Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Cardiff Energy from Waste Facility

Viridor Waste Management Limited
Trident Park
Glass Avenue
Ocean Way
Cardiff

Permit number

EPR/LP3030XA

Cardiff Energy from Waste Facility
Permit number EPR/LP3030XA

Introductory note

This introductory note does not form a part of the permit

The main features of the facility are as follows.

The permit authorises the operation of an energy from waste incinerator carrying out an activity covered by the description in Section 5.1 A(1)(c) (The incineration of non-hazardous waste) in Schedule 1 of the EP Regulations.

Cardiff Energy from Waste Facility is located some 1.6 km to the south-east of Cardiff city centre. The application site occupies 4.5 hectares of the 20 hectare Trident Park development area, which previously formed part of the East Moors Steelworks (closed 1978) and more recently the Nippon Electric Glass (UK) Ltd plant (closed 2005).

The main purpose of the facility is to burn non-hazardous municipal, commercial and industrial waste and to recover energy by producing steam. The steam will be used to produce electricity for export to the local grid and have the capability for further heat export to local consumers. The installation includes waste receipt and storage, two waste combustion units with associated waste heat boilers and exhaust gas abatement systems, on-site storage of residues and all systems for controlling and monitoring incinerator operation. The plant is designed to process approximately 44 tonnes of waste per hour in two parallel and identical combustion units (22 tonne per hour in each stream) which equates to 350,000 tonnes of waste per annum. Typically the heat produced would be used to generate 20 MW of electricity and a further 50 MW of steam for heat export.

The incoming waste is loaded into the furnace via a feed hopper from the reception hall, where the waste vehicles deposit their loads into the storage bunker. After entering the combustion chamber via the refuse feed ram the waste is allowed to fall onto the grate in a controlled manner. The moving grate mechanisms are used to agitate the waste as it progresses down to the ash discharger. As the waste moves along, primary air is introduced from beneath the grate causing the waste to go through a series of drying and burning areas. Secondary air is introduced from above the grate for combustion control. An auxiliary oil fired burner is located in each combustion chamber to both establish minimum temperature on start up and to maintain the combustion gas temperature at a minimum of 850°C for 2 seconds in the combustion chamber before passing to the boiler, economiser and abatement plant. The furnace is equipped with a water tube boiler raising steam at 60 bar and 400°C. Economisers are fitted down stream of the boiler unit to pre-heat the incoming feed water.

Each furnace unit is fitted with an independent dry urea injection system in order to reduce the facility's emissions of NOx to air through selective non-catalytic reduction. A dry hydrated lime flue gas treatment system is used to neutralise acid flue gases with the injection of lime reagent into the reaction chamber. Activated carbon is injected into the flue gas stream in order to reduce the concentrations of heavy metals and dioxins in the combustion gases emitted to air. Bag filters are used to separate out the resulting particulate matter from the cooled and treated gases. The facility has a 90m stack containing the separate flue gas streams from each combustion unit, via which the combustion gases are released to air. Each flue gas stream is equipped with a Continuous

Emission Monitoring System (CEMS) which continuously monitor for particulates, carbon monoxide (CO), ammonia (NH_3), sulphur dioxide (SO_2), hydrogen chloride (HCl), oxygen (O_2), nitrogen oxides (NOx) and volatile organic compounds (VOC).

There is no discharge of process liquids to controlled waters. Uncontaminated surface and roof waters are discharged to the surface water drainage system via a series of interceptors, attenuation lagoons and isolation valves.

Bottom ash from the incinerator grate is quenched with water and then conveyed via a metals extraction system to a concrete storage area prior to removal from site. Air pollution control residues from the bag filter systems are collected continuously and stored in two dedicated silos prior to removal from the site.

A more detailed process description can be found at section A2 of the decision document.

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**	**Response Date**
Application EA/EPR/LP3030XA/A001	Duly made 06/04/09	
Additional information requested	09/02/10	01/03/10
Additional information requested	25/02/10	12/05/10
Additional information requested	06/05/10	17/06/10
Additional information requested	08/06/10	17/06/10
Permit Draft Decision EPR/LP3030XA	26/07/10	
Permit Issued	04/11/10	

End of Introductory Note

Permit

Permit number
EPR/LP3030XA

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

Viridor Waste Management Limited ("the operator"),

whose registered office is

Peninsula House
Rydon Lane
Exeter
Devon
EX2 7HR

company registration number **00575069**

to operate a facility comprising an installation at
Cardiff Energy from Waste Facility
Trident Park
Glass Avenue
Ocean Way
Cardiff

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

Name	Date
M. Bischer	04/11/2010

M Bischer – Principal Permitting Team Leader, National Permitting Service

Authorised on behalf of the Agency

Conditions

1 Management

1.1 General management

1.1.1 The activities shall be managed and operated:

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

(b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.

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 Accident management plan

1.2.1 The operator shall:

(a) maintain and implement an accident management plan;

(b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;

(c) make any appropriate changes to the plan identified by a review.

1.3 Energy efficiency

1.3.1 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;

(b) review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures identified by a review.

1.3.2 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.

1.3.3 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.

1.4 Efficient use of raw materials

1.4.1 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 4 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 appropriate further measures identified by a review.

1.5 Avoidance, recovery and disposal of wastes produced by the activities

1.5.1 The operator shall:

(a) take appropriate measures to ensure that waste produced by the activities is avoided or reduced, or where waste is produced it is recovered wherever practicable or otherwise disposed of in a manner which minimises its impact on the environment;

(b) review and record at least every 4 years whether changes to those measures should be made; and

(c) take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.1.2 Waste authorised by this permit shall be clearly distinguished from any other waste on the site.

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at Schedule 2 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 Agency.

(b) If notified by the Agency that the activities are giving rise to pollution, the operator shall submit to the 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 Agency.

2.3.2 No raw materials or fuels listed in schedule 3 table S3.1 shall be used unless they comply with 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 3 table S3.2, and it is not excluded by schedule 3 table 3.2; and

(b) it conforms to the description in the documentation supplied by the producer and holder.

2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

(a) the nature of the process producing the waste;

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazard classification associated with the waste; 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 4 table S 4.1(a) is exceeded; or

(c) any continuous emission limit value in schedule 4 table S 4.1 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 4 table S 4.1 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 4 table S 4.1 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 four hours uninterrupted duration;

(b) the cumulative duration of WID abnormal operation periods over one calendar year exceeds 60 hours on an incineration line;

(c) continuous measurement shows that an emission exceeds any emission limit value in schedule 4 table S 4.1 (a) due to disturbances or failures of the abatement systems;

(d) the alternative techniques to demonstrate compliance with the WID abnormal operation emission limit value(s) for particulates, TOC and CO in schedule 4 table S4.1(a), as detailed in the application or as agreed in writing with the Agency, are unavailable.

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 Agency;

(c) when a period of 4 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 Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Agency, the operator shall notify the 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 4 tables S4.1, S4.2 and S4.3 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 4 tables S4.1(a) and S4.2.

3.1.2 The limits given in schedule 4 shall not be exceeded.

3.1.3 Wastes produced at the site shall, as a minimum, be sampled and analysed in accordance with schedule 4 table S4.5. 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 Fugitive emissions of substances

3.2.1 Fugitive emissions of substances (excluding odour, noise and vibration) 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 fugitive emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 All liquids, 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 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 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 Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the 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 Agency.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the monitoring specified in the following tables in schedule 4 to this permit:

(a) point source emissions specified in tables S4.1, S4.1(a), S4.2 and S4.3;

(b) process monitoring specified in table S4.4;

(c) ash monitoring specified in table S4.5.

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 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 4, table S4.1. 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 4 tables S4.1, S4.1a, S4.2 and S4.3 unless otherwise specified in that schedule.

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 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 All records, plans and the management system required to be maintained by this permit shall be held on the site where practicable, or other location agreed in writing and controlled by the operator.

4.2 Reporting

4.2.1 All reports and notifications required by the permit shall be sent to the Agency using the contact details supplied in writing by the Agency.

4.2.2 A report on the performance of the activities over the previous year shall be submitted to the Agency by 31 January (or other date agreed in writing by the Agency) each year. The report 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 5 table S5.2;

(c) the performance parameters set out in schedule 5 table S5.3 using the forms specified in table S5.4 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 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 5 table S5.1;

(b) for the reporting periods specified in schedule 5 table S5.1 and using the forms specified in schedule 5 table S5.4 ; 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 4 years, submit to the Agency, within 6 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 one month of the end of each quarter, the operator shall submit to the 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 Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission 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 6 to this permit within the time period specified in that schedule.

4.3.3 Where the 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 Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The 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.

In any other case:

(a) the death of any of the named operators (where the operator consists of more than one named individual);

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

(c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the 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 Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

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

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

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

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

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 7 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.

Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
Section 5.1 Part A1(c)	The incineration of non-hazardous waste in an incineration plant with a capacity of 1 tonne per hour or more.	The incineration of non-hazardous waste including the operation of two incineration lines with boilers and auxiliary burners; facilities for the treatment of exhaust gases; on-site facilities for treatment, storage and disposal of residues, surface water and waste water; systems for controlling and monitoring incineration operations; and receipt, storage and handling (including shredding) of wastes and raw materials (including fuels) .
Directly Associated Activity		
Electrical power supply.	The generation of electricity using a steam turbine.	The electricity is used on-site and exported to the grid.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Details provided in Section 7 (but excluding Appendix 2) and Section10 (including Appendicies 1 to 4) of the Application .	06/04/09
Response to additional information request No3	Response to question 2 relating to bag filter system operation.	17/06/10

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	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 S4.1 and Table S4.1(a) complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3.	Initial calibration report to be submitted to the Agency within 3 months of completion of commissioning. Full summary evidence compliance report to be submitted within 18 months of commissioning.
IC2	The operator shall carry out checks to verify the residence time, minimum temperature and oxygen content of the exhaust gases in the furnace whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted in writing to the Agency.	Within 3 months of completion of commissioning.

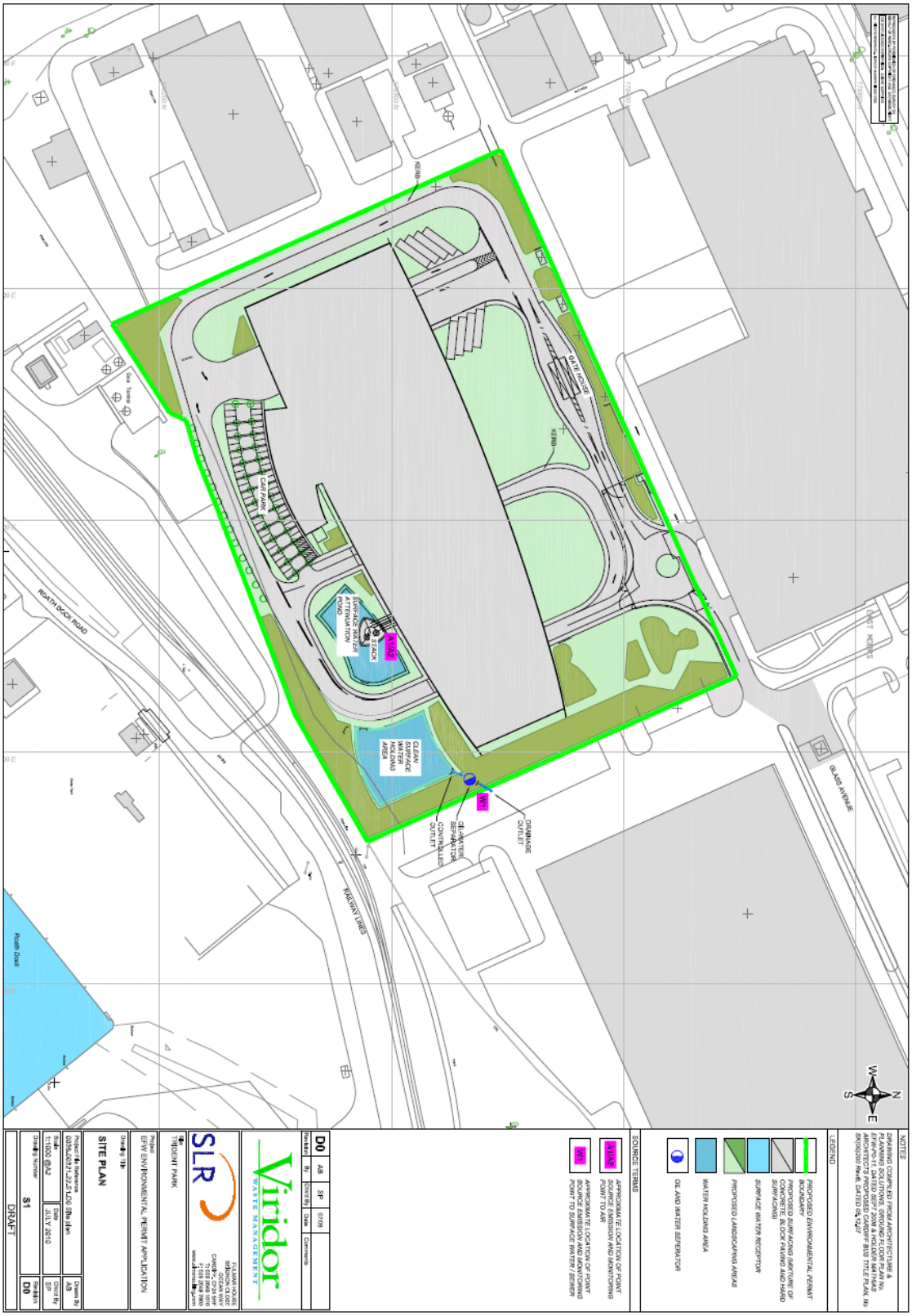
Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC3	The operator shall submit a post-commissioning report to the Agency which shall include: - a review of performance of the facility against the conditions of this permit. - details of optimisation of emission abatement systems including reagent dosing rates. - details of procedures developed during commissioning for achieving and demonstrating satisfactory process control.	Within 4 months of completion of commissioning
IC4	The operator shall submit a written proposal to the 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 PM10, PM2.5 and PM1.0 ranges. The proposal shall include a proposed timetable to carry out such tests and produce a report on the results. On receipt of written approval by the Agency to the proposal and timetable, the operator shall carry out the tests and submit to the Agency a report on the results.	Within 6 months of completion of commissioning.
IC5	The Operator shall carry out an assessment of the impact of emissions to air of Chromium (VI) having regard to the 2009 report of the Expert Panel on Air Quality Standards – Guidelines for Metal and Metalloids in Ambient Air for the Protection of Human Health. The assessment shall predict the impact of Arsenic and Chromium (VI) against the guidelines through the use of emissions monitoring data during the first year of operation and air dispersion modelling. A report on the assessment shall be made to the Environment Agency.	Within 15 months of completion of commissioning

Table S1.4 Pre-operational measures		
Reference	**Requirement**	**Date**
PO01	The Operator shall submit a written report to the Agency of the details of the computational fluid dynamic (CFD) modelling. The report shall demonstrate whether the design combustion conditions comply with the residence time and temperature requirements as defined by the Waste Incineration Directive. The report shall also justify the position of all temperature probes that are to be used to demonstrate compliance with WID requirements and demonstrate the design reliability and accuracy of the temperature probes. Operations at the site shall not start until the report is approved in writing by the Agency.	After completion of furnace design and at least three calendar months before any furnace operation.

Table S1.4 Pre-operational measures		
Reference	**Requirement**	**Date**
PO02	The Operator shall submit a written report to the Agency specifying arrangements for continuous and periodic monitoring of emissions to air to comply with all relevant guidance, including Technical Guidance Notes M1 and M2, and the SGN. The report shall include the following: • plant and equipment details, including accreditation to MCERTS • methods and standards for sampling and analysis of all substances controlled by the Waste Incineration Directive plus monitoring of N_2O and NH_3 • monitoring locations, access and working platforms	At least three calendar months before any waste is burned in the furnace.
PO03	The Operator shall submit a written commissioning plan to the Agency along with timescales for implementation. The plan shall be designed to demonstrate that permit conditions will be met under all anticipated operating conditions and shall confirm the commissioning programme and plant monitoring protocols. The plan shall be implemented in accordance with the Agency's written approval and commissioning shall not commence until that approval is provided.	At least three calendar months before any furnace operation.
PO04	The Operator shall submit a written plan to the Agency for approval detailing the ash sampling protocol to be used for APC residues and bottom ash, in conformance to Agency Guidance. The plan shall be implemented in accordance with the Agency's written approval	At least two calendar months before any waste is burned in the furnace.
PO05	The Operator shall submit a copy of the site Environment Management System (EMS) to the Agency and make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with Part 1 of 'How to comply with your Environmental Permit (EPR1.00)', Horizontal Guidance Note H6 'Environmental Management Systems' and the additional requirements set out in Section 1 of 'The Incineration of waste (EPR 5.01)' guidance document. The Operator shall also submit a plan, with timescales that identifies when external certification for the site EMS will be obtained.	At least three calendar months before the start of operations at the site.
PO06	The operator shall provide the Agency with a written report for approval describing the detailed programme of noise monitoring that will be carried out at the site at the commissioning stage and also when the plant is fully operational. The report shall include confirmation of locations, time, frequency and methods of noise monitoring, and identify the noise monitoring survey reports that will subsequently be provided to the Agency. The monitoring programme shall be carried out in accordance with the Agency's written approval.	At least three calendar months before any furnace operation.
PO07	The operator shall submit a written report to the Agency for approval that includes a detailed site drainage plan and the specific design detail of the containment infrastructure at the site, including all sub-surface structures and equipment. The report shall also include an inspection and maintenance programme for the containment infrastructure and equipment at the site.	At least four calendar months before the start of operations at the site.

Table S1.4 Pre-operational measures		
Reference	**Requirement**	**Date**
PO08	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 approval from the Agency.	At least three calendar months before any waste is burned in the furnace.

Schedule 2 – Site Plan



Schedule 3 - Waste types, raw materials and fuels

Table S3.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Gas oil	Less than 0.1% sulphur

Table S3.2 Permitted waste types and quantities for incineration.	
	Maximum quantity 350,000 tonnes per annum in total
Waste code	**Description**
02 Wastes from Agriculture, Horticulture, Aquaculture, Forestry, Hunting and Fishing, Food Preparation and Processing	
	wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing.
02 01 03	Plant tissue waste
02 01 04	Waste plastic (except packaging)
02 01 07	Wastes from forestry
02 01 09	Agrochemical waste other than those mentioned in 02 01 08*
	wastes from the preparation and processing of meat, fish and other foods
02 02 03	Materials unsuitable for consumption or processing (Note 2)
	wastes from fruit, vegetable, cereal or other vegetable origin material preparation and processing
02 03 04	Materials unsuitable for consumption or processing (Note 2)
	wastes from the dairy products industry
02 05 01	Materials unsuitable for consumption or processing (Note 2)
	wastes from the baking and confectionery industry
02 06 01	Materials unsuitable for consumption or processing (Note 2)
	wastes from the production of alcoholic and non-alcoholic beverages
02 07 04	Materials unsuitable for consumption or processing (Note 2)
03 Wastes from Wood Processing and the Production of Panels and Furniture, Pulp, paper and Cardboard.	
	wastes from wood processing and the production of panels and furniture.
03 01 01	Waste bark and cork
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04*.
	wastes from pulp, paper and cardboard production and processing
03 03 01	Waste bark wood
03 03 07	Mechanically separated rejects from pulping of waste paper and cardboard
03 03 08	Wastes from sorting of paper and cardboard destined for recycling
04 Wastes from the Leather, Fur and Textile Industries	
	wastes from the textile industry
04 02 09	Wastes from composite materials (impregnated textile, elastomer, plastomer)
04 02 10	Organic matter from natural products (eg. grease, wax)
04 02 21	Wastes from unprocessed textile fibres
04 02 22	Wastes from processed textile fibres
09 Wastes from the Photographic Industry	
09 01 07	Photographic film and paper containing silver or silver compounds
09 01 08	Photographic film and paper free of silver or silver compounds

Table S3.2 Permitted waste types and quantities for incineration.	
	Maximum quantity 350,000 tonnes per annum in total
Waste code	**Description**
15 Waste Packaging, Absorbants, Wiping Cloths, Filter Materials and Protective Clothing not otherwise specified	
	packaging (including separately collected municipal packaging waste)
15 01 01	Paper and cardboard packaging (Note 1)
15 01 02	Plastic packaging (Note 1)
15 01 03	Wooden packaging (Note 1)
15 01 05	Composite packaging
15 01 06	Mixed packaging
15 01 09	Textile packaging (Note 1)
	absorbants, filter materials, wiping cloths and protective clothing
15 02 03	Absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02*
17 Construction and Demolition Wastes (including excavated soil from contaminated sites)	
	wood, glass and plastic
17 02 01	Wood (Note 1)
17 02 03	Plastic (Note 1)
	insulation materials and asbestos-containing construction materials
17 06 04	insulating materials other than those mentioned in 17 06 01* and 17 06 03*
	other construction and demolishion wastes
17 09 04	Mixed construction and demolishion wastes other than those mentioned in 17 09 01*, 17 09 02* and 17 09 03*
18 Wastes from Human and Animal Health Care and/or Related Research (except kitchen and restaurant wastes not arising from immediate health care)	
	wastes from natal care, diagnosis, treatment or prevention of disease in humans
18 01 04	wastes whose collection and disposal is not subject to special requirements in order to prevent infection
	wastes from research, diagnosis, treatment or prevention of diseases in animals
18 02 03	wastes whose collection and disposal is not subject to special requirements in order to prevent infection
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	
	wastes from aerobic treatment of solid wastes
19 05 01	Non-composted fraction of municipal and similar wastes
19 05 02	Non-composted fraction of animal and vegetable waste
19 05 03	Off-specification compost
	wastes from anaerobic treatment of waste
19 06 04	Digestate from anaerobic treatment of municipal waste (Note 3)
19 06 06	Digestate from anaerobic treatment of animal and vegetable waste (Note 3)
	wastes from waste water treatment plants not otherwise specified
19 08 01	Screenings (Note 2)
19 08 05	Sludges from treatment of urban waste water (Note 2)
	wastes from the mechanical treatment of waste (eg. sorting, crushing, compacting, pelletising) not otherwise specified
19 12 01	Paper and cardboard (Note 1)
19 12 04	Plastic and rubber (Note 1)

Table S3.2 Permitted waste types and quantities for incineration.	
	Maximum quantity 350,000 tonnes per annum in total
Waste code	**Description**
19 12 07	Wood other than that mentioned in 19 12 06* (Note 1)
19 12 08	Textiles (Note 1)
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)	
	separately collected fractions (except 15 01)
20 01 01	Paper and cardboard (Note 1)
20 01 08	Bio-degradable kitchen and canteen waste (Note 2)
20 01 10	Clothes (Note 1)
20 01 11	Textiles (Note 1)
20 01 38	Wood other than that mentioned in 20 01 37* (i.e. other than that containing dangerous substances) (Note 1)
20 01 39	Plastics (Note 1)
	garden and park wastes (including cemetery waste)
20 02 01	Bio-degradable wastes (Note 2)
	other municipal wastes
20 03 01	Mixed municipal wastes
20 03 02	Wastes from markets
20 03 03	Street cleaning residues
20 03 06	Waste from sewage cleaning
20 03 07	Bulky waste
20 03 99	Municipal wastes not otherwise specified

Exclusions

Note 1. Only the fraction that is contaminated or can not be practically recycled or reused and would otherwise be destined for landfill.

Note 2. Only where anaerobic digestion, composting or similar treatment is not a practical option.

Note 3. Only where that waste stream is not practical for Recovery though agricultural or horticultural benefit or other similar means, and has a solid phase composition (no liquid phase wastes).

Schedule 4 – Emissions and monitoring

Table S4.1 Point source emissions to air except during abnormal operation– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit) [Note 1]**	**Reference Period [Note 12]**	**Monitoring frequency**	**Monitoring standard or method [Notes 3 and 5]**
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Incineration gases via heat recovery boiler and APC plant	200 mg/m^3	Daily Mean	Continuous [Note 8]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Incineration gases via heat recovery boiler and APC plant	400 mg/m^3	½-hour mean	Continuous [Note 8]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Particulate matter	Incineration gases via heat recovery boiler and APC plant	10 mg/m^3	Daily Mean	Continuous [Note 7]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Particulate matter	Incineration gases via heat recovery boiler and APC plant	30 mg/m^3	½-hour mean	Continuous [Note 7]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Total organic carbon (TOC)	Incineration gases via heat recovery boiler and APC plant	10 mg/m^3	Daily Mean	Continuous [Note 7]	BS EN 15267-3

Table S4.1 Point source emissions to air except during abnormal operation– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit) [Note 1]**	**Reference Period [Note 12]**	**Monitoring frequency**	**Monitoring standard or method [Notes 3 and 5]**
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Total organic carbon (TOC)	Incineration gases via heat recovery boiler and APC plant	20 mg/m^3	½-hour mean	Continuous [Note 7]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Hydrogen chloride (HCl)	Incineration gases via heat recovery boiler and APC plant	10 mg/m^3	Daily Mean	Continuous [Note 4]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Hydrogen chloride (HCl)	Incineration gases via heat recovery boiler and APC plant	60 mg/m^3	½-hour mean	Continuous [Note 4]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Sulphur dioxide (SO_2)	Incineration gases via heat recovery boiler and APC plant	50 mg/m^3	Daily Mean	Continuous [Note 8]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Sulphur dioxide (SO_2)	Incineration gases via heat recovery boiler and APC plant	200 mg/m^3	½-hour mean	Continuous [Note 8]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Carbon monoxide (CO)	Incineration gases via heat recovery boiler and APC plant	50 mg/m^3	Daily Mean	Continuous [Note 2]	BS EN 15267-3

Table S4.1 Point source emissions to air except during abnormal operation– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit) [Note 1]**	**Reference Period [Note 12]**	**Monitoring frequency**	**Monitoring standard or method [Notes 3 and 5]**
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Carbon monoxide (CO)	Incineration gases via heat recovery boiler and APC plant	100 mg/m^3	½-hour mean	Continuous [Note 2]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Hydrogen fluoride (HF)	Incineration gases via heat recovery boiler and APC plant	2 mg/m^3	Mean over minimum 1 hour period	Quarterly [Notes 6 and 11]	ISO 15713
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Cadmium and thallium and their compounds (total) [Note 9]	Incineration gases via heat recovery boiler and APC plant	0.05 mg/m^3	Mean over period minimum 30 minutes maximum 8 hours	Quarterly [Notes 6 and 11]	BS EN 14385
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Mercury and its compounds [Note 9]	Incineration gases via heat recovery boiler and APC plant	0.05 mg/m^3	Mean over period minimum 30 minutes maximum 8 hours	Quarterly [Notes 6 and 11]	BS EN 13211
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V and their compounds (total) [Note 9]	Incineration gases via heat recovery boiler and APC plant	0.5 mg/m^3	Mean over period minimum 30 minutes maximum 8 hours	Quarterly [Notes 6 and 11]	BS EN 14385
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Dioxins / furans (I-TEQ) [Note 10]	Incineration gases via heat recovery boiler and APC plant	0.1 ng/m^3	Mean over minimum 6 hours, maximum 8 hour period	Quarterly [Notes 6 and 11]	BS EN 1948 1-3

Table S4.1 Point source emissions to air except during abnormal operation– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit) [Note 1]**	**Reference Period [Note 12]**	**Monitoring frequency**	**Monitoring standard or method [Notes 3 and 5]**
Emergency pressure relief valves	All relief valves on Incineration lines 1 and 2 and associated APC plant, boiler and steam turbine.	Combustion Gases and high pressure steam	None	Not applicable		
Vents from tanks and storage silos	All passive vents from storage tanks and silos for abatement chemicals and residues	Vapours from fuel oil, calcium hydroxide, urea and powdered carbon	None	Not Applicable		

Note 1: See Schedule 7 for reference conditions.

Note 2: The Continuous Emission Monitors used shall be such that the values of the 95% confidence intervals of a single measured result at the daily emission limit value shall not exceed 10%. 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 interval (10%). Where it is necessary to calibrate or maintain the monitor and this means that data is not available for a complete half-hour period, the half-hourly average shall nonetheless 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 8 per day). 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 will be considered valid if no more than five half-hourly average values in any day have been determined not to be valid. No more than ten daily average values per year shall be determined not to be valid.

Note 3: MCERTS certification to the appropriate ranges and determinands is a demonstration of compliance to the applicable standards.

Note 4: As Note 2, except that the value of the confidence interval is 40% in place of 10%.

Note 5: The certification range for MCERTS equipment should be not more than 1.5 times the daily emission limit value. The CEM shall also be able to measure instantaneous values over the ranges that 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.

Note 6: After the first 12 months of operation, measurement frequency for emission points A1and A2 shall be bi-annual.

Note 7: As Note 2, except that the value of the confidence interval is 30% in place of 10%.

Note 8: As Note 2, except that the value of the confidence interval is 20% in place of 10%.

Note 9: Metals include gaseous, vapour and solid phases as well as their compounds (expressed as the metal or the sum of the metals as specified). Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V mean antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium respectively.

Note 10: The TEQ sum of the equivalence factors to be reported as a range based on: All congeners less than the detection limit assumed to be zero as a minimum, and all congeners less than the detection limit assumed to be at the detection limit as a maximum.

Note 11: At least one monitoring result shall be reported within three months of first burning waste.

Note 12: The reference period shall be a period of representative operation for periodic monitoring.

Table S4.1(a) Point source emissions to air during abnormal operation of incineration plant – emission limits and monitoring requirements

Emission point ref. & location	Parameter	Source	Limit (including unit) [Note 1]	Reference period	Monitoring frequency	Monitoring standard or method
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Particulate matter	Incineration gases via heat recovery boiler and APC plant	150 mg/m^3	½-hourly mean	Continuous [Note 3]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Total Organic Carbon (TOC)	Incineration gases via heat recovery boiler and APC plant	20 mg/m^3	½-hourly mean	Continuous [Note 3]	BS EN 15267-3
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Carbon monoxide (CO)	Incineration gases via heat recovery boiler and APC plant	100 mg/m^3	½-hourly mean	Continuous [Note 2]	BS EN 15267-3

Note 1: See Schedule 7 for reference conditions.

Note 2: The Continuous Emission Monitors used shall be such that the values of the 95% confidence intervals of a single measured result at the daily emission limit value shall not exceed 10%. 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 interval (10%). Where it is necessary to calibrate or maintain the monitor and this means that data is not available for a complete half-hour period, the half-hourly average shall nonetheless 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 8 per day). 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 will be considered valid if no more than five half-hourly average values in any day have been determined not to be valid. No more than ten daily average values per year shall be determined not to be valid.

Note 3: As Note 2, except that the value of the confidence interval is 30% in place of 10%.

Table S4.2 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 on site plan in Schedule 2	No parameters set	Drainage of uncontaminated surface water via attenuation pond, holding pond and oil interceptor	No limits set. Discharge to be free of any visible solids, oil or grease	-	Assess weekly. Permanent sampling access not required.	

Table S4.3 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
There are no emission points or point source releases of process effluent from the installation						

Table S4.4 Process monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method [Notes 1 & 2]	Other specifications
As agreed in writing with the Agency	Wind speed and direction	Continuous	Anemometer	
Furnace Chamber 1 and Furnace Chamber 2 As agreed in writing with the Agency after completion of PO01	Furnace chamber temperature	Continuous	As agreed in writing with the Agency	

Table S4.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method [Notes 1 & 2]**	**Other specifications**
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Exhaust gas temperature	Continuous	As agreed in writing with the Agency	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Exhaust gas pressure	Continuous	As agreed in writing with the Agency	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Exhaust gas water content	Continuous	BS EN 15267-3	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Exhaust gas oxygen concentration	Continuous	BS EN 15267-3	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Exhaust gas flow rate	Continuous	BS EN 15267-3	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Dioxin-like PCBs (WHO-TEQ Humans / Mammals) [Note 3]	Quarterly. Mean value over minimum 6 hour, maximum 8 hour reference period. [Note 4]	To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3) and BS EN TS 1948-4	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Dioxin-like PCBs (WHO-TEQ Fish) [Note 3]	Quarterly. Mean value over minimum 6 hour, maximum 8 hour reference period. [Note 4]	To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3) and BS EN TS 1948-4	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Dioxin-like PCBs (WHO-TEQ Birds) [Note 3]	Quarterly. Mean value over minimum 6 hour, maximum 8 hour reference period. [Note 4]	To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3) and BS EN TS 1948-4	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Specific individual polycyclic aromatic hydrocarbons (PAHs), as defined in Schedule 7	Quarterly. Mean value over minimum 6 hour, maximum 8 hour reference period. [Note 4]	BS ISO 11338-1 and BS-ISO 11338-2	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Dioxins / furans (WHO-TEQ Humans / Mammals) [Note 3]	Quarterly. Mean value over minimum 6 hour, maximum 8 hour reference period. [Note 4]	To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3)	

Table S4.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method [Notes 1 & 2]**	**Other specifications**
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Dioxins / furans (WHO-TEQ Fish) [Note 3]	Quarterly. Mean value over minimum 6 hour, maximum 8 hour reference period. [Note 4]	To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3)	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Dioxins / furans (WHO-TEQ Birds) [Note 3]	Quarterly. Mean value over minimum 6 hour, maximum 8 hour reference period. [Note 4]	To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3)	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Nitrous oxide (N_2O)	Quarterly. [Note 4]	VDI 2469-1 or VDI 2469-2	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Ammonia (NH_3)	Continuous	BS EN 15267-3	Record daily mean and half-hourly mean

Note 1: MCERTS certification to the appropriate ranges and determinands is a demonstration of compliance to the applicable standards.

Note 2: The CEM shall be able to measure instantaneous values over the ranges that 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.

Note 3: The TEQ sum of the equivalence factors to be reported as a range based on: All congeners less than the detection limit assumed to be zero as a minimum, and all congeners less than the detection limit assumed to be at the detection limit as a maximum.

Note 4: After the first 12 months of operation, measurement frequency for emission point A1 and A2 shall be bi-annual.

Table S4.5 Bottom Ash and APC Residue Quality					
Emission point reference or source or description of point of measurement	**Parameter**	**Limit**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Bottom Ash Quality					
Bottom Ash [Sample Each Process Line]	Total Oganic Carbon (TOC)	3%	Monthly for the first year of operation and quarterly thereafter		Ash sampling protocol to be agreed in writing by the Agency
Bottom Ash [Combined Sample from both Process Lines]	Total heavy metal content (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds	Record	Monthly for the first year of operation and quarterly thereafter		Ash sampling protocol to be agreed in writing by the Agency
Bottom Ash [Combined Sample from both Process Lines]	Total dioxin/furan content	Record	Monthly for the first year of operation and quarterly thereafter		Ash sampling protocol to be agreed in writing by the Agency
Bottom Ash [Combined Sample from both Process Lines]	Total dioxin-like PCBs content	Record	Monthly for the first year of operation and quarterly thereafter		Ash sampling protocol to be agreed in writing by the Agency
Bottom Ash [Combined Sample from both Process Lines]	Total soluble fraction and heavy metal content of that fraction. (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds	Record	Before use of a new disposal or recycling route	Analysis for total soluble fraction using EA NEN 7371:2004 and PR/CEN/TS 14429.	Ash sampling protocol to be agreed in writing by the Agency
APC Residue Quality					
APC residues [Sample Each Process Line]	Total heavy metal content (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds	Record	Monthly for the first year of operation and quarterly thereafter		Ash sampling protocol to be agreed in writing by the Agency
APC residues [Sample Each Process Line]	Total dioxin/furan content	Record	Monthly for the first year of operation and quarterly thereafter		Ash sampling protocol to be agreed in writing by the Agency

Table S4.5 Bottom Ash and APC Residue Quality					
Emission point reference or source or description of point of measurement	**Parameter**	**Limit**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
APC residues [Sample Each Process Line]	Total dioxin-like PCBs content	Record	Monthly for the first year of operation and quarterly thereafter		Ash sampling protocol to be agreed in writing by the Agency
APC residues [Sample Each Process Line]	Total soluble fraction and heavy metal content of that fraction. Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds	Record	Before use of a new disposal or recycling route	Analysis for total soluble fraction using EA NEN 7371:2004 and PR/CEN/TS 14429.	Ash sampling protocol to be agreed in writing by the Agency

Schedule 5 - Reporting

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

Table S5.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air of SO_2, TOC, NOx, HCl, particulate matter, CO, N_2O and NH_3 continuous monitoring as required by condition 3.5.1.	A1 and A2 [Each process line]	Every 3 months	From the first date that waste is burned in the installation
Emissions to air of HF, N_2O, Cd/Tl, Hg, Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V and their compounds (total), dioxins/ furans (I-TEQ), dioxin-like PCBs (WHO-TEQ Humans/ Mammals), dioxin-like PCBs (WHO-TEQ Fish), dioxin-like PCBs (WHO-TEQ Birds), specific individual poly-cyclic aromatic hydrocarbons (PAHs), dioxins/furans (WHO-TEQ Humans/Mammals), dioxins/furans (WHO-TEQ Fish), dioxins/furans (WHO-TEQ Birds) periodic monitoring as required by condition 3.5.1.	A1 and A2 [Each process line]	Every 3 months for the first year of operation, and every 6 months thereafter.	From the first date that waste is burned in the installation
Exhaust gas temperature, pressure, oxygen content, water content and flow rate, continuous monitoring as required by condition 3.5.1	A1 and A2 [Each process line]	As requested by Agency site inspector. See Note 1.	From the first date that waste is burned in the installation
Furnace chamber temperature continuous monitoring as required by condition 3.5.1	Furnace 1 and Furnace 2	As requested by Agency site inspector. See Note 1.	From the first date that waste is burned in the installation
Wind speed and direction continuous monitoring as required by condition 3.5.1	Installation	As requested by Agency site inspector. See Note 1.	From the first date that waste is burned in the installation
Total Organic Carbon content of bottom ash as required by condition 3.5.1	Bottom ash [Each process line]	Monthly for the first year of operation, and quarterly thereafter.	From the first date that waste is burned in the installation
Content of heavy metals, dioxins/furans and dioxin-like PCBs of bottom ash as required by condition 3.5.1	Bottom ash [Combined Sample from both Process Lines]	Monthly for the first year of operation, and quarterly thereafter.	From the first date that waste is burned in the installation
Content of heavy metals, dioxins/furans and dioxin-like PCBs of APC residues as required by condition 3.5.1	APC residues [Each process line]	Monthly for the first year of operation, and quarterly thereafter.	From the first date that waste is burned in the installation

Note 1: These parameters would not normally require to be reported, but would be available for inspection at the site. Only where there is an operational need for a report to be made should one be required.

Table S5.2: Annual production/treatment	
Parameter	**Units**
Total mass of municipal waste received on site	tonnes
Total mass of commercial and industrial waste received on site	tonnes
Municiple waste incinerated	tonnes
Commercial and industrial waste incinerated	tonnes
Rejected material sent off-site for disposal	tonnes
Electricity generated	MWh
Electricity exported	MWh
Steam exported	MWh

Table S5.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Water usage	Annually	m^3/tonne waste incinerated
Energy usage	Annually	MWh/tonne waste incinerated
Gas oil consumption	Annually	kg/tonne waste incinerated
Total urea used	Annually	kg/tonne waste incinerated
Total calcium hydroxide reagent used	Annually	kg/tonne waste incinerated
Total powdered activated carbon	Annually	kg/tonne waste incinerated
Total Air Pollution Control residues disposed of	Annually	kg/tonne waste incinerated
Total bottom ash generated	Annually	kg/tonne waste incinerated
Total bottom ash recycled	Annually	kg/tonne waste incinerated
Total bottom ash disposed of	Annually	kg/tonne waste incinerated

Table S5.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air – periodic monitoring	Form air 1 or other form as agreed in writing by the Agency	04/11/10
Air – continuous monitoring	Form air 2 or other form as agreed in writing by the Agency	04/11/10
Water usage	Form water usage1 or other form as agreed in writing by the Agency	04/11/10
Energy usage	Form energy 1 or other form as agreed in writing by the Agency	04/11/10
Other performance indicators	Form performance 1 or other form as agreed in writing by the Agency	04/11/10
Ash composition	Form Ash 1 or other form as agreed in writing by the Agency	04/11/10

Schedule 6 - 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/LP3030XA**
Name of operator	**Viridor Waste Management Limted**
Location of Facility	**Cardiff Energy from Waste Facility, Trident Park, Cardiff**.
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission 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.	

Part C

Permit Number	**EPR/LP3030XA**
Name of operator	**Viridor Waste Management Limted**
Location of installation	**Cardiff Energy from Waste Facility, Trident Park, Cardiff**.

Time at which abnormal operation commenced	
Time at which abnormal operation ceased	
Duration of this incidence of abnormal operation	
Cumulative abnormal operation duration in current year (at end of present incidence)	
Reasons for abnormal operation	
How did the abnormal operation end? (e.g. plant repaired, reaching maximum permitted duration, initiation of shutdown, etc.)	
Where the abnormal operation was caused by the failure of the particulate, CO or TOC CEM, attach a copy of the alternate monitoring data which was used to demonstrate compliance with the abnormal operation emission limit values.	

Where abatement plant has failed, give the half-hourly average emissions for pollutants of relevance during the abnormal operation in the rows below								
Pollutant	1st ½ hour	2nd ½ hour	3rd ½ hour	4th ½ hour	5th ½ hour	6th ½ hour	7th ½ hour	8th ½ hour

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of **Viridor Waste Management Limited**

Schedule 7 - 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.

"*annually*" means once every year.

“a*pplication*” 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.

“*APC residues*” means air pollution control residues

“authorised officer” means any person authorised by the 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.

“*BAT*” means best available techniques means the most effective and advanced stage of development of activities and their methods of operation which indicates the practical suitability of particular techniques to prevent and where that is not practicable to reduce emissions and the impact on the environment as a whole. For these purposes: “available techniques” means “those techniques which have been developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the cost and advantages, whether or not the techniques are used or produced inside the United Kingdom, as long as they are reasonably accessible to the Operator”; “best” means “in relation to techniques, the most effective in achieving a high general level of protection of the environment as a whole” and “techniques” “includes both the technology used and the way in which the Installation is designed, built, maintained, operated and decommissioned”.

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

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

“*CEM*” Continuous emission monitor

“*CEN*” means Commité Européen de Normalisation

‘’*Commissioning*’’ will commence at the point at which waste is received at the site and will be considered as complete at the point at which the plant is formally handed over from the Technology Contractor to the operator.

“*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.

“*emissions to land*”, includes emissions to groundwater.

”*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.

“*fugitive emission*” means an emission to air, water or land from the activities from a localised or diffuse source which is not controlled by an emission limit.

"*Gas oil*" means low sulphur content hydrocarbon fuel oil, not arising as waste from some other process, used for furnace support and during start up procedures.

"*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.

"*ISO*" means International Standards Organisation.

"*I-TEF*" means international toxic equivalent factors.

"*I-TEQ*" means international toxic equivalent concentration

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

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

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

"*PCB*" means Polychlorinated Biphenyl. Dioxin-like PCBs are the non-ortho and mono-ortho PCBs listed at the end of this schedule

"*PM10, PM2.5, PM1.0*" mean respectively the mass of particulate matter contained in particles of less than 10, 2.5 and 1.0 micrometres aerodynamic diameter.

"*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.

"*shutdown*" 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 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 as agreed in writing with the Agency.

"start of operations" means the point at which waste or secondary fuel or other raw materials are first received at the site.

"*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).

"VCR" means Video Casette Recorder.

"*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 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:

(a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or

(b) in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content

(c) 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.

TEF schemes for dioxins and furans				
Congener	I-TEF(1990)	WHO-TEF (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	0.0001	-	-
Furans				
2,3,7,8-TCDF	0.1	0.1	0.05	1
1,2,3,7,8-PeCDF	0.05	0.05	0.05	0.1
2,3,4,7,8-PeCDF	0.5	0.5	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	0.0001	0.0001	0.0001

TEF schemes for dioxin-like PCBs			
Congener	WHO-TEF (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)	0.0001	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)	0.01	0.00005	0.001
Mono-ortho PCBs			
2,3,3',4,4'-PeCB (105)	0.0001	<0.000005	0.0001
2,3,4,4',5-PeCB (114)	0.0005	<0.000005	0.0001
2,3',4,4',5-PeCB (118)	0.0001	<0.000005	0.00001
2',3,4,4',5-PeCB (123)	0.0001	<0.000005	0.00001
2,3,3',4,4',5-HxCB (156)	0.0005	<0.000005	0.0001
2,3,3',4,4',5'-HxCB (157)	0.0005	<0.000005	0.0001
2,3',4,4',5,5'-HxCB (167)	0.00001	<0.000005	0.00001
2,3,3',4,4',5,5'-HpCB (189)	0.0001	<0.000005	0.00001

END OF PERMIT