



**Cyfoeth
Naturiol**
Cymru
**Natural
Resources**
Wales

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Viridor Waste Management Limited

Cardiff Energy Recovery Facility

Trident Park

Glass Avenue

Ocean Way

Cardiff

CF24 5EN

Permit number

EPR/LP3030XA

Cardiff Energy Recovery Facility

Permit number EPR/LP3030XA

Introductory note

This introductory note does not form a part of the permit

The main features of the permit 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)(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 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 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 has 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 26.48 tonne per hour in two parallel and identical combustion units. Taking into account the expected long term availability of the facility, the annual throughput of the facility is 425,000 tonnes of waste per annum. Typically the heat produced would be used to generate 30 MW of electricity and a further 20 MW of steam for heat export.

The incoming municipal 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 Oxides of Nitrogen (NO_x) 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 (NH₃), sulphur dioxide (SO₂), hydrogen chloride (HCl), oxygen (O₂), nitrogen oxides (NO_x) and volatile organic compounds (VOC's).

There is a discharge of process effluent to sewer in accordance with a Trade Effluent Consent issued by Dwr Cymru Welsh Water. 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.

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/LP3030XA/A001	Duly made 06/04/09	
Additional information received	01/03/10	
Additional information received	12/05/10	
Additional information received	17/06/10	
Additional information received	17/06/10	
Permit Draft Decision EPR/LP3030XA	26/07/10	
Permit Issued	04/11/10	
Application EPR/LP3030XA/V002 (variation and consolidation)	Duly made 20/03/14	Application to vary and update the permit to modern conditions
Additional information received	26/06/14	
Variation determined EPR/LP3030XA	21/08/14	Varied and consolidated permit issued in modern condition format
Application EPR/LP3030XA/V003	Duly made 28/09/16	Application to vary the permit
Additional information received	20/10/17	Correct site plan provided
Additional information received	10/01/17	Confirmation of waste codes
Permit determined	02/03/17	Varied and consolidated permit issued
Application EPR/LP3030XA/V004	Duly made 07/02/18	Admin variation to amend table S1.3 and table S3.1
Permit determined	04/05/18	Variation issued

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number
EPR/LP3030XA

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/LP3030XA/V004 authorising,

Viridor Waste Management Limited (“the operator”),
whose registered office is

Peninsula House
Rydon Lane
Exeter
Devon
EX2 7HR

company registration number **00575069**
to operate an installation at

Cardiff Energy Recovery Facility
Trident Park
Glass Avenue
Ocean Way
Cardiff
CF24 5EN

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

Signed

Date

Holly Noble	04/05/2018
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Authorised on behalf of Natural Resources Wales

Conditions

1 Management

1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

- 1.2.1 The operator shall:
- (a) take appropriate measures to ensure that energy is recovered with a high level of energy efficiency and energy is used efficiently in the activities.
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
 - (c) take any further appropriate measures identified by a review.
- 1.2.2 The operator shall provide and maintain steam and/or hot water pass-outs such that opportunities for the further use of waste heat may be capitalised upon should they become practicable.
- 1.2.3 The operator shall review the practicability of Combined Heat and Power (CHP) implementation at least every 2 years. The results shall be reported to Natural Resources Wales within 2 months of each review.

1.3 Efficient use of raw materials

- 1.3.1 The operator shall:
- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
 - (b) maintain records of raw materials and water used in the activities;
 - (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
 - (d) take any further appropriate measures identified by a review.

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

- 1.4.1 The operator shall take appropriate measures to ensure that:
- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
 - (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.
- 1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).
- 2.1.2 Waste authorised by this permit shall be clearly distinguished from any other waste on the site.

2.3 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 Natural Resources Wales.
- (b) If notified by Natural Resources Wales that the activities are giving rise to pollution, the operator shall submit to Natural Resources Wales for approval within the period specified, a revision of any plan or other documentation (“plan”) specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.
- 2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.3 Waste shall only be accepted if:
- (a) it is of a type and quantity listed in schedule 2 table S2.2; and
 - (b) it conforms to the description in the documentation supplied by the producer and holder.
- 2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

- (a) the nature of the process producing the waste;
 - (b) the composition of the waste;
 - (c) the handling requirements of the waste;
 - (d) the hazardous property associated with the waste, if applicable; and
 - (e) the waste code of the waste.
- 2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.
- 2.3.6 Waste shall not be charged, or shall cease to be charged, if:
- (a) the combustion chamber temperature is below, or falls below 850°C; or
 - (b) any continuous emission limit value in schedule 3 table S3.1(a) is exceeded; or
 - (c) any continuous emission limit value in schedule 3 table S3.1 is exceeded, other than under abnormal operating conditions ; or
 - (d) monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 are unavailable other than under 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 “abnormal operation”.
- 2.3.9 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.
- 2.3.10 Where, during “abnormal operation”, on an incineration line any of the following situations arise, waste shall cease to be charged on that line until normal operation can be restored:
- (a) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1 due to disturbances or failures of the abatement systems, or continuous emission monitor(s) are out of service, as the case may be, for a total of 4 hours uninterrupted duration;
 - (b) the cumulative duration of “ abnormal operation” periods over 1 calendar year has reached 60 hours;
 - (c) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1(a) due to disturbances or failures of the abatement systems;
 - (d) continuous emissions monitors or alternative techniques to demonstrate compliance with the emission limit value(s) for particulates, TOC and CO in schedule 3 table S3.1(a), as detailed in the application or as agreed in writing with Natural Resources Wales, are unavailable.
- 2.3.11 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 combustion activity, as described in the application or as agreed in writing with Natural Resources Wales;
- (c) when a period of four hours has elapsed from the start of the “WID abnormal operation”;
- (d) when, in any calendar year, an aggregated period of 60 hours “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 Natural Resources Wales.
- 2.4.2 Except in the case of an improvement which consists only of a submission to Natural Resources Wales, the operator shall notify Natural Resources Wales within 14 days of completion of each improvement.

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 except in “abnormal operation”, when there shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1(a), S3.2 and S3.3.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.
- 3.1.4 Wastes produced at the site shall, as a minimum, be sampled and analysed in accordance with schedule 3 table S 3.5. Additional samples shall be taken and tested and appropriate action taken, whenever:
 - (a) disposal or recovery routes change; or
 - (b) it is suspected that the nature or composition of the waste has changed such that the route currently selected may no longer be appropriate

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

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

3.4 Noise and vibration

- 3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.
- 3.4.2 The operator shall:
- (a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to noise and vibration, submit to Natural Resources Wales for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
 - (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.5 Monitoring

- 3.5.1 The operator shall, unless otherwise agreed in writing by Natural Resources Wales, undertake the monitoring specified in the following tables in schedule 3 to this permit:
- (a) point source emissions specified in tables S3.1, S3.1(a), S3.2 and S3.3;
 - (b) process monitoring specified in table S3.4;
 - (c) ash monitoring specified in table S3.5.
- 3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by Natural Resources Wales. Newly installed CEMs, or CEMs replacing existing CEMs, shall have MCERTS certification and have an MCERTS certified range which is not greater than 1.5 times the daily emission limit value (ELV) specified in schedule 3 table S3.1. The CEM shall also be able to measure instantaneous values over the ranges which are to be expected during all operating conditions. If it is necessary to use more than one range setting of the CEM to achieve this requirement, the CEM shall be verified for monitoring supplementary, higher ranges.
- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.1a, S3.2 and S3.3 unless otherwise agreed in writing by Natural Resources Wales.

3.5.5 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3 table S3.1; the Continuous Emission Monitors shall be used such that;

- (a) the values of the 95% confidence intervals of a single measured result at the daily emission limit value shall not exceed the following percentages:
- Carbon monoxide 10%
 - Sulphur dioxide 20%
 - Oxides of nitrogen (NO & NO₂ expressed as NO₂) 20%
 - Particulate matter 30%
 - Total organic carbon (TOC) 30%
 - Hydrogen chloride 40%
- (b) valid half-hourly and 10-minute 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;
- (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 or 10-minute average shall in any case be considered valid if measurements are available for a minimum of 20 minutes or 7 minutes during the half-hour or 10-minute period respectively. The number of half-hourly or 10-minute averages so validated shall not exceed 5 or 15 respectively per day;
- (d) daily average values shall be determined as the average of all the valid half-hourly average or 10-minute average values within a calendar day. The daily average value shall be considered valid if no more than five half-hourly average or 15 10-minute 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 Natural Resources Wales, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
- (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.

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

4.2 Reporting

- 4.2.1 The operator shall send all reports and notifications required by the permit to Natural Resources Wales using the contact details supplied in writing by Natural Resources Wales.
- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) each year. The report(s) shall include as a minimum:
- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
 - (b) the annual production /treatment data set out in schedule 4 table S4.2; 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 Natural Resources Wales. The report shall, as a minimum requirement (as required by Chapter IV of the Industrial Emissions Directive) give an account of the running of the process and the emissions into air and water compared with the emission standards in the IED.
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by Natural Resources Wales, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to Natural Resources Wales, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.
- 4.2.5 Within 1 month of the end of each quarter, the operator shall submit to Natural Resources Wales using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.3 Notifications

- 4.3.1 (a) In the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
- (i) inform Natural Resources Wales,

- (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
 - (b) in the event of a breach of any permit condition the operator must immediately—
 - (i) inform Natural Resources Wales, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
 - (c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.2 Any information provided under condition 4.3.1 (a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.3 Where Natural Resources Wales has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform Natural Resources Wales when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to Natural Resources Wales at least 14 days before the date the monitoring is to be undertaken.
- 4.3.4 Natural Resources Wales shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- Where the operator is a registered company:
- (a) any change in the operator's trading name, registered name or registered office address; and
 - (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.
- Where the operator is a corporate body other than a registered company:
- (a) any change in the operator's name or address; and
 - (b) any steps taken with a view to the dissolution of the operator.
- In any other case:
- (a) the death of any of the named operators (where the operator consists of more than one named individual);
 - (b) any change in the operator's name(s) or address(es); and
 - (c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.
- 4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

- (a) Natural Resources Wales shall be notified at least 14 days before making the change; and
 - (b) the notification shall contain a description of the proposed change in operation.
- 4.3.6 Natural Resources Wales shall be given at least 14 days notice before implementation of any part of the site closure plan.
- 4.3.7 Where the operator has entered into a climate change agreement with the Government, Natural Resources Wales shall be notified within one month of:
 - (a) a decision by the Secretary of State not to re-certify the agreement;
 - (b) a decision by either the operator or the Secretary of State to terminate the agreement; and
 - (c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.
- 4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made “without delay”, in which case it may be provided by telephone.

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 A(1) (b)	The incineration of non-hazardous waste in a waste incineration plant with a capacity exceeding 3 tonnes per hour.	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 Section 10 (including Appendices 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
Variation application	Part 2 – Firing diagram, Boiler configuration, Flue Gas Treatment Configuration, Storage changes Part 3 – BAT assessment	20/03/14
Variation application	Section 5.1 – Metals recovery from IBA amends Operating Techniques received 06/04/09 section 2.2 – 4.7.3 and section 6.3 Section 5.3 – rain water harvesting amends Operating Techniques received 06/04/09 section 4.4 – 6.2.1 and 6.2.3. Section 5.4 – Drainage amends Operating Techniques received 06/04/09 section 4.4 and 4.5 Section 5.5 – Bulky items	28/09/16

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IC1	The operator shall submit a written summary report to Natural Resources Wales 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 Natural Resources Wales 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 Natural Resources Wales.	Within 3 months of completion of commissioning.
IC3	The operator shall submit a post-commissioning report to Natural Resources Wales which shall include: <ul style="list-style-type: none"> – 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 Natural Resources Wales to carry out tests to determine the size distribution of the particulate matter in the exhaust gas emissions to air from emission points A1 and A2, identifying the fractions within the PM10 and PM2.5 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 Natural Resources Wales to the proposal and timetable, the operator shall carry out the tests and submit to Natural Resources Wales 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 Natural Resources Wales.	Within 15 months of completion of commissioning

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels

Raw materials and fuel description	Specification
Gas oil	Less than 0.1% sulphur

Table S2.2 Permitted waste types and quantities for incineration

Maximum quantity 425,000 tonnes per annum

Waste code	Description
02 Wastes from Agriculture, Horticulture, Aquaculture, Forestry, Hunting and Fishing, Food Preparation and Processing	
02 01	wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing.
02 01 02	Animal tissue waste
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*
02 02	wastes from the preparation and processing of meat, fish and other foods
02 02 02	Animal-tissue waste
02 02 03	Materials unsuitable for consumption or processing (Note 2)
02 03	wastes from fruit, vegetable, cereal or other vegetable origin material preparation and processing
02 03 04	Materials unsuitable for consumption or processing (Note 2)
02 05	wastes from the dairy products industry
02 05 01	Materials unsuitable for consumption or processing (Note 2)
02 06	wastes from the baking and confectionery industry
02 06 01	Materials unsuitable for consumption or processing (Note 2)
02 06 02	wastes from preserving agents
02 07	wastes from the production of alcoholic and non-alcoholic beverages
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials
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.	
03 01	wastes from wood processing and the production of panels and furniture.
03 01 01	Waste bark and cork
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04*.
03 03	wastes from pulp, paper and cardboard production and processing
03 03 01	Waste bark wood
03 03 05	de-inking sludges from paper recycling
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
03 03 10	fibre rejects, fibre-, filler- and coating-sludges from mechanical separation
04 Wastes from the Leather, Fur and Textile Industries	
04 01	wastes from the leather and fur industry
04 01 09	wastes from dressing and finishing

Table S2.2 Permitted waste types and quantities for incineration

Maximum quantity 425,000 tonnes per annum	
Waste code	Description
04 02	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
07 Wastes from organic chemical processes	
07 02	wastes from the MFSU of plastics, synthetic rubber and man-made fibres
07 02 13	waste plastic
07 05	wastes from the MFSU of pharmaceuticals
07 05 14	solid wastes other than those mentioned in 07 05 13
08 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS	
08 01	wastes from MFSU and removal of paint and varnish
08 01 12	waste paint and varnish other than those mentioned in 08 01 11
08 01 18	wastes from paint or varnish removal other than those mentioned in 08 01 17
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
15 Waste Packaging, Absorbants, Wiping Cloths, Filter Materials and Protective Clothing not otherwise specified	
15 01	packaging (including separately collected municipal packaging waste)
15 01 01	Paper and cardboard packaging ^(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)
15 02	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)	
17 02	wood, glass and plastic
17 02 01	Wood ^(Note 1)
17 02 03	Plastic ^(Note 1)
17 06	insulation materials and asbestos-containing construction materials
17 06 04	insulating materials other than those mentioned in 17 06 01* and 17 06 03*
17 09	other construction and demolition wastes
17 09 04	Mixed construction and demolition 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)	
18 01	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
18 01 09	medicines other than those mentioned in 18 01 08
18 02	wastes from research, diagnosis, treatment or prevention of diseases in animals

Table S2.2 Permitted waste types and quantities for incineration

Maximum quantity 425,000 tonnes per annum	
Waste code	Description
18 02 03	wastes whose collection and disposal is not subject to special requirements in order to prevent infection
18 02 08	medicines other than those mentioned in 18 02 07
19 Wastes from Waste Management Facilities, Off-Site Waste Water Treatment Plants and the Preparation of Water for Human Consumption and Water for Industrial Use	
19 02	wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)
19 02 03	premixed wastes composed only of non-hazardous wastes
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 05	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
19 06	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)
19 08	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)
19 09	wastes from the preparation of water intended for human consumption or water for industrial use
19 09 01	solid waste from primary filtration and screenings
19 12	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)
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 25	edible oil and fat
20 01 28	paint, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 30	detergents other than those mentioned in 20 01 29
20 01 32	medicines other than those mentioned in 20 01 31
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
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)

Table S2.2 Permitted waste types and quantities for incineration

Maximum quantity 425,000 tonnes per annum	
Waste code	Description
20 01 41	wastes from chimney sweeping
20 01 99	other fractions not otherwise specified – Confiscated class A and B drugs after release from Police evidence store
20 02	<i>garden and park wastes (including cemetery waste)</i>
20 02 01	Bio-degradable wastes ^(Note 2)
20 02 03	other non-biodegradable wastes
20 03	<i>other municipal wastes</i>
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 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 or method
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 7)	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	BS EN 14181
			400 mg/m ³	½-hour mean		
	Particulate matter		10 mg/m ³	Daily Mean		
			30 mg/m ³	½-hour mean		
	Total organic carbon (TOC)		10 mg/m ³	Daily Mean		
			20 mg/m ³	½-hour mean		
	Hydrogen chloride (HCl)		10 mg/m ³	Daily Mean		
			60 mg/m ³	½-hour mean		
	Sulphur dioxide (SO ₂)		50 mg/m ³	Daily Mean		
			200 mg/m ³	½-hour mean		
	Carbon monoxide (CO)		50 mg/m ³	Daily Mean		
			150 mg/m ³	95%ile 10 minute average in any 24-hour period		
	Hydrogen fluoride (HF)		2 mg/m ³	Mean over minimum 1 hour period	6-monthly	ISO 15713
	Cadmium and thallium and their compounds (total) [Note 1]		0.05 mg/m ³	Mean over period minimum 30 minutes maximum 8 hours	6-monthly	BS EN 14385
	Mercury and its compounds [Note 1]		0.05 mg/m ³	Mean over period minimum 30 minutes maximum 8 hours	6-monthly	BS EN 13211
	Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V and their compounds (total) [Note 1]		0.5 mg/m ³	Mean over period minimum 30 minutes maximum 8 hours	6-monthly	BS EN 14385

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

Emission point ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
	Dioxins / furans (I-TEQ) [Note 2]		0.1 ng/m ³	Mean over minimum 6 hours, maximum 8 hour period	6-monthly	BS EN 1948 1-3
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: Metals include gaseous, vapour and solid phases as well as their compounds (expressed as the metal or the sum of the metals as specified). Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V mean antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium respectively.

Note 2: 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.

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

Emission point ref. & location	Parameter	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 7)	Particulate matter	Incineration gases via heat recovery boiler and APC plant	150 mg/m ³	½-hourly mean	Continuous [Note 3]	BS EN 14181
	Total Organic Carbon (TOC)		20 mg/m ³			
	Carbon monoxide (CO)		100 mg/m ³		Continuous [Note 2]	

Note 1: See Schedule 6 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 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 on site plan in Schedule 7	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 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 on site plan in Schedule 7	No parameters set	Boiler drain down	-	-	-	Discharge in accordance with Trade Effluent Consent issued by Dwr Cymru Welsh Water

Table S3.4 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 Natural Resources Wales	Wind speed and direction	Continuous	Anemometer	
Furnace Chamber 1 and Furnace Chamber 2	Furnace chamber temperature		As agreed in writing with Natural Resources Wales	
A1 and A2 [Each process line] (Points A1 and A2 on site plan in Schedule 2)	Exhaust gas temperature		As agreed in writing with Natural Resources Wales	
	Exhaust gas pressure		As agreed in writing with Natural Resources Wales	
	Exhaust gas water content		BS EN 14181	
	Exhaust gas oxygen concentration			
	Exhaust gas flow rate			
	Dioxin-like PCBs (WHO-TEQ Humans / Mammals) [Note 3]	6-monthly. Mean value over minimum 6 hour, maximum 8 hour reference period.	To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3) and BS EN TS 1948-4	
	Dioxin-like PCBs (WHO-TEQ Fish) [Note 3]		To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3) and BS EN TS 1948-4	
	Dioxin-like PCBs (WHO-TEQ Birds) [Note 3]		To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3) and BS EN TS 1948-4	

Table S3.4 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
	Specific individual polycyclic aromatic hydrocarbons (PAHs), as defined in Schedule 7		BS ISO 11338-1 and BS-ISO 11338-2	
	Dioxins / furans (WHO-TEQ Humans / Mammals) [Note 3]		To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3)	
	Dioxins / furans (WHO-TEQ Fish) [Note 3]		To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3)	
	Dioxins / furans (WHO-TEQ Birds) [Note 3]		To be determined utilising sampling and analytical techniques developed for dioxins/ furans (BS EN 1948 1-3)	
	Nitrous oxide (N ₂ O)	6-monthly.	VDI 2469-1 or VDI 2469-2	
	Ammonia (NH ₃)	Continuous	BS EN 14181	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.

Table S3.5 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 Organic Carbon (TOC)	3%	Quarterly		Ash sampling protocol to be agreed in writing by Natural Resources Wales
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	Quarterly		Ash sampling protocol to be agreed in writing by Natural Resources Wales
	Total dioxin/furan content	Record	Quarterly		Ash sampling protocol to be agreed in writing by Natural Resources Wales
	Total dioxin-like PCBs content	Record	Quarterly		Ash sampling protocol to be agreed in writing by Natural Resources Wales
	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 Natural Resources Wales
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	Quarterly		Ash sampling protocol to be agreed in writing by Natural Resources Wales

Table S3.5 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
	Total dioxin/furan content	Record	Quarterly		Ash sampling protocol to be agreed in writing by Natural Resources Wales
	Total dioxin-like PCBs content	Record	Quarterly		Ash sampling protocol to be agreed in writing by Natural Resources Wales
	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 Natural Resources Wales

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 of SO ₂ , TOC, NO _x , HCl, particulate matter, CO, N ₂ O 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 ₂ O, 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 6 months	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 NRW 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 NRW 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 NRW 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]	Quarterly	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]	Quarterly	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]	Quarterly	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 S4.2: 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
Municipal 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 S4.3 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 S4.4 Reporting forms

Media/parameter	Reporting format	Date of form
Air – periodic monitoring	Form air 1 or other form as agreed in writing by Natural Resources Wales	04/11/10
Air – continuous monitoring	Form air 2 or other form as agreed in writing by Natural Resources Wales	04/11/10
Water usage	Form water usage1 or other form as agreed in writing by Natural Resources Wales	04/11/10
Energy usage	Form energy 1 or other form as agreed in writing by Natural Resources Wales	04/11/10
Other performance indicators	Form performance 1 or other form as agreed in writing by Natural Resources Wales	04/11/10
Ash composition	Form Ash 1 or other form as agreed in writing by Natural Resources Wales	04/11/10

Schedule 5 - Notification

These pages outline the information that the operator must provide.

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

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

Part A

Permit Number	EPR/LP3030XA
Name of operator	Viridor Waste Management Limited
Location of Facility	Cardiff Energy Recovery Facility, Trident Park, Cardiff.
Time and date of the detection	

(a) Notification requirements for any activity that gives rise to an incident or accident which significantly affects or may significantly affect the environment	
To be notified Immediately	
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 permit condition	
To be notified immediately	
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) In the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment:

To be notified immediately	
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

Part C

Permit Number	EPR/LP3030XA
Name of operator	Viridor Waste Management Limited
Location of installation	Cardiff Energy Recovery 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 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 [other than continuous emission monitors for releases to air of particulates, TOC and/or CO], during which the concentrations in the discharges into air and the purified waste water of the regulated substances may exceed the normal emission limit values.

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

"annually" means once every year.

"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.

"APC residues" means air pollution control residues

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

"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 Comité 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 20160 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"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.

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

"*ISO*" means International Standards Organisation.

"*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 Natural Resources Wales.

"*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 Natural Resources Wales.

"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).

“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 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
- 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
- in relation to gases from incineration plants other than those burning waste oil, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 11% dry.

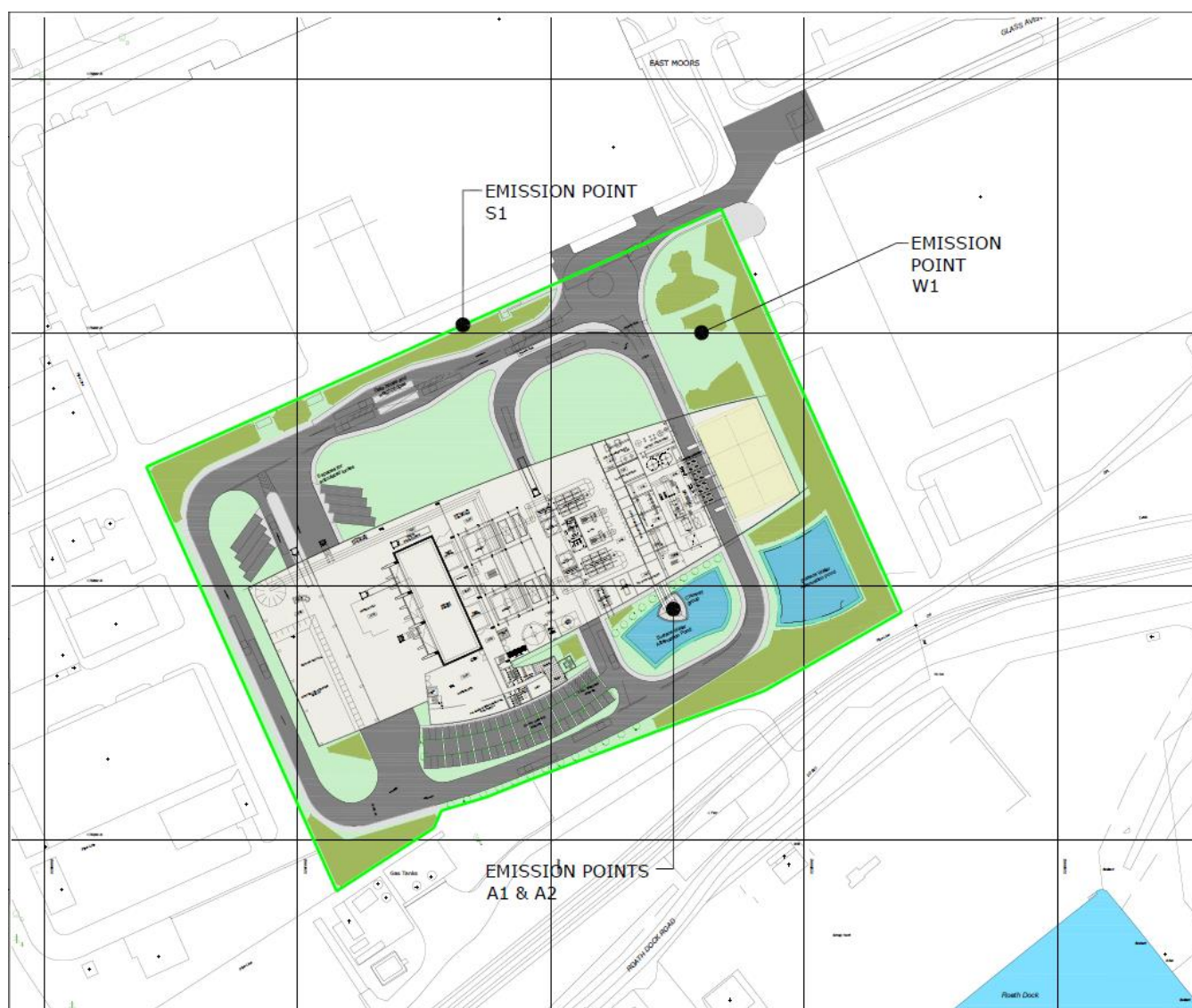
For dioxins/furans and dioxin-like PCBs the determination of the toxic equivalence concentration (I-TEQ, & WHO-TEQ for dioxins/furans, WHO-TEQ for dioxin-like PCBs) stated as a release limit and/ or reporting requirement, the mass concentrations of the following congeners have to be multiplied with their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



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