Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

WTI (UK) Ltd

Parc Adfer Energy Recovery Facility
Deeside Industrial Park
Deeside
Flintshire
CH5 2LL

Permit number

EPR/AB3092CV

Parc Adfer Energy recovery Facility
Permit number EPR/AB3092CV

Introductory note

This introductory note does not form a part of the permit

This permit controls the operation of a waste incineration plant. The relevant listed activities are Section 5.1 A1 (b) and Section 5.4 A1 (b) (iii). The permit implements the requirements of the EU Directives on Industrial Emissions and Waste.

The main features of the permit are as follows:

The Energy Recovery Facility will accept up to 200,000 tonnes per annum of municipal, industrial and commercial waste for incineration in a combined heat and power (CHP) enabled Incinerator. Waste will be received in the waste reception hall where it will be discharged into a bunker for the temporary storage of waste. Waste will be mixed in the bunker and then fed into a feed hopper using an overhead crane.

The facility will process waste using air cooled, moving grate technology. The energy recovered from the combustion of waste will be utilised (in the form of high pressure steam) to produce electrical power through a steam turbine and generator unit. The facility will also have combined heat and power (CHP) capability through a blanking flange and heat/steam export from the turbine which can be utilised upon securing a suitable customer.

The key components of the technology will include, but shall not be limited to:

- A furnace/boiler unit incorporating moving grate technology and steam boiler with an energy recovery system;
- Flue gas treatment (FGT) system comprising selective non catalytic reduction (SNCR), semi dry reactor and bag house filters;
- Steam turbine/generator set with the capability for CHP operation;
- Condensate system, including air cooled condensers (ACC);
- Residue handling and storage facilities;
- Electrical equipment associated with the facility and its connection to the national grid;
- Continuous emissions monitoring system (CEMS); and
- Auxiliary equipment.

The combustion of waste will release flue gases which will be treated in order to comply with the requirements of the Industrial Emissions Directive.

Urea will be added at various stages of the boiler's combustion chamber to reduce nitrogen oxides (NOx). Lime and powdered activated carbon (PAC) will be used within the FGT system. The lime reduces acid gas emissions while the activated carbon reduces mercury and the formation of dioxins/furans. The by-products from both reactions are captured in the fabric filter as Air Pollution Control Residues (APCR).

The facility will be designed to generate approximately 16.4MW and export approximately 14.4MW of electricity (assuming zero heat off-take).

Incinerator Bottom Ash (IBA) will remain after the combustion of the waste. This ash will be discharged from the end of the combustion grate directly into an ash quench bath. Ash from the first to fourth boiler pass will discharge to the IBA Treatment Facility. Fly ash from the boiler fifth pass (economiser pass) is mixed with the hazardous fly ash to form the APCR, and will be conveyed to silos for storage prior to being sent off site for treatment or disposal.

The mixed ash will be transferred by means of conveyor to the IBA facility for weathering and processing. The ash will be processed into IBA aggregate (IBAA) and ferrous and non-ferrous metal recovery will take place.

The IBA treatment facility allows for the storage and management of the IBA from the ERF combustion process. The IBA facility will comprise a weathering area where untreated IBA will be stored before processing, and an IBA processing building containing machinery that will process the ash. The ash will be split into fine and coarse aggregate with ferrous and non-ferrous metals separated for recycling. The processed aggregates will be stored externally in segregated mounds against push walls.

The IBA facility has been designed with flexibility to handle ash volumes between 15% and 30% of the annual waste tonnage as IBA.

The site is located to the south east of the Dee Estuary within the Deeside Industrial Estate, 2km south west of the nearest village, Puddington. The site will be developed on an area of brownfield reclaimed land, once consisting of tidal mudflats of the Dee Estuary that was previously part of the Shotton Steelworks facility. WTI propose to construct new bespoke buildings to house the proposed waste management activities. Farmland and areas of open space lie approximately 50m to the north of the proposed permit boundary. The Borderlands railway line is adjacent to the east of the site. There are Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) and Inshore Special Protection Areas with Marine Components (ISPAMs) within 2km of the site boundary.

The site is centred on National Grid Reference SJ 310 716. The surrounding land use is predominantly industrial. Immediately adjacent to the site lies Shotton Power Station, UPM's Paper Mill and Great Bear Distribution.

Access to the site will be via Weighbridge Road which runs parallel and adjacent to the western boundary of the site. Weighbridge Road can be accessed off the A548 located north of the site. The A548 links to the A494/A550 to the east of the industrial estate.

There are existing drainage ditches on site, and surface water drains running within 20m to the east and west of the site's boundary.

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

Status Log of the permit		
Detail	**Date**	**Comments**
Application EPR/PP3733WW/A001	Duly made 27/10/14	Application for Energy Recovery Facility by Incineration of Municipal waste
Additional information received	20/02/15	Additional information received relating to noise modelling queries requested 04/02/15.
Additional information received	06/05/15	Additional information received relating to further noise queries requested 17/04/15.
Additional information received	19/06/15	Additional information received relating to Schedule 5 Notice issued 15th May 2015.
Additional information received	07/07/15	Additional information received relating to queries regarding PCB's & calculations used in Habitats Assessment requested 29th June 2015.
Additional information received	02/09/15	Additional information received relating to waste types, site drainage and CEMS requested 11th and 17th August 2015.
Additional information received	07/09/15	Additional information received relating to waste types and site drainage requested 4th September 2015.
Permit issued	28/10/15	New permit number AB3092CV

End of Introductory Note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
EPR/AB3092CV

The Natural Resources Body for Wales ("Natural Resources Wales") authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

WTI (UK) Ltd ("the operator"),

whose registered office is

WTI UK Ltd
Mitre House
160 Aldersgate Street
London
EC1A 4DD

company registration number **01332476**

to operate an installation at

Parc Adfer Energy Recovery Facility
Deeside Industrial Park
Deeside
Flintshire
CH5 2LL

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

Name	Date
A. M. Lewis	**28/10/15**

Anna Lewis, Principal Permitting Officer, NRW Permitting Service

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 in condition 2.3.3 shall be clearly distinguished from any other waste on the site.

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by 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 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 tables S2.2 and S2.3; and

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

(c) it having been separately collected for recycling, it is subsequently unsuitable for recovery by recycling.

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

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

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazardous property associated with the waste, if applicable; and

(e) the waste code of the waste.

2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

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

(a) the combustion chamber temperature is below, or falls below, 850^{o}C; or

(b) any continuous emission limit value in schedule 3 table S3.1(a) is exceeded; or

(c) any continuous emission limit value in schedule 3 table S3.1 is exceeded, other than under 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 emission monitors or alternative techniques to demonstrate compliance with the emission limit values for particulates, TOC and or 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 “abnormal operation”;

(d) when, in any calendar year, an aggregated period of 60 hours “abnormal operation” has been reached.

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.

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

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

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

3.1.3 Wastes produced at the site shall, as a minimum, be sampled and analysed in accordance with schedule 3 table S3.4. Additional samples shall be taken and tested and appropriate action taken, whenever:

(a) disposal or recovery routes change; or

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

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by Natural Resources Wales that the activities are giving rise to pollution, submit to Natural Resources Wales for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

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

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

3.2.4 The Operator shall carry out monitoring of groundwater at least once every 5 years; and of soil at least once every 10 years; to the protocol agreed in writing with Natural Resources Wales under PO5 .

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.

3.3.2 The operator shall:

(a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to odour, submit to Natural Resources Wales for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

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

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) and S3.2;

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

(c) residue quality in table S3.4

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

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by 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, S3.1(a) and S3.2 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 average values shall be determined within the effective operating time (excluding the start-up and shut-down periods) from the measured values after having subtracted the value of the confidence intervals in condition 3.5.5 (a);

(c) where it is necessary to calibrate or maintain the monitor and this means that data are not available for a complete half-hour period, the half-hourly average shall in any case be considered valid if measurements are available for a minimum of 20 minutes during the half-hour period. The number of half-hourly averages so validated shall not exceed 5 per day;

(d) daily average values shall be determined as the average of all the valid half-hourly average values within a calendar day. The daily average value shall be considered valid if no more than five half-hourly average values in any day have been determined not to be valid;

(e) no more than ten daily average values per year shall be determined not to be valid.

3.6 Pests

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

3.6.2 The operator shall:

(a) if notified by Natural Resources Wales, submit to Natural Resources Wales for approval within the period specified, a pests management plan which identifies and minimises risks of pollution, hazards or annoyance from pests;

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

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 The Operator shall

(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.

4.4 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 immediately 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**
S5.1 A1 (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.	The incineration of mixed municipal waste and commercial and industrial waste in a single air cooled moving grate incineration plant.	From receipt of waste to emission of exhaust gas and disposal of waste arising. Waste types and quantities as specified in Table S2.2 of this permit.
S5.4 A1 (b) (iii)	Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities covered by Council Directive 91/271/EEC – treatment of slags and ashes Metal recovery by eddy current seperators and magnetic separation. Screening and crushing of recovered ash into aggregates. R4: Recycling/reclamation of metals and metal compounds R5: Recycling/reclamation of other inorganic materials. R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	Receipt of Incinerator Bottom Ash (IBA) from the Parc Adfer Energy Recovery Facility to output from IBA Treatment plant Waste types as specified in Table S2.3 of this permit.
Directly Associated Activities		
Electricity Generation	Generation of electrical power using a steam turbine from energy recovered from the flue gases .	Electricty to be used on site and for export to the National Grid.
Discharge to controlled waters at emission point W1	Discharge of site run-off to controlled waters	Drainage of uncontaminated surface water via attenuation pond and oil interceptor.
Offsite transfer of process water	Water from IBAA storage	Water to be transferred offsite via

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
and site drainage unsuitable for discharge to controlled waters at emission point W1	and other waste handling areas (unless proven by analysis to be uncontaminated in which case it can be discharged to controlled waters at emission point W1)	tanker (unless proven by analysis to be uncontaminated in which case it can be discharged to controlled waters at emission point W1).
Auxillary Diesel Generator	Provision of emergency electrical power	The use of electricity for on-site plant and equipment operation in the event of supply interruption.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Application form B3 section 3 and 4 and Appendices 5 and 6. Best Available Techniques and Operating Techniques Document – Version 1 (superseded by version 2). Global Warming Potential Assessment (Appendix BATOT2) Acid Gas Abatement Assessment (Appendix BATOT3) NOx Abatement Assessment (BATOT4) H1 Environmental Risk Assessment Permit application Appendix H1-1 Air Quality Dispersion Modelling	Duly Made Date 27/10/15
Additional information	Further information relating to Noise Modelling	20/02/15
Additional information	Further information relating to Noise Modelling	14/05/15
Response to Schedule 5 Notice dated 15/05/15	Parc Adfer Energy Recovery Facility – Response to Schedule 5 Notice. Best Available Techniques and Operating Techniques Document – Version 2.	0707/15
Response to Improvement Condition IC3 as approved in writing by Natural Resources Wales	As stated in written approval to the response to Improvement Condition IC3.	Post Permit issue
Additional information	Confirmation that containment for pollution control will be constructed in accordance Ciria guidance and that the ERF will be served by standby CEMS in case of main CEMS failure.	02/09/15
Additional information	Confirmation that water discharged from IBAA storage area will be tankered off site unless proven to be uncontaminated through sampling suite submitted to NRW as part of PO6.	04/09/15

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The Operator shall submit a written report to Natural Resources Wales on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions.	Within 4 months of the completion of commissioning.
IC2	The Operator shall carry out checks to verify the residence time, minimum temperature and oxygen content of the exhaust gases in the furnace whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted in writing to Natural Resources Wales.	Within 4 months of the completion of commissioning.
IC3	The Operator shall submit a written report to Natural Resources Wales describing the performance and optimisation of the Selective Non Catalytic Reduction (SNCR) system and combustion settings to minimise oxides of nitrogen (NO_x) emissions within the emission limit values described in this permit with the minimisation of nitrous oxide emissions. The report shall include an assessment of the level of NO_x and N_2O emissions that can be achieved under optimum operating conditions. The report shall also provide details of the optimisation (including dosing rates) for the control of acid gases and dioxins	Within 4 months of the 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 point A1, identifying the fractions within the PM_{10}, and $PM_{2.5}$ ranges. The proposal shall include a timetable for approval by Natural Resources Wales to carry out such tests and produce a report on the results. On receipt of written agreement by Natural Resources Wales to the proposal and the timetable, the Operator shall carry out the tests and submit to Natural Resources Wales a report on the results.	Within 6 months of the completion of commissioning.
IC5	The Operator shall submit a written report to Natural Resources Wales on the implementation of its Environmental Management System and the progress made in the accreditation of the system by an external body or if appropriate submit a schedule by which the EMS will be certfified.	Within 12 months of the completion of commissioning..

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC6	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 S3.1 and Table S3.1(a) complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3.	Initial calibration report to be submitted to Natural Resources Wales within 3 months of completion of commissioning. Full summary evidence compliance report to be submitted within 18 months of commissioning.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO1	At least 1 month prior to the commencement of commissioning, the Operator shall submit to Natural Resources Wales for approval a protocol for the sampling and testing of incinerator bottom ash for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.
PO2	At least 2 months prior to the Prior to the commencement of commissioning; the Operator shall provide a written commissioning plan, including timelines for completion, for approval by Natural Resources Wales. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to Natural Resources Wales in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved.
PO3	At least 1 month prior to the commencement of commissioning, the Operator shall submit a written report to Natural Resources Wales 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 Natural Resources Wales
PO4	After completion of furnace design and at least three calendar months before any furnace operation; the operator shall submit a written report to Natural Resources Wales 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 Industrial Emissions Directive.
PO5	At least 4 months prior to operations commencing, the Operator shall submit the written protocol referenced in condition 3.2.4 for the monitoring of soil and groundwater for approval by Natural Resources Wales. The protocol shall demonstrate how the Operator will meet the requirements of Articles 14(1)(b), 14(1)(e) and 16(2) of the IED. The procedure shall be implemented in accordance with the written approval from Natural Resources Wales.
PO6	At least 2 months prior to operations commencing an assessment is undertaken to derive appropriate limits which will be used to determine if run-off from the IBAA storage area can be considered to be proven to be uncontaminated and thus suitable for discharge from discharge point W1.The assessment will be submitted to NRW and approval obtained from NRW prior to such discharge occurring.

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Fuel Oil	< 0.1% sulphur content

Table S2.2 Permitted waste types and quantities for Energy Recovery plant	
Maximum quantity	**200,00 tonnes per annum**
Waste code	**Description**
02	**Wastes from Agriculture, Horticulture, Aquaculture, Forestry, Hunting and Fishing, Food Preparation and Processing**
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 03	plant-tissue waste (Note 2)
02 01 04	waste plastics (except packaging) (Note 1)
02 01 06	animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site (Note 2)
02 01 07	wastes from forestry
02 01 09	agrochemical wastes other than those mentioned in 02 01 08
02 02	**wastes from the preparation and processing of meat, fish and other foods of animal origin**
02 02 02	animal tissue waste (Catering wastes and former foodstuff only)
02 02 03	materials unsuitable for consumption or processing(Catering wastes and former foodstuff only)
02 02 04	sludges from on-site effluent treatment (Note 3)
02 03	**wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**
02 03 02	wastes from preserving agents
02 03 03	wastes from solvent extraction
02 03 04	materials unsuitable for consumption or processing (Note 2)
02 03 05	sludges from on-site effluent treatment (Note 3)
02 04	**wastes from sugar processing**
02 04 03	sludges from on-site effluent treatment (Note 3)
02 05	**wastes from the dairy products industry**
02 05 01	materials unsuitable for consumption or processing (Note 2)
02 05 02	sludges from on-site effluent treatment (Note 3)
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 06 03	sludges from on-site effluent treatment (Note 3)
02 07	**wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)**
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials
02 07 02	wastes from spirits distillation
02 07 03	wastes from chemical treatment
02 07 04	materials unsuitable for consumption or processing (Note 2)
02 07 05	sludges from on-site effluent treatment (Note 3)
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

Table S2.2 Permitted waste types and quantities for Energy Recovery plant	
Maximum quantity	**200,00 tonnes per annum**
Waste code	**Description**
03 01 05	sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04 (Note 1)
03 03	**wastes from pulp, paper and cardboard production and processing**
03 03 01	waste bark and wood (Note 1)
03 03 07	mechanically separated rejects from pulping of waste paper and cardboard (Note 1)
03 03 08	wastes from sorting of paper and cardboard destined for recycling (Note 1)
03 03 10	fibre rejects, fibre, filler and coating-sludges from mechanical separation
03 03 11	sludges from on-site treatment of effluent other than those mentioned in 03 03 10 (Note 3)
04	**Wastes from the Leather, Fur and Textile Industries**
04 01	**wastes from the leather and fur industry**
04 01 08	waste tanned leather (blue sheetings, shavings, cuttings, buffing dust) containing chromium
04 01 09	wastes from dressing and finishing
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 (for example grease, wax) (Note 2)
04 02 15	wastes from finishing other than those mentioned in 04 02 14
04 02 17	dyestuffs and pigments other than those mentioned in 04 02 16
04 02 20	sludges from on-site effluent treatment other than those mentioned in 04 02 19 (Note 3)
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 12	sludges from on-site effluent treatment other than those mentioned in 07 02 11
07 02 13	waste plastic (Note 1)
07 02 15	wastes from additives other than those mentioned in 07 02 14
07 02 17	wastes containing silicones other than those mentioned on 07 02 16*
07 03	**Wastes from the MFSU of Organic Dyes and Pigments (except 06 11)**
07 03 12	sludges from on-site effluent treatment other than those mentioned in 07 03 11
07 04	**Wastes from the MFSY of Organic Plant Protection Products (except 02 01 08 and 02 01 09), Wood Preserving Agents (except 03 02) and other Biocides**
07 04 12	sludges from on-site effluent treatment other than those mentioned in 07 04 11
07 05	**Wastes from the MFSU of Pharmaceuticals**
07 05 12	sludges from on-site effluent treatment other than those mentioned in 07 05 11
07 05 14	solid wastes other than those mentioned in 07 05 13
07 06	**Wastes from the MFSU of Fats, Grease, Soaps, Detergents, Disinfectants and Cosmetics**
07 06 12	sludges from on-site effluent treatment other than those mentioned in 07 06 11
07 07	**Wastes from the MFSU of Fine Chemicals and Chemical Products not otherwise Specified**
07 07 12	sludges from on-site effluent treatment other than those mentioned in 07 07 11 (Note 3)

Table S2.2 Permitted waste types and quantities for Energy Recovery plant	
Maximum quantity	**200,00 tonnes per annum**
Waste code	**Description**
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 14	sludges from paint or varnish other than those mentioned in 08 01 13
08 01 16	aqueous sludges containing paint or varnish other than those mentioned in 08 01 15
08 01 18	wastes from paint or varnish removal other than those mentioned in 08 01 17
08 03	**Wastes from MFSU of Printing Inks**
08 03 07	aqueous sludges containing ink
08 03 13	waste ink other than those mentioned in 08 03 12
08 03 15	Ink sludges other than those mentioned in 08 03 14
08 04	**Wastes from MFSU of Adhesive and Sealants (including Waterproof Products)**
08 04 10	waste adhesives and sealants other than those mentioned in 08 04 09
08 04 12	adhesive and sealant sludges other than those mentioned in 08 04 11
08 04 14	aqueous sludges containing adhesives or sealants other than those mentioned in 08 04 13
09	**Wastes from the photographic industry**
09 01	**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
09 01 10	single-use cameras without batteries
12	**Wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01	**Wastes from Shaping and Physical and Mechanical Surface Treatment of Metals and Plastics**
12 01 05	plastics shavings and turnings
12 01 15	machining sludges other than those mentioned in 12 01 14
12 01 17	waste blasting material other than those mentioned in 12 01 16
12 01 21	spent grinding bodies and grinding materials other than those mentioned in 12 01 20
15	**Waste Packaging; Absorbents, Wiping Cloths, Filter Materials and Protective Clothing not otherwise specified**
15 01	**packaging (including separately collected municipal packaging waste)**
15 01 01	paper and cardboard packaging (Note 1)
15 01 02	plastic packaging (Note 1)
15 01 03	wooden packaging (Note 1)
15 01 04	metallic packaging (Note 1)
15 01 05	composite packaging (Note 1)
15 01 06	mixed packaging (Note 1)
15 01 07	glass packaging (Note 1)
15 01 09	textile packaging (Note 1)
15 02	**absorbents, 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
16	**Wastes not otherwise specified in the list**
16 01	**end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)**
16 01 03	end-of-life tyres (Note 1)

Table S2.2 Permitted waste types and quantities for Energy Recovery plant	
Maximum quantity	**200,00 tonnes per annum**
Waste code	**Description**
16 01 12	brake pads other than those mentioned in 16 01 11
16 01 19	Plastic (Note 1)
16 01 22	components not otherwise specified
16 02	**wastes from electrical and electronic equipment**
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15
16 03	**off-specification batches and unused products**
16 03 04	inorganic wastes other than those mentioned in 16 03 03
16 03 06	organic wastes other than those mentioned in 16 03 05
16 06	**batteries and accumulators**
16 06 04	alkaline batteries (except 16 06 03) (Note 1)
16 06 05	other batteries and accumulators (Note 1)
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 03	**Bituminous Mixtures, Coal Tar and Tarred Products**
17 03 02	bituminous mixtures other than those mentioned in 17 03 01
17 06	**insulation materials and asbestos-containing construction materials**
17 06 04	insulation 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 (Note 1)
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 (for example dressings, plaster casts, linen, disposable clothing, diapers)
18 01 07	chemicals other than those mentioned in 18 01 06
18 02	**wastes from research, diagnosis, treatment or prevention of disease involving animals**
18 02 03	wastes whose collection and disposal is not subject to special requirements in order to prevent infection
18 02	**Wastes from Research, Diagnosis, Treatment or Prevention of Disease involving Animals**
18 02 06	chemicals other than those mentioned in 18 02 05
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 Intended 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 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 03	**stabilised/solidified wastes**
19 03 05	stabilised wastes other than those mentioned in 19 03 04

Table S2.2 Permitted waste types and quantities for Energy Recovery plant	
Maximum quantity	**200,00 tonnes per annum**
Waste code	**Description**
19 03 07	solidified wastes other than those mentioned in 19 03 06
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) (Note 3)
19 08 09	grease and oil mixture from oil/water separation containing edible oil and fats
19 08 12	sludges from biological treatment of industrial waste water other than those mentioned in 19 08 11 (Note 2) (Note 3)
19 08 14	sludges from other treatment of industrial waste water other than those mentioned in 19 08 13 (Note 2) (Note 3)
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 09 04	spent activated carbon
19 10	**Wastes from Shredding of Metal-Containing Wastes**
19 10 04	fluff-light fraction and dust other than those mentioned in 19 10 03
19 11	**Wastes from Oil Regeneration**
19 11 06	sludges from on-site effluent treatment other than those mentioned in 19 11 05
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 01	paper and cardboard (Note 1)
19 12 02	ferrous metal (Note 1)
19 12 03	non-ferrous metal (Note 1)
19 12 04	plastic and rubber (Note 1)
19 12 05	Glass (Note 1)
19 12 07	wood other than that mentioned in 19 12 06 (Note 1)
19 12 08	Textiles (Note 1)
19 12 09	minerals (for example sand, stones) (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
19 13	**Wastes from Soil and Groundwater Remediation**
19 13 02	solid wastes from soil remediation other than those mentioned in 19 13 01 (Note 3)
19 13 04	sludges from soil remediation other than those mentioned in 19 13 03 (Note 3)
20	**Municipal Wastes (Household waste and similar commercial, industrial and institutuional wastes) Including separately collected fractions**
20 01	**separately collected fractions (except 15 01)**
20 01 01	paper and cardboard (Note 1)
20 01 08	biodegradable kitchen and canteen waste (Note 1)
20 01 10	Clothes (Note 1)
20 01 11	Textiles (Note 1)
20 01 25	edible oil and fat (Note 2) (Note 3)
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

Table S2.2 Permitted waste types and quantities for Energy Recovery plant	
Maximum quantity	**200,00 tonnes per annum**
Waste code	**Description**
20 01 32	medicines other than those mentioned in 20 01 31
20 01 34	batteries and accumulators other than those mentioned in 20 01 33
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 (Note 1)
20 01 39	Plastics (Note 1)
20 01 41	wastes from chimney sweeping
20 02	**garden and park wastes (including cemetery waste)**
20 02 01	biodegradable waste (Note 2) (Note 3)
20 02 03	other non-biodegradable wastes
20 03	**other municipal wastes**
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 03	street-cleaning residues
20 03 06	waste from sewage cleaning
20 03 07	bulky waste
20 03 99	Beach Cleaning Residues

Exclusions

Note 1. It having been separately collected for recycling, it is subsequently unsuitable for recovery by recycling.

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

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

Table S2.3 Permitted waste types and quantities for Incinerator Bottom Ash teatment plant	
Maximum quantity	**Only Bottom Ash produced by Parc Adfer ERF shall be accepted for treatment**
Waste code	**Description**
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION/INDUSTRIAL USE**
19 01	**Wastes from incineration or pyrolysis of waste**
19 01 12	Bottom ash and slag other than those mentioned in 19 01 11.

Schedule 3 – Emissions and monitoring

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

Emission point ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1	Particulate matter	Incineration gases via Flue Gas Treatment Plant	30 mg/Nm^3	½-hr average	Continuous measurement	BS EN 14181
A1	Particulate matter	Incineration gases via Flue Gas Treatment Plant	10 mg/Nm^3	daily average	Continuous measurement	BS EN 14181
A1	Total Organic Carbon (TOC)	Incineration gases via Flue Gas Treatment Plant	20 mg/Nm^3	½-hr average	Continuous measurement	BS EN 14181
A1	Total Organic Carbon (TOC)	Incineration gases via Flue Gas Treatment Plant	10 mg/Nm^3	daily average	Continuous measurement	BS EN 14181
A1	Hydrogen chloride	Incineration gases via Flue Gas Treatment Plant	60 mg/Nm^3	½-hr average	Continuous measurement	BS EN 14181

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A1	Hydrogen chloride	Incineration gases via Flue Gas Treatment Plant	10 mg/Nm^3	daily average	Continuous measurement	BS EN 14181
A1	Hydrogen fluoride	Incineration gases via Flue Gas Treatment Plant	2 mg/Nm^3	1 hr average	Quarterly in first year. Then Bi-annual	BS ISO 15713
A1	Carbon monoxide	Incineration gases via Flue Gas Treatment Plant	100 mg/Nm^3	½-hr average	Continuous measurement	BS EN 14181
A1	Carbon monoxide	Incineration gases via Flue Gas Treatment Plant	50 mg/Nm^3	daily average	Continuous measurement	BS EN 14181
A1	Sulphur dioxide	Incineration gases via Flue Gas Treatment Plant	200 mg/Nm^3	½-hr average	Continuous measurement	BS EN 14181
A1	Sulphur dioxide	Incineration gases via Flue Gas Treatment Plant	50 mg/Nm^3	daily average	Continuous measurement	BS EN 14181

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A1	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	Incineration gases via Flue Gas Treatment Plant	400 mg/Nm^3	½-hr average	Continuous measurement	BS EN 14181
A1	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	Incineration gases via Flue Gas Treatment Plant	200 mg/Nm^3	daily average	Continuous measurement	BS EN 14181
A1	Cadmium & thallium and their compounds (total)	Incineration gases via Flue Gas Treatment Plant	0.05 mg/Nm^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1	Mercury and its compounds	Incineration gases via Flue Gas Treatment Plant	0.05 mg/Nm^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 13211
A1	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	Incineration gases via Flue Gas Treatment Plant	0.5 mg/Nm^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1	Ammonia (NH_3)	Incineration gases via Flue Gas Treatment Plant	10 mg/Nm^3	daily average	Continuous measurement	BS EN 14181

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A1	Nitrous oxide (N_2O)	Incineration gases via Flue Gas Treatment Plant	No Limit Set	daily average	Continuous where CEM installed.	BS EN 14181
A1	Dioxins / furans (I-TEQ)	Incineration gases via Flue Gas Treatment Plant	0.1 ng/Nm^3	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
A1	Dioxins / furans (WHO-TEQ Humans / Mammals) as specified in Schedule 6.	Incineration gases via Flue Gas Treatment Plant	No Limit Set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
A1	Dioxins / furans (WHO-TEQ Fish) as specified in Schedule 6.	Incineration gases via Flue Gas Treatment Plant	No Limit Set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
A1	Dioxins / furans (WHO-TEQ Birds) as specified in Schedule 6.	Incineration gases via Flue Gas Treatment Plant	No Limit Set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
A1	Dioxin-like PCBs (WHO-TEQ Humans / Mammals) as specified in Schedule 6.	Incineration gases via Flue Gas Treatment Plant	No Limit Set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A1	Dioxin-like PCBs (WHO-TEQ Fish) as specified in Schedule 6.	Incineration gases via Flue Gas Treatment Plant	No Limit Set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
A1	Dioxin-like PCBs (WHO-TEQ Birds) as specified in Schedule 6.	Incineration gases via Flue Gas Treatment Plant	No Limit Set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
A1	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	Incineration gases via Flue Gas Treatment Plant	No Limit Set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS ISO 11338 Parts 1 and 2.

Table S3.1(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)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1	Particulate matter	Incineration gases via Flue Gas Treatment Plant	150 mg/Nm^3	½-hr average	Continuous measurement	BS EN 15267-3 during abatement plant failure
A1	Total Organic Carbon (TOC)	Incineration gases via Flue Gas Treatment Plant	20 mg/Nm^3	½-hr average	Continuous measurement	BS EN 15267-3 during abatement plant failure
A1	Carbon monoxide	Incineration gases via Flue Gas Treatment Plant	100 mg/Nm^3	½-hr average	Continuous measurement	BS EN 15267-3 during abatement plant failure

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	No parameters set	Drainage of uncontaminated surface water via attenuation 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 Process monitoring requirements				
Location or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Below the boiler roof in the first boiler pass	Temperature (° C)	Continuous	Traceable to national standards	As agreed in writing with Natural Resources Wales.
A1	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with Natural Resources Wales.
A1	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with Natural Resources Wales.
A1	Exhaust gas oxygen content	Continuous	BS EN 15267-3	
A1	Exhaust gas water vapour content	Continuous	BS EN 15267-3	Unless gas is dried before analysis of emissions.
A1	Exhaust gas flow rate	Continuous	BS EN 15267-3	Exhaust gas flow rate
Bag Filter	Pressure drop	Continuous	Not applicable	-

Table S3.4 Residue quality					
Emission point reference or source or description of point of measurement	**Parameter**	**Limit**	**Monitoring frequency**	**Monitoring standard or method ***	**Other specifications**
Bottom Ash (including boiler ash)	Total Organic Carbon [TOC]	3%	Monthly in the first year of operation. Then Quarterly	Natural Resources Wales ash sampling protocol.	Ash sampling protocol to be agreed in writing by NRW
Bottom Ash (including boiler ash as specified in Schedule 6)	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	No limit set	Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Natural Resources Wales ash sampling protocol.	Ash sampling protocol to be agreed in writing by NRW
Bottom Ash (including boiler ash)	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	No limit set	Before use of a new disposal or recycling route	Sampling and analysis as per Natural Resources Wales ash sampling protocol.	Ash sampling protocol to be agreed in writing by NRW
APC Residues	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	No limit set	Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Natural Resources Wales ash sampling protocol.	Ash sampling protocol to be agreed in writing by NRW
APC Residues	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	No limit set	Before use of a new disposal or recycling route	Sampling and analysis as per Natural Resources Wales ash sampling protocol.	Ash sampling protocol to be agreed in writing by NRW

* Or other equivalent standard as agreed in writing with 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 Parameters as required by condition 3.5.1	A1	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
TOC Parameters as required by condition 3.5.1	Bottom Ash (including bolier ash)	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.5.1	Bottom Ash (including bolier ash)	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.5.1	Bottom Ash (including bolier ash)	Before use of a new disposal or recycling route	
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.5.1	APC Residues	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.5.1	APC Residues	Before use of a new disposal or recycling route	
Functioning and monitoring of the incineration plant as required by condition 4.2.2		Annually	1 Jan

Table S4.2: Annual production/treatment	
Parameter	**Units**
Total Municipal Waste Incinerated	tonnes
Total Commercial Waste Incinerated	tonnes
Electrical energy produced	MWh
Thermal energy produced e.g. steam for export	MWh
Electrical energy exported	MWh
Electrical energy used on installation	MWh
Waste heat utilised by the installation	MWh
Total Bottom ash (including boiler ash) produced	tonnes
Total APC residue produced	Tonnes

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Electrical energy exported, imported and used at the installation	Quarterly	KWhrs / tonne of waste incinerated
Fuel oil consumption	Quarterly	Kgs / tonne of waste incinerated
Mass of Bottom Ash produced	Quarterly	Kgs / tonne of waste incinerated
Mass of Incinerator Bottom Ash Aggregate produced	Quarterly	Kgs / tonne of bottom ash treated
Mass of APC residues produced	Quarterly	Kgs / tonne of waste incinerated
Urea consumption	Quarterly	Kgs / tonne of waste incinerated
Activated Carbon consumption	Quarterly	Kgs / tonne of waste incinerated
Lime consumption	Quarterly	Kgs / tonne of waste incinerated
Water consumption	Quarterly	M^3 / tonne of waste incinerated
Periods of abnormal operation	Quarterly	No of occasions and cumulative hours for current calendar year .

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form air 1-8 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY
Residues	Form residues1 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY
Energy usage	Form energy 1 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY
Other performance indicators	Form performance 1 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY
Water usage	Form water usage1 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY
Waste subject to condition 4.2.5	Waste tonnage return form from the Natural Resources Wales website or other form as agreed in writing by Natural Resources Wales	n/a

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/PP3733WW**
Name of operator	**WTI UK Limited**
Location of Facility	**Parc Adfer Energy Recovery Facility**
Time and date of the detection	

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

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

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

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

Part B - to be submitted as soon as practicable

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

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

"abatement equipment" means that equipment dedicated to the removal of polluting substances from releases from the installation to air or water media.

"abnormal operation" means any technically unavoidable stoppages, disturbances, or failures of the abatement plant or the measurement devices , during which the emissions into the air and the discharges of waste water may exceed the prescribed emission limit values

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

"APC residues" means air pollution control residues

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

"authorised officer" means any person authorised by 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.

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

"bottom ash" means ash transported by the grate

"CEM" Continuous emission monitor

"CEN" means Commité Européen de Normalisation

"Completion of commissioning" *means the date on which the listed activity is first operated"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 I to Directive 2008/98/EC of the European Parliament and of the Council 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.

"emissions of substances not controlled by emission limits" means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit**.**.

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

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

"Industrial Emissions Directive" 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.

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

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

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

"PCB" means *Polychlorinated Biphenyl. Dioxin-like PCBs are the non-ortho and mono-ortho PCBs listed in the table below.*

"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.

"quarter" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"recovery" means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"*shut down"* is any period where the plant is being returned to a non-operational state and there is no waste being burned as 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 in sufficient quantity to cover the grate and to initiate steady-state conditions as agreed in writing with Natural Resources Wales.

"TOC" means *Total Organic Carbon.* In respect of releases to air, this means the gaseous and vaporous organic substances, expressed as TOC. In respect of Bottom Ash, this means the total carbon content of all organic species present in the ash (excluding carbon in elemental form).

"waste code" means the six digit code referable to a type of waste in accordance with the list of wastes established by Commission Decision 2000/532/EC as amended from time to time (the 'List of Wastes Decision') and in relation to hazardous waste, includes the asterisk.

"Waste Framework Directive" or "WFD" means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council 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:

(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

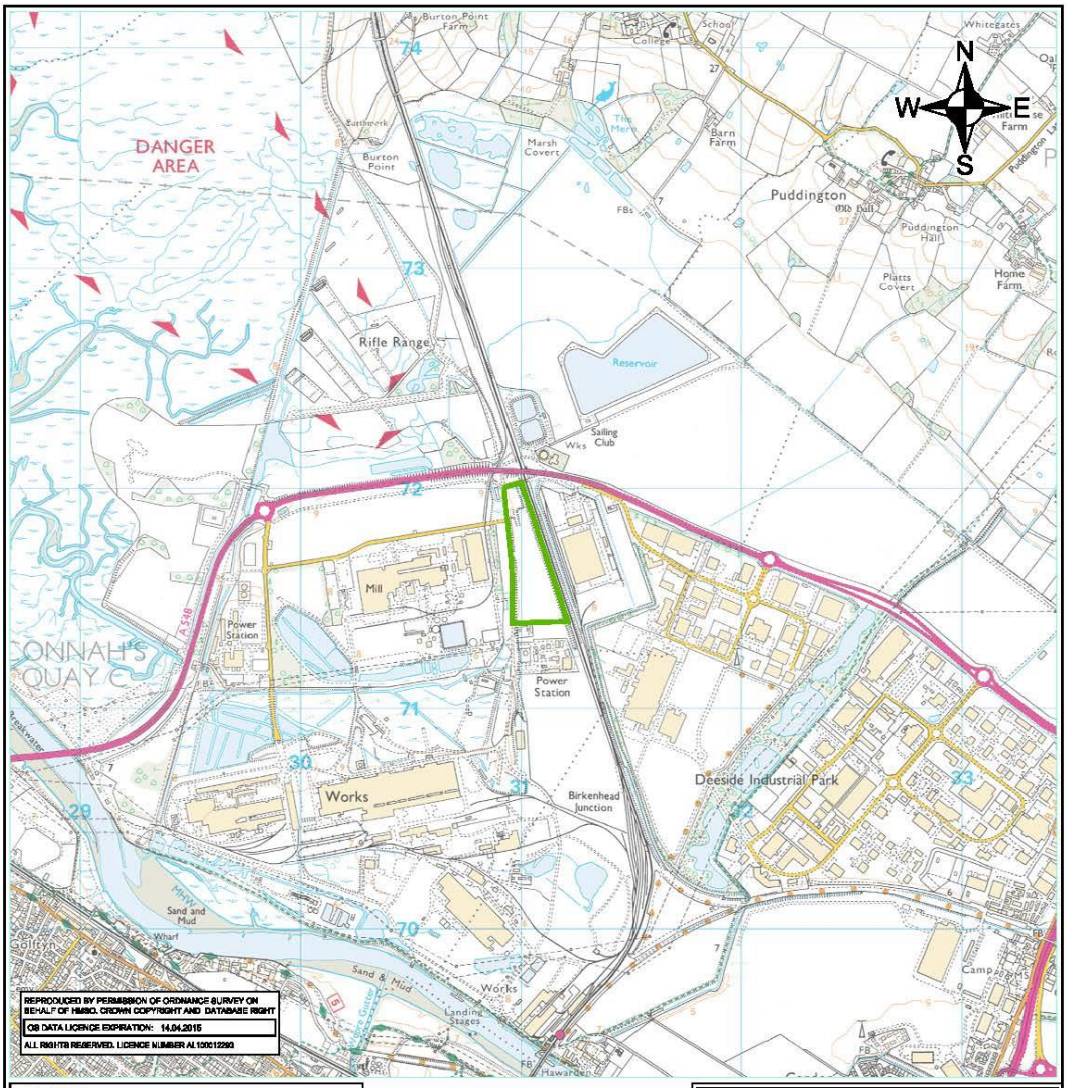
(c) in relation to gases from incineration plants other than those burning waste oil, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 11% dry.

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. 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 then 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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