

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

High Energy Fuels Limited
Bloomfield Road Pyrolysis Plant
Bloomfield Road
Tipton
DY4 9BS

Permit number

EPR/CP3836QX

Bloomfield Road Pyrolysis Plant

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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 activity is 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 permit implements the requirements of the EU Directives on Industrial Emissions and Waste.

The main features of the permit are as follows:

The installation will pyrolyse non-hazardous refuse derived fuels (RDF) and waste wood to produce a torrefied solid output (fuel). The plant will also produce a synthesis gas (syngas) which will be cleaned and utilised in both a cyclone furnace to generate heat for the pyrolysis process and also a gas engine to produce electricity. The facility will typically receive about 180,000 tonnes per annum (tpa) of waste RDF and waste biomass. It will not receive hazardous waste or clinical waste, and there will be no sorting or pre-treatment of waste on the site. The facility will have the following features:

- Waste will feed the cyclone furnace and once the required temperature is achieved, a feedstock of waste will be introduced to the pyrolysis plant. Both the cyclone furnace and pyrolysis units will be fed with RDF and waste biomass although these feeds will not be mixed together prior to input to the units.
- The two parallel pyrolysis units are externally heated from the cyclone furnace fired using a dual fuel 5MW burner utilising syngas and/or diesel as an auxiliary fuel for start-up and shut-down purposes. Waste RDF and wood will only be fed to the cyclone furnace once a temperature of 850°C is achieved by the syngas and/or diesel.
- Waste is fed into each of the pyrolysis lines from hoppers by two feed systems. Each line then consists of a four-stage pyrolysis process comprising of heating in a retort drum to thermally treat the waste, passage through a cyclone to remove solids from the syngas, thermal cracking of syngas at 1100°C to break down tars, oils and heavy components and a final passage through a further cyclone to remove particulates in the form of soot.
- As the solid torrefied fuel exits the pyrolysis units, it is cooled via a set of auger systems before discharge. The torrefied fuel will be pelletised using a pellet mill prior to bagging and storage pending dispatch from site.
- Once the syngas exits the pyrolysis process it is passed through a venturi scrubber, packed tower scrubber and carbon filter to cool and further polish the syngas. Once polished, it is then passed through to one gas-fired engine and the dual-fuel burner serving the cyclone furnace. Exhaust gases from the engine will be discharged via a 9m stack with continuous emissions monitoring systems (CEMS) and ports for periodic monitoring purposes. A gas holder on site is available on site to store the syngas prior to utilisation within the engine.
- An activated carbon filter within the syngas clean-up process is designed to reduce emissions to air of organic compounds including dioxins and furans and PCBs from the pyrolysis and subsequent syngas combustion. A wet scrubbing system will be in place to reduce acid gas content.
- A proportion of the syngas will be used to generate 2.2MW of electricity for either the site parasitic load or for export to the local electricity distribution network.
- In the event of an emergency only, a flare is available to combust the syngas to atmosphere.
- A nitrogen purge system will be in place for extinguishing fires.

- There will be no storage or processing of waste feedstock on site. Waste feedstocks will be delivered on a 'just in time' basis. Prior to delivery to the hoppers, feedstock materials will be subject to waste acceptance procedures and a final inspection in a waste inspection area prior to acceptance and delivery into the hoppers.
- The operator has stated that they intend for the torrefied fuel to meet End of Waste status but this has not been applied for at the time of application. A maximum of 500 tonnes of torrefied fuel will be stored on site at any one time.
- Hot gases produced by the combustion of the waste in the cyclone furnace will be subject to a temperature of at least 850°C for at least 2 seconds within the combustion chamber to ensure complete destruction of organic pollutants. The cyclone furnace operates at over 1100°C to destroy dioxins and furans and exhaust gases are rapidly cooled through the boiler to minimise reformation.
- A Selective Non-Catalytic Reduction (SNCR) system will be in place to reduce oxides of nitrogen (NO_x) emissions. A cyclone will remove particulates and metals. A wet scrubbing system will reduce acid gas emissions. A carbon filter will be designed to further reduce emissions to air of organic compounds including dioxins and furans and polychlorinated biphenyls (PCBs).
- Flue gases from the cyclone furnace are passed through a heat recovery boiler. The boiler's purpose is to remove residual heat within the flue gases so that they are lowered to a suitable temperature for subsequent flue gas treatment and to supply heat for future heat load opportunities.
- The flue gases will then pass into the atmosphere via a single 29m tall chimney stack.
- A system of continuous emissions monitoring equipment and periodic manual sampling provisions will be in place to characterise residual emissions from the process to atmosphere.
- Air Pollution Control residues are collected by the cyclone post-combustion in the furnace combustion chamber are removed by an auger system for storage prior to removal off-site.
- A cyclone will collect entrained ash from the furnace which will drop out to a container for removal from and further treatment off site. No bottom ash treatment will occur on site.
- There will be no process water emissions to sewer or controlled waters, with contaminated water being tankered off site for suitable treatment.
- Run-off from external surfaces will be captured by the drainage system prior to release to the public sewer. Clean surface water from roof run-off will be captured for reuse on the site. Surface water runoff that is not reused will be passed through an interceptor prior to discharge. The plant will recycle boiler blow down water for use in the wet scrubbing systems and recycle waste water from the wet scrubbers to minimise the production of aqueous emissions.
- A plant control and monitoring system will be in place.

The installation will be situated on the edge of an industrial area in Tipton, and is approximately 2.7km northeast of Dudley in the West Midlands. The National Grid Reference for the site is SO 94847 93114.

The nearest sensitive residential properties are located approximately 150m to the west of the site. Fens Pool Special Area of Conservation (SAC) is the only European designated site within 10km of the installation. Wren's Nest Site of Special Scientific Interest (SSSI) is within 5km of the installation.

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/CP3836QX/A001	Duly made 21/12/2018	Application for a pyrolysis plant permit.
Additional information received	03/05/2019	Revised Air Quality impact assessment and noise modelling files.

Status log of the permit		
Description	Date	Comments
Additional information received	13/05/2019	Revised site plan layout and revised noise assessment.
Additional information received in response to schedule 5 notice dated 18/06/19	31/07/2019	Revised noise impact assessment and revised noise management plan.
Additional information received in response to schedule 5 notice dated 19/08/19	18/09/2019	Clarification on air quality impacts and best available techniques assessment.
Additional information received in response to schedule 5 notice dated 09/10/19	31/10/2019	Clarifications relating to fire prevention plan and operating parameters of gas engine.
Further information received	20/11/2019	Clarification on waste feedstocks.
Further information received	15/01/2020	Clarification on BAT 30 of the Waste Incineration BAT Conclusions; and abatement techniques.
Permit determined EPR/CP3836QX/A001 (Billing reference: CP3836QX)	16/03/2020	Permit issued to High Energy Fuels Limited.

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/CP3836QX

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

High Energy Fuels Limited (“the operator”),

whose registered office is

Ground Floor

59 New Street

Chelmsford

CM1 1NE

company registration number 10676562

to operate an installation at

Bloomfield Road Pyrolysis Plant

Bloomfield Road

Tipton

DY4 9BS

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

Name	Date
Sifelani F Mpofo	16/03/2020

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

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

1.2 Energy efficiency

- 1.2.1 The operator shall:
- (a) take appropriate measures to ensure that energy is recovered with a high level of energy efficiency and energy is used efficiently in the activities.
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy 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 viability of Combined Heat and Power (CHP) implementation at least every 4 years, or in response to any of the following factors, whichever comes sooner:
- (a) new plans for significant developments within 15 km of the installation;
 - (b) changes to the Local Plan;
 - (c) changes to the UK CHP Development Map or similar; and
 - (d) new financial or fiscal incentives for CHP.

The results shall be reported to the Agency within 2 months of each review, including where there has been no change to the original assessment in respect of the above factors.

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.

2.2 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 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.
- 2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan specified in schedule 1, table S1.2 or otherwise required under this permit 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 the Environment Agency.
- 2.3.3 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.4 Waste shall only be accepted if:
- (a) it is of a type and quantity listed in schedule 2 table S2.2; and
 - (b) it conforms to the description in the documentation supplied by the producer or holder; and
 - (c) it having been separately collected for recycling, it is subsequently unsuitable for recovery by recycling.
- 2.3.5 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.
- 2.3.6 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.
- 2.3.7 Waste to the cyclone furnace shall not be charged, or shall cease to be charged, if, following start up:
- (a) the cyclone furnace combustion chamber temperature is below, or falls below, 850°C; or
 - (b) any continuous emission limit value in schedule 3 table S3.1(a) relating to emission point A1 is exceeded; or
 - (c) any continuous emission limit value in schedule 3 table S3.1 relating to emission point A1 is exceeded, other than during abnormal operation or periods of OTNOC; or
 - (d) any continuous emission limit value in schedule 3 table S3.1(b) relating to emission point A1 is exceeded other than during abnormal operation; or
 - (e) monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 relating to emission point A1 are unavailable other than during abnormal operation; or
 - (f) there is a stoppage, disturbance or failure of the activated carbon abatement system, other than during abnormal operation.
- 2.3.8 The operator shall have at least one auxiliary burner in each line which shall be operated at start up, shut down and as required during operation to ensure that the operating temperature specified in condition 2.3.7 is maintained as long as incompletely burned waste is present in the combustion chamber. Unless the temperature specified in condition 2.3.7 is maintained in the combustion chamber, such burner(s) shall be fed only with fuels which result in emissions no higher than those arising from the use of gas oil, liquefied gas or natural gas.
- 2.3.9 Waste to the pyrolysis units shall not be charged, or shall cease to be charged, if, following start up:
- (a) the operating conditions which are controlled through the engine management system (as described in the application) fall below the parameters agreed through preoperational condition PO8 or
 - (b) any continuous emission limit value in schedule 3 table S3.1(a) relating to emission point A2 is exceeded; or
 - (c) any continuous emission limit value in schedule 3 table S3.1 relating to emission point A2 is exceeded, other than during abnormal operation or periods of OTNOC; or
 - (d) any continuous emission limit value in schedule 3 table S3.1(b) relating to emission point A2 is exceeded other than during abnormal operation; or
 - (e) monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 relating to emission point A2 are unavailable other than during abnormal operation;
 - (f) there is a stoppage, disturbance or failure of the activated carbon abatement system, other than during abnormal operation; or
 - (g) syngas is being burned in the flare.
- 2.3.10 The operator shall record the beginning and end of each period of “abnormal operation”.
- 2.3.11 During a period of “abnormal operation” or OTNOC, the operator shall restore normal operation of the failed equipment or replace the failed equipment as rapidly as possible.

- 2.3.12 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 stoppages, disturbances or failures of the abatement plant, or continuous emission monitor(s) are out of service, as the case may be, for a total of 4 hours uninterrupted duration;
 - (b) there is a technically unavoidable stoppage, disturbance or failure of the activated carbon abatement system for a total of 4 hours uninterrupted duration;
 - (c) the cumulative duration of “ abnormal operation” periods over 1 calendar year has reached 60 hours;
 - (d) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1(a).
 - (e) continuous emission monitors or alternative techniques to demonstrate compliance with the emission limit value(s) for particulates, TOC and / or CO in schedule 3 table S3.1(a), as agreed in writing with the Environment Agency, are unavailable.
- 2.3.13 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 the Environment Agency;
 - (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 on an incineration line.
- 2.3.14 Cylone furnace ash and APC residues shall not be mixed.

2.4 Improvement programme

- 2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.
- 2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.5 Pre-operational conditions

- 2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4 have been completed.

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.
- 3.1.2 The limits given in schedule 3, subject to condition 3.2.1, 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 limits and monitoring for emission to air for incineration plant

- 3.2.1 The limits for emissions to air apply as follows:
- (a) The limits in table S3.1 shall not be exceeded except during periods of abnormal operation or OTNOC.
 - (b) The limits in table S3.1(a) shall not be exceeded.
 - (c) The limits in table S3.1(b) shall not be exceeded except during abnormal operation.
- 3.2.2 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3 table S3.1, S3.1(a) and S3.1(b); 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 of the emission limit values:
 - 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%
 - Ammonia 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 3.2.2(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. The number of half-hourly averages so validated shall not exceed 5 per day;
 - (d) daily average values shall be calculated as follows:
 - (i) for the daily average values in table S3.1, the average of valid half hourly averages over a calendar day excluding half hourly averages during periods of abnormal operation and OTNOC. 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;
 - (ii) for the daily average values in table S3.1(b), the average of valid half hourly averages over a calendar day excluding half hourly averages during periods of abnormal operation. 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.

3.3 Emissions of substances not controlled by emission limits

- 3.3.1 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.
- 3.3.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan 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 the Environment Agency.
- 3.3.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.
- 3.3.4 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.

3.4 Odour

- 3.4.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.
- 3.4.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan 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 the Environment Agency.

3.5 Noise and vibration

- 3.5.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.
- 3.5.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan 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 the Environment Agency.

3.6 Monitoring

- 3.6.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:
- (a) point source emissions specified in tables S3.1, S3.1(a), S3.1(b) and S3.2;
 - (b) process monitoring specified in table S3.3;
 - (c) residue quality in table S3.4.
- 3.6.2 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.
- 3.6.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.6.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Environment Agency. Newly installed CEMs, or CEMs replacing existing CEMs, shall have MCERTS certification and have an MCERTS certified range which is not greater than 1.5 times the daily emission limit value (ELV) specified in schedule 3 table S3.1. The CEM shall also be able to measure instantaneous values over the ranges which are to be expected during all operating conditions. If it is necessary to use more than one range setting of the CEM to achieve this requirement, the CEM shall be verified for monitoring supplementary, higher ranges.
- 3.6.4 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), S3.1(b), and S3.2 unless otherwise agreed in writing by the Environment Agency.

3.7 Pests

- 3.7.1 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.
- 3.7.2 The operator shall:
- (a) if notified by the Environment Agency, submit to the Environment Agency for approval within the period specified, a pests management plan which identifies and minimises risks of pollution from pests;
 - (b) implement the pests management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.8 Fire prevention

- 3.8.1 The operator shall take all appropriate measures to prevent fires on site and minimise the risk of pollution from them including, but not limited to, those specified in any approved fire prevention plan.

4 Information

4.1 Records

- 4.1.1 All records required to be made by this permit shall:
- (a) be legible;
 - (b) be made as soon as reasonably practicable;
 - (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
 - (d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.
- 4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

- 4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.
- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year using the annual report form specified in schedule 4, table S4.4 or otherwise in a format agreed with the Environment Agency. The report(s) shall include as a minimum:
- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
 - (b) the annual production /treatment data set out in schedule 4 table S4.2;
 - (c) the performance parameters set out in schedule 4 table S4.3;
 - (d) the functioning and monitoring of the incineration plant in a format agreed with the Environment Agency. The report shall, as a minimum requirement (as required by 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 the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.
- 4.2.5 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.3 Notifications

4.3.1 In the event:

- (a) 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 the Environment Agency,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
- (b) of a breach of any permit condition the operator must immediately—
 - (i) inform the Environment Agency, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
- (c) 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 the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

- (a) any change in the operator's trading name, registered name or registered office address; and
- (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

- (a) any change in the operator's name or address; and
- (b) any steps taken with a view to the dissolution of the operator.

In any other case:

- (a) the death of any of the named operators (where the operator consists of more than one named individual);
- (b) any change in the operator's name(s) or address(es); and
- (c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

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

- (a) the Environment Agency shall be notified at least 14 days before making the change; and
- (b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "immediately", in which case it may be provided by telephone

Schedule 1 – Operations

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
AR1	S5.1 A1 (b) The incineration of non-hazardous waste in a waste incineration plant with a capacity of 3 tonnes per hour or more.	The incineration of non-hazardous waste in the following: <ul style="list-style-type: none"> • a cyclone furnace; • two pyrolysis lines; • one 2.2MWth gas engine; and • one emergency flare. 	From receipt of waste, incineration of waste wood, refuse derived fuel and syngas to exhaust of waste gases and transfer off site of associated wastes and residues including the torrefied solid output. Types and quantities of wastes as specified in table S2.2.
Directly Associated Activities			
	Emergency flare	Combustion of syngas in emergency flare	From receipt of syngas to emission of combustion gases

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application EPR/CP3836QX/A001	Application forms B2 and B3 and supporting information including: <ul style="list-style-type: none"> • Non-technical summary, dated December 2018; • Best Available Techniques & Operating Techniques, dated December 2018; • Site Condition Report, dated December 2018; • Soil and Groundwater Monitoring Protocol, dated October 2018; • Fire Prevention Plan, dated December 2018; • Amenity and Accident Risk Assessment. Excluding reference to the following: <ul style="list-style-type: none"> • Noise impact assessment, dated December 2018; • Air emissions risk assessment, dated November 2018; • Site layout drawing, dated November 2018. 	Duly Made 21/12/2018
Additional information received	Revised documents: Revised site layout plan, dated January 2019	13/05/2019
Response to Schedule 5 Notice dated 18/06/19	Revised noise management plan, dated July 2019.	31/07/2019
Response to Schedule 5 Notice dated 19/08/19	Clarification on air quality impacts and best available techniques assessment.	18/09/2019
Response to Schedule 5 Notice dated 09/10/19	Clarifications relating to fire prevention plan and operating parameters of gas engine.	31/10/2019
Additional information received	Update on response to BAT 30 and abatement techniques proposed.	16/01/2020

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC1	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System (EMS) and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be certified.	Within 12 months of the completion of commissioning.
IC2	The Operator shall submit a written proposal to the Environment Agency to carry out tests to determine the size distribution of the particulate matter in the exhaust gas emissions to air from emission point A1, identifying the fractions within the PM ₁₀ , and PM _{2.5} ranges. On receipt of written approval from the Environment Agency to the proposal and the timetable, the Operator shall carry out the tests and submit to the Environment Agency a report on the results.	Within 6 months of the completion of commissioning.
IC3	The Operator shall submit a written report to the Environment Agency on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions and confirm that the Environmental Management System (EMS) has been updated accordingly.	Within 4 months of the completion of commissioning.
IC4	The operator shall notify the Environment Agency of the proposed date(s) that validation testing is planned for.	Notification at least 3 weeks prior to validation testing
	During commissioning the operator shall carry out validation testing to validate the residence time, minimum temperature and oxygen content of the gases in the cyclone furnace whilst operating under normal load and most unfavourable operating conditions. The validation shall be to the methodology as approved through pre-operational condition PO7.	Validation tests completed before the end of commissioning
IC6	The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of: <ul style="list-style-type: none"> • The Selective Non Catalytic Reduction (SNCR) system and combustion settings to minimise oxides of nitrogen (NO_x).The report shall include an assessment of the level of NO_x, N₂O and NH₃ emissions that can be achieved under optimum operating conditions. • The wet scrubbing systems for minimisation of acid gas emissions. • The carbon abatement system for minimisation of dioxin and heavy metal emissions. 	Within 4 months of the completion of commissioning.
IC7	The Operator shall carry out an assessment of the impact of emissions to air of the following component metals subject to emission limit values: Cd, As, Cr, Mn and Ni A report on the assessment shall be made to the Environment Agency. Emissions monitoring data obtained during the first year of operation shall be used to compare the actual emissions with those assumed in the impact assessment submitted with the Application. An assessment shall be made of the impact of each metal against the relevant ES. In the event that the assessment shows that an environmental standard can be exceeded, the report shall include proposals for further investigative work.	15 months from the completion of commissioning

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC8	The Operator shall submit a written summary report to the Environment Agency to confirm 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. The report shall include the results of calibration and verification testing,	Initial calibration report to be submitted to the Agency within 3 months of completion of commissioning. Full summary evidence compliance report to be submitted within 18 months of completion of commissioning.
IC9	The operator shall carry out a programme of dioxin and dioxin like PCB monitoring over a period and frequency agreed with the Environment Agency. The operator shall submit a report to the Environment Agency with an analysis of whether dioxin emissions can be considered to be stable.	Within 3 months of completion of commissioning or as agreed in writing with the Environment Agency
IC10	The operator shall carry out a programme of mercury monitoring over a period and frequency agreed with the Environment Agency. The operator shall submit a report to the Environment Agency with an analysis of whether the waste feed to the plant can be proven to have a low and stable mercury content.	Within 3 months of completion of commissioning or as agreed in writing with the Environment Agency
IC11	The Operator shall submit a report to the Environment Agency for approval on start-up and shut-down conditions for the cyclone furnace and the pyrolysis plant over the first 12 months of operation. The report shall identify any amendments to the start-up and shut-down definitions that were described in the application.	Within 15 months of completion of commissioning or as agreed in writing with the Environment Agency

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO1	<p>Prior to the commencement of commissioning, the Operator shall send:</p> <ul style="list-style-type: none"> • A summary of the site Environment Management System (EMS);and • A copy of the full OTNOC management plan which shall be prepared in accordance with BAT 18 of the BAT conclusions <p>to the Environment Agency and obtain the Environment Agency's written approval to the EMS summary and the full OTNOC management plan.</p> <p>The Operator shall make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with the requirements set out in Environment Agency web guide on developing a management system for environmental permits (found on www.gov.uk) and BAT 1 of the incineration BAT conclusions. The EMS shall include the approved OTNOC management plan.</p> <p>The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.</p>

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO2	Prior to the commencement of commissioning, the Operator shall submit to the Environment Agency, and obtain the Environment Agency's written approval to it, a protocol for the sampling and testing of cyclone furnace ash for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.
PO3	Prior to the commencement of commissioning, the Operator shall submit to the Environment Agency, and obtain the Environment Agency's written approval to it, a written commissioning plan, including timelines for completion, for approval by the Environment Agency. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved.
PO4	Prior to the commencement of commissioning, the Operator shall submit a written report to the Agency, and obtain the Environment Agency's written approval to it, detailing the waste acceptance procedure to be used at the site. The waste acceptance procedure shall include the process and systems by which wastes unsuitable for incineration at the site will be controlled. The procedure shall be implemented in accordance with the written approval from the Environment Agency.
PO5	No later than one month after the final design of the cyclone furnace, the operator shall submit a written report to the Environment Agency, and obtain the Environment Agency's written approval to it, of the details of the computational fluid dynamic (CFD) modelling. The report shall explain how the cyclone furnace has been designed to comply with the residence time and temperature requirements as defined by Chapter IV and Annex VI of the IED whilst operating under normal load and the most unfavourable operating conditions (including minimum turn down and overload conditions), and that the design includes sufficient monitoring ports to support subsequent validation of these requirements during commissioning.
PO6	At least three months before (or other date agreed in writing with the Environment Agency) the commencement of commissioning, the Operator shall submit a written report to the Environment Agency, and obtain the Environment Agency's written approval to it, specifying arrangements for continuous and periodic monitoring of emissions to air to comply with Environment Agency guidance notes M1, M2 and M20. The report shall include the following: <ul style="list-style-type: none"> • Plant and equipment details, including accreditation to MCERTS • Methods and standards for sampling and analysis • Details of monitoring locations, access and working platforms
PO7	At least 3 months before the commencement of commissioning (or other date agreed in writing with the Environment Agency) the Operator shall submit, for approval by the Environment Agency, a methodology (having regard to Technical Report P4-100/TR Part 2 Validation of Combustion Conditions) to verify the residence time, minimum temperature and oxygen content of the gases in the cyclone furnace whilst operating under normal load, minimum turn down and overload conditions.
PO8	The operator shall submit a report in writing to the Environment Agency for approval detailing the following points which should be established during commissioning: <ul style="list-style-type: none"> • Definitions of start-up and shutdown for the gas engine and details of the parameters used to indicate that start-up has been completed with justification for use; • The process for ensuring that upon completion of start-up, the operation of the engine, including the temperature is optimised for the combustion of syngas and production of electricity; including details of how these operational objectives correlate and will be managed;

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
	<ul style="list-style-type: none"> • Proposals for monitoring the engines process parameters and any triggers which would indicate that the process is not operating as required, and an associated 'triggers' which would indicate that waste should cease to be charged to the pyrolysis units; and • Location of process parameter monitoring points.
PO9	<p>The operator shall submit a review of the selected stack height of the gas engine and determine if it is BAT. This shall include but is not limited to:</p> <ul style="list-style-type: none"> • Evidence to show whether the process contribution of annual NO₂ is significantly reduced by a higher stack; • Use of the above information to inform what is BAT for stack height and to propose changes in stack height if appropriate; and • Proposal of an appropriate timescale for improvements. <p>The review and timescale for improvement shall be submitted to the Environment Agency in writing for approval.</p>

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 the cyclone furnace and pyrolysis units	
Maximum quantity	180,000 tonnes per annum aggregated for the installation
Waste code	Description
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 05	sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04
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 03	wooden packaging
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 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 07	wood other than that mentioned in 19 12 06
19 12 10	combustible waste (refuse derived fuel)

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 [Stack shown on plan in Schedule 7]	Particulate matter	Cyclone furnace exhaust gases	30 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Particulate matter	Cyclone furnace exhaust gases	5 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Cyclone furnace exhaust gases	20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Cyclone furnace exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Hydrogen chloride	Cyclone furnace exhaust gases	60 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Hydrogen chloride	Cyclone furnace exhaust gases	2 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Hydrogen fluoride	Cyclone furnace exhaust gases	1 mg/m ³	Average of three consecutive measurements of at	Quarterly in first year. Then Bi-annual	BS ISO 15713

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
				least 30 minutes each		
A1 [Stack shown on plan in Schedule 7]	Carbon monoxide	Cyclone furnace exhaust gases	100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Carbon monoxide	Cyclone furnace exhaust gases	50 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Sulphur dioxide	Cyclone furnace exhaust gases	200 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Sulphur dioxide	Cyclone furnace exhaust gases	30 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	Cyclone furnace exhaust gases	400 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	Cyclone furnace exhaust gases	120 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Cadmium & thallium and their compounds (total)	Cyclone furnace exhaust gases	0.02 mg/m ³	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year. Then Bi-annual	BS EN 14385

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 [Stack shown on plan in Schedule 7]	Mercury and its compounds	Cyclone furnace exhaust gases	0.02 mg/m ³ Limit does not apply if continuous monitoring has been specified by the Environment Agency after completion of IC10	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year and accelerated monitoring at frequency agreed through IC10. Then Bi-annual. Not required if continuous monitoring has been specified by the Environment Agency after completion of IC10.	BS EN 13211
A1 [Stack shown on plan in Schedule 7]	Mercury and its compounds	Cyclone furnace exhaust gases	0.02 mg/m ³	Continuous	Not required unless continuous monitoring has been specified by the Environment Agency after completion of IC10.	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	Cyclone furnace exhaust gases	0.3 mg/m ³	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year. Then Bi-annual	BS EN 14385
A1 [Stack shown on plan in Schedule 7]	Water vapour content	Cyclone furnace exhaust gases	No limit set	Continuous	-	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Ammonia (NH ₃)	Cyclone furnace exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Dioxins / furans (I-TEQ)	Cyclone furnace exhaust gases	0.04 ng/m ³ or 0.06 ng/m ³ if long term limit is specified by the Environment	Periodic over minimum 6 hours, maximum 8 hour period or	Monthly for first 6 months and accelerated monitoring as agreed through IC9, quarterly for following 6 months and then bi-annually; or	BS EN 1948 Parts 1, 2 and 3 Or long term sampling method if specified by the

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
			Agency after completion of IC9	value over sampling period of 2 to 4 weeks for long term sampling	long term monitoring if specified by the Environment Agency after completion of IC9.	Environment Agency after completion of IC9
A1 [Stack shown on plan in Schedule 7]	Dioxin-like PCBs (WHO-TEQ Humans / Mammals, Fish, Birds)	Cyclone furnace exhaust gases	No limit set	Periodic over minimum 6 hours, maximum 8 hour period or value over sampling period of 2 to 4 weeks for long term sampling	Monthly for first 6 months and accelerated monitoring as agreed through IC09, quarterly for following 6 months and then bi-annually; or long term monitoring if specified by the Environment Agency after completion of IC9. No monitoring is required if emissions have been shown to be below 0.01 ng/m ³ as agreed with the Environment Agency.	BS EN 1948 Parts 1, 2 and 4 or long term sampling method if specified by the Environment Agency after completion of IC9
A1 [Stack shown on plan in Schedule 7]	Dioxins / furans (WHO-TEQ Humans / Mammals, Fish, Birds)	Cyclone furnace exhaust gases	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 [Stack shown on plan in Schedule 7]	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	Cyclone furnace exhaust gases	No limit set	Periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year then annually	BS ISO 11338 Parts 1 and 2.
A2 [Gas engine shown on	Particulate matter	Gas engine exhaust gases	30 mg/m 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 <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
plan in Schedule 7]						
A2 [Gas engine shown on plan in Schedule 7]	Particulate matter	Gas engine exhaust gases	5 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Gas engine exhaust gases	20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Gas engine exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Hydrogen chloride	Gas engine exhaust gases	60 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Hydrogen chloride	Gas engine exhaust gases	2 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Hydrogen fluoride	Gas engine exhaust gases	1 mg/m ³	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year. Then Bi-annual	BS ISO 15713

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A2 [Gas engine shown on plan in Schedule 7]	Carbon monoxide	Gas engine exhaust gases	100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Carbon monoxide	Gas engine exhaust gases	50 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Sulphur dioxide	Gas engine exhaust gases	200 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Sulphur dioxide	Gas engine exhaust gases	30 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	Gas engine exhaust gases	400 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	Gas engine exhaust gases	120 mg/m ³	daily average	Continuous measurement	BS EN 14181

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A2 [Gas engine shown on plan in Schedule 7]	Cadmium & thallium and their compounds (total)	Gas engine exhaust gases	0.02 mg/m ³	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year. Then Bi-annual	BS EN 14385
A2 [Gas engine shown on plan in Schedule 7]	Mercury and its compounds	Gas engine exhaust gases	0.02 mg/m ³ Limit does not apply if continuous monitoring has been specified by the Environment Agency after completion of IC10	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year and accelerated monitoring at frequency agreed through IC10. Then Bi-annual. Not required if continuous monitoring has been specified by the Environment Agency after completion of IC10.	BS EN 13211
A2 [Gas engine shown on plan in Schedule 7]	Mercury and its compounds	Gas engine exhaust gases	0.02 mg/m ³	Continuous	Not required unless continuous monitoring has been specified by the Environment Agency after completion of IC10.	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	Gas engine exhaust gases	0.3 mg/m ³	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year. Then Bi-annual	BS EN 14385
A2 [Gas engine shown on plan in Schedule 7]	Dioxins / furans (I-TEQ)	Gas engine exhaust gases	0.04 ng/m ³ or 0.06 ng/m ³ if long term limit is specified by the Environment Agency after completion of IC9	Periodic over minimum 6 hours, maximum 8 hour period or value over sampling period of 2 to 4	Monthly for first 6 months and accelerated monitoring as agreed through IC9, quarterly for following 6 months and then bi-annually; or	BS EN 1948 Parts 1, 2 and 3 or long term sampling method if specified by the Environment Agency after completion of IC9

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
				weeks for long term sampling	long term monitoring if specified by the Environment Agency after completion of IC9.	
A2 [Gas engine shown on plan in Schedule 7]	Dioxin-like PCBs (WHO-TEQ Humans / Mammals, Fish, Birds)	Gas engine exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period or value over sampling period of 2 to 4 weeks for long term sampling	Monthly for first 6 months and accelerated monitoring as agreed through IC9, quarterly for following 6 months and then bi-annually; or long term monitoring if specified by the Environment Agency after completion of IC9. No monitoring is required if emissions have been shown to be below 0.01 ng/m ³ as agreed with the Environment Agency.	BS EN 1948 Parts 1, 2 and 4 or long term sampling method if specified by the Environment Agency after completion of IC9
A2 [Gas engine shown on plan in Schedule 7]	Dioxins / furans (WHO-TEQ Humans / Mammals, Fish, Birds)	Gas engine exhaust gases	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
A2 [Gas engine shown on plan in Schedule 7]	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	Gas engine exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year then annually	BS ISO 11338 Parts 1 and 2.
A3 [Emergency flare shown]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	Emergency flare	150 mg/m ³	Hourly average	Annually	BS EN 14792
	Carbon monoxide		50 mg/m ³			BS EN 15058

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
on plan in Schedule 7]	Total VOCs		10 mg/m ³			BS EN 12619:2013
Note 1 – Emission point A2 shown marked 'Jichai Generator engine' on plan in Schedule 7						

Table S3.1(a) Point source emissions to air during abnormal operation of incineration plant – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 [Stack shown on plan in Schedule 7]	Particulate matter	Cyclone furnace exhaust gases	150 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Cyclone furnace exhaust gases	20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Carbon monoxide	Cyclone furnace exhaust gases	100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Particulate matter	Gas engine exhaust gases	150 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Gas engine exhaust gases	20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Carbon monoxide	Gas engine exhaust gases	100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181

Table S3.1(a) Point source emissions to air during abnormal operation of incineration plant – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
Note 1 – Emission point A2 shown marked 'Jichai Generator engine' on plan in Schedule 7						

Table S3.1(b) Point source emissions to air during OTNOC – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 [Stack shown on plan in Schedule 7]	As specified in the OTNOC management plan as approved after completion of pre-operational condition PO1	Cyclone furnace exhaust gases	No limit set	As specified in the OTNOC management plan as approved after completion of pre-operational condition PO1.		
A1 [Stack shown on plan in Schedule 7]	Particulate matter	Cyclone furnace exhaust gases	30 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Particulate matter	Cyclone furnace exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Cyclone furnace exhaust gases	20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Cyclone furnace exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Hydrogen chloride	Cyclone furnace exhaust gases	60 mg/m ³	½-hr average	Continuous measurement	BS EN 14181

Table S3.1(b) Point source emissions to air during OTNOC – emission limits and monitoring requirements

Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 [Stack shown on plan in Schedule 7]	Hydrogen chloride	Cyclone furnace exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Hydrogen fluoride	Cyclone furnace exhaust gases	2 mg/m ³	Periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
A1 [Stack shown on plan in Schedule 7]	Carbon monoxide	Cyclone furnace exhaust gases	100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Carbon monoxide	Cyclone furnace exhaust gases	50 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Sulphur dioxide	Cyclone furnace exhaust gases	200 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Sulphur dioxide	Cyclone furnace exhaust gases	50 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	Cyclone furnace exhaust gases	400 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	Cyclone furnace exhaust gases	200 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Cadmium & thallium and their compounds (total)	Cyclone furnace exhaust gases	0.05 mg/m ³	Periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1 [Stack shown on plan in Schedule 7]	Mercury and its compounds	Cyclone furnace exhaust gases	0.05 mg/m ³	Periodic over minimum 30 minute,	Quarterly in first year. Then Bi-annual	BS EN 13211

Table S3.1(b) Point source emissions to air during OTNOC – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
				maximum 8 hour period		
A1 [Stack shown on plan in Schedule 7]	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	Cyclone furnace exhaust gases	0.5 mg/m ³	Periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1 [Stack shown on plan in Schedule 7]	Ammonia (NH ₃)	Cyclone furnace exhaust gases	No limit set	½-hr average and / or daily average	Continuous measurement	BS EN 14181
A1 [Stack shown on plan in Schedule 7]	Dioxins / furans (I-TEQ)	Cyclone furnace exhaust gases	0.1 ng/m ³	Periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
A2 [Gas engine shown on plan in Schedule 7]	As specified in the OTNOC management plan as approved after completion of pre-operational condition PO1	Gas engine exhaust gases	No limit set	As specified in the OTNOC management plan as approved after completion of pre-operational condition PO1		
A2 [Gas engine shown on plan in Schedule 7]	Particulate matter	Gas engine exhaust gases	30 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Particulate matter	Gas engine exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Gas engine exhaust gases	20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181

Table S3.1(b) Point source emissions to air during OTNOC – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A2 [Gas engine shown on plan in Schedule 7]	Total Organic Carbon (TOC)	Gas engine exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Hydrogen chloride	Gas engine exhaust gases	60 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Hydrogen chloride	Gas engine exhaust gases	10 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Hydrogen fluoride	Gas engine exhaust gases	2 mg/m ³	Periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
A2 [Gas engine shown on plan in Schedule 7]	Carbon monoxide	Gas engine exhaust gases	100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Carbon monoxide	Gas engine exhaust gases	50 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Sulphur dioxide	Gas engine exhaust gases	200 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Sulphur dioxide	Gas engine exhaust gases	50 mg/m ³	Daily average	Continuous measurement	BS EN 14181

Table S3.1(b) Point source emissions to air during OTNOC – emission limits and monitoring requirements						
Emission point ref. & location <small>Note 1</small>	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A2 [Gas engine shown on plan in Schedule 7]	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	Gas engine exhaust gases	400 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	Gas engine exhaust gases	200 mg/m ³	Daily average	Continuous measurement	BS EN 14181
A2 [Gas engine shown on plan in Schedule 7]	Cadmium & thallium and their compounds (total)	Gas engine exhaust gases	0.05 mg/m ³	Periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A2 [Gas engine shown on plan in Schedule 7]	Mercury and its compounds	Gas engine exhaust gases	0.05 mg/m ³	Periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 13211
A2 [Gas engine shown on plan in Schedule 7]	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	Gas engine exhaust gases	0.5 mg/m ³	Periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A2 [Gas engine shown on plan in Schedule 7]	Dioxins / furans (I-TEQ)	Gas engine exhaust gases	0.1 ng/m ³	Periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3

Note 1 – Emission point A2 shown marked 'Jichai Generator engine' on plan in Schedule 7

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site–emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period	Monitoring frequency	Monitoring standard or method
S1	Site surface drainage via interceptor	No parameter set	No limit set	-	-	-

Table S3.3 Process monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
As agreed in writing with the Agency.	Wind Speed and Direction	Continuous	Anemometer	-
Location close to the Combustion Chamber inner wall	Cyclone Furnace Temperature (°C)	Continuous	Traceable to national standards	As agreed in writing with the Agency.
Location as approved in accordance with PO8	Process parameter monitoring points	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 [Stack shown on plan in Schedule 7]	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A2 [Gas engine shown on plan in Schedule 7]	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 [Stack shown on plan in Schedule 7]	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A2 [Gas engine shown on plan in Schedule 7]	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 [Stack shown on plan in Schedule 7]	Exhaust gas flow	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A2 [Gas engine shown on plan in Schedule 7]	Exhaust gas flow	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 [Stack shown on plan in Schedule 7]	Exhaust gas oxygen content	Continuous	BS EN 15267-3 BS EN 14181	-
A2 [Gas engine shown on plan in Schedule 7]	Exhaust gas oxygen content	Continuous	BS EN 15267-3 BS EN 14181	-
A1 [Stack shown on plan in Schedule 7]	Exhaust gas water vapour content	Continuous	BS EN 15267-3 BS EN 14181	Unless gas is dried before analysis of emissions.

Table S3.3 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
A2 [Gas engine shown on plan in Schedule 7]	Exhaust gas water vapour content	Continuous	BS EN 15267-3 BS EN 14181	Unless gas is dried before analysis of emissions.

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
Cyclone furnace Ash	TOC	<3%	Monthly in the first year of operation. Then Quarterly	BS EN 14899 and either BS EN 13137 or BS EN 15936	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'
Cyclone furnace Ash	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.		Monthly in the first year of operation. Then Quarterly	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	
Cyclone furnace Ash	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions		Before use of a new disposal or recycling route	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	
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.		Monthly in the first year of operation. Then Quarterly	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	
APC Residues	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions		Before use of a new disposal or recycling route	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	

* Or other equivalent standard as agreed in writing with the Environment Agency.

Schedule 4 – Reporting

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

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1. Reporting of the daily average parameters in table S3.1(b) is only required if a period of OTNOC has occurred during that day	A1, A2	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
Emissions to air Parameters as required by condition 3.5.1.	A3	Annually	1 Jan
TOC Parameters as required by condition 3.5.1	Cyclone furnace 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	Cyclone furnace 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	Cyclone furnace 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	

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
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	KWh
Thermal energy produced e.g. steam for export	KWh
Electrical energy exported	KWh
Electrical energy used on installation	KWh
Waste heat utilised by the installation	KWh

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Units
Annual Report as required by condition 4.2.2	Annually	-
Electrical energy exported, imported and used at the installation	Annually	KWh / tonne of waste incinerated
Fuel oil consumption	Annually	Kg / tonne of waste incinerated
Emergency flare operation	Annually	Hours

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Annual report required by condition 4.2.2	Annual performance report template	16/03/2020
Air	Forms air 1-9 or other forms as agreed in writing by the Environment Agency	16/03/2020
Water and raw material usage	Form WU/RM1 1 or other form as agreed in writing by the Environment Agency	16/03/2020
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	16/03/2020
Waste disposal/recovery	Form R1 or other form as agreed in writing by the Environment Agency	16/03/2020
Residue quality	Form residue 1 or other form as agreed in writing by the Environment Agency	16/03/2020
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	16/03/2020

Schedule 5 – Notification

These pages outline the information that the operator must provide.

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

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

Part A

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

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

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

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
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 for the pollutant(s) affected.

“accident” means an accident that may result in pollution.

“APC residues” means air pollution control residues

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

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

“BAT conclusions” means Best Available Techniques (BAT) Conclusions published by the European Commission.

“cyclone furnace ash” means ash collected from the cyclone from the emissions from the cyclone furnace;

“CEM” Continuous emission monitor

“CEN” means Comité Européen de Normalisation

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

“Commissioning” means testing of the new incineration plant that involves any operation of the furnace.

“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 2016 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.

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

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

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

“Industrial Emissions Directive” 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.

‘List of Wastes’ means the list of wastes established by Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, as amended from time to time

“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.

“OTNOC” means operation other than normal operating conditions, excluding start-up and shut-down and periods of abnormal operation, as defined in the OTNOC management plan approved through pre-operational condition PO1 or otherwise as agreed in writing with the Environment Agency.

“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, Dibenz[ah]anthracene, Dibenz[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.

“Pests” means Birds, Vermin and Insects.

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

“start up” of the cyclone furnace is any period, where the plant has been non-operational, after igniting the auxiliary burner until waste has been fed to the plant to initiate steady-state conditions as described in the application or agreed in writing with the Environment Agency.

“shut down” of the cyclone furnace is any period where the plant is being returned to a non-operational state and there is no waste being burned as described in the application or agreed in writing with the Environment Agency.

“start-up” of the gas engine as defined in accordance with PO8 in Table S1.4 of this permit

“shut down” of the gas engine as defined in accordance with PO8 in Table S1.4 of this permit

“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 the cyclone furnace 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 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

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 other than from gas engines, 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;
- (b) in relation to gases from the cyclone furnace, 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;
- (c) in relation to emissions from gas engines, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 15% dry for liquid and gaseous fuels; and
- (d) 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.

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

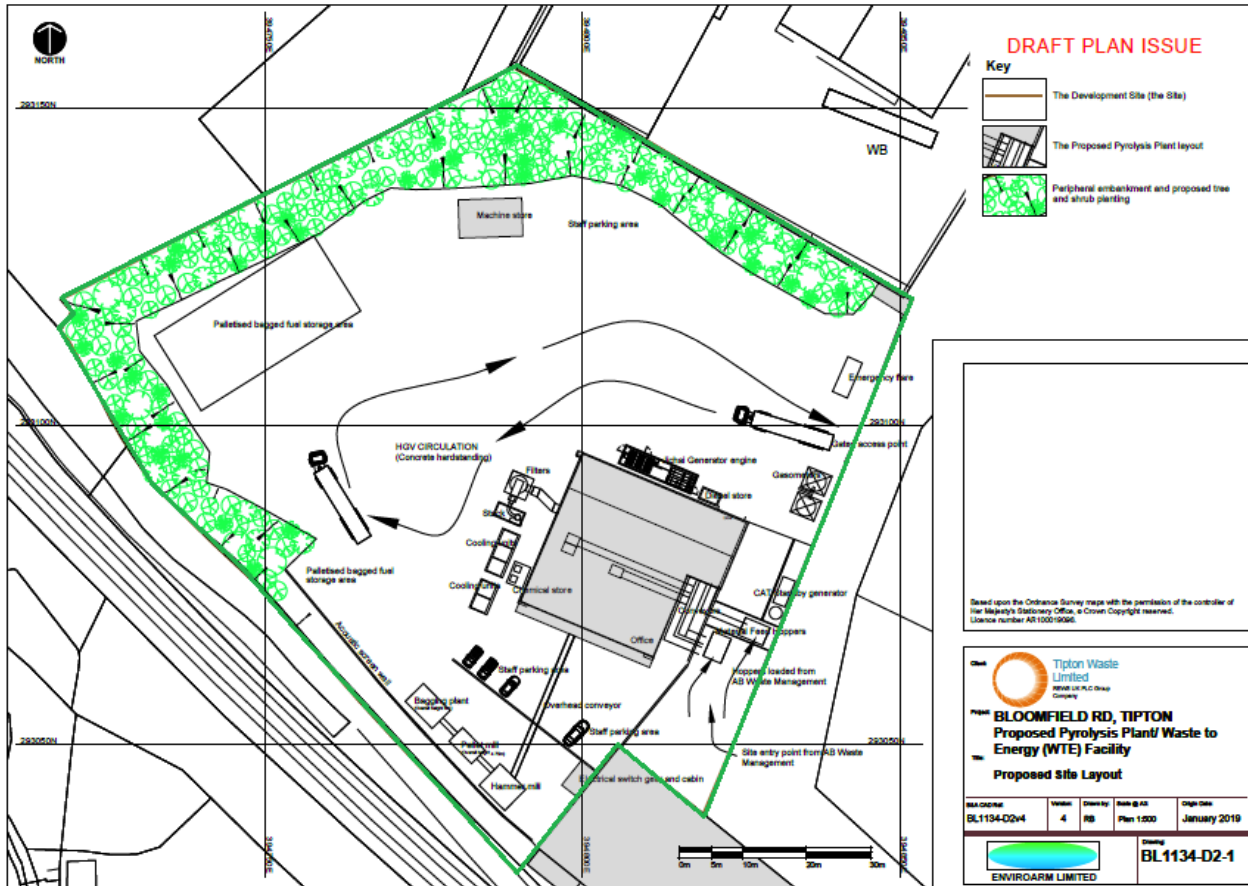
assumed to be at the detection limit as a maximum. However the minimum value should be used when assessing compliance with the emission limit value in table S3.1.

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

TEF schemes for dioxin-like PCBs			
Congener	WHO-TEF		
	2005	1997/8	
	Humans / mammals	Fish	Birds
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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END OF PERMIT