

Notice of variation, partial surrender and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Bulwell Energy Limited

Bulwell Energy Recovery Facility
Former Allotments
Blenheim Lane
Bulwell
Nottingham
NG6 8UR

Variation application number

EPR/LP3239NX/V003

Surrender application number

EPR/LP3239NX/S004

Permit number

EPR/LP3239NX

Bulwell Energy Recovery Facility

Permit number EPR/LP3239NX

Introductory note

This introductory note does not form a part of the notice

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made.

The following notice also gives notice of the surrender in part of an environmental permit. As a result of the changes made under the part surrender the site plan in Schedule 7 has been updated to remove the areas of land surrendered from the site.

All the conditions of the permit have been varied and are subject to the right of appeal.

The changes permitted by this variation are summarised below:

The original permit authorised the facility to use natural gas as the plant's auxiliary fuel for use in achieving and maintaining the required operating temperature of the heating and combustion chambers of the gasification plant. This permit variation is to include the use of recovered fuel oil (RFO) as a replacement auxiliary fuel to natural gas. A reduced quantity of natural gas will still be used as an auxiliary fuel on-site.

The facility will burn up to 18,800 tonnes of RFO per annum. RFO is classified as a hazardous waste and the variation includes the addition of a Section 5.1A(1)(a) activity to the permit for the incineration of hazardous waste (RFO), along with the relevant hazardous waste incineration permit conditions (2.3.7, 2.3.8 and 2.3.9).

The RFO will be stored at the facility in two 200,000 litre steel tanks. The oil storage tanks will be located on an impermeable concrete surface and within a reinforced concrete bund designed to contain 110% of the total tank capacity.

The original permitted facility was permitted to generate electricity through the use of gas engines and a steam turbine. Following this variation, gas engines will no longer be used at the facility, with the varied facility generating electricity through the use of a high efficiency steam turbine alone.

The permit variation also increases the height of the stack serving the gasification plant from 50 to 70 metres.

Summary of facility:

This permit controls the operation of a waste incineration plant. The relevant listed activities are Section 5.1 A(1)(a) The incineration of hazardous waste in a waste incineration plant with a capacity exceeding 10 tonnes per day (included for the burning of RFO) and Section 5.1A(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 Installation processes Commercial and Industrial Wastes (C&I) and Municipal Solid Wastes (MSW) and recovers energy, which is used to generate electricity for export to the National Grid and also to supply power to the site itself. The facility uses a gasification technology to process non-hazardous waste with a calorific value of around 13.5 MJ/kg (the RFO will have a calorific value of at least 40 MJ/kg). The non-hazardous waste processed by the plant is sourced from a variety of waste operators. Up to 160,000 tonnes per year of non-hazardous waste, which otherwise would be expected to go to landfill, is processed, generating 29 MWe of electricity. It is estimated that 4,640 tonnes of ferrous and non-ferrous metals will be recovered post processing each year.

The gasification plant consists of two RODECS gasifiers and produces a syngas from the waste processed (up to 80,000 tonnes per plant). The syngas from each gasifier plant is combusted in its own combustion chamber, from which the exhaust gases pass to one of two heat recovery boilers to generate steam, with energy being recovered from the steam and electricity generated via a steam turbine common to both RODECS lines. The flue gases from each boiler pass through their own air pollution control system prior to discharge via their own flue, located within a dual-flue stack.

The un-processed waste material is stored in bays inside a waste reception hall. This material is then fed using front loaders and mobile crane grab into the gasifier charge bins via a loading conveyor. The wastes are treated at controlled temperatures, under a low oxygen atmosphere which enables their organic content to be degraded and transformed into gaseous components known as synthetic gas or 'syngas'. A solid residue is also produced, which remains in the processing bin.

RFO will only be used to fuel the heating and combustion chambers when the operating temperature of the combustion chamber is greater than 850°C. Natural gas will be used to heat the plant (heating chamber and combustion chambers) when the temperature of the combustion chamber is below 850°C. During start-up, the combustion chamber will be heated to above 850°C using natural gas only. Similarly, during shut-down only natural gas burners will be used to ensure that RFO is not burnt when the temperature of the combustion chamber is below 850°C. The temperature within the combustion chamber of the plant will be monitored continuously and use of RFO will stop immediately if the temperature within the chamber falls below 850°C.

The syngas produced and combusted in the gasification plant will be used to generate steam in a combined cycle waste heat recovery boiler to drive a steam turbine. The turbine will be used to generate 29 MW of electricity, of which 6 MW will be utilised to meet the site's electrical demand, with the remaining 23 MW being exported to the local electricity grid.

Emissions to air from the gasification process are via a 70 m high dual-flue stack. This stack is fitted with continuous emission monitors (CEMs) to monitor emissions of particulates, nitrogen oxides, sulphur dioxide, volatile organic compounds, ammonia, carbon monoxide, hydrogen chloride, total organic carbon and oxygen. Secondary NOx control is provided by the employment of selective non-catalytic reduction (SNCR). Acid gases (HCl & HF produced from the gasification of the waste) along with particulate matter will be removed from the syngas using adsorption additives at the syngas ceramic filter. SO₂ produced from the gasification of the waste is removed from the flue gas similarly at the flue gas bag filter located prior to the exhaust stack.

Water emissions from the process are predominantly intermittent boiler blowdown which are discharged to foul sewer. Treated water from the waste water treatment plant will be either reused in the process or discharged to a trade effluent sewer. Emissions of clean surface water are discharged to a site retention/infiltration pond, which has an overflow to sewer.

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

The schedules specify the changes made to the permit.

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

Status log of the permit		
Description	Date	Comments
Application EPR/LP3239NX/A001	Duly made 14/10/2014	Application for 30 MW electrical output Energy Recovery Facility.
Additional information received	01/12/2014	

Status log of the permit		
Description	Date	Comments
Permit determined EPR/LP3239NX	20/04/2015	Permit issued to Bulwell Energy Limited.
Application EPR/LP3239NX/V002	Received 03/11/2015	
Application EPR/LP3239NX/V002	Withdrawn 09/12/2015	Application withdrawn by applicant.
Application EPR/LP3239NX/V003	Duly made 08/02/2018	Substantial variation application.
Application EPR/LP3239NX/S004	Duly made 26/03/2018	Partial surrender application.
Additional information requested by Schedule 5 Notice, dated 05/04/2018	Received 27/04/2018	Further information regarding air quality assessment, RFO storage and use, fire prevention.
Additional information requested by Request for Further Information (email) dated 03/05/2018	Received 16/05/2018 01/06/2018	Further information regarding RFO storage, energy use and air quality assessment.
Additional information requested by Request for Further Information (email) dated 04/05/2018	Received 10/05/2018	Air quality impact assessment for additional pollutants, including PCBs.
Additional information requested by Request for Further Information (email) dated 31/05/2018	Received 01/06/2018	Revised air quality impact assessment for habitat sites.
Additional information requested by Schedule 5 Notice, dated 11/06/2018	Received 06/07/2018	Included confirmation of use of RFO in gasification plant.
Additional information requested by Schedule 5 Notice, dated 02/08/2018	Received 22/08/2018	Included updated Fire Prevention Plan.
Additional information requested in support of Schedule 5 Notice (email), dated 24/08/2018	Received 24/08/2018	Confirmation of containment measures for RFO storage tanks and tanker offloading area, and site supervision measures.
Variation and partial surrender with consolidation determined EPR/LP3239NX/V003 EPR/LP3239NX/S004 Billing Reference: TP3430JD	12/10/2018	

End of introductory note

Notice of variation, partial surrender and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 and regulation 25 of the Environmental Permitting (England and Wales) Regulations 2016 varies and accepts the surrender in part of

Permit number

EPR/LP3239NX

Issued to

Bulwell Energy Limited (“the operator”)

whose registered office is

No.1 Nottingham Science Park

Jesse Boot Avenue

Nottingham

NG7 2RU

company registration number 09157307

to operate a regulated facility at

Bulwell Energy Recovery Facility

Former Allotments

Blenheim Lane

Bulwell

Nottingham

NG6 8UR

to the extent set out in the schedules.

The notice shall take effect from 12/10/2018

Name	Date
Claire Roberts	12/10/2018

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be varied

All conditions have been varied by the consolidated permit as a result of the applications made by the operator.

Schedule 2 – amended plan

The area of the site reduced to that shown in the site plan of the consolidated permit.

Schedule 3 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/LP3239NX

This is the consolidated permit referred to in the variation, partial surrender and consolidation notice for applications EPR/LP3239NX/V003 and EPR/LP3239NX/S004 authorising,

Bulwell Energy Limited (“the operator”),

whose registered office is

**No.1 Nottingham Science Park
Jesse Boot Avenue
Nottingham
NG7 2RU**

company registration number 09157307

to operate an installation at

**Bulwell Energy Recovery Facility
Former Allotments
Blenheim Lane
Bulwell
Nottingham
NG6 8UR**

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

Name	Date
Claire Roberts	12/10/2018

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 review the practicability of Combined Heat and Power (CHP) implementation at least every 2 years. The results shall be reported to the Agency within 2 months of each review.

1.3 Efficient use of raw materials

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

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

- 1.4.1 The operator shall take appropriate measures to ensure that:
- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

- (c) where 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.
- 2.1.3 Hazardous waste shall not be mixed, either with a different category of hazardous waste or with other waste, substances or materials, unless it is authorised by schedule 1 table S1.1 and appropriate measures are taken.

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, S2.3; and
 - (b) it conforms to the description in the documentation supplied by the producer or holder; and
 - (c) it having been separately collected for recycling, it is subsequently unsuitable for recovery by recycling.
- 2.3.5 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 The operator shall burn only those hazardous wastes where the throughputs, calorific values and pollutant compositions are within the ranges specified in table S2.4 of schedule 2.
- 2.3.8 The operator shall ensure that prior to accepting waste subject to condition 2.3.7 at the site, it has obtained sufficient information about the hazardous wastes to be burned to demonstrate compliance with the characteristics described in condition 2.3.7.
- 2.3.9 The operator shall take representative samples of all hazardous waste deliveries to the site unless otherwise agreed in writing with the Environment Agency and test a representative selection of these samples to verify conformity with the information obtained as required by condition 2.3.8. These samples shall be retained for inspection by the Environment Agency for a period of at least 1 month after the material is incinerated and results of any analysis made of such samples will be retained for at least 2 years after the material is incinerated.
- 2.3.10 Waste shall not be charged, or shall cease to be charged, if:
- (a) the combustion chamber of the combined cycle waste heat recovery boiler temperature is below, or falls below, 850°C; or
 - (b) any continuous emission limit value in schedule 3 table S3.1 is exceeded; or
 - (c) any continuous emission limit value in schedule 3 table S3.1 is exceeded, other than under abnormal operating conditions; or
 - (d) monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 are unavailable other than under abnormal operating conditions.
 - (e) there is a stoppage, disturbance or failure of the activated carbon abatement system, other than under abnormal operating conditions.
- 2.3.11 The operator shall have at least one auxiliary burner in each line at start up or shut down or whenever the operating temperature falls below that specified in condition 2.3.10, as long as incompletely burned waste is present in the combustion chamber. Unless the temperature specified in condition 2.3.10 is maintained in the combustion chamber, such burner(s) may be fed only with fuels which result in emissions no higher than those arising from the use of gas oil, liquefied gas or natural gas.
- 2.3.12 The operator shall record the beginning and end of each period of “abnormal operation”.
- 2.3.13 During a period of “abnormal operation”, the operator shall restore normal operation of the failed equipment or replace the failed equipment as rapidly as possible.
- 2.3.14 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 detailed in the application or as agreed in writing with the Environment Agency, are unavailable.

- 2.3.15 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 shutdown 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.
- 2.3.16 Bottom ash / char and APC residues shall not be mixed.

2.4 Improvement programme

- 2.4.2 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.
- 2.4.3 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 and except in “abnormal operation”, when there shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1(a), S3.2 and S3.3.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Wastes produced at the site shall, as a minimum, be sampled and analysed in accordance with schedule 3 table S3.5. Additional samples shall be taken and tested and appropriate action taken, whenever:
- (a) disposal or recovery routes change; or
 - (b) it is suspected that the nature or composition of the waste has changed such that the route currently selected may no longer be appropriate.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan 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.
- 3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.
- 3.2.4 The Operator shall carry out monitoring of groundwater in accordance with IED articles 14(1)(b), 14(1)(e) and 16(2) to the protocol agreed in writing with the Environment Agency under PO7.

3.3 Odour

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

3.4 Noise and vibration

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

3.5 Monitoring

- 3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:
- (a) point source emissions specified in tables S3.1, S3.1(a), S3.2, S3.3;
 - (b) process monitoring specified in table S3.4;
 - (c) residue quality in table S3.5.
- 3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Environment Agency. Newly installed CEMs, or CEMs replacing existing CEMs, shall have MCERTS certification and have an MCERTS certified range which is not greater than 1.5 times the daily emission limit value (ELV) specified in schedule 3 table S3.1. The CEM shall also be able to measure instantaneous values over the ranges which are to be expected during all operating conditions. If it is necessary to use more than one range setting of the CEM to achieve this requirement, the CEM shall be verified for monitoring supplementary, higher ranges.
- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2 and S3.3 unless otherwise agreed in writing by the Environment Agency.
- 3.5.5 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3 table S3.1; the Continuous Emission Monitors shall be used such that:
- (a) the values of the 95% confidence intervals of a single measured result at the daily emission limit value shall not exceed the following percentages 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%

- (b) valid half-hourly average values shall be determined within the effective operating time (excluding the start-up and shut-down periods) from the measured values after having subtracted the value of the confidence intervals in condition 3.5.5 (a);
- (c) where it is necessary to calibrate or maintain the monitor and this means that data are not available for a complete half-hour period, the half-hourly average shall in any case be considered valid if measurements are available for a minimum of 20 minutes during the half-hour. The number of half-hourly so validated shall not exceed five per day;
- (d) daily average values shall be determined as the average of all the valid half-hourly average values within a calendar day. The daily average value shall be considered valid if no more than five half-hourly average in any day have been determined not to be valid;
- (e) no more than ten daily average values per year shall be determined not to be valid.

3.6 Pests

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

3.6.2 The operator shall:

- (a) if notified by 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.

3.7 Fire prevention

3.7.1 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. The report(s) shall include as a minimum:
- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
 - (b) the annual production / treatment data set out in schedule 4 table S4.2; and
 - (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
 - (d) the functioning and monitoring of the incineration plant in a format agreed with the Environment Agency. The report shall, as a minimum requirement (as required by 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.
- 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 A(1) (b)	The incineration of non-hazardous waste in a waste incineration plant with a capacity exceeding 3 tonnes per hour.	From receipt of waste to emission of exhaust gas and disposal of waste arising. Waste types and quantities as specified in Table S2.2 of this permit. The incineration plant consists of two RODECS gasifiers (two incineration lines), each served by a heat recovery boiler and air pollution control system. Emissions to air from each gasifier are emitted via a dedicated flue within a dual-flue stack. Incineration capacity of 10.67 tonnes per hour, per RODECS gasifier.
AR2	S5.1 A(1) (a)	Incineration of hazardous waste in a waste incineration plant with a capacity exceeding 10 tonnes per day.	From receipt of recovered fuel oil (RFO) to emission of exhaust gas and disposal of waste arising. Waste types and quantities as specified in Table S2.3 of this permit. The incineration of hazardous waste is limited to the burning of RFO in the support fuel burners of the RODECS gasifiers permitted to incinerate non-hazardous waste under activity AR1. Incineration capacity of 26 tonnes per day, per RODECS gasifier.
Directly Associated Activities			
AR3	Electricity Generation	Generation of 29 MWe electrical power using heat recovery boiler and steam turbine.	Each of the two RODECS gasification plant is served by its own heat recovery boiler. The two heat recovery boilers are served by a common, high efficiency steam turbine.
AR4	Back up electrical generator	For providing emergency electrical power to the plant in the event of supply interruption.	
AR5	Storage of recovered fuel oil	On-site delivery, handling and storage of recovered fuel oil.	From receipt of waste oil on-site to its storage and transfer of the waste oil to the waste gasification plant. Storage of oil in two bunded tanks with combined storage capacity of 400 m ³ (2 x 200 m ³ tanks). Recovered fuel oil to be offloaded in dedicated area provided with impervious surface and self-contained drainage.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Variation Application EPR/LP3239NX/V003 Duly Made 08/02/2018	Emissions and volumetric flow rates in Tables 4.1 and 4.2 of report Air Quality Assessment of Emissions to Atmosphere from Proposed Waste to Energy Facility at Bulwell (Appendix J of application).	12/09/2017
Variation Application EPR/LP3239NX/V003 Duly Made 08/02/2018	Supporting Statement (Updated January 2018) Section 2 Non-Technical Summary, Section 5 Detailed process description and operating techniques (excluding Table 1), Section 8 Monitoring and Section 9 Resource Efficiency.	17/01/2018
Response to additional information request (email) dated 04/05/2018	Emissions rates for additional pollutants provided in Table 2.2 of report Environment Agency Schedule 5 Notice: Air Quality Proposed Waste to Energy Facility at Bulwell (Issue date 31/05/2018).	01/06/2018
Response to Schedule 5 Notice dated 11/06/2018	Confirmation of RFO Use (response to item 1 of Schedule 5 Notice).	06/07/2018
Response to Schedule 5 Notice dated 02/08/2018	Fire Prevention Plan (Version 8).	22/08/2018
Additional information requested in support of Schedule 5 Notice, dated 02/08/2018	Confirmation of containment measures for RFO storage tanks and tanker offloading area, and site supervision measures.	24/08/2018

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC1	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be certified.	Within 12 months of the date on which waste is first processed.
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 the exhaust stack, identifying the fractions within the PM ₁₀ , and PM _{2.5} ranges. The proposal shall include a timetable for approval by the Environment Agency to carry out such tests and produce a report on the results. On receipt of written agreement by the Environment Agency to the proposal and the timetable, the Operator shall carry out the tests and submit to the Environment Agency a report on the results.	Within 6 months of the completion of commissioning.
IC3	The Operator shall submit a written report to the Environment Agency on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this	Within 4 months of the completion of commissioning.

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions.	
IC4	The Operator shall carry out checks to verify the residence time, minimum temperature and oxygen content of the exhaust gases in the furnace whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted in writing to the Environment Agency.	Within 4 months of the completion of commissioning.
IC5	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 lime injection system for minimisation of acid gas emissions • The carbon injection system for minimisation of dioxin and heavy metal emissions. 	Within 4 months of the completion of commissioning.
IC6	The Operator shall carry out an assessment of the impact of emissions to air of all the following component metals subject to emission limit values: Cd, 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 EQS/EAL. In the event that the assessment shows that an EQS/EAL can be exceeded, the report shall include proposals for further investigative work.	15 months from commencement of operations
IC7	The Operator shall submit a written summary report to the Agency to confirm by the results of calibration and verification testing that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 and Table S3.1(a) complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3.	Initial calibration report to be submitted to the Agency within 3 months of completion of commissioning. Full summary evidence compliance report to be submitted within 18 months of commissioning.

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO1	Prior to the commencement of commissioning, the Operator shall send a summary of the site Accident Management Plan to the Environment Agency and make available for inspection all documents and procedures which form part of the plan.
PO2	<p>Prior to the commencement of commissioning, the Operator shall submit a written report to the Agency detailing the waste acceptance procedure to be used at the site for non-hazardous waste and hazardous waste (i.e. RFO). The waste acceptance procedure shall include the process and systems by which wastes unsuitable for incineration at the site will be controlled.</p> <p>The procedure shall be implemented in accordance with the written approval from the Agency.</p>
PO3	<p>Prior to the commencement of commissioning, the Operator shall send a summary of the site Environment Management System (EMS) to the Environment Agency and make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with the requirements set out in Environment Agency web guidance – <i>How to develop a management system: environmental permits</i>. 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> <p>The Environment Management System shall include an energy efficiency plan, which shall be developed and reviewed on an ongoing basis in accordance with Environment Agency web guidance ‘<i>Energy efficiency standards for industrial plants to get environmental permits</i>’ and Sector Guidance Note The Incineration of Waste (EPR 5.01), to provide the basis for an ongoing energy efficiency improvement programme.</p>
PO4	Prior to the commencement of commissioning, the Operator shall send a report to the Environment Agency which will contain a comprehensive review of the options available for utilising the heat generated by the waste incineration process in order to ensure that it is recovered as far as practicable. The review shall detail any identified proposals for improving the recovery and utilisation of waste heat and shall provide a timetable for their implementation.
PO5	After completion of furnace design and at least three calendar months before commencement of commissioning; the operator shall submit a written report to the Agency of the details of the computational fluid dynamic (CFD) modelling. The report shall demonstrate whether the design combustion conditions comply with the residence time and temperature requirements as defined by Chapter IV and Annex VI of the IED.
PO6	Prior to the commencement of commissioning, the Operator shall provide 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.
PO7	Prior to the commencement of commissioning, the Operator shall submit a report on the baseline conditions of soil and groundwater at the installation. The report shall contain the information necessary to determine the state of soil and groundwater

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
	contamination so as to make a quantified comparison with the state upon definitive cessation of activities provided for in Article 22(3) of the IED. The report shall contain information, supplementary to that already provided in the application Site Condition Report, needed to meet the information requirements of Article 22(2) of the IED.
PO8	<p>The Operator shall submit the written protocol referenced in condition 3.2.4 for the monitoring of soil and groundwater for approval by the Environment Agency. The protocol shall demonstrate how the Operator will meet the requirements of Articles 14(1)(b), 14(1)(e) and 16(2) of the IED.</p> <p>The procedure shall be implemented in accordance with the written approval from the Agency.</p>
PO9	Prior to the commencement of commissioning, the Operator shall submit to the Environment Agency for approval a procedure for the sampling and testing of the gasification plant bottom ash/char for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the procedure as approved.
PO10	<p>At least three months before the commencement of commissioning, the Operator shall submit a written report to the Environment Agency specifying arrangements for continuous and periodic monitoring of emissions to air to comply with Environment Agency guidance notes M1 and M2. The report shall include the following:</p> <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
PO11	<p>The Operator shall provide the Environment Agency with a written report for approval providing details of the impermeable hardstanding and containment measures (including but not limited to tanks, pipework, bunds, above and below ground drainage systems) in place to prevent and control fugitive emissions to land and water from the activity (or activities).</p> <p>The report shall demonstrate that the areas of hardstanding and containment measures have been constructed and installed to meet relevant standards, including the relevant requirements of CIRIA C736 Containment systems for the prevention of pollution and Section 2.2.5 of S5.06 Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste, and that this has been confirmed by a suitably qualified engineer.</p> <p>The RFO storage tanks shall be provided with independent reinforced concrete bunds that meet the requirements of Class 2 containment, as set out in CIRIA C736.</p> <p>The RFO tanker offloading area shall be provided with self-contained drainage.</p>
PO12	<p>Waste shall not be accepted for storage in the waste reception hall until:</p> <ul style="list-style-type: none"> • the Operator has provided evidence to the Environment Agency to show that the design, installation and maintenance of the building's fire detection and suppression systems will be covered by an appropriate UKAS accredited third party certification scheme;

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
	<ul style="list-style-type: none"> • a commissioning plan is submitted to the Environment Agency that includes, but not limited to, the design layout, performance and operating procedure of the systems; • the fire detection and suppression systems are installed and commissioned in accordance with the commissioning plan; and • the Environment Agency has agreed in writing that the storage of waste in the waste reception hall may commence.
PO13	<p>The Operator shall submit a written report to the Environment Agency for approval detailing a proposed monitoring programme and procedures for the monitoring of emissions of site surface water (referred to as emission W1 in Table S3.2 of this permit), including sampling method(s), location and frequency (for obtaining representative samples), monitoring parameters and method(s) of analysis. Emissions of site surface water shall be monitored in accordance with the approved monitoring programme and procedures.</p>

Schedule 2 – Waste types, raw materials and fuels

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

Table S2.2 Permitted waste types and quantities for gasification plant (AR1)	
Maximum quantity	160,000 tonnes / year
15	Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified
15 01	packaging (including separately collected municipal packaging waste)
15 01 01	paper and cardboard packaging
15 01 02	plastic packaging
15 01 03	wooden packaging
15 01 04	metallic packaging
15 01 05	composite packaging
15 01 06	mixed packaging
15 01 09	textile packaging
15 02	absorbents, filter materials, wiping cloths and protective clothing
15 02 03	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02
19	Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use
19 02	wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)
19 02 03	premixed wastes composed only of non-hazardous wastes
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 03	stabilised/solidified wastes
19 03 05	stabilised wastes other than those mentioned in 19 03 04
19 03 07	solidified wastes other than those mentioned in 19 03 06
19 05	wastes from aerobic treatment of solid wastes
19 05 01	non-composted fraction of municipal and similar wastes
19 05 02	non-composted fraction of animal and vegetable waste
19 05 03	off-specification compost
19 06	wastes from anaerobic treatment of waste
19 06 04	digestate from anaerobic treatment of municipal waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste
19 08	wastes from waste water treatment plants not otherwise specified
19 08 01	screenings

Table S2.2 Permitted waste types and quantities for gasification plant (AR1)	
Maximum quantity	160,000 tonnes / year
19 10	wastes from shredding of metal-containing wastes
19 10 04	fluff-light fraction and dust other than those mentioned in 19 10 03
19 10 06	other fractions other than those mentioned in 19 10 05
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 01	paper and cardboard
19 12 04	plastic and rubber
19 12 07	wood other than that mentioned in 19 12 06
19 12 08	textiles
19 12 10	combustible waste (refuse derived fuel)
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions
20 01	separately collected fractions (except 15 01)
20 01 01	paper and cardboard
20 01 08	biodegradable kitchen and canteen waste
20 01 10	clothes
20 01 11	textiles
20 01 38	wood other than that mentioned in 20 01 37
20 01 39	plastics
20 02	garden and park wastes (including cemetery waste)
20 02 01	biodegradable waste
20 03	other municipal wastes
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 07	bulky waste

Table S2.3 Permitted waste types and quantities for gasification plant (AR2)	
Maximum quantity	18,800 tonnes / year
Waste code	Description
13	Oil wastes and wastes of liquid fuels (except edible oils, and those in chapters 05, 12 and 19)
13 02	waste engine, gear and lubricating oils
13 02 05*	mineral-based non-chlorinated engine, gear and lubricating oils (recovered fuel oil)

Table S2.4 Hazardous waste (RFO) specification	
Substance	% by weight of the waste (dry basis)
Carbon	<84%
Hydrogen	<16%
Nitrogen	<1%
Sulphur	<1%
Oxygen	<3%
Balance	<1%
Chlorine	<0.3%
PCB	<10 ppm
Fluorine	<80 ppm
Lead	<275 ppm
Nickel	<50 ppm
Cadmium	<15 ppm
Copper	<150 ppm (total)
Chromium	
Vanadium	
Minimum CV (gross)	42 MJ/kg
Minimum CV (net)	40 MJ/kg
Maximum CV (gross)	45.52 MJ/kg
Maximum CV (net)	42.64 MJ/kg
Minimum design feed rate	1,781 kg/hr
Maximum design feed rate	2,507 kg/hr

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission points ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 and A2, as shown on Schedule 7 site plan	Particulate matter	RODECS waste gasifier units (two in number)	30 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
	Particulate matter		10 mg/m ³	daily average	Continuous measurement	BS EN 14181
	Total Organic Carbon (TOC)		20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
	Total Organic Carbon (TOC)		10 mg/m ³	daily average	Continuous measurement	BS EN 14181
	Hydrogen chloride		60 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
	Hydrogen chloride		10 mg/m ³	daily average	Continuous measurement	BS EN 14181
	Hydrogen fluoride		2 mg/m ³	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
	Carbon monoxide		100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
	Carbon monoxide		50 mg/m ³	daily average	Continuous measurement	BS EN 14181
	Sulphur dioxide		160 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
	Sulphur dioxide		40 mg/m ³	daily average	Continuous measurement	BS EN 14181
	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)		180 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 points ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)		90 mg/m ³	daily average	Continuous measurement	BS EN 14181
	Cadmium & thallium and their compounds (total)		0.05 mg/m ³	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
	Mercury and its compounds		0.05 mg/m ³	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 13211
	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)		0.5 mg/m ³	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
	Water vapour content		-	continuous	-	BS EN 14181
	Ammonia (NH ₃)		-	½-hr average and / or daily average	Continuous measurement	BS EN 14181
	Nitrous oxide (N ₂ O)		-	½-hr average and / or daily average	Continuous measurement	BS EN 14181
	Dioxins / furans (I-TEQ)		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
	Dioxins / furans (WHO-TEQ Humans / Mammals)		-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
	Dioxins / furans (WHO-TEQ Fish)		-	periodic over minimum 6 hours,	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission points ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
				maximum 8 hour period		
	Dioxins / furans (WHO-TEQ Birds)		-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)		-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
	Dioxin-like PCBs (WHO-TEQ Fish)		-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
	Dioxin-like PCBs (WHO-TEQ Birds)		-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
	Specific individual polycyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.		-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS ISO 11338 Parts 1 and 2.

Table S3.1(a) Point source emissions to air during abnormal operation of incineration plant – emission limits and monitoring requirements						
Emission point ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 & A2 as shown on Schedule 7 site plan	Particulate matter	RODECS waste gasifier units (two in number)	30 mg/m ³	½-hr average	Continuous measurement	BS EN 14181 during abatement plant failure
	Total Organic Carbon (TOC)		20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181 during abatement plant failure
	Carbon monoxide		100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181 during abatement plant failure

Table S3.2 Point source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period	Monitoring frequency	Monitoring standard or method
W1 surface water retention pond, as shown on Schedule 7 site plan	Site surface water	Note 1	Limited to clean uncontaminated surface water	Note 1	Note 1	Note 1

Note 1 – As agreed through pre-operational condition PO13.

Table S3.3 Point Source emissions to sewer, emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
S1 to foul sewer, as shown on Schedule 7 site plan	Boiler blowdown	pH	6 - 9	Instantaneous	Continuous	BS6068-2.50
S2 overflow of retention pond to foul sewer, as shown on Schedule 7 site plan	Site surface water	-	-	-	-	-

Table S3.4 Process monitoring requirements

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Location close to the Boiler Combustion Chamber inner wall or as identified and justified in Application	Temperature (>850° C)	Continuous	Traceable to national standards	As agreed in writing with the Agency
A1 & A2	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency
A1 & A2	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency
A1 & A2	Exhaust gas oxygen content	Continuous	BS EN 15267-3 BS EN 14181	
A1 & A2	Exhaust gas water vapour content	Continuous	BS EN 15267-3 BS EN 14181	

Table S3.5 Residue quality					
Emission point reference or source or description of point of measurement	Parameter	Limit	Monitoring frequency	Monitoring standard or method	Other specifications
Bottom Ash / Char	TOC	<3%	Monthly in the first year of operation. Then Quarterly	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	
Bottom Ash / Char	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'	
Bottom Ash / Char	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'	

Table S3.5 Residue quality

Emission point reference or source or description of point of measurement	Parameter	Limit	Monitoring frequency	Monitoring standard or method	Other specifications
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'	

Schedule 4 – Reporting

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

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1	A1 & A2	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
Emissions to water Parameters as required by condition 3.5.1	W1	Annually	1 Jan
Emissions to sewer Parameters as required by condition 3.5.1	S1	Annually	1 Jan
TOC Parameters as required by condition 3.5.1	Bottom Ash / Char	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.5.1	Bottom Ash / Char	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.5.1	Bottom Ash / Char	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
Total Recovered Fuel Oil Incinerated	Tonnes
Electrical energy produced	KWhrs
Thermal energy produced e.g. steam for export	KWhrs
Electrical energy exported	KWhrs
Electrical energy used on installation	KWhrs
Waste heat utilised by the installation	KWhrs

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Units
Electrical energy exported, imported and used at the installation	Quarterly	KWhrs / tonne of waste incinerated
Fuel oil consumption	Quarterly	Kgs / tonne of waste incinerated
Mass of Ash produced	Quarterly	Kgs / tonne of waste incinerated
Mass of APC residues produced	Quarterly	Kgs / tonne of waste incinerated
Mass of Other solid residues produced	Quarterly	Kgs / tonne of waste incinerated
Ammonia consumption	Quarterly	Kgs / tonne of waste incinerated
Activated Carbon consumption	Quarterly	Kgs / tonne of waste incinerated
Lime / Sodium Bicarbonate consumption	Quarterly	Kgs / tonne of waste incinerated
Water consumption	Quarterly	Kgs / tonne of waste incinerated
Periods of abnormal operation	Quarterly	No of occasions and cumulative hours for current calendar year for each line.

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Air	Forms Air 1 – 7 or other forms as agreed in writing by the Environment Agency	12/10/2018
Water	Form Water 1 or other form as agreed in writing by the Environment Agency	12/10/2018
Sewer	Form Sewer 1 or other form as agreed in writing by the Environment Agency	12/10/2018
Water usage	Form WU/RM 1 or other form as agreed in writing by the Environment Agency	12/10/2018
Energy usage	Form Energy 1 or other form as agreed in writing by the Environment Agency	12/10/2018
Waste disposal & recovery	Form R1 or other form as agreed in writing by the Environment Agency	12/10/2018
Residue quality	Forms Residues 1 & 2 or other form as agreed in writing by the Environment Agency	12/10/2018
Other performance indicators	Form Performance 1 or other form as agreed in writing by the Environment Agency	12/10/2018

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 measurement devices.

“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.

“background concentration” means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

“CEM” Continuous emission monitor

“CEN” means Comité Européen de Normalisation “bi-annual” means twice per year with at least five months between tests;

“daily average” for releases of substances to air means the average of valid half-hourly averages over a calendar day during normal operation.

“dioxin and furans” means polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

“emissions to land” includes emissions to groundwater.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

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

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

‘hazardous property’ has the meaning in Annex III of the Waste Framework Directive

‘hazardous waste’ has the meaning given in the Hazardous Waste (England and Wales) Regulations 2005 (as amended)

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

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

“ISO” means International Standards Organisation.

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

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

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

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

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

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

“shut down” is any period where the plant is being returned to a non-operational state

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

“TOC” means Total Organic Carbon. In respect of releases to air, this means the gaseous and vaporous organic substances, expressed as TOC.

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

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

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

For dioxins/furans and dioxin-like PCBs the determination of the toxic equivalence concentration (I-TEQ, & WHO-TEQ for dioxins/furans, WHO-TEQ for dioxin-like PCBs) stated as a release limit and/ or reporting requirement, the mass concentrations of the following congeners have to be multiplied with their respective toxic equivalence factors before summing. When reporting on measurements of dioxins/furans and dioxin-like PCBs, the toxic equivalence concentrations should be reported as a range based on: all congeners less than the detection limit assumed to be zero as a minimum, and all congeners less then the detection limit assumed to be at the detection limit as a maximum. However the minimum value should be used when assessing compliance with the emission limit value in table S3.1.

TEF schemes for dioxins and furans				
Congener	I-TEF	WHO-TEF		
	1990	2005	1997/8	
		Humans / Mammals	Fish	Birds
Dioxins				
2,3,7,8-TCDD	1	1	1	1
1,2,3,7,8-PeCDD	0.5	1	1	1
1,2,3,4,7,8-HxCDD	0.1	0.1	0.5	0.05
1,2,3,6,7,8-HxCDD	0.1	0.1	0.01	0.01
1,2,3,7,8,9-HxCDD	0.1	0.1	0.01	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.01	0.001	<0.001

TEF schemes for dioxins and furans				
Congener	I-TEF	WHO-TEF		
	1990	2005	1997/8	
OCDD	0.001	0.0003	-	-
Furans				
2,3,7,8-TCDF	0.1	0.1	0.05	1
1,2,3,7,8-PeCDF	0.05	0.03	0.05	0.1
2,3,4,7,8-PeCDF	0.5	0.3	0.5	1
1,2,3,4,7,8-HxCDF	0.1	0.1	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01	0.01	0.01
OCDF	0.001	0.0003	0.0001	0.0001

TEF schemes for dioxin-like PCBs			
Congener	WHO-TEF		
	2005	1997/8	
	Humans / mammals	Fish	Birds
Non-ortho PCBs			
3,4,4',5-TCB (81)	0.0001	0.0005	0.1
3,3',4,4'-TCB (77)	0.0003	0.0001	0.05
3,3',4,4',5 - PeCB (126)	0.1	0.005	0.1
3,3',4,4',5,5'-HxCB(169)	0.03	0.00005	0.001
Mono-ortho PCBs			
2,3,3',4,4'-PeCB (105)	0.00003	<0.000005	0.0001
2,3,4,4',5-PeCB (114)	0.00003	<0.000005	0.0001
2,3',4,4',5-PeCB (118)	0.00003	<0.000005	0.00001
2',3,4,4',5-PeCB (123)	0.00003	<0.000005	0.00001
2,3,3',4,4',5-HxCB (156)	0.00003	<0.000005	0.0001
2,3,3',4,4',5'-HxCB (157)	0.00003	<0.000005	0.0001
2,3',4,4',5,5'-HxCB (167)	0.00003	<0.000005	0.00001
2,3,3',4,4',5,5'-HpCB (189)	0.00003	<0.000005	0.00001

“year” means calendar year ending 31 December.

Schedule 7 – Site plan



END OF PERMIT

Permit number
EPR/LP3239NX