

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Greenfield Properties (UK) Limited
Chelveston Non-Recyclable Plastic to Fuel Facility
Land Adjacent to the Cottage
Upper Higham Lane
Higham Ferrers
Northamptonshire
NN10 0SU

Variation application number

EPR/LP3592NM/V003

Permit number

EPR/LP3592NM

Chelveston Non-Recyclable Plastic to Fuel Facility

Permit number EPR/LP3592NM

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

Variation application EPR/LP3592NM/V003

This variation authorises:

- The addition of a scheduled activity for the incineration of non-hazardous waste in a waste co-incineration plant with a capacity of 3 tonnes per hour or more – Section 5.1 A(1)(b);
- The addition of directly associated activities as specified in Table S1.1

As a result of these changes, the facility will become a bespoke Installation regulated under Section 5.1 A(1)(b) of the Environmental Permitting Regulations 2016 and a waste operation.

The main features of the permit are as follows:

The Installation is located on a small industrial estate 2.5 km east of the towns of Higham Ferrers and Rushden in East Northamptonshire, at grid reference SP 99235 67300. The site is bounded by industrial units and agricultural land, with several residential receptors and three villages within 2 km of the installation. The nearest residential receptor is Airfield Farm circa 0.4 km to the south-east.

Within 10 km of the installation there is the Upper Nene Valley Gravel Pits (SPA and Ramsar) and within 2 km of the installation there are: Yelden Meadows (SSSI and Local Wildlife Site), Newton Gorse Green Lane CWS (Local Wildlife Site) and Yelden Field CWS (Local Wildlife Site). The discharge to surface water from the onsite wastewater treatment plant flows into Chelveston Brook and then into the River Nene, which passes through the Upper Nene Valley Gravel Pits (SPA and Ramsar).

The facility is currently permitted to operate a Household, Commercial and Industrial Waste Transfer Station with waste treatment. Non-hazardous wastes are treated by sorting, separation, screening, baling, shredding (including crumbing), crushing and compaction. Wastes are bulked up for disposal or recovery.

The waste activities will continue to be undertaken at this site until the commencement of commissioning of the waste co-incineration activity described below. Prior to the commencement of commissioning, the operator is required to cease the waste activities and apply for a partial surrender.

Pyrolysis activity

The facility will convert waste plastics into diesel, petrol and liquefied petroleum gas (LPG) by means of a process using liquefaction, pyrolysis and distillation. The combustion of LPG and uncondensed gases from the pyrolysis process to provide heat for the pyrolysis process falls under the requirements of the Industrial Emissions Directive (IED) as a waste co-incinerator.

Waste plastic is the only feedstock that will be accepted for thermal treatment in four pyrolysis units. Waste plastic received on site will undergo pre-treatment, which includes; de-baling and size reduction through coarse shredding, sorting of the plastic to remove any impurities and a final size reduction through fine shredding to product plastic pellets. Once the plastic is formed into pellets, it will be temporarily stored in bays with fire resistant dividers prior to passing via a screw conveyor into the catalytic reactors (pyrolysis

kilns). A hopper contains a catalyst (activated bauxite) that will be fed into the screw conveyor with the waste plastic feedstock, which ensures good mixing between the two materials.

The catalytic reactors will use heat to break down the bonds of the polymers (depolymerisation) with the aid of the catalyst. This forms a gaseous hydrocarbon vapour that will be passed through a packed column scrubber in order to remove any particulate contaminants, which are returned into the catalytic reactor for further depolymerisation. The vapour will then pass into a fractionation column where diesel, marine diesel, petrol and LPG are separated. Diesel fuel will pass into an impurity extraction system and then into a vacuum drying column to remove any moisture. Petrol and LPG vapours will pass into the primary condenser, where the petrol is condensed out and transferred to storage tanks. The remaining hydrocarbon vapour will pass into the chilled vent condenser and compressor, where LPG is condensed and transferred to the LPG storage tank. Incondensable vapours will be combusted in the low NOx burners, along with LPG, where they produce heat to power the process. Glycol-water chillers will be used to condense the LPG.

Heat will be recovered from the flue gas using a heat exchanger, which will then be used to increase the primary combustion air temperature, in order to reduce the energy required to heat the exhaust gases to the required temperature for use in the depolymerisation kilns.

Emissions to air will be minimised through the use of primary NOx reduction measures, which are low NOx burners and flue gas recirculation (FGR). The gaseous products of combustion will be discharged into the atmosphere via a single stack, 35 metres above the surrounding ground level.

Emissions to water are treated using an onsite wastewater treatment plant. Emission limit values for the discharge have been calculated using Monte Carlo modelling and are based upon the maximum theoretical values that will not cause a deterioration of the watercourse. A reverse osmosis unit will filter rainwater and process water in order to purify it to be used within the process.

Monitoring of emissions to air will be undertaken continuously for: particulate matter, hydrogen chloride, hydrogen fluoride, sulphur dioxide, carbon monoxide, oxides of nitrogen and total organic carbon and quarterly for: metals, dioxins, furans and poly-aromatic hydrocarbons, using the methods listed in Table S3.1.

Monitoring of emissions to water will be undertaken continuously for flow and pH. Other parameters including suspended solids, BOD, COD, mercury, cadmium, arsenic, lead, chromium, copper, nickel and zinc will be monitored as 24 hour flow proportional samples.

Solid residues produced during the pyrolysis process will be continually extracted from the pyrolysis kilns and deposited in sealed metal containers. These will be removed regularly for disposal. Combustion air will be drawn from around the containers and passed into the burners in order to minimise odour.

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
Licence determined EAWML 73098	08/08/2008	Licence issued to Greenfield Properties (UK) Limited.
Application EPR/LP3539NM/V002 (EAWML 73098)	05/05/2010	Application to extend the site boundary.
Application EPR/LP3539NM/V002	18/10/2018	Application deemed withdrawn.
Application EPR/LP3539NM/V003 (variation and consolidation)	Duly made 11/05/2018	Application for a 6 MWth pyrolysis unit producing liquid fuel and LPG derived from waste plastic.

Status log of the permit		
Description	Date	Comments
Response to Schedule 5 Notice dated 13/06/2018	16/07/2018	Air dispersion modelling report, details of receptors and additional information on the air quality assessment.
Response to Schedule 5 Notice dated 13/06/2018	01/08/2018	Noise impact assessment report.
Response to Schedule 5 Notice dated 24/10/2018	23/11/2018	Site condition report and answers to fire prevention plan, BAT assessment, noise impact assessment and public consultation questions.
Additional information received	06/12/2018	H1 assessment tool.
Response to Schedule 5 Notice dated 24/10/2018	17/12/2018	Fire prevention plan, further responses to Schedule 5 Notice and site layout plan.
Response to Schedule 5 Notice dated 08/01/2019	16/01/2019 28/01/2019	Environmental risk assessment, fire prevention plan and odour management plan.
Response to Schedule 5 Notice dated 08/01/2019	25/01/2019	Environmental risk assessment and water discharge information.
Additional information received	12/02/2019	Confirmation of air emissions abatement and BAT.
Additional information received	13/02/2019	Confirmation of acid gas abatement technique.
Additional information received	21/02/2019	Confirmation of emission points and updated site layout plan.
Additional information received	06/03/2019	Updated site layout plan.
Additional information received	07/03/2019	Emission abatement operating technique.
Additional information received	03/04/2019	Assessment of emissions for TOC/VOC and chromium (VI). Confirmation of shutdown procedure and back-up CEMS.
Permit determined EPR/LP3592NM	12/06/2019	Permit issued to Greenfield Properties (UK) Limited.

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

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

Permit number

EPR/LP3592NM

Issued to

Greenfield Properties (UK) Limited ("the operator")

whose registered office is

23 Cottingham Way

Thrapston

Kettering

Northamptonshire

NN14 4PL

company registration number 04206354

to operate a regulated facility at

Chelveston Non-Recyclable Plastic to Fuel Facility

Land Adjacent to the Cottage

Upper Higham Lane

Higham Ferrers

Northamptonshire

NN10 0SU

to the extent set out in the schedules.

The notice shall take effect from 12/06/2019

Name	Date
David Griffiths	12/06/2019

Authorised on behalf of the Environment Agency

Schedule 1

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

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/LP3592NM

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/LP3592NM/V003 authorising,

Greenfield Properties (UK) Limited (“the operator”),

whose registered office is

23 Cottingham Way

Thrapston

Kettering

Northamptonshire

NN14 4PL

company registration number 04206354

to operate an installation and waste operations at

Chelveston Non-Recyclable Plastic to Fuel Facility

Land Adjacent to the Cottage

Upper Higham Lane

Higham Ferrers

Northamptonshire

NN10 0SU

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

Name	Date
David Griffiths	12/06/2019

Authorised on behalf of the Environment Agency

Conditions

1 Management

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.
- 1.1.4 The operator shall comply with the requirements of an approved competence scheme or other approval issued by the Environment Agency.

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.

1.3 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 tables S2.2 and S2.3 and
 - (b) it conforms to the description in the documentation supplied by the producer and holder.
 - (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 shall not be charged, or shall cease to be charged, if:
- (a) the temperature measured within the combustion chamber is below, or falls below, 850°C; or
 - (b) any continuous emission limit value in schedule 3 table S3.1 is exceeded; or
 - (c) monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 are unavailable, other than under abnormal operating conditions.
- 2.3.8 The operator shall record the beginning and end of each period of “abnormal operation”.
- 2.3.9 During a period of “abnormal operation”, the operator shall restore normal operation of the failed equipment or replace the failed equipment as rapidly as possible.
- 2.3.10 Where, during “abnormal operation”, on a pyrolysis line, any of the following situations arise, waste shall cease to be charged on that line until normal operation can be restored:
- (a) the cumulative duration of “abnormal operation” periods over 1 calendar year has reached 60 hours;
 - (b) 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, as agreed in writing with the Environment Agency, are unavailable.
- 2.3.11 The operator shall interpret the end of the period of “abnormal operation” as the earliest of the following:
- (a) when the failed equipment is repaired and brought back into normal operation;
 - (b) when the operator initiates a 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 on an incineration line.
- 2.3.12 The operator shall use liquefied petroleum gas (LPG) in the combustion chamber at start up, or shut down, or whenever the operating temperature falls below that specified in condition 2.3.7 as long as incompletely pyrolysed waste is present in the pyrolysis chamber.
- 2.3.13 Char 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 (AR1 to AR3) 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 and S3.2.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Wastes produced at the site shall, as a minimum, be sampled and analysed in accordance with schedule 3 table S3.4. Additional samples shall be taken and tested and appropriate action taken, whenever:
 - (a) disposal or recovery routes change; or
 - (b) it is suspected that the nature or composition of the waste has changed such that the route currently selected may no longer be appropriate.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
 - (a) if notified by 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 soil and groundwater in accordance with IED articles 14(1)(b), 14(1)(e) and 16(2) to the protocol approved in writing with the Environment Agency.

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.

3.4 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 and S3.2;
- (b) process monitoring specified in table S3.3;
- (c) residue quality in table S3.4.

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

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.4.1 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 and S3.2, 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 & NO ₂ expressed as NO ₂)	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 3.4.5 (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 averages so validated shall not exceed 5 per day;

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

3.6 Pests

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

3.6.2 The operator shall:

- (a) if notified by 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.
- 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 and WFD Annex I and II operations	Limits of specified activity and waste types
AR1	Section 5.1 A(1)(b)	The incineration of non-hazardous waste in a waste co-incineration plant with a capacity exceeding 3 tonnes per hour	<p>From receipt of waste to emission of exhaust gas and dispatch of products.</p> <p>The handling, storage and shredding of waste. The pyrolysis of non-hazardous waste, including combustion of gas, refining of intermediate product via distillation and fractionation and storage of flammable products, including non-compressible gas; facilities for the treatment of exhaust gases; on-site facilities for the treatment and storage of residues, surface water and waste water; systems for controlling and monitoring pyrolysis operations and receipt, storage and handling of raw materials (including fuels).</p> <p>Waste types suitable for acceptance are limited to those specified in Table S2.2 of this permit.</p> <p>This activity shall not commence until activities AR4 and AR5 have ceased and the wastes, products and equipment cleared from the site.</p>
Directly Associated Activities			Limits of specified activity
AR2	Operation of flare	Flaring of process gas in emergencies.	<p>Flaring of gas during emergencies using an onsite flare on permanent standby.</p> <p>This activity shall not commence until activities AR4 and AR5 have ceased and the wastes, products and equipment cleared from the site.</p>
AR3	Output storage	Storage of material outputs	<p>Includes diesel, marine diesel, petrol and liquefied petroleum gas.</p> <p>This activity shall not commence until activities AR4 and AR5 have ceased and the wastes, products and equipment cleared from the site.</p>
Activity reference	Description of activities for waste operations		Limits of specified activity
AR4	D15: Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where the waste is produced)		<p>Non-hazardous waste must be kept on an impermeable surface with a sealed drainage system.</p> <p>Outside storage of crumbed waste shall be suitably contained and stored on an impermeable surface with a sealed drainage system.</p>

	R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	Storage of loose crumbed waste shall be within a building on an impermeable surface with a sealed drainage system. This activity shall cease once commissioning of activities AR1 to AR3 have commenced.
AR5	D9: Physico-chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 (e.g. evaporation, drying, calcination, etc.). R3: Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes) R4: Recycling/ reclamation of metals and metal compounds R5: Recycling/ reclamation of other inorganic compounds	Treatment consisting only of manual sorting, grading, chipping, pulverising, separation, screening, baling, shredding (including crumbing), crushing or compaction of non-hazardous waste into different components for disposal, (no more than 50 tonnes per day) or recovery. Non-hazardous waste must be treated on an impermeable surface with a sealed drainage system. Crumbing of waste with a particle size of <50 mm must be carried out within a building on an impermeable surface with a sealed drainage system. This activity shall cease once commissioning of activities AR1 to AR3 have commenced.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Environmental Management System	Environmental Management System, Issue 1, January 2009	January 2009
Application EPR/LP3592NM/V003	Application documents, parts: <ul style="list-style-type: none"> • Environmental Permit Application, Part 2.1.5 – Staffing and training • Environmental Permit Application, Table 2.1.2 – Raw materials and water use • Environmental Permit Application, Part 2.3 – Avoidance, recovery and disposal of waste • Environmental Permit Application, Part 3.1 – Process overview • Environmental Permit Application, Part 3.4 – Receipt and storage of raw materials (Waste Acceptance and Pre-Acceptance Criteria) • Environmental Permit Application, Part 3.5 – Cyclone combustor and catalytic reactor • Environmental Permit Application, Part 3.8 – Cooling • Environmental Permit Application, Table 4.2 – Stack height • Environmental Permit Application, Part 4.3 – Emissions of substances not controlled by emission limits 	Duly Made 11/05/2018

Table S1.2 Operating techniques		
Description	Parts	Date Received
Response to Schedule 5 Notice dated 24/10/2018	<ul style="list-style-type: none"> • Response to Questions 7a and 7b – Management of waste plastic feedstock • Response to Question 7c – Management of fugitive VOC emissions • Response to Question 7m – Management of waste metals • Site Condition Report – Appendix C, Site Closure Plan (November 2018) 	23/11/2018
Response to Schedule 5 Notice dated 08/01/2019	<ul style="list-style-type: none"> • Response to Question 2b – Location of water meters • Odour Management Plan (January 2019) • Fire Prevention Plan (January 2019) • Response to Question 4f – Management of wastewater • Response to Questions 5a, 5b and 5c – Plastic feedstock processing • Response to Question 6h – Frequency of pyrolysis chamber maintenance • Response to Questions 7b and 7c – Management of char residue • Response to Question 9e – Operation of the activated carbon abatement for the storage tank vents • Response to Questions 9f, 9g, 9h and 13 – Operation of the diesel reflux scrubber and impurity extraction system • Response to Questions 10a-f – Operation of the emergency flare • Response to Question 12 – Management of the out of specification products 	16/01/2019
Response to Schedule 5 Notice dated 08/01/2019	<ul style="list-style-type: none"> • Environmental Risk Assessment (December 2018) • Table 2-5 Accident Risk Assessment and Management Plan • Fire Action Plan • Spillage Procedure 	28/01/2019
Additional information received	Design of the flue gas management system to allow the retrospective addition of flue gas abatement techniques.	07/03/2019
Additional information received	<ul style="list-style-type: none"> • Shutdown procedure in the event of CEMS failure • Back-up CEMS 	03/04/2019

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 of the activities detailed in AR1 to AR3.

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
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 of the activities detailed in AR1 to AR3.
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 of the activities detailed in AR1 to AR3.
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 and include a comparison with the CFD modelling submitted with PO6.	Within 4 months of the completion of commissioning of the activities detailed in AR1 to AR3.
IC5	The Operator shall submit a written summary report to the Environment 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 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 of the activities detailed in AR1 to AR3. Full summary evidence compliance report to be submitted within 18 months of completion of commissioning of the activities detailed in AR1 to AR3.
IC6	The Operator must submit a report detailing the types, sources and proportion of gases used for the heating of the pyrolysis process. The report must also state if any of the gases originating from the pyrolysis process have been granted end of waste status. This must be presented in monthly datasets from the date that the facility has been fully commissioned.	Within 6 months of commissioning of the installation of the activities detailed in AR1 to AR3.
IC7	The Operator shall submit a written report to the Environment Agency on the options they have considered for the recovery of the char.	Within 6 months of commissioning of the installation of the activities detailed in AR1 to AR3.

Reference	Requirement	Date
IC8	The Operator shall submit a written report to the Environment Agency on the potential for use of recycled water in their processes. The report should include assessments of multiple potential uses, taking into account the chemical composition of the wastewater.	Within 6 months of commissioning of the installation of the activities detailed in AR1 to AR3.
IC9	The Operator shall submit a written report to the Environment Agency that details the TOC and LOI content of the char for a minimum of 12 samples taken over a three-month period. These must be compared to the limits stated in table S3.4.	Within 4 months of commissioning of the installation of the activities detailed in AR1 to AR3.

Reference	Pre-operational measures
PO1	Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall send a summary of the site Environment Management System (EMS) to the Environment Agency for written approval 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 guide on developing a management system for environmental permits (found on www.gov.uk). 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.
PO2	Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall send a report to the Environment Agency for written approval, which will contain a comprehensive review of the options available for utilising the heat generated 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 heat and shall provide a timetable for their implementation. This review must include the potential for heat to be utilised in the proposed Rushden Sustainable Urban Extension.
PO3	Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall submit to the Environment Agency for written approval a protocol for the sampling and testing of the char for the purposes of assessing its hazard status, which must be in line with Technical Guidance Note M4 – Guidelines for Ash Sampling and Analysis, V7, June 2016.
PO4	Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall provide a written commissioning plan, including timelines for completion, for written 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.
PO5	Prior to commissioning of activity AR1 to AR3, the Operator shall cease activities AR4 and AR5 and clear the site of the associated wastes, products and equipment. The Operator must provide a report, including images of the site, demonstrating that the activities have ceased and the site has been cleared, to the Environment Agency for written approval.

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO6	After completion of furnace design and at least three calendar months before commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall submit a written report to the Environment Agency for written approval 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. The report shall include a proposed location, to be agreed with the Environment Agency, for the continuous monitoring of temperature close to the combustion chamber inner wall.
PO7	Prior to the commencement of construction of the facilities comprising activity AR1 to AR3 in table S1.1, the Operator shall submit a report for written approval by the Environment Agency on the baseline conditions of soil and groundwater at the installation and update the Site Condition Report Evaluation Template (SCRET) to include this information. The report shall contain the information necessary to determine the state of soil and groundwater 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 application Site Condition Report, needed to meet the information requirements of Article 22(2) of the IED.
PO8	Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall submit the written protocol referenced in condition 3.2.4 for the monitoring of soil and groundwater for written approval by the Environment Agency. The protocol shall demonstrate how the Operator will meet the requirements of Articles 14(1)(b), 14(1)I and 16(2) of the IED. The procedure shall be implemented in accordance with the written approval from the Agency.
PO9	At least three months before the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall submit a written report for approval in writing by the Environment Agency. This shall specify 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: <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
PO10	Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall submit an updated Accident Management Plan for written approval by the Environment Agency to include the recommendations from the HAZOP and DSEAR risk assessments and how they have addressed these risks.
PO11	Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall submit an updated Fire Prevention Plan (FPP) for written approval by the Environment Agency, that includes the following: <ul style="list-style-type: none"> • Details on the construction of the silos used to store the shredded plastic and demonstrate that they are in line with section 11.2 of the Fire Prevention Plan guidance, available from: https://www.gov.uk/government/publications/fire-prevention-plans-environmental-permits/fire-prevention-plans-environmental-permits • An updated site plan in line with section 6.2 of the Fire Prevention Plan guidance listed above • Details on the deluge system, including calculations to demonstrate how the volumes of water supplied are sufficient for the waste pile sizes • The certificate demonstrating that the fire detection and deluge systems comply with a UKAS accredited third party certification scheme.

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO12	<p>At least 8 weeks (or any other date as agreed with the Environment Agency) prior to the commencement of commissioning of the facility comprising the activities in AR1 to AR3 in table S1.1, the Operator shall ensure that a review of the design, method of construction and integrity of the proposed site secondary containment is carried out by a qualified engineer. The review shall compare the constructed secondary containment against the standards set out in CIRIA C736 - Containment Systems for the Prevention of Pollution - secondary, tertiary and other measures for industrial and commercial premises or other relevant industry standard.</p> <p>The review shall include:</p> <ul style="list-style-type: none"> • the physical condition of the secondary containment • the suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure; and • any work required to ensure compliance with the standards set out in CIRIA C736 or other relevant industry standard. <p>A written report of the review shall be submitted to the Environment Agency for approval detailing the review's findings and recommendations. Remedial action shall be taken to ensure that the secondary containment meets the standards set out in the technical guidance documents. The maintenance and inspection regime must be incorporated into the Environmental Management System.</p>
PO13	<p>Prior to the commencement of construction of the facilities comprising the activities in AR1 to AR3 in table S1.1, the Operator shall submit an updated Surface Water Proposals document for written approval by the Environment Agency, which must include the following:</p> <ul style="list-style-type: none"> • A site layout plan detailing the above and below ground water storage tanks, interceptors, drains, pipework, pollution control valves and bunding, including kerbing that is used as bunding and the effluent sampling locations; • A process flow chart of water management, including process water, treated water, surface water run-off and rainwater, including tank volumes, expected flowrates and valves; • Calculations to show that the effluent treatment plant and reverse osmosis plant are suitably sized to cope with the expected flowrates; • The inspection frequency and maintenance routines for the tanks, bunding and pipework listed above.
PO14	<p>Prior to the commencement of construction of the facilities comprising the activities in AR1 to AR3 in table S1.1, the Operator shall provide a list of the changes that have been made between the design of the facility that was submitted with the application EPR/LP3592NM/V003 and the Schedule 5 Notice responses and the final design to be constructed.</p>
PO15	<p>Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall submit for written approval by the Environment Agency the operating techniques for the delivery of chemicals to the installation and collection of the liquid products from the installation.</p>
PO16	<p>Prior to the commencement of commissioning of activity AR1 to AR3 in table S1.1, the Operator shall submit a report detailing the design of the flare for written approval by the Environment Agency. This report must include:</p> <ul style="list-style-type: none"> • Calculations to show that the flare is appropriately sized • The operational tolerances for contaminants, such as liquids and particulates • The expected composition of the gas that would be flared in an emergency • The operational temperature and residence time

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
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Table S2.2 Permitted waste types and quantities for activity AR1 – pyrolysis plant	
Maximum quantity	The total quantity of waste accepted at the site shall be no more than 73,170 tonnes per year. The total quantity of waste stored at the site shall not exceed 820 tonnes.
Waste code	Description
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 04	plastics
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 39	plastics

Table S2.3 Permitted waste types and quantities for activities AR4 and AR5 – Household, Commercial and Industrial Waste Transfer Station with Treatment	
Maximum quantity	The total quantity of waste accepted at the site shall not exceed 75,000 tonnes per year. Notwithstanding the specification of waste types below, wastes shall not be accepted at the site which have any of the following characteristics: <ul style="list-style-type: none"> • Consisting solely or mainly of dusts, powders or loose fibres • Wastes that are in a form which is either sludge or liquid
Waste code	Description
07	WASTES FROM ORGANIC CHEMICAL PROCESSES
07 02	wastes from the MSFU of plastics, synthetic rubber and man-made fibres
07 02 13	waste plastic
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 02	plastic packaging
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 01	end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)
16 01 03	end-of-life tyres

Table S2.3 Permitted waste types and quantities for activities AR4 and AR5 – Household, Commercial and Industrial Waste Transfer Station with Treatment	
Maximum quantity	<p>The total quantity of waste accepted at the site shall not exceed 75,000 tonnes per year.</p> <p>Notwithstanding the specification of waste types below, wastes shall not be accepted at the site which have any of the following characteristics:</p> <ul style="list-style-type: none"> • Consisting solely or mainly of dusts, powders or loose fibres • Wastes that are in a form which is either sludge or liquid
Waste code	Description
16 01 17	ferrous metal
16 01 18	non-ferrous metal
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 04	plastic and rubber
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 39	plastic

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 (as shown on site plan in schedule 7)	Combined pyrolysis units boiler stack & vacuum drying column exhaust	Particulate matter	15 mg/m ³	daily average	Continuous measurement	BS EN 14181
		Total Organic Carbon (TOC)	15 mg/m ³	daily average	Continuous measurement	BS EN 14181
		Hydrogen chloride	15 mg/m ³	daily average	Continuous measurement	BS EN 14181
		Hydrogen fluoride	1.5 mg/m ³	daily average	Continuous measurement	BS EN 14181
		Carbon monoxide	75 mg/m ³	daily average	Continuous measurement	BS EN 14181
		Sulphur dioxide	75 mg/m ³	daily average	Continuous measurement	BS EN 14181
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	300 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
		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)	No limit set	periodic over minimum 6	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 point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
				hours, maximum 8 hour period		
		Dioxins / furans (WHO-TEQ Fish)	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
		Dioxins / furans (WHO-TEQ Birds)	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
		Dioxin-like PCBs (WHO-TEQ Humans / Mammals)	No limit set	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)	No limit set	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)	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
		Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	No limit set	Periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	Procedure shall use BS ISO 11338-1 and BS-ISO 11338-2.
A2 (as shown on site plan in schedule 7)	Emergency flare	No parameters listed	No limit set	--	--	--
A3 (as shown on site plan)	Transition tanks, solvent extraction tank &	VOCs	No limit set	--	--	--

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

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
in schedule 7)	rework tank pressure release valves vented through common stack					
A4 (as shown on site plan in schedule 7)	Laboratory Air Extraction Unit	No parameters listed	No limit set	--	--	--
A5 (as shown on site plan in schedule 7)	Petrol storage tank vent via carbon filter	No parameters listed	No limit set	--	--	--
A6 & A7 (as shown on site plan in schedule 7)	Diesel storage tanks vents	No parameters listed	No limit set	--	--	--
A8 (as shown on site plan in schedule 7)	Marine diesel storage tank vent	No parameters listed	No limit set	--	--	--
A9 (as shown on site plan in schedule 7)	LPG storage tank pressure release valve	No parameters listed	No limit set	--	--	--

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) (note 1, note 2)	Reference Period	Monitoring frequency	Monitoring standard or method
S1 to Chelveston Brook (as shown on site plan in schedule 7)	Onsite effluent treatment plant	Maximum daily discharge	5 m ³ /d	Daily	Continuous	MCerts flowmeter
		pH	6 – 9	Instantaneous	Continuous	MCerts pH probe
		Suspended solids	30 mg/l	Daily	24-hour flow proportional sample	BS EN 872
		BOD	20 mg/l	Daily	24-hour flow proportional sample	BS EN 1899-1 or BS EN 1899-2
		Total Mercury and its compounds, expressed as mercury	30 µg/l	Daily	24-hour flow proportional sample	BS EN 12846 or BS EN ISO 17852
		Total Cadmium and its compounds, expressed as cadmium	25 µg/l	Daily	24-hour flow proportional sample	BS 6068-2.29
		Total Arsenic and its compounds, expressed as arsenic	150 µg/l	Daily	24-hour flow proportional sample	BS ISO 17378-1 or BS ISO 17378-2
		Dissolved Lead and its compounds, expressed as lead	90 µg/l (note 3)	Daily	24-hour flow proportional sample	BS 6068-2.29
		Total Chromium and its compounds, expressed as chromium	370 µg/l	Daily	24-hour flow proportional sample	BS EN 1233
		Dissolved Copper and its compounds, expressed as copper	260 µg/l (note 3)	Daily	24-hour flow proportional sample	BS 6068-2.29
		Dissolved Nickel and its compounds, expressed as nickel	143 µg/l (note 3)	Daily	24-hour flow proportional sample	BS 6068-2.29

		Dissolved Zinc and its compounds, expressed as zinc	650 µg/l (note 3)	Daily	24-hour flow proportional sample	BS 6068-2.29
S2 to Chelveston Brook (as shown on site plan in schedule 7)	Uncontaminated surface water runoff and treated process water	Visual oil and grease	None	-	Daily	Visual check

Note 1: Spot samples shall not exceed the limits by more than 50%.

Note 2: Only 1 sample per year, or 5% of annual samples (where more than 20 are taken), may exceed the stated limits for metals.

Note 3. The limit is the mean over the reporting period.

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
Location close to combustion chamber to be agreed upon completion of PO6	Temperature (°C)	Continuous	Traceable to national standards	As agreed in writing with the Environment Agency.
A1	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Environment Agency.
A1	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Environment Agency.
A1	Exhaust gas oxygen content	Continuous	BS EN 15267-3 BS EN 14181	--
A1	Exhaust gas water vapour content	Continuous	BS EN 15267-3 BS EN 14181	Unless gas is dried before analysis of emissions.
Carbon filters from storage tanks	Key process parameters to include, temperature, differential pressure, air flow and moisture.	In accordance with manufacturer's recommendations.	None specified	Carbon filter shall be regularly checked and maintained to ensure appropriate temperature and moisture content. Carbon filters to be replaced when saturated in accordance with manufacturer's recommendations.

Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
				Differential pressure determined by upstream and downstream measurement of the activated carbon unit or other method agreed in writing with the Environment Agency.

Emission point reference or source or description of point of measurement	Parameter	Limit	Monitoring frequency	Monitoring standard or method *
Char	TOC & LOI	<3% for TOC <5% for LOI	Monthly in the first year of operation. Then Quarterly	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'
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'
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'

*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.

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1	A1	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
Emissions to water Parameters as required by condition 3.5.1	S1, S2	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
TOC and LOI Parameters as required by condition 3.5.1	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	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	Char	Before use of a new disposal or recycling route	
Functioning and monitoring of the incineration plant as required by condition 4.2.2		Annually	1 Jan

Parameter	Units
Total plastic waste thermally treated	tonnes
Solid residue produced	tonnes
Diesel produced	m ³
Marine diesel produced	m ³
Petrol produced	m ³
LPG produced	tonnes

Parameter	Frequency of assessment	Units
LPG consumption (excluding imported)	Annually	kWh / tonne of waste processed
Imported LPG consumption	Annually	kWh / tonne of waste processed

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Units
Mass of char produced	Annually	Kg / tonne of waste processed
Mass of diesel produced	Annually	Litres / tonne of waste processed
Mass of marine diesel produced	Annually	Litres / tonne of waste processed
Mass of petrol produced	Annually	Litres / tonne of waste processed
Mass of LPG produced	Annually	kWh / tonne of waste processed
Electrical energy consumption	Annually	kWh / tonne of waste processed
Potable water consumption	Annually	Litres / tonne of waste processed
Catalyst (bauxite) consumption	Annually	Kg / tonne of waste processed
Activated carbon	Annually	Kg / tonne of waste processed
Periods of abnormal operation	Annually	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	Form air 1, air 2, air 3, air 4, air 5, air 6, air 7 and air 8 or other form as agreed in writing by the Environment Agency	12/06/2019
Water	Form water 1 or other form as agreed in writing by the Environment Agency	12/06/2019
Water and raw material usage	Form WU/RM1 or other form as agreed in writing by the Environment Agency	12/06/2019
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	12/06/2019
Waste disposal/recovery	Form R1 or other form as agreed in writing by the Environment Agency	12/06/2019
Residue quality	Form residue 1 or other form as agreed in writing by the Environment Agency	12/06/2019
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	12/06/2019

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.

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

“CEM” Continuous emission monitor

“CEN” means Comité Européen de Normalisation

“char” means residue originating from the pyrolysis unit.

“Commissioning” means testing of the new incineration plant that involves any operation of the furnace or as agreed with the Environment Agency.

“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” mean 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.

“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.

“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.

“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.

“shutdown” is any period where the plant is being returned to a non-operational state and there is no waste being consumed.

“start up” is any period, where the plant has been non-operational, after igniting the fuel burner using natural gas until waste has been fed to the pyrolysis chamber to initiate steady-state conditions at operational temperature and production of syngas commences, as described in the application.

“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 Char, 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 gases from co-incineration plants the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 6% dry

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

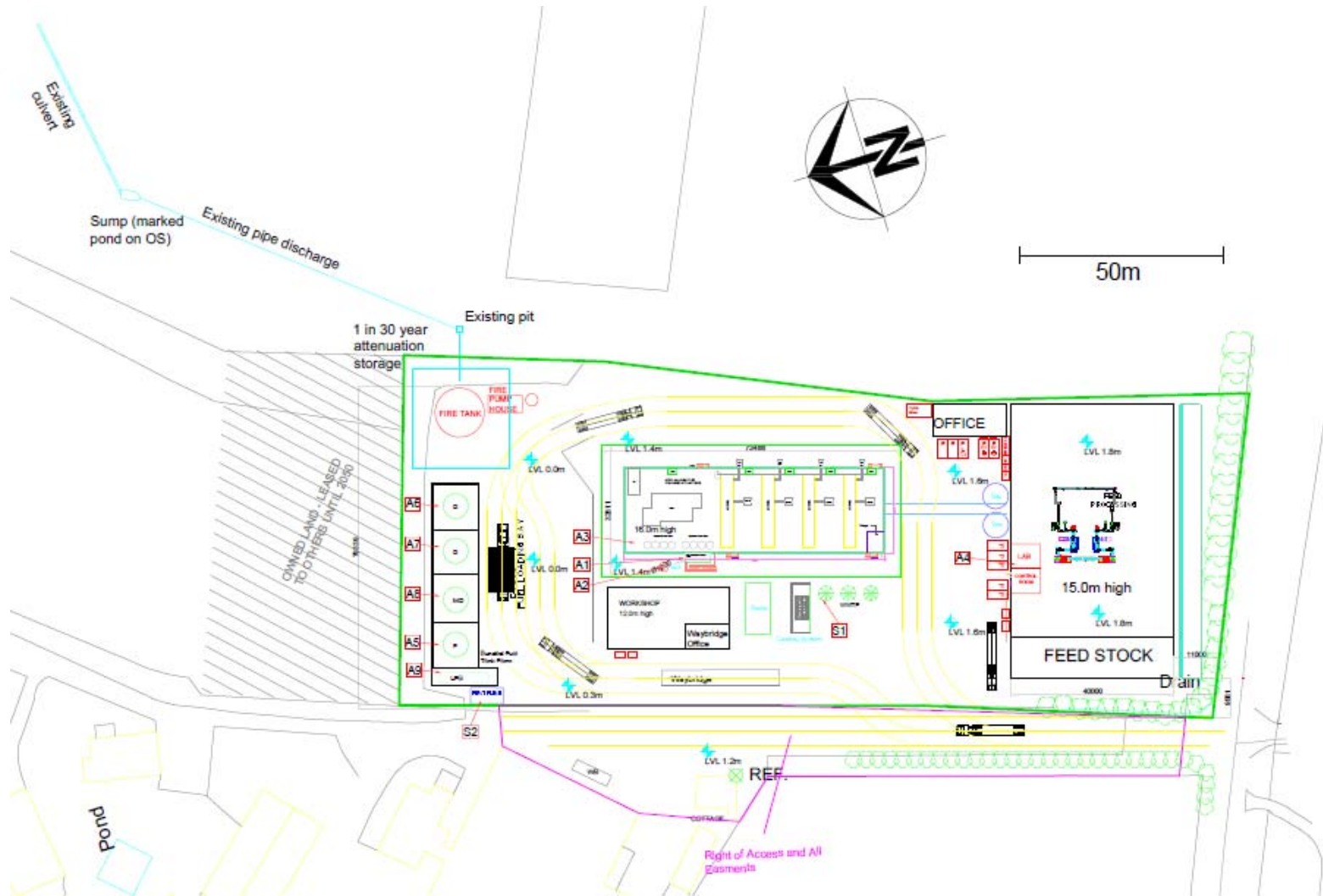
TEF schemes for dioxins and furans				
Congener	I-TEF	WHO-TEF		
	1990	2005	1997/8	
		Humans / Mammals	Fish	Birds
Dioxins				
2,3,7,8-TCDD	1	1	1	1
1,2,3,7,8-PeCDD	0.5	1	1	1
1,2,3,4,7,8-HxCDD	0.1	0.1	0.5	0.05

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

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

“year” means calendar year ending 31 December.

Schedule 7 – Site plan



END OF PERMIT

Permit number
EPR/LP3592NM