



Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Knowsley Energy Recovery Limited

Knowsley Energy from Waste Facility
Penryhn Road
Knowsley Business Park
Knowsley
Merseyside
L34 9HY

Permit number
EPR/ZP3339FN

Knowsley Energy from Waste Facility

Permit Number EPR/ZP3339FN

Introductory note

This introductory note does not form a part of the permit

This permit controls the operation of an installation, whose purpose is the disposal of waste with energy recovery in an incineration plant. The relevant listed activity is Section 5.1 (Incineration and Co-incineration of Waste) Part A(1)(c) "The incineration of non-hazardous waste in an incineration plant with a capacity of 1 tonne or more per hour". The permit implements the requirement of the EU Directives, in particular the Directives on Integrated Pollution Prevention and Control and Waste Incineration.

The main features of the permit are as follows:

The site covers an area of 1.27 hectares and is located in a predominately industrial area of Liverpool, approximately 1km to the north of Knowsley Village. The M57 lies to the west and A580 (East Lancs Road) to the north. The grid reference for the Site is 343101, 396598. Contract Chemicals is located immediately north and had intended to develop the site for offices and car parking facilities for its adjacent chemical process plant. Although some hardstanding car parking areas exist, the site is undeveloped and largely covered by scrub-type vegetation, with some immature trees lining the site boundary.

The Installation comprises a gasification process for the thermal treatment of residual municipal waste and some industrial and commercial waste. The process involves pre-treatment, gasification, combustion of the resulting syngas, and energy recovery.

The facility is designed to process up to 96,000 tonnes of non-hazardous residual municipal waste together with some industrial and commercial waste and produce 8.9 MW of electrical energy. 7.2MW of the electricity produced shall be for export to the National Grid. The waste, which will be delivered to the site by road, will be subject to shredding and homogenisation to provide a uniform sized feedstock for the gasification process. Metals are removed prior to gasification. There will be two identical fixed grate gasifier lines with a combined capacity of 12 tonne/hr of waste of an approximate calorific value of 11.8MJ/kg. Each line has a dedicated secondary combustion chamber where the syngas from the gasification process is incinerated.

The ash will be quenched to control fugitive dust. Primary measures will be used to reduce emissions of oxides of nitrogen, lime to reduce acid gas emissions and Powdered Activated Carbon injection for the reduction of dioxins and volatile heavy metals. The treated emissions to air are released through a 50 metre stack comprising two flues that run the full length of the stack (one for each incineration line). Each flue is equipped with Continuous Emission Monitors (CEMs) which continuously monitor for particulates, carbon monoxide (CO), sulphur dioxide (SO₂), hydrogen chloride (HCl), oxygen (O₂), nitrogen oxides (NO_x) and total organic compounds (TOC). Emissions of hydrogen fluoride, heavy metals, dioxins and furans, dioxin-like PCBs and polyaromatic hydrocarbons will be monitored periodically. There are no emissions from the process to controlled waters.

The facility will have gas-fired auxiliary burners to support start-up and shutdown, and a stand-by diesel generator to support emergency shutdown during power failure.

There are no European or National designated sites within screening distances. There are a number of locally designated Nature Conservation Sites within 2km, which include Acornfield Plantation and Croxteth Local Nature Reserves together with Otis Meadow; Knowsley Brook; Knowsley Park; Meakins Pits; Howards Pits, Aker's Pits and the Roughts Local Wildlife Sites.

The site will have a trade effluent drainage system, which will discharge to drains flowing to an offsite wastewater treatment facility.

It is understood that all site drainage will be constructed with the facility as there are no existing on site drains.

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

Status Log of the permit

Detail	Date	Comments
Application EPR/ZP3339FN/A001	Duly made 10/02/12	
Additional Information Received	22/02/12	Request dated 20/02/12
Additional Information Received	24/05/12	Schedule 5 Request dated 09/05/12
Additional Information Received	26/06/12	Request dated 20/06/12
Additional Information Received	12/07/12	Request dated 06/07/12
Permit determined	12/11/12	

End of Introductory Note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number

EPR/ZP3339FN

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

Knowsley Energy Recovery Limited (“the operator”),

whose registered office is

ENER-G House

Daniel Adamson Road

Salford

Manchester

M50 1DT

company registration number 07058988

to operate *an installation* at

Knowsley Energy from Waste Facility

Penryhyn Road

Knowsley business Park

Knowsley

Merseyside

L34 9HY

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

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Name	Date
Helen Smith	12/11/2012

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 recovery and efficiency of the activities; and
- (c) take any further appropriate measures identified by a review.

1.2.2 The operator shall provide and maintain steam and/or hot water pass-outs such that opportunities for the further use of waste heat may be capitalised upon should they become practicable.

1.2.3 The operator shall review the practicability of Combined Heat and Power (CHP) implementation at least every 2 years. The results shall be reported to 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 waste disposal is necessary, this is undertaken in a manner which minimised its impact on the environment.

1.4.2 The Operator shall review and record at least every four years whether changes to those measures should be made; and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).

2.1.2 Waste authorised by this permit in condition 2.3.3 shall be clearly distinguished from any other waste on the site.

2.2 The site

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

2.3 Operating techniques

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

- (b) 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, 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.

2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.3 Waste shall only be accepted if:

- (a) it is of a type and quantity listed in schedule 2 table S2.2 and
- (b) it conforms to the description in the documentation supplied by the producer or holder; and
- (c) having been separately collected for recycling, it is contaminated and otherwise destined for landfill.

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

- (a) the nature of the process producing the waste;
- (b) the composition of the waste;

- (c) the handling requirements of the waste;
 - (d) the hazardous property associated with the waste, if applicable; and
 - (e) the waste code of the waste.
- 2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.
- 2.3.6 Waste shall not be charged, or shall cease to be charged, if:
- (a) the furnace temperature is below, or falls below, 850°C or
 - (b) any continuous emission limit value in schedule 3 table S3.1(a) is exceeded; or
 - (c) any continuous emission limit value in schedule 3 table S3.1 is exceeded, other than under WID 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 WID abnormal operating conditions.
- 2.3.7 The operator shall have at least one auxiliary burner in each line at start up or shut down or whenever the operating temperature falls below that specified in condition 2.3.6 as long as incompletely burned waste is present in the combustion chamber. Unless the temperature specified in condition 2.3.6 is maintained in the combustion chamber, such burner(s) may be fed only with fuels which result in emissions no higher than those arising from the use of gas oil, liquefied gas or natural gas.
- 2.3.8 The operator shall record the beginning and end of each period of "WID abnormal operation".
- 2.3.9 During a period of "WID 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 "WID abnormal operation", any of the following situations arise, the operator shall, as soon as is practicable, cease the burning of waste until normal operation can be restored:
- (a) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1 due to disturbances or failures of the abatement systems, or continuous emission monitor(s) are out of service, as the case may be, for a total of 4 hours uninterrupted duration;
 - (b) the cumulative duration of "WID abnormal operation" periods over 1 calendar year exceeds 60 hours on an incineration line;
 - (c) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1 (a) due to disturbances or failures of the abatement systems;
- 2.3.11 The operator shall interpret the end of the period of "WID abnormal operation" as the earliest of the following:
- (a) when the failed equipment is repaired and brought back into normal operation;
 - (b) when the operator initiates a shut down of the waste combustion activity, as described in the application or as agreed in writing with the Environment Agency;
 - (c) when a period of four hours has elapsed from the start of the "WID abnormal operation";
 - (d) when, in any calendar year, an aggregated period of 60 hours "WID abnormal operation" has been reached for a given incineration line.
- 2.3.12 Bottom ash and APC residues shall not be mixed.

2.4 Improvement programme

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

2.5 Pre-operational conditions

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

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.1(a) and S3.2.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Wastes produced at the site shall, as a minimum, be sampled and analysed in accordance with schedule 3 table S 3.4. 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;
 - (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.

3.3 Monitoring

- 3.3.1 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) and S3.2;
 - (b) process monitoring specified in table S3.3;
 - (c) residue quality in table S3.4
- 3.3.2 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.

- 3.3.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.3.1 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.
- 3.3.4 Means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.1(a), S3.2, S3.3, and S3.4 unless otherwise agreed in writing by the Environment Agency.
- 3.3.5 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3 table S3.1; the Continuous Emission Monitors shall be used such that;
- (a) the values of the 95% confidence intervals of a single measured result at the daily emission limit value shall not exceed the following percentages:

• Carbon monoxide	10%
• Sulphur dioxide	20%
• Oxides of nitrogen (NO & 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 3.3.5 (a);
 - (c) where it is necessary to calibrate or maintain the monitor and this means that data are not available for a complete half-hour period, the half-hourly average shall in any case be considered valid if measurements are available for a minimum of 20 minutes during the half-hour period. The number of half-hourly averages so validated shall not exceed 5 per day;
 - (d) daily average values shall be determined as the average of all the valid half-hourly average values within a calendar day. The daily average value shall be considered valid if no more than five half-hourly average values in any day have been determined not to be valid;
 - (e) no more than ten daily average values per year shall be determined not to be valid.

3.4 Odour

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

3.5 Noise and vibration

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

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 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 Article 12(2) of the Waste Incineration Directive) give an account of the running of the process and the emissions into air and water compared with the emission standards in the WID.
- 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 The Environment Agency shall be notified without delay following the detection of:
- (a) 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;
 - (b) the breach of a limit specified in the permit; or
 - (c) any significant adverse environmental effects.
- 4.3.2 Any information provided under condition 4.3.1 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 "without delay", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
S5.1 A1 (c)	The incineration of non-hazardous waste in an incineration plant with a capacity of 1 tonne per hour or more.	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.
Directly Associated Activities		
Electricity Generation	Generation of 8.86 MWe electrical power using a steam turbine from energy recovered from the flue gases.	Use of electricity on-site and export to the Grid
Back up electrical generator	For providing emergency electrical power to the plant in the event of supply interruption.	From interruption of electrical supply to restoration of supply.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	Responses to Part B3 of the Application form and supporting information	10/02/2012
Additional Information	Responses on assessment of Emissions to Air and assessment of Noise impacts	22/02/2012
Response to Schedule 5 Notice dated 09/05/12	Details of emission points, proposed techniques, waste fractions and descriptions and further information for BAT and impact assessments.	24/05/2012
Response to request for information dated 20/06/12	details on Operating Techniques, waste codes and descriptions	26/06/2012
Response to request for information dated 06/07/12	Additional details of abnormal emissions	12/07/2012

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC 1	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 accreditation of the system by an external body or if appropriate submit a schedule by which the EMS will be subject to accreditation	Within 12 months of the date on which biomass is first burnt.
IC 2	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 , PM _{2.5} and PM _{1.0} 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.
IC 3	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. The report shall also provide details of optimisation (including dosing rates) for the control of acid gases and dioxins.	Within 4 months of the completion of commissioning.
IC 4	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.
IC 5	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 start of commissioning

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
POC 1	<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.</p> <p>The EMS shall be developed in line with the requirements set out in Section 1 of How to comply with your environmental permit – EPR 1.00 (April 2011), Horizontal Guidance Note H6 and and the requirements of the WID Sector Guidance EPR 5.01.</p> <p>The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.</p>
POC 2	<p>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.</p>
POC 3	<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. The waste acceptance procedure shall include the process and systems by which wastes unsuitable for incineration at the site will be controlled. The procedure shall be implemented in accordance with the written approval from the Agency.</p>
POC 4	<p>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.</p>
POC 5	<p>Prior to the commencement of commissioning, the Operator shall submit to the Environment Agency for approval a protocol for the sampling and testing of incinerator bottom ash for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.</p>
POC 6	<p>After completion of furnace design and at least three calendar months before any furnace operation; 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 the Waste Incineration Directive.</p>

Schedule 2 - Waste types, raw materials and fuel

Table S2.1 Raw materials and fuels

Raw materials and fuel description	Specification
Fuel Oil	< 0.1% sulphur content

Table S2.2 Permitted waste types and quantities for gasification plant

Maximum quantity	<i>96,000 tonnes per annum less any quantity of authorised sludge waste combusted in the period</i>	
Waste code	Description	
02 01	<i>Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing</i>	
02 01 03	Plant tissue waste	
02 01 04	Contaminated waste plastics (except packaging) otherwise destined for landfill	
02 01 06	animal faeces, urine and manure (incl. spoiled straw) treated off-site to less than 50% moisture content	
02 01 07	Waste from forestry	
02 02	<i>Wastes from the preparation and processing of meat, fish and other foods of animal origin</i>	
02 02 03	Materials unsuitable for consumption or processing	
02 03	<i>Waste from fruit, vegetables, cereals, edible oils preparation and production</i>	
02 03 04	Materials unsuitable for consumption or processing	
02 05	<i>Wastes from the Dairy products industry</i>	
02 05 01	Materials unsuitable for consumption or processing	
02 06	<i>Wastes from the baking and confectionery industry</i>	
02 06 01	Materials unsuitable for consumption or processing	
02 06 02	Wastes from preserving agents	
02 07	<i>Wastes from the production of alcoholic and non-alcoholic beverages (excl. tea, coffee, cocoa)</i>	
02 07 01	Wastes from washing, cleaning and mechanical reduction of raw materials	
02 07 02	Wastes from spirits distillation	
02 07 04	Materials unsuitable for consumption or processing	
04 02	<i>Wastes from the textile industry</i>	
04 02 22	Wastes from contaminated processed textile fibres otherwise destined for landfill	
15 01	<i>Waste Packaging; Absorbents, Wiping Cloths, Filter Materials and Protective Clothing</i>	
15 01 01	Contaminated paper and cardboard packaging otherwise destined for landfill	
15 01 02	Contaminated plastic packaging otherwise destined for landfill	
15 01 03	Contaminated wooden otherwise destined for landfill	
15 01 04	Contaminated Absorbents, Wiping Cloths, Filter Materials and Protective Clothing otherwise destined for landfill	
15 01 05	Composite packaging	
15 01 06	Mixed packaging	
15 01 09	Textile packaging	
15 02	<i>Absorbents, Wiping Cloths, Filter Materials and Protective Clothing</i>	
15 02 03	Materials not contaminated by dangerous products	
16 03	<i>Off-specification batches and unused products</i>	
16 03 04	Inorganic wastes	
16 03 06	Organic wastes	
16 05	<i>Discarded Chemicals</i>	
16 05 09	Discarded Chemicals not containing dangerous substances	

Table S2.2 Permitted waste types and quantities for gasification plant

Maximum quantity **96,000 tonnes per annum less any quantity of authorised sludge waste combusted in the period**

Waste code	Description
16 11	Waste linings and refractories
16 11 04	Linings and refractories from metallurgical processes not containing dangerous substances
18 01	Wastes from natal care, diagnosis, treatment or prevention of disease in humans
18 01 04	Health care wastes not subject to special requirements. (disposable clothing, linen, hygiene products)
19 02	wastes from physico/chemical treatments of non hazardous waste
19 02 03	Premixed waste deposits comprising only non-hazardous wastes
19 02 10	Combustible wastes not containing dangerous substances
19 05	Wastes from aerobic treatment of solid wastes
19 05 01	Non composted fraction of municipal or similar waste
19 05 02	Non composted fraction of animal or vegetable waste
19 05 03	Off-specification compost
19 09	wastes from the preparation of water intended for human consumption or for industrial use
19 09 01	Solid waste from primary filtration and screenings from Waste Water Treatment Works
19 09 04	Spent activated carbon from Waste Water Treatment Works not suitable for regeneration
19 12	Wastes from the mechanical treatment of waste (sorting, crushing, compacting, or pelletising)
19 12 01	Contaminated paper and cardboard otherwise destined for landfill
19 12 04	Plastic and rubber
19 12 07	Contaminated wood not containing dangerous substances otherwise destined for landfill
19 12 08	Contaminated textiles otherwise destined for landfill
19 12 10	Combustible Waste (Refuse Derived Fuel [RDF])
19 12 12	Other wastes from the mechanical treatment of wastes not containing dangerous substances
20 01	Municipal Waste (Household waste and similar commercial, industrial and institutional wastes)
20 01 01	Contaminated paper and cardboard otherwise destined for landfill
20 01 08	Contaminated biodegradable food waste otherwise destined for landfill
20 01 10	Contaminated clothes otherwise destined for landfill
20 01 11	Contaminated textiles otherwise destined for landfill
20 01 38	Contaminated wood not containing dangerous substances otherwise destined for landfill
20 01 39	Contaminated plastics otherwise destined for landfill
20 02	Garden and park wastes (including cemetery waste)
20 02 01	Biodegradable waste
20 02 03	Other non biodegradable waste
20 03	Other municipal wastes
20 03 01	Mixed municipal waste
20 03 02	Waste from markets
20 03 03	Street cleaning residues
20 03 07	Bulky non metallic household (and office??) waste
Permitted Sludge Wastes	
Waste Code	At a maximum feed rate not exceeding 2% of the hourly total)
19 02	wastes from physico/chemical treatments of non hazardous waste
19 02 06	Sludges from physico/chemical treatment of wastes
20 03 04	Septic tank sludge

Schedule 3 – Emissions and monitoring

Table S3.1 Point Source emissions to air – emission limits to air and monitoring during normal operation

Emission points ref. & location	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 and A2 on site plan in Schedule 7	Particulate matter	30 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Particulate matter	10 mg/m ³	daily average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Total Organic Carbon (TOC)	20 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Total Organic Carbon (TOC)	10 mg/m ³	daily average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Hydrogen chloride	60 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Hydrogen chloride	10 mg/m ³	daily average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Hydrogen fluoride	2 mg/m ³	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
A1 and A2 on site plan in Schedule 7	Carbon monoxide	100 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Carbon monoxide	50 mg/m ³	daily average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Sulphur dioxide	200 mg/m ³	½-hr average	Continuous measurement	BS EN 14181

Table S3.1 Point Source emissions to air – emission limits to air and monitoring during normal operation

Emission points ref. & location	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 and A2 on site plan in Schedule 7	Sulphur dioxide	50 mg/m ³	daily average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	400 mg/m ³	½-hr average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	180 mg/m ³	daily average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	105 mg/m ³	Rolling annual average	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	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
A1 and A2 on site plan in Schedule 7	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
A1 and A2 on site plan in Schedule 7	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
A1 and A2 on site plan in Schedule 7	water vapour content	No limit set	continuous	Continuous measurement	BS EN 14181
A1 and A2 on site plan in Schedule 7	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
A1 and A2 on site plan in Schedule 7	Dioxins / furans (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 Parts 1, 2 and 3
A1 and A2 on site plan in Schedule 7	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

Table S3.1 Point Source emissions to air – emission limits to air and monitoring during normal operation

Emission points ref. & location	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 and A2 on site plan in Schedule 7	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
A1 and A2 on site plan in Schedule 7	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
A1 and A2 on site plan in Schedule 7	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
A1 and A2 on site plan in Schedule 7	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
A1 and A2 on site plan in Schedule 7	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	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	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 and A2 on site plan in Schedule 7	Particulate matter	150 mg/m ³	½-hr average	Continuous measurement	BS EN 15267-3 during abatement plant failure
A1 and A2 on site plan in Schedule 7	Total Organic Carbon (TOC)	20 mg/m ³	½-hr average	Continuous measurement	BS EN 15267-3 ¹ during abatement plant failure
A1 and A2 on site plan in Schedule 7	Carbon monoxide	100 mg/m ³	½-hr average	Continuous measurement	BS EN 15267-3 during abatement plant failure

Table S3.2 Point source emissions to sewer emission limits and monitoring requirements

Emission point ref. & location	Parameter	Source	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
S1	No parameters set	Site Internal Drainage System	No limit set			
SW1 on Site drainage plan 39484	No parameters set	Uncontaminated water. Free of visible oil and grease	No limit set			

Table S3.3 Process monitoring requirements

Location or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Location close to the Secondary Combustion Chamber inner wall.	Temperature (° C)	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 and A2 on site plan in Schedule 7	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 and A2 on site plan in Schedule 7	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 and A2 on site plan in Schedule 7	Exhaust gas oxygen content	Continuous	BS EN 15267-3 BS EN 14181	
A1 and A2 on site plan in Schedule 7	Exhaust gas water vapour content	Continuous	BS EN 15267-3 BS EN 14181	Unless gas is dried before analysis of emissions.

Table S3.4 Residue quality

Emission point reference or source or description of point of measurement	Parameter	Limit	Monitoring frequency	Monitoring standard or method *	Other specifications
Bottom Ash	TOC	<3%	Monthly in the first year of operation. Then Quarterly	Environment Agency ash sampling protocol.	
Bottom Ash	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	No limit set	Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Environment Agency ash sampling protocol.	
Bottom Ash	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	No limit set	Before use of a new disposal or recycling route	Sampling and analysis as per Environment Agency ash sampling protocol.	
APC Residues	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	No limit set	Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Environment Agency ash sampling protocol.	
APC Residues	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	No limit set	Before use of a new disposal or recycling route	Sampling and analysis as per Environment Agency ash sampling protocol.	

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

Schedule 4 - Reporting

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

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.3.1	A1, A2,	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
TOC Parameters as required by condition 3.3.1	Bottom Ash	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.3.1	Bottom Ash	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.3.1	Bottom Ash	Before use of a new disposal or recycling route	
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.3.1	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 3.3.1	APC Residues	Before use of a new disposal or recycling route	
Functioning and monitoring of the incineration plant as required by condition 4.2.2		Annually	1 Jan

Table S4.2: Annual production/treatment

Parameter	Units
Total Waste Incinerated	tonnes
Total sludge Waste Incinerated	tonnes
Electrical energy produced	KWhrs
Thermal energy produced e.g. steam	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 Bottom 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 (
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 WID 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	Form air 1-9 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Waste Disposal and Recovery	Form R 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Water Usage and other Raw Materials	Form WU/RM1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Residue Quality	Form Residue 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Ash Solubility	Form Residue2 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY

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	ZP3339FN
Name of operator	Knowsley Energy Recovery Limited
Location of Facility	Knowsley Business Park, Knowsley, Merseyside. L34 9HY
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution

To be notified within 24 hours of detection

Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit
--

To be notified within 24 hours of detection unless otherwise specified below

Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

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

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

Part B - to be submitted as soon as practicable

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

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

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

“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.

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

“bottom ash” means ash transported by the grate

“CEM” Continuous emission monitor

“CEN” means Comité Européen de Normalisation

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

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

“disposal” means any of the operations provided for in Annex IIA to Directive 2008/98/EC of the Waste Framework Directive.

“emissions to land” includes emissions to groundwater.

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

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

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

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

“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.

“quarterly” for reporting/sampling means after/during each 3 month period, January to March; April to June; July to September and October to December and, when sampling, with at least 2 months between each sampling date.

“recovery” means any of the operations provided for in Annex IIB to Directive 2008/98/EC of the Waste Framework Directive.

“Rolling Annual Average” shall be taken to be the sum of the valid daily means over the previous 12 calendar months divided by 365.

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

“start up” is any period, where the plant has been non-operational, until waste has been fed to the plant to initiate steady-state conditions.

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

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

“Waste Incineration Directive” means Directive 2000/76/EC on the incineration of waste (O.J. L 332, 28.12.2000)

“WFD” means Waste Framework Directive (Directive 2008/98/EC of the European Parliament and Council).

“WID abnormal operation” means any technically unavoidable stoppages, disturbances, or failures of the abatement plant or the measurement devices during which the concentrations in the discharges into air and the purified waste water of the regulated substances may exceed the normal emission limit values.

“year” means calendar year ending 31 December.

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

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

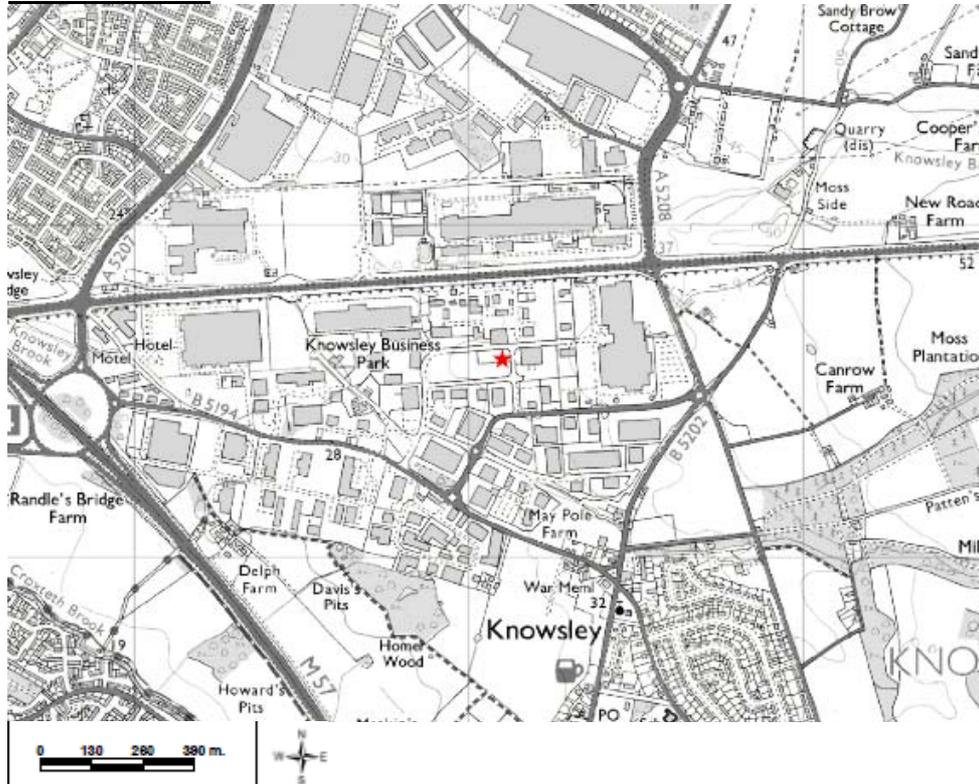
For dioxins/furans and dioxin-like PCBs the determination of the toxic equivalence concentration (I-TEQ, & WHO-TEQ for dioxins/furans, WHO-TEQ for dioxin-like PCBs) stated as a release limit and/ or reporting requirement, the mass concentrations of the following congeners have to be multiplied with their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

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

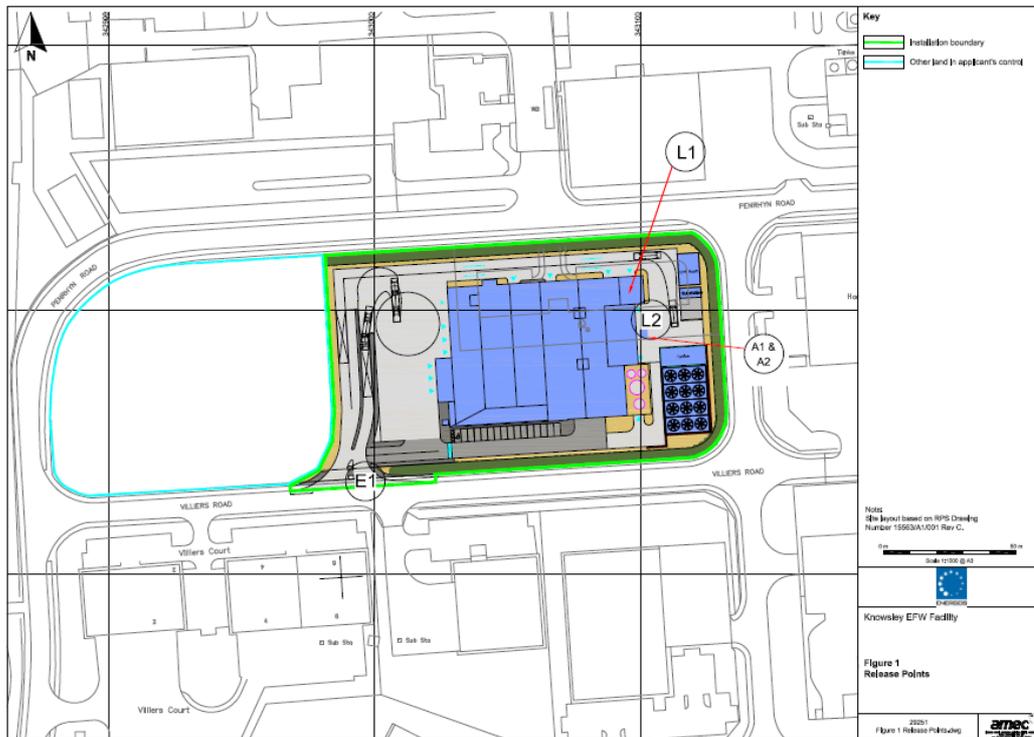
TEF schemes for dioxin-like PCBs			
Congener	WHO-TEF		
	2005	1997/8	
	Humans / mammals	Fish	Birds
Non-ortho PCBs			
3,4,4',5-TCB (81)	0.0001	0.0005	0.1
3,3',4,4'-TCB (77)	0.0003	0.0001	0.05
3,3',4,4',5 - PeCB (126)	0.1	0.005	0.1
3,3',4,4',5,5'-HxCB(169)	0.03	0.00005	0.001
Mono-ortho PCBs			
2,3,3',4,4'-PeCB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

Schedule 7 - Site plan

Site Location



Site Layout



END OF PERMIT