

# Permit with introductory note

Pollution Prevention and Control Regulations 2000

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**Onyx Sheffield Limited**  
**Bernard Road**  
**Sheffield**  
**South Yorkshire**

Permit number

**BM4082**

# Contents

Introductory note .....	iii
<b>Permit .....</b>	<b>1</b>
<b>Conditions .....</b>	<b>2</b>
1 The permitted installation .....	2
2 Operational Matters.....	6
3 Records.....	15
4 Reporting.....	16
5 Notifications.....	18
6 Emissions.....	20
7 Transfer to effluent treatment plant .....	25
8 Off site conditions.....	26
9 Improvement programme.....	27
10 Interpretation .....	28
11 Written agreement to changes .....	33
Schedule 1 .....	34
Schedule 2.....	36
Schedule 3.....	38
<b>END OF PERMIT .....</b>	<b>38</b>

## Introductory note

### ***This introductory note does not form a part of the Permit***

The following Permit is issued under Regulation 10 of the Pollution Prevention and Control Regulations 2000 (S.I.2000 No.1973) ("the PPC Regulations") to operate an Installation carrying out one or more of the activities listed in Part 1 to Schedule 1 of those Regulations, to the extent authorised by the Permit.

The Permit includes conditions that have to be complied with. It should be noted that aspects of the operation of the Installation which are not regulated by those conditions are subject to the condition implied by Regulation 12(10) of the PPC Regulations, that the Operator shall use the best available techniques for preventing or, where that is not practicable, reducing emissions from the Installation.

Techniques include both the technology used and the way in which the Installation is designed, built, maintained, operated and decommissioned.

### **Brief description of the Installation regulated by this permit**

The main purpose of the activity/ies at the Installation is to burn mixed municipal waste and to recover energy in the form of heat for export to the district heating scheme and to generate electricity for export to the national grid. The Installation is replacing an existing municipal waste incinerator, which is currently authorised under Integrated Pollution Control (IPC). The IPC authorised incinerator will be demolished following commissioning of the new Installation. The Installation covers the entire incineration plant, including the incineration line, waste reception, storage, on-site pre-treatment facilities, waste fuel and air supply systems, boiler, facilities for the treatment of exhaust gases, on-site facilities for treatment and storage of residues and waste water, stack, devices and systems for controlling incineration operations, recording and monitoring conditions.

The Installation has a design capacity of 28 tonnes per hour, which equates to 225,000 tonnes per annum at 8000 hours operation per annum. Waste that cannot be incinerated is transferred to appropriate waste disposal facilities. The thermal capacity of the grate is such that waste hourly throughput will vary between 16.8 and 28.0 tonnes per hour, depending upon the calorific value of the waste. There is one incineration line. The incineration process will generate a maximum of approximately 39 MWth of heat for export to the district heating scheme and 17.5 MW of electricity for export to the national grid.

## **Raw Materials**

Waste is delivered to the plant in covered vehicles. These are first weighed before proceeding to the tipping hall. This is a building, maintained under slight negative pressure to ensure that any odours, dust or litter escaping from the building are minimised. The vehicles tip into a waste storage pit from where a grab transfers waste to the feed hopper of the combustion plant. The grab is also used to homogenise the waste and to remove any unsuitable or non-combustible items and oversize items (items not suitable for incineration) as far as is practicable.

Hydrated lime for the flue gas cleaning process is delivered by bulk road tanker and offloaded pneumatically into a silo fitted with a dust filter.

Activated carbon for the flue gas cleaning process is delivered in bulk road tanker and off-loaded pneumatically into a silo fitted with a dust filter.

Solid urea for the flue gas cleaning process is delivered in bulk bags. A dedicated emptying station feeds the urea preparation and injection process.

Various water treatment chemicals are delivered in proprietary containers and stored in the appropriate contained areas.

A bunded fuel oil tank provides fuel oil for the site vehicles.

Various other materials including maintenance materials (oils, greases, insulants, antifreezes, welding and fire fighting gases) are stored in the appropriate manner.

## **Combustion Process**

The incinerator hearth, an inclined reciprocating grate bar design, promotes continuous mixing of the waste and hence promotes good combustion. As the waste enters the incinerator, it passes through a drying zone, followed by a combustion zone and a burnout zone. Combustion air is extracted from within the tipping hall. Primary air is fed in below the waste through the grate bars and secondary air is injected above the waste mass to promote mixing for good combustion.

Urea is injected into the combustion gas path to react with the oxides of nitrogen, chemically reducing them to nitrogen and water.

Auxiliary natural gas burners are fitted for start-up sequencing and to maintain temperatures above 850°C for 2 seconds at 6% oxygen. The oxygen concentration and temperature are carefully controlled to promote combustion of organic matter.

Ash from the grate ("Bottom Ash") is discharged from the lower end of the grate into a water filled quench pit. It is then removed from the quench pit by conveyor, to a Bottom Ash storage area located within the main incinerator building prior to off-site disposal. Ferrous metals are removed by magnetic separator and stored separately prior to recycling off-site. Liquids collected from the Bottom Ash and ferrous storage areas are returned to the ash quench pit.

## **Energy Recovery**

The proposed incinerator will operate as a combined heat and power plant generating both electricity and supplying heat to an existing district heating scheme. Such a plant ranks more highly in the Government's Waste Strategy 2000 than an incinerator without the benefit of energy recovery.

Hot gases arising from the combustion of waste pass through a steam generator (boiler) consisting of a series of heat exchangers, which remove heat, from the gas stream to evaporate water and hence generate steam. The heat recovery system will rapidly reduce the waste gas temperature through the temperature range at which dioxins and furans can form thus inhibiting their formation.

Steam from the heat recovery boiler is fed to a steam turbine driven generator, which will supply electricity to the National Grid. Pass out steam from the turbine, together with surplus steam from the boiler, can be used for heating water supplied to the District heating Scheme.

Water for steam generation is taken from a town's water main and is treated prior to use in the boiler. Exhaust steam from the turbine and steam used directly in the District Heating Scheme is condensed in air-cooled condensers and returned to the boiler.

Soot blowing facilities are included to remove particulate matter fouling the boiler tubes and feeding this material into the Bottom Ash collecting system.

## **Gas Cleaning**

Urea solution is injected into the combustion gas path within the boiler to reduce the formation of oxides of nitrogen ("NO<sub>x</sub>"). Downstream of the boiler, lime is injected to neutralise acid gases and activated carbon is injected to absorb (primarily) dioxins, furans and dioxin-like PCBs ("PCBs"), volatile organic compounds ("VOCs") and mercury. The lime injection rate is controlled, in relation to the measurement of acid gases to optimise the efficiency of gas scrubbing and lime usage. Lime usage is further optimised by the use of relative humidity control and the recirculation of spent lime.

NO<sub>x</sub> abatement is achieved by the use of both controlled air combustion techniques in the combustion chamber and selective non-catalytic reduction ("SNCR"). The SNCR is based on the injection of urea solution into the gas combustion stream before the lime and carbon injection and before the gas passes to bag filters.

Bag filters remove particulate matter carried with the combustion gases, including lime which has been injected upstream of the bag filter. Pulses of compressed air are used to remove the accumulated particulate ("APC Residues") from the bags. The APC Residues fall into a collection hopper and are then conveyed to a storage silo.

The cleaned gas then discharges to atmosphere via a 76 metre stack at an efflux velocity in excess of 15 m sec<sup>-1</sup> at maximum throughput.

### **Ancillary Operations**

Demineralised water is required to compensate for steam system losses. An ion exchange demineralisation plant provides the make-up water. The ion exchange resins are regenerated using sodium hydroxide and hydrochloric acid and the regeneration effluent is routed to the water treatment plant, with the boiler blowdown and other process effluent, for treatment prior to reuse within the Installation.

### **Ash Handling and Disposal**

Bottom Ash and APC Residues are sent separately for disposal or recovery, off site, by licensed contractors, subject to waste licensing legislation. The Operator is investigating options for the reuse and recycling of the ash. The ferrous metals are sent for recovery off site by licensed contractors subject to waste licensing legislation. The Bottom Ash will be periodically monitored to ensure effective burn out is being achieved. All other solid waste residues arising from the operation of the process will be removed from site for disposal by suitable contractors.

All APC Residues will be transported and handled within enclosed systems.

### **Liquid Effluent and Site Drainage**

All effluent (including excess rainwater) arising from the Installation will be discharged to sewer.

### **Emissions Monitoring**

Emissions from the stack are continuously monitored for:- particulate, carbon monoxide (CO), ammonia (NH<sub>3</sub>), sulphur dioxide (SO<sub>2</sub>), hydrogen chloride (HCl), oxygen (O<sub>2</sub>), oxides of nitrogen (NO and NO<sub>2</sub> expressed as NO<sub>2</sub>) and volatile organic compounds (VOCs as Total Organic Carbon ("TOC")). In addition periodic measurements will be carried out for hydrogen fluoride (HF), metals (cadmium (Cd), thallium (Tl), mercury (Hg), antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni), vanadium (V)), dioxins/furans, PCBs, and nitrous oxide (N<sub>2</sub>O). The frequency for periodic measurements are specified in the Permit.

In addition, the flue gas will be sampled continuously to facilitate monthly tests to determine the monthly release of dioxins.

#### **Other PPC Permits relating to this installation**

Permit holder	Permit Number	Date of Issue
None		

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#### **Superseded Licenses/Consents/Authorisations relating to this Installation**

Holder	Reference Number	Date of Issue
None		

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## Talking to us

If you contact the Agency about this Permit please quote the Permit Number.

The Operator should use the Emergency Hotline telephone number (0800 80 70 60) or any other number notified to it to give a notification under condition 5.1.1.

## Confidentiality

The Permit requires the Operator to provide information to the Agency. The Agency will place the information onto the public registers in accordance with the requirements of the PPC Regulations. If the Operator considers that any information provided is commercially confidential, it may apply to the Agency to have such information withheld from the register as provided in the PPC Regulations. To enable the Agency to determine whether the information is commercially confidential, the Operator should clearly identify the information in question and should specify clear and precise reasons.

## Variations to the permit

This Permit may be varied in the future. The Status Log within the Introductory Note to any such variation will include summary details of this Permit, variations issued up to that point in time and state whether a consolidated version of the Permit has been issued.

## Surrender of the permit

Before this Permit can be wholly or partially surrendered, an application to surrender the Permit has to be made. For the applicant to be successful, they would have to be able to demonstrate to the Agency, in accordance with Regulation 19 of the PPC Regulations, that there is no pollution risk and that no further steps are required to return the site to a satisfactory state.

## Transfer of the permit or part of the permit

Before the Permit can be wholly or partially transferred to another person, a joint application to transfer the Permit has to be made by both the existing and proposed holders, in accordance with Regulation 18 of the PPC Regulations. A transfer will be allowed unless the Agency considers that the proposed holder will not be the person who will have control over the operation of the installation or will not ensure compliance with the conditions of the transferred Permit. If the Permit authorises the carrying out of a specified waste management activity, then there is a further requirement that the transferee is considered to be a "fit and proper person" to carry out that activity.

## Status Log

Detail	Date	Comment
Application BM4082	Received 10/12/01	
Response to request for information	Request dated 05/03/02	Response dated 03/05/02
Further Information	Received 10/05/02	Methodology for soil sampling
Further Information	Received 13/06/02	Summary of air dispersion sensitivity analysis and comparison of annual average NO <sub>x</sub> concentrations with existing plant.
Further Information	Received 14/06/02	Comments on use of FGR
Further Information	Received 17/06/02	Clarification of site plan, CFD analysis, combustion temperature, sample point standards, energy factors, emissions of chromium.
Further Information	Received 17/06/02	Clarification of use of raw materials, use of carbon monoxide monitoring, FGR, surface water drainage, background noise monitoring
Further Information	Received 05/08/02	Assessment of metal deposition rates
Further Information	Received 22/08/02	Change of registered office address
Further Information	Received 27/08/02	Clarification of HF monitoring, fuel oil storage conditions, feedstock waste definitions, incorporation of formal environmental management system.
Permit BM4082	Determined 04/09/02	

End of introductory note.



**Permit**

Pollution Prevention and Control  
Regulations 2000



**ENVIRONMENT  
AGENCY**

## Permit

Permit number

**BM4082**

The Environment Agency ("the Agency") in exercise of its powers under Regulation 10 of the Pollution Prevention and Control Regulations 2000 (S.I. 2000 No. 1973), hereby authorises

**Onyx Sheffield Limited** ("the Operator"),

Whose Registered Office is

**Onyx House,  
154a Pentonville Road,  
London N1 9PE**

**Company registration number 3709317**

to operate an Installation at

**Onyx Sheffield Energy Recovery Facility  
Bernard Road  
Sheffield S4 7YX**

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

Signed

[Signature box]

**Dr Frank Hardwick**

Authorised to sign on behalf of the Environment Agency

Date

**4 September 2002**

## Conditions

### 1 The permitted installation

1.1.1 The Operator is authorised to carry out the activities and/or the associated activities specified in Table 1.1.1.

**Table 1.1.1**

<b>Activity under Schedule 1 of the Regulations/ Associated Activity</b>	<b>Description of specified activity</b>	<b>Schedule 1 Activity Reference (if applicable)</b>	<b>Limits of specified activity</b>
Receipt and storage of municipal waste	Receive waste at the Installation boundary and storage prior to incineration	Directly associated activity	Receipt of waste and storage for incineration
Incineration of municipal waste	Feedstock management, combustion operations, gas cleaning and discharge.	5.1 A (1)(d)	From feedstock management and selection to point of discharge to the environment
Production of steam for generation of heat and electricity and off site use.	Steam generation, Turbine generator operation. District Heating Scheme operation within the Installation.	Directly associated activity.	From incinerator to: output to district heating scheme; output to grid of electricity.
Abatement of flue gas	Lime and activated carbon injection. Urea injection. Bag filter abatement.	Directly associated activity.	From incinerator to release point A1
Management of Bottom Ash and APC residues	Residues, handling and storage	Directly associated activity	Including loading and storage on off-site transfer vehicles as far as site boundary.
Water discharges to foul sewer.	Discharge of waste waters from process to foul sewer	Directly associated activity	From incinerator to foul sewer

- 1.1.2 The activities authorised under condition 1.1.1 shall not extend beyond the Site, being the area shown edged in red on the plan below

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## 1.1.3

The Permitted Installation shall not be brought into operation until the following measures have been completed and the Agency has been notified in writing of this

**a** Prior to the start of Operation, the Operator shall:

- i. carry out all off-site monitoring required to be carried out prior to the start of Operation; and
- ii. submit all reports due to be submitted prior to the start of Operation

under the provisions of condition 8.1.2 of this Permit in accordance with the provisions of that condition.

**b** At least 3 months prior to the start of any on-site plant construction activities, the Operator shall provide to the Agency, a written report of the details of the computational fluid dynamic modelling of the combustion chamber. The details shall be sufficient to demonstrate that the combustion chamber will be able to achieve 850°C for two seconds at a minimum of 6% oxygen content by volume (wet).

**c** At least 3 months prior to the start of commissioning, the Operator shall provide in writing, to the Agency, full details of all continuous and spot monitoring arrangements and facilities. These must include monitoring equipment details, methods and standards for sampling and analysis together with full details of monitoring locations, access and working platforms. The details shall be sufficient for the Agency to determine the suitability of the position(s).

**d** At least 3 months prior to the start of commissioning, the Operator shall notify the Agency, in writing, of the planned start date for the first introduction of waste as part of the commissioning activities and the proposed completion date for commissioning.

**e** At least 3 months prior to the start of commissioning the Operator shall provide a commissioning plan in writing to the Agency. The plan shall be designed to establish that Permit conditions can be met under all anticipated operating conditions and shall confirm the commissioning programme and plant monitoring protocols.

**f** At least 3 months prior to the start of commissioning the Operator shall provide to the Agency the following documents demonstrating that BAT is used:-

- i An environmental accident prevention plan (including the risk assessment [quantitative where appropriate] on which it is based)
- ii An emergency plan
- iii A site closure plan

**g** At least 1 month prior to the start of commissioning, the Operator shall provide a report, in writing, of the details of the noise control study carried out during the detailed design phase, to show which noise control measures have been adopted.

- h** The Operator shall complete the design of the Permitted Installation in line with BAT and shall provide a report in writing to the Agency prior to the commencement of commissioning demonstrating that the final detailed design is BAT and including, as a minimum, a comparison of the completed design with the Agency's relevant PPC guidance note current at that time.
- i** The Operator shall design, construct and commission the Permitted Installation in accordance with:
  - i. the documentation provided in response to conditions 1.1.3 (b), (c), (e), (g), (h) from the date of submission of such documentation to the Agency;unless and until otherwise agreed in writing with the Agency or specified in writing by the Agency.

## 2 Operational Matters

### 2.1 Management techniques and control

2.1.1 The Permitted Installation shall, subject to the conditions of this Permit, be managed and controlled as described in the documentation specified in Table 2.1.1, or as otherwise agreed in writing by the Agency.

**Table 2.1.1 : Management and control**

Description	Parts	Date Received
Application	The response to question 2.1 given in section 4 of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 05/03/02	Response to questions 3, 19 and 20	03/05/02
Further Information	Headed 'Environmental Management System'	27/08/02

2.1.2 All plant, equipment and technical means used in operating the Permitted Installation shall be maintained in good operating condition.

2.1.3 The Permitted Installation shall be supervised by Staff who are suitably trained and fully conversant with the requirements of this Permit.

2.1.4 A copy of this Permit and those parts of the Application referred to in this Permit shall be available, at all times, for reference by all Staff carrying out work subject to the requirements of the Permit.

2.1.5 All Staff shall be fully conversant with those aspects of the Permit conditions, which are relevant to their duties and shall be provided with appropriate training and written operating instructions to enable them to carry out their duties.

### 2.2 Raw materials (including water)

2.2.1 The Operator shall, subject to the conditions of this Permit, use raw materials (including water) as described in the documentation specified in Table 2.2.1, or as otherwise agreed in writing by the Agency.

**Table 2.2.1 : Raw materials (including water)**

Description	Parts	Date Received
Application	The response to question 2.2 given in section 5 and figures 6.4 and 6.7 of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 5/03/02	Response to question 4, excluding references to sulphuric acid in box 1.	03/05/02
Further information	Response to further questions raised 14/6/02, question 1	17/06/02
Further Information	Headed 'Fuel Oil Storage'	27/08/02

2.2.2 The materials detailed in Table 2.2.2 shall be stored in the location, manner and storage conditions specified in that table.

**Table 2.2.2: Raw Materials (including water)**

Material	Location of Storage on site	Manner of Storage	Storage Conditions
Municipal Waste	As detailed in the Application	Enclosed waste bunker	Dedicated contained concrete bunker
Lime	As detailed in the Application	Silo with self cleaning filter on vent.	Designated storage area with contained drainage
Urea	As detailed in the Application	Sealed bags	Designated storage area with contained drainage
Activated Carbon	As detailed in the Application	Silo with self cleaning filter on vent.	Designated storage area with contained drainage
Fuel oil for on site vehicles	As detailed in the Application	Bulk tanks	Bunded area, including transfer connections.
Lubricating oils and other maintenance fluids	As detailed in the application	Sealed drums and other sealed containers	Within bunded, covered storage area
Water treatment chemicals	As detailed in the application	Sealed drums and other sealed containers	Within bunded, covered storage area

## 2.3 **Operating Techniques**

2.3.1 The Permitted Installation shall, subject to the conditions of this Permit, be operated using the techniques and in the manner described in the documentation specified in Table 2.3.1, or as otherwise agreed in writing by the Agency.

**Table 2.3.1: Operating techniques**

Description	Parts	Date Received
Application	The response to questions 2.3 given in section 6 and annex C of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 5/03/02	Response to questions 5, 14, 15 and 21 and in appendices A and B of the response.	03/05/02
Further information	Whole document	14/06/02
Further information	Response to further questions raised 14/06/02, questions 2 to 5	17/06/02
Further information	Response to further questions raised 5/06/02, questions 2 and 3	17/06/02
Further Information	Headed 'Waste Categories'	27/08/02

2.3.2 Only the waste types and quantities specified in Table 2.3.2 shall be incinerated in the Permitted Installation.

**Table 2.3.2: Permitted Waste Types**

Description	European Waste Catalogue Number (where available) or other specification	Maximum throughput
Mixed Municipal Waste.	200301	225,000 tonnes per year
MRF waste residue and commercial waste of a similar nature to municipal waste (less than 20 % of total waste input)		

2.3.3 The Operator shall adopt procedures and practices to, as far as practicable, identify and manage the wastes delivered to the Permitted Installation such that the conditions of this Permit are not breached.

2.3.4 The Operator shall adopt effective procedures and practices to monitor and control pests, odour and litter.

2.3.5 The Operator shall carry out and record the results of a daily olfactory assessment along the boundary of the Permitted Installation.

2.3.6 The incinerator Bottom Ash shall have **either** a total organic carbon (TOC) content less than 3% **or** loss on ignition of less than 5% of the dry weight of the ash.

2.3.7 Waste shall only be charged into the incinerator when the combustion chamber temperature is in excess of 850°C after the last injection of combustion air, the oxygen level is in excess of 6% (wet) by volume and when the continuous emissions limits are being complied with subject to abnormal operation conditions specified in conditions 2.3.8 and 2.3.9.

### Abnormal Operating Conditions

2.3.8 In the case of breakdown, the Operator shall reduce or close operations as soon as practical until normal operation can be restored.



- 2.3.9 In the case of abnormal operation, the Operator shall shutdown those process lines, as soon as practicable until normal operation can be restored, where:
- a continuous measurement(s) exceed emission limit value(s) in Table 6.1.3 for a period of four hours uninterrupted duration (excluding abnormal operating conditions specified in condition 2.3.10); or
  - c continuous emission monitor(s) is(are) out of service for four hours uninterrupted duration; or
  - d where the cumulative duration of abnormal operation periods as specified in conditions 2.3.9(b) and 2.3.9(c) above, over one calendar year is or exceeds 60 hours.
- 2.3.10 Under no circumstances shall releases from the Permitted Installation exceed a total particulate emission concentration of 150 mg/m<sup>3</sup> (expressed as a half hourly average); or exceed the CO and / or VOC emission limits (excluding start-up and shutdown periods when there is no waste being incinerated).
- 2.3.11 The bag filter bypass use shall be minimised and only used when feedstock waste is not present in the furnace, or in the event of an emergency. Any use of the bypass when waste is present in the furnace shall be notified to the Agency in accordance with this Permit. The CEM equipment shall be located such that releases from Release Point A1 shall be monitored (within the instrument range) during periods when the bag filter bypass operates.
- 2.3.12 The Operator shall reduce or close operations as soon as practical on becoming aware of a substantiated grounding of a visible plume from release point A1.
- 2.3.13 The Operator shall operate the Permitted Installation in accordance with:
- a. the documentation provided in response to condition 1.1.3 (e) from the date of submission of such documentation to the Agency until the completion of Commissioning; and
  - b. the documentation provided in response to condition 1.1.3 (f) unless and until otherwise agreed in writing with the Agency or specified by the Agency.

## 2.4 **Groundwater protection**

- 2.4.1 The Permitted Installation shall, subject to the conditions of this Permit, be controlled as described in the documentation specified in Table 2.4.1, or as otherwise agreed in writing by the Agency.

**Table 2.4.1: Groundwater protection**

Description	Parts	Date Received
Application	The response to questions 2.4 given in section 7 of the application	10/12/01

2.5 **Waste handling and storage**

2.5.1 The Operator shall, subject to the conditions of this Permit, handle and store waste as described in the documentation specified in Table 2.5.1, or as otherwise agreed in writing by the Agency.

**Table 2.5.1: Waste handling and storage**

Description	Parts	Date Received
Application	The response to question 2.5. given in section 8 of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 05/03/02	Response to question 7	03/05/02

2.5.2 Waste materials specified in Table 2.5.2 shall only be stored on the site in the location, manner and storage conditions specified in that Table.

**Table 2.5.2: Waste stored on site**

Description of Waste	Location of Storage on Site	Manner of Storage	Storage Conditions
Reject loads and oversize	As detailed in the Application	Segregated area. Loose and liquid loads in containers	Impermeable hard standing within tipping hall.
Waste oil, grease and solvents	As detailed in the Application	Drums	Drums to be clearly marked, held on contained concrete hard standing
Bottom ash	As detailed in the Application	Dedicated storage bay	Covered concrete hard standing with contained drainage
APC Residues	As detailed in the Application	Silo	Inside building in dedicated area with contained drainage
Metals for recycling	As detailed in the Application	Dedicated storage bays	Covered concrete hardstanding with controlled drainage and three side walls.

2.5.3 Bottom Ash and APC Residues shall not be mixed prior to recovery / disposal.

2.5.4 Effective dust control measures (including water sprays if appropriate) shall be installed and used for the raw ash storage and processing and removal of products and unused and rejected wastes.

2.6 **Waste recovery and disposal**

2.6.1 The Operator shall, subject to the conditions of this Permit, recover and dispose of waste as described in the documentation specified in Table 2.6.1, or as otherwise agreed in writing by the Agency.

**Table 2.6.1: Waste recovery and disposal**

Description	Parts	Date Received
Application	The response to question 2.6 given in section 9 of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 05/03/02	Response to questions 8	03/05/02

2.6.2 Waste produced at the Permitted Installation shall, as a minimum, be sampled and analysed in accordance with Table 2.6.2. Additional samples shall be taken and tested and appropriate action taken whenever:

- a. disposal or recovery routes change; and / or
- b. it is suspected that the nature or composition of the waste has changed such that the route selected may no longer be appropriate.

**Table 2.6.2: Waste Sampling and Analysis**

Waste Description	Parameters to be measured	Frequency
Bottom Ash	TOC or LOI	Quarterly
Bottom Ash	Metals (Cd, Tl, Hg, Pb, Cr, Cu, Mn, Ni, As, Co, V, Sn) and their compounds, dioxins/furans and PCBs. Sampling and analysis as per Agency ash sampling protocol.	Quarterly
APC Residues	TOC, metals (Cd, Tl, Hg, Pb, Cr, Cu, Mn, Ni, As, Co, V, Sn) and their compounds, dioxins/furans and PCBs. Sampling and analysis as per Agency ash sampling protocol.	Quarterly

2.7 **Energy Efficiency**

2.7.1 The Operator shall, subject to the conditions of this Permit, use energy as described in the documentation specified in Table 2.7.1, or as otherwise agreed in writing by the Agency.

**Table 2.7 1: Energy efficiency**

Description	Parts	Date Received
Application	The response to question 2.7 given in section 10 of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 05/03/02	Response to questions 9 and 23	03/05/02
Further Information	Response to further questions raised 5/06/02, question 5.	17/06/02

2.8 **Accident prevention and control**

2.8.1 The Operator shall, subject to the conditions of this Permit, prevent and limit the consequences of accidents as described in the documentation specified in Table 2.8.1, or as otherwise agreed in writing by the Agency.

**Table 2.8.1 : Accident prevention and control**

Description	Parts	Date Received
Application	The response to question 2.8 given in section 11 of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 05/03/02	Response to questions 10	03/05/02

2.9 **Noise and vibration**

2.9.1 The Operator shall, subject to the conditions of this Permit, control noise and vibration as described in the documentation specified in Table 2.9.1, or as otherwise agreed in writing by the Agency.

**Table 2.9.1 : Noise and vibration**

Description	Parts	Date Received
Application	The response to question 2.9 given in section 12 of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 05/03/02	Response to questions 11 and 24	03/05/02
Further Information	Response to further questions raised 14/06/02, question 6	17/06/02

2.9.2 The Operator shall maintain a written Noise and Vibration Management Plan with the objective of reducing to a minimum noise and vibration emissions, so as to avoid harm or nuisance within the local community. The plan shall include an inspection and corrective maintenance regime for the noise abatement measures adopted within the Permitted Installation. The plan shall also include a procedure for recording, investigating and resolving noise complaints.

2.10 **Monitoring**

2.10.1 The Operator shall, subject to the conditions of this Permit, carry out, evaluate and assess monitoring as described in the documentation specified in Table 2.10.1, or as otherwise agreed in writing by the Agency.

**Table 2.10.1 : Monitoring**

Description	Parts	Date Received
Application	The response to question 2. Given in section 13 of the application	10/12/01
Response to Schedule 4 Part 1 Notice issued 05/03/02	Response to questions 12, 25 and 26	03/05/02
Further Information	Response to further questions raised 5/06/02, question 4	17/06/02
Further information	Headed 'HF Monitoring'	27/08/02

2.10.2 Where requested in writing by the Agency, the Operator shall provide at least 14 days advance notice of undertaking monitoring/spot sampling.

2.10.3 The Operator shall provide:

- a** safe and permanent means of access to enable sampling/monitoring to be carried out in relation to the emission points specified in Schedule 2, unless otherwise specified in that Schedule; and
- b** safe means of access to other sampling/monitoring points when required by the Agency.

2.10.4 On a weekly basis, the Operator shall make available on the Internet a summary report of the continuous monitoring data.

2.10.5 The following operating parameters shall be continuously monitored and recorded:

- a** temperature near the inner wall of the combustion chamber (or other representative location agreed in writing with the Agency); and
- b** the exhaust gas oxygen concentration, temperature, pressure and water vapour content (the latter is not required if gases are dried prior to analysis).

2.10.6 The Operator shall ensure that sampling ports are compliant with the requirements of BS EN 13284-1.

2.10.7 Measurements for the determination of concentrations of substances specified in this Permit shall be carried out representatively.

2.10.8 Sampling and analysis of all pollutants, including dioxins and furans, as well as reference measurement methods to calibrate automated, continuous, measurement systems shall be carried out as specified by the appropriate CEN standards. If CEN standards are not available, ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality, as agreed in writing with the Agency, shall apply.

2.10.9 Analysis of the samples for the substances specified in the Permit shall be carried out at a UKAS certified laboratory or other laboratory providing the equivalent performance and reliability.

2.11 **Decommissioning**

2.11.1 The Operator shall, subject to the conditions of this Permit, make provision for decommissioning the Permitted Installation as described in the documentation specified in Table 2.11.1, or as otherwise agreed in writing by the Agency.

**Table 2.11.1 : Decommissioning**

Description	Parts	Date Received
Application	The response to question 2.11 given in section 14 of the application and specifically excludes section 3 of the application.	10/12/01
Response to Schedule 4 Part 1 Notice issued 05/03/02	Response to questions 13	03/05/02

2.11.2 A site closure plan shall be maintained such that, upon definitive cessation of activities, the Permitted Installation can be decommissioned safely and that pollution risks from the site are minimised.

2.12 **Multi-operator installations**

2.12.1 This is not a multi-operator installation

## 3 Records

- 3.1.1 A record (a "Specified Record") shall be made of:-
- a** any malfunction, breakdown or failure of plant, equipment or techniques (including down time and any short term and long term remedial measures) that may have, has had or might have had an effect on the environmental performance of the Permitted Installation. These records shall be kept in a log maintained for that purpose;
  - b** all monitoring and sampling taken or carried out and any assessment or evaluation made on the basis of such data;
  - c** CEM data before and after subtraction of the uncertainty errors;
  - d** raw data for all specified congeners of dioxins/furans and PCBs;
  - e** any other Specified Records for the Permitted Installation / sector as stipulated from time to time by the Agency.
- 3.1.2 There shall be made available for inspection by the Agency at any reasonable time:
- a** Specified Records;
  - b** any other records made by the Operator in relation to the operation of the Permitted Installation ("Other Records").
- 3.1.3 A copy of any Specified or Other Records shall be supplied to the Agency on demand and without charge.
- 3.1.4 Specified Records and Other Records shall:-
- a** be legible;
  - b** be made as soon as reasonably practicable; and
  - c** indicate any amendments, which have been made and shall include the original record wherever possible.
- 3.1.5 Specified Records and Other Records shall be retained for a minimum period of 4 years from the date when the records were made at the Permitted Installation.
- 3.1.6 For all waste received at or produced from the Permitted Installation, the Operator shall record (and shall retain such records for a minimum of 4 years)
- a** its composition, or as appropriate, description;
  - b** the best estimate of the quantity received or produced;
  - c** its disposal routes; and
  - d** the best estimate of the quantity sent for recovery.
- 3.1.7 A record shall be made at the Permitted Installation of any complaints concerning the Permitted Installation's effect or alleged effect on the environment. The record shall give the date of complaint, time of complaint, a summary of any investigation and the results of such investigation. Such records shall be made in a log kept for this purpose.

## 4 Reporting

- 4.1.1 All reports and notifications required by this Permit, or by Regulation 16 of the PPC Regulations, shall be sent to the Agency at the address notified in writing to the Operator by the Agency.
- 4.1.2 The Operator shall report the parameters listed in Table S2 to Schedule 2 as follows:
- a** in respects of the emission points specified;
  - b** for the reporting periods specified in Table S2 to Schedule 2 and using the forms specified in Table S3 to Schedule 3;
  - c** giving the information from such results and assessments as may be required by the forms specified in those Tables; and
  - d** sending the report to the Agency within 28 days of the end of the reporting period, with the exception of monthly reports specified, which shall be submitted in hard copy within 10 working days of the end of the month in question.
- 4.1.3 The Operator shall, within 34 months of the issue of this Permit, submit a report in writing on potential environmental improvements to the Permitted Installation. For each of the subject areas identified in Section 2 of the appropriate technical guidance current at that time, the report shall assess the costs and benefits of alternative techniques that may provide environmental improvement. This shall include, but not be limited to, those techniques listed in the aforementioned guidance. The methodologies used should be based on those given in Agency guidance note IPPC H1 (Environmental Assessment and Appraisal of BAT) and should justify, against the Best Available Techniques criteria, where potential improvements are not planned to be implemented. As part of its management system the Operator shall submit an updated report in writing, every 36 months thereafter.
- 4.1.4 Where the Operator has a formal environmental management system applying to the Permitted Installation which encompasses annual improvement targets the Operator shall, not later than 31 January in each year, provide a summary report of the previous year's progress against such targets.
- 4.1.5 Fugitive emissions shall be reviewed on an annual basis and a summary report on this review shall, not later than 31 January each year, be sent to the Agency detailing such releases and the measures taken to prevent or reduce them.
- 4.1.6 By 31 January each year, the Operator shall submit to the Agency an annual report in writing on quantities of ash, their destinations and their components / compositions, which have been disposed of or recycled in the previous calendar year. The report shall review (with regard to BAT) opportunities for increasing waste recovery over the coming year, and report on the progress with those identified in the previous year's report.
- 4.1.7 The Operator shall forward without delay to the Agency, any complaints received relating to off-site noise nuisance.



- 4.1.8 By 31 January each year, the Operator shall submit to the Agency, an annual report on the energy consumption and energy production of the Permitted Installation.
- 4.1.9 The report required by condition 4.1.8 shall include the following:
- a. A review (with regard to BAT) of opportunities for increasing the overall energy efficiency of the Permitted Installation over the coming year;
  - b. Identify progress with those opportunities identified in the previous annual report; and
  - c. Energy produced per tonne of waste processed including details of parasitic load and exported energy.

## 5 Notifications

5.1.1 The Operator shall notify the Agency **without delay** of:-

- a** the detection of an emission of any substance which exceeds any limit or criteria in this Permit specified in relation to the substance;
- b** the detection of any fugitive emission which has caused or may cause pollution unless the quantity emitted is so trivial that it would be incapable of causing pollution;
- c** the detection of any malfunction, breakdown or failure of plant or techniques which has caused or may have the potential to cause pollution;
- d** any accident which has caused or may have the potential to cause pollution;
- e** reaching the 60 hour limit referred to in condition 2.3.8 (d); and
- f** the operation of the bag filter bypass referred to in condition 2.3.10

5.1.2 The Operator shall submit written confirmation to the Agency of any notification under condition 5.1.1 of this Permit by sending:-

- a** the information listed in Part A of Schedule 1 to this Permit within 24 hours of such notification; and
- b** the more detailed information listed in Part B of that Schedule as soon as practicable thereafter;

and in each case such information shall be in accordance with that Schedule.

5.1.3 The Operator shall give written notification as soon as practicable, of any of the following:

- a** permanent cessation of the operation of any part of or all of the Permitted Installation;
- b** cessation of the operation of any part of or all of the Permitted Installation for a period, likely to exceed one year; and
- c** resumption of the operation of any part of or all of the Permitted Installation after a cessation notified under condition 5.1.3(b).

5.1.4 The Operator shall notify the following matters to the Agency, in writing, within 14 days of their occurrence:

- a** where the Operator is a registered company:
  - i** any change in the Operator's trading name, registered name or registered office address;
  - ii** a change to any particulars of the Operator's ultimate holding company (including details of an ultimate holding company where the Operator has become a subsidiary);
  - iii** any steps taken with a view to the Operator going into administration, entering into a company voluntary arrangement or being wound up.

OR

- b** where the Operator is a corporate body other than a registered company:
  - i.** any change in the Operator's name or address;

- ii. any steps taken with a view to the dissolution of the Operator.

OR

**c** in any other cases

- i. the death of any of the named Operators (where the Operator consists of more than one named individual);
- ii. any change in the Operator's name(s) or address(es);
- iii. 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.

## 6 Emissions

### 6.1 Emissions into air

6.1.1 Emissions to air from the emission point(s) specified in Table 6.1.1 shall only arise from the source(s) specified in that Table.

**Table 6.1.1: Emission points into air**

Emission point reference/description	Source	Location of emission point
A1	Incinerator 76m main plant stack	Labelled 'Stack' on site plan received 17 June 2002 as further information.
A2	Lime silo filter vent	Labelled 'Lime Storage Silo's' on site plan received 17 June 2002 as further information
A3	Activated carbon silo filter vent	Labelled 'Activated Carbon Silo's' on site plan received 17 June 2002 as further information
A4	Fuel oil storage tank vent	To west of main plant building.

6.1.2 The limits for emissions into air for the parameter(s) and emission point(s) set out in Table 6.1.3 shall not be exceeded except under abnormal operating conditions as specified in condition 2.3.8.

6.1.3 The Operator shall carry out monitoring of the parameters listed in Table 6.1.3, from the emission points and at least at the frequencies specified in that Table.

**Table 6.1.3: Emission limits into air**

Parameters	Emission Point A1				Monitoring Requirements <sup>Note 3</sup>
	Units	Half Hour Average	Daily Average	Periodic	
Particulate Matter	mg/m <sup>3</sup>	30	10	20	100 percentile 1/2hr average and daily average; continuous measurement. Quarterly periodic measurement: average value over at least 1 hour sample period. <sup>Note 1</sup>
VOCs as Total Organic Carbon (TOC)	Mg/m <sup>3</sup>	20	10	20	100 percentile 1/2hr average and daily average; continuous measurement. Bi-annual periodic measurement, at least 4 hour sample period, data to be reported as half-hourly averages. <sup>Notes 1</sup>
Hydrogen chloride	Mg/m <sup>3</sup>	60	10	30	100 percentile 1/2hr average and daily average; continuous measurement. Bi-annual periodic measurement, average value over at least 1 hour sample period. <sup>Notes 1</sup>
Hydrogen fluoride	Mg/m <sup>3</sup>	-	-	2	Bi-annual periodic measurement, average value over at least 1 hour sample period. <sup>Note 1</sup>
Carbon monoxide	Mg/m <sup>3</sup>	100	50	100	100 percentile 1/2hr average and daily average; continuous measurement. Bi-annual periodic measurement, at least 4 hour sample period, data to be reported as half-hourly averages. <sup>Notes 1</sup>
Sulphur dioxide	Mg/m <sup>3</sup>	200	50	200	100 percentile 1/2hr average and daily average; continuous measurement. Bi-annual periodic measurement, at least 4 hour sample period, data to be reported as half-hourly averages. <sup>Notes 1</sup>
Oxides of nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	mg/m <sup>3</sup>	400	180	400	100 percentile 1/2hr average and daily average; continuous measurement. Bi-annual periodic measurement, at least 4 hour sample period, data to be reported as half-hourly averages. <sup>Notes 1</sup>
Ammonia (NH <sub>3</sub> )	mg/m <sup>3</sup>	None	None	None	100 percentile 1/2hr average and daily average; continuous measurement. <sup>Note 5</sup> Bi-annual periodic measurement, average value over at least 1 hour sample period. <sup>Notes 1 &amp; 5</sup>
Nitrous oxide (N <sub>2</sub> O)	Mg/m <sup>3</sup>	None	None	None	Quarterly periodic measurement, average value over at least 2 hour sample period. <sup>Note 5</sup>
Cadmium and thallium and their compounds (total)	Mg/m <sup>3</sup>	None	None	0.05	Quarterly periodic measurement, average value over sample period between 30 minutes and 8 hours. <sup>Note 2</sup>
Mercury and its compounds	Mg/m <sup>3</sup>	None	None	0.05	Quarterly periodic measurement, average value over sample period between 30 minutes and 8 hours. <sup>Note 2</sup>
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	mg/m <sup>3</sup>	None	None	0.5	Quarterly periodic measurement, average value over sample period between 30 minutes and 8 hours. <sup>Note 2</sup>

## Emissions

PCBs	WHO-TEQ	ng/m <sup>3</sup>	None	None	None	Bi-annual periodic measurement, average value over sample period of between 6 and 8 hours. To be determined utilising sampling and analytical techniques developed for dioxins / furans (BS EN 1948) <sup>Note 4 and 6</sup>	
	Humans / Mammals						
	WHO-TEQ <sub>Fish</sub>	ng/m <sup>3</sup>	None	None	None		
WHO-TEQ <sub>Birds</sub>	ng/m <sup>3</sup>	None	None	None			
Dioxins / furans	I-TEQ	ng/m <sup>3</sup>	None	None	None		
	WHO-TEQ	ng/m <sup>3</sup>	None	None	None		
	Humans / Mammals						
	WHO-TEQ <sub>Fish</sub>	ng/m <sup>3</sup>	None	None	None		
	WHO-TEQ <sub>Birds</sub>	ng/m <sup>3</sup>	None	None	None		

**Notes:**

1. Periodic measurements to be used to check CEM calibration.
2. Metals include both gaseous, vapour and solid phases as well as their compounds. (expressed as the metal or total as specified).
3. Reference measurement monitoring techniques shall be in accordance with the conditions and tables in section 2.10 of this permit.
4. Quarterly periodic measurement in first 12 months of operation.
5. Emission limit value to be specified after first 12 months of monitoring data.
6. The respective TEQ sum of the equivalence factors to be reported as a range based on:
  - All congeners less than the detection limit assumed to be zero; and
  - All congeners less than the detection limit assumed to be at the detection limit.

6.1.4 For continuous emissions monitors, the half-hourly average values shall be determined within the effective operating time (excluding start-up and shut-down periods if no waste is being incinerated) from the measured values after having subtracted the percentage uncertainty error of the measured value. (Percentage uncertainty errors are specified in condition 6.1.6 below.) The daily average values shall be determined from those validated average values.

6.1.5 With regard to the calibration of continuous emission monitors, at the daily emission limit value, the values of the 95% confidence intervals of a single measured result shall not exceed the following percentages of the emission limit values:

Carbon monoxide	10%
Sulphur dioxide	20%
Oxides of nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	20%
Particulate matter	30%
Total organic carbon	30%
Hydrogen chloride	40%
Ammonia	40%

6.1.6 To obtain a valid daily average value, no more than five half-hourly average values in any day shall be discarded due to malfunction or maintenance of the continuous measurement system. No more than ten daily average values per year shall be discarded due to malfunction or maintenance of the continuous measurement system.

6.1.7 For periodic measurement, compliance shall be determined from the measured value after having subtracted the uncertainty error for the selected method of sampling and analysis for each relevant pollutant.

## 6.2 **Emissions to land**

6.2.1 There shall be no emission to land from the Permitted Installation

6.2.2 The Operator shall notify the Agency, as soon as practicable, of any information concerning the state of the Site which affects or updates that provided to the Agency as part of the Site Report submitted with the application for this Permit.

## 6.3 **Emissions to water [other than emissions to sewer]**

6.3.1 There shall be no emission to water from the Permitted Installation

## 6.4 **Emissions to sewer**

6.4.1 Emissions into sewer from the emission point(s) specified in Table 6.4.1 shall only arise from the source(s) specified in that Table.

**Table 6.4.1 Emission points into sewer**

<b>Emission point reference</b>	<b>Source</b>	<b>Sewer</b>
S1	Process effluent	Yorkshire Water Services
S2	Surplus rainwater from buildings, hardstanding areas and roadways to surface water drain via interceptor	Yorkshire Water Services

6.4.2 The limits for the emissions into sewer for the parameter(s) and emission point(s) set out in Table 6.4.2 shall not be exceeded.

6.4.3 The Operator shall carry out monitoring of the parameters listed in Table 6.4.2, from the emission point(s) and at least at the frequencies specified in that table.

**Table 6.4.2 Emission limits into sewer**

Parameter	Emission point S1	Frequency and duration
Total suspended solids mg/l	150	Weekly flow proportional composite sample
pH maximum / minimum	10 / 6	Weekly flow proportional composite sample
Chemical Oxygen Demand mg/l	1000	Weekly flow proportional composite sample
Oil and grease mg/l	5	Weekly flow proportional composite sample
Mercury and its compounds expressed as mercury (Hg), µg/l	3.0	Weekly flow proportional composite sample
Cadmium and its compounds expressed as cadmium (Cd) mg/l	0.05	Weekly flow proportional composite sample
Total other metals and their compounds (Fe, Zn, Cu, Ni, Mn, Cr, Pb, Sn and As – taken together) mg/l	5	Weekly flow proportional composite sample

6.4.4 There shall be no emission into sewer from the Permitted Installation of any substance prescribed for water for which no limit is specified in Table 6.4.2 except in a concentration, which is no greater than the background concentration.

#### 6.5 **Emissions of heat**

6.5.1 There are no conditions in relation to heat.

#### 6.6 **Emissions of noise and vibration**

6.6.1 There are no on-site noise or vibration conditions.



## 7 Transfer to effluent treatment plant

- 7.1.1 No transfers to the effluent treatment plant are controlled under this part of this Permit. Emissions to water (sewer) are controlled under condition 6.4

## 8 Off site conditions

- 8.1.1 The Operator shall undertake, and report annually, not later than the 31 January of each year, to the Agency, annual audits of the intended waste disposal and treatment sites for the excess Bottom Ash, APC Residues and other wastes (solid and liquid) to ensure that they are appropriately licensed to receive the type and quantity of waste generated and of the recovery sites for ferrous metals, to ensure that they are appropriately licensed to recover the type and quantity of waste generated.
- 8.1.2 The Operator shall undertake a soil monitoring programme for the parameters specified in sections D3.8.2 and D3.8.3 of the Application, by the methodologies specified in the further information to the application supplied 10/05/02 and at locations S1 and S2 specified in the Application, in figure D3.9 as 1 and 2 respectively. The soil monitoring programme shall commence prior to the operation of the Permitted Installation to establish pre-operational values as required by condition 1.1.3 (a). Subsequent monitoring shall be carried out on an annual basis. An assessment of monitoring results compared against pre-operational values shall be reported annually to the Agency, not later than 31 January.

## 9 Improvement programme

- 9.1.1 The Operator shall complete the requirements specified in Table 9.1.1 by the date specified in that Table, and shall send written notification of the date of completion of each requirement to the Agency, at the Reporting Address, within 14 days of the completion of each such requirement.

<b>Table 9.1.1: Improvement programme requirements</b>		
<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
9.1	A report shall be sent to the Agency confirming the establishment of an Environmental Management System having regard to section 2.1 of the appropriate Agency IPPC Sector or other Technical Guidance current at the time.	Within 12 months of completion of commissioning
9.2	The Operator shall submit a written post commissioning report. The report shall include comparison of process design performance against actual performance, including emissions from the Installation.	Within 3 months of completion of commissioning
9.3	The Operator shall take measurements to demonstrate the residence time, minimum temperature and oxygen content within the incinerator whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted to the Agency in writing.	Within 3 months of completion of commissioning
9.4	The Operator shall submit, in writing, to the Agency, a report detailing Installation noise monitoring carried out in accordance with BS 4142, during commissioning. Measurements will be taken on one weekday, one Saturday and one Sunday, during the daytime (i.e. in the period 9.00am to 5.00pm) and the quietest night-time period (i.e. in the period 1.00am to 4.00am). Representative measurement periods will be used and the following parameters will be reported: ambient noise; residual noise; LA90 background; specific noise; specific noise rating level and likelihood of complaint assessment result. The measurement positions should be at the site boundary and should be agreed in writing by the Agency prior to monitoring taking place.	Within 3 months of completion of commissioning.
9.5	A written protocol for representative sampling and analysis for the determination of total organic carbon or loss-on-ignition, composition and leachability of the Bottom Ash and APC Residues shall be submitted to the Agency, in writing, for approval and thereafter operate in accordance with.	Prior to commencement of commissioning.
9.6	The Operator shall submit, in writing, to the Agency, a report detailing a assessment of the potential for contamination of leachate from ash, with dioxins and furans, PCBs and metals.	Within 6 months of completion of commissioning.
9.7	The Operator shall review the techniques for continuous measurements for heavy metals, dioxins / furans and PCBs, including cost, availability, accuracy, detection limits and submit a report to the Agency in writing.	Within 12 months of completion of commissioning.
9.8	The Operator shall carry out tests to demonstrate that hydrogen chloride may be considered to be a surrogate of hydrogen fluoride for the purposes of condition 6.1.3 of this Permit. The results shall be submitted to the Agency in writing.	Within 6 months of completion of commissioning.

## 10 Interpretation

10.1.1 In this Permit, the following expressions shall have the following meanings:

*“Abnormal operation”*

means any technically unavoidable stoppages, disturbances, or failures of purification devices 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 prescribed emission limit values.

*“Authorised Officer”*

means any person authorised by the Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, powers specified in Section 108(4) of that Act;

*“Annual release”*

means the total release during any calendar year commencing 1 January;

*“APC Residues”*

means air pollution control residues;

*“Application”*

means the Application by the Operator for a PPC Permit received 10 December 2001; the Operator's response to any notices served under Schedule 4 of the PPC Regulations; and any additional information otherwise supplied by the Operator in writing;

*“Background concentration”*

means the same as “background quantity” as defined in paragraph 11 to Part 2 to Schedule 1 of the PPC Regulations;

*“BAT”*

means Best Available Techniques;

*“Bi-annual”*

means twice per year with at least five months between tests;

*“Bottom Ash”*

means any ash falling through the incinerator grate or transported by the grate;

*“CEM”*

means continuous emission monitor;

*“CEN”*

means Comité Européen de Normalisation;

*“Commissioning”*

relates to the period after construction has been completed when the Permitted Installation process is being made ready to operate;

*“Controlled waters”*

shall have the same meaning as in Part III of the Water Resources Act 1991;

*“COT”*

means Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment;

*“Dioxins and Furans”*

means polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans;

*“ELV”*

means emission limit value;

*“Fugitive emission”*

means an emission from any point other than those specified in the Tables in part 6 of this Permit.

*“Grounding”*

means that a visible plume from Release Point A1 impinges on the ground or on any building thereon;

*“Hg, Cd, Sb, As, Pb, Cr, Co, Cu, Mn, Ni, Tl and V”*

mean respectively Mercury, Cadmium, Antimony, Arsenic, Lead, Chromium, Cobalt, Copper, Manganese, Nickel, Thallium and Vanadium;

*“ISO”*

means International Standards Organisation;

*“I-TEF”*

means international toxic equivalency factors;

*“I-TEQ”*

means international toxic equivalent concentration;

*“LOI”*

means Loss on Ignition;

*“Monitoring”*

includes the taking and analysis of samples, instrumental measurements (periodic and continual), calibrations, examinations, tests and surveys;

*“mg/m<sup>3</sup>”*

means milligrams per cubic metre;

*“ng/m<sup>3</sup>”*

means nanograms per cubic metre;

*“PCB”*

means polychlorinated biphenyls with TEF values ascribed in condition 10.1.4;

*“Permitted Installation”*

means the activities and the limits to those activities described in Table 1.1.1 of this Permit.

*“PPC Regulations”*

means the Pollution Prevention and Control Regulations 2000 (S.I. 2000 No. 1973) and words and expressions defined in the PPC Regulations shall have the same meanings when used in this Permit;

*“Quarterly”*

means four times per year with at least 2 months and no more than 4 months between tests;

*“Release point”*

followed by the letter A, W, E or S means respectively a point shown on a map or plan forming a part of the Application for the release from the Permitted Installation into the air, into controlled waters, into an on-site effluent treatment plant or into a sewer;

*“Reporting Address”*

means the address, from time to time notified to the Operator, for that purpose by the Agency in writing;

*“Staff”*

includes employees, directors or other officers of the Operator, and any other person under the Operator’s direct or indirect control, including contractors;

*“Substances prescribed for water”*

means those substances mentioned in paragraph 13 of Part 2 of Schedule 1 to the PPC Regulations;

*“TEF”*

means toxic equivalence factors;

*“TEQ”*

means toxic equivalent concentration;

*“TOC”*

means total organic carbon;

*“UK”*

means United Kingdom;

*“UKAS”*

means United Kingdom Accreditation Service;

*“VOC”*

means any organic compound in the exhaust gas emissions;

*“WHO”*

means World health Organisation; and

*“Year”*

means calendar year ending 31 December.

- 10.1.2 Where a minimum limit is set for any emission / process parameter, references to exceeding the limit shall mean that the parameter shall not be less than that limit.
- 10.1.3 Unless otherwise stated, any references in this Permit to concentrations of substances in emissions into air means in relation to emission limits, the concentration in dry gas at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen concentration of 11%.
- 10.1.4 For dioxins / furans and PCBs the determination of the toxic equivalence concentration (I-TEQ, and WHO-TEQ for dioxins / furans, UK COT and WHO\_TEQ for 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.

<b>TEF Schemes for Dioxins and Furans</b>				
<b>Congener</b>	<b>I-TEF(1990)</b>	<b>WHO-TEF (1997/8)</b>		
		<b>Human / Mammals</b>	<b>Fish</b>	<b>Birds</b>
<b>Dioxins</b>				
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	0.0001	-	-
<b>Furans</b>				
2,3,7,8-TCDF	0.1	0.1	0.05	1
1,2,3,7,8-PeCDF	0.05	0.05	0.05	0.1
2,3,4,7,8-PeCDF	0.5	0.5	0.5	1
1,2,3,4,7,8-Hx CDF	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	0.0001	0.0001	0.0001

<b>TEF Schemes for Dioxin like PCBs</b>			
<b>Congener</b>	<b>WHO-TEF (1997/8)</b>		
	<b>Human / Mammals</b>	<b>Fish</b>	<b>Birds</b>
<b>Non-ortho PCBs</b>			
3,4,4',5-TCB(81)	0.0001	0.0005	0.1
3,3',4,4'-TCB (77)	0.0001	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)	0.01	0.00005	0.001
<b>Mono-ortho</b>			
2,3,3',4,4'-PeCB(105)	0.0001	<0.000005	0.0001
2,3,4,4',5-PeCB(114)	0.0005	<0.000005	0.0001
2,3',4,4',5-PeCB(118)	0.0001	<0.000005	0.00001
2',3,4,4',5-PeCB(123)	0.0001	<0.000005	0.00001
2,3,3',4,4',5-HxCB(156)	0.0005	<0.000005	0.0001
2,3,3',4,4',5'-HxCB(157)	0.0005	<0.000005	0.0001
2,3',4,4',5,5'-HxCB(167)	0.00001	<0.000005	0.00001
2,3,3',4,4',5,5'-HpCB(189)	0.0001	<0.000005	0.00001

The respective TEQ sum of the equivalence factors to be reported as a range based on:

All congeners less than the detection limit assumed to be zero; and

All congeners less than the detection limit assumed to be at the detection limit.

- 10.1.5 Where any of the Tables in this Permit numbered 2.1.1 up to 2.11.1 (inclusive) refer to the whole or parts of different documents, in the event of any conflict between the wording of such documents, the wording of the later document(s) shall prevail to the extent of such conflict.



## 11 Written agreement to changes

- 11.1.1 When the qualification “or as otherwise agreed in writing” is used in a condition of this Permit, the Operator shall seek such agreement in the following manner:
- a** the Operator shall give the Agency written notice of the details of the proposed change, indicating the relevant part(s) of this Permit; and
  - b** such notice shall include an assessment of the possible effects of the proposed change (including waste production) on risks to the environment from the Permitted Installation.
- 11.1.2 Any change proposed according to condition 11.1.1 and agreed in writing by the Agency, shall not be implemented until the Operator has given the Agency prior written notice of the implementation date for the change. As from that date, the Operator shall operate the Permitted Installation in accordance with that change, and any relevant documentation referred to in this Permit shall be deemed to be amended.

## Schedule 1

### Confirmation of condition 5.1.1 notifications, in accordance with condition 5.1.2

This Schedule outlines the information that the Operator must provide to the Agency to satisfy condition 5.1.2 of this Permit.

Units of measurement used in information supplied under Part A and B requirements must 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 PPC Regulations.

Returns should contain:

#### **Part A**

- Name of Operator.
- Permit Number
- Location of Installation.
- Date information provided.
- Time, date and location of the emission.
- Identity and details of the substance[s] emitted to include:-
  - Best estimate of the quantity or the rate of emission, and the time during which the emission took place.
  - Environmental medium into which the emission took place.
  - Measures taken, or intended to be taken, to stop the emission.

#### **Part B**

- Date and time of emission
- Any more accurate information on the matters notified 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 or harm which has been or may be caused by the emission.
- The dates of any Part A notifications within in the previous 24 months.

Name  Post.....

Signature  Date

Statement that signatory is authorised to sign on behalf of Onyx Sheffield Limited

## Schedule 2

### Reporting of monitoring data

Parameters for which reports shall be made, in accordance with conditions 4.1.2 of this Permit, are listed below.

<b>Table S2: Reporting of monitoring data</b>				
<b>Parameter</b>	<b>Emission point</b>	<b>Frequency</b>	<b>Reporting period</b>	<b>Form Number</b>
Total particulate	A1	Continuous	Monthly	S3/A/1
		Quarterly periodic measurement	3 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
VOCs (as TOC)	A1	Continuous	Monthly	S3/A/1
		Bi-annual periodic measurement	6 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
Hydrogen chloride	A1	Continuous	Monthly	S3/A/1
		Bi-annual periodic measurement	6 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
Hydrogen fluoride	A1	Continuous	Monthly	S3/A/1
		Bi-annual periodic measurement	6 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
Sulphur dioxide	A1	Continuous	Monthly	S3/A/1
		Bi-annual periodic measurement	6 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
Oxides of nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	A1	Continuous	Monthly	S3/A/1
		Bi-annual periodic measurement	6 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
Carbon monoxide	A1	Continuous	Monthly	S3/A/1
		Bi-annual periodic measurement	6 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
Ammonia	A1	Continuous	Monthly	S3/A/1
		Bi-annual periodic measurement	6 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
Nitrous oxide	A1	Quarterly periodic measurement	6 Monthly	S3/A/2
		Annual release	Annual	S3/A/4

Cadmium + thallium and their compounds (in total)	A1	Quarterly periodic measurement	3 Monthly	S3/A/2
		Annual release	Annual	S3/A/4
Mercury and its compounds (in total)	A1	Quarterly periodic measurement	3 monthly	S3/A/2
		Annual release	Annual	S3/A/4
Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V and their compounds (in total)	A1	Quarterly periodic measurement	3 monthly	S3/A/2
		Annual release	Annual	S3/A/4
PCBs (WHO-TEQ)	A1	Bi-annual periodic measurement Note 1	6 monthly	S3/A/3
		Annual release Note 2	Annual	S3/A/4
Dioxins / Furans (I-TEQ, WHO-TEQ)	A1 Note 5	Bi-annual periodic measurement Note 1	6 monthly	S3/A/3
		Annual release Note 2	Annual	S3/A/4
TOC or LOI, Metals (Cd, Tl, Hg, Pb, Cr, Cu, Mn, Ni, As, Co, V, Sn) and their compounds, dioxins/furans and PCBs	Bottom Ash	Quarterly	3 monthly	S3/O/1
TOC, metals (Cd, Tl, Hg, Pb, Cr, Cu, Mn, Ni, As, Co, V, Sn) and their compounds, dioxins/furans and PCBs	APC Residues	Quarterly	3 monthly	S3/O/1
Waste throughput (tonnes)	Permitted Installation	N/A	3 monthly	S3/O/1
Bottom Ash and APC Residues (tonnes)	Permitted Installation	N/A	3 monthly	S3/O/1
Periods of abnormal operation	Permitted Installation	N/A	3 monthly	S3/O/2
pH	S1	Weekly composite sample	6 monthly	S3/W/1
Chemical oxygen demand	S1	Weekly composite sample	6 monthly	S3/W/1
Oil and grease	S1	Weekly composite sample	6 monthly	S3/W/1
Total suspended solids	S1	Weekly composite sample	6 monthly	S3/W/1
Mercury and its compounds (in total)	S1	Weekly composite sample	6 monthly	S3/W/1
Cadmium and its compounds (in total)	S1	Weekly composite sample	6 monthly	S3/W/1
Total other metals and their compounds (Fe, Zn, Cu, Ni, Mn, Cr, Pb, Sn and As – taken together) mg/l	S1	Weekly composite sample	6 monthly	S3/W/1

Notes on Table S2:

1: New plants quarterly in first 12 months of operation

2: Annual release calculation to assume all congeners less than the detection limit are zero.

## Schedule 3

### Forms to be used

Unless otherwise agreed in writing between Agency and the Operator, the following Agency forms are to be used for reports submitted to Agency.

**Table S3:Reporting Forms**

<b>Media/parameter</b>	<b>Form Number</b>
Air (continuous monitoring) Release Point A1	S3/A/1
Air (periodic (extractive) sampling results) Release Point A1	S3/A/2
Air (dioxin/furan and PCB periodic (extractive) sampling results) Release Point A1	S3/A/3
Air annual releases, Release Point A1	S3/A/4
Water (sewer)	S3/W/1
Quarterly Operational information (ash)	S3/O/1
Operational information (abnormal operation)	S3/O/2
Off-site monitoring results (condition 8)	Free format
Energy recovery	Free format

**END OF PERMIT**