

Barrow-in-Furness Borough Council

POLLUTION PREVENTION AND CONTROL ACT 1999
ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2010

Part B Permit with Introductory Note

Ref: PPC/B/10

Thorncliffe Crematorium

Installation Address:
Thorncliffe Crematorium
Devonshire Road
Barrow-in-Furness
Cumbria
LA14 5PD

Application First Received: 16th September 1992
Current Part B Permit Issued: 10th September 2012

EXPLANATORY NOTES

These notes do not form part of the Permit

This Permit is issued under Regulation 13 of the Environmental Permitting (England & Wales) Regulations 2010 (2010 Regulations) to operate an installation carrying out one or more of the activities listed in Part B 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 Operator using the best available techniques (BAT) for preventing or, where that is not practical, reducing emissions from the installation.

Article 2(11) of the IPPC Directive defines — “best available techniques” as follows:

- a) ‘Best available techniques’ shall mean the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole.
- b) ‘techniques’ shall include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned,
- c) ‘available’ techniques shall mean those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator,
- d) ‘best’ shall mean most effective in achieving a high general level of protection of the environment as a whole.

In determining the best available techniques, special consideration should be given to the items listed in Annex IV.

1. **Responsibility under Workplace Health and Safety Legislation** - This permit is given in relation to the requirements of Environmental Permitting Regulations 2010 and subordinate regulations. It must not be taken to replace any responsibilities you may have under workplace health and safety legislation.
2. **Other responsibilities** - This permit, in that it regulates only air pollution matters, does not absolve you of the responsibility of any other statutory requirement, such as any need to obtain planning permission, hazardous substances consent or Building Regulations approval from the Council. Discharge consents from the local sewerage undertaker or a waste disposal licence from the Environment Agency may still be required.
3. **Enforcement and Offences** - It is an offence to operate a prescribed activity without a current permit. The operator will be liable to enforcement action where;
 - a) a new activity (as defined within the Environmental Permitting (England & Wales) Regulations 2010) is carried on without a proper permit, and
 - b) any of the conditions of the permit are breached.
4. **Subsistence Charge** - An annual fee (subsistence charge) due on 1st April each year (currently chargeable per activity per annum but subject to change by statutory instrument) is payable to Barrow-in-Furness Borough Council.
5. **Confidentiality** - The Permit requires the Operator to provide information to Barrow-in-Furness Borough Council. The Council will place the information onto the public registers in accordance with the requirements of the 2010 Regulations. If the Operator considers that any information provided is commercially confidential, it may apply to the Council to have such information withheld from the register as provided in the 2010 Regulations. To enable Barrow Borough Council to determine whether the information is commercially confidential, the Operator should clearly identify the information in question and should specify clear and precise reasons.

6. **Variations to the permit** - This Permit may be varied in the future. If at any time the activity, or any aspect of the activity regulated by the following conditions changes such that the conditions no longer reflect the activity and require alteration, the Regulator should be contacted.
7. **Surrender of the permit** - Where an Operator intends to cease the operation of an installation (in whole or in part) the regulator should be informed in writing, such notification must include the information specified in regulation 24 of the 2010 Regulations.
8. **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 21 of the 2010 Regulations. A transfer will be allowed unless the Authority 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.
9. **Appeal against permit conditions** - Anyone who is aggrieved by the conditions attached to a Permit can appeal to the Secretary of State for the Environment, Food and Rural Affairs. Appeals must be made in accordance with the requirements of Regulation 31 and Schedule 6 of the 2010 Regulations.

Appeals should be sent to the Secretary of State for the Environment, Food and Rural Affairs. The address is as follows:-

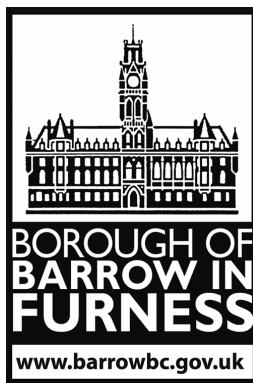
The Planning Inspectorate
Environmental Appeals Administration
Room 4/12 - Eagle Wing
Temple Quay House
2 the Square
Temple Quay
Bristol
BS1 6PN

Please Note - an appeal brought under Regulation 31 paragraph (1) (b) and Schedule 6 in relation to the conditions in a permit will not suspend the effect of the conditions appealed against; the conditions must still be complied with.

In determining an appeal against one or more conditions, the Act allows the Secretary of State in addition to quash any of the other conditions not subject to the appeal and to direct the regulator either to vary any of these other conditions or to add new conditions.

10. **Contact Details** - If you are required to contact the Environmental Protection Section of the Environmental Health Department at Barrow-in-Furness Borough Council, please telephone 01229 876382 during office hours and ask for Damon Pearson (Environmental Protection Officer).

End of Explanatory Note



Permit Reference Number: PPC/B/10

Barrow-in-Furness Borough Council (the “regulator”) in exercise of its powers under Regulation 13 of the Environmental Permitting (England & Wales) Regulations 2010 (2010 Regulations), hereby permits

Barrow-in-Furness Borough Council (the “operator”)

whose registered office is

**Barrow-in-Furness Borough Council
Town Hall
Duke Street
Barrow-in-Furness
Cumbria
LA14 2LD**

Tel: 01229 876300

to operate under the provisions of section 5.1 (Part B) of Chapter 5 of the above Regulations, One Dowson and Mason Twin Reflux Cremators (L and P Furnaces refurbished) at

**Thornccliffe Crematorium
Devonshire Road
Barrow-in-Furness
Cumbria
LA14 5PD**

Tel: 01229 876529

subject to the conditions within this Permit and within the installation boundary as marked in red on the attached plan (PPC/B/10 – Plan 1) in Appendix A.

Signed:.....

Environmental Health Manager

Authorised to sign on behalf of Barrow-in-Furness Borough Council

Date: Wednesday 5th September 2012

CONDITIONS

EMISSION LIMITS, MONITORING AND OTHER PROVISIONS

1. The emission limits and other provisions outlined in Tables One and Two of Condition 2 shall apply to both cremators until 31st July 2013.
2. All pollutants shall be expressed in reference conditions: 273K, 101.3kPa and 11% oxygen v/v, dry gas unless otherwise stated

TABLE ONE

Substance	Concentration limits	Type of monitoring	Monitoring frequency
Hydrogen chloride (excluding particulate matter)	200mg/m ³ averaged over an hour	Extractive test, BS EN 1911 parts 1 to 3	Annual
Total particulate matter	80mg/m ³ averaged over an hour for 95% of cremations and 160mg/m ³ averaged over an hour for all cremations	Provide visual alarms and record levels and alarms Manual extractive test, BS ISO 9096:2003	Continuous indicative and Annual
Carbon monoxide	100mg/m ³ averaged over the first hour for 95% of cremations and 200mg/m ³ averaged over the first hour for all cremations	- Record data at less than 10 second intervals - No more than 3 cremators per analyser - Provide visual alarms and record alarm events - BS ISO 12039	Continuous indicative and Annual test
Organic compounds (excluding particulate matter) expressed as carbon	20mg/m ³ averaged over an hour of cremation	BS EN 12619 up to 20mg/m ³ BS EN 13256 over 20mg/m ³	Annual test
Particulate matter from cremated remains reduction plan that vents externally	50mg/m ³ with no correction for oxygen concentration or water vapour	Manual extractive	On commissioning

TABLE TWO

Parameter	Combustion provision	Type of monitoring	Monitoring Frequency
Temperature	Minimum of 1123K (850°C) in the secondary combustion chamber	- Measure at the entrance and after the exit from the secondary combustion zone - Automatically record temperatures - Visual alarm when temperature falls below 1123K - Interlock to prevent cremator overloading	- Continuous - Continuous - Record alarm activations - To operate when temperature and combustion provisions for residence time and oxygen are not met

Residence time	2 seconds residence time in the secondary chamber without correction for temperature, oxygen or water vapour	Measurement and calculation of the volume rate of the flue gases throughout the cremation cycle at the cremator exit	On commissioning
Oxygen	At the end of the secondary combustion chamber, measured wet or dry, minimum average 6% and minimum 3%	- Monitor and record of concentration at outlet of secondary combustion zone - Visual alarm and record alarm activations - During discontinuous tests, continuous reference oxygen measurements should be at the same sampling location as the parameters tested	Continuous Activate alarms when oxygen falls below provision
If the above combustion provisions are not met, then the dioxin emission limit and monitoring provision in the row below should be applied			
PCDD/F On existing processes for cremators that don't meet the combustion provisions above	1ng/m3 as ITEQ	Extractive, BS EN 1948 parts 1 to 3. Temperature, oxygen and any flow parameters that apply during the dioxin tests, should be required by the permit. Interlock to prevent cremator loading unless those parameters are met	On commissioning Continuous

- From the 1st August 2013, the concentration limits (for substances), combustion provisions (for parameters) and monitoring requirements outlined in Table Three of Condition 4 shall apply to both cremators
- All pollutants shall be expressed in reference conditions: 273K, 101.3kPa and 11% oxygen v/v, dry gas unless otherwise stated.

TABLE THREE

Row	Substance	Concentration limits	Type of monitoring	Monitoring frequency
1	Hydrogen chloride (excluding particulate matter)	200mg/m ³ averaged over an hour	Periodic Monitoring	Annual
2	Total particulate matter from cremator (see note 1)	80mg/m³ averaged over an hour for 95% of cremations and 160mg/m³ averaged over an hour for all cremations	Qualitative Monitoring (see note 1) - Provide visual alarms and record levels and alarms Plus - Instrument health check Plus Periodic Monitoring - Use results to set reference levels for continuous emissions monitor (CEM)	Continuous Plus Annual Plus Annual

3	Carbon monoxide	100mg/m ³ averaged over the first hour for 95% of cremations; and 200mg/m ³ averaged over the first hour for all cremations	Qualitative Monitoring - Record data at 15 second intervals or less - Provide visual alarms and record alarm events Plus Instrument Health check Plus Periodic Monitoring - Validation of continuous emissions monitor (CEM) output through comparison with periodic test results	Continuous Plus Annual Plus Annual
4	Organic compounds (excluding particulate matter) expressed as carbon	20mg/m ³ averaged over an hour of cremation	Periodic Monitoring	Annual
If the combustion provisions in Rows 7- 9 are not met, then the dioxin emission limit and monitoring provision in the row 5 shall be applied				
5	PCDD/F On existing processes for cremators that don't meet the combustion provisions above	1ng/m ³ as ITEQ	Periodic monitoring - Continuous monitoring of any temperature, oxygen and flow parameters that apply during dioxin tests should be required by the permit - Interlock to prevent cremator loading unless those parameters are met.	Upon commissioning of new or replacement cremators
Concentration limits for cremated remains reduction plant (regulators) venting externally are given in Row 6				
6	Particulate matter from cremated remains reduction plant that vents externally	50mg/m ³ with no correction for oxygen concentration or water vapour	Gross Filter failure detection Instrument Health Check	Testing at commissioning Service interval as specified by manufacturer
Row	Parameter	Combustion provision	Type of monitoring	Monitoring Frequency
7	Temperature	Minimum of 1123K (850°C)	- Measure at the exit of the secondary combustion zone (measuring point should be the last measuring thermocouple) - Automatically record temperatures - Visual alarm when temperature falls below 1123K - Interlock to prevent cremator loading to operate when	Continuous

			temperature and combustion provisions in Row 7-9 are not met	
8	Residence time	2 seconds residence time (minimum) in the secondary chamber without correction for temperature, oxygen or water vapour	Measurement and calculation of the volume rate of the flue gases throughout the cremation cycle at the cremator exit	On commissioning of new or replacement cremators
9	Oxygen	At the end of the secondary combustion chamber; measured dry, 6% average and 3% minimum	▪ Monitor and record of concentration at outlet of secondary combustion zone ▪ Visual alarm and record activations ▪ During discontinuous tests, continuous reference oxygen measurements should be at the same sampling location as the parameters tested	Continuous
Note 1 - the term “qualitative” monitoring refers to those particulate continuous emissions monitors (CEM) where the instrument response shall be correlated to the results of multiple isokinetic gravimetric samples according to the standard reference method (SRM) which is typically EN-13284-1. See also paragraphs 4.4 – 4.11 and Table 5 of the Process Guidance note.				

Continuous Emissions Monitoring (all substances)

5. All continuous monitoring readings shall be on display to appropriately trained operating staff
6. Instruments shall be fitted with a visual alarm to warn the operator of arrestment plant failure or malfunction.
7. The activation of alarms shall be automatically recorded.
8. All continuous monitors shall be operated, maintained and calibrated in accordance with the manufacturer’s instructions, which shall be made available for inspection by the regulator. The relevant maintenance and calibration shall be recorded.
9. All continuous emissions monitoring shall provide reliable data >95% of the operating time. A manual or automatic procedure shall be in place to detect instrument malfunction and to monitor instrument availability.
10. The introduction of dilution air to achieve emission concentration limits shall not be permitted

Sampling Provisions

11. The operator shall ensure that adequate facilities for sampling are provided on vents or ducts.
12. Sampling points on new plant shall be designed to comply with the British or equivalent standards.

Monitoring, investigating and reporting

13. The operator shall keep records of inspections, tests and monitoring, including all non-continuous monitoring, inspections and visual assessments. The records should be:
 - Kept on site
 - Kept by the operator for at least two years; and
 - Made available for the regulator to examine

Information required by the regulator

14. The operator shall notify the regulator at least 7 days before any periodic monitoring exercise to determine compliance with emission limit values. The operator shall state the provisional time and date of monitoring, pollutants to be tested and the methods to be used.
15. The results of non-continuous emission testing shall be forwarded to the regulator within 8 weeks of the completion of the sampling.
16. Adverse results from any monitoring activity (both continuous and non-continuous) shall be investigated by the operator as soon as the monitoring data has been received. The operator shall:
 - Identify the cause and take corrective action
 - Record as much detail as possible regarding the cause and extent of the problem, and the action taken by the operator to rectify the situation
 - Re-test to demonstrate compliance as soon as possible; and
 - Notify the regulator
17. For each cremator, every 6 months a report shall be submitted containing the following continuous monitoring data for carbon monoxide and particulate matter. The data shall be submitted covering each period of either four weeks or a calendar month:
 - Monthly averages from the first hour of each cremation
 - Values that exceed the 95% limit for each substance in that period for each cremation
 - 60 minute mean emission values that exceed the 100% limit for carbon monoxide and particulate matter in that period for each cremation
 - A list of the highest 60 minute mean emission value for each period
 - The 95-percentile value for each period
18. Until 31st July 2013, for temperature and oxygen, the operator shall report the following continuous monitoring values to the regulator every 6 months
 - Secondary chamber entrance temperature, 4-weekly/monthly maximum and minimum
 - Secondary chamber exit temperature, 4-weekly/monthly maximum and minimum
 - Oxygen concentration, 4-weekly/monthly minimum (of 5 minute averages)
19. From 1st August 2013, for temperature and oxygen, the operator shall report the following continuous monitoring values to the regulator every 6 months
 - Secondary chamber entrance temperature, 4-weekly/monthly maximum and minimum (of 5 minute averages)
 - Secondary chamber exit temperature, 4-weekly/monthly maximum and minimum (of 5 minute averages)
 - Oxygen concentration, 4-weekly/monthly minimum (of 5 minute averages)
20. Where values in Condition 17, 18 and/or 19 have been exceeded in any 4-weekly/monthly or 6-monthly reporting period, records shall be kept that identify the number of times that the limit was exceeded during the reporting period, the levels of exceedance, and the time, date and cremation reference. This data shall be kept and available for inspection by the regulator.

Visible and odorous emissions

21. Emissions from cremations shall be free from visible smoke.
22. All other releases to air, other than condensed water vapour, shall be free from persistent visible emissions.
23. All emissions to air shall be free from droplets.
24. There shall be no offensive odour beyond the process boundary, as indicated in red on the attached plan (PPC/B/10 Plan 1) as perceived by the regulator.

25. Visual and olfactory assessments of emissions shall be made frequently and at least once a day whilst the process is in operation. The time, location and result of these assessments shall be recorded.

Abnormal events

26. Within 3 months, the operator shall provide a list of key arrestment plant and shall have a written procedure for dealing with its failure, in order to minimise any adverse effects.
27. In the case of abnormal emissions, malfunction or breakdown leading to abnormal emissions the operator shall:
- Investigate and undertake remedial action **immediately**
 - Adjust the process or activity to minimise those emissions; and
 - Promptly record the events and actions taken
28. The regulator shall be informed without delay:
- If there is an emission that is likely to have an effect on the local community; or
 - In the event of the failure of key arrestment plant, for example flue gas cleaning plant or use of the dump stack; or
 - Continuous monitoring results exceed twice the specified emission limit

Gas Usage, Carbon Dioxide Emissions and Carbon Footprint

29. The operator shall keep records of quarterly gas consumption for inspection by the regulator. Consumption shall be converted into CO₂ equivalent emissions using the following conversion equation:

Gas Usage (kWh) x conversion factor – kgCO₂e

CONTROL TECHNIQUES

Coffin materials and cremator design

30. PVC and melamine shall not be used in coffin construction or furnishings.
31. Cardboard coffins shall not contain chlorine in the wet-strength agent (e.g. not using polyamidomine-epichlorhydrin based resin (PAA-E)).
32. Coffins containing lead or zinc shall not be cremated.
33. Packaging for stillbirth, neonatal and foetal remains shall not include any chlorinated plastics.
34. The cremator shall be designed and operated in order to prevent the discharge of smoke, fumes, or other substances during charging.
35. The charging system shall be interlocked to prevent the introduction of a coffin to the primary combustion zone unless the secondary combustion zone temperature exceeds that specified for good combustion in the permit.
36. The cremator and all ductwork shall be made and maintained gas tight if under positive pressure to prevent the escape of gases from the ductwork or cremator to the air.

Good combustion

37. All cremators shall be designed to ensure complete combustion and shall be fitted with a secondary combustion zone.
38. The manufacturer shall state the volume of the secondary combustion zone.

39. When rebricking the cremator, the convolutions of the secondary combustion chamber shall be maintained and the volume of the chamber recalculated and restated.

Cremated Remains

40. The remains in the cremator shall only be moved when calcination is completed.
41. The removal of ash and non-combustible residues from the cremator shall be undertaken carefully so as to prevent dust emissions via the flue.
42. Cremated remains shall be moved and stored in a covered container.
43. Cremated remains treatment plant venting externally shall be:
- arrested to meet the particulate matter limit; and
 - testing at commissioning only
 - subsequent performance can be demonstrated indicatively, for example by the use of a pressure drop indicator on the bag filter

AIR QUALITY

Stacks

44. All emissions from the cremators shall be discharged at 12.144 metres above ground level, through a chimney marked A on PPC/B/10 Plan 1.
45. Flues and ductwork shall be cleaned to prevent accumulation of materials, as part of the routine maintenance programme.
46. Exhaust gases discharged through a stack or vent shall be designed to achieve an exit velocity of 15m/sec during peak operating conditions to achieve adequate dispersion.
47. Stacks or vents shall not be fitted with any restriction at the final opening such as plate, cap or cowl, with the exception of a cone which may be necessary to increase the exit velocity of the emissions.

MANAGEMENT

Management Techniques

48. The operator shall ensure that spares and consumables, in particular those subject to continual wear, are held on site, or shall be available at short notice from guaranteed local suppliers, so that plant breakdowns can be rectified rapidly.
49. The operator shall keep an audited list of essential items that relate to Condition 48

Mass Fatalities

50. The operator shall maintain a plan for dealing with emergencies which give rise to mass fatalities, which shall address the holding of additional spares and consumables and training of suitable numbers of staff. Such plan shall be made available for inspection.

Training

51. Training of staff with responsibility for operating the process shall include:
- Awareness of their responsibilities under the permit, and in particular maintenance of monitoring equipment

- Minimising emissions on start up and shut down
- Action to minimise emissions during abnormal conditions

52. The operator shall maintain a statement of training requirements for each operational post and keep a record of the training received by each person whose actions may have an impact on the environment. These documents shall be made available to the regulator on request.

Maintenance

53. A written maintenance and cleaning programme shall be kept with respect to pollution control equipment, including control instrumentation and the cremator secondary chamber, and ducts and flues. This written program shall be available on site for inspection by the regulator.
54. A record of such maintenance and cleaning shall be made available for inspection.

Mercury Abatement

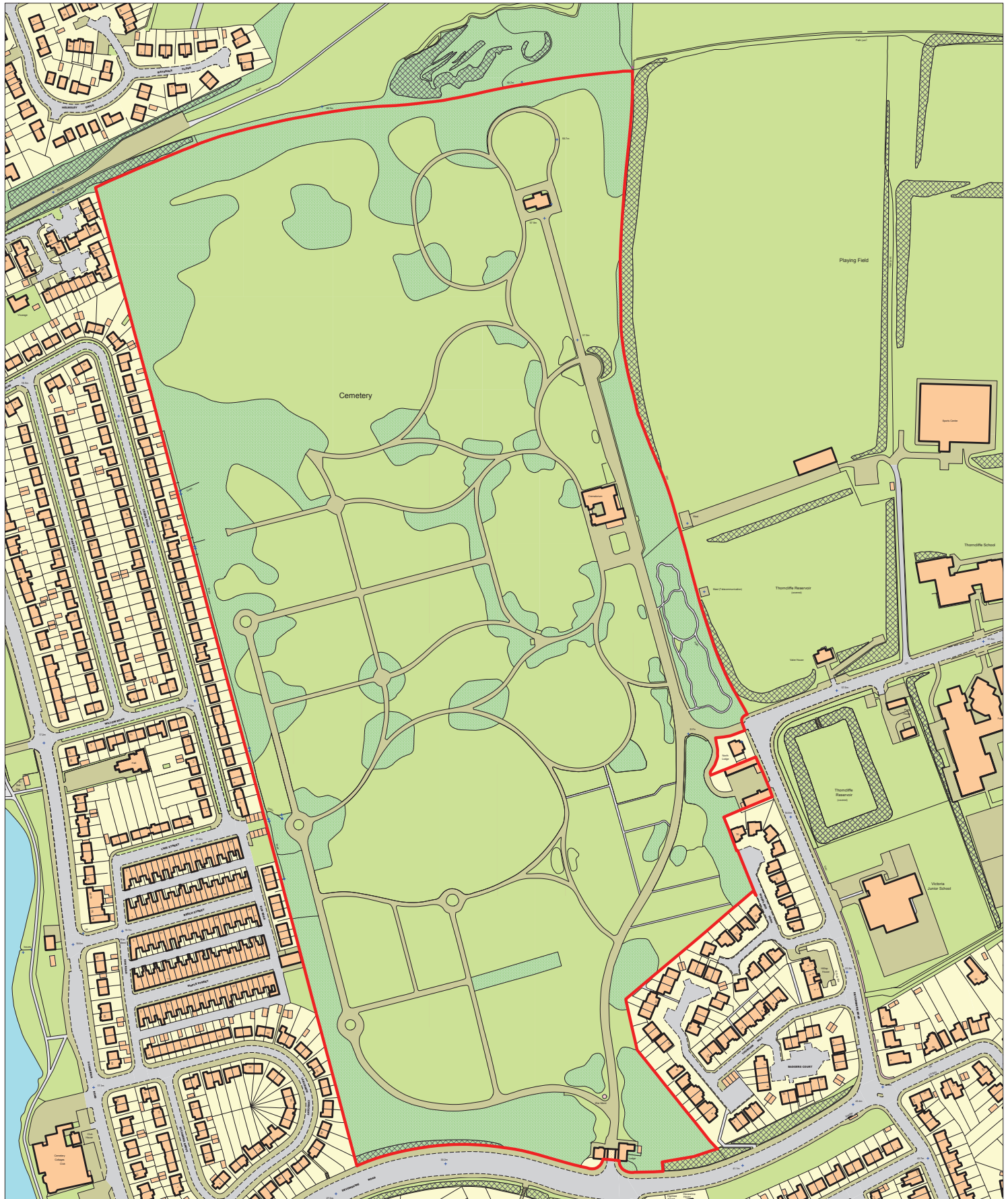
55. The operator shall send the regulator, by no later than 1 June 2010 and 1 April in each year thereafter, a certificate from the CAMEO organisation* or appropriate evidence from a comparable audited burden sharing arrangement or scheme which specifies:-

- a. the total number of cremations in the past 12 months;
- b. the number of cremations undertaken in cremators fitted with operational mercury abatement equipment in the previous 12 months; or
- c. the number of cremations undertaken in the previous 12 months and the proportion of those subject to burden sharing arrangements under which money is paid for the benefit of abated crematoria; or
- d. in cases where mercury abatement is fitted but fewer than 50% of cremations at the installation were undertaken in cremators fitted with it in the previous 12 months, the relevant information in both b) and c).

* Crematoria Abatement of Mercury Emissions Organisation

End of Permit

Appendix 1: PPC/B/10 - Plan 1



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