

Torfaen County Borough Council



Permit with Introductory Note

The Pollution Prevention and Control Act 1999
The Environmental Permitting (England & Wales)
Regulations 2010

Part B Permit for:

**Gwent Crematorium
Treherbert Road
Croesyceiliog
Cwmbran
Torfaen
NP44 2BZ**

Permit Reference TCBC/EP B24

Address for Communication:

**Planning and Public Protection Department
Tŷ Blaen Torfaen
Panteg Way
Pontypool
New Inn
Torfaen
NP4 0LS**

CONTENTS

INTRODUCTORY NOTE	3
<i>Brief description of the installation regulated by this permit.....</i>	3
<i>Talking to us</i>	4
<i>Confidentiality.....</i>	4
<i>Variations of the Permit.....</i>	4
<i>Surrender of the Permit.....</i>	4
<i>Transfer of the Permit.....</i>	4
<i>Offences</i>	5
<i>Enforcement</i>	5
<i>Revocation.....</i>	5
<i>Suspension.....</i>	5
<i>Appeals.....</i>	5
<i>Powers of entry</i>	5
<i>Status Log</i>	6
PERMIT	7
<i>The Permitted Installation.....</i>	8
<i>Permit Conditions</i>	9
<i>Emission Limits and Controls</i>	9
<i>Monitoring, Sampling and Measurement of Emissions</i>	11
<i>Combustion Requirements.....</i>	14
<i>Stacks and Ductwork.....</i>	14
<i>Notifications</i>	14
<i>Reporting Requirements</i>	15
<i>Coffin Materials and Contents.....</i>	16
<i>Cremated Remains</i>	16
<i>Management, Maintenance and Training.....</i>	17
<i>Mercury Abatement / Burden Sharing.....</i>	18
APPENDICES.....	19
<i>Appendix 1: Definitions.....</i>	19
<i>Appendix 2: Site Plan</i>	20
<i>Appendix 3: Emissions Monitoring Sampling Protocol.....</i>	21
<i>Appendix 4: Monthly Record and 6 Monthly report format.....</i>	24
<i>Appendix 5: Mercury Abatement Schematic and Alarm List.....</i>	26

List of Tables

Table 1: Permitted Activities	8
Table 2: Emission Limit Values	9
Table 3: Emission Test Methods	13

INTRODUCTORY NOTE

This introductory note does not form part of the Permit

This Permit authorises the operation of an activity listed in Part 2 to Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2010 (S.I. 2010 / No. 675) [[the EP Regulations](#)] to the extent specified in the Permit and shall be treated as having been granted under Regulation 13(1) of those Regulations. It must not be taken to replace any responsibilities under The Health and Safety at Work (Etc.) Act 1974 and associated legislation.

Brief description of the installation regulated by this permit

The crematoria situated at the above address is utilised for the cremation of human remains, the subsequent reduction of the calcinated remains to a granular consistency and the removal of mercury and other particulates from flue gases.

The cremation process is carried out in one of four Evans Universal 300, series 2 cremators. Each unit comprises two separate primary chambers/combustion zones, each with its own burner and flue system. The combustion in the primary chamber takes place at temperatures between 500°C and 600°C with the secondary combustion chamber being maintained above 850°C. The units are manually controlled by skilled operators to ensure correct combustion conditions are maintained throughout the incineration cycle. This is achieved by constant monitoring of instrumentation and subsequent manipulation of primary chamber burners, primary air and side jets along with secondary combustion chamber burner and secondary air. Periodic visual observations of chimney emissions are also undertaken and recorded.

Calcinated remains are raked out from the cremators under negative pressure and transferred to a cremulating room. They are then reduced to a granular consistency using a Facultatieve-technologies, high speed cremulator with a dedicated dust extraction system. The final remains are then transferred to an approved container.

Each pair of cremators are served by a dedicated mercury abatement plant. Cremators one and two emit flue gas via the stream 1 abatement plant, cremators three and four emit via the stream 2 abatement plant. The flue gas streams are cooled and dosed with reagent prior to capture of particulates via a bag filter and prior to emission to air.

Talking to us

To speak to an officer concerned with this permit please contact Peter Oates on 01633 647290 or peter.oates@torfaen.gov.uk

In the event of an emergency occurring outside of normal office hours you should contact 01495 762200 and ask for the emergency Environmental Health Officer.

Confidentiality

The Permit requires the Operator to provide information to the Council. The Council will place the information onto the public registers in accordance with the requirements of the EP 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 EP Regulations. To enable the 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.

Variations of the Permit

This Permit may be varied in the future in accordance with Regulation 20 of the EP Regulations. 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 in accordance with Regulation 24 of the EP Regulations.

Transfer 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 EP Regulations. A transfer will be allowed unless the Council 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.

Any change in the activities covered by this permit must be notified to the Council for approval prior to implementation.

Offences

Regulation 38 of the EP Regulations defines the offences that may arise as a result of non-compliance with the regulations or conditions contained within this permit. You are advised to be familiar with this regulation since a person guilty of an offence could be fined up to £50,000 and/or be subject to imprisonment for a term not exceeding 12 months.

Enforcement

If the conditions attached to this Permit are not adhered to, then an enforcement notice may be served upon the operator in accordance with Regulation 36 of the EP Regulations. This notice will specify the contraventions and the steps to be taken to remedy the situation. It is an offence not to comply with such an Enforcement Notice (see above).

Revocation

The Permit may be revoked at any time by the enforcing Local Authority in accordance with Regulations 22 & 23 of the EP Regulations. This will particularly be considered if fees are not paid or enforcement notices are not complied with, in accordance with Regulation 65(5).

Suspension

The Regulator has a duty to serve a suspension notice in accordance with Regulation 37 of the EP Regulations if it is considered that there is a risk of serious pollution to the environment, whether or not there has been a breach of the Permit.

Appeals

Any person who has been refused a Permit, is aggrieved by the conditions attached to the Permit, has been refused a variation of a Permit on application or has had a Permit revoked may appeal against the decision of the Regulator to the Welsh Ministers.

Powers of entry

Any duly authorised officer of the Regulator may enter premises to inspect activity at all reasonable times. On entry of the premises the officer also has powers to take any equipment or materials with him for which the power of entry is being exercised, to make such examination and investigation as may be necessary, to take such photographs, measurements or samples and seek any other assistance necessary to assist him in his duties.

Status Log

Detail	Date	Comment
Application for an Environmental Protection Act 1990 Authorisation	01.10.1991	
EPA 1990 Authorisation Issued	26.09.1994	
Transfer of authorisation to Permit.	09.10.2003	Implementation of The Pollution Prevention and Control (England & Wales) Regulations 2000
Transfer of PPC Permit to Environmental Permit	06.04.2008	Implementation of The Environmental Permitting (England & Wales) Regulations 2007
Variation of Environmental Permit	23.07.2008	1.To include Mercury Abatement condition as directed by the Welsh Assembly Government. 2. Adoption of National Model Permit
Review and Variation of Permit	10.05.2010	Inclusion of Mercury Abatement / CAMEO Direction and update to 2010 Regulations.
Variation of Permit	01.07.2013	To include Mercury Abatement facility and amended emission limits

Permit**The Environmental Permitting (England & Wales) Regulations 2010****PERMIT**Permit number: **TCBC/EP B24**

Torfaen County Borough Council ("the Regulator") in exercise of its powers under Regulation 13 of the Environmental Permitting (England & Wales) Regulations 2010 (S.I. 2010 No. 675), hereby permits

Gwent Crematorium ("the operator")

Of/whose *Registered Office* is

Newport City Council
Civic Centre
Newport
Gwent
South Wales
NP20 4UR

to operate an installation at

Gwent Crematorium
Treherbert Road
Croesyceiliog
Cwmbran
Torfaen
NP44 2BZ

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

Signed

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Peter Oates: Senior Environmental Health Officer

Authorised to sign on behalf of Torfaen County Borough Council

Date

1 st July 2013

The Permitted Installation

The Operator is authorised to carry out the activities and/or the associated activities specified in Table 1

Table 1

Activity under Schedule 1 of the Regulations	Schedule 1 Activity Reference	Description of Specified Activity
Chapter 5 – Waste Management	Section 5.1 – Disposal of Waste by Incineration	Part B (c) – The Cremation of Human Remains
Directly Associated Activity	N/A	Cremulation – Rendering burnt bone fragments and other remains into a granular form of ash
Directly Associated Activity	N/A	The abatement of Mercury and other particulates from flue gases

Process Guidance Note at time of Issue :

[PG 5/2 \(12\)](#)

Statutory Guidance for Crematoria

February 2012

Permit Conditions

Emission Limits and Controls

1. All emissions to air from the crematorium stack shall be free from persistent visible emissions and free from droplets, see site plan in Appendix 2.
2. Emissions from the crematorium stack in normal operation shall be free from visible smoke and no emission from the stack shall exceed the equivalent of Ringelmann Shade 1 as described in British Standard BS 2742:1969.
3. No result obtained from a non continuous monitoring exercise, carried out to comply with the Emissions Monitoring Protocol contained in Appendix 3, shall exceed the specified emission limits values as detailed below in Table 2. In the case of Gwent crematorium, the operator must comply with concentration limit values.

Table 2

Row	Substance	Concentration Limits	Type of Monitoring	Monitoring Frequency
1	Mercury	50 micrograms/m ³	Periodic Monitoring (Note 1)	<ul style="list-style-type: none"> • Annual
2	Hydrogen Chloride (excluding particulate matter)	30 mg/m ³ hourly average	Periodic monitoring	<ul style="list-style-type: none"> • Annual
3	Total particulate matter	20 mg/m ³ hourly average	Filter leak monitor <ul style="list-style-type: none"> • Provide visual alarms and record levels and alarms • Set reference levels on commissioning (i.e. set levels at which alarms will activate) Plus Instrument health check – i.e. service according to manufacturer's instructions	<ul style="list-style-type: none"> • Continuous Plus <ul style="list-style-type: none"> • Annual

			<p>Plus</p> <p>Periodic monitoring</p> <ul style="list-style-type: none"> Set reference levels for continuous emission monitor (CEM) (i.e. set levels at which alarms will activate) 	<p>Plus</p> <ul style="list-style-type: none"> Every 3 years
4	Carbon Monoxide	100 mg/m ³ reported as 2 x 30 minute averages	<p>Qualitative monitoring</p> <ul style="list-style-type: none"> Record data at 15 second intervals or less Provide visual alarms and record alarm events <p>Plus</p> <p>Periodic test:</p> <ul style="list-style-type: none"> Validation of continuous emissions monitor (CEM) output through comparison with periodic test results 	<ul style="list-style-type: none"> Continuous <p>Plus</p> <ul style="list-style-type: none"> Annual
5	Organic compounds (excluding particulate matter) expressed as carbon	20 mg/m ³ averaged over an hour of cremation	Periodic monitoring	<ul style="list-style-type: none"> Annual

Row	Parameter	Combustion Provision	Type of Monitoring	Monitoring Frequency
6	Temperature	<ul style="list-style-type: none"> Minimum of 800 °C (1073K) in the secondary combustion chamber Minimum of 850 °C (1123K) in the secondary combustion chamber when operating under emergency conditions without abatement <p>- measuring point should</p>	<ul style="list-style-type: none"> Measure at the exit of the secondary combustion zone; measuring point should be at the last measuring thermocouple Automatically record temperatures Visual alarm when temperature falls below 1073K (800 °C) Record alarm activations 	<ul style="list-style-type: none"> Continuous

		be at the last measuring thermocouple	<ul style="list-style-type: none"> • Interlock to prevent cremator loading below 800 °C 	
7	Oxygen	<p>At the end of the secondary combustion chamber:</p> <p>a) If measured wet, 6% minimum;</p> <p>or</p> <p>b) If measured dry, 6% average and 3% minimum</p>	<ul style="list-style-type: none"> • 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

Monitoring, Sampling and Measurement of Emissions

4. Emissions from each cremator shall be continuously monitored and recorded for the following parameters using dedicated analysers for each emission.
 - Particulate Matter – continuous indicative monitor.
 - Carbon Monoxide – continuous quantitative or continuous indicative measurement at outlet of secondary combustion zone (data to be acquired at intervals of 10 seconds or less).
 - Oxygen – continuous quantitative measurement at outlet of secondary combustion zone.

5. Each instrument required for Condition 4 above shall be fitted with visual and/or audible alarms that activate at a reference level that has been set to correspond to 75% of the emission limit value (ELV). Emission events that lead to activation of the alarms shall be electronically recorded.

6. The continuous monitoring equipment shall be operated, maintained, serviced, calibrated or referenced in accordance with the

manufacturer's instructions. Details of manufacturer's calibration / reference recommendations shall be made available to the Regulator.

7. All continuous monitoring results shall be on immediate display to operating staff.
8. Any order for the replacement of continuous monitoring equipment with new equipment shall specify the requirement for less than 5% downtime over any 3 month period of operation.
9. The cremators shall be fitted with mechanical draught gauges to indicate the operating pressure in the main chamber.
10. Visual assessments of emissions from the crematorium stack shall be made at least once per day under normal operating conditions and every 2 minutes during the first 10 minutes of the cremation of larger coffins.
11. The monitoring point for visual assessment of emissions required by Condition 10 above shall be as marked on the site plan detailed in **Appendix 2**.

12. Records shall be maintained in respect of the following:

- Maintenance inspections of the cremators and control systems.
- The oxygen and carbon monoxide concentration values when the cremators are in pre-heat, on a daily basis.
- The manufacturer's design volume of the secondary combustion zones and any recalculated values following re-bricking of the cremators.
- Any malfunction, breakdown or failure of plant, equipment or techniques including downtime and any short term remedial measures that have or may have an effect on the environmental performance of the permitted activity.
- Visual assessments carried out in accordance with condition 10 of this Permit, along with any olfactory assessments, and any assessment or evaluation made on the basis of such data.
- Continuous emission monitoring results and maintenance, including calibration/referencing of continuous emission monitors.
- Non-continuous monitoring results.

- Any complaints concerning the effect or alleged effect of the operation of the activity on the environment, to include the time and date of the complaint together with a summary and the results of any investigation.
- The operator shall keep simple records of quarterly gas consumption for inspection by the regulator. Consumption should be converted into CO² equivalent emissions using the following conversion equation:

$$\text{Gas usage (kWh)} \times \text{conversion factor} = \text{kgCO}_2\text{e}$$

Note: The conversion factor for natural gas at the time of issue was 0.1836

- The above records shall be kept on site by the Operator for a minimum period of 2 years and made available for examination within five working days of any request by the Regulator.
13. The concentration of pollutants, listed in Table 3 below, in emissions to air from each cremator shall be determined at least once annually, unless otherwise requested by the Regulator. The test methods as specified in the table below, or other methods that can be demonstrated to be equivalent, shall be used. Oxygen shall also be measured concurrently at the same sampling locations in accordance with BS ISO 12039 (BS EN 14789). (All pollutant concentrations to be expressed at reference conditions 273K, 101.3kPa, 11% oxygen v/v and dry gas:

Table 3

Pollutant	Test Method
Particulate matter	BS EN 13284 Part 1 for particulate below 50 mg/m ³
Hydrogen Chloride	BS EN 1911 Parts 1 - 3
Organic Matter (excluding particulate matter)	BS EN 12619 up to 20mg/m ³
Carbon Monoxide	BS EN 15058

NB. Test methods are continually being reviewed and updated and Operators are advised to check the [Natural Resources Wales](#) website for information on the latest approved test methods.

Sampling shall be in accordance with the Emissions Monitoring Sampling Protocol specified in **Appendix 3** to this permit.

Combustion Requirements

14. All cremators shall be designed to ensure complete combustion and shall be fitted with a secondary combustion zone. The temperature of gases after the last admission of secondary air and at the exit from the secondary combustion zone shall be continuously monitored and continuously recorded. A visual alarm shall be triggered when the temperature in the secondary combustion zone falls below that specified in Condition 15 below.
15. 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 1123k (800°C).

Stacks and Ductwork

16. The cremators shall be permanently ducted to separate flues contained within the chimney. The chimney shall discharge vertically upwards and shall not be fitted with any restriction at the final opening, such as a cap or cowl.
17. Stacks and associated ductwork shall be insulated as necessary to minimise the cooling of waste gases and prevent liquid condensation on internal surfaces.
18. Within six months of the date of this Permit the Operator shall submit in writing to the Regulator a proposed flue inspection and cleaning schedule, for the Regulator to determine its acceptability. On written confirmation of acceptability the Operator shall implement the schedule.

Annual visual inspection by way of fibre optic camera or similar would be deemed acceptable.

Notifications

19. The Regulator shall be advised in writing (e-mail acceptable) at least 7 days in advance of any periodic monitoring exercise to determine compliance with emission limit values, of the provisional time and date of monitoring, pollutants to be tested and the methods to be used.
20. The operator shall notify the Regulator, in writing, at least 14 days prior to implementation of any intended change to the installation, which

may have an impact on emissions to air. The notification shall include an assessment of the possible effects of the proposed change on the environment.

21. The Operator shall notify the Regulator without delay of the detection of any fugitive emission, plant malfunction/breakdown, the failure of techniques or accident that has caused or is likely to cause air pollution.

Reporting Requirements

22. A summary of continuous emission monitoring results for carbon monoxide (from cremations) shall be forwarded onto the Regulator in the format specified in **Appendix 4** (or equivalent) within 14 days after the last working day of the months of September and April. The data should be submitted covering each period of either four weeks or a calendar month.
23. A summary of continuous emission monitoring results for temperature and oxygen shall be forwarded onto the Regulator in the format specified in **Appendix 4** (or equivalent) within 14 days after the last working day of the months of September and April. The data should be submitted covering each period of either four weeks or a calendar month.
24. Results of the annual emission testing requirements as specified in Condition 13 above, together with the results of any other non-continuous emission testing carried out, shall be forwarded as a report to the regulator within 8 weeks of the completion of sampling.
25. In any case where non-compliance with any specified emission limit value is identified by periodic testing, a report detailing the cause and extent of the problem and the remedial actions taken/proposed shall be submitted to the regulator within 28 days of the results being made available.

Coffin Materials and Contents

26. The operator shall inform funeral directors, in writing, of their obligations with respect to the construction and linings of coffins and the materials that must not be placed in them. The operator shall maintain records in relation to the actions taken to inform funeral directors of these matters.

This may be achieved by details on cremation bookings forms, letter drops, foot notes on invoices etc.

Cremated Remains

27. For all cremators:

- a) The remains in the cremator shall only be moved when calcinations is completed, and
- b) The removal of ash and non combustible residues from the cremator shall be undertaken carefully so as to prevent dust emissions via the flue, and
- c) Cremated remains shall be moved and stored in a covered container.

28. Cremulators shall be equipped with an effective dust handling system.

29. Any spillages of ash in the cremator room shall be cleared up immediately using a vacuum device fitted with a high efficiency filter.

30. All dust collected by vacuum cleaners or other dust collection systems shall be contained, transported and disposed of in dust tight containers.

31. Dust emissions generated during the transfer of cremated remains following pulverisation shall be prevented by means of an ash transfer cabinet fitted with a dust extraction system incorporating a high efficiency filter system. The remains shall be stored in a closed container prior to disposal.

Management, Maintenance and Training

32. A copy of this Permit shall be available at all times for reference by staff carrying out duties subject to the requirements of this Permit.

33. The permitted installation shall be supervised and operated by staff who are suitably trained and fully conversant with the requirements of this Permit.

The [Crematorium Technicians Training Scheme](#) operated by the Institute of Burial and Cremation Administration, and the Federation of British Cremation Authorities should be adequate for this purpose.

34. 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.

35. The operator shall keep an up to date written maintenance programme with respect to pollution control equipment, including control instrumentation, the cremator secondary chamber, ducts and flues. The maintenance programme along with records of maintenance that has been carried out shall be made available to the Regulator on request.

36. In the event that the operator wishes to transfer this Permit as a result of a business transaction then the operator and the proposed transferee shall make a joint application to the Regulator for the transfer before the proposed transferee is to operate the plant specified in this Permit.

37. Where any aspect of the operation of this installation is not specifically regulated by a condition contained within this permit, then the best available techniques shall be used to prevent or, where that is not practicable, reduce emissions into the air from the installation.

Mercury Abatement / Burden Sharing

38. The operator shall send the regulator, by no later than 1st April in each year thereafter, details of

- (a) the total number of cremations in the past 12 months and the proportion of those undertaken in cremators fitted with operational mercury abatement equipment; or
- (b) the total number of cremations in the past 12 months and the proportion of those subject to burden sharing arrangements under which money is paid for the benefit of abated crematoria; or
- (c) in the case of installations where mercury abatement is fitted but fewer than 50%¹ of cremations in the past 12 months were undertaken in cremators fitted with operational mercury abatement equipment, the information in both (a) and (b),

which may be evidenced by a certificate from [CAMEO](#) (the Cremation Abatement of Mercury Missions Organisation) or by other appropriate evidence from a comparable audited burden sharing arrangement or scheme.

- (1) Using as a baseline the number of cremations undertaken in 2003 based on the [Federation of British Cremation Authorities](#) annual statistics for 2003, and taking into account guidance note AQ09(06) which specifies that the number of cremations involving stillbirths, perinatal deaths and deaths of infants under 5 years should be subtracted.

END OF PERMIT CONDITIONS

APPENDICES

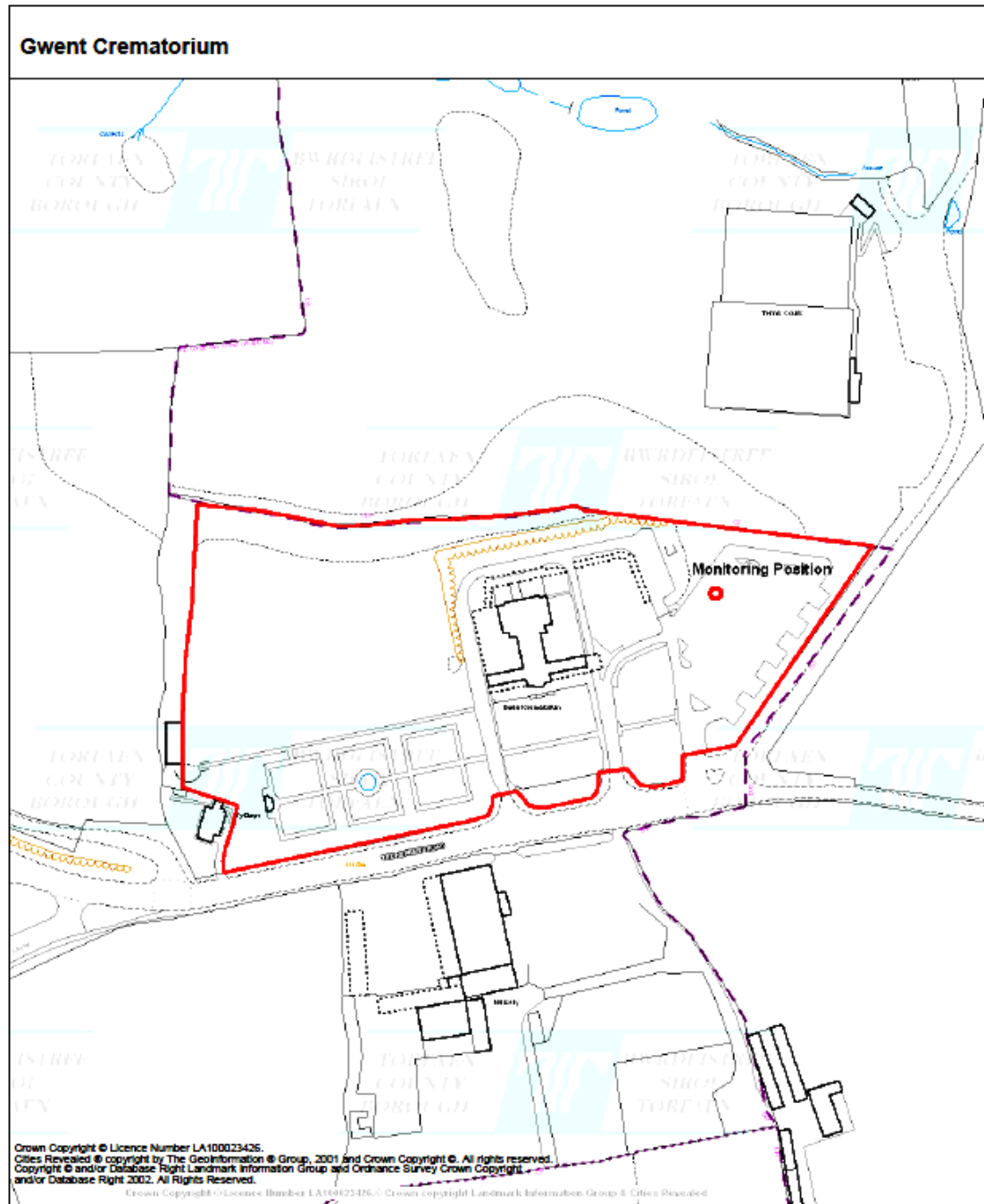
Appendix 1: Definitions

“Regulator”	Torfaen County Borough Council, Planning and Public protection Department
“Operator”	Newport City Council
“Installation”	A stationary technical unit where one or more of the activities listed in Part 2 of Schedule 1 to the Environmental Permitting (England & Wales) Regulations 2010 are carried out, and, any other location on the same site where any other directly associated and technically connected activities are carried out which could have an effect on pollution.
“Activity”	An activity listed in Part 2 of Schedule 1 to the Environmental Permitting (England & Wales) Regulations 2010 and any other directly associated activity with a technical connection to the stationary technical unit which could have an effect on pollution.
“Pollution”	Emissions to air arising as a result of human activity which may be harmful to human health or the quality of the environment, cause offence to any human senses, result in damage to material property or impair or interfere with amenities and other legitimate uses of the environment.
“Pollutant”	Any substance or heat released to air as a consequence of a pollution event.
“Air”	Includes air within buildings and air within any other natural or man made structures above and below ground.
“Colourless”	Shall not be taken to mean white, grey or black emissions.
“Fume”	Particulate matter of less than 1 micron diameter, vapours and aerosols of colloidal particles that are visible, but excludes steam.
“Droplets”	Liquid fractions (larger than mist or fume), which are released from the rim of a stack or vent and precipitate from the emission plume within the locality of the emission source.
“Abnormal Emissions”	Any atmospheric emission outside the normal range of the installation when operating under routine conditions.
“Significant Emissions”	Any atmospheric emission visible more than 10 metres from the source
“Ringelmann Shade 1”	The meaning contained within British Standard BS2472: 1969
“Persistent”	A continuous or frequent emission or an emission remaining in the local environment as a consequence of poor dispersion.
“Inspection”	The physical examination of the installation and any associated records (written and electronic format), to assess compliance in respect of the permit.
“Monitoring”	A mechanism for assessing the performance of the process primarily from the volume and nature of the emissions in order to assess compliance with specified emission limit values contained within the permit.
“Visual Assessment”	A programme of routine visual observations and subsequent evaluation of the character of the emission
“Olfactory Assessment”	A routine programme of observation of any odour produced as a result of the process and subsequent identification of its cause if possible.
“Authorised Officer”	An officer authorised by Torfaen County Borough Council to implement the provisions of the Environmental Permitting (England & Wales) Regulations 2010

Appendix 2: Site Plan

The activities authorised under the conditions in Table 1 (Page 8) shall not extend beyond the Site, being the area shown edged in red on the plan below.

- is the location for recording visible stack emissions.



Appendix 3: Emissions Monitoring Sampling Protocol

Whether sampling on a continuous or non-continuous basis, care is needed in the design and location of sampling systems in order to obtain representative samples for all release points.

Sampling points should be designed to comply with the NRW TGN, M1. The operator should ensure that relevant stacks or ducts are fitted with facilities for sampling which allow compliance with the sampling standards.

<http://www.environment-agency.gov.uk/business/regulation/31831.aspx>

Mode of operation of cremator

The cremator should be operated in automatic mode throughout the duration of the cremation cycle. If the cremation cycle is required to be extended then the cremator should be switched to “hold” mode.

Sampling time

Sample Duration: the entire cremation cycle

Commencement Time: 2 minutes after the coffin has been charged.

Cessation of Sampling: immediately prior to cremator rake down.

Standard cremation time is pre-programmed.

If the cremation time has to be extended then sampling should be continued.

If the cremation is completed early then stop sampling immediately prior to rake down.

Preferred sampling location

It is possible that a compromise may be necessary due to restricted access problems.

The hot leg of the flue should be sampled for all substances.

Sample points should be in vertical flue sections.

Ideal number of sample points

Multi-point sampling on 2 lines should be carried out unless it can be demonstrated that single point sampling is representative.

1 complete traverse across the flue should be sampled during each of the following stages in the cremation cycle:

- Burning of the coffin – between 10 to 20 minutes after start
- Coffin break/burning of charge – during 30 to 40 minutes

- Calcification - at least after 30 minutes

Concurrent oxygen readings

Oxygen concentrations must be made concurrently with the monitoring of the pollutant species.

Monitoring must be in the same sampling plane in which the other samples are being taken.

Minimum equipment standards

The equipment used shall, as a minimum, meet the specifications set out in the standard test method employed for the sampling.

Minimum number of samples

A minimum of 3 cremations per flue gas stream (i.e. 6 in total) must be sampled to give a 95% confidence result. The size of the 95% confidence interval must not exceed the following percentages of the emission limit values:

- Carbon monoxide – 10%
- Particulate matter – 30%
- Total organic carbon – 30%
- Hydrogen chloride – 40%

The 3 individual results from each flue gas stream must be reported separately and compared the respective emission limit values as mg/m³.

Minimum standard of reporting

Reports shall contain the following information as a minimum:

- Identification of the site and the purpose of the tests.
- Identification of the units under test to include make and model numbers.
- The identification of the version of computer software used to control the unit under test.
- Description of the operating conditions and any variations that occur during sampling.
- For each test, the report shall show the date, the cremation number, the test duration, an estimate of the mass of the deceased (light, average, heavy) and any unusual features of the coffin (heavily varnished, unusually ornate) for cremation. Coffins of unusual construction or extreme mass must not be tested.

- A brief summary of each test method, including that for velocity and gas flow measurements, referencing standard documents where necessary
- A full summary of non-standard test methods with justifications for their use
- The raw data obtained from non-standard test methods
- Any deviations from standard test methods with justifications.
- Identification of the sampling location and gas parameters in the duct:-
 1. Duct dimensions, number and position of sampling lines and sampling points.
 2. Stack pressure.
 3. Velocity and temperature profile.
 4. Oxygen and humidity concentrations and gas volumes.
- Results calculated via the formulae given for each test method with estimates of the errors on each parameter – the effects on the errors of deviations from the standard methods should be fully investigated if possible (pollutant concentrations expressed at reference conditions 273K, 101.3kPa, 11% oxygen v/v and dry gas).
- A summary of the results and errors in respect of the emission limit values as specified in this permit.
- Raw data for each substance measured.

Quality assurance

- Leak test results.
- Overall blank values.
- Iso-kinetic criteria.
- Deposits of dust upstream of the filter.

MCERTS Accreditation

Only MCERTS accredited organisations should be employed to conduct emissions testing at crematoria

To find an MCERTS accredited organisation, please visit the [UKAS](#) website.

Appendix 4: Monthly Record and 6 Monthly report format example

Monthly Report Gwent Crematorium

Cremator Number: _____

Report for the period starting: _____

Total number of cremations: _____

Table 1: Combustion Provisions – 5 minute average

	PG/5/2 Criteria	Average value for period	Minimum value	Maximum value
Secondary Chamber Start Temperature °C	800 °C			
Secondary Chamber End Temperature °C	800 °C			
Oxygen % measured wet or dry	Average 6% Minimum 3%			N/A

Table 2: 95th percentile emission value for the period.

Substance	95 th percentile mg/m3
Carbon Monoxide	

Table 3: 60 minute mean emission values that exceed 100% limit for carbon monoxide.

Value	Date	Time

NB: Carbon dioxide 60 minute mean emission value is the average of 2 x 30 minute means given in cremation report

Table 4: Highest carbon monoxide 60 minute mean emission value for the period.

Value	Date	Time

Table 5: Limit exceedances during the period

Number of secondary inlet temperature excursions below limit _____

Number of secondary outlet temperature excursions below limit _____

Number of Oxygen excursions below limit _____

Exceedances:

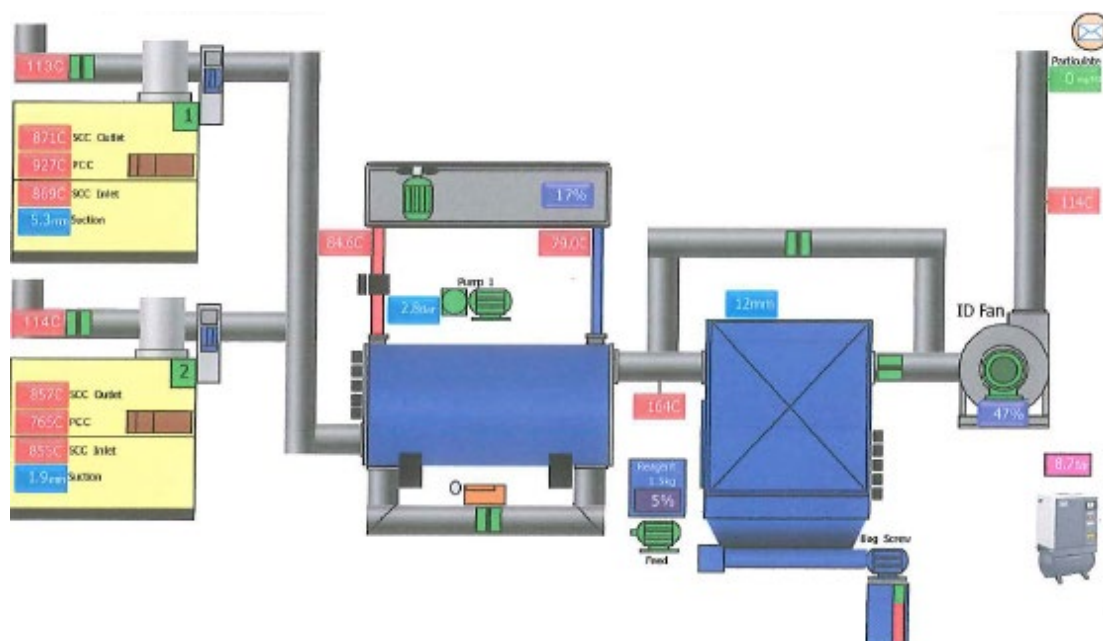
Secondary Chamber Temperatures: 5 minute average below 800 °C

Oxygen 5 minute averages below 3% wet or dry

60 minute averages below 6% wet or dry

Parameter	Value	Date	Time	Cremation Number

Appendix 5: Mercury Abatement Plant Schematic and Alarm List



Alarm List

ID	Alarm	ID	Alarm
L1400	ID Fan Fault	L1504	Boiler Pressure 2 nd Stage High
L1462	Boiler Pump 1 Fault	L1506	Low Boiler Water Flow
L1464	Boiler Pump 2 Fault	L1508	Boiler Return Valve Fault – Pumps Disabled
L1466	Dosing Screw Fault	L1512	Elevator Screw Fault
L1472	Bag Filter Screw Fault	L1520	Compressor Air Low 1 st Stage
L1474	Compressor Fault	L1522	Compressor Air Low 2 nd Stage
L1476	Reagent Agitator Fault	L1524	Common Duct Pressure Low
L1480	Bag Filter Low Inlet Temperature	L1526	Flue Temperature 2 nd Stage High
L1484	Bag Filter Bypass Fault	L1528	Emergency Bypass Active
L1486	Emergency Bypass Damper Fault	L1530	Flue Temperature 1 st Stage High
L1488	Low Boiler Pressure	L1532	Bag Filter High Temperature 1 st Stage
L1490	Boiler Water Level Low	L1536	Warning Possible Bag Filter Fire !!!
L1492	Bag Filter High Temperature 2 nd Stage	L1540	Air Blast Cooler Inverter Fault
L1494	Boiler Water Outlet Temperature 1 st Stage	L1542	Air Blast Cooler Fan 1 Fault
L1496	Boiler Water Outlet Temperature 2 nd Stage	L1544	Shunt Damper Fault
L1498	Air Blast Cooler Outlet High Temperature	L1558	Waste Drum Full
L1502	Boiler Pressure 1 st Stage High	L1576	Coanda Isolation Damper Fault