

Report to: Executive Member for Environmental Services

Date: 29th June 2009

Report of: Malcolm Veigas, Assistant Director of Community Services

Report No: EMES/269/09

Contact Officer: Kevan Roberts, Head of Service

Tele No: 01204 336775

Report Title: **Cremator Emissions: the challenge of mercury abatement**

**Confidential /
Non Confidential:**
(delete as approp)

(**Non-Confidential**) This report does **not** contain information which warrants its consideration in the absence of the press or members of the public

Purpose:

To share with the Executive Member the considerations with regard to responding to the government requirement to reduce mercury emissions from Cremators by 1.1.2013.

Recommendations:

The Executive Member is requested to approve the recommended way forward for the service presented in the report (Option 2: to invest around £1m on 3 new cremators and abatement equipment).

Decision:

Background Doc(s):

Specialist report from Peter Mitchell Associates (2008).
Report to Environmental Services PDG on 12 June 2009

(for use on Exec Rep)

Signed:

Leader / Executive Member

Monitoring Officer

Date:

Summary:

(on its own page
with background
docs)

1. BACKGROUND

The Government has reacted to global environmental concerns by imposing a requirement for UK crematoria to abate 50% of cremations by 1.1.2013. DEFRA has indicated that failure of the UK cremation industry to self-regulate and achieve the 50% target will lead to DEFRA placing a mandatory duty on larger crematoria to abate emissions. 'Larger' crematoria include all those undertaking in excess of 2,000 cremations per year in 2003 and this would therefore include Overdale.

Bolton Council commissioned Peter Mitchell Associates to advise us regarding the future operation of Overdale Crematorium in light of the government targets for the emission of mercury from UK Crematoria. The brief was to carry out an in depth independent assessment of the current operational status of (1) plant, equipment and buildings; (2) the likely future demand for cremation at Overdale Crematorium and (3) identify options to meet the challenge of mercury abatement.

The following report is a summary of the findings from the specialist report.

2. STATUS OF THE PLANT, EQUIPMENT AND BUILDINGS

Overdale Crematorium is 54 years old and the style and décor of the buildings reflects the periods when they were built or altered. In general, the buildings are maintained to a high standard: they are clean, tidy and the fabric of the buildings is in good repair.

The current 5 Newton cremators and ancillary equipment was installed between 1995 and 1998 at Overdale and represents the previous generation compared to equivalent plant available today. However, standards of maintenance and cleanliness of this equipment at Overdale are exceptionally high and reflect very well on the commitment and abilities of the staff and other personnel involved.

The cremators must currently comply with the Secretary of State's Guidance for Crematoria, Process guidance Note 5/2(04), [PG5/2(04)] which requires continuous monitoring of certain emissions and annual testing of further emissions.

The results of both continuous and annual emission testing demonstrate that each of the 5 cremators complies with the requirements of PG5/2(04). This is less common than one would expect and is largely the result of the input from those who operate and maintain the cremators in such good condition, which means they could be retained for their serviceable life until 2018.

2. FUTURE DEMAND FOR CREMATION AT OVERDALE

Cremation numbers at Overdale have declined within the context of a variable yet generally declining number of cremations within the wider NW area.

Cremation numbers from within the Bolton Council district have declined, but only slightly. The much greater decline can be seen in cremations from outside Bolton, many of which are now going to the new crematoria built by the private sector (Howe Bridge in Wigan; and more recently to Radcliffe in Bury and Charnock Richard in Chorley).

The national and local age structures indicate that, in about 30 years' time, a relatively large proportion of the population will be in the age groups with the highest mortality rates. This will lead to a dramatic rise in the number of deaths.

However, whilst Bolton Council should note the long term increase in demand for burial and cremation, the lower demand in the short to medium term is highly relevant in decision-making about investment in plant and equipment at Overdale Crematorium.

Whilst population is expected to increase, cremation numbers at Overdale are likely to continue to decrease over the next 2 years, stabilise and only recover to their current, reduced levels by 2023. It is clear that Overdale Cremation will not be returning to a previous peak level of cremations of 4,000. Instead, they will remain at around the 2,000 to 2,500 level for the next 15 to 20 years.

On the basis of this projected level of demand Overdale does not need to operate 5 cremators in future.

3. OPTIONS TO MEET THE CHALLENGE OF MERCURY ABATEMENT

3.1. Choices

In order to achieve the 50% reduction, every cremation authority including Bolton Council is faced with the following choices:

Option	Comment	Implications
Do nothing	This is not really an option as the requirement to act in response to mercury abatement is statutory.	Action by the Regulator to prevent the crematorium from undertaking cremations after 31.12.2012.
Do nothing about abating emissions, but enter a burden sharing arrangement	The CAMEO Scheme, initiated by the FBCA is a national burden sharing scheme although alternative schemes may be available. CAMEO = Crematoria Abatement of Mercury Emissions Organisation FBCA = Federation of Burial & Cremation Authorities	Minimum capital outlay and no disruption of Overdale Crematorium. There must be sufficient abated cremations nationally above and beyond the 50% target for burden sharing to work. Commitment to pay a fee per abated cremation credited to Overdale. This will be an ongoing cost that will be likely to rise each year.
Install abatement equipment at Overdale to abate a proportion of its cremations	If less than 50%, the balance could be achieved by burden sharing. If more than 50%, 'surplus' abated cremations could be traded through burden sharing.	There are capital and revenue implications to installing abatement equipment and service disruption during installation.

3.2. Mercury abatement technology

There are currently three types of mercury abatement technology operational at UK crematoria:

- Fluidized bed - Furnace Construction Company (FCC) – one crematorium
- Co-flow - Facultative Technologies (FT) - 9 crematoria
- Wet scrubber - Crawford Equipment (Europe) – one crematorium

If Bolton Council decided to install abatement equipment, there is no guarantee that this could be achieved by the 31.12.2012 deadline unless the Council acts swiftly, and completes the tendering process and places an order within the next 12 months.

The following is a summary of abatement technology options with indicative costs:

Company	Technology	Capital Costs	Specified Costs Per cremation *
FCC	Fluidized bed	Joule Cremator - £145k Abatement - £250k per cremator 2 cremators + 2 abatement £790k 4 cremators + 4 abatement £1,580k	£0.95 – supply of fresh carbon only, not disposal. 20kW electrical demand per abatement stream
FT	Co-flow filter	2 FT Cremators + twin abatement £575k 4 FT Cremators + 2 twin abatement £1,150k	£3.34 - Supply & disposal of both reagent and filter bags
Crawford	Wet scrubber	Cremator - £130k Abatement - £225k 2 cremators + 2 abatement £685k 4 cremators + 4 abatement £1,370k	£5.00 – electricity, supply & disposal of both carbon and filters.

3.3. Implications of the installation of abatement equipment for civil works

This report identifies that Overdale could operate more efficiently through using less cremators, but even if one of the existing Newtons were physically removed from the crematory, the space gained would be insufficient to install abatement equipment.

The installation of mercury abatement at Overdale Crematorium would occupy significant space. The optimum location for an extension would be adjacent to the existing crematory service yard.

3.4. Levels of disruption to Overdale Crematorium

Option	Level of disruption	Outcome
No changes, but join CAMEO and buy abated cremations	No disruption to customer service	Reliance upon CAMEO. Cremators will require replacement by 2018, with consequent disruption to service and buildings.
Retain existing Newton Cremators. Install FCC or Crawford abatement to some / all of the cremators	New building extension required – adjacent to West Chapel and main driveway. Delivery and installation of abatement could be achieved using weekend / night time working. Cremations not affected, except during connection to abatement equipment and commissioning.	Capital expenditure required. Abatement achieved. Potential to gain income via burden sharing. Increased operational costs. Cremators will require replacement by 2018, with consequent additional disruption to service and buildings.
Replace existing Newton cremators with 3 or 4 new cremators.	New building extension required – adjacent to West Chapel and main driveway.	Highest capital cost option. Abatement achieved. Potential to gain income via

Install cremator same manufacturer's abatement equipment.	Noise and dust generated by cremator removal. Delivery and installation of cremators abatement could be achieved using weekend / night time working. Cremations potentially, affected: progressive removal and installation, possibly using temporary flues, could overcome these problems.	burden sharing. Increased operational costs partially offset by more efficient cremators. Maximum environmental benefits achieved. Robust specification and tendering should lead to selection of best supplier, providing efficient and cost effective plant for the next 20 years.
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3.5. Timescale

The supply and installation of abatement equipment and/or cremators will be subject to market forces and timescales cannot be guaranteed. As more crematoria place orders for equipment, delivery and installation times are likely to significantly increase. There does not appear to be capacity within the UK suppliers to meet likely demand by the deadline of 31.12.2012.

Option	Action	Timescale
Burden share	Notify regulator (EH), who will issue modified authorization. Notify CAMEO. Levy separate environmental surcharge to set aside funds to purchase surplus abated cremations from CAMEO.	Immediate. Payments to CAMEO will commence 1.1.2013
Retain existing Newton Cremators. Install FCC or Crawford abatement to some / all of the cremators.	Notify regulator (EH), who will issue modified authorization. Notify CAMEO. Secure capital funding. Engage in tender process. Appoint supplier. Obtain planning permission as appropriate for civil works. Undertake site works.	Immediate. Payments to / from CAMEO will commence 1.1.2013. Council's Capital programme. Occupies 6 months. 3 months? Occupies further 6 months
Replace existing Newton cremators with 3 or 4 new cremators. Install cremator same manufacturer's abatement equipment.	Notify regulator (EH), who will issue modified authorization. Notify CAMEO. Secure capital funding. Engage in tender process. Appoint supplier. Obtain planning permission as appropriate for civil works. Undertake site works.	Immediate. Payments to / from CAMEO will commence 1.1.2013. Council's Capital programme. Occupies 6 months. 3 months? Occupies further 6 to 9 months

3.6. Conclusions/Cost Implications

Overdale Crematorium is 54 years old and used to undertake 4,000 cremations per year. It now operates within a climate of change. Deaths are currently declining and competition from new private sector crematoria is further reducing demand. Overdale. Whilst population is expected to increase,

cremation numbers at Overdale are likely to continue to decrease over the next 2 years, stabilise and only recover to their current, reduced levels by 2023.

The decision whether to install abatement equipment at Overdale prior to 1.1.2013 is a difficult one. Had the existing cremators been in poor condition, failing to meet current emission standards and close to the end of their economic life, there would be a clear case for replacing the 5 existing cremators with 3 or 4 new ones complete with abatement equipment.

However the options are:

Option 1: If the Council decides to postpone the replacement of the cremators and the installation of abatement equipment, it will be entirely reliant upon sufficient other crematoria installing abatement equipment to enable the CAMEO burden sharing scheme to work. If Overdale does not abate its cremations, it must pay the costs of the crematoria that do so via a burden sharing scheme on a fee per cremation basis that can only work if there are sufficient surplus abated cremations available. The estimated fee is around £50 per cremation. Based on 50% of existing demand this would be a fee of around £70k per annum from 1.1.2013.

Option 2: If the Council decides to install abatement equipment, great care will be needed to ensure the best solution is provided in terms of effectiveness, cost and impact upon the users of the crematorium.

Bolton Council could purchase 3 new cremators with abatement equipment from the UK's leading supplier for approximately £850,000 plus the costs of civil works. In simple terms, expenditure of £1 million at Overdale Crematorium within the next 2 years would:

- remove all uncertainty concerning mercury abatement
- provide entirely new plant with a serviceable life of 20 years
- provide an income stream through the sale of up to 50% of its abated cremations through the CAMEO scheme
- enable to Council to comply with its Environmental Policy

In addition to income from CAMEO, the expenditure would be partially offset by the reduced fuel costs of using less, new, more efficient cremators and a fixed price per cremation service contract, calculated over a 10 year period.

Option 3: Another option could be to remove 2 of the remaining cremators and use the resultant space plus other available space if needed to fit abatement equipment to 2 of the remaining 3 cremators at around half the cost but on the understanding that the remaining cremators would need to be completely replaced in 2018.

4. RECOMMENDATIONS.

The recommended way forward for the service is Option 2 above:

- Invest around £1m on 3 new cremators and abatement equipment.

A capital bid totalling £1m for the purchase of 3 new cremators with mercury abatement equipment was approved in November 2008 requesting £400k for 2009/10 and £600k for 2010/11.

There is the potential for an income stream through the sale of 50% of abated cremations at around £50 per cremation.

The Executive Member is requested to approve the way forward recommended for the service in line with the detailed information presented in the report.

