



Executive Committee

Abbey Ward

16th September 2009

REDDITCH CREMATORIUM - CREMATOR REPLACEMENT AND BUILDING UPGRADES – CAPITAL PROGRAMME

(Report of the Head of Operations)

1. Summary of Proposals

The report will advise Members of the requirement for a major infrastructure upgrade to the existing crematorium plant and buildings including the preferred method of installing a new cremator and mercury filtration equipment to ensure the Council meets Government targets for mercury emissions and the longer term viability of Bereavement Services.

2. Recommendations

The Committee is asked to **RESOLVE** that,
subject to the necessary budgetary approvals of the full
Council, as detailed at recommendations 6) and 7) below,

- 1) a programme of replacement of and installation of one new cremator, complete with mercury abatement equipment, at a current cost in the region of £575,000, be carried out;
- 2) a programme of civil works be undertaken to improve the public and staff areas of the crematorium buildings, at a cost of £380,000;
- 3) a defined study be carried out in relation to energy recovery and re-use for both internal and external purposes;
- 4) specialist and technical support be employed to assist the Bereavement Services Manager with the management and implementation of this project, at a cost of £32,500;
- 5) expenditure of up to the total sum approved by the Council, for the purposes defined in the report, be approved in accordance with Standing Order 41;

and to RECOMMEND that

- 6) the Council, if it is established that it is economically viable to recover waste energy and to re-use it for internal and external purposes, implement the recommended programmes for such re-use. Initial research indicates that internal re-use will be economically viable so a sum of £70,000 has been included in the Capital Programme for this aspect of the project.**
- 7) up to £757,500 be allocated from the Capital Programme for the purposes indicated in the report; and**
- 8) the Capital Programme be amended accordingly.**

3. Financial, Legal, Policy, Risk and Sustainability Implications

- 3.1 £50 from each cremation fee has been set aside for the purpose of funding the replacement of the cremators, based on 1,200 cremations per annum this equates to £60,000 per annum. The fund currently stands at £180,000, although by the intended date of installation this will stand in the region of £300,000 depending on the number of cremations that have been carried out.
- 3.2 There will be a further capital funding requirement of £275,000 at current prices and this excludes the predicted 10 per cent annual industry related inflation for the replacement cremator, mercury abatement equipment. This has been caused primarily by the deterioration in the exchange rate and fluctuating raw material costs, as a substantial proportion of both components and finished goods are imported and are dependent on world commodity markets. A further £380,000 at current prices, is required for the planned improvements to the public areas of the building.
- 3.3 Additionally a further cost should be considered under 'Spend to Save' for installing the mercury abatement equipment with an energy recovery system and a redistribution capability.. The most obvious use of some of the energy recovered would be to heat the crematorium building, which would allow the current electrical heating system to be replaced - reducing the cost of heating the building by 75 to 80%.
- 3.4 The capital cost of this work is estimated to be between £50,000 and £70,000. It currently costs approximately £15,000 per year to heat the Crematorium so the payback period is estimated at 4 years and 8 months, after which, apart from maintenance costs heating will effectively be a fraction of the current cost.

- 3.5 There may be additional opportunities to export and re-use some or all of the remaining 'waste' energy, either for other council buildings ie; Abbey Stadium or to export it back to the grid and create additional revenue. However, further research is required to establish the viability of any such project. (A more detailed explanation is provided under the heading Sustainability / Environmental - Paragraphs 3.16 to 3.25 below)

	Total cost	Existing built up funds by time of installation	Additional capital finance required
New cremator and mercury abatement technology	£125,000 to £175,000 and £350,000 to £400,000 total maximum £575,000 +10 per cent	In the region of £300,000	£275,000
Energy Recovery Technology for heating the Crematorium	£ 50,000 to £70,000. ?		£70,000
Consultancy	£ £32,500		£32,500
Improvement to public area	£380,000		£380,000
Total	£1,057,500	- £300,000	£757,500

- 3.6 The overall legal requirement is that 50% of all cremations, based on the reference year of 2003, be abated as from the operational date of January 1st 2013. (See Paragraph 5.1).
- 3.7 It has already been agreed that Redditch Crematorium will participate in the Crematoria Abatement of Mercury Emissions Organisation (CAMEO) burden sharing scheme, which will be established in 2012 in readiness for the operational date.
- 3.8 Those crematoria fitting abatement equipment will have the opportunity of recovering part of the capital cost by placing the number of cremations over and above the legal requirement and /or their 'net' needs into a 'bank' for purchase at an estimated cost of £50 per cremation by those crematoria who have decided not to fit

the equipment but to meet their legal obligations through such purchases ie: by burden sharing.

- 3.9 Costs of the employment of technical specialist support are included in the bid

Legal

- 3.10 There is a requirement to improve the level of compliance within the conditions of the operating permit under the pollution prevention and control regulations 2000.

Policy

- 3.11 This work would assist in meeting the requirements of the air quality management strategy.
- 3.12 The energy saving element of undertaking these works will increase our performance under NI185 by significantly reducing the Council's carbon footprint and contribute to the Worcestershire Partnership Climate Change Strategy.

Risk

- 3.13 Failure to comply with the pollution prevention and control regulations 2000 could result in the closure of the crematorium for cremations. Failure to meet Government targets could result in damage to the Council's reputation as a well managed organisation.
- 3.14 There will need to be thorough project planning and management to minimise potential loss of business to other local cremation authorities during upgrading.
- 3.15 The long term financial viability of this service area could be compromised if improvements to the public areas are not upgraded due to the building layout and public facilities being inadequate and in some cases not fit for purpose. (Appendices 1 and 2 refer)

Sustainability/Environmental

- 3.16 Operating a crematorium is a highly energy intensive process and in 2008 used 170,000 kiloWatt hours (kWh) of electricity and 1,516,000 kWh of natural gas. A typical cremation lasts 80 minutes and releases to atmosphere throughout an average of 300 kW (high 400 kW low 200 kW) of waste heat. At present this is dissipated via the chimney to atmosphere and is lost.
- 3.17 In the case of an abated cremation there is an average of 280 kW of waste heat generated throughout a typical 80 minute cremation. This lower figure is due to the fact that the cremator temperature is

lowered from 850C to 800C. In an abated system without any heat recovery this energy would still be dissipated to atmosphere via the abatement cooling system and the chimney.

- 3.18 New cremators are far more technologically advanced and efficient than previous technology having shorter preheat times, greater heat retention and have the option to recover any energy waste from the secondary process (mercury abatement plant – not from the cremator itself)
- 3.19 If agreed we will recover a proportion of the waste energy created from the secondary process (mercury abatement plant) for use either on site or possible export. This recoverable heat could be used as heating for the crematorium facility and also potentially for the Abbey Stadium sports facility located adjacent to the crematorium. However the amount of recoverable heat is several times greater than this heating requirement. It should be noted that at present the heating of the crematorium is by electric storage heaters and the replacement of this method with a central heating system powered by the recovered heat would displace the present heating electrical consumption and would have a significant reduction in the carbon footprint.
- 3.20 An alternative to using the recovered heat for simple heating may be to use it to generate electrical power. This electrical power would then be used for both heating and operating the cremators and abatement equipment. In the event that there is a surplus of electrical energy produced then this could be exported from the site into the national grid. It may be possible for any exported electrical energy to qualify for potential future feed-in tariffs under the government's Renewable Energy Programme.
- 3.21 It may be possible in addition to feed-in tariffs premiums to qualify for grants towards capital cost from DEFRA. Contact has already been made with DEFRA to investigate this possibility.
- 3.22 Alternatively there is a possibility to obtain partial funding from the SALIX programme whereby qualifying projects must deliver both CO₂ and revenue benefits and, in line with the SALIX objective, must offer long term CO₂ savings. The potential continued displacement of purchased energy that would be achieved under waste heat recovery would appear to satisfy this criteria.
- 3.23 Any energy produced from waste heat recovery and used on site will displace the requirement of purchasing from our electricity supply company resulting in savings once the equipment has paid for itself and thereafter, thus protecting the authority against future increases against energy costs and ensuring our energy supply – ensuring the crematorium can operate in times of low energy security.

- 3.24 The combination of reduced energy usage of the more efficient cremators together with energy recovery will significantly reduce the carbon footprint of the facility and contribute to the Governments target of reducing carbon emissions by 80% of 1990 levels by 2050 under the Climate Change Act (2008).
- 3.25 The majority of cremations would be carried out in the new machine with the one remaining old cremator only used at peak times or as a contingent resource. The industry recognised system of holding over cremations for up to 24 hours, with permission of the applicant for cremation, would also make for more efficient use of energy resources. The installation of mercury abatement equipment alone could reduce mercury emissions by up to 100%, thus assisting with DEFRA's 50% national reduction of mercury to air as from the operational date of the legislation, January 1st 2013. However this figure is more likely to be between 70% and 80 %for Redditch Crematorium because of the need to use the older cremator at peak periods.

Report

4. Background

A detailed feasibility report was commissioned by the Bereavement Services Manager entitled Replacement of Existing Cremation Equipment and Installation of Mercury Abatement Plant together with an Assessment of Burial Provision and Ancillary Services for Redditch which provides detailed background information for this report. (Appendices 1 and 2 refer.)

5. Key Issues

- 5.1 The industry is required to reduce mercury emissions from cremations by at least 50% by the operational date of January 1st 2013 in order to meet the Government target for reduction in mercury emissions based on the reference year of 2003.
- 5.2 Failure to meet targets could result in the future operational viability of the cremation service in Redditch being severely reduced, leading to associated damage to the Council's reputation and potential loss of service to residents.
- 5.3 The replacement of one cremator with mercury abatement capability would meet the requirements of Redditch Bereavement Services based on current and projected annual cremation numbers.
- 5.4 The replacement of one cremator with abatement capability would allow for the phased replacement of the second cremator and the associated reduction in capital requirement until 2014/15.

- 5.5 The current cremators would require replacement or major refurbishment due to their age and use regardless of the need reduce mercury emissions. Replacement of a cremator with mercury abatement capability would be financially and operational preferable to retro-fitting abatement equipment to refurbished cremators. This would include the possibility of installing abatement equipment ready for future cremator upgrade.
- 5.6 Certain parts of the public areas at the crematorium are no longer adequate for use nor do they meet the expectations of the bereaved, which could impact on the longer term success and viability of bereavement services in Redditch.
- 5.7 Specialist and technical support will be required for the implementation of this project; the estimated cost for this has been included in the capital funding requirement for cremator replacement.
- 5.8 Full details including all supporting information are contained within the report produced by Goldray Limited - Management Consultancy Services for Redditch Borough Council - Appendix 1 – Goldray Limited report (Feasibility Study: Redditch Crematorium & Cemetery) and Appendix 2 - Goldray report: list of appendices to report.
- 5.9 The Goldray Limited report (Feasibility Study: Redditch Crematorium & Cemetery) also contains an assessment of the need for additional burial space within Redditch which will be the subject of a separate report.

6. Other Implications

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|------------------|---|---|
| Asset Management | - | The report proposes significant structural and other improvement works to the crematorium building. |
| Community Safety | - | None specific. |
| Human Resources | - | Appendix 3, the Goldray report, includes a list of appendices to the report which contain recommendations regarding staffing levels and working practices. |
| Social Exclusion | - | Some of the improvement works include improvements to the public areas of the building for example the provision of toilet facilities for customers with mobility issues. |

7. **Lessons Learnt**

None.

8. **Background Papers**

Goldray Limited Consultants report and associated papers Appendix 1 – Goldray Consultants report (Feasibility Study: Redditch Crematorium & Cemetery) and Appendix 2 – Goldray Limited report: list of appendices to report.

9. **Consultation**

9.1 This report has been prepared in consultation with relevant Borough Council Officers.

9.2 Goldray Limited also undertook consultation exercises with local funeral directors as detailed in Appendix 1 – Goldray Limited report (Feasibility Study: Redditch Crematorium & Cemetery).

10. **Author of Report**

The author of this report is Ian N Gregory (Bereavement Services Manager), who can be contacted on 01527 62174 (or email: ian.gregory@redditchbc.gov.uk) for more information.

11. **Appendices**

Appendix 1 - Goldray Limited report (To follow)
Appendix 2 - Goldray Limited report: list of appendices to report.
(To follow)