

Committees:	Dates:	
Projects Sub Committee Port Health and Environmental Services Committee	12 December 2018 15 January 2019	
Subject: Cremator Replacement – City of London Cemetery and Crematorium	Gateway 3/4 Options Appraisal(Regular)	Public
Report of: Director of Open Spaces Report Author: Gary Burks	For Decision	

Summary

Recommendations

1. That Members agree option 5 is taken forward and implemented.
2. That the total budget of £1,100,000 is approved.

Progress to date

The City of London Cemetery and Crematorium currently has five cremators. Four are 20 years old and at the end of their working lives and an additional one was fitted in 2009 to meet current needs to remove mercury and other pollutants from the cremation emissions.

The aim of this project is to protect and maintain cremation service provision at the City of London Cemetery and Crematorium, improve energy efficiency and reduce pollution by replacing the old cremators with new ones.

Gateway 1/2 (regular) was passed in September 2017 with the agreed next steps of developing options and costings for the removal of the City Corporations four aging and polluting Evans Universal Cremators with the aim of replacing them with the appropriate number of modern, energy efficient ones. The evaluation of fitting flue gas treatment plant was also to be considered.

The Cemetery and Crematorium management team have employed a specialist consultant to assess the options set out at Gateway 1/2, and to provide a report with costings for an appropriate way forward. The resources expended to date are £9,832.73 for the services of a consultant and 15 hours of officer time to date.

Overview of Options

Whilst six options were listed at Gateway 1/2, three were listed for the sake of completeness and are not viable in the opinions of the superintendent and management team, this opinion is fully supported by the specialist consultant

(Rose Project Management) employed to carry out an options appraisal on behalf of the City Corporation. The non-viable options were;

- **Option 1** - Do nothing

This option has been considered non-viable as the cremators in question are now 20 years old, one is already beyond economical repair and the remaining three are inefficient, pollute and are at risk of failure when under heavy use.

- **Option 2** - Remove one cremator and retrospectively fit flue gas treatment plant to the three remaining 20 year old cremators.

This option has been considered non-viable for similar reasons to option 1 as the spend of £450,000 + on fitting flue gas treatment plant to such old cremators would not be an effective use of the City Corporation's money.

- **Option 3** - Remove all four of the old cremators and replace with one new cremator complete with flue gas treatment plant.

This option has not been taken forwards as at least 3 cremators are required in order to operate a crematorium carrying out 2,500+ cremation, as there needs to be contingencies in place for break-downs, repairs, servicing and re-lining or refractory brickwork without negatively affecting service provision.

The remaining (viable) options were set out as follows;

- **Option 4** - Remove all of the old cremators and replace with two new cremators, but without fitting flue gas treatment plant.
- **Option 5** - Remove all of the old cremators and replace with two new cremators complete with flue gas treatment plant. **Recommended Option**
- **Option 6** - Remove three of the old cremators (leaving one operational and in situ) and replace with two new fully abated cremators.

Proposed way forward

The recommendation of the specialist consultant and the proposed way forwards is to **remove all four of the old cremators and replace them with two new cremators complete with flue gas treatment plant. (Option 5)**

Procurement Approach

Procure the services of a specialist contractor to manage and oversee the project through tenders in consultation with City Procurement.

Procure the works aspect of the project (removal, supply and fitting including all other aspects) through the tender process in consultation with City Procurement.

Table with Financial Implications

The financial implications for the options set out in this report are shown below. It should be noted that it is possible but unlikely that an electrical upgrade or new electrical supply will be required. This would effectively reduce the costs below by £120,000 but a further electrical survey would be required to confirm this.

- Option 4 - £650,000
- Option 5 - £1,100,000 (**Recommended**)
- Option 6 - £1,077,500

Options Appraisal Matrix

See attached.

Appendices

Appendix 1	PT 4 Procurement form
Appendix 2	Financial Calculations
Appendix 3	Project Risk Register
Appendix 4	Project Cover Sheet

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Options Appraisal Matrix

	<i>Option 4</i>	<i>Option 5</i>	<i>Option 6</i>
1. Brief description	Remove all four of the 20 year old Evans Universal cremators and install two new cremators without fitting flue gas treatment plant.	Remove all four of the 20 year old Evans Universal Cremators and replace with two new cremators including flue gas treatment plant.	Remove three of the four 20 year old Evans Universal Cremators and replace with two new cremators and flue gas treatment plant. This option leaves one Evans cremator in its original position to be used in emergencies.
2. Scope and exclusions	<p>The scope of works is to;</p> <ul style="list-style-type: none"> • Procure Specialist contractor to project manage the works • Procure removal and replacement of cremators • Remove the four existing Evans Universal Cremators • Assess current electrical supply and upgrade or replace if necessary • Install new cremators • Commission new cremators 	<p>The scope of works is to;</p> <ul style="list-style-type: none"> • Procure Specialist contractor to project manage the works • Procure removal and replacement of cremators and installation of Flue Gas Treatment Plant. • Achieve planning consents where required for installation of heat exchange outlet • Remove the four existing Evans Universal Cremators • Assess current electrical supply and upgrade or replace if necessary 	<p>The scope of works is to;</p> <ul style="list-style-type: none"> • Procure Specialist contractor to project manage the works • Procure the removal of three of the old cremators and installation of two new ones including the installation of flue gas treatment plant. • Achieve planning consents where required for installation of heat exchange outlet • Remove three of the existing Evans Universal cremators and ensure that the remaining one remains fully operational.

	Option 4	Option 5	Option 6
	<ul style="list-style-type: none"> Carry out emissions testing 	<ul style="list-style-type: none"> Install new cremators, heat exchange equipment and flue gas treatment plant Commission new cremators Carry out emissions testing 	<ul style="list-style-type: none"> Assess current electrical supply and upgrade or replace if necessary Install new cremators, heat exchange equipment and flue gas treatment plant Commission new cremators Carry out emissions testing
Project Planning			
3. Programme and key dates	<ul style="list-style-type: none"> Achieve Gateway 3/4 decision at Project Sub Committee November 2018 PHES Committee Approval November 2018 Achieve Gateway 4a (inclusion in Capital Programme) Jan- Feb 2019 Tenders for Project Management and Main cremator removal and replacement projects October 2019 (to allow for 6month lead in period for cremators and/or flue gas treatment plant). Achieve planning consent for any visible alterations to the building (roof mounted air blast coolers). Gateway 5 Authority to Start Work April 2020 Project to commence May 2020 Project completion August 2020 Emission testing and commence use September 2020 Gateway 7 report Jan 2021 		
4. Risk implications	<p>Medium risk</p> <ul style="list-style-type: none"> This option meets the current needs of the service. 	<p>Low Risk</p> <ul style="list-style-type: none"> This option meets the current needs of the service and also meets the future 	<p>Low Risk</p> <ul style="list-style-type: none"> This option meets the current needs of the service and also meets the future needs should

	Option 4	Option 5	Option 6
	<ul style="list-style-type: none"> The Risk of Medium is based around the fact that this option does not protect the City Corporation from future changes in legislation by installing mercury abatement 	<p>needs should the anticipated OSPAR convention recommendations 2003/4 to achieve 100% abatement of cremation become law.</p> <p>Risk Register for this option Completed and attached as Appendix 3</p>	<p>the anticipated OSPAR convention recommendations 2003/4 to achieve 100% abatement of cremation become law.</p> <ul style="list-style-type: none"> Whilst it can not be considered a risk at this time, the one remaining old Evans cremator will eventually fail and become uneconomical to repair if its use may be legislated against, but will be difficult and expensive to remove later with the new cremators alongside it.
5. Benefits and disbenefits	<p>Benefits</p> <ul style="list-style-type: none"> This option provides the City with modern and efficient cremators Is less expensive than options 5 and 6 <p>Disbenefits</p> <ul style="list-style-type: none"> Choosing not to purchase and install flue gas treatment plant risks 	<p>Benefits</p> <ul style="list-style-type: none"> This option offers the appropriate level of cremators to meet the needs of the service This option meets the OSPAR convention recommendations for the abatement of mercury and other toxins. 	<p>Benefits</p> <ul style="list-style-type: none"> This option would save the City of London Corporation £25,000 by not demolishing and removing one of the old existing Evans Universal cremators. By having a 4th Cremator on site the City's ability to manage mass fatalities or Pandemic situations would be increased.

	Option 4	Option 5	Option 6
	<p>the City Corporation not meeting the anticipated OSPAR convention recommendations 2003/4 to achieve 100% abatement of Cremation.</p> <ul style="list-style-type: none"> The City Corporation Crematorium would continue to pollute which would contradict the City's efforts elsewhere to reduce pollution where possible. 	<ul style="list-style-type: none"> This option reduces the need to carry spares and purchase servicing for an ageing cremator that there is only very limited demand for. <p>Disbenefits</p> <ul style="list-style-type: none"> This is the most expensive of the options being considered This option offers a reduced cremation capacity than option 6 but still provides us with adequate provision. 	<p>Disbenefits</p> <ul style="list-style-type: none"> The old cremator is approaching the end of its useful life and each cremation will cost more in gas and electricity when using it. It will not be possible to affix flue gas treatment plant retrospectively to the old cremator The site will have to purchase and hold spares for this cremator as well as meet service costs even if it is not frequently used, if it is to be relied upon at times when there is a high volume of work. Due to its age the old cremator will be less reliable than the others, but will have to be used to ensure that it continues to function.
6. Stakeholders and consultees	<ul style="list-style-type: none"> As this project is aimed at replacing operational equipment in order to maintain the crematorium service and provision we have not consulted with stakeholders at this time. 		

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	<ul style="list-style-type: none"> The cemetery management team have consulted with industry experts and colleagues to develop options that meet the needs of the bereaved, support the City's wider environmental aspirations, and provide the best option for the cemetery business. 		
Resource Implications			
7. Total Estimated cost	£300,000 New cremators £90,000 removal of old cremators (4) £65,000 Upgrade electrical system * £55,000 New electrical Supply * £2,000 Asbestos survey £8,000 Emissions testing £130,000 estimated cost of professional services for project management £650,000 NB * it is possible but unlikely that an electrical upgrade or new electrical supply will be required.	£300,000 New cremators £450,000 Abatement equipment £90,000 remove old cremators (4) £65,000 Upgrade electrical system * £55,000 New electrical Supply * £2,000 Asbestos survey £8,000 Emissions testing £130,000 estimated cost of professional services for project management £1,100,000 NB * it is possible but unlikely that an electrical upgrade or new electrical supply will be required.	£300,000 New cremators £450,000 Abatement equipment £67,500 remove old cremators (3) £65,000 Upgrade electrical system * £55,000 New electrical Supply * £2,000 Asbestos survey £8,000 Emissions testing £130,000 estimated cost of professional services for project management £1,077,500 NB * it is possible but unlikely that an electrical upgrade or new electrical supply will be required.
8. Funding strategy	<ul style="list-style-type: none"> All required resources to reach next gateway will be found from local risk budget 		

	<i>Option 4</i>	<i>Option 5</i>	<i>Option 6</i>
	<ul style="list-style-type: none"> This project will be the subject of a bid for an allocation from the City Fund provision for new schemes, which is subject to the approval of Resource Allocation Sub and Policy and Resources Committee 		
9. Estimated capital value/return	<ul style="list-style-type: none"> The total income from cremation in the year 2017/18 was £2,040,945. The cremators have a recommended life expectancy of 15 years, therefore with inflationary increases of 3% the return on the capital investment is £39,098.904. This will equate to £13,032,904 per cremator. A return of £26,065,808 on the £1,100,000 investment. Cremator project Payback Calculation attached as Appendix 2 		
10. Ongoing revenue implications	<p>For the 15 year expected life of the cremator the total projected revenue cost, excluding gas and electricity is;</p> <p>£659,000</p> <p>The saving compared to options 5 and 6 is due to the lack of mercury abatement and the fact that this process has an ongoing cost.</p>	<p>For the 15 year expected life of the cremator the total projected revenue cost, excluding gas and electricity is;</p> <p>£859,000</p>	<p>For the 15 year expected life of the cremator the total projected revenue cost, excluding gas and electricity is;</p> <p>£974,000</p> <p>The extra cost for this option is the cost of service, repairs and maintenance on the old Evans cremator.</p>

	<i>Option 4</i>	<i>Option 5</i>	<i>Option 6</i>
11. Investment appraisal	<p>The whole life costs of purchase, repair, maintenance and operation of the cremators (using 15 years as an industry standard), excluding gas and electricity for this option is £1,309,000</p> <p>The projected total income, based on current cremation numbers and including a 3% annual increase on fees is £39,098,714 or £13,032,904 per cremator</p>	<p>The whole life costs of purchase, repair, maintenance and operation of the cremators (using 15 years as an industry standard), excluding gas and electricity for this option is £1,959,000</p> <p>The projected total income, based on current cremation numbers and including a 3% annual increase on fees is £39,098,714 or £13,032,904 per cremator</p> <p>Cremator project Payback Calculation for this option attached as Appendix 2</p>	<p>The whole life costs of purchase, repair, maintenance and operation of the cremators (using 15 years as an industry standard), excluding gas and electricity for this option is £2,051,500</p> <p>The projected total income, based on current cremation numbers and including a 3% annual increase on fees is £39,098,714</p>
12. Affordability	<p>Considering the income produced from cremation, all of the options are affordable. The proposed purchase and installation is unlikely to increase cremations carried out at the City of London Crematorium but it will ensure that we continue to be able to provide the level of service and therefore protect the income.</p>		
13. Legal implications	<ul style="list-style-type: none"> • None at present • Choosing not to purchase and install flue gas treatment plant risks the 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None

	<i>Option 4</i>	<i>Option 5</i>	<i>Option 6</i>
	<p>City Corporation not meeting the anticipated OSPAR convention recommendations 2003/4 to achieve 100% abatement of Cremation.</p> <ul style="list-style-type: none"> • 		
14. Corporate property implications	None		
15. Traffic implications	None		
16. Sustainability and energy implications	<ul style="list-style-type: none"> • Replacing the old Evans cremators with a modern equivalent will produce savings in gas and electricity. • However, not installing mercury abatement equipment will mean that we will still be polluting for half of our cremations. 	<ul style="list-style-type: none"> • Replacing the old Evans cremators with a modern equivalent will produce savings in gas and electricity • Installing mercury abatement will mean the loss of some of the energy savings from the new cremators but will ensure that we reduce emissions as much as possible for all cremations carried out. 	<ul style="list-style-type: none"> • Replacing 3 of the old Evans cremators with a modern equivalent will produce savings in gas and electricity • Installing mercury abatement will mean the loss of some of the energy savings from the new cremators but will ensure that we reduce emissions as much as possible of all cremations carried out using the new cremators.

	<i>Option 4</i>	<i>Option 5</i>	<i>Option 6</i>	
			<ul style="list-style-type: none"> There will still be unfiltered emissions (containing mercury and other toxins) produced from the one remaining Evans cremator 	
17. IS implications	None			
18. Equality Impact Assessment	As this report is simply recommending the replacement of aging cremators with new efficient ones, an equality Impact Assessment has not been carried out.			
19. Recommendation	Not recommended	Recommended	Not recommended	
20. Next Gateway	Choose an item.	Gateway 4a - Inclusion in Capital Programme	Choose an item.	
21. Resource requirements to reach next Gateway	Item	Reason	Cost (£)	Funding Source
	Gateway 4a	Officer Time	£5,000	Local Risk Budget
	Gateway 5	Officer Time - Procurement		Local Risk

	<i>Option 4</i>	<i>Option 5</i>			<i>Option 6</i>	