Committees:	Dates:	Item no.
Community and Children's Services Committee Projects Sub	10/07/2015 21/07/2015	
Subject: Heating and hot water equipment replacement - Golden Lane Estate.	**Gateway 3/4 Options Appraisal**	**Public**
Report of: Director of Community & Children's Services		**For Decision**

Summary

Dashboard:

Project Status	Green
Projected Time Line	August 2015 – commence formal engagement with the Planning Section of the Department of the Built Environment. September/October 2015 – commence procurement. January 2016 – seek authority to commence works (Gateway 5) *N.B. – if Option 3 is selected, the procurement process may take longer and works may not start in March 2016.*
Programme status	Pending Approval of Gateway 3/4 Options Appraisal
Approved budget	£26,260 (+VAT) (approved spend to reach next Gateway) £9-12m (approved estimate at Gateway 2 – project scope was broader)
Latest estimated costs	£975,375 - £6,072,750 (dependent upon the option selected)
Expenditure to date	£32,590 + VAT on surveying and report (£6330 higher than approved budget following negotiation regarding the level of detail required.)

Current Situation:

The Golden Lane Estate is listed, the majority at Grade II and Crescent House at Grade II*. There are 560 properties on the Golden Lane Estate. At present there are 290 properties that are rented to tenants by the City of London. All of the tenanted properties have individual gas boilers within the property. The driver for this project was the fact that 200 boilers within these properties are at the end of their expected service life and are being replaced reactively when they fail, at higher cost than a planned project. Where boilers are required to be replaced, modern flues and outlet pipes which extend further from opening windows must be installed. As outlined in greater detail below, for two blocks, this poses a challenge to meet the requirements of this safety legislation and the aesthetic preservation in accordance with the listing. The option of a communal heating system was assessed as part of this project as a potential solution to this problem.

Resources Expended:

Since the previous gateway, the feasibility report has been undertaken. The resources expended have been for the cost of the surveying work and report: £32,590 + VAT.

Scope of the project:

The previous Gateway report outlined three options for heating and hot water supply with two sub-options regarding the building fabric. Based on the results of the feasibility study,

the heating and hot water supply project will proceed independently, meaning sub-option 'b' applies:

b. Replacing windows, repairing/replacing roofs and consideration of other building fabric sustainability improvements (for example, internal wall insulation) as part of separate projects.

The advice received in the report confirmed the challenge of procuring contractors who would specialise in all aspects of the work, meaning economies of scale may not be achieved by combining the works. The heating and hot water options are now the sole focus of this report and ongoing project. The windows project, which includes insulation options, is proceeding concurrently. The works stages of the projects will be scheduled appropriately to avoid clashes.

Overview of Options
There are three main options for the provision of heating and hot water to the tenanted properties on the estate:

Option 1 –the replacement of existing gas-powered individual boilers to tenanted flats. These offer the most energy efficient individual solution with the lowest-risk outlay cost, as the parameters of such works are well known. The issue that would need to be overcome would be agreeing an approach regarding the placement of flues/outlet pipes with the Planning Department in two of the nine blocks, to meet both the statutory requirement for the safe operation of boilers, and compliance with the Listed Building Management Guidelines to preserve the appearance and character of the estate.

Option 2 – the replacement of existing gas-powered boilers as per Option 1, and where it is not possible to agree an approach to flues/outlet pipes in some properties within Crescent and Cullum Welch Houses, working with Planning to develop a local solution to remove the issue. In the two blocks, there are 115 tenanted properties, of which an estimated 56 may not be possible to agree a flue/outlet pipe route. Where this is the case, the option will be to either install a communal boiler in the basement of the block (where pipework may be run through existing service routes), or install individual electric-powered boilers in resident's homes, as electric boilers do not require flues. (Option 2 has been varied slightly from the second option outlined in the previous Gateway report; it was previously the replacement of all gas boilers with electric boilers.)

Option 3 – installing a communal heating and hot water system to the entire estate. This was posed as a potential solution to the problem of flue/outlet pipe locations. A communal solution could be a supply from an external source such as Bunhill Fields or Citigen, the installation of communal boilers or Combined Heat and Power (CHP) plant on the estate or a combination of these options. Communal heating options offer the benefits of an energy efficient solution; however, there will be substantial challenges in designing, establishing and installing an estate-wide pipe network with the associated physical difficulties of the fact that previous pipe routes are unusable and the regulatory challenges of agreeing substantive changes to the building fabric with the Planning Department. A further alteration would be moving from individual systems to compelling tenants to connect to a communal system, with the potential for challenge. The department would also have the new responsibility for billing residents for usage, with associated resource requirements and administrative costs.

Table with financial implications

Description	Option 1	Option 2	Option 3
Works Cost	£600,000 (boilers)	£337,500 (gas boilers) £315,000-£500,000 (for electric boilers or communal boiler with Heat Interface Units (HIUs) and pipework)	£1,545,561 - £5,398,000 For pipework, Heat Interface Units (HIUs) and connection to a heat supply.
Potential Cost (included in total)	Up to £267,000 (cold water booster pumps)	Up to £300,000 (cold water booster pumps/electrical mains)	
Fees & Staff Costs	£75,000 - £108,375	£119,063 - £142,188	£193,195 - £674,750
Total	£675,000 - £975,375	£1,071,563- £1,279,688	£1,738,756- £6,072,750
Funding Strategy			
Source	Housing Revenue Account (HRA)	Housing Revenue Account (HRA)	Housing Revenue Account (HRA) + Service Charge recovery from leaseholders, where applicable.

N.B. The financial information within this report has been drawn from 3 sources. The department's knowledge of gas boiler replacements on the estate, the report provided by the specialist consultants Parsons Brinckerhoff (commissioned to study the estate), and a quote from one of the commercial providers of district heating.

Procurement Approach

The procurement approach is variable dependent upon the option selected. For Options 1 and 2, an open tender process would be carried out, advertised via the City's online Portal. Should Option 3 be selected, the tender process would be further explored with the City's Procurement team, owing to the fact there are a smaller number of specialist suppliers.

The proposed way forward and summary of the recommended option

Option 2 is recommended. This is because the majority of boilers will be replaced with gas boilers, offering a replication of the existing provision for the majority, with an energy-efficient and known-cost solution. Further discussions will be undertaken with planning to determine and finalise the appropriate approach for all properties in Crescent House and Cullum Welch House. This option was the professionally recommended approach detailed by Parsons Brinckerhoff in the report they provided for the City.

Should further exploration with Planning pose further variations to the project approach for Crescent House and Cullum Welch House, we propose to return to Committee to seek further approval before proceeding with works to these blocks.

Recommendations

- That approval is given for £6,330 for the report and recommendations (retrospectively).
- That approval is given to proceed with Option 2.
- That approval is given of the current budget estimate of £1,035,000 - £1,243,000.

Options Appraisal Matrix

See attached.

Contact

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Options Appraisal Matrix

	Option 1 – gas boilers	*Option 2 – variance for two blocks*	*Option 3 – communal heating*
1. Brief description	Replace all individual gas boilers that are more than 15 years old in tenanted dwellings. This will involve agreeing an approach with the Planning Department regarding the flues and outlet pipes at some blocks.	Replace all individual boilers that are more than 15 years old in tenanted dwellings. Install new gas boilers where possible, as per Option 1. Where no approach can be agreed regarding the flues and outlet pipes for gas boilers install a local communal boiler or individual electric boilers to those blocks. This approach was recommended by Parsons Brinckerhoff, the consultants commissioned to study the Golden Lane Estate.	Installation of a communal heating system. This could be a supply from an external source such as Bunhill Fields or Citigen, the installation of communal boilers or a Combined Heat and Power (CHP) plant on the estate or a combination of these options.
2. Scope and exclusions	Scope: All tenanted residential properties at the Golden Lane Estate. Exclusions: Leasehold properties. (However, the agreed solution regarding flues/outlet pipes would be available to all leaseholders when they wish to replace their boilers.)	Scope: All tenanted residential properties at the Golden Lane Estate. Exclusions: Leasehold properties. (However, the agreed solution regarding flues/outlet pipes would be available to all leaseholders when they wish to replace their boilers.)	Scope: All tenanted residential properties, and subject to agreement, those non-residential properties that are supplied by the existing communal boiler at the Golden Lane Estate. Potential Scope: Leaseholders would be offered the opportunity to connect to the system, but may not be compelled.
Project Planning			
3. Programme and key dates	August 2015 – commence formal engagement with the Planning Section of the Department of the Built Environment. September/October 2015 – commence procurement. January 2016 – seek authority to commence works (Gateway 5) *N.B. – if Option 3 is selected, the procurement process may take longer, delaying Gateway 5.*		
4. Risk implications	Low • An approach cannot be agreed with Planning regarding some boiler flues and outlet pipes meaning Option 1 cannot be fully	Medium • An approach cannot be agreed with Planning regarding all gas boiler flues and outlet pipes. • The electric mains to the building	High • Expense is incurred proceeding with the option of a communal/district heating network and following structural survey or

	Option 1 – gas boilers	*Option 2 – variance for two blocks*	*Option 3 – communal heating*
	completed. To date, Crescent and Cullum Welch Houses have been identified as the most challenging blocks to deliver a safe and aesthetically appropriate option to all flats. • Potential additional cost for cold water booster pumps which may be required to some blocks as modern 'combination' boilers draw immediately from the water supply rather than tanks.	are known to require some additional work. This work may be required in advance of the installation of the electric boilers, owing to demand. If so, there will be some additional cost. • Residents object to the removal of gas boilers and a replacement communal or electric system, for example, concerns regarding more expensive operating costs. • Potential additional cost for cold water booster pumps which may be required to some blocks as combination boilers draw immediately from the water supply rather than tanks.	discussions with Planning, it is confirmed that a route cannot be achieved to all blocks meaning the approach is reduced or abandoned. Expense would be incurred upon the ring-fenced Housing Revenue Account. • If it is only possible to achieve a pipework route to some blocks there are the dual implications that the cost/benefit viability is reduced and there is a future service requirement of multiple types of equipment on the estate. • Major works such as these will take a significant period of time to plan and implement during which existing gas boilers will continue to fail and require replacement leading to duplicate cost. • Tenants object to the compulsion to connect to a communal heating system. • Residents object to the pipework routing and the change to the visual appearance of the estate and therefore raise objections to the Listed Building Consent applications. • Properties will continue to be sold under Right to Buy (RTB) lowering the viability of a communal system.
5. Benefits and disbenefits	Benefits: • Residents keep the same service as they currently have. • Good levels of energy efficiency.	Benefits: • As per Option 1, where gas boilers are acceptable, they are replaced, meaning the majority of	Benefits: • A new communal system would offer a solution to the planning concern regarding individual flues

	Option 1 – gas boilers	*Option 2 – variance for two blocks*	*Option 3 – communal heating*
	• Individual systems which allow residents to remain independent. • Replacing traditional system boilers with 'combi' boilers will enable the removal of hot water storage tanks which releases space for resident storage. Disbenefits: • The required layout of flues and outlet pipes, to ensure safe operation of gas boilers may not be acceptable to Planning for all blocks.	residents keep the same service. • Where gas boilers are unacceptable, a viable alternative is provided. • Good levels of energy efficiency are achieved by individual gas boilers/a communal boiler. • The majority, if not all, are individual systems which allow residents to remain independent • Replacing traditional system boilers with 'combi' boilers will enable the removal of hot water storage tanks which releases space for resident storage. Disbenefits • Establishing a communal heating plant for two blocks requires more major works and disturbance for residents. • Electric boilers have lower levels of energy efficiency and they are more expensive for residents to run. The installation of electrical boilers will be kept to a minimum. • The electrical mains within the building may need to be upgraded to accommodate the additional demand.	and outlet pipework. • The environmental impact is lower through a communal system. Disbenefits: There are significant challenges in installing a distribution network owing to the decay of previous routes and respecting the limit of changes that may be made to listed buildings. • Practical – much of the previous pipework routing is now either capped, unusable or failed, this is due to corroded pipes that were concreted in when they were installed, and the work taken to decommission the system in the 1990s. Therefore new pipes and routes are required. • Planning – gaining Listed Building Consent would be challenging for major changes to the appearance of the building in both internal and external areas of the blocks. • Legal – leaseholders could regard the works as unnecessary and are damaging property. Tenants may also object to the change of service. • Financial – Option 3 has the least known costs. One provider of district heating supply has provided indicative costs, subject to survey (this uncertainty has been factored in to the cost range indicated).

	Option 1 – gas boilers	*Option 2 – variance for two blocks*	*Option 3 – communal heating*
6. Stakeholders and consultees	Members, Ward Members, Residents. Departments of Town Clerk's, City Surveyor's and Chamberlain's including CLPS. The Planning team within the Department of the Built Environment will be a key consultee; they may in turn consult with English Heritage and other organisations as required.	Members, Ward Members, Residents. Departments of Built Environment, Town Clerk's, City Surveyor's and Chamberlain's including CLPS. The Planning team within the Department of the Built Environment will be a key consultee; they may in turn consult with English Heritage and other organisations as required.	In addition to the consultees in Options 1 and 2, leaseholders would also be formally consulted via Section 20 regulations should they stand to incur cost.
Resource Implications			
7. Total Estimated cost	£675,000 - £975,375	£1,035,000**-** £1,243,000	£1,738,756- £6,072,750
	The financial information within this report has been drawn from 3 sources. The department's knowledge of gas boiler replacements on the estate, the report provided by the specialist consultants commissioned to study the estate, and a quote from one of the commercial providers of district heating. There is a wide range in the costs for Option 3, the lowest cost estimate is that provided by a commercial provider of district heating – subject to survey, the highest cost estimate is drawn from the report provided by the specialist consultants following their survey.		
8. Funding strategy	Housing Revenue Account (HRA) External funding options for energy efficiency improvements will be explored - – for example, 'ECO' or the GLA's 'Re:New' scheme. The works solely apply to tenants homes; therefore there is no financial recovery from leaseholders.	Housing Revenue Account (HRA) External funding options for energy efficiency improvements will be explored – for example, 'ECO' or the GLA's 'Re:New' scheme. The works solely apply to tenants homes; therefore there is no financial recovery from leaseholders.	Housing Revenue Account (HRA) Service Charge Contributions from leaseholders, where applicable. External funding options for energy efficiency improvements will be explored – for example, 'ECO' or the GLA's 'Re:New' scheme. The works solely apply to tenants homes, therefore there is no financial recovery from leaseholders. However, should leaseholders elect to opt-in to a communal system, they would be charged for connection. There is no guarantee that any leaseholders would wish to connect, as such, this is not

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			factored into the economic modelling of this project.
9. Estimated capital value/return	N/A.		
10. Ongoing revenue implications	As per existing equipment - circa £50 per gas boiler for the annual 'CP12' safety check by a qualified Gas Safe Engineer. Operating costs are the sole responsibility of the resident.	Reduction up to £2800 (maximum) per annum compared to the existing CP12 requirement – as either only one communal boiler will be serviced or 56 electric boilers will be installed which do not require the annual 'CP12' safety check by a qualified Gas Safe Engineer. Electric boilers would be checked as part of the 5-yearly electrical testing, circa £40 per flat. (Existing service, no additional cost.) Operating costs are the sole responsibility of the resident. The department will work closely with residents if there is to be a change of service to ensure the operating costs are minimised. Should the resident have a gas cooker, the annual 'CP12' safety check by a qualified Gas Safe Engineer will still be required.	The rate at which heating and hot water provision is made to the Golden Lane Estate would be variable dependent upon the contract with the supplier of the communal system. The operating costs for the system would be funded by the City of London Corporation and residents would be billed individually for their energy usage. The billing administration is not currently a City of London liability, so undertaking this work would be a new cost and resource requirement. N.B. residents would no longer have the option of switching utility suppliers to achieve a better deal, meaning the department could be subject to challenge if heat supply costs rise above a resident's previous spend their heating and hot water provision. Should the resident have a gas cooker, the annual 'CP12' safety check by a qualified Gas Safe Engineer will still be required.
11. Investment appraisal	The works are a necessary replacement of existing facilities. The works to each flat would be considered minor in nature. Costs can be stated with a good level of certainty owing to the fact works of this type are frequently carried out both as	The works are a necessary replacement of existing facilities. The works to each flat would be considered relatively minor in nature, dependent upon the variation in Crescent House and Cullum Welch House.	The installation of a new communal facility and estate-wide pipework on a listed estate will take a significant period of time, during which gas boilers will continue to be replaced which causes a duplicate cost. Owing to the reactive

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	planned projects and reactive repairs. Service Life: A gas boiler has a service life of 15-20 years, so a similar project will be required in 2030-2035, however, the number of properties that require the works will decrease as Right to Buy sales are completed.	Costs can be stated with relative certainty owing to the fact the majority of the types of works have previously been carried out. Service Life: Gas boilers as per Option 1. Communal gas boilers have a service life of 20-25 years. Electric boilers have a 15-20 year service life.	nature of boiler failure, and the immediate need for heating and hot water, replacing failed boilers cannot be put on hold. There is a likelihood of variation in the cost estimates, as these have been based upon visual appraisal and desktop feasibility assessment rather than detailed structural survey and analysis. Service Life: The length of contract for district heating supply will be negotiated. Pipework has a service life of 40 years and Heat Interface Units (HIUs) – where the communal system is connected to the property and metered – have a service life of 15 years.
12. Affordability	Individual gas boilers offer the least expensive installation option and the least expensive running costs of the individual systems.	Individual gas boilers offer the least expensive installation option and the least expensive running costs of the individual systems. Wherever possible, individual gas boilers will be installed. Installing a localised communal gas boiler would have higher installation costs, but lower running costs for residents. Installing electric boilers is a low costs option, however, they have higher operating costs. Therefore, considering concerns about fuel poverty, the installation of electric boilers will be kept to a minimum to offer the best service for residents. The greater operating expense of electric boilers will be a relevant factor when addressing the situation with	Installing a communal heating system has the greatest cost uncertainty. One of the factors of the project was establishing whether re-instating the system would be readily feasible. The initial survey has identified a high level of unusable pipework routes, in particular, where the pipework used to run from the basements of the blocks through the service risers in between flats. These routes were set in concrete, and were blocked when the system was decommissioned. As these are no longer serviceable, if a communal heating option is selected, further structural survey work must be undertaken, and further work with the Planning team, to determine appropriate and feasible alternative routes. These may be as visible as flues/outlet pipes

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		Planning.	currently are, meaning district heating does not offer a solution to the aesthetic issue.
13. Procurement strategy	Open tender process via the Portal.	Open tender process via the Portal.	Tailored procurement process, in conjunction with City Procurement, to ensure value can be achieved from specialist suppliers.
14. Legal implications	There are currently inter-related legal implications of breaches of safety and breaches to planning consent regarding the existing gas-fired boilers in Crescent House and Cullum Welch House. The project will resolve these issues and secure a solution for future installations.	As Option 1. Should a communal boiler be installed to two blocks, contracts would need to be agreed with suppliers of district heating and hot water and/or suppliers of utilities to power such a boiler.	Contracts would need to be agreed with suppliers of district heating and hot water and/or suppliers of utilities to power a communal system.
15. Corporate property implications	It is important that the City's assets remain in good, safe and statutory compliant condition. Therefore all necessary action should be taken to ensure that assets are kept as such throughout the assets' lifetime.		
16. Traffic implications	N/A.		
17. Sustainability and energy implications	Gas boilers offer the most energy efficient individual supply of heating and hot water. Estimated CO2 emissions: 924 tonnes/year.	A communal gas boiler would offer a more efficient source of heating and hot water supply than individual gas boilers. Electric boilers offer the least energy efficient individual supply of heating and hot water. As such, the intention is to install individual gas boilers wherever possible, following which, a communal boiler for the two blocks will be explored fully prior to any decision being taken regarding electric boilers. Estimated CO2 emissions: 1000+ tonnes/year (owing to the potential	Communal heating is the most energy efficient source of heating and hot water supply. Connection to the Citigen CHP system supports the City's sustainability and planning policies. It supports the Government's national target to increase homes supplied by communal heating from 2% to 14% and the Mayor's targets for carbon reduction and CHP set out in the 'London Plan'. Estimated CO2 emissions: 441 tonnes/year.

<table>
<tr><th></th><th>Option 1 – gas boilers</th><th>Option 2 – variance for two blocks</th><th>Option 3 – communal heating</th></tr>
<tr><td></td><td></td><td>variations within this option.)</td><td></td></tr>
<tr><td>18. IS implications</td><td colspan="3">N/A.</td></tr>
<tr><td>19. Equality Impact Assessment</td><td colspan="3">The City of London Corporation has a duty of care towards residents, particularly those who are vulnerable such as the elderly and those with children. This project will assist in combating fuel poverty by providing modern, more efficient equipment to enable them to keep their homes warm.</td></tr>
<tr><td>20. <u>Recommendation</u></td><td>Not recommended</td><td>Recommended</td><td>Not recommended</td></tr>
<tr><td>21. Next Gateway</td><td>Gateway 5 - Authority to Start Work</td><td>Gateway 5 - Authority to Start Work</td><td>Gateway 5 - Authority to Start Work</td></tr>
<tr><td>22. Resource requirements to reach next Gateway</td><td colspan="3">
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<tr><th>Item</th><th>Reason</th><th>Cost (£)</th><th>Funding Source</th></tr>
<tr><td>Staff time</td><td>Working with Planning to agree the approach.</td><td>£4000</td><td>Local Risk</td></tr>
<tr><td>Consultancy</td><td>Detailed assessment of water pressure, gas pressure, electricity supply. Design and specification of the requirements.</td><td>£30,000</td><td>HRA - Capital</td></tr>
<tr><td>Staff time</td><td>Procurement process.</td><td>£3000</td><td>Local Risk</td></tr>
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<tr><th>Item</th><th>Reason</th><th>Cost (£)</th><th>Funding Source</th></tr>
<tr><td>Staff time</td><td>Working with Planning to agree the approach.</td><td>£4000</td><td>Local Risk</td></tr>
<tr><td>Structural Assessment</td><td>To assess pipe routes.</td><td>£25,000 - £30,000</td><td>HRA - Capital</td></tr>
<tr><td>Consultancy</td><td>Detailed design.</td><td>£5,000</td><td>HRA - Capital</td></tr>
<tr><td>Staff Time</td><td>Procurement process</td><td>£6000</td><td>Local Risk</td></tr>
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