Leeds CITY COUNCIL

Report author: Peter Lynes
Tel: 247 5539

Report of the Deputy Chief Executive

Report to the Executive board

Date: 22 April 2015

Subject: Proposed investment in Electricity Generation in Merrion House refurbishment project

Are specific electoral Wards affected? If relevant, name(s) of Ward(s):	☐ Yes	☒ No
Are there implications for equality and diversity and cohesion and integration?	☐ Yes	☒ No
Is the decision eligible for Call-In?	☐ Yes	☒ No
Does the report contain confidential or exempt information? If relevant, Access to Information Procedure Rule number: **10.4 (3)** Appendix number: **3**	☒ Yes	☐ No

Summary of main issues

1. The purpose of this report is to seek approval to install a 2MW $_{peak}$ gas-fired electricity generating station as part of the base specification for the Merrion House refurbishment project.

2. The capital investment would be offset by cost savings and income generated over the life of the project. Total net savings are estimated at £1.514m over 25 years with a net present value of £420k. However, this scheme would negate the need for a smaller business continuity generator and, taking into account the costs avoided, total net savings would increase to £2.917m with a net present value of £1.1m.

Recommendations

3. The Executive Board is recommended to:

- Approve an injection of capital of £3.1m to invest in a 2MW $_{peak}$ gas-fired electricity generating station with heat recovery that will be incorporated into the base specification for the Merrion House refurbishment project; and
- Approve the Authority to Spend of £3.1m in a 2MW peak gas-fired electricity generating system.

1 Purpose of this report

1.1 The purpose of the report is to provide details on the proposed new electricity generation plant in Merrion House. Details are provided on the financial business case, setting out both the revenue savings and the opportunities for income generation.

2 Background information

2.1 Due to the technical nature of the report, a glossary is attached at appendix 2.

2.2 Merrion House currently has a gas-fired boiler plant rated at 6MW which provides heat to the building. The building consumes approximately 880kw peak of electricity and draws its power from the national grid with a maximum supply capacity of 1MW.

2.3 The floor-plate of the building is being increased by >30%, however the potential increase in energy demand will be reduced through improvements in insulation, lighting equipment, controls and general building services. The likely final heating demand is estimated at <2MW, with an electricity demand of 1.1MW $_{peak}$.

2.4 Changes in the electricity supply market, reflecting the general move away from fossil fuel generation have had an effect particularly on larger power consumers such as the Council. This has resulted in an increase in the differential of cost between base rate and peak rate electricity, currently of approximately 18%. This differential presents an opportunity to firstly generate our own power when electricity is more expensive during peak times; and secondly to generate surplus power to export and sell to the national grid at peak times when other consumers are paying premium prices. Finally the waste heat produced by the electricity generator can be used to reduce the need for gas boilers when it is running.

2.5 The regulator (OfGEM) has warned since October 2013 that there may be shortages of electricity supply at peak times starting in winter 2015/16. These peak time shortages are likely to continue until the middle of the next decade.

2.6 Each year, National Grid Company is paid a Transmission Network Use of System (TNUoS) fee in order to finance the cost of maintaining and updating the UK's electricity grid. This fee is split between generators and consumers of electricity. Customers receiving pass-through charges pay their share based on consumption during Triads. These are the three highest half-hour periods of system demand between November and February each year, typically occurring during cold weather around 5-6pm on weekdays, when industrial demand coincides with the domestic tea-time period. However, with prior warning, it is possible to reduce this charge – which often runs to tens of thousands of pounds – by reducing consumption when a Triad is likely to occur.

2.7 The availability of the Council's own generator in Merrion House would enable the city centre business of the Council to continue without interruption during potential power outages. In addition it would also provide back-up generator capacity to cover any other (e.g. accidental) power losses.

3 Main Issues

Technical capability of the plant

3.1 The gas-fired electricity generator will be capable of supplying Merrion House with electrical power to meet its anticipated peak demand at any time. In addition the generator will be sized so as to be capable of operating the building continuously at any time should the need arise (e.g. during a power outage or in order to avoid paying very high prices for peak electricity).

3.2 The National Grid Company and the Distribution Network tariffs offer significant incentives to organizations that can offer generation that can be remotely switched-on, on demand, so as to offset the need for either power cuts, or future power station construction. This scheme is known as STOR.

3.3 Installation of this generator will allow the Council to generate electricity at the known peak times, reducing the amount that the Council currently pays for Triad charges. As well as reducing the Council's own Triad charges, it will also be able to earn Triad rebates for power exported during peak times.

3.4 By sizing the generator at 2MW peak, this allows the Council to export surplus electricity to the grid at peak times when prices are at their highest, maximising income return to the Council. The effect of exporting power at peak times is to improve the pattern of electrical consumption for the whole Council's portfolio. The effect of this is to reduce the whole Council's exposure to peak rate electricity prices. The financial benefit from changing the Council's energy profile will be approximately £58,000 per year.

3.5 When the electricity generator is operating it produces waste heat which will be used to heat the building in place of any boiler plant, resulting in a further financial saving to the Council. The total efficiency of the plant will be increased by making use of waste heat instead of operating additional boilers. It is anticipated that the generator will provide 25% of the building's heating demand.

3.6 Alternative scenarios such as Combined Heat and Power where the waste heat from the electricity generator is the only heating source for the building have been reviewed and found to be unviable.

Business case

3.7 The total capital scheme is estimated to be £3.100m. However, the installation of this equipment would negate the need for a smaller Business Continuity Generator, deemed to be essential, at a cost of £832k. The funding for the business continuity generator will be sourced from the fit out budget approved at Executive Board July 2012.

3.8 As well as repaying the financing costs for the initial investment, the business case has included a cost for maintenance and the gas costs that are required to run the plant.

3.9 Income and savings together would arise from the avoidance of utility costs, income from utility sales, avoidance of emissions taxation, avoidance of an overhead charge and income from an overhead rebate. In addition there would be further financing savings resulting from the avoidance of the capital spend on the necessary business continuity generator.

3.10 Appendix 3 to this report details these estimated costs and savings. Total savings would be £1.514m with a net present value of £420k and annual losses in years 1to 6. However, taking account of costs avoided from the Business Continuity generator, net savings would increase to £2.917m with a net present value of £1.1m. There would be annual savings from year 1 onwards.

Energy security

3.11 On completion of the Merrion House refurbishment, more than 50% of the Council's city centre staff will be based in this one building. This increased concentration of staff in one building increases the risk to business continuity. Investment in the proposed plant is a risk management strategy for overcoming this potential situation whilst also providing the Council with an invest to save opportunity. It also provides the platform for further consideration of the opportunity to extend building electrical power resilience to other city centre premises (e.g. Civic Hall) not covered by existing back up facilities. These opportunities will be explored and appropriate business cases developed in the future.

Future considerations

3.12 During the time of the development of this proposal, the potential that a District Heating pipeline will pass close by the Merrion building has become a strong possibility (see Executive Board report of September 2014). None of this business case depends on, or supports that possibility. However, should the Council's ambition to bring such a pipeline through be realised, then this generation scheme would form a considerable asset towards the completion and successful operation of that pipeline. It would enable LCC to further profit from both endeavours by allowing surplus heat to be exported onto a district heating network and also importing cheaper heat from the network.

3.13 Should the potential for a connection to a city centre district heating scheme become realisable, then a business case would be presented to add functionality to this generator project so as to increase the profitability of the scheme.

4 Corporate Considerations

4.1 Consultation and Engagement

4.1.1 This report has been through a process of consultation with the Business Improvement Sub-Board (including Town Centre Securities, the current building owners) and the Finance Performance Group and does not require any further consultation and engagement considerations.

4.2 Equality and Diversity / Cohesion and Integration

4.2.1 An EDCI impact assessment for the complete refurbishment was carried out in July 2012. Consideration of the addition of this generator concluded that a full impact assessment was not required, as the decision is based entirely on technical property characteristics rather than any personal or group characteristics. The rationale behind this decision has not changed in the interim period. A copy of the assessment is attached at appendix 1

4.3 Council policies and City Priorities

4.3.1 This strategy aims to support the following Council policies and values:

- The Core Value of 'Spending Money Wisely'.
- The Council's Carbon and Water Management Plan, 2011-2021. The business case includes a reduction in the levy paid under the Carbon Reduction Commitment Energy Efficiency Scheme. This arises from the carbon emissions reductions associated with the use of waste heat for heating the building.
- The complete refurbishment comprises part of the Council's Business Improvement Plan. The concentration of more than 50% of the City Centre staff into one highly energy-efficient building, enabling disposal of less-well-performing properties forms a key long term aim of the Carbon and Water Management Plan above.

4.4 Resources and value for money

4.4.1 The purpose of this investment project aims to increase value for money. No additional budget would be required for additional personnel, since maintenance of the equipment would involve an external contractor, and supervision/switching algorithms would be provided by external specialist software operators, the costs of which are incorporated in to the business case. LCC would:

- Minimise the cost of energy procurement for the refurbished Merrion House
- Generate income by exporting electricity onto the national grid, or to other LCC buildings, when energy prices are favourably high
- Minimise the cost of energy procurement for LCC as a whole, by changing the consumption pattern significantly
- Reduce carbon emissions associated with Merrion House, and hence reduce levy charges associated with those emissions

4.5 Legal Implications, Access to Information and Call In

4.5.1 Any legal implications associated with the project have been and would be considered as part of the overall refurbishment project, managed by the Property Improvement Sub-board.

4.5.2 The proposal constitutes a Key decision however this decision is not subject to 'call in'. A Key decision may be Exempt from Call In if the decision taker considers that the decision is urgent (i.e. that any delay would seriously damage the Council's or public's interests). This decision is exempt from call-in due to the need to sign off the next stage of works for Merrion and any delay to this element will hold up the progress of the overall project, causing delays to the completion date and therefore

the realisation of the associated financial benefits of moving staff out of other buildings and into Merrion. Time was not built into the timetable to return to Executive Board as the capital had already been approved at an earlier stage. However, further due diligence has meant that the costs and associated benefits are higher than originally anticipated and consequentially the decision to proceed needed to be re-approved at Executive Board.

4.5.3 The information contained in Appendix 3 to this report relates to the financial or business affairs of a particular company, and of the Council. This information is not publicly available from the statutory registers of information kept in relation to certain companies. It is considered that since this information was obtained through direct negotiations then it is not in the public interest to disclose this information at this point in time. It is considered that whilst there may be a public interest in disclosure, much of this information will be available following completion of the project and consequently the public interest in maintaining the exemption outweighs the public interest in disclosing this information at this point in time. It is therefore considered that this element of the report should be treated as exempt under rule 10.4(3) of the Access to Information Procedure Rules.

4.6 Risk Management

4.6.1 Once approved, the investment project would become incorporated into the base-build plan for Merrion House. Risk Management issues would be incorporated into the already existing Risk Management Plan for that project. Risks associated specifically with this element of the project include:

- This project is going to be a variation to the main contract but it is not considered to be a material variation and accord with Regulation 72 of the Public Contracts Regulations 2015 (and relevant procurement case law) in that a change of contractor cannot be made for technical reasons and would cause significant inconvenience/substantial duplication of costs, the increase in capital costs does not exceed 50% of the value of the original contract, and in any event is not substantial.
- Capital price changes leading to increased capital injection requirements. This risk is mitigated by a portfolio approach to the pricing, with competitive quotations derived from a number of sources, with checking and challenging originating in at least three separate bodies.
- Income fluctuations caused by scheme changes may lead to reductions in income. This risk is mitigated by considering both current and confirmed future repayment rationales. Further mitigation arises from the savings/income arising from a spread of separate schemes, rather than a single scheme. Due diligence has been undertaken by an external body to ensure that the case is realistic.

5 Conclusions

5.1 This report has established that there is a robust business case to recommend investment in a 2MW $_{peak}$ gas-fired electricity generator as part of the refurbishment of Merrion House resulting in efficiency savings, income generation and an increase

in the Council's energy security as well as contributing to corporate carbon reduction requirements.

6 Recommendations

6.1 The Executive Board is recommended to:

- Approve an injection of capital of £3.1m to invest in a 2MW $_{peak}$ gas-fired electricity generating station with heat recovery that will be incorporated into the base specification for the Merrion House refurbishment project; and
- Approve the Authority to Spend of £3.1m in a 2MW peak gas-fired electricity generating system.

7 Background documents[1]

7.1 None

[1] The background documents listed in this section are available to download from the Council's website, unless they contain confidential or exempt information. The list of background documents does not include published works.

Appendix 1
Equality, Diversity, Cohesion and Integration Screening

As a public authority we need to ensure that all our strategies, policies, service and functions, both current and proposed have given proper consideration to equality, diversity, cohesion and integration.

A **screening** process can help judge relevance and provides a record of both the **process** and **decision.** Screening should be a short, sharp exercise that determines relevance for all new and revised strategies, policies, services and functions. Completed at the earliest opportunity it will help to determine:

- the relevance of proposals and decisions to equality, diversity, cohesion and integration.
- whether or not equality, diversity, cohesion and integration is being/has already been considered, and
- whether or not it is necessary to carry out an impact assessment.

Directorate: City Development	**Service area: CPM, City Development**
Lead person: Peter Lynes	**Contact number: 75539**

1. Title: Addition of 2MW$_{peak}$ generator to the refurbishment project at Merrion House

Is this a:

☐	**Strategy / Policy**	✓	**Service / Function**	☐	**Other**

If other, please specify

2. Please provide a brief description of what you are screening

Addition of a 2MW generator to the Merrion House Refurbishment project to reduce cost of electricity to the site, and to generate income from the export of peak rate electricity to the national grid, or to other LCC premises

3. Relevance to equality, diversity, cohesion and integration

All the council's strategies/policies, services/functions affect service users, employees or the wider community – city wide or more local. These will also have a greater/lesser relevance to equality, diversity, cohesion and integration.

The following questions will help you to identify how relevant your proposals are.

When considering these questions think about age, carers, disability, gender reassignment, race, religion or belief, sex, sexual orientation and any other relevant characteristics (for example socio-economic status, social class, income, unemployment,

residential location or family background and education or skills levels).		
Questions	**Yes**	**No**
Is there an existing or likely differential impact for the different equality characteristics?		✓
Have there been or likely to be any public concerns about the policy or proposal?		✓
Could the proposal affect how our services, commissioning or procurement activities are organised, provided, located and by whom?		✓
Could the proposal affect our workforce or employment practices?		✓
Does the proposal involve or will it have an impact on • Eliminating unlawful discrimination, victimisation and harassment • Advancing equality of opportunity • Fostering good relations		✓ ✓ ✓

If you have answered **no** to the questions above please complete **sections 6 and 7**

If you have answered **yes** to any of the above and;

- Believe you have already considered the impact on equality, diversity, cohesion and integration within your proposal please go to **section 4.**
- Are not already considering the impact on equality, diversity, cohesion and integration within your proposal please go to **section 5.**

4. Considering the impact on equality, diversity, cohesion and integration
If you can demonstrate you have considered how your proposals impact on equality, diversity, cohesion and integration you have carried out an impact assessment. Please provide specific details for all three areas below (use the prompts for guidance).
• **How have you considered equality, diversity, cohesion and integration?** (**think about** the scope of the proposal, who is likely to be affected, equality related information, gaps in information and plans to address, consultation and engagement activities (taken place or planned) with those likely to be affected)
• **Key findings** **(think about** any potential positive and negative impact on different equality characteristics, potential to promote strong and positive relationships between groups, potential to bring groups/communities into increased contact with each other, perception that the proposal could benefit one group at the expense of another)
• **Actions** **(think about** how you will promote positive impact and remove/ reduce negative impact)

5. If you are **not** already considering the impact on equality, diversity, cohesion and integration you **will need to carry out an impact assessment**.	
Date to scope and plan your impact assessment:	
Date to complete your impact assessment	
Lead person for your impact assessment (Include name and job title)	

6. Governance, ownership and approval Please state here who has approved the actions and outcomes of the screening		
Name	**Job title**	**Date**
Anne Chambers	Head of Service (CPM)	28/08/12

7. Publishing This screening document will act as evidence that due regard to equality and diversity has been given. If you are not carrying out an independent impact assessment the screening document will need to be published. Please send a copy to the Equality Team for publishing	
Date screening completed	28th August 2012
Date sent to Equality Team	28th August 2012
Date published (To be completed by the Equality Team)	

Appendix 2

Glossary of terms

NET PRESENT VALUE
Reference is made in paragraph 3.11 to the Net Present Value of the total savings. This reflects the convention that money in the future is worth less than money today. Discount factors are applied to yearly savings. Using LCC current factors, £1,514,391 accumulated over 25 years has an NPV of £420,000, and £2,971,497 has an NPV of £1,132,309

STOR
The National Grid Company, at times of peak load in the national grid, operates a scheme whereby they pay owners of electricity generators to make those plants available for them to switch on remotely. This reduces the need for much larger generators to be on line, when those generators are not able to take-up and relinquish load very rapidly. The envisaged generator would meet the requirements of that scheme for part of the year, earning income both from the availability of the and for the units exported to the grid under this scheme

TRIAD CHARGES AND REBATES
The network distribution capacity must match the peak demand offered by consumers across the grid. The Transmission System Use of System Charges (TNUoS) paid by large consumers are calculated by measuring the demand on the customers sites on three peak times during each winter. These times are worked out by a relatively predictable algorithm, but are not announced until the end of each winter, and apply to every bill in the year

If we are able to generate electricity at the predicted peak times, then our TNUoS charges fall to zero.

If we are able to export electricity at those times, we are paid a rebate by the National grid, equal to the charges levied on other sites for consuming during that period..

The bidding regime for STOR, above, would enable us to make a tailored bid to achieve these savings and income alongside the income resulting from the STOR scheme

SHAPE CHARGES
The Council's complete portfolio of electricity purchases are aggregated in our wholesale contract. This aggregation has the effect of reducing the impact of premium charges made when our consumption at peak times exceeds our consumption outside those times. The effect of the addition of generation at peak times changes the shape of the graph of our daily consumption pattern, to the point where we would reduce our premium rate consumption close to zero. Currently, the surcharge for peak rate compared to baseload rate is approximately 18%. This is significantly higher than the premium cost for self-generation using a gas-fired generator

Electricity Bill Savings
Electricity bill savings result from the avoidance of paying for grid electricity at those times that our generator would be generating

Export Electricity to the grid.
Typically the export of power to the grid by small generators achieves unit incomes that are only approximately one-third of the savings achieved by avoiding the use of grid power, however, when this income is aggregated with the other savings and income mentioned above, the exercise becomes sufficiently remunerative.

Savings of CRC and CCL levies

Much of the power we take from the grid is subject to emissions levies in the form of Climate Change Levy and Carbon Reduction Commitment Energy Efficiency Scheme. The production of electricity with a useful amount of waste heat directed to heat the building when needed, will reduce LCC's direct Carbon emissions. This item reflects the likely levy reductions