

**Manchester City Council
Report for Resolution**

Report To: Executive – 8 March 2017

Subject: The Manchester Civic Quarter Heat Network

Report of: Strategic Director - Development

Summary

In July 2015 the Executive approved resources to undertake the work needed to progress with the procurement of a delivery partner for a “Civic Quarter Heat Network”. This report now updates Members on the progress that has been made to date on the procurement exercise that has been undertaken along with outlining the next steps needing to be taken in order to progress with the delivery of this scheme. In doing so the report seeks to appoint the ‘Preferred Bidder’ (the delivery partner) for the Manchester Civic Quarter Heat Network Project. A report elsewhere on the agenda outlines the detailed background on this appointment.

Recommendations

The Executive is recommended to:

1. Approve the proposals to recommend the ‘Preferred Bidder’ to deliver and operate the Civic Quarter Heat Network, and to progress the project through to contract completion / financial close.
 2. Delegate authority to the Strategic Director - Development and the City Treasurer, in consultation with Executive Member for the Environment and the Executive Member for Finance and Human Resources, to agree the detailed terms of potential funding award, finalise the terms of the contract with the Preferred Bidder in relation to the Civic Quarter Heat Network Project and report back the finalised terms to a future meeting of the Executive for approval.
 3. Note that any proposals to establish a project specific Special Purpose Vehicle (SPV) for the Manchester Civic Quarter Heat Network will be the subject of a further report to Executive;
 4. Delegate authority to the City Solicitor to enter into and agree and complete on behalf of the Council all the necessary legal documentation giving effect to the above.
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Wards Affected:

City Centre

Manchester Strategy Outcomes	Summary of the contribution to the strategy
A thriving and sustainable city: supporting a diverse and distinctive economy that creates jobs and opportunities	Investment into a Heat Network within the City Centre will help to reduce costs to businesses and improve their resilience to climate change.
A highly skilled city: world class and home grown talent sustaining the city's economic success	The delivery of a series of Heat Networks within the City Centre should facilitate the creation of employment opportunities at a range of skill levels.
A progressive and equitable city: making a positive contribution by unlocking the potential of our communities	Work with the community sector to find ways of reaching communities to create a thriving active neighbourhoods
A liveable and low carbon city: a destination of choice to live, visit and work	The delivery of Civic Quarter Heat Networks within the City Centre will help improve the environmental quality and attractiveness of the city, reduce energy and resource costs for residents, and help create attractive places that residents and businesses will choose to locate to
A connected city: world class infrastructure and connectivity to drive growth	Manchester's Civic Quarter is already consists of established transport links throughout; cycling lanes, metro link, bus corridor. Car Parking primarily located within Manchester Central

Environmental and Climate Change Impacts

The Civic Quarter Heat Network will reduce the City's CO² emissions by over 3500 tonnes per year and will operate for at least 30 years. It will improve air quality in the city centre by reducing the emissions of oxides of nitrogen currently generated by unabated combustion plant (boilers).

Full details are in the body of the report, along with any implications for:

- Equal Opportunities Policy
- Risk Management
- Legal Considerations

Financial Consequences – Revenue

The Executive report in July 2015 approved use of funds from the Climate Change Innovation Fund (CIF) Reserve for project development to financial close. The project is now recommending the preferred bidder to proceed to financial close. A proportion of the estimated gross costs will seek to be recovered from European Local Energy Assistance (ELENA) grant (see section 2.7 for further info).

Following contract close the most significant risk is uncertainty with inflation over the period. Clarification will be required before contract close to quantify scenarios and potential mitigation. A scenario of zero inflation, however unlikely, delivers a significant negative net present value (NPV) for the project and cost for the Council. In the early years of the project there is negative cashflow associated with the debt structure. Further work is being carried to determine what can be mitigated with cashflow and debt cost assumptions.

Financial Consequences – Capital

The approved capital programme includes an approval for £18m capital cost associated with the delivery of the Manchester Civic Quarter Heat Network.

An application for a capital grant application was made for the Manchester Civic Quarter Heat Network in November 16' to the Heat Network Investment Project (HNIP) which is funded by Department Business Energy and Industrial Strategy (DBEIS).

The application is being finalised by Department Business Energy and Industrial Strategy (DBEIS) and is subject to cross Government approval and satisfaction of a number of conditions. Please refer to Section 3 for further details. Expanded details can be found within Part B of this report.

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Background documents (available for public inspection):

The following documents disclose important facts on which the report is based and have been relied upon in preparing the report. Copies of the background documents are available up to 4 years after the date of the meeting. If you would like a copy please contact one of the contact officers above.

- Manchester City Council Climate Change Action Plan 2015/16 - 2017/18, Executive, 18th March 2015
- Civic Quarter Heat Network Proposal, Executive, 1st July 2015
- Capital Programme (Budget 2017/18 – 2021/22), Executive, 11th January 2017

1.0 Introduction

- 1.1 Manchester – A Certain Future (MACF) is the city's Climate Change Action Plan, setting out what all organisations and individuals in the city will need to contribute to collective, citywide action to enable Manchester to realise its aim to be a leading low carbon city by 2020. It has the following aims:
- To reduce the city's carbon emissions by 41% by 2020;
 - To engage all individuals, neighbourhoods and organisations in a process of cultural change that embeds low carbon thinking into the lifestyles and operations of the city;
 - To prepare for and actively adapt to a rapidly changing climate; and
 - To make a rapid transition to a low carbon economy.
- 1.2 The City Council has committed to contribute to the delivery of the city's MACF plan, setting out its commitments in the City Council's Climate Change Action Plan, the most recent of which was approved by the Executive in March 2015. Within that Action Plan it identifies that the energy consumed within the Council's operational buildings estate contributes 66% (from 2009/10 baseline) of the City Council's direct CO₂ emissions. As such this is a key area for the Council to secure reduction.
- 1.3 The City Council's Climate Change Action Plan highlighted the intention to develop and deliver a heat network in the Civic Quarter. This report sets out proposals to progress the delivery of the Civic Quarter Heat Network (CQHN) project through to contract completion / financial close.
- 1.4 The Executive of Manchester City Council in July 2015 have previously considered, approved and welcomed the innovative proposal to develop the Civic Quarter Heat Network Project within the city which, when implemented, could save the creation of 3,500 tonnes of CO₂ and improve air quality whilst generating a revenue stream for the City Council to potentially invest in future Heat Network Projects.
- 1.5 The purpose of this report is to update Members on the procurement processes undertaken since 2015 and to seek the necessary approvals from the Executive to progress the project through to contract completion and financial close.

2.0 The Manchester Civic Quarter Heat Network: Background

- 2.1 An initial technical feasibility study was undertaken by AECOM and confirmed by SKM Jacobs which underpinned the viability of the initial business case for the Manchester Civic Quarter Heat Network (CQHN), previously reported to the Executive in July 2015. Building upon this work, the City Council have secured design proposals via a competitive tendering process to create a viable scheme including provisional pipework mapping, generation equipment sizing and energy centre design. Demands of the key 'base load' customers

can be initially satisfied and the design proposals are future proofed to allow for the incorporation of additional buildings in and around the Network.

The Civic Quarter Heat Network will satisfy the following key drivers:

- Provide reliable supplies of low carbon heat and power over a period of at least 30 years;
- Reduce the cost of energy increases to the City Council;
- Improve low air quality through a reduction in the emissions of oxides of nitrogen (NOx) over a period of at least 30 years;
- Avoid the cost of replacing ageing plant in individual buildings; and
- Be the first modern heat network in Manchester and act as the pathfinder/catalyst for others.

- 2.2 The proposed new generation plant comprises natural gas fuelled, high efficiency and low emission Combined Heat and Power units (CHP) – similar to those installed in the Town Hall Extension and so power will be generated as well as heat from a single fuel source. It is key for project viability that the value of the revenue from the sale of power is maximised but without excessive risk

It has yet to be finalized as to whether this aim will be achieved through a private wire (PW) approach (the cables installed simultaneously with the pipes) or through an enhanced sleeving arrangement (the Virtual Private Wire (VPW) which would have lower returns but at a lower risk.

The virtual private wire solution is a collaborative project involving the Greater Manchester Combined Authority Project Delivery Unit (GMCA PDU) and Electricity Northwest (ENW) and aims to financially recognise the benefits of local generation supplying local demand and as a result reduce demand on, and the need to reinforce the upstream electricity distribution network and also avoid the unnecessary redundancy of existing Electricity Northwest assets.

The virtual private wire approach permits the generator to transmit power to local customers using the Electricity Northwest distribution network which increases the local customer base as it is not restricted by the physical installation of a private wire system.

Electricity Northwest have applied to Office of Gas and Electricity Markets (OFGEM) for a derogation (i.e. a change) to the distribution use of system charging to recognise the benefits of virtual private wire. Subject to OFGEM's acceptance of the derogation the Civic Quarter Heat Network could pioneer this exciting development. In conjunction with proposed heat and electricity network infrastructure, the City Council will comply with a previous City Wide directive to install provision for future installation of Fibre Optic communications networks

- 2.3 An initial 2.7MW (3600HP) Combined Heat and Power (CHP) plant will be the lead energy provider with new high efficiency boilers as top up/back up heat providers. The grid supply acts as back up for electricity supply. The new plant will be located in an energy centre based within the Manchester Central complex.
- 2.4 Manchester Central itself will receive heat and power from the network which will also supply low carbon heat to seven other properties (the “Core A base load” – a number of which are owned by Manchester City Council). The private wire system will supply low carbon electricity to three of the buildings (in addition to Manchester Central)
- 2.5 The existing 440kW (590HP) Combined Heat and Power (CHP) plant within the Town Hall Extension may also be integrated into the scheme. Existing boiler plant will be mothballed and retained as a contingency. The Core A buildings and the energy supply provision is summarised below

Base Load Customers

Customer	Electricity Sales	Heat Sales
Bridgewater Hall	Y	Y
Manchester Central	Y	Y
Heron House		Y
Town Hall Extension & Library	Y	Y
Town Hall		Y
Art Gallery		Y
<i>Private Sector Customer 1</i>	Y	Y
<i>Private Sector Customer 2</i>		Y

- 2.6 A number of further potential customers who own or will be developing properties within the compass of the Civic Quarter Heat Network are already in discussion with the City Council and their participation in the scheme will be considered during development of the scheme and its future expansion. Advanced negotiations are underway with potential private sector customer base (see Section 7.3 for further detail)
- 2.7 The ability to expand the initial network in terms of energy supplied is built into the initial design (“future proofing”). The expansion will require an additional Combined Heat and Power (CHP) engine and backup boilers to be installed at the appropriate time.

The design of the energy centre is key to allow this accommodation and the initial design proposal from the preferred bidder allows for this expansion and installation with minimal disruption.

- 2.8 The Civic Quarter Heat Network is a pathfinder project for modern high efficiency District Heating / District Energy networks not just in Manchester but also for Greater Manchester. Using the current procurement process has and continues to provide invaluable experience and information which, it is intended, will enable Manchester to establish its own expertise and processes to undertake future projects.

As such the development of the Civic Quarter Heat Network project is being supported by the Greater Manchester Low Carbon Project Delivery Unit (PDU) which is part of the Greater Manchester Combined Authority Core Investment Team. The Unit is funded through the Greater Manchester Combined Authority and the European Investment Bank (EIB) as a result of successfully securing funding from the EIB's European Local Energy Assistance (ELENA) program.

The ELENA revenue funding provides the opportunity to fund 90% of eligible external technical /legal /financial services costs (the balance to come from the benefiting client). The eligible work streams for such funding support includes heat networks

3.0 The National Heat Networks Investment Project (HNIP)

- 3.1 As indicated elsewhere in this report the development of the Manchester Civic Quarter Heat Network has already benefited from the availability of financial support from the European Investment Bank (EIB) ELENA initiative in order to develop the Greater Manchester Low Carbon Project Delivery Unit that is supporting the Civic Quarter Heat Network scheme as a pilot initiative. In November 2015 the Government announced that £320 million of capital funding support would be made available to contribute towards the construction costs of heat networks. The Heat Networks Investment Project (HNIP) aims to bring about an increased and sustained build rate for heat networks and influence the types of heat network built, and help stimulate a self-sustaining heat networks market.
- 3.2 The first tranche of the £320 million Heat Networks Investment project was launched with a £39 million pilot scheme and a pre-qualification process for the single competitive funding-round opening in October 2016. The budget will be split across two financial years – 2016/17 and 2017/18. The pilot scheme is open to local authorities and other public sector bodies excluding central Government Departments, applying for any efficient heating and cooling network in England and Wales. Applicants could apply for grants or loans to support construction, expansion, refurbishment, and interconnection, including works to access recoverable heat and upgrade heating systems inside existing properties.
- 3.3 The grant application is subject to providing further technical information, additional modelling and also reviewing / agreeing the funding agreement terms and conditions (to be issued to us shortly). All of these conditions must be complete and submitted back to Department Business Energy and Industrial Strategy (DBEIS) no later than 15th March 17'. This funding will underpin the delivery of the scheme in its early years and support the strategic financial outcomes set for the project's initiatives. The financial benefit of the grant is discussed in Section 5.

4.0 The Manchester Civic Quarter Heat Network: Procurement

- 4.1 The July 2015 Executive approved the use of the “Carbon and Energy Fund” (CEF) Procurement Framework to procure a delivery partner to deliver the CQHN. The Carbon and Energy Fund (CEF) Procurement Framework is operated by the Carbon and Energy Fund which provides project, procurement and management support together with the necessary technical, commercial and procurement experience within the City Council to deliver such a project.
- 4.2 On the 11th November 2015, under the Carbon and Energy Fund Procurement Framework the Council undertook a mini-competition to select a delivery partner. The Council has now completed the evaluation and selection process and are now seeking to recommend the appointment of the preferred bidder.

5.0 The Manchester Civic Quarter Heat Network: Business Case

- 5.1 The capital expenditure identified at the outset to support this scheme was £14m which included c£1m for a private wire system to the main four buildings in scope for Core A buildings. To date it has been assumed that the project will be fully funded by the City Council and that a wholly owned Special Purpose Vehicle will be set up to “own” the project which will be designed, built and operated by the successful bidder. The initial operational term will be 30 years however the pipework assets will have a lifespan of at least 50 years. As a result of the procurement exercise that is now completed the capital estimates for the scheme has been updated to £18m to reflect the revised values submitted within the tenders and planning requirements.
- 5.2 It is a key requirement that the scheme is commercially viable, therefore any net revenue contribution should be able to cover any financing requirements for the scheme with a surplus to be returned to the city in the form of a dividend.

The Business Case that has been developed for this project to date has demonstrated that the capital costs of the Civic Quarter Heat Network project could be repaid through the energy savings generated for the City Council and income from selling heat and / or power outputs to external stakeholders through the set-up of an Special Purpose Vehicle (SPV). Based on the base case in the Preferred Bidders submission the analysis undertaken has indicated that this is still the case.

- 5.3 Notwithstanding the outcomes of the current business case more detailed work is required with the Preferred Bidder to determine the final capital costs of the scheme and to undertake more detailed analysis of the financial risks associated with this project. These risks include the assumptions in the business model in relation to pricing, the heat and power tariff rates to be charged, energy usage, design and build and putting in place the necessary commercial agreements with the non-City Council customer base.
- 5.4 Until the project has been fully designed and a full updated business case and financial model has been prepared it is difficult to determine the full revenue implications for the scheme. It is only once the project has progressed to the

next stage that a more comprehensive model will be co-created with the Preferred Bidder to fully assess the revenue implications associated with this project. The final revenue position with regard to the sale of power will also be determined by the decision as to whether to opt for the higher risk higher reward private wire approach or to use the lower risk lower reward sleeving/Virtual Private Wire (VPW) solution.

- 5.5 The capital funding grant will reduce the debt financing requirement and reduce the overall risk on revenue exposure for the project. This will represent a significant reduction of revenue risk for the City Council.

6.0 Next Steps

- 6.1 This report seeks the Executive approval to appoint the 'Preferred Bidder' for the Manchester Civic Quarter Heat Network, in order to progress the project through to contract completion and financial close. Proposals to establish a project specific Special Purpose Vehicle (SPV) will be the subject of a further report to Executive when detailed diligence is completed and there is a proposed structure and business plan available for consideration.
- 6.2 If the Executive support the appointment of the Preferred Bidder, and subject to final approvals from Executive in September 2017, the indicative programme for delivery of the Manchester Civic Quarter Heat Network Project should see a scheme commence in October 2017 and be completed and operational by March 2019.
- 6.3 Given the technical complexity of the project, a detailed resourcing review will be undertaken to ensure that an appropriate and effective structure is in place to support commercial negotiations with multiple parties, agree contractual structures and ultimately progress the project through to contract close and onto delivery.

7.0 Concluding Remarks

- 7.1 The Civic Quarter Heat Network (CQHN) project has been identified as providing the optimal carbon reduction solution technically, to be a Greater Manchester pathfinder project for procurement, delivery and operation of these types of asset, to offer the most 'cost and time' effective method of procurement and to be aligned with the low carbon energy policy for Manchester.
- 7.2 The Business Case that has been developed for this project to date has demonstrated that the capital costs of the Civic Quarter Heat Network project would be repaid through the energy savings generated for the City Council and income from selling outputs to other customers. As such the project will contribute to the strategic objectives of the City Council including revenue savings, carbon impact reduction and offset heating plant replacement costs.

7.3 Advanced negotiations are currently underway with representatives from potential private sector customers. Site specific business models have been created which demonstrates the financial and commercial viability of connection to the Civic Quarter Heat Network.

8.0 Recommendations

8.1 Detailed recommendations appear at the front of this Report.

9.0 Contributing to the Manchester Strategy

(a) A thriving and sustainable city

9.1 Investment into a series of Heat Networks within the City Centre will help to reduce costs to businesses and improve their resilience to climate change.

(b) A highly skilled city

9.2 The delivery of a series of Heat Networks within the City Centre should facilitate the creation of employment opportunities at a range of skill levels.

(c) A progressive and equitable city

9.3 Work with the community sector to find ways of reaching communities to create a thriving active neighbourhoods

(d) A liveable and low carbon city

9.4 The delivery of Heat Networks within the City Centre will help improve the environmental quality and attractiveness of the city, reduce energy and resource costs for residents, and help create attractive places that residents and businesses will choose to locate to.

(e) A connected city

9.5 Manchester's Civic Quarter is already consists of established transport links throughout; cycling lanes, metro link, bus corridor. Car Parking primarily located within Manchester Central

10.0 Key Polices and Considerations

(a) Equal Opportunities

10.1 An outcome will be to capture significant employment opportunities and ensure that local residents have the opportunity to compete for such job opportunities.

(b) Risk Management

10.2 The key risks arising from the development of Heat Network proposals are as follows:

- **Design risk** –associated with the impact on a project of deficiencies in design (e.g. of heat mains, energy centres, control systems, internals);
- **Construction risk** –associated with the building of physical assets to a specified design and costs;
- **Operational risk** –associated with operating and maintaining assets to meet specified requirements and costs;
- **Demand / market risk** - associated with variances from anticipated demand – e.g. heat loads fail to materialise, or connection of loads to the network is significantly delayed, or loads choose to disconnect from the network;
- **Performance risk** –associated with being able to supply customers to an agreed performance / service standard – e.g. due to demand being greater than forecast, or heat output being less than anticipated for the heat generation source(s);
- **Financial risk** – various financial risks that generate a potential financial loss, including, for example: credit risks; and interest rate movements; and
- **Regulatory risk** –associated with changes to the legal / regulatory framework adversely impacting a project (e.g. planning control, metering, billing, consumer protection, technical standards).

The Governance structures for the Civic Quarter Heat Network will monitor these key risks as part of the delivery of this project.

(c) Legal Considerations

10.3 The Council has utilised the Carbon Energy Fund (CEF) Procurement Framework as the procurement route for this project. The Civic Quarter Heat Network Project Team have carried out an evaluation of the bids received under the mini –competition process as set out in the Carbon and Energy Fund Procurement Framework and are now proposing to appoint a preferred bidder.

10.4 As has been identified in the report it is envisaged that the Civic Quarter Heat Network Project will be fully funded by the City Council and that a wholly owned Special Purpose Vehicle (SPV) will be established to deliver the Project. City Solicitors will continue to support the project team in the delivery of the project and the finalisation of the commercial structure.