Manchester City Council
Report for Resolution

Report to: Executive – 21 March 2018

Subject: The Manchester Civic Quarter Heat Network

Report of: Strategic Director (Development) and the City Treasurer

Summary

The purpose of this report is to provide an update to Members on the progress that has been made to date in respect of the Civic Quarter Heat Network (CQHN) project and provides further detail on the Full Business Case (FBC) and corporate and contractual relationships to facilitate the delivery of the project.

This report also provides an update to Executive on the terms of the proposed agreement to be entered into with Vital Energi (VE), outlines the steps to be taken in order to progress through to financial close of the project and seeks the approval of the Executive to delegations to officers and members around finalising the contracts.

Recommendations

1. To note progress that has been made to date.

2. To note that the Full Business Plan including financial modelling associated with the project is to be finalised in April 2018.

3. To approve the establishment of special purpose vehicles, wholly owned by the Council to promote the delivery of the project as referred to in this report.

4. To delegate authority to the Strategic Director (Development), the City Treasurer and the City Solicitor, in consultation with the Leader, Executive Member for the Environment and the Executive Member for Finance and Human Resources, to approve the Full Business Plan and corporate documentation to establish the special purpose vehicles and to negotiate and finalise the terms of the contractual and property arrangements, including (i) the contract with Vital Energi; (ii) utilities and fuel supply contracts; (iii) customer supply agreements; (iv) land transfer agreements; (v) licensed supplier agreements; and (vi) guarantees, warranties, and other ancillary documentation to give effect to the delivery of the project and proposals set out in this report.

5. To delegate authority to the City Solicitor to enter into and complete all documents or agreements necessary to give effect to the recommendations in this report.

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 Network 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. The CQHN will include provision for high performance fibre communications to be installed along its route

Environmental and Climate Change Impacts

The Civic Quarter Heat Network will initially reduce the City's CO_2 emissions by over 1600 tonnes per year and will be in operation for 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

As part of the work to develop the CQHN project and complete the work required to get the project to this stage up front revenue costs have been required to fund external technical /legal /financial services costs. To date these costs have been

funded through a combination of European Local Energy Assistance (ELENA) grant and use of funds from the Climate Change Innovation Fund (CIF) Reserve as approved by Executive in July 2015.

The proposed operating vehicles that will operate and manage the distribution of heat will be separate legal entities to the City Council. It is proposed to set up a number of wholly owned City Council companies, to be responsible for funding both the ongoing operational costs and overheads of the companies. The funding for these costs will be generated through the revenues raised from the sale of heat to customers.

The final business plan is currently being finalised and is due for completion in April 2018. The business plan will set out details of both the full operating costs and expected income of the special purpose vehicles, along with indicative timing of the cash flows. This will enable the full working capital requirement of the SPVs and surplus generated from the trading activity to be determined.

Once implemented the project will provide long term savings to the City Council through reduced costs of heating and lighting the buildings within the Civic Quarter, whilst also mitigating the uncertainty over price increases.

Financial Consequences – Capital

The City Council approved capital programme currently includes £21m for the development of this project, this is made of up £2.87m external grant funding from the Heat Network Investment Project (HNIP) and the balance is from City Council resources.

Work done to date indicates that the final scheme costs will be within the current approved capital resources, and following recent planning approvals work is ongoing to finalise the overall capital costs. This will be clearly set out within the full business plan.

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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 'CEF Procurement Route' Proposal, Executive,1st July 2015
- Capital Programme (Budget 2017/18 – 2021/22), Executive, 11th January 2017
- Civic Quarter Heat Network 'Preferred Bidder' Proposal, Executive, 8th March 2017
- Civic Quarter Heat Network 'SPV' Proposal, Executive, 10th January 2018

1.0 Introduction

1.1 This report also provides an update to Members on the progress that has been made to date in respect of the Civic Quarter Heat Network (CQHN) project and provides further detail on the Full Business Case (FBC) and contractual relationships to facilitate the delivery of the project.

1.2 The Purpose of this report is to update Executive on the terms of the proposed agreement to be entered into with Vital Energi (VE), outlines the steps to be taken in order to progress through to financial close of the project and seeks the approval of the Executive to delegations to officers and members around finalising the contracts.

2.0 Background

Context

2.1 In the UK, unlike much of Northern Europe, the heating of commercial buildings has been by use of boilers installed within individual buildings. This traditional approach has been driven by the ready availability of natural gas supplies in most of the UK – the UK having probably the most extensive gas network in the world. In addition to this electricity supply to buildings has traditionally come from remote power stations transmitting power over significant distances using the national grid transmission system and local distribution networks. This is inefficient in that the waste heat associated with power generation is rejected to the atmosphere or rivers and not used to heat homes and other buildings. In addition there is further energy lost to the atmosphere from electrical transmission. Even with an increasing amount of renewable energy being produced it is probable that a significant amount of fossil fuel generation will still be required until at least 2050.

2.2 However there is an alternative and that is to bring the power generation into a building and collect the waste heat for use in heating the building. This is known as Combined Heat and Power (CHP) and is a well proven, highly efficient, highly reliable form of generation and because of its high efficiency will reduce carbon emissions even if operating on natural gas.

2.3 In order to achieve economies of scale and an even more effective system a larger CHP plant can be used to supply more than one building (hundreds in the case of a residential project) with both electricity and heat via a district heating network. This is more correctly described as District Energy rather than just District Heat.

The benefits of a District Energy project include:-

- Provision of low carbon energy (compared with traditional systems)
- Provision of lower cost energy (due to high efficiency)
- Provision of highly reliable energy due to the inbuilt duty/standby nature of the equipment installed
- Improved air quality through installation of new low emission combustion plant which replaces older higher emission equipment

- Reduced equipment costs for those connecting – no need for boilers/flues/gas connection
- Reduced operating, maintenance and capital replacement cost – through not having to install individual boilers
- Improved safety as no requirement for gas supply in buildings (other than the building in which the CHP/boiler plant is located)

2.4 It is worthwhile noting that the UK Government sees the implementation of district heating/district energy as a key route to decarbonising heat as evidenced by publications including:

- "The Future of Heating: a strategic framework" (2012)
- "The Future of Heating: meeting the challenge" (2013)
- "Green Growth Strategy" (2017);

2.5 And through the creation of the Heat Networks Delivery Unit (HNDU), which provides grant funding and technical support for the early development phases of heat network projects, and through the establishment of the Heat Network Investment Project (HNIP) which is offering £320m of capital support to invest in projects.

2.6 In 2009 a plan for collective action on climate change in Manchester was produced – "Manchester – A Certain Future". This was updated in 2013 and more recently "Manchester Climate Change Strategy 2017 to 2050" and the accompanying "Manchester Climate Change Strategy – Implementation Plan 2017 – 2022" have been produced. All these documents refer to the Manchester Civic Quarter Heat Network (CQHN) as a key project to contribute to the decarbonisation of energy provision in Manchester. Other benefits arising from the project include:

- Provide reliable supplies of low carbon heat and power over a period of at least 30 years;
- Reduce the impact of energy cost increases to the City Council;
- Provide competitively priced low carbon energy to City Council premises and 3rd party off-takers
- Improve low air quality through a reduction in the emissions of oxides of nitrogen (NOx) over a period of at least 30 years;
- To be financially viable and generate a long term revenue stream for the City Council
- Avoid the cost of replacing ageing plant in individual buildings
- Install high performance broad band fibre along the route of the network
- Be the first modern heat network in Manchester, delivering heat and power to multiple owned sets of buildings and therefore act as the trailblazer for other such similar initiatives; and
- Create valuable long life assets – the Energy Centre, the heat network and the private wire supply which brings new electrical capacity into the centre of the city.

Development of the Manchester Civic Quarter Heat Network (CQHN) Project

2.7 At its meeting in July 2015 the Executive considered and 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) provide project, procurement and management support together with the necessary technical, commercial and procurement experience within the City Council to deliver such a project.

2.8 During November 2015, under the Carbon and Energy Fund Procurement Framework the Council undertook a mini-competition to select a delivery partner.

2.9 At its meeting in March 2017 the Executive considered and approved the appointment of Vital Energi, who are one of the country's best known providers of sustainable and renewable energy schemes as Preferred Bidder to develop the CQHN project within the city. When implemented this will reduce CO_2 emissions by circa 3,500 tonnes per annum and improve air quality whilst generating a revenue stream for the Council to potentially invest in future projects.

2.10 The project, includes the creation of a low-carbon Energy Centre at Manchester Central Convention Complex incorporating CHP and boilers connected to a 2km district heating network. It will connect several iconic Manchester buildings, including Manchester Town Hall & Extension, Manchester Central Convention Centre, Central Library, Manchester Art Gallery, The Bridgewater Hall, and Heron House. The design of the Energy Centre has been the subject of an architectural competition and the chosen design has received widespread acclaim and approval at the planning meeting of 8th March 2018.

2.11 Heat created during electricity generation will be distributed through a highly efficient underground network of insulated pipes whilst the boilers will be used to "top up" the heat supplied by the CHP when required.

2.12 The electrical power generated will serve Manchester Central as the primary host of the energy centre site via a private wire connection with surplus electricity exported to ENW's grid and traded utilising a "License Lite" model; further detailed within Section 5 of this report.

2.13 At its meeting in January 2018 the Executive considered and approved the establishment of a wholly owned SPV structure to facilitate the delivery of the project.

2.14 The current approved capital programme includes an £21m capital budget for the completion of this project. The final business plan is currently being finalised and is due for completion in April 2018. As part of the business plan the full working capital requirement of the SPV and surplus generated from its trading activity will be clearly set out.

2.15 As the project is to facilitate delivery of commercial activity, the City Council is to establish a number of Special Purpose Vehicles (Tradeco, Councilco, Holdco) which it will wholly own. As noted in the previous report to Executive, Holdco will be a 'governance' buffer between the operating companies Tradeco and Councilco. Councilco will be the main entity that contract with the City Council and the Tradeco will be the main entity which contracts with third parties.

2.16 It is proposed that Tradeco will enter into the Design Build Operate and Maintain Contract (DBOM) with Vital Energi. Vital Energi will design, construct, commission and operate and maintain the network and its plant, equipment and Energy Centre building for 30 years.

2.17 Tradeco will be responsible for all commercial arrangements including:

- Utility supplies to the Energy Centre (primarily natural gas and electricity to support essential services in the event that the CHP plant is not operational (e.g. at times of maintenance)
- Power export and import agreements
- Heat and power agreements with customers within the City Centre, and this will include a number of City Council buildings and some private sector buildings.

2.18 The construction phase is anticipated to be 18 months and the contract with Vital includes penalties for late delivery. The Operate and Maintain (O&M) contract includes for plant replacement and incorporates performance guarantees and service level agreements over the 30 year period of operation.

2.19 The Energy Centre and the distribution network will be designed to accommodate a doubling of demand over time as new developments local to the network become available to connect. Having incurred the initial infrastructure costs the increase in demand at marginal additional cost will further improve the financial performance of the project. These will be looked at on a case by case basis as opportunities arise.

2.20 Manchester City Council is providing £21m of capital funding for the project which it views as of the highest strategic importance and will be establishing a wholly owned Special Purpose Vehicle (SPV) to act as its commercial vehicle. The funding will include a grant of £2.87m awarded to the project under the HNIP scheme mentioned above.

2.21 The delivery and long term operation of this network will also stimulate economic growth through the creation of jobs during the construction phase, and also through the revenue generated for the City Council by the project, mainly comprising of:-

- Repayment of MCC's project funding - ***Income***
- Payment of Business Rates (estimated at £150k p.a.) and Energy Centre rental (£75k p.a.) - ***Income***
- Reduced cost of energy – ***Savings***

3.0 Manchester Civic Quarter Heat Network - Business Case Development

3.1 The project objective is to deliver an energy network supplying both power and heat in order to realise a return on the initial investment. For the CQHN the power generation is supplied by new Combined Heat and Power (CHP) plant installed in a new Energy Centre located at Manchester Central supplemented by the existing CHP equipment installed in the Town Hall Extension.

3.2 The initial approach taken by the project with regard to power supply had been to adopt the "private wire" model. With private wire the project installs new power supply cabling to the customers who are also connecting to the heat network. This cable is installed in the same trenches as the heat pipes. The CHP units connect into the private wire cable which is also connected to the Electricity North West (ENW) local network.

3.3 The CHP units will be the normal supply of power to the connected customers with the "back up" of being connected to the ENW network which provides:

- a continuity of supply for the occasions when the CHP is unable to provide sufficient power (e.g. when being maintained), and
- a conduit for the export of power if the CHP is generating more power than the connected customers require, and
- the same resilience of supply as a direct connection to the ENW network

3.4 Having previously sought to employ comprehensive private wire as the preferred option for the supply of electricity, following a series of discussions with Electricity North West (ENW) the project has now focussed on two business case scenarios as set out below:

- The "Campus Plus" private wire scenario, and
- The "Non private wire" scenario

3.5 The Campus Plus scenario involves the private wire connection at Circle Square with the CHP plant at Manchester Central supplying MCC properties and the St Michaels development. Surplus power would then be traded via a "Licence Lite" arrangement.

3.6 The non-private wire scenario involves a private wire supply to Manchester Central as the host site with all surplus power traded via a "Licence Lite" arrangement.

3.7 ENW have advised there is no issue with a non-private wire scenario in terms of a "power export only" local connection to their network and will make a contribution to the project by way of a demand side response payment, which partially reflects the benefits of local generation matching local demand.

3.8 Licence Lite is a new model where local generation is supplying local demand and aims to address the value shortfall of a purely "vanilla" export model alone.

3.9 The Licence Lite (LL) arrangement is backed by a fully licenced supplier who provide the required market services (including power balancing in the event that the CQHN over or under generates).

3.10 It is an approach which has been developed by the Greater London Authority (GLA) over a number of years and which has now received OFGEM approval in the form of a "junior supply licence" which became operative in January 2018.

3.11 License Lite enables a supplier to be granted the junior licence providing it is supported by a fully licensed supplier which will provide the necessary market services. With this support the CQHN project would be able to supply selected customers within the local ENW network.

3.12 The establishment of a further company will enable the Council to trade power (e.g. supply back into Council properties) exported from other renewable/low carbon generation assets (e.g. photo voltaic, CHP in leisure centres)

3.13 As a (Junior) Licenced Supplier it provides the ability to sell at retail price levels not just to customers connected to the heat network but to any half hourly metered customer on the ENW distribution network, providing that an overall balance of generation and demand is maintained.

Key Implications include:

- provides greater connection opportunity/ flexibility than private wire
- tradeco could sell power at retail prices but would pay the supporting licensed supplier for the market services provided, reducing the margin available compared with private wire
- Finalising the cost, configuration and timing of the cost of connection to ENW's network. ENW have indicated that this is a far less challenging connection than the private wire as only an export facility is required.
- Obtaining a satisfactory offer from a licensed supplier to support the LL approach and provide a viable alternative to private wire.
- ensuring the payment for market services is taken account of in the business plan.

3.14 A further report will be presented to a future meeting of the Executive setting out the contractual and commercial position for the establishment of a City Council owned Energy Services Company (ESCo) equipped to deliver the benefits of a License Lite supply model.

4.0 Concluding Remarks

4.1 The Civic Quarter Heat Network (CQHN) project has been identified as providing the optimal carbon reduction solution technically, to be a Greater Manchester trailblazer project for the delivery and operation of these types of asset, to offer the most 'cost and time' effective method of delivery and to be aligned with the low carbon energy policy for Manchester.

4.2 The finalised Full Business Plan developed for this project to date will demonstrate that the capital costs of the Civic Quarter Heat Network project would be repaid in part through the energy savings generated for the City Council and income from selling outputs to other customers.

4.3 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.

5.0 Recommendations

5.1 Detailed recommendations appear at the front of this Report.

6.0 Contributing to the Manchester Strategy

(a) A thriving and sustainable city

6.1 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

6.2 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

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

(d) A liveable and low carbon city

6.4 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

6.5 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.

7.0 Key Polices and Considerations

(a) Equal Opportunities

7.1 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

7.2 Project risks and appropriate mitigations are addressed within the body of this report.

(c) Legal Considerations

7.3 It is proposed that the SPV structures will be established pursuant to powers contained in s1 Localism Act 2011. The proposed legal arrangements are set in the body of this report. The Council's legal team, together with the appointed external legal advisors, will continue to work with the Project Team to finalise the contractual and corporate arrangements to give effect to the proposals and recommendations as set out in this report.