

**23 November 2020**

<b>Report of</b>	<b>Assistant Director of Place &amp; Client Services</b>	<b>Author</b>	<b>Michael Woods/ Andrew Tyrrell 282390</b>
<b>Title</b>	<b>The Northern Gateway Heat Network: Project and Finance Update</b>		
<b>Wards affected</b>	Highwoods & Mile End		

## 1. Executive Summary

1.1 The Colchester Northern Gateway Heat Network is an innovative flagship project for low carbon heat generation, the largest of its type in the UK. It was 1 of only 9 pilot projects to win the support of the Department of Business, Enterprise and Industrial Strategy (BEIS) who have invested £3.5m in the project, as well as the interest of both industrial and academic experts. It is a pioneering project that leads by example in the Council's climate emergency response and will provide a source of clean energy to approximately 350 homes (30% affordable and owned by the Council), a health campus with 300 homes, and 500,000 square feet of commercial floorspace.

1.2 The Heat Network is a major vehicle for delivery of the Council's Climate Change and Sustainability work, leading the response to the climate emergency declaration, and as set out in the emerging Local Plan (for the Northern Gateway, and in particular) section CC1:

*(v) Supporting opportunities to deliver decentralised energy systems, particularly those which are powered by a renewable or low carbon source. Supporting connection to an existing decentralised energy supply system where there is capacity to supply the proposed development, or design for future connection where there are proposals for such a system.*

*(vi) Requiring development in the Northern Gateway and East Colchester to connect to, or be capable of connecting to the district heating scheme where there is capacity to supply the proposed development and where it is appropriate and viable to do so.*

1.2 A business case was agreed by Cabinet in March 2017 which outlined the full financial details of the scheme, including the £3.3m grant from BEIS, £200k commercialisation monies from BEIS and a £2.5m investment by the Council including a loan to the Council's wholly owned energy company, Colchester Amphora Energy Limited (CAEL). In March 2019 additional capital expenditure of £720K for the increased scheme size was approved by Cabinet and a change to the delivery structure.

1.3 Over the last 2 years the project has been through further development and test phases and proven to be viable. However, many factors have changed during that time. The installation and testing of boreholes to provide a low carbon heat source (which are a key part and significant proportion of the cost of the project) is one example of how the project has evolved. As the project continues through to construction phase, with the

energy centre contract about to be procured, this report provides the latest update on progress and finances after 19 months of work on site.

- 1.4 As part of the project development several significant changes have occurred, whether within the project or linked to it, some of which we have no control over, such as the current global pandemic. The result is that since the initial concept was agreed, the project design has changed and overall there has been an increase in the size of scheme and the proposed accommodation at Northern Gateway. This means that heat requirements have also increased, the increased costs have meant a reduction in the contingency amount.
- 1.5 It is expected that due to the evolution of the project we are now estimating starting on site in October 2021 as the development of the Heat network is dependent on the build of the broader Northern Gateway South development. However, this date may change as the project evolves, potentially grows further or is subject to the risk of Renewable Heat Incentive funding reduction as outlined in 11.1.2.
- 1.6 The business case has been updated from the pre-start estimations with actual costs for the boreholes and reflecting a recent reduction of non-domestic Renewable Heat Incentive (RHI) which has significantly reduced since March 2020, details of which are outlined in item 11. However, the Northern Gateway Heat Network remains a viable project with economical return alongside truly innovative environmental and beneficial social value.

## **2. Recommended Decision**

- 2.1 To note the good progress made to date, as well as the ongoing risk implications for the Council arising from the updated project.
- 2.2 To agree, provided that returned construction tenders are within the budget update estimates in the not for publication Appendix in Part B of the agenda, to delegate authorisation for the appointment of a contractor for the Energy Centre and related Heat Network infrastructure (as well as any consequential financial, legal, contractual or other related matters for the completion of the project) to the Portfolio Holder for Commercial Services and Assistant Director for Place & Client Services.

## **3. Reason for Recommended Decision**

- 3.1 To provide Cabinet with an update on the progress of the project and future issues, illustrating how this project provides a major focus for delivery on the Council's Climate Change and Sustainability ambitions.
- 3.2 To ensure that contracts are delegated to the portfolio holder for Commercial Services and the Assistant Director to allow awards to be made without delay to the project.

## **4. Alternative Options**

- 4.1 To allow the requirements to award the contract to be subject to our current arrangements, which would mean having to bring the decision to award a contract to a meeting of Cabinet. This could delay the award of the contract and negatively affect the project timeline.

## **5.0 Background Information**

- 5.1 The delivery of the Heat Network continues to show leadership across the Borough and wider national sectors for the implementation of low carbon heat in new developments and in line with the Carbon Zero Agenda. It is one of the innovative suites of inter-linked and pioneering projects that recently led to the Council being named 'Best Commercial Council' in the prestigious 2020 Municipal Journal (MJ) Awards and winner of the Local Government Chronicle (LGC) Award for 'Entrepreneurial Council' 2020.
- 5.2 The Heat Network, which will be one of the biggest of its type (heat pump and boreholes) in the UK, will provide a competitively priced, stable energy source for future residents and businesses over a long period of time, using clean renewable energy. The Network will develop local knowledge of low carbon heat networks which are likely to become increasingly important in an urban environment if gas boilers are not permitted in new developments from 2025, as currently intended by Government.
- 5.3 The Northern Gateway Heat Network is 1 of only 9 pilot schemes funded by Department of Business Energy and Industrial Strategy (BEIS), through Heat Network Investment Project (HNIP) grant funding, across the country. It has national significance due to the innovative use of ground water to generate heat. The Council and Colchester Amphora Energy Limited (CAEL) are continuing an ongoing dialogue with BEIS, who see the scheme in Colchester as having the potential to be rolled out on a national basis following the completion of the scheme. Whilst the technology within the scheme is more used widely in Europe and is very successful in generating localised heat, its use in the UK is new.
- 5.4 A 'district heat network' such as the Northern Gateway Heat Network can offer extremely competitive and stable energy prices over a long-term, and the centralised heat source is more efficient in carbon savings than individual boilers (which will be banned from 2025 under current Government regulations). The use of water from the aquifer under Colchester, utilising natural heat and then intensifying it through an 800-kilowatt heat pump, means that this is very safe, clean and green, renewable energy source for the Northern Gateway as it starts to emerge on site.
- 5.5 As part of the 'infrastructure first' design of the Northern Gateway, this innovative local energy network is being installed prior to construction of the homes and commercial areas (alongside "The Walk", a main pedestrian and cycle route that will help prioritise sustainable travel modes from day one, through the heart of the Northern Gateway).
- 5.6 Cabinet approved the full business case for the development of the Colchester Northern Gateway Heat Network on 15 March 2017, with a capital expenditure of over £5.9 million including the £3.3m construction grant from BEIS, £200k commercialisation monies from BEIS and a loan to CAEL from CBC of £2.5m. In March 2019 additional capital expenditure of £720K for the increased scheme size was approved by Cabinet and a change to the delivery structure.
- 5.7 Since March 2019 the project has been further developed with the installation and testing of the whole borehole system, which proved there is an appropriate resource to provide the required heat. However, challenges during the installation process which included changing the drilling location of one of the boreholes and delays in the programme led to increased costs and demonstrated the experimental nature of a project like this (part of the reason BEIS were prepared to fund the project).

- 5.8 Although the cost for the successful boreholes was higher than estimated, this risk was identified in advance and the creation of working boreholes with a water flow rate high enough to sustain a Network of this scale has removed the most significant risk from the delivery a low carbon Heat Network at the Northern Gateway.
- 5.9 Apart from this essential additional expenditure, the project has also seen a recent negative change from reductions to available Renewable Heat Incentive (RHI). Part of the project income is due to come from 'Non-Domestic' RHI, but since Jan 2020 the number of heat pumps which have accredited to the scheme has exceeded the expected rate and thus the budget allocated by RHI. Consequently, the payment rate reduced the amount to be paid out to future schemes. This has halved the payment rate that was expected in March; reducing the rate of return of the project (as described at 11.1 below).
- 5.10 The installation has been delayed primarily due to issues in obtaining outline planning permission for the related developments, but also affected by Covid 19, and the intention to not have an Energy Centre constructed long before the building of houses and offices has occurred (and thus heat sales).
- 5.11 Under the new structure (approved by Cabinet in January 2019) most of the increased costs will sit within CAEL due to the increase in borehole costs. The Council-owned part of the project, the Energy Centre and pipe network, has seen a reduction in capital costs due to lower heat pipe network installation costs (in the latest costings). However, the Council is the sole shareholder of CAEL and therefore all changes, positive and negative, ultimately affect the Council.
- 5.12 The BEIS grant which has been received has allowed the project to proceed to this point with no financial risk to the Council (the boreholes installation and testing and RIBA stage 3 design) and would allow for the Energy Centre building (not internal equipment) to be constructed and some further items before expending the grant amount.
- 5.13 The long-term returns of the project are still modelled on the industry standard projections of energy costs and heat sales. This is set out further below. However, there are also several non-financial benefits, including the contribution to the Council's climate emergency declaration.

## **6.0 The (Ongoing) 'Due Diligence' Process**

- 6.1 The work in defining the new proposed scheme and cost model has been largely carried out by appointed specialists for the project. WSP Ltd are a large engineering consultancy with significant experience of heat networks. Woodward Energy Consulting Ltd have over 30 years of experience in district heating systems and have worked on a numerous project supported by BEIS Heat Network Development Unit.
- 6.2 The further commercialisation work and due diligence for the project over the past 12 months has included the following activities:
- Installation and testing of five boreholes for the primary heat source for the scheme
  - Review and refinement of the financial model, project costs and programme
  - Submission and consent of planning approval for the Heat Network and Energy Centre
  - Regular reports to BEIS on the grant funding and draw down of the final tranche of BEIS funding
  - Regular updates and progress reporting between and within the Council and CAEL.

- 6.3 Further work will take place to validate the assumptions of the financial model and its outputs (rates of returns) as information becomes available through the tender process for the design and installation of the scheme.
- 6.4 It should be noted that the long term returns of the project are modelled on and are likely to be affected by:
- the projections of energy costs which are taken from BEIS forecasts and the difference between those electricity and gas purchase prices versus the sale price of heat.
  - a requirement of the BEIS grant is to sign up to the Heat Trust for consumer protection which constrains the price that can be charged for a unit heat sold by currently benchmarking it to the price of gas central heating, and at present does not factor in the cost of producing low carbon heat which overall is generally higher.
  - a major aim of BEIS is the de-carbonisation of heating, demonstrated by the proposed banning of gas boilers in new builds from 2025 which will make the overall price of heat higher and should be reflected in the benchmarking in due course, though with the improved thermal properties of new houses the overall annual cost for heat should be the same or lower, even with higher prices per unit of heat.
- 6.5 The market conditions the heat network business will operate in are likely to change over the decades that it will operate, and as with any business, it will need work on reducing operating costs and developing revenues to ensure good long-term returns. This could include new opportunities to grow income. These could include:
- selling cold water from the boreholes for building cooling and/ or extending the heat networks;
  - the development of a Micro Grid at the Northern Gateway (on which an initial feasibility study has already been carried out);
  - generating electricity from solar PV to sell to the offices in the development and providing lower cost electricity to the Energy Centre, thus improving returns.

While these could require additional capital expenditure and would require a 'business case' to determine value, with much of the core infra structure already in place the development challenges are likely to be less complicated.

## **7.0 Strategic Plan References**

- 7.1 This project contributes directly to the Council's Strategic Plan 2020-23 priority 'Growing a better economy so everyone benefits' contributing to the ability, as outlined in the plan, to 'Enable Economic Recovery from Covid-19 ensuring all residents benefit from growth'. This is specifically detailed in the in the goal to 'Transform the Northern Gateway as a hub for improved wellbeing, physical activity, jobs, housing and renewable energy'. In addition, the project is a major contribution to the Council's Covid-19 recovery plan providing jobs through construction and enabling economic recovery.
- 7.2 The Northern Gateway is specifically identified as a theme in the Council's Strategic Plan 2020-2023 under the priority 'Develop the Northern Gateway as a sustainable place for people to live, work and visit'. This also underpins to the Council's strategic priority to 'create new communities and adopt a Local Plan that delivers jobs, homes and the infrastructure to meet the borough's future needs.

- 7.3 This update illustrates the contribution this project makes to the Strategic plan priority: 'Create an environment that attracts inward investment to Colchester and help businesses to flourish' and to 'Ensure a good supply of employment land and premises to attract new businesses and allow existing firms to expand and thrive'.
- 7.4 The project also contributes to the Strategic Plan priority of 'Creating safe, healthy and active communities.'

## **8.0 Equality, Diversity and Human Rights implications**

- 8.1 Under the Equality Act 2010, Section 149, a public authority must, in the exercise of its functions, have due regard to the need to:
- eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under this Act.
  - advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it; and
  - foster good relations between persons who share a relevant protected characteristic and persons who do not share it.
- 8.2 The recommended decision will have no disproportionate impact on any protected group.

## **9.0 Consultation**

- 9.1 Public consultation has been carried out as planning application for the Heat Network and Energy Centre, and as part of public consultation for outline planning consent for the Northern Gateway south side development.
- 9.2 Neighbour notifications were sent out during the works to create the 5 boreholes. In addition, ongoing notification continues as part of 'The Walk' contract currently progressing on site with Breheny, which includes some parts of the Heat Network pipeline and borehole inspection chambers being installed as part of the 'infrastructure first' approach.

## **10.0 Publicity Considerations**

- 10.1 The Heat Network project has been part of widespread publicity over several years and is part of the wider Northern Gateway development and will be included the communications plan for the whole development.
- 10.2 There will be some primarily Business to Business publicity communication to companies and groups interested in the heat network delivery and particularly those companies who have expressed interested in becoming suppliers of services and equipment to the scheme.
- 10.3 When an installation contractor is selected and ground-breaking occurs for the Energy Centre a more specific and intense communication programme on the Heat Network will commence.
- 10.4 There continues to be much interest in the technology being used on a national and international scale and the scheme features in several trade publications and marketing and publicity being disseminated by BEIS.

## **11 Financial implications**

## 11.1 Rate of Return on the Project

11.1.1 In the March 2017 Cabinet paper the stated total rate of return for the Council was 7.34%. The proposed increase in the size of the scheme comes with higher costs but also higher income and a higher projected rate of return on investment of 7.8% based on a 25-year model period and 8.4% based on a 40-year model period. However, with the increase cost and reduction in non-domestic RHI it has reduced to 4.18% over 25 years and 4.65% over 40 years. This financial return remains in addition to the great social and environmental benefits from a flagship urban expansion that will be powered by low carbon energy.

11.1.2 There is a risk of further delays in obtaining the outline planning consent for the Colchester Northern Gateway south development and it is not seen as prudent to contract the construction of the Energy Centre until the consent is obtained, which may mean the heat pump fails to qualify for Non-Domestic RHI, in which case the forecast of return of return would further reduce to 3.5%.

## 12.0 Community Safety Implications

12.1 None

## 13.0 Health and Safety Implications

13.1 Normal health and safety standards will be complied with during the construction process and operations.

## 14.0 Risk Management Implications

14.1 The following risks have been identified in respect of the whole project;

Risk	Consequence	P	I	Total	Mitigation	Action Owner	Start Date
<b>RHI and State Aid issues complexity</b>	Not able to receive RHI & higher financial return with RHI are not met.	2	4	8	Consultation with HNIP and OFGEM, RHI pre-registration. Careful development & monitoring of budget.	MW	Ongoing since May 2018
<b>Complexity of contractual arrangements</b>	Increased administration costs, unforeseen contractual issues	2	2	4	Appropriate legal and technical advice and strong contract management. CAEL is ultimately owned by CBC.	MW	Ongoing since May 2018
<b>Construction costs rise</b>	Would reduce the levels of returns	2	3	4	Contingency and robust procurement process, Value engineering of project through delivery process	MW	Ongoing
<b>Utilities connections &amp;</b>	See Confidential annex table 3 in March 2019 Report	2	2	2	Robust procurement process, value	MW	Mar 17

<b>Risk</b>	<b>Consequence</b>	<b>P</b>	<b>I</b>	<b>Total</b>	<b>Mitigation</b>	<b>Action Owner</b>	<b>Start Date</b>
<b>miscellaneous risks</b>					engineering of project through delivery process		
<b>Northern Gateway south side build programme delay</b>	Not meeting programme targets. Sales targets in financial model not met	3	3	9	Continuing programme development and monitoring	CATL	Ongoing since Feb 19
<b>Brexit</b>	Change in predicted costs	2	2	4	Robust procurement process	MW	Planned since Jan 2019

## 15.0 Sustainability & Climate Change

- 15.1 The project is a flagship project and is responding to climate change and sustainability. It is the biggest Heat Network of its type in the UK, and 1 of only 9 to receive funding from BEIS for its innovative use of renewable ground source heat. See details in the main report.