

# Cabinet

7 June 2016



<b>Report Title:</b>	HEAT NETWORKS PHASE 2	
<b>Ward:</b>	City-wide	
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## Purpose of the report:

1. To provide an update on the Energy Service's progress in developing and delivering a city-wide heat networks (previously referred to as 'district heating'), further to the 1 July 2014 Cabinet Report 'District Heating Phase 1' – [https://www2.bristol.gov.uk/committee/2014/ua/ua000/0701\\_10.pdf](https://www2.bristol.gov.uk/committee/2014/ua/ua000/0701_10.pdf);
2. To seek approval to include the City Centre Heat Network Phase 1 in Tier 1 of the Corporate Capital Programme and allocate £5.0m of capital funding to the project;

## Recommendation for the Mayor's approval:

1. To approve the allocation of £5.0m of Tier 1 capital funding through Prudential Borrowing for the installation of the City Centre Heat Network Phase 1 (previously £6m of Tier 2 approved).
2. To delegate authority to the Service Director, Energy, to negotiate and sign Heads of Terms agreements and subsequent commercial contracts with the University of Bristol (UoB) and University Hospitals Bristol NHS Foundation Trust (UHBFT) in relation to the City Centre Heat Network Phase 1.
3. Within a Prudential Borrowing spend envelope of £5.0m and subject to a satisfactory financial business case being maintained, to delegate authority to the Service Director, Energy, in conjunction with the Service Director, Finance, to authorise the activities required to implement the City Centre Heat Network Phase 1 and extensions.
4. To delegate authority for the Service Director, Finance to approve the necessary borrowing for the project under Tier 1 of the Corporate Capital Programme subject to Recommendation 3.

## The proposal:

### Background

1. Heat networks, also known as district heating, are systems for distributing heat generated in a centralized location via a network of pipes for domestic and commercial space heating and water heating. The heat is delivered from heat-only boilers or from a combined heat and power (CHP) plant, which are often gas-fired but increasingly also use biomass as their fuel source.
2. Heat networks can provide higher efficiencies and better pollution control than localised boilers. Heat networks using CHP plants are amongst the cheapest methods of cutting carbon emissions and have one of the lowest carbon footprints of all generation plants.
3. Although only 2% of heat in the UK is currently supplied by heat networks, this is rapidly increasing, particularly in cities. Major European cities like Copenhagen have installed heat networks supplying over 90% of homes.
4. Heat networks are central to the Council's decarbonisation agenda and ELENA investment programme. As with Copenhagen, a city-wide heat network will be a key factor in achieving Bristol's aim of being a carbon neutral city by 2050 and the interim carbon reductions targets set out in the draft Climate and Energy Security Framework 2015.
5. Installing heat networks will provide the following benefits to the citizens and businesses of Bristol:
  - Help to tackle inequality and fuel poverty for social housing tenants and those private households who are connected to the network by providing heat at lower prices.
  - Reduce fuel bills for businesses connected to the network through lower process
  - Deliver savings for public sector partners, including United Bristol Hospitals NHS Foundation Trust and the University of Bristol, for reinvestment into health and education.
  - Facilitate connections to BNet, the Council-owned ultrafast broadband network.
6. Installing heat networks will also provide the following benefits for the City of Bristol:
  - Provide an independent revenue stream to the Council from the sale of heat and power to connected buildings.
  - Provide an opportunity to build partnerships with other public sector bodies and the business community.
  - Reduce energy consumption and operating costs for building occupiers, improving Bristol's competitiveness for attracting new businesses to the City.
  - Reduce costs for developers as they no longer need to install and maintain expensive plant and equipment.
  - Increase the City's security of energy supply and increase its resilience.
7. This report provides an update to the [1 July 2014 Cabinet Report 'District Heating Phase 1'](#), including:
  - Schemes completed or work-in-progress
  - Schemes for which Tier 1 status in the Corporate Capital Programme (approved with funding identified) is now being sought
  - Schemes that have been identified as future opportunities to expand Bristol's heat network and will be brought forward for approval by Cabinet at the appropriate time.

### **Schemes completed or work-in progress (no further approval required)**

### *Temple & Redcliffe Heat Network Phase 1*

8. This element of the wider Temple & Redcliffe Heat Network involves the installation of a 1MW<sub>th</sub> biomass energy centre in Broughton House (Redcliffe) and connecting this to 13 social housing blocks. This work was completed in March 2016.
9. The Temple & Redcliffe Heat Network Phase 1 will eventually connect this energy centre to 100 Temple Street (in 2017) and the new Arena once constructed (2018). The project is being funded by a combination of grant funding and Prudential Borrowing previously approved by Cabinet.
10. The build out of the Temple & Redcliffe heat network is being carried out in line with other capital projects, e.g. Metrobus, Arena Bridge, to ensure capital costs and disruption are minimised, whilst also ensuring key grant funding deadlines are met, e.g. as part of Temple Gate highway works, Arena development, etc.

### *Rowan Heat Network*

11. This project involved the installation of a biomass boiler energy centre to serve five social housing blocks in the Hartcliffe area of Bristol, previously supplied via a gas heat network. The project was financed via a combination of Energy Company Obligation funding (ECO) and Housing Revenue Account (HRA) investment and the HRA will receive the project's income from the Government's Renewable Heat Incentive (RHI). This project is now operational.

### **Projects seeking approval for inclusion within Tier 1 of the Corporate Capital Programme**

12. In July 2014, Cabinet approved Tier 2 Corporate Capital Programme status for the City Centre District Heating Phase 1 (now known as City Centre Heat Network Phase 1) with an estimated capital spend of £6m. At the time, this project proposed a 2.6MWe Gas Combined Heat & Power unit (CHP) being installed by the Council within the energy centre of the Bristol Royal Infirmary to supply low carbon energy to the United Bristol Hospitals NHS Foundation Trust (UBHFT) and a number of University of Bristol (UoB) buildings. A Memorandum of Understanding in relation to the scheme was signed by all three parties in March 2015.
13. The network also had the potential to supply heat to BCC social housing blocks on Dove Street, subject to the HRA funding the conversion of these blocks from their existing electrical heating systems to communal 'wet' systems. In addition, the Cabinet Report approved the investigation of replacing UBHFT's existing internal steam heat network with a new low temperature hot water system, which would enable a much larger CHP engine (6.8MWe) to be installed resulting in further reductions in CO<sub>2</sub> emissions and energy demand.
14. Following feasibility studies of all of the above options, the 2.6MWe CHP option has been confirmed as the preferred option to be put forward for approval for inclusion within Tier 1 of the Corporate Capital Programme.
15. Subject to Cabinet's approval of this Cabinet Report, the Heads of Terms will be negotiated for signing by all three parties to continue collaborating on the project, allowing BCC to commence the procurement of a consultant to carry out detailed design work.

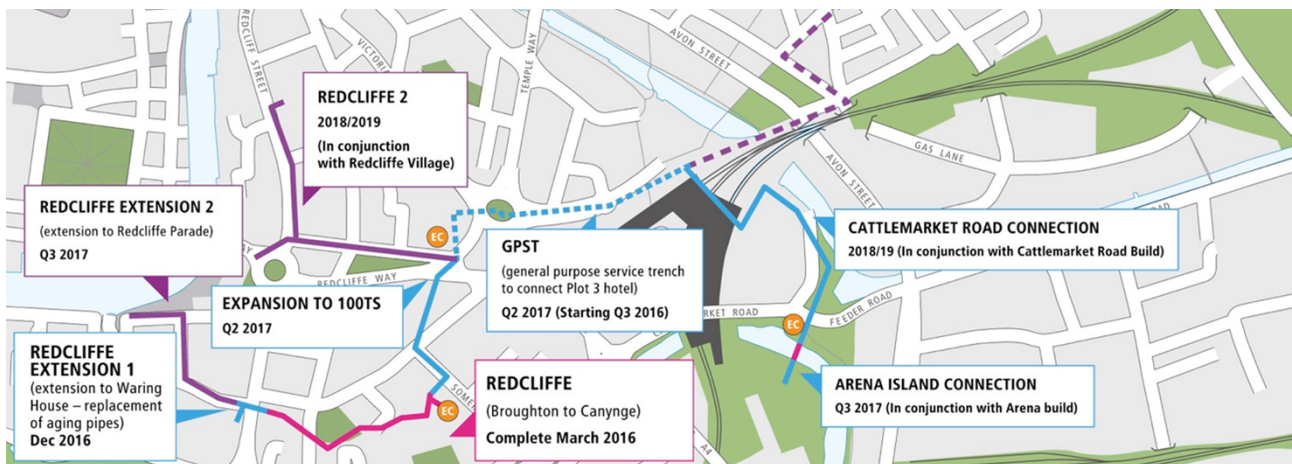
### **Projects identified as future opportunities to be brought forward for Cabinet approval at the appropriate time**

#### *City Centre Phase 1 Heat Network – De-Steam and Extensions*

16. Although the 2.6MWe options has been confirmed as the preferred option for this scheme (see above), the larger 6.8MW<sub>e</sub> option to 'de-steam' UHBFT may be re-examined in the future should external sources of finance (such as Government grants) become available.
17. In order to be able to progress this should the opportunity arise, this project is being put forward for approval for inclusion within Tier 2 of the Corporate Capital Programme and will be progressed if external sources of finance were identified and/or a satisfactory business case developed. Further information is set out in the 'Options Considered' section of this Cabinet Report.

### *Temple & Redcliffe Heat Network Extensions*

18. The Temple and Redcliffe areas of Bristol are an area of focus for new build developments. In line with Planning Policy BCS14, these developments are required to connect to an existing heat network unless it can be demonstrated that this is not viable. Consequently, the heat network in this area must be developed in line with, but ahead of, new developments if they are to be connected.
19. The next steps for this scheme are to continue with feasibility investigations and allocating BCC officer time to: engage developers, complete viability studies and investigate external funding opportunities and delivery models to facilitate these extensions.



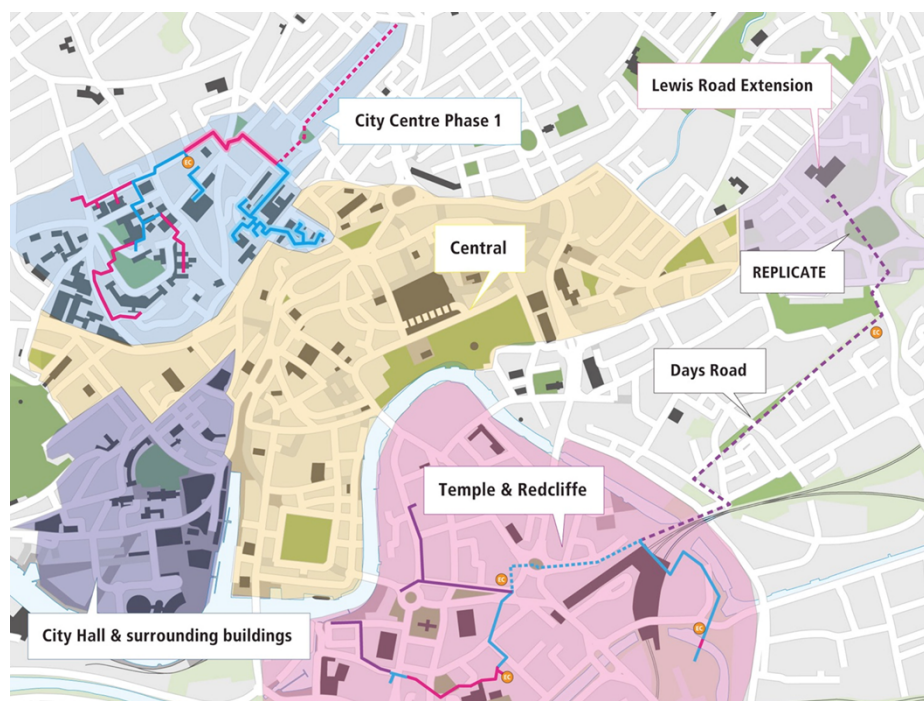
*Figure 1 - Indicative map of Temple & Redcliffe Heat Network – all phases*

### *REPLICATE Heat Network*

20. Bristol City Council was successful in winning European funding as a Lead City for the REPLICATE Project, which is currently in the process of being initiated by Bristol Futures. REPLICATE is part of the EU's Horizon 2020 Programme, which aims to identify, develop and deploy replicable, balanced and integrated solutions via energy, transport and ICT actions through partnerships between municipalities and industries.
21. As part of Bristol's bid, 680k Euros were allocated to a heat network incorporating Easton Leisure Centre, Easton Church of England Primary School and BCC social housing blocks fed by a biomass boiler located near the leisure centre.
22. This scheme was originally investigated in 2013 by Sustainable Energy Limited. This feasibility study will be updated and will be included within wider REPLICATE project reporting, including cabinet reports, led by Bristol Futures.

### *City Centre Heat Network Phase 2*

23. Current heat network delivery in the city centre is focused on the Temple & Redcliffe Phase 1 and City Centre Phase 1 networks. Building a heat network between these two areas would deliver a heat network across the whole of the City Centre and will provide the basis of the future city-wide heat network. The area between these two locations has yet to be assessed for heat network potential.
24. The next steps for this scheme are to seek Tier 2 project status to allow progression of internally resourced investigations and energy master-planning.



*Figure 2: Indicative map of City Centre Phase 2 Heat Network*

### *Avonmouth and Severnside Heat Network Opportunity*

25. The long-term ambition of the Council to decarbonise Bristol is critically dependent on the delivery of a city-wide heat network, connected to the substantial waste heat produced by multiple power and energy-from-waste plants in Avonmouth and Severnside.
26. This would enable significant quantities of waste heat to be transported and distributed through the north of the City and into the City Centre. Whilst some investigations have been carried out, this project is still at the 'concept' stage and further investigations are needed to develop a business case.

## Consultation and scrutiny input

### a. Internal consultation:

1. Extensive internal consultation has been carried out by the Energy Service, engaging colleagues in Landlord Services (via monthly meetings with HRA on heat networks); legal and financial services (including being represented in regular project meetings); plus consultation when beneficial with procurement, human resources and property.
2. Two updates on heat networks were provided to the Council's Scrutiny Commission since the 1 July 2014 Cabinet Report. Firstly, an Energy Service Update was given in December 2014 – with slides 27-33 providing an update on heat networks:  
[https://www2.bristol.gov.uk/committee/2014/sc/sc048/1205\\_12.pdf](https://www2.bristol.gov.uk/committee/2014/sc/sc048/1205_12.pdf)
3. On 21 January 2016 Place Scrutiny Commission were provided an update on the Council's Energy Service, including the progression of heat networks – prior to this Cabinet Report:  
[https://www2.bristol.gov.uk/committee/2016/sc/sc048/0121\\_9.pdf](https://www2.bristol.gov.uk/committee/2016/sc/sc048/0121_9.pdf)

### b. External consultation:

4. For the City Centre Phase 1 Heat Network, the Council attends monthly senior-level CHP Board meetings with representatives from the UoB and UHBFT for critical updates and decisions. In addition, four working-groups meet and work together when needed on Approvals; Technical & Construction; Commercial & Contracts; and Finance.
5. For the Temple & Redcliffe Heat Network, the Council attends fortnightly site meetings with representatives from the housing department, our installation contractors on site and technical consultants to monitor and discuss ongoing works. The Council also has an internal District Heating Board meeting which meets monthly to discuss programming and critical path for TRHN works.

## Other options considered

1. Broadly, there are three other options the Council can decide between for progressing the heat networks outlined in this Cabinet Report. Firstly, the Council could decide not to progress these networks; and secondly, the Council could decide to delay progressing them.
2. If either of these options were chosen, it would mean stalling growth of Bristol's heat networks. Feasibility studies have identified viable opportunities to expand these networks, meaning there are opportunities to provide additional income to BCC via selling heat and power; reduce the energy consumption and carbon emissions of Bristol buildings, whilst reducing their need for space-consuming and costly boilers in their plant rooms; and contribute to the wider City objectives of creating future-proofed resilient infrastructure and a carbon-neutral future by 2050.
3. The third option would be to deliver these networks via a private-sector partner, using a turnkey Energy Services Company to develop and deliver projects. This would place risk and financial rewards on the private partner; resulting in reduced Council strategic control, such as choosing routes and negotiating which buildings connect, and its income stream would be reduced.
4. Thanks to the European Local Energy Assistance (ELENA) grant, Bristol City Council has the external and in-house expertise to complete the underpinning work needed to progress these potential projects into workable business cases. Despite ELENA ending, the Council maintains its internal expertise and can access grant funding, such as £320m Government grant funding announced within the 2014 Autumn Statement (and opening for applications this autumn). This allows the Council to benefit from greater income and control of networks; contracting external private companies only where external expertise is needed.

### *Temple & Redcliffe Heat Network (TRHN) Heat Network Extensions*

5. The approvals sought for this heat network are to investigate up to £10m of network extensions to this existing scheme. The extension of the TRHN has been designed as part of a masterplanning exercise which has evaluated the heat loads and network routing options across the City to design the most commercially viable network for future expansion. This scheme will be put forward for inclusion in Tier 2 of the Corporate Capital Programme as part of the Medium Term Financial Plan process.

### *City Centre Heat Network Phase 1*

6. This heat network represents the only decision seeking approval for the Corporate Capital Programme Tier 1 to invest in a heat network, with a maximum spend envelope of £5m.
7. As reported in the July 2014 Cabinet report, a 2.6MWe Gas CHP engine installed within the Hospital's energy centre – supplying heat and power to the UBHFT, UoB and Dove Street social housing block – was investigated with an estimated project cost of £6.6 million. Further feasibility work and outline design was required to provide a more accurate cost.
8. In addition, it was agreed that BCC would also investigate the opportunity of installing a much larger 6.8MWe Gas CHP engine (with greater CO<sub>2</sub> and energy savings) as an additional option requiring UHBFT to replace its aging steam heat distribution network with a more efficient low temperature hot water (LTHW) system.
9. Financial modelling of 4 network options has now been carried out by the Carbon Trust and BCC

Finance team and set out within this report:

- a) Option 1. The installation of a 2.6MWe Gas CHP engine connected to Hospital and a handful of University buildings only.
  - b) Option 2: As above, but includes contingency to run a heat pipe part-way to Dove St and/or deploy additional pipe allowing more UoB buildings to connect.
  - c) Option 3. As above but including a complete pipe-run connection to BCC owned social housing blocks on Dove St.
  - d) Option 4. Installation of two 3.4MWe Gas CHP engines connected to University and Dove St social housing blocks as well as a 'de-steamed' Hospital.
10. Option 1 is considered to be the core network with options 2 and 3 representing expansions to this core. Option 1 has a strong financial business case, but also the lowest levels of energy generation and associated CO2 savings. There is also a risk with this scheme that, at detailed design, it is found there are insufficient heating demands to run a 2.6MWe CHP plant and gain CHP Quality Assurance status.
11. Option 3 was initially the preferred option, but this option has a weaker financial business case than the preferred option. Extending the heat network to Dove Street is contingent on Housing Delivery allocating the necessary funding to convert the blocks from their existing electrical heating systems to a communal 'wet' system and/or a new energy centre being built adjacent to the blocks.
12. Option 4, which would connect many of UoB's buildings to the network along with converting UHBFT's heat distribution system from its existing steam to a low temperate system, and connecting to social housing blocks of flats on Dove Street is currently not financially viable. The Energy Service will revisit this option should BCC be successful in applying for some of the £300 million DECC funding for heat networks, announced in the 2015 Autumn statement, given the significant CO2 savings it provides.

#### *REPLICATE Heat Network*

13. As with the other heat networks detailed in this Cabinet Report, paragraphs 1-4 hold true. This scheme will be put forward for inclusion in Tier 2 of the Corporate Capital Programme as part of the Medium Term Financial Plan process or progressed as part of wider REPLICATE Cabinet Reports.

#### *City Centre Heat Network Phase 2*

14. The purpose of carrying out feasibility and masterplanning of heat networks in this area is to identify heat network opportunities in the heart of Bristol's City Centre. This may include smaller discreet networks, but also represents the opportunity to link the City Centre Phase 1 Heat Network with the TRHN. If the Council were not to investigate these, the consequences set out in paragraphs 1-4 would occur. Additionally, the opportunity larger networks possess would be missed – greater balancing and a more even heat demand across a network that spans the breadth of Bristol's centre, forming the heart of a city-wide low-carbon network, and providing higher energy and associated CO2 savings and. This scheme will be put forward for inclusion in Tier 2 of the Corporate Capital Programme as part of the Medium Term Financial Plan process.

#### *Avonmouth and Severnside Heat Network Opportunity*

15. This project is in its infancy, but also represents the largest strategic heat network opportunities currently identified in Bristol. This scheme will be put forward for inclusion in Tier 3 of the Corporate



Capital Programme as part of the Medium Term Financial Plan process.

## Risk management / assessment:

**FIGURE 4**

**The risks associated with the implementation of the (subject) decision :**

No.	RISK  Threat to achievement of the key objectives of the report	INHERENT RISK  (Before controls)		RISK CONTROL MEASURES  Mitigation (ie controls) and Evaluation (ie effectiveness of mitigation).	CURRENT RISK  (After controls)		RISK OWNER
		Impact	Probability		Impact	Probability	
1	<p><b>Loss of DH key partner(s) and/or key buildings</b> The City Centre DH scheme requires continued commitment from UHBFT as the major heat customer and the host of the Energy Centre; and the UoB as a major heat customer taking approximately a third of the thermal output. A Heads of Terms is being negotiated and, assuming mutual agreement is achieved between UoB and UHBFT on its content, this will be signed following approval of this Cabinet Report but either organisation could decide to pull out of the scheme.</p>	<b>High</b>	<b>Medium</b>	BCC Energy Services has established a strong working relationship and regular stakeholder and overarching board meetings with both UoB and UHBFT in order that the project meets the needs of all project partners. The Heads of Terms is being collaboratively drafted and designed in a way to ensure transparent and collaborative working. It will include a penalty clause should either organisation seek early termination of the contract. It will commit the partnership to detailed design – and delivery, providing a viable network is identified that all partners approve of; and safeguarding BCC investment should a partner pull out.	<b>High</b>	<b>Low</b>	David White
2	<p><b>Loss of key heat loads results in a smaller or unviable network</b> Even with the UoB's continued commitment, detailed design of the scheme could rule out some of the UoB's buildings from connecting to the network – reducing the heat demands of the scheme. If the thermal demands drop too low, a 2.6MW CHP could be too large for the network.</p>	<b>Medium</b>	<b>High</b>	The feasibility investigations completed to date have identified several UoB buildings that could be connected and two possible routes through their estates. This has included physical surveys of the buildings and research into their heat loads and building/plant-room construction. Additionally, the £5m spend envelope could enable connecting Dove St's heating needs (if BCC HRA commit); and/or additional UoB buildings.	<b>Low</b>	<b>Low</b>	David White
3	<p><b>Increased project costs and/or reduced financial returns.</b> Project capital costs could increase as the DH scheme is designed in detail, resulting in a reduced financially viable scheme(s). Other external factors such as energy prices reducing further (which have dropped since the initial feasibility studies were conducted) or borrowing costs increasing could also reduce the project's financial returns.</p>	<b>Medium</b>	<b>Medium</b>	The combined efforts of BCC and partners' internal staff, the technical consultancy services from WSP-PB and the Carbon Trust's financial due-diligence have investigated and tested the financial viability of each scheme. The financial assumptions have been approved by BCC, UoB and UHBFT. Prudent assumptions have been used in estimating costs, meaning the modelled returns could comfortably be higher, including incorporating a 15% contingency on all costs. Sensitivity analysis has also been carried out by the Place Finance Business Partner, testing different future energy price scenarios informed by Government guidance. Additionally, the heat and electricity tariffs are significantly below rates paid by both the UoB and BCC, especially when standing charges are taken into account (a nil value has been used for modelling).	<b>Med</b>	<b>Low</b>	David White
4	<p><b>Project delays occur</b> The installation and ultimate</p>	<b>Medium</b>	<b>Medium</b>	The delivery timescales are partly linked to the UHBFT's	<b>Low</b>	<b>Low</b>	David White

	<p>installation and operation of the scheme could be delayed due to a number of factors including:</p> <ul style="list-style-type: none"> <li>• Negotiating and signing of Heads of Terms</li> <li>• Procurement of detailed design and/or appointing consultants</li> <li>• Procurement of physical works and procurement of contractors</li> <li>• Drafting and signing of agreements between organisations (commercial agreements and energy supply contracts)</li> <li>• Installation of the network</li> </ul>			<p>requirement to replace its aging existing CHP plant. BCC holds weekly internal project meetings to review the project plan, and updates both UoB and UHBFT via monthly Project Board meetings, interspersed with working group meetings and email/telephone communications. The Council's Energy Service is also investigating temporary thermal plant options, that could be used should UHBFT need additional thermal plant prior to this scheme becoming operational</p>			
5	<p><b>Legal risk relating to contractual arrangement and the commercial delivery model</b> BCC is proposing to procure services on behalf of and supply heat and power to the UoB and UHBFT. This needs to be done within the Council's legal powers, and in a way which is compliant with Official Journal of the European Union (OJEU) procurement standards from the perspective of all Parties – otherwise there is a risk of challenge, which could jeopardise the Council's investment.</p>	High	High	<p>The Council's Legal Department are working closely with the UoB and UHBFT to mitigate this risk. The Local Government (Goods and Services) Act 1970 provides the ability for local authorities entering into trading contracts with other local authorities or any "public bodies" as notified under that Act; and the 1989 Electricity Act allows the Council to sell electricity from specific sources. In addition, there are also options under the 2011 Localism Act, or to set-up an arms-length Special Purpose Vehicle jointly between the Council, UoB and UHBFT.</p>	Low	Medium	David White
6	<p><b>Exposure to UK Government changes in low-carbon subsidies and taxes; and a possible UK exit from the EU</b> Whilst gas-CHP isn't so reliant on Government financial support mechanisms, heat networks and gas CHP can reduce organisations' carbon taxing, such as the Carbon Reduction Commitment (CRC). Projects reliant on these mechanisms could become less viable if there are changes to Government policy – such as the March 2016 Government's Budget announcement that the CRC will end following the 2018/19 compliance year.</p>	High	Medium	<p>The financial feasibility model did not include any costs and benefits on CRC due to the uncertainty of government policy changes. However, benefits on CCL have been included and it is important that these should be updated with time; in addition, detailed design should satisfy the good quality CHP requirements so that the estimated CCL benefits can be realised.</p>	Low	Low	David White
7	<p><b>Reputational risk due to poor operation of plant</b> The Council intends to own and operate the City Centre Phase 1 Heat Network, plus potentially other heat networks (especially the TRHN). The Council's reputation could suffer, if the City Centre Heat Network and CHP is run poorly – for instance, if its operation does not meet the needs of UoB/UHBFT, or if its operation results in high proportions of 'wasted heat' (excess heat would be 'dumped' to the air – a function found in almost all schemes, but levels should be minimised).</p>	High	Medium	<p>The procurement and delivery of detailed design will be overseen by the Council, with representatives of UoB and UHBFT inputting into their design and sitting on the selection panel for external works. By developing this project jointly, it is in all organisations' interests for the scheme to operate efficiently. Additionally, the recommended Option 2 has enough potential heat connections (when compared to Option 1) to help reduce heat dumping.</p>	Med	Low	David White
8	<p><b>Project lifetime exceeding Contract length</b> Deciding what length the contracts should run for is partly dependent on the detailed design of the scheme, and UoB/UHBFT appetite for longer contracts.</p>	High	Medium	<p>Financial modelling has been carried out for 15-years and 30 years, confirming the project's ability to repay borrowed capital within the project's lifetime. Additionally, the heat network pipes and other assets lasting</p>	Med	Low	David White

	Consultation so far has shown they may seek an initial contract of 15-years. There is a financial and reputation risk of what to do with the network, if UoB/UHBFT did decide to end the contract after 15 years.			longer than 15-years could be split between the UoB and UHBFT respectively, if they did want to step away from this partnership approach.			
9	<b>Achieving minimum return on investment for BCC</b> The City Centre Phase 1 Heat Network requires a maximum of £5m Prudential Borrowing within Tier 1 of the Corporate Capital Programme. As with other Council borrowing, investments must achieve the minimum return needed to meet the loan agreements.	<b>High</b>	<b>Medium</b>	Not only has financial modelling included prudent assumptions, including a 15% contingency on all costs; the Council proposes the Heads of Terms would only provide savings to UoB and UHBFT when the project is achieving a financial return above the Council's minimum return on investment.	<b>Med</b>	<b>Low</b>	David White

### FIGURE 5

#### The risks associated with not implementing the (subject) decision:

No.	RISK  Threat to achievement of the key objectives of the report	INHERENT RISK  (Before controls)		RISK CONTROL MEASURES  Mitigation (ie controls) and Evaluation (ie effectiveness of	CURRENT RISK  (After controls)		RISK OWNER
		Impact	Probability		Impact	Probability	
1	<b>Bristol unlikely to become a Zero Carbon City.</b> District Heating is a vital element of any City's drive to become a Low Carbon city. In regards to City Centres where old and often inefficient buildings are typical, it is often the only method as retrofitting other low or zero carbon technologies is neither financially viable nor aesthetically acceptable. Not installing DH networks therefore conflicts with the Council's strategic objectives. The opportunity to install the CHP engine will not arise again for 15 years.	<b>High</b>	<b>High</b>	Other low or zero Carbon technologies can be retrofitted to older, inefficient building i.e. Solar PV panels but they often contribute a small percentage of the buildings energy use.	<b>High</b>	<b>High</b>	David White
2	<b>Bristol fails to future proof its energy infrastructure</b> Higher energy costs for citizens (increasing the risk of fuel poverty), the commercial sector and BCC where buildings remain supplied by fossil fuel.	<b>High</b>	<b>High</b>	It is anticipated that fossil fuel costs will continue to rise; there are limited options available. If BCC wishes to reduce the impact of these rises on its citizens and commercial sector without developing low carbon DH networks.	<b>High</b>	<b>High</b>	David White
3	<b>BCC lose the partnership working and joint project delivery opportunities with UoB and UHBFT</b> The Energy Service has worked collaboratively with UoB and UHBFT over the last four years in developing this scheme, which all organisations view as the first of many potential opportunities. Additionally, other service areas of BCC (such as Public Health and Education) work closely with each organisation – and failure to progress with this scheme could have wider impacts on the relationships between BCC and UoB/UHBFT.	<b>High</b>	<b>High</b>	Other projects being developed between the Council, University of Bristol and University Hospitals Bristol Foundation Trust could be judged on their own merits – rather than the wider strategic relationship between these three major Bristol employers. However, failure to approve progression to detailed design and other approvals sought for the City Centre Phase 1 Heat Network will almost certainly damage relations between the three organisations, given the time and effort that each has put in over the last four years.	<b>High</b>	<b>Medium</b>	David White

## **Public sector equality duties:**

Before making a decision, section 149 of the Equality Act 2010 requires that each decision-maker considers the need to promote equality for persons with the following “protected characteristics”: age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex, sexual orientation. Each decision-maker must, therefore, have due regard to the need to:

- i) Eliminate discrimination, harassment, victimisation and any other conduct prohibited under the Equality Act 2010.
- ii) Advance equality of opportunity between persons who share a relevant protected characteristic and those do not share it. This involves having due regard, in particular, to the need to:
  - a. Remove or minimise disadvantage suffered by persons who share a relevant protected characteristic.
  - b. Take steps to meet the needs of persons who share a relevant protected characteristic that are different from the needs of people who do not share it (in relation to disabled people, this includes, in particular, steps to take account of disabled persons' disabilities);
  - c. Encourage persons who share a protected characteristic to participate in public life or in any other activity in which participation by such persons is disproportionately low.
- iii) Foster good relations between persons who share a relevant protected characteristic and those who do not share it. This involves having due regard, in particular, to the need to tackle prejudice and promote understanding.

### **Note:**

The following actions have been undertaken to determine where public sector equality duties are relevant to the proposals and how these duties have been taken into account in developing the proposals.

1. An Equalities Impact Screening Assessment has been used to test whether an Equalities Impact Assessment was required for this Cabinet Report. Please see Appendix 1 for an Equalities Impact Screening Assessment, confirming an Equalities Impact Assessment was not required.
2. The principles of equal opportunities will be embedded in the delivery of the City Centre Heat Network Phase 1 and the development of other heat network opportunities outlined in this Cabinet Report – both in the procurement and delivery of services and works.
3. The City Centre Heat Network Phase 1 will not immediately and directly address fuel poverty and socio economic disadvantages for Bristol’s residents – due to it not providing heat to households. However, the network’s design will be ‘future proofed’ to ensure connecting to nearby housing is as easily as possible, such as BCC Housing on Dove St. The Energy Service will work with HRA to investigate the opportunity and additional capital needed to connect to housing in Dove St, which would form a separate future Cabinet Report.

## Eco impact assessment

1. The environmental impacts of projects in tier 2 or 3 are not considered to be significant, as these are limited to planning, investigations and design. These projects would require separate approval in order to be considered for tier 1, and the environmental impacts will be assessed at that point.
2. Therefore, the significant impacts of this report are limited to the approval of the City Centre Phase 1 scheme as a tier 1 project. The impacts of this project were considered in the Cabinet report submitted in July 2014, available at [https://www2.bristol.gov.uk/committee/2014/ua/ua000/0701\\_10.pdf](https://www2.bristol.gov.uk/committee/2014/ua/ua000/0701_10.pdf)
3. In summary, the significant environmental impacts are:
  - A reduction in Greenhouse Gas Emissions (data taken from consultants' assessments) of c. 4,193tonnes CO<sub>2</sub>e per year. This is equivalent to over 10% of Bristol City Council's own annual emissions.
  - Impacts from installation of new infrastructure:
  - Possible highways disruption leading to temporary increase traffic congestion
  - Waste from removal of existing plant and equipment
  - Resources for manufacture and installation of new plant and equipment
4. The net effects of the proposals are Positive.

## Resource and legal implications:

### Finance

#### a. Financial (revenue) implications:

City Centre Heat Network Phase 1 project seeks Tier 1 funding approval for the allocation of up to £5.015m through Prudential Borrowing for the installation of a 2.6MWe CHP engine, supplying heat and power to the UBHFT, UoB and part of the Dove Street social housing block.

Please see detailed feasibility financial appraisal under the Exempt Appendix 2 for the preferred option. This option requires an initial capital injection of £5.015m, funded by prudential borrowing over the life of the underlying assets. The project generates net revenue return for the council and will also result in additional cash savings for the UHBFT and the UoB. Detailed benefit and risk analyses are also included under the Exempt Appendix 2.

**Advice given by** Tian Ze Hao, Finance Business Partner  
**Date** 10<sup>th</sup> May 2016

#### b. Financial (capital) implications:

##### In relation to City Centre Heat Network Phase 1 Project:

City Centre Heat Network Phase 1 project seeks Tier 1 funding approval for the allocation of up to £5.015m through Prudential Borrowing for the installation of a 2.6MWe CHP engine, supplying heat and power to the UBHFT, UoB and part of the Dove Street social housing block.

The preferred option under the City Centre Heat Network Phase 1 project requires an initial capital injection of £5.015m, funded by prudential borrowing over the life of the underlying assets. Please note, the financial appraisal was conducted over 30 years, the length of borrowing periods in relation to various classes of initial capital assets were capped at 30 years, even where the useful lives of some of these assets are over 30 years. Please see Exempt Appendix 2 for detailed financial appraisal, return and risk analyses.

During the latest comprehensive spending review, the Government announced a £300 million funding package to leverage the delivery of £2 billion-worth of heat networks across the country over the next ten years. A further announcement is expected during 2016 setting out how local authorities can apply for this funding. Any additional grant funding will be used to reduce the need for/leverage against Prudential Borrowing requirements.

##### In relation to other heat network opportunities identified in this Cabinet Report

Funding streams for these proposals are yet to be identified and business cases are yet to be developed.

Given the Council's excising Tier 1 Capital Programme and borrowing commitments and taking into account the scale and the costs estimated, alternative external sources of finance will be required to deliver these schemes. Alternative commercial delivery models should be explored at the feasibility stage, including private sector partnerships / funding options and external investment opportunities.

**Advice given by** Tian Ze Hao, Finance Business Partner  
**Date** 10<sup>th</sup> May 2016

### **Comments from the Corporate Capital Programme Board:**

The Corporate Capital Programme Board approved the proposed project for Tier 1 on 29 March 2016 – subject to agreement from the Council’s Place Leadership Team (PLT), Senior Leadership Team (SLT) and Cabinet Approval.

#### **c. Legal implications:**

This report seeks delegated authority for the Director of Energy Services to proceed with the implementation of the District Heating Scheme in accordance with the recommendations set out in this report.

The Council should ensure robust procedures and monitoring processes are put in place during the implementation of the Scheme. Any contracts and agreements will need to comply with the Council’s procurement regulations and also with European Union procurement regulations and the Council will need to obtain legal advice throughout the next stages of the Scheme as it progresses.

**Advice given by**      **Irfan Sheik, Energy, Contracts and Procurement Solicitor**  
**Date**                      **9 May 2016**

#### **d. Land / property implications:**

The City Council is proposing to invest in heat networks in Bristol and both the City Centre Phase 1 and Temple and Redcliffe Heat Network have future potential to pass near existing Bristol City Council buildings. Connecting these buildings would reduce operating costs and carbon emissions of these facilities, so further development of these networks and changes to these buildings should consider and safeguard these opportunities. When a building is connected that is part of the City Council portfolio there will also be a reduction of Carbon Reduction Commitment (CRC) Tax.

**Advice given by**      **Robert Orrett, Service Director, Property**  
**Date**                      **3 May 2016**

#### **e. Human resources implications:**

All external contractors carrying out work on behalf of the City Council, must be committed to adhere to BCC employment policies and procedures while undertaking work on our behalf

If any additional staff are required for the implementation of this work, there must be clear and detailed workforce requirements for the duration of the programme and this must be sourced in accordance with our recruitment policies and procedures.

**Advice given by**      **Mark Williams, HR Business Partner, Place**  
**Date**                      **10 May 2016**



## Appendices:

### Appendix 1: Equalities Impact Relevance Check

<b>What is the proposal?</b>	
Name of proposal	City Centre Heat Network Phase 1
Please outline the proposal.	This involves installing a Combined Heat and Power unit (CHP) into the UHBFT plant-room, owned and operated by the Council. Electricity will feed into the hospital and the heat will be used in the hospital; and be distributed to University of Bristol buildings via a heat network.
What savings will this proposal achieve?	Both the UoB and UHBFT will have significantly lower energy costs for the provision of heat, with the latter benefiting from cheaper electricity too. The project will also achieve CO <sub>2</sub> savings in its supply of low-carbon heat and electricity; and cost savings for all three organisations.
Name of Lead Officer	Bill Edrich

<b>Could your proposal impact citizens with protected characteristics?</b> (This includes service users and the wider community)	
Please outline where there may be significant opportunities or positive impacts, and for whom.	The initial investment will not address the fuel poverty and socio economic disadvantage of the people of Bristol. The project will achieve the installation of the infrastructure to produce cheaper heating. In the future the intention is that the investment will address fuel poverty/socio economic disadvantage of the people of Bristol by providing lower cost heat where domestic properties are connected to the network.
Please outline where there may be significant negative impacts, and for whom.	None.

<b>Is a full Equality Impact Assessment required?</b>	
Does the proposal have the potential to impact on people with protected characteristics in the following ways: <ul style="list-style-type: none"> <li>• Access to or participation in a service;</li> <li>• Levels of representation in our workforce, or</li> <li>• Reducing quality of life (i.e. health, education, standard of living)?</li> </ul>	
Please indicate yes or no. If the answer is yes then a full impact assessment must be carried out. If the answer is no, please provide a justification.	No – The project does not affect service access, levels of representation or reduce the quality of life. It provides a wider positive impact to reduce the effects of climate change for the benefit of the world which in the wider context will generally assist the world poor.
Service Director sign-off and date:	Equalities Officer sign-off and date: Wanda Knight

**Appendix 2: Business case for City Centre Heat Network Phase 1 (Exempt)**

**Appendix 3: Draft Heads of Terms between the Council and UBHFT and UoB (Exempt)**

(Please note the above appendices are not for publication by virtue of category 3, part 1 of Schedule 12(A) to the Local Government Act 1972, as amended by section 1 of the Local Authorities (Access to Information) order 2006.