REPORT TITLE: CITY CENTRE HEAT NETWORK PROJECT DEVELOPMENT

To:

Performance, Assets and Strategy Overview and Scrutiny Committee, 3 March 2026

Lead Cabinet Member: Cllr Rosy Moore, Cabinet Member for Climate Action and Environment

Report by:

Jaques van der Vyver, Senior Development Manager, Development
Tel: 01223 450000 Email: jaques.vandervyver@cambridge.gov.uk

Wards affected:
All

Director Approval: Director Lynne Miles confirms that the report author has sought the advice of all appropriate colleagues and given due regard to that advice; that the equalities impacts and other implications of the recommended decisions have been assessed and accurately presented in the report; and that they are content for the report to be put to the Committee for decision.

1 Recommendations

1.1 Performance, Assets and Strategy Overview and Scrutiny Committee is invited to consider the report and provide feedback to officers and the Cabinet when they consider the matter on 24 March 2026.

1.2 Performance, Assets and Strategy Overview and Scrutiny Committee are recommended to note:

1.2.1 Officers are recommending that Cabinet supports the release of £0.6m from the Councils Climate Change Fund reserve to fund the next stage of the project to develop the strategic objectives for a council led joint (51% ownership) venture, apply for grant funding of approximately £20m from the Green Heat Network Fund and to progress procurement to identify and appoint a specialist delivery and management contractor.

1.2.2 Officers are targeting a date of no later than March 2028 to present a final report on recommendations to proceed or not with council investment. With the planned Local Government Reorganisation (LGR), subject to the Structural Changes Order (SCO), it is recognised that this final decision to proceed or not will need scrutiny and agreement from the Shadow Authority. We note that the County Council is a Partner to the current project and has been significantly engaged to date.

1.2.3 The project will be governed through an updated memorandum of agreement in line with that agreed for Detailed Project Development (Appendix 1), including establishment of oversight and Steering groups with partner representation and led by the Council.

1.2.4 If this project is approved at the next stage, no later than March 2028, members should note:

I. this is a large infrastructure project, and contains finance, partner engagement, and construction risks (See part 6)

II. This council led proposal, will deliver a rapid decarbonisation in the city centre and significantly improve local air quality by reducing an estimated c. 506,000 tonnes of CO2 (93%) against business as usual and a reduction of c2.5 million m3 of gas usage. Benefits are set out in Part 6.

III. The current proposals suggest that it will cost the council £8.1m of direct capital cost, with the council on lending £18.4m to finance the project. All costs are set out in part 7.

2 Executive Summary

2.1 Since June 2023 officers have been working with experts and academic partners to develop an Outline Business Case for a Cambridge City Centre Heat Network.

2.2 The Detailed Project Development (DPD) has now proposed a network using air source and river source heat pumps supported by a transition to electric boilers from gas boilers to generate energy.

2.3 As part of this work, a Memorandum of Agreement was jointly signed with the County, and 19 Academic institutions with significant heating demand in the city centre. Connections to many of these partner heat loads forms the basis of a Minimum Viable Product identified for delivery at a cost of c. £121m.

2.4 Compared to business as usual using gas boilers, the proposed district heating network could produce a **93% carbon emissions reduction** over a 40 year project lifetime. A heat network would play a significant role in reducing the Council's emissions as well as key anchor institutions in the centre of Cambridge.

2.5 Current modelling suggests that this communal approach to decarbonisation is more cost effective than individual institutional approaches by c.15-20% over 40 years. From the council perspective, it has been calculated that there is a saving of c £1m capital cost if DH is used rather than trying to decarbonise four strategic assets individually.

2.6 The estimated cost of the £121m is made up of: connection costs of £70.5m (£75m as inflated in the Financial model). This is split £4.1m to Council and £66.4m other customers); grant of £19.7m; on-lending by the council of £18.4m; and equity funding of £7.9m (£4m council and £3.9 from other investors).

2.7 To date, 19 of the projects 20 Academic Partners have expressed an in-principal support as customers, subject to continued review and viability. Seven Academic Partners have expressed interest in potential joint investment with the Council.

2.8 The DPD confirms that a council led Joint Venture (51% council ownership) offers the best outcomes for all parties. Alternatives considered and rejected are summarised in section 2.4.

2.9 A council led Joint Venture will mean the council shares construction, delivery and reputational risk with established academic partners; ensures a small return on investment; and ensures targeting a low enough connection charge to incentivise all partners to fast-track decarbonisation.

2.10 Current modelling for a Council led JV shows a respectable post-tax nominal equity IRR of 12% assuming c. £20m of grant is received from the Green Heat network Fund.

2.11 This report outlines the next steps, which would be to develop the strategic objectives for a council led joint (51% ownership) venture to a market led scheme, applying for grant funding and progress procurement to identify and appoint a specialist delivery and management contractor.

2.12 Officers would then produce a further report for Cabinet and Full Council no later than March 2028 outlining, if officers are minded to recommend, the final proposals and development costs, and to seek approval to appoint a long-term contractor and operator for a City Centre District Heating Network which can be expanded over time. This will be subject to scrutiny from a Shadow Authority if LGR proceeds.

3 Background

3.1 In June 2023, the Environment Scrutiny Committee approved funding of £180,000 to match grant funding, to develop the Outline Business Case for a renewable heat network in the city centre.

3.2 The DPD study was facilitated by the council working with 17 colleges, Cambridge University, ARU and the County Council. Sustainability Co (Project Management), Buro Happold (Technical), Amberside Advisors(Commercial and financial advice) and Sharpe Pritchard (Legal) were appointed to undertake specialist works packages. A service agreement was signed with the National Wealth Fund (NWF) to provide further commercial advice, and the project has additionally benefited from review input from the Greater South-East Net Zero Hub, the Danish Board of District Heating, and an Expert Advisory Panel consisting of academic specialists.

3.3 Current working proposals - Minimum Viable Product (MVP)

3.3.1 The map below highlights a network using air source and river source heat pumps supported by electric boilers and transitional gas boilers in the interim of up to 15 years, to supply peak demand (10-15% of overall generation). Two phases (2030-2032 and 2032-2035) are proposed with three energy centres at a cost of c. £121m (including design build and contingency)

3.3.2 The proposed scheme will deliver heat to a significant portion of academic and Council properties within the city centre. This is forecast to produce a 93% carbon reduction over a 40-year project lifetime compared to Business As Usual (BAU) gas heating systems.

3.3.3 Ground source heat capture has been confirmed as not viable at city-scale without future linked cooling demand to replenish geological heat reserves.

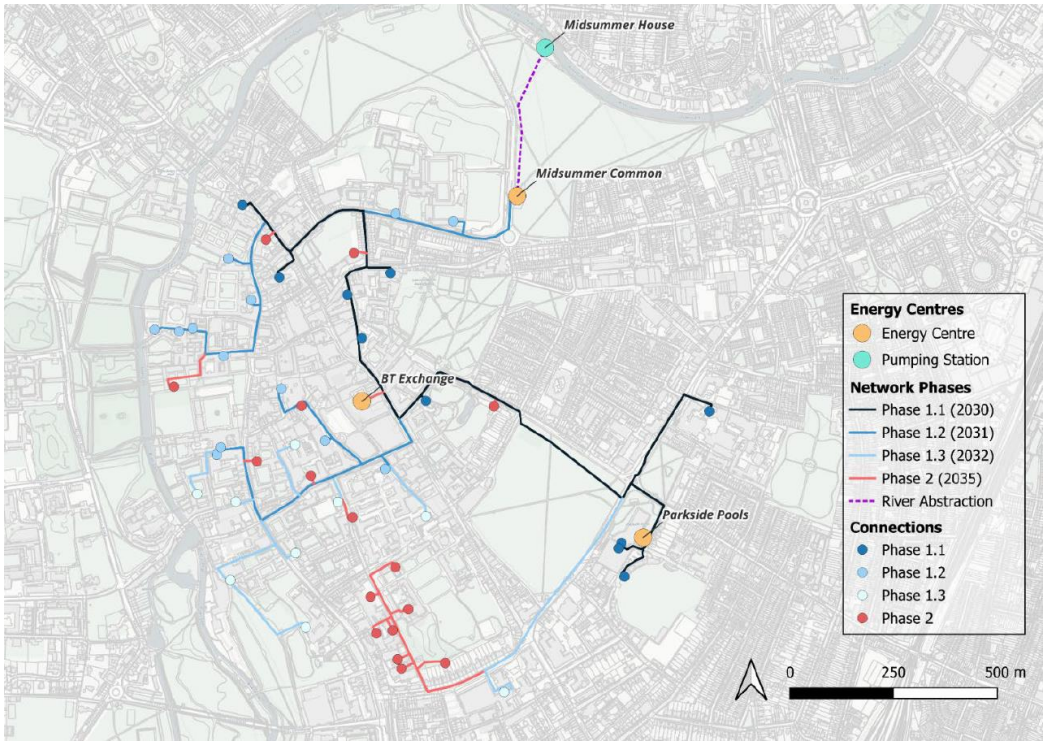


Figure 1: Proposed Heat network and Connection Phasing

3.3.4 From the Council perspective, it has been calculated that there is a saving of c £1m capital cost if the heat network is used, rather than trying to individually decarbonise four strategic assets – the Guildhall, Corn Exchange, Parkside Swimming Pool and Kelsey Kerridge. Similar blended efficiency figures have been calculated for academic partners.

3.3.5 This also allows full decarbonisation of listed assets such as the Corn Exchange, which due to structural constraints cannot be fully decarbonised on site. A heat network is the only viable decarbonisation option for such buildings.

3.3.6 A high Temperature (85-80Deg) network is currently proposed – this allows maximal connection of both historic and new buildings. Subject to fabric improvements, there is flexibility to reduce operating temperatures in future, which would improve efficiency over time.

3.3.7 Thermal storage is anticipated to form part of the heat network proposals and will be maximally incorporated to best balance performance efficiency and cost.

3.4 Proposed Delivery Model

3.4.1 Different delivery models have been reviewed from Concession (private sector delivery) through to a 100% council owned Special Purpose Vehicle (SPV)

3.4.2 A private sector led scheme - a Concession model - is expected to increase tariff costs over time, disincentivising the council and other parties from connecting. However, it does mean minimal construction, operational and reputational risk, with less management costs.

3.4.3 A Concession model will be considered as a viable alternative delivery option during Commercialisation Stage. Whilst it reduces overall level of control, it could be facilitated by council and Partner involvement, which facilitation would be subject to agreement on Key Performance metrics and requirements.

3.4.4 It would however require a balance to be struck between additional requirements vs Concession's freedom to practice within their business model.

3.4.5 Whilst a 100% council led SPV is attractive, all the construction, operational and reputational risks would sit with the Council. This delivery option is not recommended for further consideration during Commercialisation Stage.

3.4.6 Officers recommend that Commercialisation Stage focuses on the preferred delivery option of a council led (51% ownership) Joint Venture, together with Academic Partners. This would mean the council can obtain lower cost financing (and lend to onward for a margin in line with subsidy control regulations). The Council also shares construction, delivery and reputational risk with Partners who hold a long term vested interest in the City; ensures a return on investment; and ability to implement Connection Charges at levels which can incentivise all partners to fast track decarbonisation.

3.4.7 Modelling for a Council led JV shows a respectable post-tax nominal equity IRR of 12% compared to a funding eligibility target of at least 10%. The NPV is positive for the council due to the on lending and is 0 for other equity investing partners.

3.4.8 The council led JV balances the competing needs of:

i. reduced connection charges (to incentivise the switch to the heat network);

ii. a return on investment (to justify financing the scheme);

iii. lower borrowing costs being facilitated (to enable connection and expansion);

iv. direct control of delivery for all interested parties (rather than being passive customers),

v. ability to target long term expansion, social value opportunities and reinvestment in the city

3.4.9 to date, nineteen of twenty Academic Partners have expressed in-principal support as customers, subject to continued review and viability.

3.4.10 Additionally, seven Academic Partners have expressed interest in potential joint investment with the Council.

3.4.11 Formal legal agreements will only be confirmed at point of Final Investment Decision.

3.5 Potential for growth due to Heat Zoning Regulations

3.5.1 The Government's Heat Zoning Guidance consultation response has now been published and has confirmed that Regulations are to be put in place which would require heat loads (currently noted as above c100MWh/yr) to connect to a heat network, where it is shown to be the most economically viable route to decarbonisation.

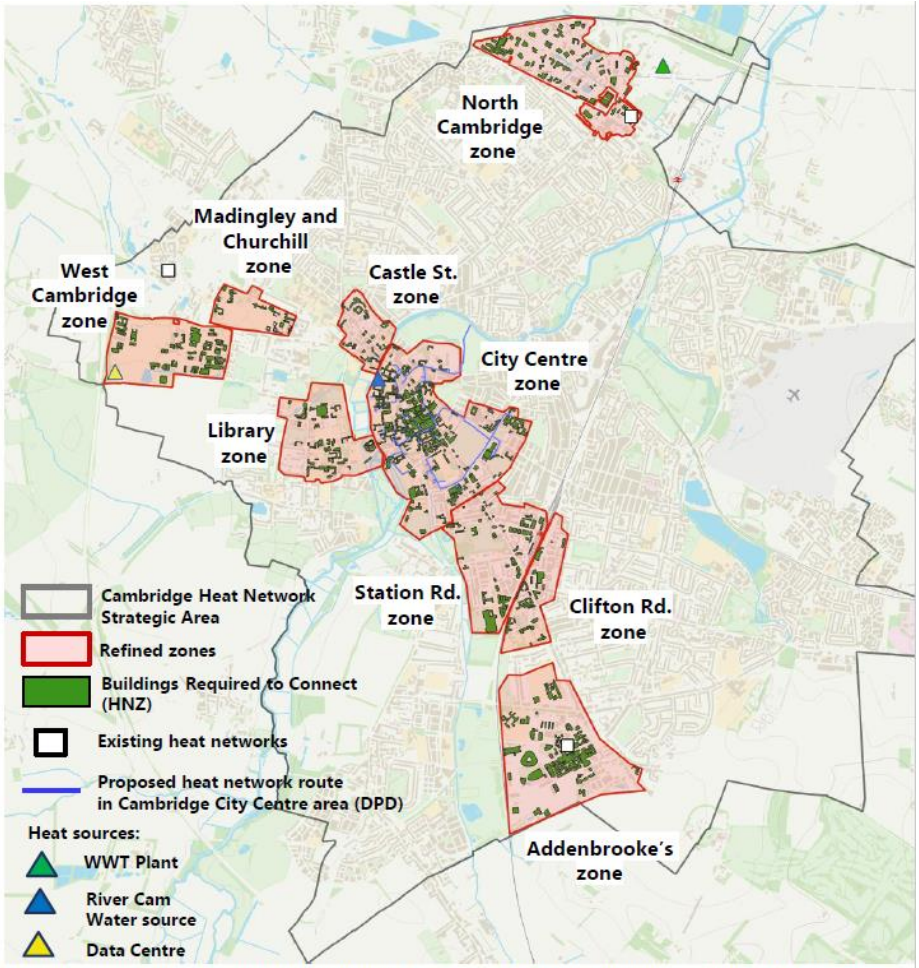
3.5.2 Early Zoning Studies by Department for Energy Security and Net Zero (DESNZ) indicated potential Heat Zoning for Cambridge City, opening up the opportunity for the City to land within the hands of potential Heat Network Developers who first reach gateway signoffs for heat network Incumbency Rights.

3.5.3 The current work undertaken by officers has targeted early consideration of Zoning implications for the Council and funding partners, ensuring that the Council positions itself with the greatest level of control of a heat network, should these Regulations be put in place as forecast.

3.5.4 There is identified additional expansion capacity of c. 45% within the core Minimum Viable Product area, formed of commercial heat loads which may be required to connect to a heat network within Cambridge City Centre, should Zoning be enacted.

3.5.5 Expansion opportunities are identified across the Council and Strategic Partner's pre-emptive Zoning Refinement Study and highlights c. 600% additional heating demand expected to be captured by government regulations, providing significant long-term expansion opportunities across the City.

3.5.6 Linked to these expansion opportunities is a further opportunity for infill residential connections, at a cost competitive to property-by property retrofit. Such residential expansion is, however, only realisable as a viable proposition once a core heat network is delivered and active (discussed further in Part 9).



Refined heat network zones showing the Required to Connect building within designated zones based on the most recent HNZ model results.

Figure 2: Heat Network Commercial Load Expansion opportunity, as identified by Zone Refinement Study

4 Corporate Plan and Council Vision

4.1 This project meets 3 of the Councils 4 key priorities as set out in the Corporate Plan for 2022-2027.

4.1.1 Leading Cambridge's response to the climate and biodiversity emergencies and creating a net zero council by 2030;

4.1.2 Tackling poverty and inequality and helping people in the greatest need;

4.1.3 Modernising the council to lead a greener city that is fair for all.

4.1.4 This Project fully enshrines the vision of the Council, working collaboratively with partners, and ensuring "one Cambridge Fair for all", through

I. Residents enjoy a high quality of life and exemplar public services, establishing a New utility and significant improvements to air quality

II. Decarbonisation and sustainability, as a core objective of this project

III. Innovation, leading on renewable infrastructure delivery

IV. Ensuring Development Is sustainable and inclusive

5 Development Programme

5.1 Figure 3 below outlines the development programme. This is a ten year phased programme.

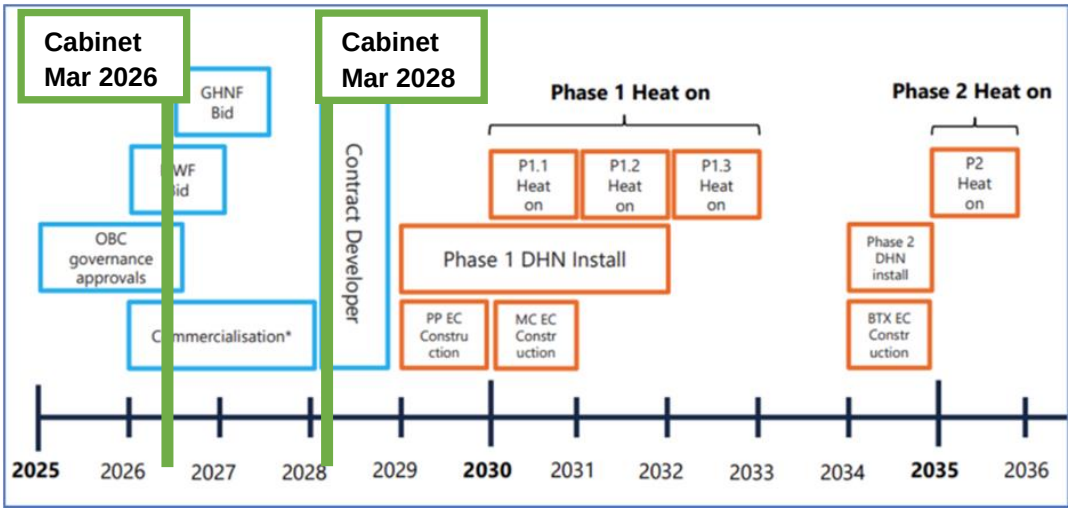


Figure 3: Heat Network Delivery Phasing

5.2 Phase 0 (blue): applying for grant funding, market testing and developing the Final Business Case.

5.3 Next steps toward delivery would be to proceed to Pre-Commercialisation, and to commence Commercialisation should Government funding be realised. Bridge Funding is needed to carry programme through gateways to:

5.3.1 Develop, strengthen and de-risk the Business Case
5.3.2 Market testing with specialist Design Build Operate and Maintain (DBOM) specialists or alternatively potential concession partners
5.3.3 Seek legal advice on delivery model, Joint Venture and Company structure
5.3.4 Establishment of an appropriate Joint Venture Holding Company for a JV customer Owned Energy Company, should this favoured approach be realised
5.3.5 Procurement of early specialist contractors for derisking activities
5.3.6 establishment of Power Purchase Agreements with potential consumers
5.3.7 Key Stakeholder consultation and engagement

5.4 If the decision is to proceed with further technical work, officers would produce a further report for Cabinet and then to Full Council no later than March 2028 outlining, if officers are minded to recommend, the final Investment proposals, development costs, and to seek approval to enter into the main Design, Build, Operations and Maintenance contract with a specialist heat network developer.

5.5 Figure 3 (5.1) outlines the phased approach to installation, and then operating the Cambridge City Centre Heat Network.

IMPLICATIONS

6 Benefits and Risks

6.1 Benefits

6.1.1 Council control of decarbonisation and expansion

6.1.2 Fast-tracked decarbonisation in Cambridge City Centre and helping to work towards the Council's vision of a net zero Cambridge

6.1.3 Reducing the emissions of Council buildings, playing a significant role in progress towards the Council's net zero targe

6.1.4 Reduction of c506,000 tonnes of CO2 (93%) against business as usual, and within a fast-tracked timeline (7.1% of which directly attributed to Council emissions, refer Part 10)

6.1.5 Reduction of c2.5 million m3 of gas usage, leading to significant local air quality improvements across the City.

6.1.6 Linked Biodiversity improvements targeted at 20%, to align with Council Planning targets.

6.1.7 Electrical infrastructure improvements to accommodate large-scale move away from gas usage, as well as possibility to link electrical events and mooring infrastructure to works at Midsummer common (associated smaller-scale decarbonisation).

6.1.8 Long term expansion opportunities (+600% commercial expansion capacity indicated), and ability to direct such expansion.

6.1.9 Disruption mitigation through single project approach, and linked clearly to roadway improvements.

6.1.10 Subject to overall business viability, opportunity to link to social value undertakings.

6.2 Dependencies and Risks

Risk	Mitigation
Decision making cycles require coordination across 20 partner institutions	Early engagement and long lead-in periods allowed. Confirming bridging approvals of support provide sufficient comfort to proceed, while investment and final connection undertakings are retained for formalisation once delivery has been sufficiently derisked for Council and Partners.
Financial Risk – Costs of investment and connection are High, however remain lower that the option of decarbonisation at an individual level	Several Strategic Partners and additional external stakeholders have expressed an interest in providing support and investment, together with expressing interest in connecting Partner investment is led by associated benefit of long term facilitation and shared control as opposed to direct financial return
Viability reliant on grant funding	Funding bid is seen as competitive but would aim to maximise funding. Strong partnership undertaking, commitments to Social Value and expansion opportunity will increase opportunity for successful grant bid
Reliant on significant borrowing	Any improvement in GILTS Rates will also improve the NPV On-lending margins assumed in line with Subsidy Control
Planning	Planning Permissions will be required. Location of appropriate energy centres has been difficult, and development will include significant constraints. Selected sites have been through 3 rounds of pre-application advice and are considered deliverable, subject to appropriate Design and Conditioning.

Risk	Mitigation
Highways Disruptions	Disruption is a key consideration however it must be seen in context. Should 20 Strategic Partners and other commercial property owners in Cambridge city centre progress standalone decarbonisation activities, the cumulative city impact will also be higher, and can be expected to be over an extended period, as opposed to the heat network programme with dedicated construction periods. Early engagement with highways authorities has commenced but it is flagged that Political-level support and engagement between City and County will be a key requirement to ensuring deliverability. We have also partnered with the CPCA on pilot consideration of Multi-utility tunnels
Archaeological risk	Archaeological risk is considered high within the city centre. Early engagement and studies are being undertaken as priority derisking works and additional contingencies have been factored into cost considerations together with exploratory core sampling.
reliance on interim gas usage	In common with many new UK heat network projects, interim gas usage for peak heating demand is needed to reduce early capital, thereby ensuring project viability by maximising the number of connections in the Minimum Viable Product, with linked connection recharge reduction and later (15-20yr) spend. This is a time limited exercise, with a longstop date of 20years currently considered, after which electric boilers will be used for peak heating, making the heat network fully electrified. As a result, the decarbonisation

Risk	Mitigation
	achieved during the full 40 years has reduced from a 97% to 93% reduction. This however will remain under review.

7 Financial Implications

7.1 The estimated cost of £121m is made up of:

7.1.1 connection costs of £70.5m (£75m as inflated over time in the Financial model). This is split £4.1m to Council and £66.4m other customers at current value;

7.1.2 grant of £19.7m;

7.1.3 lending by the council of £18.4m;

7.1.4 and equity funding of £7.9m (£4m Council and £3.9 from other investors)

7.2 Modelling for a Council led JV shows a nominal post tax equity IRR of 12% compared to a funding eligibility target of at least 10%. The NPV is positive for the council due to the on lending and is 0 for other equity investing partners. Partner investment remains subject to individual consideration of benefit and return, with long term control and surety of supply being a shared core value between partners and Council. An investment decision is on this basis of benefit.

7.3 This project is however fully reliant on grant funding from the government to be viable, and proposals to proceed are subject to such successful receipt of Funding from the Green Heat Network Fund.

7.4 Given the complexities of the project, sensitivities to cost overruns have been considered, including a worst case scenario 30% cost overrun, ensuring that return hurdle rates remain met and can be balanced through shared consumer/investor/developer risk.

7.5 Additional consideration of full electrification at early stages is covered in Part 10, however the current approach to ensure flexibility and cost effective benefit to all parties is reflected in the model for interim gas usage to subsidize peak heating demand.

7.6 Once operational, additional equity investment at points of network expansion would be met through Business as usual investment management and budgetary processes.

7.7 To ensure timely delivery within target timeframes, avoiding delays which would reduce consumer interest given pressures to replace existing eating infrastructure, bridge funding of a pre-commercialisation period is proposed.

7.8 £600,000 of funding to cover pre-commercialisation activities will be applied for from the Council's Climate Change Fund, which is subject to the application meeting the fund's criteria and being approved by the Council's Net Zero Programme Board and Cabinet Member for Climate Action and Environment. This funding request would only be made subject to Cabinet approval to proceed with the next stage of work. This expenditure is undertaken at risk as ability to proceed with full heat network delivery is reliant on successful funding bid to the Green Heat Network Fund. The next round of funding from GHNF is expected to open for bidding in March/April 2026, with outcomes expected to be reported by September/October 2026. Successful bidding is targeted to coincide with the early establishment of a Joint Venture Vehicle, and proceeding to procurement of a specialist Design, Build, Operate and Maintenance contracting partner.

7.9 Should pre-commercialisation not be undertaken, there would a delay period of 6-9 months, which will strongly impact ability of partners to rely on heat network connection, in the face of ageing heating infrastructure which needs to be replaced, and pressure to develop timeous decarbonisation plans. Internal funding aims to streamline all processes to maximise buy in from partners and other potential consumers. There is also significant competition for expertise in the sector, which will increase over time. A rapid approach to retain delivery momentum balances risk and opportunity for successful delivery and adoption.

7.10 Pre-commercialisation expenditure will additionally be subsidized by any underspend carried forward from the DPD Study. Such underspend is expected currently to be c£50-100,000, and has been jointly sourced from council and academic partner contributions.

8 Legal Implications

8.1 Specialist legal Services are appointed to advise on all aspects of Project delivery and delivery vehicle establishment.

9 Equalities and socio-economic Implications

9.1 The ability to deliver a City Centre Heat network as proposed relies on Government funding to ensure viability, and as part of this funding application is assessed against a set measure of Social Internal Rate of Return (SIRR).

9.2 This SIRR assesses the overall return value of a project to society, both economically and socially. It considers the full range of costs and benefits, both private and social, associated with a project. The SIRR is calculated in much the same way as the financial IRR, except that it instead considers both the private and social costs and benefits over the lifetime of the project.

$$Social\ IRR = Economic\ IRR + Carbon\ Abatement\ Value + Air\ Quality\ Damage\ Cost$$

9.3 To calculate the SIRR the costs and benefits are measured against the counterfactual where the proposed project is not implemented. As with a financial IRR, the SIRR is expressed in monetary terms. Therefore, to calculate the SIRR, it is first necessary to put a monetary value on all the relevant costs and benefits. The social benefits included are:

9.3.1 Air quality damage costs - The Green Book supplementary guidance provides air quality damage costs from primary fuel use in pence per kilowatt hour. These are used to evaluate the impact of the change in air quality of a proposed heat network

9.3.2 Carbon abatement value - The Green Book supplementary guidance provides guidance on the value to society in saving one tonne of carbon. Therefore, the net social impact on carbon emissions can then be given a monetary value using DESNZ carbon prices. This can be used to compare the carbon emissions associated with supplying heat through the counterfactual heating technology and the proposed heat network.

9.4 Using the above methodology, the Social Impact for the Network as proposed returns a social value IRR of 47.9% post grant funding (20.5% pre-grant), well exceeding the target SIRR of “3.5% or greater”. It is worth noting that the transitional gas option being adopted shows a greater SIRR than a full electric scenario (25.2% post grant) as the calculation considers both carbon/air quality abatement and overall project Rates of financial return.

9.5 In addition to standard Market Transformation social value commitments required by GHNF, the project aims to deliver strategic added value by capitalising upon both the strength of its strategic partnership and Cambridge’s academic prowess. It is proposed to achieve this through shared commitment to social value and education, with potential avenues being investigated for reinvesting into expansion of the CCCHN, addressing of fuel poverty, and linked education/training.

9.6 In accordance with the Public Sector Equality Duty under section 149 of the Equality Act 2010, the Council has given due regard at this early stage to the potential equalities implications of the proposed study. National public health evidence, including from the UK Health Security Agency, demonstrates that the health impacts of poor air quality and climate change are not evenly distributed. Older people and disabled people, in particular, are at greater risk of adverse health outcomes from heat, air pollution and related environmental stressors.

9.7 There is also strong evidence that people living in areas of socio-economic deprivation are disproportionately exposed to environmental harms; while poverty is not a protected characteristic under the Equality Act, it frequently intersects with protected characteristics and may therefore compound disadvantage.

9.8 As this decision relates to commissioning further technical work rather than implementation of specific measures, no direct equalities impacts arise at this stage. However, should the project proceed to the development of options or interventions, a full Equality Impact Assessment will be undertaken to assess distributional impacts in detail and to inform mitigation measures.

9.9 A specific point of note is the focus on commercial heat usage for the heat network Minimum Viable proposition. Case studies both locally and abroad have shown clearly that bringing residential connections into a heat network in a cost-viable manner requires an active base network first being established. We note that this project as identified is a Minimum Viable Product, which allows such activation for the City. Future expansion into both residential and commercial heating supply is treated as a Primary Critical Success Factor by all Partners to ensure shared long term benefit across the City.

Critical Success Factors Table

Primary

1. Help decarbonise individual Estates, while enabling potential future heat network expansion

2. Provide cost-competitive & reliable low carbon heat:
   a. Offer low carbon energy that is better value over contract lifetime against counterfactual(s)

   b. Provide long-term reliability and at minimum, heat supply availability in line with industry standards

Secondary

1. Maximise social value & education

2. Minimise disruption & share the benefit from construction across the city

3. Showcase sustainability leadership & innovation

10 Climate Change and Environmental implications

10.1 Climate Change Strategy

10.1.1 In discussion around the 2026-2031 Climate Change Strategy, being brought to this meeting of the cabinet as a separate item, much has been said about the direct control the Council has on Carbon Emissions in the city, being only c0.7% direct emission attribution. Action will be needed by the city's institutions and businesses alongside the council to address city-wide emissions.

10.1.2 It has separately been noted that net zero targets are ambitious, and large scale operational changes are required to meet these. These targets are shared by the Academic Partners which have collaborated on the DPD Stage of work looking at a city centre heat network.

10.1.3 The proposals set out in this report, aim to address both the above points. Progressing toward a Joint Venture Partnership where the Council holds a controlling share ensures that direct guidance of decarbonisation can be enshrined in the long term management of the City. Likewise, investment by partners who have significant and long-term investment in the city ensure that all work to a coordinated outcome to the benefit of the City.

10.1.4 Should Market appetite indicate that a Joint Venture as preferred may not be best suited, there remains a fallback to a potential Concession model. Such a Concession would require facilitation by the Council and Academic Partners, and as such there would remain some ability to ensure core requirements are met, however there would be a loss in terms of the ability to directly guide expansion and city investment at scale, and a risk that it won't progress if the market doesn't judge it to be an attractive proposition.

10.2 Transitional arrangements

10.2.1 Bringing forward a large scale infrastructure project holds significant risk, and any increase on upfront capital requirements has significant downstream effects on financial viability.

10.2.2 A key cost item are Substation and electrical grid capacity works required for any significant new electrical usage loads, and the costs associated with meeting these.

10.2.3 Through the DPD stage an “ambitious” full electric and 100% degassed network proposal has been favoured by all partners, given shared decarbonisation commitments. This by necessity has however been reviewed against financial pressures; a full electric option reduces overall financial returns to a level which cannot comfortably be accommodated.

10.2.4 These cost pressures also need to be considered against the value added by such expenditure, and the Council and its parties have a duty of care to ensure that finances are utilised appropriately and provide value for money.

10.2.5 A full upfront move to 100% electrical generation would require c4.5% increase capital expenditure, but also a signficant 6.95% increase in lifetime fuel costs which would be met by both operator and consumers. This would be offset by only a c4% improvement in carbon emmissions reduction.

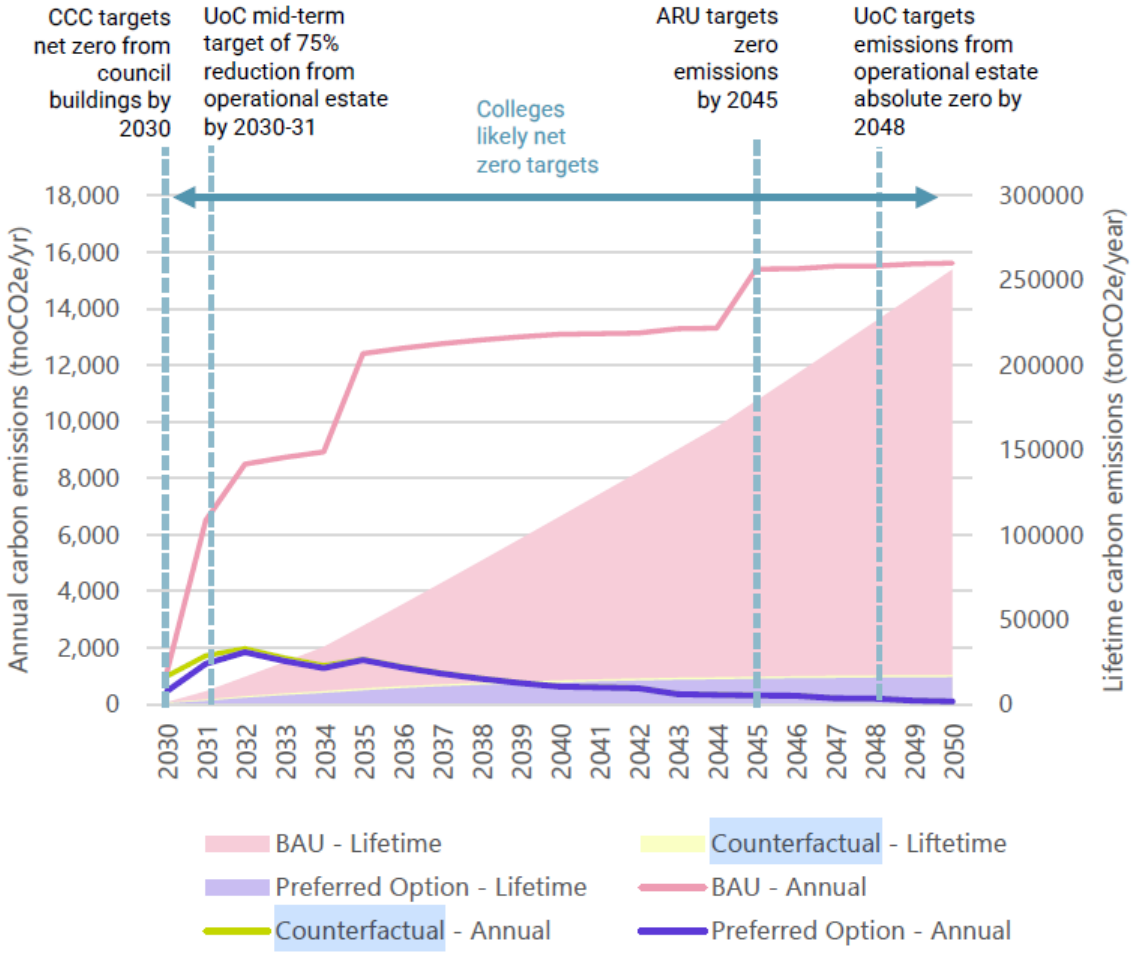
10.2.6 Ultimately such immediate reliance on 100% electric heating generation loads signficant risk to project deliverability, as well as increases costs to all parties which funds could be best used elsewhere, for example on fabric/insulation and secondary network efficiency imrpovements.

	modelled usage	**Reduction against BAU**	**Carbon reduction over 40 yrs**	**Social IRR**	**Financial IRR**
	tCO2e (40yrs)	tCO2e (40yrs)			
Business as Usual (counterfactual data)	546,000	-	-		
Ambitious full electric	17,400	528,600	**97%**	**25.2%**	**9.7%**
Transitional gas usage	39,900	506,100	**93%**	**47.9%**	**12%**

	tCO2e (40yrs)	tCO2e per year (to yr20)
Difference Interim vs full electric	22,500	1125
CCC portion of carbon emissions (7.1% of load)	1,598	80

10.2.7 Put forward as a current preferred option is an interim usage of gas boilers which would accommodate peak periods of usage (10-15% of overall generation), to be utilised for a fixed period of 17-20yrs (boiler lifespan) and moving to fully electric generation at point of replacement.

10.2.8 This proposal and evidence base echoes findings of the Governments recently published Heat Zoning Consultation response, which considers that 100% electric isn't realistic in the short term, as well as specialist advice from numerous sources, such as the Danish Board of District Heating.



10.3 Climate Rating Tool

10.3.1 A Climate Rating Tool Assessment has been completed and confirms this project as High Positive Impact.

11 Procurement Implications

11.1 It is proposed that the currently procured Specialist team be retained through pre-commercialisation stages to ensure continuity through this period. This will be conducted through Compliant procurement procedures.

12 Community Safety Implications

12.1 None for this stage of the project.

12.2 Should a full heat Network delivery in future come forward this will as noted be subject to final Cabinet signoff. Delivery will however be undertaken in line with compliance regulatory arrangements covering infrastructure works, and no additional safety implications are identified.

BACKGROUND DOCUMENTS

13 Appendices

Appendix 1: Memorandum of Agreement covering DPD Stage

Appendix 2: Outline Business Case (Partially redacted)

To inspect the background papers or if you have a query on the report please contact:

Jaques van der Vyver, Jaques.vandervyver@cambridge.gov.uk

Benedict Binns, Ben.binns@cambridge.gov.uk