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Leeds PIPES District Heating Network: status update and securing future growth

Date: 21st July 2021

Report of: Director of Resources

Report to: Executive Board

Will the decision be open for call in? ☒ Yes ☐ No

Does the report contain confidential or exempt information? ☒ Yes ☐ No

What is this report about?

Including how it contributes to the city's and council's ambitions

This report is about the Leeds PIPES District Heating Network (DHN) and serves the following purposes:

1. Since the decision to construct phase 1 was approved by Executive Board in July 2017 a 10-kilometre DHN has been constructed with the network successfully delivering low carbon heat to both the Leeds Playhouse and council tenants in multi-storey flats. The last twelve months have seen exceptional growth in the network, with at least nine new buildings connecting in 2021, which is faster than anticipated in the original business case.

2. These new connections include some of the councils own corporate buildings in the Civic Quarter (Town Hall, Civic Hall, City Museum, Art Gallery & Library), as well as a number of prominent buildings owned by public sector partners. This fast uptake in customers connecting to the network is forecast to see the volume of heat provided to customers double compared to the demand seen in 2020.

3. On-going discussions, with a range of potential customers who are interested in connecting in the next few years, ensures that the network is set to establish itself in the city and become one of the largest networks being developed in the country. The increasing number of early adopters connecting to the network will result in higher annual levels of carbon savings across the city and ensure the DHN can play a key role in contributing to the council's climate emergency ambitions of becoming net zero by 2030.

4. The rapid expansion of customers on the network and an increasing number of new potential connection opportunities substantiates the decision to construct Leeds PIPES. The decision to construct phase 2 of the network has enabled 6 of the 9 new connections taking place in 2021, demonstrating that the extension was a worthy investment. Forecasting of the project business case shows that the project is expected to achieve a breakeven position much sooner than initial projections. This report provides Executive Board with a progress update, including an evaluation of the latest long-term financial outlook compared to previous forecasts provided at various stages of the project.

5. This report recommends not proceeding with the Phase 3E extension into the South Bank. Since approval was given by the Board in July 2020 to progress with the extension, the council has been successful in securing a grant from the Heat Networks Investment Project (HNIP) to help fund the scheme. However, the business case for this extension has proved difficult to deliver and is at present considered to place too great a financial risk on the overall busines case for the DHN because of its

dependency on one customer. During project development the heat demands from this specific extension have reduced by over 70% of what was originally anticipated. Discussions remain on-going, with the developer to explore ways to de-risk the investment to the council. In the event that new information is brought forward which improves the case we will make the information available as soon as possible to the Executive.

6. Whilst it is not considered that a full extension into the South Bank is currently attainable due to the timing and sequencing of developments planned in the area, there may be connection opportunities that present themselves in the area in future that will continue to be explored to inform future business cases. To ensure that a future expansion into the South Bank remains possible this report sets out a recommendation to carry out installation works on the Citu site at Low Fold, ensuring a future expansion opportunity remains technically viable.

7. The report seeks to secure a commitment to further council investment to allow the district heating network to attract new customers and to make long-term strategic growth decisions as well as support for a new bid to HNIP for a phase 3W extension that will run from the Headrow to the Whitehall Road area of the city. The proposed extension will be based on a portfolio of customers, rather than just one anchor load – this will help to de-risk the business case.

8. An update is also provided on the government's intentions to regulate the heat network market and introduce a policy of heat zoning, as well as advising on steps that Leeds PIPES can take to prepare for these measures being introduced.

Recommendations

Executive Board are requested to note the contents of this report including the detail set out within the confidential appendix 1 and:

a) Approve the recommendation to no longer proceed with the extension to the Tetley Brewery site and to hand back £2.438m grant to HNIP.

b) Approve authority to spend for the construction of works on the Citu site at Low Fold to a value of £450k to ensure the opportunity to supply heat into the South Bank in future remains possible.

c) Provide authority to submit a funding application to the Heat Networks Investment Project (HNIP) for a potential phase 3W extension to the Wellington St area of the city, with further details to be brought to a future Executive Board meeting to seek authority to sign a grant agreement and to provide the funding required from the council to the District Heating PipeCo in the form of a loan to satisfy funders' requirements.

d) In line with existing delegations, note that any strategic investment opportunities up to an individual scheme value of £500k be authorised by the Director of Resources where a viable business case exists.

e) Approve the principle of providing capital free connection agreements to customers if there is a viable business case.

Why is the proposal being put forward?

1 The council has already agreed to invest over £47m in the district heating network, via Executive Board decisions taken in July 2017, April 2019 and July 2020. Phase 1 was completed during 2019 with the Recycling and Energy Recovery Facility (RERF) providing low carbon heat to council tenants in Multi-Storey Flats (MSFs) and the Leeds Playhouse since

September 2019. Phase 2 was successfully delivered throughout 2019-20 in the midst of the COVID-19 pandemic and is ready to supply heat to customers in the city centre.

2 Whilst the operation of the network very much remains in its infancy there is significant interest from a range of partners across the city to connect and make use of the low carbon network, with at least 9 new customers expected to connect during 2021 adding c.12GWh of annual heat demand to the network. These buildings include the council's own corporate buildings within the civic quarter such as the Town Hall and Civic Hall as well as other public sector partners. Once these buildings are connected, total demand on the network is anticipated to exceed 24GWh per year.

3 This early rapid growth is a significant achievement and clearly demonstrates support for a citywide low carbon heat network. New potential customers regularly contact the project team to discuss connecting, and as momentum continues to grow we anticipate that numerous further connections will take place in the next few years as partners across the city see Leeds PIPES as a viable means of reducing carbon emissions and reducing heating costs.

4 Following Executive Board approval in July 2020 to progress with a Phase 3E extension into the South Bank area of the city, the project team have been successful in securing a HNIP grant. However, Brexit and Covid-19 have slowed the redevelopment of the former Tetley Brewery site, the key heat load for the extension, which has delayed the start. The Leeds PIPES project team have worked closely with the developer during this time to refine the technical requirements and agree a commercial position.

5 The council has already taken a significant financial risk with the development of phase 1 and subsequently phase 2 and this original investment is just about to start to breakeven and produce a profit for the council but any further expansion will delay this breakeven point. There will always be a requirement to invest ahead of demand but each time an investment is made the risk versus reward balance needs to be carefully assessed to ensure that the council can ensure the financial viability of the overall network.

6 Over the last 12 months the volume of heat available to the DHN from the proposed development has significantly reduced following the development of the site's technical solutions for their site. This along with a relatively low number of other connection opportunities currently identified within the area means that the potential revenue that can be generated through heat sales is low in comparison to the high construction cost of the extension. Financial modelling has shown that the business case for the extension has the potential to negatively impact on the DHN unless the whole development is constructed according to the current timetable and this is therefore considered too great a risk to the council and the overall DHN business case.

7 Given the financial pressures that the council faces and to ensure the DHN is given the opportunity to become and remain financially stable, it is recommended that the council does not proceed with the extension. At the point of the report being written, an alternative option is being explored with the developer, which could de-risk the investment for the council and enable the extension to proceed - an update will be provided to the Executive at the earliest opportunity.

8 There is the potential for future connection opportunities to materialise in the South Bank, which are either unknown or in very early stages of development. To ensure that there remains an opportunity to supply heat to any customers it is proposed that works are undertaken to install pipework across the Citu site at Low Fold, which is considered the primary option for crossing the River Aire. Installation works will take place this year in accordance with Citu's wider construction programme for the site.

9 To support the expansion of customers connecting to the network there are two key strategic decisions that, whilst having an upfront capital cost, have the potential to secure customers and enable future connections.

a) It has become apparent in customer negotiations that the upfront cost of connecting can be a barrier to some organisations. Some customers have asked for the council to pay the connection cost which they then pay back across the term of the connection. This approach would provide an option to customers and help secure additional connections that would further improve the business case.

b) Network extensions are required to reach some potential customers, with these branches typically sized and costed to provide the lowest connection cost for the potential customers. However, some of these extensions pass by, or go partway to, other known potential customers. Taking a strategic decision to increase the diameter of the branch pipework is a cost effective way to future proof additional connections, but there is a higher initial capital cost.

10 These strategic investment opportunities will assist with the rapid expansion of the network by providing further opportunities in relation to customer connections.

11 A feasibility study has been commissioned from Sweco UK Ltd to undertake initial analysis of the potential for a phase 3W extension from the Headrow to Whitehall Road area of the city. This high-level benchmarking review has identified a heat demand in the area of up to 28MW. Whilst there is an 11MW limit on the volume of heat that can be made available to the area, the volume of potential heat available and the density of opportunity within the area suggests there is likely to be sufficient heat volume for an extension.

12 It is proposed that market sounding be undertaken over summer to understand interest from potential customers and to inform a business case. Should this identify that a phase 3W be viable it is proposed an application to HNIP be submitted in October. If successful, details regarding the business case will be brought back to a future Executive Board to seek approval to enter into the grant agreement and to seek authority to spend.

13 The government are considering measures to introduce regulation for heat networks of a similar nature to other energy services. The DHN was developed to be constructed and operated in line with the requirements of the Heat Trust, so whilst not being a member of the Heat Trust it is considered that operating in accordance with these requirements will ensure that regulatory requirement will be adhered to. It is considered that the regulatory requirements will require membership of the Heat Trust.

14 The government is also reviewing plans for heat network zoning. Whilst still under consultation it is expected that the measures will provide powers to local authorities to enforce buildings within a heat zone to connect to a DHN. This again is expected to support with the development of the network however details of how the scheme will be implemented need to be further understood.

What impact will this proposal have?

Wards affected:		
Burmantofts and Richmond Hill		
Hunslet and Riverside		
Little London and Woodhouse		
Have ward members been consulted?	☐ Yes	☒ No

15 If the decision is taken to not progress Phase 3E, it means that the development will have to find an alternative low carbon solution such as heat pumps, renewable fuelled electric heating etc.

16 The network does have finite capacity so by not completing this extension, it means that other opportunities can be explored.

17 Giving Leeds PIPES strategic investment capabilities and endorsing the Phase 3W bid to HNIP will support the expansion of the network and enable some potential organisations to connect when capital costs would ordinarily be prohibitive.

18 These recommendations support the aspirations set out in the Best Council Plan and the overall vision of becoming the best city and best council in the UK. In particular the proposals to help rapidly grow the Leeds PIPES network will help deliver the Best Council Plan priority associated with the Climate Emergency.

19 An equality impact assessment was completed as part of Phase 1, Phase 2 and was updated as part of the Phase 3E extension proposals presented to Executive Board in July 2020. This identified that the DHN has a positive impact on equality as it will support the compassionate city equality objective by reducing fuel poverty, helping to increase life expectancy, improving mental health and wellbeing and reducing health inequalities. It is not considered than a revised assessment is required for the proposals within this report.

What consultation and engagement has taken place?

20 The Executive Member for Climate and Infrastructure has been kept updated on the development of the DHN and the recommendations set out within this report.

21 The Director of Resources and the Director of City Development have been consulted regarding the recommendation to not to proceed with phase 3E as well as the potential options to help de-risk the investment, with input from Senior Finance Managers within Resources.

What are the resource implications?

22 The DHN business case is complex with many variables, some of which are outside the council's control, which can have a significant impact on financial performance. The business case that was approved by Executive Board in July 2017 was based on the best available knowledge at the time, but some key assumptions have changed since then. The updated financial position presented in confidential appendix 1 provides a summary of how some of these changes have altered the financial outlook.

23 The approval given by Executive Board in July 2017 was also based upon a range of potential scenarios associated with an increase in customers connected and the impact on the revenue position.

24 The table below shows a high level summary of the financial forecast for 2022 for the base case presented to Executive Board in 2017 alongside the current projected performance. This position has been shown as it represents the first full year's financial performance for the customers currently being connected.

	Executive Board 2017 – Scenario 1	**Current forecast – Scenario 1**
	£000	**£000**
Revenue	1,959	1,977
Operational costs	(1,367)	(1,287)
Funding costs	(753)	(534)
Surplus/(loss)	**(160)**	**156**

25 The business case for Phase 3E presented to Executive Board in July 2020 identified that the revenues generated through heat sales would make a positive contribution to the overall business case for the DHN. Since then we have worked closely with the developer to refine the technical solution in response to the changed market conditions for their development. This has seen the forecast heat demand from their site reduce considerably impacting on the viability of the business case.

26 Having received the HNIP grant for phase 3E the council are now required to transfer the £2.438m back to HNIP if the final decision to not proceed is taken.

27 The proposals to undertake £450k works on the Citu site will be funded via the existing capital programme.

28 The financial viability of a phase 3W extension will be determined throughout July and August following customer engagement and network design. Should a business case be considered viable, an application will be submitted to HNIP to secure a grant to support the construction of the network. Where a HNIP grant is secured full details of the financial case will be brought to a future Executive Board to seek authority to enter into the grant and to seek authority to proceed with the extension.

29 The strategic development proposals require the council to invest additional capital, however authority to do so will be based upon a business case that demonstrates that revenue generated through the customer connections will improve the overall DHN business case.

30 A consultant has recently undertaken a review of the energy performance of the RERF and this has shown that the DHN connection to the RERF is even more carbon efficient than originally anticipated when the network was designed, so as a result the DHN is able to provide a higher level of carbon saving to customers and play a greater role in the council's climate emergency ambitions. Further detail on this can be found in Appendix 1.

31 Membership of the Heat Trust is anticipated to cost £8k per year, which is lower than when the network was initiated, and which can be covered as part of the ongoing operational costs of the network.

What are the legal implications?

32 The information contained within confidential Appendix 1 to this report is designated as exempt from publication in accordance with paragraph 10.4(3) of the Access to Information Rules and Schedule 12A(3) of the Local Government Act 1972 on the grounds that it contains information relating to the financial or business affairs of any particular person (including the authority holding that information). The appendix contains detailed pricing information underpinning the council's heat sales which if disclosed could damage its commercial interests. Disclosure of this information would seriously harm the council's negotiating position when discussing heat sales with potential customers. Therefore it is considered that the public interest in maintaining the content of confidential Appendix 1 as exempt outweighs the public interest in disclosing the information.

What are the key risks and how are they being managed?

33 There is a risk in the invest to save proposal associated with customers paying back capital across the term of the connection agreement deciding to disconnect from the network prior to the end of the term. This risk is mitigated by repayment clauses contained within the heat sale agreement and due diligence prior to offering finance.

34 There is a risk that Phase 3W is not supported sufficiently by customers or does not secure HNIP grant funding. A further report will be brought to Executive Board to secure authority to accept the grant and authority to spend prior to committing capital to the extension. A robust business case will be presented to support the decision.

35 There is a reputational risk with handing back the phase 3E HNIP grant, however there is a greater risk in progressing with the extension. The council has previously delivered the phase 2 extension with support from HNIP, demonstrating that where a business case is viable that it can successfully bring extensions forward.

36 There is a risk in carrying out the Citu site works with the DHN business case needing to incorporate additional capital costs. Investment has already been made in installing pipework with the Citu footbridge it is considered that this proposal supports this previous investment.

37 There are a range of Connecting Leeds highways works planned around the area of the potential phase 3W extension, which could impact on the route of the extension. Liaison with the project team managing these works will take place to ensure that any potential overlaps between projects are taken into account.

Does this proposal support the council's three Key Pillars?

☒ Inclusive Growth ☒ Health and Wellbeing ☒ Climate Emergency

38 The Leeds PIPES district heating network is a major strategic priority for the city and growing the network as proposed directly supports the council's three Key Pillars:

a) The network provides lower cost heating to both residents and businesses, helping to reduce fuel poverty and improve competitiveness. The presence of the network has been cited by a major utility as one of the reasons that they are seeking to build a private district heating network linked to a new energy from waste plant, securing significant inward investment to the city.

b) The network reduces reliance on gas boilers in dense urban areas, helping to improve air quality and improving health. Reducing fuel poverty is also directly linked to improved mental and physical health, particularly amongst the young, the elderly and those with underlying health conditions.

c) The network directly reduces CO2 emissions from heating, which is otherwise difficult and expensive to improve, helping the city to achieve net zero ambitions.

Options, timescales and measuring success

What other options were considered?

39 With the information that is currently available, the recommendation to not proceed with phase 3E is considered more favourable than progressing with the extension as it presents less financial risk to the council and provides greater stability to the DHN business case.

40 The proposal to carry out works on the Citu site ensures that the opportunity to supply heat into the South Bank area remains open for any future connection opportunities that arise. The alternative option of not completing these works would mean there is unlikely to be any opportunity to expand into the area in future due to limited options for crossing the River Aire.

41 The proposal to allow customers to payback connection costs is an additional option that can be made available to customers with limited access to capital. Increasing the range of connection offers made available will help make a connection even more attractive and grow the network more quickly. Risk assessments on the long-term certainty of the customer/ building will be undertaken.

42 The alternative option to making strategic decisions to increase the size of the pipework branches of network is to limit the pipe size to only serve individual customers. This is not considered suitable as it would limit the opportunity to make the network available to specific clusters of connections.

43 The Phase 3W extension was identified as a larger potential extension in 2017, including an underground section that used thrust boring techniques to install pipes under the canal, river and railway. We have recently engaged Sweco and the Carbon Trust through WYCA's Energy Accelerator programme to work up this opportunity. The customer engagement and technical feasibility that they undertook showed that the section to the north of the river has a far higher total heat load and much better linear heat density so is the preferred option. The solution will be designed to allow a further extension to the western side of the South Bank, should a new bridge be constructed over the canal and river.

How will success be measured?

44 Success will be measured by realising new DHN connections. Should a business case for a phase 3W be seen as viable and the council secures a HNIP grant to support its construction, circa 26GWh of heat sales can be achieved through the extension.

45 Strategic investment decisions will support with connecting new customers on the network where it is considered viable to do so.

46 The addition of new customers will reduce carbon emissions in the city and contribute to the ambition of achieving net zero by 2030.

What is the timetable for implementation?

47 To apply for a Phase 3W grant from HNIP will require the council to submit an outline application by the 1st of September 2021 and a full application by the 1st October 2021. It is likely that construction would then commence in mid-2022 and be complete by mid-2023.

48 The works on the Citu site will take place in sections throughout 2021 and are driven by the development programme of Citu.

Appendices

49 Appendix 1 – Exempt from publication under the provisions of Access to Information Procedure rile 10.4(3).

Background papers

50 N/A