Report to: Strategic Planning Committee

Date of Meeting 14th February 2023

Document classification: Part A Public Document

Exemption applied: None

Review date for release N/A

District Heating: Reliability and Resilience

Report summary:

This report has been prompted by an event in early December whereby technical issues affected the operation of the district heating network serving Cranbrook. This subsequently directly impacted the supply of hot water to over 400 homes. The report details the cause of these issues and what has been done to rectify the position. It also considers how to improve oversight of the operation of the networks going forward alongside the introduction of regulation at a national level. More strategically the report considers whether there are wider implications for the Council's approach to promoting the roll out of district heating in the West End of the District.

Is the proposed decision in accordance with:

Budget Yes ☒ No ☐

Policy Framework Yes ☒ No ☐

Recommendation:

It is recommended that members;

1. **Note the issues that led to the supply issues on the Cranbrook network in December and what has been done to rectify the position**
2. **Endorse the principle of establishing a District Heating Stakeholder forum with E.ON to cover both district heating networks**
3. **Continue to support the approach of pursuing the roll out of district heating networks to serve the major development areas in the West End in line with adopted policies**
4. **Endorse the approach of the Chair writing to the relevant BEIS Minister to advocate for an equivalent package of support for domestic consumers on heat networks to that received by domestic consumers on the gas grid under the Energy Price Guarantee (EPG)**

Reason for recommendation:

To ensure that the circumstances surrounding the heat outages in Cranbrook in December 2022 are understood.

To provide for improved oversight and scrutiny of the operation of the heat networks going forward.

To support the large scale delivery of low and zero carbon development in the West End of the District in line with Strategy 40 of the East Devon Local Plan 2013-2031 and CB12 of the Cranbrook Plan DPD.

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Portfolio(s) (check which apply):
☒ Climate Action and Emergency Response
☒ Coast, Country and Environment
☒ Council and Corporate Co-ordination
☒ Democracy, Transparency and Communications
☒ Economy and Assets
☒ Finance
☒ Strategic Planning
☒ Sustainable Homes and Communities
☒ Tourism, Sports, Leisure and Culture

Equalities impact Low Impact

Climate change High Impact. The roll out of district heating networks in the West End is expected to secure up to 17,200 tonnes of carbon savings per year. This is significant both locally and nationally. Delivering large scale zero carbon development in the West End is a key objective in the Council's Climate Change Action Plan. The Devon Carbon Plan makes it clear that in 2019 burning of fossil fuels for heat accounted for 19% of Devon's greenhouse gas emissions. It states that 'we must consider district heating for new developments where the distribution pipes and energy centre can be designed in from the outset, particularly in locations where waste heat is available from industrial processes.'

Risk: Medium Risk; It is the intention for the bulk of new housing in the District to be connected to a district heating network as the preferred means of supporting the large scale delivery of low and zero carbon development. The success of this approach ultimately hinges on the day to day operation of these networks. The report puts forward proposals for improved scrutiny and oversight of the performance of the networks. Alongside the introduction of national regulation this will help to mitigate potential risks.

Links to background information Towards Zero Carbon Development in the West End – agenda for Cabinet on Wednesday, 2nd November, 2022 item 19 - East Devon Towards Zero Carbon Development in the West End – Cabinet 12th May 2021 item 13 Towards Zero Carbon Development in the West End - Cabinet January 2021 – item 26; Towards Zero Carbon Development in the West End - Planning Committee March 2021 – item 8 Towards Zero Carbon Development in the West End, Cabinet Report September 2020 item 14 Zero Carbon Development in the West End, Cabinet Report July 2019 item 13 Cranbrook Heat Networks Detailed Feasibility Study Future Homes Standard Energy Security Bill Cranbrook Plan Inspector's Report Heat and Buildings Strategy Independent Assessment: The UK's Heat and Buildings Strategy - Climate Change Committee (theccc.org.uk) https://www.heattrust.org/

Link to Council Plan

Priorities (check which apply)

☒ Better homes and communities for all
☒ A greener East Devon
☒ A resilient economy

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1. Background and context

1.1 One of the unusual features of the West End of the District is the presence of two district heating networks. These are designed to meet all the heat and hot water needs of the buildings to which they connect. The first network (to serve Cranbrook/SkyPark) was negotiated in 2010 with 'heat on' being achieved in 2012 to coincide with the first new home

being occupied. A second network serving the Tithebarn/Monkerton/West Clyst area was agreed in 2015. As originally planned, together these two networks will serve approximately 8,000 homes and 2million sq ft of commercial space including Exeter Science Park when fully developed.

1.2 The decision to roll out district heating was part of a deliberate strategy to underpin the large scale delivery of low and zero carbon development. This avoided the need for gas boilers to be installed in individual homes. This was a farsighted decision, predating the national Heat and Building Strategy by over 10 years. This Strategy emphasises that ultimately, net zero will mean gradually, but completely, moving away from burning fossil fuels for heating. In their Net Zero modelling, the Committee on Climate Change showed that 18% of the UK's heat supply will need to come from heat networks by 2050 to reach net zero commitments, an increase from the current figure of 3%.

1.3 Cabinet has received a series of reports over the past three years regarding district heating. These reports have focused on proposals to decarbonise the network, culminating in a report to the November 2022 Cabinet to move forward with the interconnector project.

1.4 This report has been prompted by issues in relation to the operation of the Cranbrook network during December 2022. It details the circumstances around this 'outage' and what has been done to rectify the issue. The report then moves on to consider the wider strategic approach of the Council in terms of supporting the continued roll out of district heating networks.

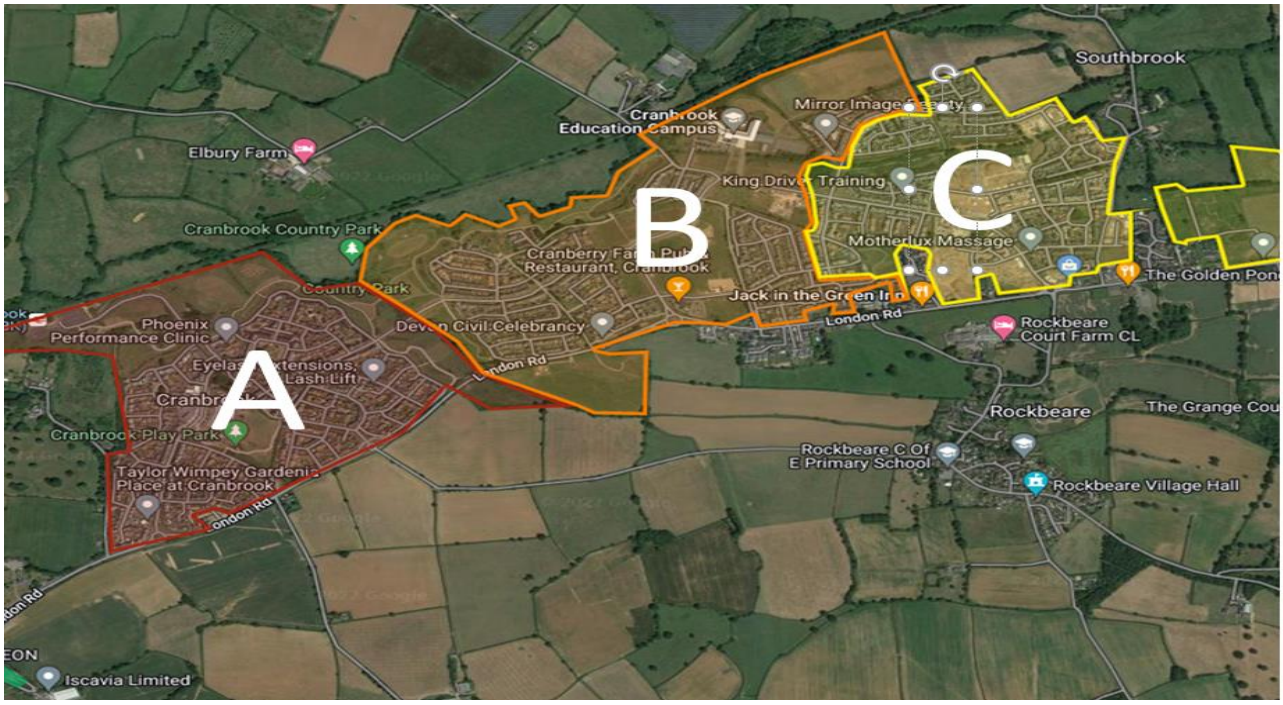
2. Cranbrook Heat Outage

2.1 There are currently around 3,000 occupied homes in Cranbrook which, with the exception of the nineteen homes being developed at South Whimple Farm, are each connected to the district heating network. Water is heated at the main energy centre at SkyPark and then distributed via a network of pipes. A Heat Interface Unit (HIU) in each house then plays the key role of transferring the heat, but not the water, from the main network in to the ordinary domestic wet system (radiators etc). As such the HIU acts as a heat exchanger, with the main network and the domestic system being hydraulically separated. Householders are then billed for each unit of heat that they consume with the price pegged to a basket of gas prices. The district heating network is a closed loop with the cooler water then returning to the energy centre to be reheated and redistributed.

2.2 Energy company E.ON own and operate the district heating network. This is on the basis of an 80 year concession agreement originally negotiated with the developer consortium for Cranbrook. E.ON are responsible for the Energy Centre and pipework as well as all of the HIUs. As well as pricing, the contract with individual households also covers minimum service standards. Residents can only purchase heat from E.ON and there is no opportunity to change provider.

2.3 A period of colder weather began on the 7th December with minimum temperatures dropping to freezing or below for the next 10 days. This prompted greater demand being placed on the district heating network. By the 9th December E.ON became aware that there was an issue affecting the heat supply to multiple households as the number of calls to their contact centre increased significantly.

2.4 Following engineer visits it became clear that the cause of the issue related to valves becoming stuck open in a particular make of HIUs. This effectively meant that hot water was bypassing the heat exchanger and then returning back to the Energy Centre. In total this affected 228 individual properties in Phases A and B of Cranbrook (see plan below).



2.5 As well as directly affecting individual households the nature of the issue then had knock on implications for the operation of the wider network. Essentially too much hot water was simply being returned directly back to the main energy centre. This caused wider issues of heat starvation which impacted a further 68 households in phases A and B. To bolster the heat supply in this area E.ON redirected heat from a temporary energy centre used to supply new development to the east of the town centre (Phase C). This then caused wider issues for this area with 196 households experiencing intermittent heating and hot water.

2.6 To rectify the issue E.ON began a programme of replacing the stuck valves. This began on the 8th December and was completed on the 18th. Alongside this the Eastern Transmission Main was commissioned on the 15th December. This was a pre-planned infrastructure improvement that had been under construction for 8 months. It is designed to provide a bulk supply of heat direct from the main energy centre at SkyPark to the town centre and development to the east of this. This effectively bypasses parcel A and the majority of parcel B and has the effect of making the overall network more resilient as well as negating the need for temporary energy centres to serve the eastern wards development areas.

2.7 The maximum period that a household was without heat/hot water was 9 days but the average was 1 day. This is clearly an unacceptable level of service. In recognition of this a meeting was convened on the 19th December which included Director level representation from E.ON, Simon Jupp MP and six Cllrs (three ward members together with the Leader and portfolio holders for Coast, Countryside and Environment and Strategic Development, Sustainable Homes and Communities. A series of questions were posed in advance of the meeting ranging from what had caused the issue through to customer service and compensation arrangements.

3. Current position and learning points

3.1 The current position is as follows;

- All households have had heat/hot water from the 18th December at the latest
- All affected households received financial compensation before Christmas, credited to their accounts and commensurate with the period of interruption.

- In total 1,722 households have been compensated. In addition to the households identified in paragraphs 2.4 – 2.5 above this includes a further 1,224 households where service was disrupted for a period of less than one day.
- E.ON are undertaking a root cause analysis of what caused the valves to stick
- A review of the customer service response is also being conducted

3.2 A customer evening was held on the 25th January and was attended by 66 residents alongside representatives from the Town Council. The events surrounding the December outages were discussed and four help desks were also available to help resolve any individual customer issues. A wide range of issues were raised including billing, metering and servicing as well as in relation to the wider customers experience such as the time taken to answer phone calls. There was a commitment to hold a customer service workshop with local residents in order to help address the feedback and to develop tangible solutions/improvements.

3.3 There are some immediate learning points arising from the events in December;

- The efficacy of the system, and ultimately the strategy for supporting the delivery of low and zero carbon development, rely on the ability to meet the day to day needs of residents
- Unlike with individual gas boilers, issues can escalate from the individual household level to impact a wider range of residents at a community level
- In turn there is a need for a holistic, system level response that considers a variety of issues ranging from communication through to customer service and preventative maintenance.
- The customer service team failed to respond adequately and had to be supported with local intervention by a ward member who relayed customer reports to the local team. It is not only the performance of the network that is at issue but the performance of the company in failing to respond adequately to the event
- There is an opportunity for closer collaboration between key stakeholders to improve the experience of residents

3.4 In relation to the last point it is a specific recommendation of this report that a new group is formed to provide greater oversight and accountability for the operation of the two networks in the District. In addition to representation from EDDC and E.ON it is considered that this should include the following stakeholders;

- Cranbrook Town Council
- Broadclyst Parish Council
- Devon County Council
- Exeter City Council
- Local MP
- Relevant developers
- Exeter Science Park Company

3.5 The precise Terms of Reference for this group will need to be agreed but it is anticipated that meetings should initially take place on a 6 monthly basis – ideally in September and March to coincide with the beginning and end of the colder seasons.

4 Strategic Assessment

4.1 In terms of the issues experienced by Cranbrook residents during December it would be easy to compartmentalise these as purely contractual issues to be resolved between the householders themselves and E.ON. But having played a key role in helping to secure the district network at the outset and with a strategic policy approach of continue to roll this out to the Cranbrook expansion areas, this issue is still clearly within the purview of the Council. At the very least the Council has a moral responsibility to help ensure that the operation of the network meets the needs of residents.

4.2 This is also a strategic issue for the Council given that the bulk of the new housing supply in the District will be connected to district heating. Furthermore the Council's role is expected to evolve such that it has more of a direct stake in the successful operation of the network. The procurement of the interconnector project, which will enable a bulk supply of low carbon heat, began last month in this respect. A bid has also been submitted to the government's Green Heat Network Fund which is seeking just under £7m to help enable the continued roll out of district heating to serve the Cranbrook expansion areas – a further 4,000+ homes.

4.3 There is a question as to whether the events in December represented a one off and unpredictable incident, a so called black swan event, or are emblematic of wider systemic failure. Certainly local residents would point to repeated issues over the years when the first cold weather event hits. The December issues were specific to Cranbrook but there have been subsequent reports of other outages both in Cranbrook itself and affecting the network serving the Tithebarn/West Clyst area. Whilst in at least one instance the cause of the outage was beyond the control of E.ON (a power cut) it nonetheless adds to the impression that there is a general lack of reliability and resilience.

4.4 It is also clear that E.ON are taking their responsibilities to resolve the issues highlighted in this report extremely seriously. This includes organising the further public meeting with local residents to address any outstanding concerns. It is vital that the key learning points identified above are acted upon. The credibility of the Council's strategic approach to supporting the delivery of low and zero carbon development in the West End ultimately hinges upon the successful day to day operation of both networks. The proposed twice yearly stakeholder meetings will provide a forum for formally reviewing progress and ensuring greater accountability in this respect.

4.5 Heat networks are currently unregulated at a national level. Any codes of practice and other arrangements in place to date, such as through the Heat Trust, have been entered in to on a purely voluntary basis. The government has committed to Ofgem becoming the regulator for heat networks through the passage of the Energy Security Bill. This will include service standards and price controls. But Ofgem's role is not likely to start for a further 18 months. The proposed six monthly meetings will enable greater scrutiny in the intervening period. The need for continued local oversight is likely to continue to be important going forward. As such there can be a combination of formal national regulation and greater local scrutiny.

4.6 As part of the wider discussions with E.ON it became clear that there were also concerns around the potential position for district heating customers following the end of the Energy Bill Relief Scheme in March of this year. E.ON are advocating a follow on support package from April 2023 that would provide equivalent financial support for domestic consumers on heat networks to that received by domestic consumers on the gas grid under the Energy Price Guarantee (EPG). The National Housing Federation is also campaigning on this matter currently. This is an area where we can work with E.ON and the local MP to lobby central government. It is a further recommendation of this report that a letter is sent to the relevant Minister to set out the case for ongoing and equivalent support for district heating customers.

5 Future Strategy

5.1 Given the events in December it is important to question whether the Council's strategy of supporting the achievement of low and zero carbon development through the continued roll of district heating networks is still robust. With the first major planning application for a Cranbrook expansion area due to be considered by Planning Committee in the first quarter of this year, this is an approach that will be tested immediately.

5.2 Policy CB12 of the Cranbrook Plan requires all new housing to be delivered to a net zero standard. This target is both more demanding than the national Futures Homes Standard, which is likely to require only 75% carbon reductions as opposed to 100%, and is being introduced more quickly (the Future Homes Standard is not due to apply until 2025). This policy approach speaks to the long held ambition for Cranbrook to develop as an exemplar in terms of low and zero carbon homes.

5.3 The continued roll out of the district heating network underpins this approach and is intended to provide the bulk of the required carbon savings going forward. The Council's planned investment in the interconnector project has the potential to save around 17,000 tonnes of carbon in this respect. Indeed if the approach of requiring district heating had not been pursued at the outset each house would instead have had a gas boiler installed. The first homes are now reaching the point where these boilers would be coming to the end of their operational life, likely to be replaced like for like with another gas boiler.

5.4 It is important to question whether it would be possible to meet the zero carbon policy standard through other means rather than sticking doggedly to an approach predicated upon district heating. This would likely require the installation of air source heat pumps in individual homes which would then become the responsibility of individual householders to own and maintain. There are issues that would need to be addressed to enable this approach, including bolstering the capacity of the local electricity network.

5.5 Is now the time to change approach? In the author's opinion the answer to this question is no. The Council has invested considerable time and effort to create a position whereby in both policy and investment terms the continued roll out of district heating should provide the most effective pathway to achieving zero carbon development. Not only this but the proposed social fund arising from the investment in the interconnector project will also provide a dividend for the wider community that would simply not be possible with a house by house approach alone.

5.6 This is not to ignore the imperative that the system operates both effectively and efficiently. The forthcoming regulatory role for Ofgem will provide further safeguards for district heating customers in this respect. Indeed the government's overall approach to supporting the roll out of district heating networks in terms of the interplay between policy, regulation and financial support is particularly coherent. This includes proposals for forthcoming Heat Network Zones which will identify areas that are specifically suited to the roll out of districting heating networks. Exeter is one 28 Cities that have been selected to pilot this approach. Given that the Monkerton/Tithebarn/West Clyst network straddles the M5 this provides an opportunity to create a heat network zone that covers the West End of the District. Officers have been in discussion with the City Council and BEIS appointed consultants as to the potential coverage of such a zone, including in relation to the potential for a second new town.

6. Conclusion

6.1 The heat outages that occurred in Cranbrook in December led to an unacceptable level of service for a significant number of households. Whilst there is no direct contractual locus over the operation of the networks, the Council nevertheless has as a minimum a moral obligation to help ensure that both networks perform as intended. The proposed forum is intended to achieve a greater level of scrutiny and oversight in this respect that can complement forthcoming national regulation.

6.2 The issues that occurred in December severely impacted a large number of households. The priority moving forward needs to be on ensuring that these don't recur and that overall the networks become more resilient. Whilst deeply regrettable, this event is not considered to warrant moving away from the overall strategy of continuing to promote the roll out of district heating to underpin the large scale delivery of low and zero carbon development.

Financial implications:

There are no direct financial implications from the recommendations in this report.

Legal implications:

There are no legal implications other than as set out in the report.