

## Bicester Strategic Delivery Board

<b>Date of meeting: 18 October 2018</b>	<b>AGENDA ITEM NO:  3</b>
<b>Report title: Heat Network Feasibility Study Report</b>	
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### 1. Purpose of Report

- 1.1 This report provides a summary of the feasibility investigation of a heat network connection from Ardley Energy from Waste (EfW) facility to the NW Bicester Eco-town development.

### 2. Background

- 2.1 In October 2013 the Department of Energy and Climate Change (DECC) announced the £7m Heat Networks Funding Stream and the creation of the Heat Network Delivery Unit (HNDU). Cherwell District Council successfully applied to HNDU for round 1 of the funding (which was matched by Cherwell DC and Oxfordshire CC).

- 2.2 The objectives of the first study was to conduct a high level feasibility study of the technical and commercial viability of developing a heat network within Bicester, with specific reference to the Ardley EfW. The findings of the initial report indicated that a potential single heat network was most viable for the 6000 home development of NW Bicester, with key details:

- 12.5MW of supply available from Ardley EfW
- 5.3km of transmission pipe length and 48km of distribution pipe length
- £43.3m CAPEX phased over 28 years with revenues between £56 - 73m
- IRR's between 3.2-8.6%

- 2.3 The economic results for this project are heavily dependent on a number of factors. The internal rate of return (IRR) for the project is presented as a range which reflects the sensitivity of the proposals to key parameters and assumptions. As a next step more engagement with the key stakeholders (EfW operator Viridor, SSE, who operates the existing heat network, and the developers P3ECO and A2Dominion) was needed.

- 2.4 In 2016, with further development of the NW Bicester site expected imminently, Cherwell District Council successfully applied to HNDU for round 5 to conduct a more thorough investigation of the feasibility of a heat network at NW Bicester. Ramboll UK and Energy Directions were appointed as consultants to conduct the study which started in October 2016. The key outputs for this study were as follows:
- Refinement of the pipe route length with an indication of a hard or soft dig

## Bicester Strategic Delivery Board

- More detailed analysis of the heat off-take from Ardley EfW in conjunction with Viridor
- Detailed exploration of key technical barriers to include safeguarding and futureproofing
- Detailed Negotiations with project partners
- Refinement of the financial model including elements in more detail (business rates, insurance, corporation tax, etc.)
- Review of the demand assessment on NW Bicester and future phasing elsewhere
- Validation of the business model to understand potential CDC involvement in the potential investment
- Develop, maintain and refine a key risk register for the project
- Creation of template agreements (Heads of Terms, Memorandum of Understandings, etc.)

Many of these outputs are interdependent upon each other and as a result should not be viewed in isolation.

### 3. Key Findings

- 3.1 The original completion deadline of April 2017 was delayed due to the need for gathering as much information as possible from project partners. Completion of the study without this key information would not have progressed the potential scheme significantly further than the previous study completed in February 2016.
- 3.2 Unfortunately one of the key stakeholders, A2Dominion's, planned timescales changed during the course of this project and subsequently were not at an appropriate stage to engage in detailed commercial discussions relating to heat offtake. Subsequently this had a knock on impact on the ability to conduct commercial discussions with other stakeholders which limited the scope of the study. Due to budget constraints this project needed to be finalised in April 2018.
- 3.3 Of the original key outputs only two were not able to be fully achieved which were; refinement of the financial model and validation of the business model. These are key to taking any work forward.
- 3.4 It has been clarified that the preferred approach of the developers would be to operate each developments own, potentially independent, heat network which could draw heat from a transmission pipeline connecting these heat networks to the Ardley EfW. As a result the opportunity was scaled accordingly and key details are as follows:
  - Total revenues of £21m over 40 years
  - CAPEX of £9.7m
  - Project IRR 3.93%
  - Optimum construction in 2023

## **Bicester Strategic Delivery Board**

- 3.5 It should be noted that the lifetime of the project being 40 years would potentially require an alternative heating solution to the EfW, as the contract for the Energy from Waste plant with Oxfordshire County Council is only guaranteed for a minimum of 22 years of the project and is a significant risk.
- 3.6 During this process more detail has been forthcoming on the Heat Network Investment Project (HNIP). HNIP is a capital investment programme under the Department of Business Energy and Industrial Strategy running through to 2021 in order to provide grants, loans and other financial mechanisms to potential heat networks which would otherwise not be viable. This has direct relevance to this project with its low IRR's and would likely be eligible for this support mechanism in order to provide a failsafe mechanism and boost its commercial viability. The HNIP main application is expected to launch in Autumn 2018 and will be a competitive process with finite timescale for spend on projects to be incurred.

### **4. Conclusion**

- 4.1 The detailed work that has now been done on the potential to use heat from Ardley EfW has shown that it is technically feasible and there is sufficient heat. It could also be viable but the current modelling shows that variation in the model inputs has a significant impact on this. There is a challenge in connecting a primarily residential scheme to a heat network as such developments build out over varying time scales and interim measures may be required until there is sufficient demand to justify the investment in a heat pipe and infrastructure. It has also been evident that there is not universal enthusiasm among potential parties to a heat offtake from Ardley and to pursue a scheme. This increases the risk of pursuing a scheme at this time. Whilst the original concept of using waste heat remains sound, the current work has not provided a clear route forward. In the future it may be that circumstances of the potential heat users could change or a scheme could become more attractive than it is at present.
- 4.2 Oxfordshire County Council retain responsibility for conditions attached to the planning permission for the plant that require the developer to explore the use of waste heat. To date reports have identified that it is not feasible and this has been accepted.
- 4.3 The opportunity for a heat network is still a possibility in the future and can be investigated once developers at NW Bicester are at an appropriate stage of progress with the development. Should this happen further investigation covering detailed commercial negotiations in order to develop an outline business case would need to occur for the project to progress. It is not proposed that the Bicester Team to take this work further at the present time.

### **5. Recommendation**

- 5.1 The Board is asked to note the findings of the report.