

## Chatham Low Carbon Heat Network Summary

### Aim

The aim of this document is to provide Medway Councillors and senior managers a summary of some of the information from reports and presentations from an external consultant, Greenfield Nordic group (henceforth known as Greenfield) which relate to a proposed Low Carbon Heat Network (LCHN) in Chatham.

### Introduction

A LCHN in Chatham has the potential to save c. 8,000 tonnes of carbon dioxide per year<sup>1</sup> over an estimated 40-year average lifetime [1]. This will significantly contribute towards Medway's commitment to be Net Carbon Zero by 2050 and ties in with the Kent and Medway Energy and Low Emissions Strategy (KMELES) being one of the few projects that targets borough-wide reductions (part of the Scope 3 emissions).

Greenfield, a consultancy company with expertise in energy and sustainable projects and businesses was awarded a procurement to produce a feasibility study for a LCHN for Chatham in June 2021. This study was partially funded by the Heat Networks Delivery Unit (HNDU), which is part of the Department for Business, Energy & Industrial Strategy (BEIS). The UK Government has provided valuable input to the study via the BEIS and through Local Partnerships, the Project Managers and Quality Assurance partners.

### Chatham Low Carbon Heat Network – Description

A heat network is a distributed system of pipes that take heat from a central source (or sources) and deliver it to multiple consumers, rather than each site/property having its own heating source. Greenfield's preferred solution uses the River Medway, which provides good access to a significant renewable heat source, using Water Source Heat Pumps (WSHP) as seen in Figure 1 [2].

Greenfield describes the WSHP in their report as follows: "WSHPs operate by taking 'ambient' heat from a water body and upgrading it to useable temperatures (for individual buildings or heat networks). The WSHP system will include a heat pump unit (or units) and a water pumping system which may be housed within the main Energy Centre (EC) or in a separate pumping station close to the water source. Water abstraction and discharge pipes are required in both cases." [2]

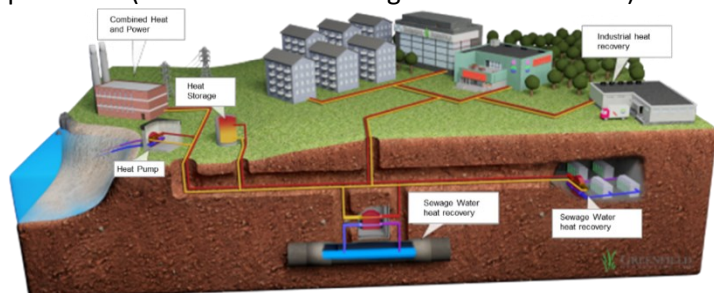


Figure 1: A schematic of a heat network. [1]

<sup>1</sup> The carbon outcome is variable and depends on the final project scale and technical optimisation (since the system design is currently optimised to limit grant support required)

Due to the significant amount of funding to be leveraged and work required (energy centre(s), heat network pipework and property connections), this is a medium-term project. It is expected that it would take approximately four years to complete the network [1], including planning and construction.

Currently the project has completed the Techno-Economic Feasibility phase (TEF). If successful, the next phase will be the Detailed Project Development (DPD) phase (costs detailed below), which would be consultant-led and take 9-12 months [1]. It would incorporate an Outline Business Case (to a HM Treasury template) which will:

- Address the key risks;
- Conduct soft-market testing;
- Resolve the delivery and commercial strategy.

## Risks and Benefits

Greenfield have highlighted the following risks [full details in 2], which are usually closed as part of the DPD process:

- The location of the primary energy centre needs to be confirmed;
- Abstraction and discharge licensing of water from the River Medway are required;
- Securing consumers ahead of the implementation of a national heat network zoning arrangement to provide confidence in the investment case is required;
- All aspects of the heat network construction may be impacted by conservation/archaeological constraints;
- Any heat network scheme will require sufficient resources and expertise to take it through the business planning and commercialisation phases. This can be delivered directly by Medway Council or perhaps through a partnership arrangement with a heat network developer (although the latter presents the risk of restricting competition from the heat network developer market). Note that Medway Property and Capital Projects prefer the latter option for capacity reasons.

Greenfield have highlighted the following benefits of proceeding with the LCHN in Chatham:

- An expected reduction of up to 8,000 tonnes of carbon dioxide per year, based on the scale and design assumptions used [2];
- Providing a ~5% to 10% Internal Rate of Return (IRR) for a period in excess of 25 years without the need of any Capital Expenditure (CAPEX) investment [2,3];
- Social value such as local jobs and significant inward investment and local revenue opportunities (~£45m) [1].

## Costs and input required from Medway

Authorise budget [1, slide 20] to contribute to the cost of the DPD study:

- BEIS would be funding 67% of the technical consultant cost + 100% of external project management cost. An application to the Heat Network Development Unit (HNDU, part of BEIS) would be submitted at the start of financial year 2022-23.
- Match funding will contribute to the DPD study will need to come from the Council. [3]

**Council / stakeholder funding required for the DPD phase is between £50k - £60k.**

## References

1. Chatham Maritime Low Carbon Heat Network (presentation), Greenfield, delivered 17<sup>th</sup> December 2021
2. Chatham Maritime Heat Network Detailed Feasibility Study (report), Greenfield, November 2021
3. Email from Local Partnerships to various recipients, 17<sup>th</sup> Dec 2021 14:18