



HEAT NETWORKS: 2023 Q3 PIPELINE

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INTRODUCTION

This publication by the Department for Energy Security and Net Zero (DESNZ) brings together heat networks investment opportunities in England and Wales. The opportunities present a wide range of projects supported through the development stages by the Heat Networks Delivery Unit (HNDU), projects seeking capital support from the Heat Networks Investment Project (HNIP) and projects that have applied to the Green Heat Network Fund (GHNF) Transition Scheme.

The publication includes a list of one-page summaries for each of the heat network projects supported by DESNZ, which set out details of HNDU, HNIP and GHNF projects, where projects have provided enough detail in time for publication.

For GHNF, this represents projects that have applied for GHNF Transition Scheme funding and which have given us permission to publish. If you would like to get in touch with the project please liaise with the DESNZ GHNF team (ghnfcorrespondence@beis.gov.uk)

For HNIP, this represents projects which have submitted at least a pre-application to the Delivery Partner, Triple Point Heat Networks Investment Management (<https://tp-heatnetworks.org>), since the scheme opened in February 2019. As a number of the projects are at different stages of development some of the costs aren't currently available or will be subject to project consent¹ and change as they progress through the project lifecycle.

The following chart shows the 2023 Q3 Capex pipeline of HNDU and HNIP projects from early stage development through to construction.

For questions relating to the HNIP pipeline or scheme enquiries, please direct these to enquiries@tp-heatnetworks.org. For questions relating to the HNDU pipeline opportunities please direct these to HNDU@energysecurity.gov.uk FAO: FAO HNDU

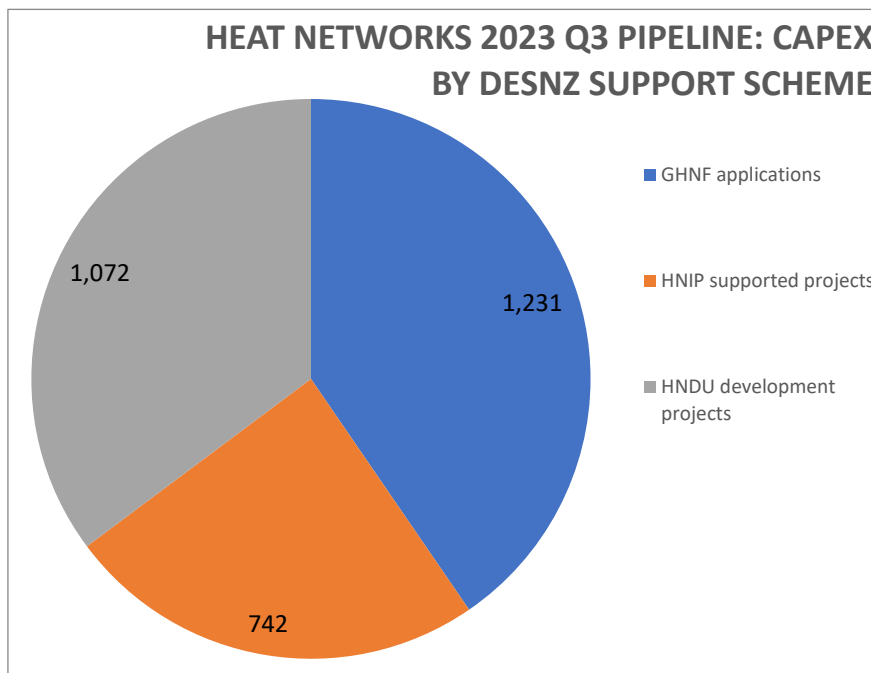
Department for Energy Security and Net Zero also publishes a quarterly Procurement Pipeline which can be found on the same webpage (<https://www.gov.uk/government/publications/heat-networks-pipelines>) and provides information about upcoming procurement opportunities on heat networks projects supported by government funding and HeatNIC members. Government funded projects will undertake Market Transformation Commitments (MTCs) which aim to increase project and procurement visibility, encourage best practice in procurement,

¹ Projects seeking HNIP funding can choose between three consent levels for the purpose of this application, full consent, limited consent and aggregated data only:

- "full consent" level will include all project information listed in the "Heat Networks Project Pipeline Summary" one-pager,
- "limited consent" keeps commercially sensitive data, such as financial information, confidential, and
- "aggregated data only" will only include projects in the Pipeline chart and applies to all projects as part of the application process.

support diversity in the heat network supply chain and new entrants. HeatNIC members have pledged to share data from their projects, with upcoming procurements, to give a better idea of the size of the market. The Procurement Pipeline shares additional information on the project design and procurement plans on these upcoming projects, and in doing so complements this pipeline.

2023 Q3 Active Capex Pipeline: £3,045m of which £1,231m relates to GHNF supported projects, £742m relates to HNIP supported projects and £1,072m relates to HNDU projects that are in development:





GHNF APPLICATIONS

Aire Valley Heat & Power

Project Sponsor:

SSE Heat Networks Ltd

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed

Total capex (£m)	Not disclosed
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Annual heat demand (GWh)	57.45
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	SSE Heat Networks Ltd
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

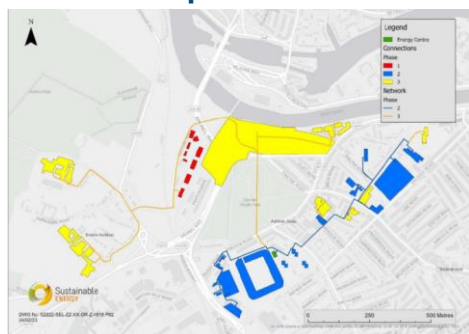
Efw energy offtake. Two linked phases of heat supply and private wires. £25m capex / 54GWhth pa / 86GWhe pa. Commercialisation 2022 with 2nd stage procurement H2 2022. Construction 2023. Efw heat on H2 2025. Please see Programme.

Ashton Gate Heat Network

Project Sponsor:

Bristol Heat Networks Limited

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	Not disclosed
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

2023	2024	2024
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Project Contact Details:

Organisation:	Bristol Heat Networks Limited
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

Project consists of: commercialisation (£819,632); phase 1 - connection of City Gateway new development and commencement of main EC (£4,934,496, 1.142 GWh); and phase 2 - connection of 16 further connections including new development and local authority owned buildings (£5,558,308, 6.977GWh). City Gateway needs first heat in June 2024 to meet their development schedule. Phase 2 would be connected by end of 2025. We are developing a procurement strategy for the whole Bristol heat networks portfolio, which will be applied to Ashton Gate. This includes the use of existing Vattenfall frameworks for certain elements, such as design. We expect to have one O&M contractor, which will be openly procured, servicing the whole portfolio. For construction we will let one or more contracts openly. We will be running supply chain events for Bristol as a whole. Our approach will seek to encourage companies to invest in growth and in local employment on the back of visibility of the heat networks pipeline in Bristol. The Ashton Gate network will feature in all such activity. Ashton Gate has been subject to feasibility work and discussions with Bristol City Council and proposed connections as part of Bristol City Leap.

Greenwich Peninsula ESCO District Heating Network Decarbonisation

Project Sponsor:

Greenwich Peninsula ESCO Ltd

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	8.37
Pipework / distribution capex (£m)	10.07
Other capex (£m)	0
Total capex (£m)	18.43

Annual heat demand (GWh)	31.78
Project IRR*	10%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2024	2025

Project Contact Details:

Organisation:	Greenwich Peninsula ESCO Ltd
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

Greenwich Peninsula (GP) ESCO and Greater London Authority (GLA) has carried out an assessment of decarbonisation options for the network, to decarbonise the scheme by deploying a 5 MW heat pump which will provide the networks low carbon heat supply up to 2035 at which point a connection into the wider RBG network is planned to take heat from several different sources such as EFW and WSHP in the old Greenwich Power Station. As such the GP ESCO is now progressing this GHN application to make the retrofit of the ASHP to the scheme commercially viable.

The required project hurdle rate is [10%] which we consider to be at the low end of the returns required to attract infrastructure investment to district heating projects. The total CapEx for the project is [£19,177,657] of which the grant covers 24% with the remaining funded by GP ESCO. Therefore this GHN funding application for [£415,000] commercialisation funding and [£4,350,000] construction funding is for the deployment of a [5MW] Air Source Heat Pump (ASHP) onto the part developed Greenwich Peninsula (GP) ESCO Energy Centre (EC) as well as the further expansion of the network in a decarbonised manner.

Submit GHN application 25/05/2023

GHN clarification period 25/05/2023-27/07/2023

Commercialisation period 28/07/2023-07/09/2023

Detailed Design and Procurement – 28/07/2023-30/05/2024

ASHP Construction and Commissioning – 31/05/2024 – 05/09/2024

Distribution Network Build Out (that included in Application period) – 2025 - 2035

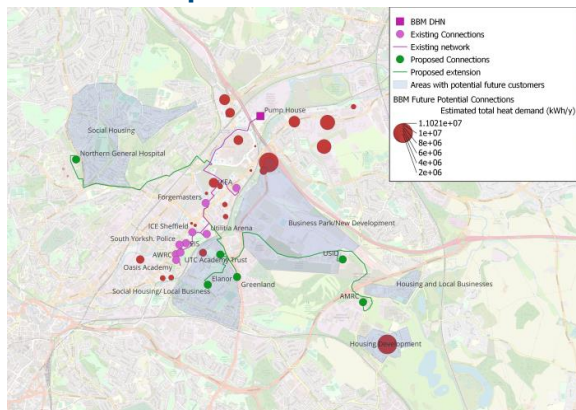
Please refer to the TEM file shared in section 1.06 for the spend profile and GWh profile.

Blackburn Meadows Heat Network Expansion

Project Sponsor:

 E.ON UK PLC

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	32.55
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2024	2024	2026

Project Contact Details:

Organisation:	E.ON UK PLC
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

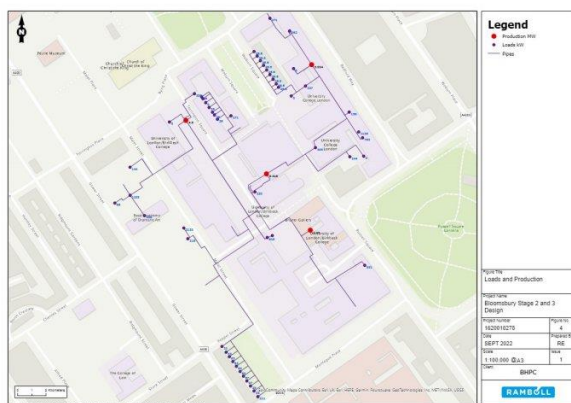
E.ON's Blackburn Meadows biomass power plant, located in Sheffield, is a combined heat and power plant that became fully operational in 2015. It uses local recycled waste wood sourced locally to generate 30MWe electricity and 25MWth thermal energy. The existing 8km of district heating network supplies commercial connections within the Lower Don Valley region. The proposed project sees the network extend by an additional 10km to supply the University of Sheffield at their Innovation District and Advanced Manufacturing Research Centre, and along that route Sheffield City Council's Darnall estate which is currently supplied by a gas led district heating network. The route is also being extended to the north, to supply the Northern General Hospital. The extended network will open up a wealth of further opportunities including 10k social and council homes around the Northern General Hospital, plus a wealth of commercial businesses along the route to the new University sites. E.ON are also working proactively with Sheffield City Council and DESNZ on the advanced heat zoning programme which will be proactively looking at how we create a bigger heat zone around Blackburn Meadows. This application is for both commercialisation and construction funding and procurement will commence following commercialisation and customer contracts signed. The total CAPEX is £37.8m, with the first heat on in January 2026 and final heat on in December 2026. The additional known connections are worth 33GWh per year.

Bloomsbury Energy Network

Project Sponsor:

UoL

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	12.79
Pipework / distribution capex (£m)	5.16
Other capex (£m)	0
Total capex (£m)	17.94

Annual heat demand (GWh)	16.8
Project IRR*	4%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2024	2025

Project Contact Details:

Organisation:	UoL
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Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

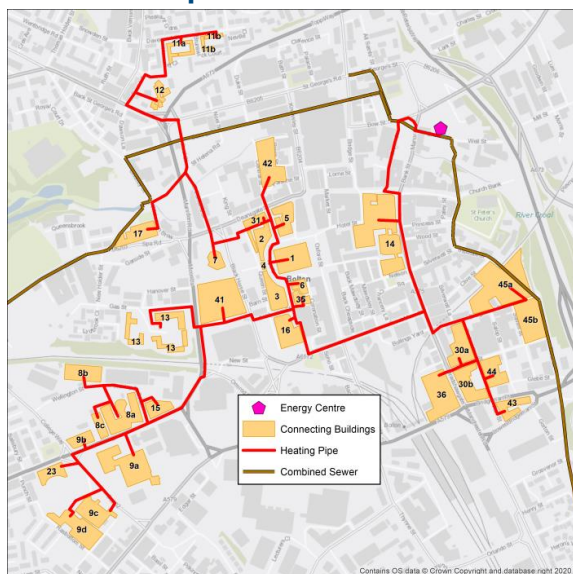
This £18.9m project comprises refurbishment and replacement of the existing Bloomsbury Heat and Power decentralised energy scheme, which serves the southern half of the Bloomsbury campus in central London. The current scheme consists of gas CHP engines more than 20 years old, gas and oil-fired boilers more than 50 years old, and distribution pipework, some of which is over 80 years old. The technology will be replaced with low carbon air source heat pumps (ASHPs), with construction starting in 2024. The project is currently at commercialisation stage. The heat network will be owned and operated by a Consortium-owned SPV, comprising UCL, UoL and SOAS as shareholders. First stage of main contractor tender will take place in June/July, with the ITT process taking place from July to November. A principal Contractor appointed by the end of 2023. The Contractor will take over the operations and maintenance of the existing network during a transition phase between the old and new networks. Phase 1 of the scheme starts in September 2025, following £17.0m of investment into heat network infrastructure, delivering an initial 15.6GWh/year. Phase 2 starts in April 2028, following an additional £1.9m investment, delivering cumulative 16.5GWh/year. The third and final phase starts in April 2029, following a further £0.5m investment, amounting to a total heat delivery of 17.0GWh/year. In addition to the total £18.9m investment in heat network infrastructure, there will be an associated £16.1m investment in HV upgrade infrastructure to enable the heat network, along with £2.3m in capitalised financing costs.

Bolton District Heating Network

Project Sponsor:

Bolton Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	18.29
Pipework / distribution capex (£m)	15.06
Other capex (£m)	0
Total capex (£m)	33.35

Annual heat demand (GWh)	23.27
Project IRR*	10%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2024	2024	2026

Project Contact Details:

Organisation:	Bolton Metropolitan Borough Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

The Bolton District Heating Network is proposed to serve 23 offtakers across 33 buildings and developments, comprising 23.3 GWh of annual heat demand. The project will be delivered in a single phase, at a CapEx value of £33million, and will rely on heat extracted from the combined sewer running through the east of Bolton town centre, supplemented by air source heat pump capacity, as well as gas boilers for peaking and resiliency.

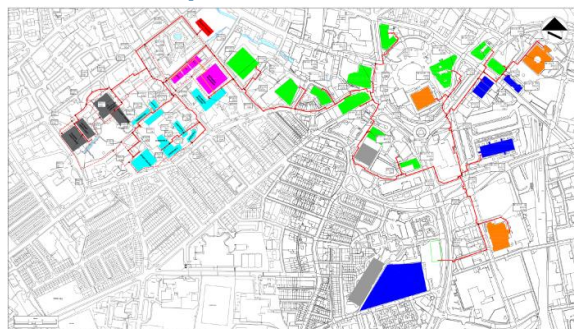
If the project's Application to GHNF is successful, the project team expects commercialisation to commence immediately (circa August 2023), and be undertaken over a 12-month period. Construction works are therefore expected to commence in Q4 2023 and be complete by Q4 2025, for a heat on date of 2026. The Procurement process will begin in circa November 2023 and will be conducted via Clear Futures, with whom Bolton Council already have an ongoing arrangement, which provides an effective mechanism for public sector bodies to deliver sustainable projects at an accelerated rate. They are able to do so via their pre-procured supply chain.

Bradford Energy Network (BEN)

Project Sponsor:

Bradford Energy Limited

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	45.15
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2023	2025

Project Contact Details:

Organisation:	Bradford Energy Limited
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

Bradford Energy Limited (a subsidiary of 1Energy) plans to build a low-to-zero carbon (LZC) heat to 34

non-domestic buildings and a new residential development (35 connections). Potential anchor customers include the University of Bradford, Bradford Council, Bradford College, the National Science and Media Museum, Alhambra Theatre, and the Bradford Live entertainment venue.

Heat will be generated by possibly the UK's largest air source heat pump (ASHP) installations (7.5MWth), coupled with 250m³ of thermal stores, and 24.8MWth of back-up gas boilers. The diversified peak heat demand is 20.8MWth. The ASHP will deliver 87% of the 37.8GWhth annual heat demand. The heat network is circa 5.5km to be installed primarily in public highways. The capex for phase one is £40.4m (not including £1m commercialisation).

Key Milestones

-Planning application submission: Nov 2022 – Aim to secure within 3-4 months. Procurement to run concurrently with the Planning Application, delivery contractor award in March 2023.

-RIBA stage 3 design: late 2022.

-Financial close: March 2023.

-Construction in Summer 2023 - running for 27 months.

-Operational phase: Early 2025.

-First and last property connected in March 2025 and October 2025 respectively.

-O&M and M&B contractor awards during the construction phase, likely Autumn 2024.

Our approach to procurement aligns with the MTC objectives, we have engaged the supply chain early as part of our initial capex pricing exercise for the purpose of this application, and defined our build and operations procurements as described in response to PS3.

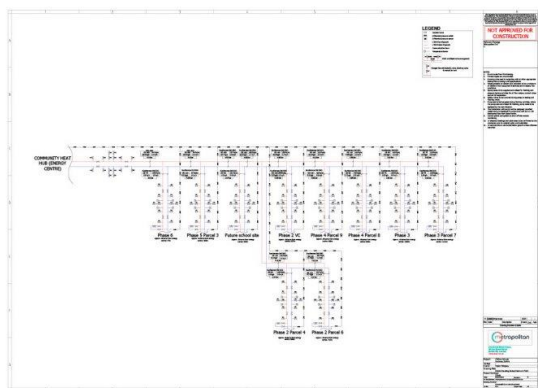
Current status - following receipt of commercialisation funding in the Transition phase, we have progressed the design of the project to RIBA stage 2-3. Customers have been engaged, and Letters of Intent signed. We have progressed the project to a level where the project is ready to receive GHNF commercialisation and construction funding.

Chilton Woods, Sudbury

Project Sponsor:

GTC Infrastructure Ltd

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	2.34
Pipework / distribution capex (£m)	3.46
Other capex (£m)	0
Total capex (£m)	5.81
Annual heat demand (GWh)	4.99
Project IRR*	>10%

* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	GTC Infrastructure Ltd
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

The project is a low density new housing development being built in Suffolk. It comprises of 890 residential properties and a school which will be built out over 6 years commencing in 2023. The development will be served by a low temperature heat network comprising of a highly insulated plastic network, an energy centre and heat interface units. The energy centre is fully electric and consists of two air source heat pumps, backup electric boilers and thermal stores.

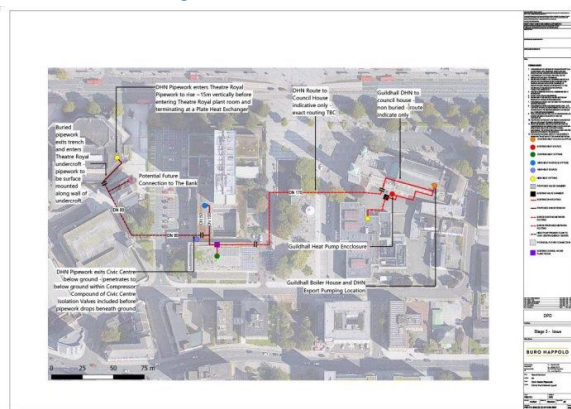
The total capex for the project is projected to be £5.4m and annual heat consumption will be 5.43GWhs. Construction of the heat network has already commenced with the energy centre installation planned for mid-2023. First properties are expected to connect in August 2023.

Civic Centre District Energy Scheme

Project Sponsor:

Plymouth City Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0.51
Pipework / distribution capex (£m)	2.23
Other capex (£m)	0
Total capex (£m)	2.73

Annual heat demand (GWh)	2.43
Project IRR*	>10%

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Plymouth City Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

This project will expand an existing Plymouth City Council heat network serving the Council House and Guildhall, to support the redevelopment of the

Civic Centre, which includes residential and commercial uses, but also to support decarbonisation of the Theatre Royal and Plymouth Combined Courts. The scheme will serve as potential enabling infrastructure for other nearby developments in the City Centre and Millbay.

The extension include installation of 480kW of additional ASHP capacity with associated gas boiler back-up to support decarbonisation of entire heat network. Reservation of space and installation of valved connections to facilitate the future extension of the network and the potential connection to a city-wide scheme

The project comprises a new energy centre, located in the basement of the Civic Centre, with the installation of (400kW) additional air source heat pump capacity and associated equipment, in addition to the air source heat pump already being delivered on the existing network at the Guildhall, to deliver a low carbon heat solution for the connected buildings. A reduction in carbon emissions from the redeveloped Civic Centre, Theatre Royal and Plymouth Combined Courts of at least161 t/ annum will be achieved against a gas counterfactual.

£2.68m Capex and total scheme annual heat demand of 2.4GHw/a (95.5GWh over 40 year modelled lifespan)

Phase 1: 2024 -2025 | Extension to Civic Centre | £0.91m | 1.87GWh/a |

Phase 2: 2025 -2026 | Installation of 400kW ASHP & Extension to Theatre Royal | £1.8m | 2.44GWh/a |

Phase 3: 2026 onwards | operation of network

Procurement approach: design and build contract with an operation, defects, and maintenance period to ensure performance of network

Current Status of project: the project is at the end of the detailed project development phase and moving into the commercialisation phase in early 2023.

Procurement start: procurement is due to start in Q2 2023 with the final business case sign off and contract award occurring in Q3 2023.

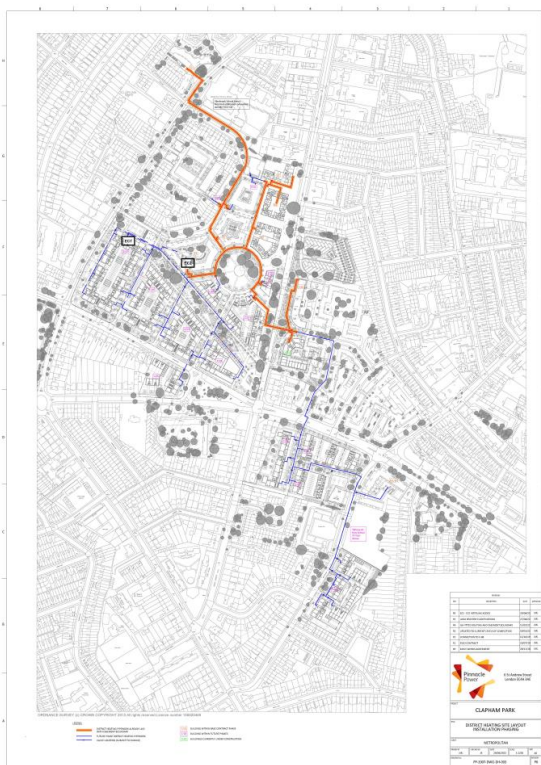
Milestones: Contractor Q3 & Q4 2023 | construction to begin Q1 2024 | Testing and commissioning in Q3 2024 | Heat on Q4 2024

Clapham Park District Heating

Project Sponsor:

PP Esco Clapham Park Ltd

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	Not disclosed
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

2023	2023	2025
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Project Contact Details:

Organisation:	PP Esco Clapham Park Ltd
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

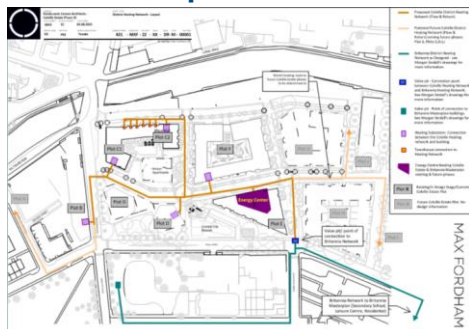
The Clapham Park development is major regeneration project in South London being Developed by MTVH. The development has an existing heat network owned, built and operated by PP ESCO (Clapham Park) Ltd, with some 569 homes already connected and is being built out to ultimately connect 3,347 homes and 16 community and business customers. The scheme has planning and works are underway and will continue through to 2032. The remaining heat network capex is forecast at £21.2m while the annual heat demand at full build out is forecast at 16 GWh. The main energy centre, including the decarbonisation works, is expected to commence on site Q1 2024 and compete Q1 2025. Procurement for these works is expected to commence September 2023. Some 3MW high efficiency CO2 ASHP capacity will be employed in conjunction with 100m3 thermal storage and electric and gas resilience capacity. The primary network is optimised to minimise heat losses and the new blocks being constructed have direct connections and minimal laterals the secondary network to achieve very low heat losses in the blocks.

Colville and Britannia District Heat Network (CDHN)

Project Sponsor:

London Borough of Hackney

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	7.35
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

2023	2025	2026
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Project Contact Details:

Organisation:	London Borough of Hackney
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

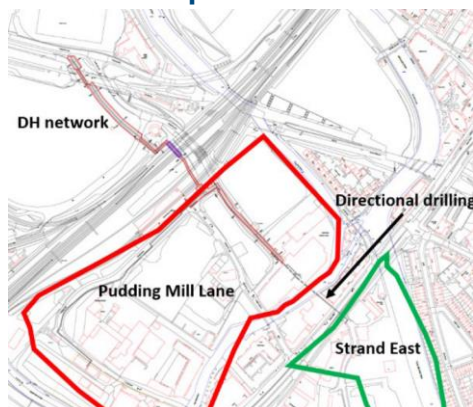
This application is for the Colville District Heat network under development by Hackney Council. The project will utilise air-source heat pumps - pivoting away from a previously CHP led scheme. The project will connect over 1400 homes, a leisure centre and 2 schools in the Hoxton area supplying 7.8GWh/yr of heat ; with the potential to expand to the wider Shoreditch area. The project requires a total investment of £13.38m. A DBOM contract will be procured to supply works and services to a LBH SPV. Procurement will commence in 2023 with construction beginning 2025.

East London Energy

Project Sponsor:

East London Energy Limited

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	2.7
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2022	2022	2023

Project Contact Details:

Organisation:	East London Energy Limited
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

The estimated capex for this project is c. £4.5m on extending the East London Energy (ELE) district energy network to the Pudding Mill Lane site and c. £2.8m on the heat pump installation.

The project will be delivered in one phase as it is an extension to the existing ELE district energy network, where the plots have been granted planning and are commencing construction imminently. The total heat demand for the base case is 2.7 GWh.

We envisage that procurement would commence in October 2022 and conclude in February 2023 with buried network, control panels and the civils element all to be procured. The heat pump will be procured in Q3 2022 to supply low carbon heat in Q1 2023, subject to lead in times. Construction of the network extension is due to start January 2023.

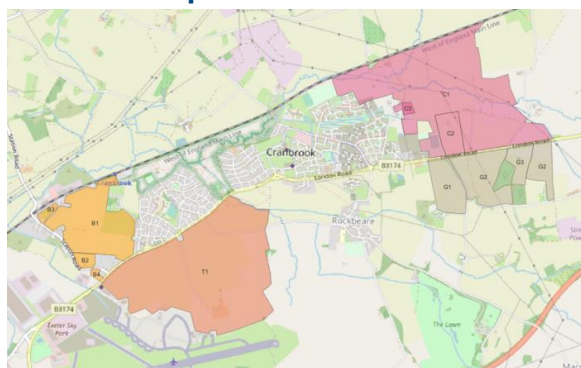
Anthology Phase 1 (75 units) is a live connection being supplied by a temporary gas boiler supply which was installed in 2020 and is operated by EQUANS under a bespoke ELE Connection agreement, that enables a switch to a permanent ELE supply when it is available. The remaining base case development plots, Anthology Phase 2 and Vulcan Wharf, have been granted planning based on a connection to ELE. These have all accepted offers of connection and a heat on date for these developments of June 2023 is targeted.

Cranbrook Heat Network Expansion

Project Sponsor:

East Devon District Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	21.88
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID **Constructi** **Heat On**
 on Start **(initial)**

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	East Devon District Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Waste heat recovered (no heat pump)

Project description:

Please see file "REF 1.8 Market Transformation Commitment" for a PDF format of our responses

The project is the expansion of the Cranbrook district heating network in East Devon, to supply heat to new development areas of an additional c4,500 homes and 24,500m² of commercial space including 3 new schools at Cranbrook new town. The project will benefit from decarbonised heat by connecting to an Energy from Waste facility (EFW) in Hill Barton via an interconnect pipe to SkyPark energy centre "The Interconnector Project". The interconnector will support the planned expansion of the Cranbrook new town through enabling the delivery of a Future Homes/Buildings Standard compliant energy solution. The project team have developed good working relationships with the Developers of the new homes and commercial spaces at Cranbrook as well as E.ON, the owner and operator of the existing network.

The project will be delivered by an ESCo. EDDC will act as broker and facilitate the procurement of the ESCo. The procurement will be carried out by the Cranbrook Developers. EDDC will maintain a level of influence, via a golden share approach, within the proposed commercial structure. Procurement Q2 2023, RIBA stage 3 design: Q1/2 2023.

Planning is already in place via the EDDC Local Development Order (LDO) for district heating dated July 2020.

The network length is c.98.6km, the total heat demand is 34.05 GWh/yr, the diversified Peak demand for the expansion area is 12.5MW. 96.9% of this demand will be met by three EFW units, and 3.1% from the existing gas CHP at Cranbrook Energy Centre. The total CHP heat capacity is 10.4MW.

Cranbrook Town Centre

Project Sponsor:

E.ON UK PLC

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0.79
Pipework / distribution capex	1.46

(£m)	
Other capex (£m)	0
Total capex (£m)	2.25

Annual heat demand (GWh)	1.19
Project IRR*	>10%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
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2022	2022	2023
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Project Contact Details:

Organisation:	E.ON UK PLC
Contact Name:	Rob Falcon
Email:	rob.falcon@kingston.gov.uk

Technical Information:

Primary energy source:

Deep geothermal

Project description:

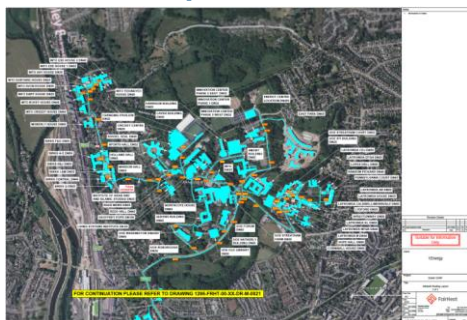
Installation of plant and district heat distribution main supplied from an EFW plant to connect 207 residential dwellings to an existing district

Exeter Energy Network

Project Sponsor:

Exeter Energy Ltd

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	36.33
Pipework / distribution capex (£m)	70.78
Other capex (£m)	0
Total capex (£m)	107.11

Annual heat demand (GWh)	88.25
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Exeter Energy Ltd
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

1Energy, with the full support of Exeter City Council and the Exeter City Futures team, is seeking to develop the Exeter Energy Network (EEN). A project specific Special Purpose Vehicle, Exeter Energy Ltd (EEL), will own and operated the EEN assets. The expected capital cost of the project is £108m and EEN will utilise 11.12 MW of Air Source Heat Pumps (ASHP), 9.57 MW of Water to Water Heat Pump (W-WHP), 2400m³ thermal stores, and 34.8 MW gas boiler backup / peaking to serve 39.87 MW of diversified demand at an average carbon intensity of 84.0 gCO₂/kWh over 15 years.

The EEN design has been progressed to RIBA stage 2.

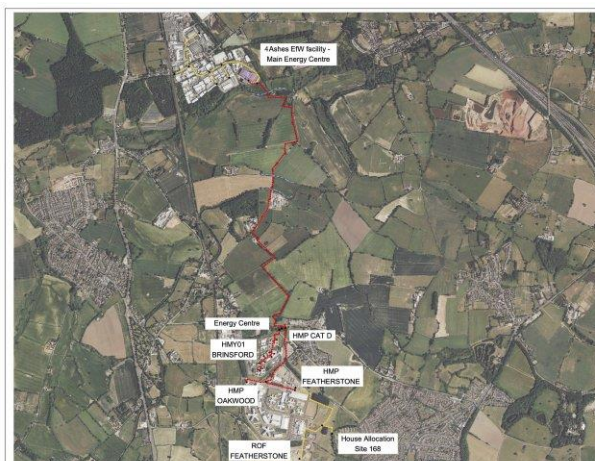
EEN plans to supply an initial load of 60.77 GWh/yr of heat to 110 buildings, mainly spread over five public anchor off-takers; University of Exeter, Exeter College, Exeter City Council (ECC), Devon County Council (DCC) and Royal Devon NHS Trust sites at Wonford and Heavitree hospitals. The University of Exeter is the largest off-taker at 28.38 GWh/yr of demand. However, we have modelled, the network growing, to include future expansion loads, to a total of 121 buildings and 92.67 GWh over 15 years. Network size c.19.89 km.

Four Ashes MoJ Heat Network

Project Sponsor:

VEOLIA ENERGY & UTILITY SERVICES UK PLC

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	11.21
Pipework / distribution capex (£m)	12.62
Other capex (£m)	1.14
Total capex (£m)	24.97

Annual heat demand (GWh)	20.98
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2024	2024	2026

Project Contact Details:

Organisation:	VEOLIA ENERGY & UTILITY SERVICES UK PLC
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Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

Please see file "REF 1.8 Market Transformation Commitment" for a PDF format of our responses

The Veolia Four Ashes heat network project aims to provide low-carbon and efficient energy solutions to the Ministry of Justice (three) prison complex, with a projected capital expenditure of £25 million. The project will involve the installation of a strategic heat network and private wire including the construction of new facilities. It will incorporate 4.7km of pipework and a new energy centre, to connect the existing Energy Recovery Facility to the prison sites whilst providing full 24/7 guarantee.

The project is currently in the detailed development phase, with key milestones including the completion of a detailed design, securing heat offtake agreements with MoJ, and the commencement of construction. The design process is set to begin in January 2024 immediately after funds are made available, with construction expected to commence in December 2024. Heat will be supplied to the prisons from April 2026. Veolia's internal service providers will manage and deliver the project to meet the high-quality standards expected.

The project aims to utilize the waste heat produced from the Veolia Four Ashes Energy Recovery Facility to provide space heating, hot water and electricity to the Ministry of Justice sites. The implementation of this initiative is expected to result in a significant reduction in the embodied carbon of the heating system, as compared to the use of natural gas, which is the current primary source of heat generation.

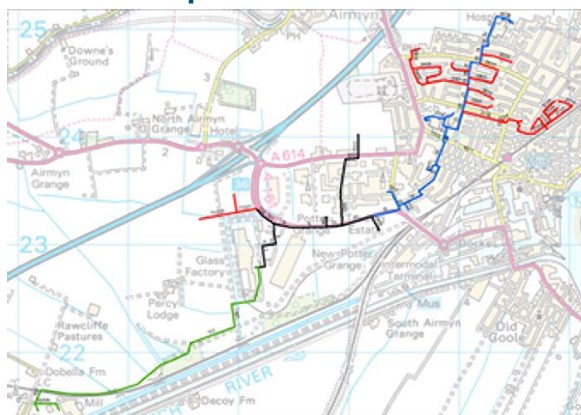
This strategic heat network project will provide a reliable, efficient, and sustainable heating solution for the area, delivering significant carbon savings and improving energy security for local residents and businesses alike.

Goole District Energy Network

Project Sponsor:

East Riding of Yorkshire Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	4.85
Pipework / distribution capex (£m)	22.28
Other capex (£m)	0
Total capex (£m)	27.13

Annual heat demand (GWh)	39.92
Project IRR*	9%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2023	2024

Project Contact Details:

Organisation:	East Riding of Yorkshire Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Waste heat recovered (no heat pump)

Project description:

Goole DHN will recover high grade waste heat and steam from a float glass manufacturing plant and deliver this to a mixture of public and private sector customers to be used for heating and industrial processes.

Total CAPEX year = £27.1m. Phase 1: year = 2023, CAPEX = £25.3m, heat delivered = 3.35GWh/yr. Phase 2: year = 2029, CAPEX = £0.26m, cumulative heat delivered = 5.51GWh/yr. Phase 3: year = 2034, CAPEX = £1.3m, cumulative heat delivered = 17.13GWh/yr.

Procurement for commercialisation activities to begin imminently, for award in December 2022. Planning approval is to be obtained by the Council and commercialisation consultants.

The intention is a 2-stage procurement process, to begin in December 2022 with Stage 1 Design procurement. Tenders for Stage 2 Construction and O&M are anticipated for August 2023. Construction if Phase 1 is expected in December 2023, and first connections end of 2024.

Handforth Garden Village Heat Network

Project Sponsor:

Cheshire East Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	5.67
Pipework / distribution capex (£m)	6.87
Other capex (£m)	0
Total capex (£m)	12.54

Annual heat demand (GWh)	6.29
Project IRR*	6%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2024	2025

Project Contact Details:

Organisation:	Cheshire East Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - decentralised (ambient loop)

Project description:

Cheshire East Council is fully committed to pursuing district heating across the Borough and has invested significant resource in exploring potential opportunities. The North Cheshire Garden Village will create an exemplar new settlement in the borough. Once completed it will provide around 1,500 new residential dwellings, new mixed employment uses; a mixed-use village centre, school and extra care facilities. The development is to be supplied by a heat network to be served by 2.6MW of open-source ground source heat pump (GSHP) technology in respect to the main head load with 4.5MW of electric boiler capacity serving peak heat loads of 7.9GWh. This is to initially supply the 665 homes + connection to 4 commercial land parcels inc: school, extra care facility, hotel, public house and retail. The scheme has been estimated to cost over £13m and is seeing grant funding of £5.28m to meet almost 8GWh of heat demand per year and currently is scheduled to go for planning determination in January 2023.

Huddersfield District Energy Network

Project Sponsor:

Kirklees Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	19.63
Project IRR*	Not

	disclosed%
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* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Kirklees Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

Huddersfield DEN will recover heat from an existing council-owned EfW plant and deliver this to a mixture of public and private sector customers to be used for heating and hot water. A paralele private wire network will also supply electricity from the EfW to a subset of the same customer group.

Total CAPEX year = £22.6m. Phase 1: year = 2026, CAPEX = £15.1m, heat delivered = 7.6GWh/yr. Phase 2: year = 2029, CAPEX = £2.6m, cummulative heat delivered = 14.2GWh/yr. Phase 3: year = 2037, CAPEX = £2.6m, cummulative heat delivered = 21.7GWh/yr.

Kirklees is currently procuring a new Waste Services contract, which will include operation of the EfW. This procurement is including measures to secure long-term supply of heat and power from the EfW. Procurement of technical service providers to HDEN will be procured as a stand-alone exercise, as described below.

Hull District Heat Network

Project Sponsor:
 Hull City Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	5.96
Pipework / distribution capex (£m)	18.96
Other capex (£m)	0
Total capex (£m)	24.92

Annual heat demand (GWh)	21.66
Project IRR*	10%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2024	2025

Project Contact Details:

Organisation:	Hull City Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - decentralised (ambient loop)

Project description:

The Hull District Heat Network is a key component of Hull’s Carbon Neutral 2030 strategy and this bid seeks to secure funding to develop the first phase of our journey towards city-wide decarbonisation of heat

The £25.9m investment will deliver 22 GWh heat generated from Hull and East Riding domestic and commercial waste to 46 public and private sector customers.

Back up heat will be provided by gas boilers, however options to integrate planned solar and wind generation into the heat network are being considered as part of a carbon reduction masterplan.

Feasibility and detailed project development have already been completed and the Outline Business Case was approved by Hull City Council (HCC) Cabinet in March (2022).

During commercialisation a special purpose vehicle will be established with Hull City Council as the sole owner. We will further develop the network and energy centre designs (to RIBA 2) and develop the full business case to be submitted to Cabinet in December to allow the project to progress to procure detailed design and capital works (D&B). Works are expected to start in January 2024 and the Network to be fully operational by the end of 2025. Operation and maintenance are expected to be procured under a separate contract(s).

We will work with local suppliers and training providers to develop and deliver a Market transformation strategy that will maximise economic and social benefits in the Hull area.

Two further phases are currently planned, however we expect the HDHN to develop and gain momentum over time as other connections become viable.

Hull East Heat Network

Project Sponsor:

Vital Energi Utilities Ltd

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not

	disclosed
Annual heat demand (GWh)	57.62
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Vital Energi Utilities Ltd
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Waste heat recovered (no heat pump)

Project description:

Hull East heat network is a £43m project that will supply 57.6GWh of heat in Phase 1 with waste from Saltend Chemicals Park. If the funding application is successful the project will go through a commercialisation period, with the aim to start construction in April 2024 and complete construction with-in 2 years. The project will be run by Vital Energi who will do the fund the remainder of the project as well as design, build operate and maintain the heat network. Future phases of the project may utilise waste heat from other sources and there is the capacity to supply main other customers.

Islington Council

Bevin Court

Project Sponsor:

London Borough of Islington

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	2.86
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	2.86

Annual heat demand (GWh)	2.41
Project IRR*	Not

	disclosed%
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* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

2022	2023	2024
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Project Contact Details:

Organisation:	London Borough of Islington
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Deep geothermal

Project description:

Bevin Court and Holford House are 2 existing blocks incorporating a total of 130 dwellings. These are currently both served by gas boiler plant at Bevin Court. The £1.95m project will decarbonise the supply through the installation of a cascade heat pump system of a combined installed capacity of around 2MW in total. 4 air to water heat pumps will generate low temperature hot water which will then be raised to 70C by 4 water source heat pumps. It also includes fitting HIUs in each dwelling. The heat network will use existing pip infrastructure. This estate is listed building and permission is currently being prepared. The consultancy procurement will start in late 2022 and project completion is due in Q1 2025.

Kingston District Heat Network (KDHN)

Project Sponsor:

Royal Borough of Kingston

Network Map:

This evidence is left as blank intentionally as RBK does not want the KDHN network map to be made public.

Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	26.43
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2022	2023	2025

Project Contact Details:

Organisation:	Royal Borough of Kingston
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: waste heat source

Project description:

The Kingston District Heating Network (KDHN) project presents a practical, innovative, and strategic solution for Kingston to assist in reducing the carbon emissions of existing and new buildings. KDHN aims to:

Produce low carbon heat utilising the waste heat from Hogsmill Sewage Treatment Works with the full potential of >50 GWh per annum recoverable from the treated sewage effluent outfall (via a heat pump) and biogas CHP excess heat.

Deliver this heat to the 'Core Four' connections: Cambridge Road Estate (CRE), Kingston Hospital, Kingston University and new Kingston Leisure Centre – totalling ~28GWh/annum.

The expected capital expenditure required by the Core Four project is £31,843k, including a contingency to account for price uncertainty in the current market, and commercialisation costs. This application to the GHNF is for £12,359k which represents 39.75% of the initial capital cost. The balance is expected to be met through Community Infrastructure Levy (CIL), s106 receipts, connection charges and long-term borrowing by RBK.

The Core Four scheme is seen as a starter network, futureproofed to provide a springboard into future expansion to more residential and commercial buildings in Kingston Town Centre totalling 47 GWh per annum.

The preferred structure for the delivery of the Preferred Option is the creation of a RBK and TW owned SPV with a view to procuring a DBOM partner for the delivery of works and services.

Commercialisation and Procurement will run through Dec 2022 – March 2024 with Construction starting in March 2024 for heat on to first development in 2025.

Lancaster University Net Zero

Project Sponsor:

Lancaster University Energy Services Ltd

Network Map:

Pipe Sizing

Energy Centre Location E



Summary forecast financial information:

Energy generation capex (£m)	23.99
Pipework / distribution capex (£m)	17.53
Other capex (£m)	18.89
Total capex (£m)	60.41

Annual heat demand (GWh)	42.12
Project IRR*	8%

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Lancaster University Energy Services Ltd
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

Lancaster University aims to achieve Net Zero for energy through an innovative heat network project, incorporating network extensions across the university's campus, a new Energy Centre with air source heat pumps and thermal storage and electrical infrastructure works. The project is supported by a 'Heat Pump Ready Buildings' programme, aimed at reducing operating temperatures for buildings connected to the heat network. A private-wire solar farm will be developed separately.

The project will extend the existing 28 GWh p.a. heat network to provide 45 GWh p.a. of low-carbon heat.

Capital costs are estimated at £61.4m (at Stage 2 Feasibility). The commercialisation phase commences in May-23 and extends to Apr-24. Procurement for the Stage 3 Design Team and commercialisation support is expected to commence in Feb-23.

A planning application for the new Energy Centre is expected to be submitted in Sep-23, with the outcome anticipated by Nov-23.

The intention is to procure the delivery of the project on a Design, Build and Operate basis, with the main contractor operating the Net Zero heat network for a period of 1 to 2 years following the Heat-On date. Procurement for the DB&O contractor is expected to commence in Sep-23.

Construction is nominally phased in two stages; the first GHNF funded stage completes by Mar-25, and the second university-funded stage completes by the heat-on date of 1st Oct 26.

Langarth Deep Geothermal Heat Network

Project Sponsor:

Cornwall Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	14.09
Pipework / distribution capex (£m)	75.85
Other capex (£m)	0

Total capex (£m)	89.95
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Annual heat demand (GWh)	41.27
Project IRR*	10%

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Cornwall Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Deep geothermal

Project description:

The Langarth district heating network is a c£90m capital project connecting a new 3,800 unit development, together with an existing hospital, schools and college, to the United Downs Deep Geothermal Project approximately 5km away. This will be the UK's first deep geothermal heat network. The development is expected to be built at a rate of approximately 150 homes per year with completion expected in 2042. The total heat demand will be in the region of 50GWh/year. The project has been initiated by Cornwall Council but it is expected that a private sector ESCo will be procured to design, build, own and operate the network and customer connections. Key upcoming milestones include early development of the secondary heat main within the development from September 2023, and securing wayleaves and planing permission for the transmission main. The geothermal heat supply is expected to be connected in 2026, with a temporary biomethane supply from 2024.

Maiden Lane

Project Sponsor:

Camden Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	4.13
Pipework / distribution capex (£m)	5.4
Other capex (£m)	0
Total capex (£m)	9.53

Annual heat demand (GWh)	6.09
Project IRR*	8%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
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2023	2024	2026
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Project Contact Details:

Organisation:	Camden Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

Hybrid Energy Centre and Communal Heat Network on a 1970s LA Social Housing Estate. Project Capex is estimated as £ 15.3M outturn. The GHNF eligible costs are estimated to be £ 10.0M. The requested GHNF Grant is £3.100M. The Project replaces the 1970 Heat Network with a modern low temperature hart network able to connect to an low carbon centralised ASHP and makes use of a more recent 2015 fossil Energy Centre to provide peak heat and backup. The size of the ASHP is optimised to balance space, CAPEX, REPLEX and OPEX and carbon emmissions. It is anticipated future fabric improveemnt will subsequently reduce the Heat Load. The existing boilers and CHP are reused to support the ASHP opertaion in terms of offsetting high electrical TRIAD costs.

Meriden Estate

Project Sponsor:

Watford Community Housing Trust

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	2.99
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID **Constructi** **Heat On**
 on Start **(initial)**

2022	2022	2023
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Project Contact Details:

Organisation:	Watford Community Housing Trust
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

Meriden Estate is a housing estate consisting of 2 tower blocks and 4 low-rise blocks with a total of 252 apartments. It is currently served by a failing and end-of-life gas district system which is >50 years old.

Given their net-zero ambitions WCHT engaged with Cenergist who have undertaken a full options appraisal assessment to look at low carbon options which will also future proof against increasing gas prices for residents and provide sustainable and affordable heating and hot water for residents. As Principal Contractor, Cenergist will manage the overall procurement approach.

This proposed project is to replace the current system with a new a 3GWh/annum hybrid ASHP-GSHP solution to maximise the Coefficient of Performance and minimise carbon emissions. Total CAPEX of the proposed solution is circa £6m and will be completed in a single delivery phase. The project is currently in the design stages and will commence in May 2023, progress will then follow the below milestones until completion in December 2024.

Detailed design freeze: 07/2023

Borefield drilling start: 09/2023

Borefield drilling end: 04/2023

ASHP's procured and installed: 12/2023

Primary DH Network installed:
12/2023

Block distribution installed: 04/2024

Domestic heat connections commence:
06/2024

All customers heat on: 12/2024

Milton Keynes Heat Network

Project Sponsor:

MILTON KEYNES ENERGY LIMITED

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	36.51
Pipework / distribution capex (£m)	83.68
Other capex (£m)	0
Total capex (£m)	120.19

Annual heat demand (GWh)	85.81
Project IRR*	10%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2024	2024	2026

Project Contact Details:

Organisation:	MILTON KEYNES ENERGY LIMITED
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: sewer source

Project description:

1Energy, with the support of Milton Keynes City Council, is seeking to develop the Milton Keynes Energy Network (MKEN). A project specific Special Purpose Vehicle, Milton Keynes Energy Ltd (MKEL), will own and operated the MKEN assets. The expected capital cost of the project is £121m and MKEN will utilise 12 MW of Water Source Heat Pumps (WSHP – extracting waste heat from the local sewage treatment facilities), 750m³ thermal stores, and 48MW gas boiler backup / peaking to serve 39.3 MW of diversified demand at an average carbon intensity of 49 gCO₂/kWh over 15 years.

The MKEN design has been progressed to RIBA stage 2.

MKEN plans to supply an initial load of 67.7 GWh/yr of heat to 37 buildings, including the supply to several public sector anchor load connections; Milton Keynes University Hospital, The Open University, Milton Keynes College, Milton Keynes City Council MKCC, Milton Keynes Academy, as well as a connection to Milton Keynes East, a 4,500 residential unit development being led by Berkeley St James.

Additionally, we envisage a heat supply to the existing ThamesWey Central Milton Keynes heat network (TCMK), which will unlock growth in the existing network through the sleeving of low carbon heat to both new and existing ThamesWey customers. Together these anchor load connections account to 83% of the initial demand load.

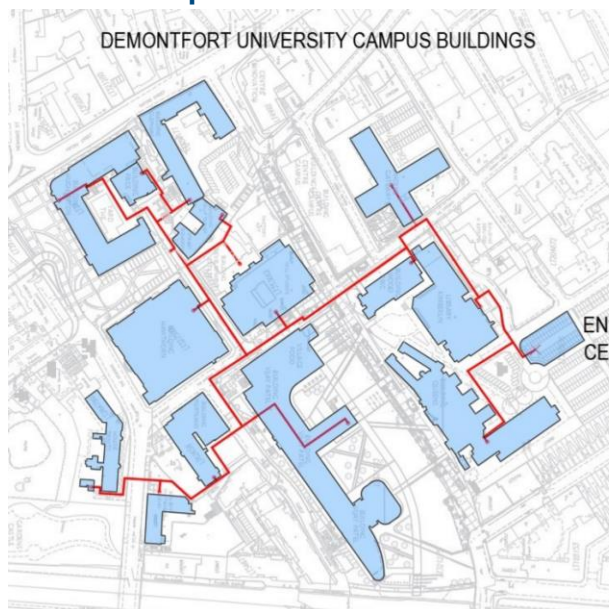
We have included the ability to expand into the MKEN energy centre and network and will grow the network quickly to 92.79GWh/yr by expanding to known (and mapped) 'Future Clusters' of loads by 2032. Network size c.21.4 km.

MyDMU Greenheat

Project Sponsor:

De Montfort University

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	11.86
Pipework / distribution capex (£m)	6.73
Other capex (£m)	0
Total capex (£m)	18.6

Annual heat demand (GWh)	11.87
Project IRR*	6%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2023	2024

Project Contact Details:

Organisation:	De Montfort University
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

Following the development and adoption of the university's Heat Decarbonisation Plan (HDP), De Montfort University are seeking funding to develop the low carbon heating solution this set out for the central campus buildings, which amounts to 70% of the university's carbon emissions related to heating, or c2,300 tonnes CO₂e per annum. This solution has been developed over the last year by the university, working in partnership with its consultants, Vital Energi Utilities Limited. It comprises of a 2.5MWth ASHP array, feeding into a new District Heat Network (DHN), serving 17 buildings across our compact city centre campus.

The scheme has now been designed to RIBA stage 3, including integration of the DHN into each building's plant room, with a tender specification ready for procurement. The capital cost of this solution is currently costed at £18,57M incl. VAT, with the solution generating c12GWh per year of renewable heat. Capital spend is forecast to be split £9.3M 50% 2023 – 24 and £9.3M 50% 2024 – 25.

The programme for the scheme is outline below. Please see section '1.4 Programme' for more detail.

1. Tender 15th May 2023 to 14th July 2023 – procurement will utilise existing, PCR compliant public procurement frameworks such as CCS HELGA / Lexica.
2. Design (RIBA 4 and 5) and Planning Application and Highways approvals 17th July 2023 to 31st Oct 2023. – Pre-application consultations currently underway with Leicester City Council which will give guidance and confidence of success in application.
3. Procurement Major Plant 24th July 2023 to 4th Mar 24 – subject to outcomes of 2 above.
4. DHN construction 13th Nov 2023 to 16th Apr 2024
5. Energy Centre Construction and fit out 13th Nov 23 to 25th July 2024
6. Building Connections fit out 17th Apr 2024 to 6th Sept 2024
7. Commission 26th July 2024 – 25th Oct 2024
8. Handover 28th Oct 2024 to 25th Nov 2024.
9. Completion 25th Nov 24



The scheme has been designed to allow for additional thermal capacity to be added in the future with a view to extend the DHN to neighbouring

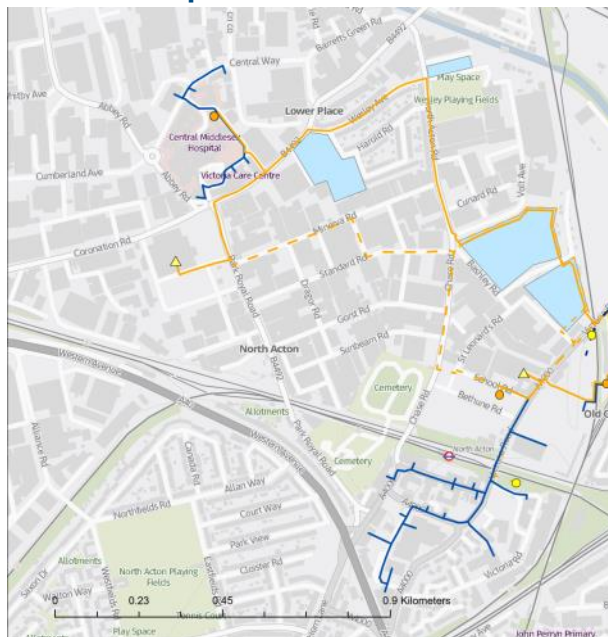
organisations such as the Leicester Royal Infirmary and / or Leicester City Council's DHN.

Old Oak and Park Royal Energy Network

Project Sponsor:

OPDC

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed

Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	89.1
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID **Constructi** **Heat On**
 on Start **(initial)**

2024	2025	2026
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Project Contact Details:

Organisation:	OPDC
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Waste heat recovered (no heat pump)

Project description:

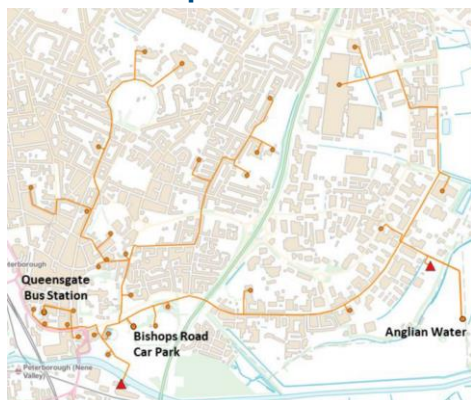
The OPEN project will recover waste heat from the cooling processes of 3 new data centres to supply low carbon heating and hot water to homes and businesses within the OPDC region. The phasing information is as follows: Phase 1: Year = 2026, heat delivered = 50.39Gwh, CAPEX spend = £85.3m. Phase 2: Year = 2027, cumulative heat delivered = 62GWh, CAPX spend = £5.3m. Phase 3: Year = 2030, cumulative heat delivered = 75GWh, CAPEX spend = £11.6m. Phase 4: Year 2035, cumulative heat delivered = 87.3GWh, CAPEX spend = £9m. Phase 5: Year = 2040, cumulative heat delivered = 94GWh, CAPEX spend = £2.4m

PIRI (Peterborough Integrated Renewables Infrastructure)

Project Sponsor:

Peterborough City Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	22.11
Pipework / distribution capex (£m)	31.02
Other capex (£m)	0
Total capex (£m)	53.13

Annual heat demand (GWh)	23.71
Project IRR*	>10%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2024	2025

Project Contact Details:

Organisation:	Peterborough City Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

PIRI (the "Peterborough Integrated Renewables Infrastructure") project is a Council-led scheme which integrates a heat and non-heat approach to decarbonisation that will deliver enabling infrastructure across the city of Peterborough, with the primary generation asset being the Council-owned Energy Recovery Facility (ERF).

The project combines a heat network and private wire electricity network to support buildings and also delivers EV infrastructure, creating a holistic smart local energy system. The initial phases 1 and 2 which are the subject of this application, will have a total CAPEX of £47m for the Phase 1 and £25m for Phase 2 (£73m total CAPEX). It will cover 8.7km, connect 17 anchor heat off-takers (which includes Council offices), with a total annual heat consumption of c. 24 GWh/a, and 20 electricity off-takers with a total electricity consumption of c. 90 GWh/a. There are a total of 7 potential future phases and together with additional work referenced in this application such as Heat Network Zoning and the Local Area Energy Plan, there is significant potential for future expansion.

The project has taken 3 years from the initial Mapping and Masterplan to end of the DPD stage. The Commercialisation stage is expected to take c24 months, with Phase 1 construction planned for September 2024, with completion in 2025. Phase 2 construction will start in April 2026 and complete in 2027.

In order to support our application, the project team have developed a programme plan (see supporting evidence "1.4 Programme"). This sets out the expected project timescale (including procurement) and key milestones.

Rotherham Energy Network (REN)

Project Sponsor:

Rotherham Energy Limited

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	48.13
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2023	2025

Project Contact Details:

Organisation:	Rotherham Energy Limited
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

Rotherham Energy Limited (REL, a subsidiary of 1Energy) is planning to build the Rotherham Energy Network (REN) a low-to-zero carbon (LZC) heat network, distributing upgraded waste heat from Templeborough Biomass Power Plant (TBPP) to businesses and residents of Rotherham. REN will take waste heat from the cooling towers at TBPP, upgrade the heat to 80C using possibly the UK's largest, water-to-water heat pump (W-WHP) powered by private wire electricity from TBPP, and distribute heat to 34 connections over c.10km of pipework. Potential anchor customers include the Rotherham Hospital, Rotherham College, Rotherham Leisure Centre and Rotherham Council.

The capex for phase one is £54.8m (not incl. £1m commercialisation), the heat load is 43.2GWhth per year with an undiversified peak capacity of 23.2MWth (16.2MW diversified). The W-WHP is 8MWth, coupled with 375m3 of thermal stores and 24.8MWth of (n+1) back-up and peaking gas boilers to meet peak load. The W-WHP will deliver 80% of the annual heat demand.

Our approach to procurement aligns with the MTC objectives, we have engaged the supply chain early as part of our initial capex pricing exercise for the purpose of this application, and defined our build and operations procurements as described in response to PS3.

Current status: through self-funding, we have progressed the project to a high level of certainty and confidence. The design is at the equivalent of RIBA stage 2. Customer engagement has been positive, and Letters of Intent signed. We have progressed the project to a level where the project is ready to receive GHNF commercialisation and construction funding.

Key Milestones:

-Planning application submission: Feb 2023 – aim to secure within 3-4 months. Procurement to run concurrently with the Planning Application.

-RIBA stage 3 design: May 2023.

-Financial close: July 2023.

-Detailed Design for Construction starting August 2023



-Onsite construction in late 2023 - running for 28 months.

-Operational phase: Spring 2025.

-First and last property connected in June 2025 and March 2027 respectively.

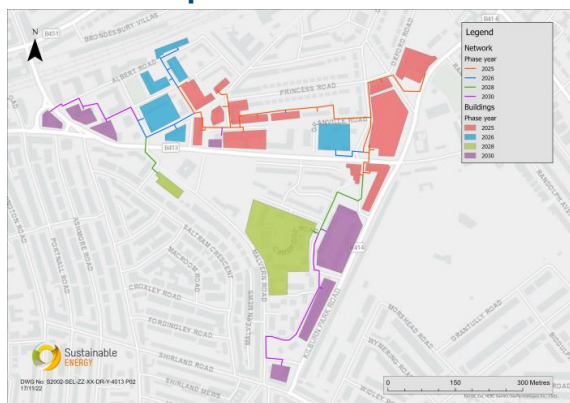
-O&M and M&B contractor awards during the construction phase, likely Autumn 2024.

South Kilburn District Heating Network

Project Sponsor:

London Borough of Brent

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	19.44
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	London Borough of Brent
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - decentralised (ambient loop)

Project description:

Capex: £17.1m (commercially sensitive) The South Kilburn District Heat Network, supports the South Kilburn Regeneration programme in providing a centralised heat hub for the area. The initial phase (1.2GWh) will supply heat using air source heat pumps utilising existing gas boilers to provide backup heat generation. The technical strategy also includes for thermal stores. Additional heat generating plant may be required. Due to a lack of electrical capacity, it is likely that this will need to be provided by gas boilers initially.

In each of the subsequent phases (Phase 2-4), the heating generating capacity is expected to increase by 0.4 GWh. This will be achieved through a second energy centre on the roof of the neighbouring building along with complementary plant in the basement.

Brent Council is proposing to directly deliver, own and operate the network with one Design Build Operate Maintain contract. The DBOM proposed procurement strategy is a two stage competitive dialogue.

Stoke On Trent City Wide DH - Deep Geothermal

Project Sponsor:

SSE Heat Networks Ltd

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	64.65
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	SSE Heat Networks Ltd
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Deep geothermal

Project description:

GT Energy are constructing 2 Geothermal wells at a depth of 3800m within the Etruria Valley of Stoke-on-Trent. SSE have agreed an MoU to deliver a heat network in the surrounding area using the heat supplied from the Geothermal Well.

Planning approved "shovel ready" geothermal district heat project. Key project size is detailed within the application form along with phased demand. Key milestones are detailed within the project programme uploaded. Procurement EPC will commence post notification of a successful award from GHNF and look to move asap. Key construction timescales for the geothermal well have also been uploaded within the project programme folder detailing key date on when drilling activity commences.

SSE, in partnership with GT Energy, will design, build operate and maintain a heat network delivering zero carbon heating and hot water to nearby customers.

The development is expected to commence in 2024 in three phases

Welborne Garden Village - Buckland Development

Project Sponsor:

Last Mile Heat Limited

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	4.55
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2022	2023	2023

Project Contact Details:

Organisation:	Last Mile Heat Limited
Contact Name:	Not disclosed

Email:

Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - decentralised (ambient loop)

Project description:

The Welborne Garden Village (WGV) project is opportunity to deliver up to 4.4 GWh of heat, hot water and cooling to 812 new build properties via individual, local heat pumps connected to an ambient heat network using a local Portsmouth Water reservoir as an energy source. The project is led by Last Mile Heat in partnership with Rendesco.

The WGV development has been recognised by the government as providing high quality and sustainable living for new communities. The development will be located outside Fareham in Hampshire, with Buckland Development as the Master Developer. Once it is complete, the site will comprise of 6,000 new build dwellings, 10 hectares of employment space, healthcare, a primary and secondary school, local retail, and leisure facilities.

Phase One of the development begins construction in 2023 and is mixed use, connecting 790 new build homes and 22 commercial premises providing a range of key services for the development. The high-profile development has full s106 planning permission from Fareham Borough Council (FBC) and has been widely publicised.

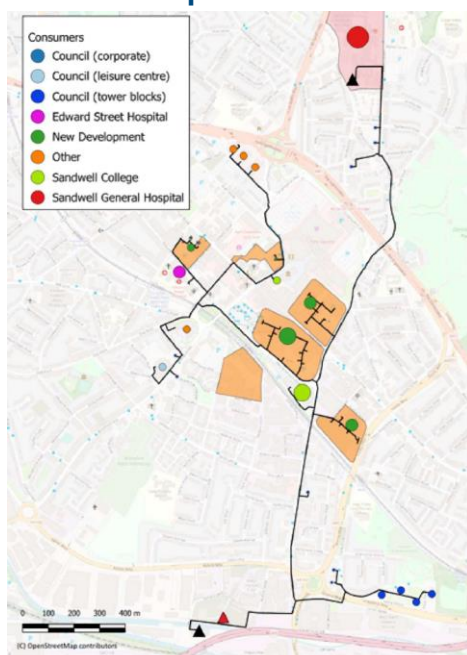
The proposed solution seeks £1,972,000 from the GHNF towards a total capital expenditure of £10,342,771, delivering excellent value for money by meeting and exceeding all of the GHNF gated metrics.

West Bromwich Heat Network

Project Sponsor:

Sandwell Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	34.88
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2024	2024	2028

Project Contact Details:

Organisation:	Sandwell Metropolitan Borough Council
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: sewer source

Project description:

Project size: overall funding requirement is £40m

Phases / heat demand / date connect: Sandwell College (4.0 GWh) 2027; Sandwell General Hospital (12.8 GWh) 2027; Edward Street Hospital (1.9GWh) 2027; Council tower blocks (3.7GWh) 2027; Council corporate property (1.2GWh) 2027; Town centre redevelopment (10.8GWh) 2025-2038. Within these main phases a further 1.9 GWh of heat demand from other heat customers is expected to connect.

Project timescale: Commercialisation (start September 2023); Final Investment Decision / FID (December 2024); Enabling works (complete February 2025); Network D&B contract (start March 2025); First "Heat On" (June 2026); and last connection 2038.

Procurement approach: Network is to be delivered through a SPV, wholly or partly owned by the Council, that will contract with the private sector for its design, build, operate & maintenance.

Current status: the Project is at DPD stage, heads of terms with major heat customers and Enfinium (heat offtake) have been secured, and the OBC subject to Council approval on 12th July 2023.

Key milestones: procurement to start April 2024 and planning application submitted February 24 – both to be completed before FID in December 2024

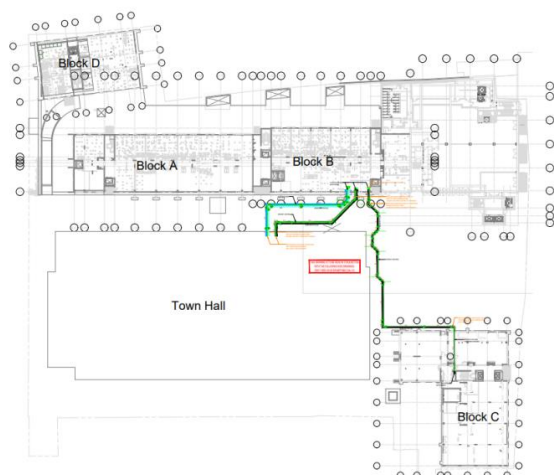
Technologies being used: majority of heat is to come from Kelvin EfW plant being developed by Enfinium, due to become operational by end 2025. Top up (3.2%)/ back-up heat is to come, at least initially, from gas boilers as grid is too constrained for electric boilers.

West King Street District Heat Network

Project Sponsor:

London Borough of Hammersmith & Fulham

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	3.84
Project IRR*	Not disclosed%

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	London Borough of Hammersmith & Fulham
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Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Waste heat recovered (no heat pump)

Project description:

The West King Street District Heat Network project has a total CAPEX size of £9.37m with projected spend over 2022/24 financial years. The network will be built in single phase and the total heat and cool demand estimated to connect to the network is 3.96GWh and 4.64GWh, respectively.

A 50/50 Joint Venture was created in the form of a Limited Liability Partnership named "West King Street Renewal LLP" (the LLP) on 4th March 2020 which includes London Borough of Hammersmith & Fulham (LBHF) and A2Dominion Developments Ltd (A2DD).

Following a mini-competition tender process, the LLP entered into a contract with Ardmore Construction Limited on 1st December 2020. The contract is to deliver 204 new homes, provide over 15,000 sqm of state of the art office and public space, over 10,000 sqm of commercial space, refurbish and extend the existing Grade II-listed Town Hall building and to install a site wide energy network to provide heating and cooling.

Planning was originally granted for a Combined Heat and Power (CHP) and gas fired boiler. In order to meet LBHF's ambition to be net zero by 2030 and to comply with changes to Building Regulations a fundamental change was proposed to move from the CHP based solution to a Ground Source Heat Pump (GSHP).

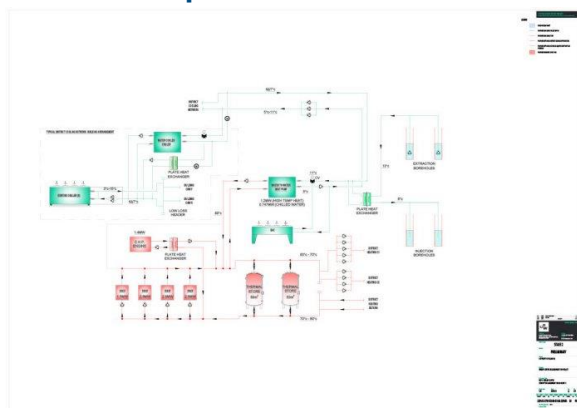
The wider project is currently in construction phase for residential blocks. Block B which houses the Energy Centre has been significantly impacted by delays to utility diversions. However, works are now progressing and the energy centre is anticipated to be constructed by the end of 2023/24 financial year.

Whiteknights Energy Centre phase 1 decarbonisation

Project Sponsor:

University of Reading

Network Map:



providing approx. 40% of the current DHN heating load (10 GWh) and adding a small cooling network providing (2 GWh) p.a. to be delivered by December 2025.

The approach to procurement would be via the use of an Open or Restricted tender or the use of an appropriate framework to be compliant with Procurement regulations. We are currently awaiting the outcome of the tests in order to define the exact specification of what is required under the procurement, which is planned to commence June 23 and would include a site visit for all bidders.

Summary forecast financial information:

Energy generation capex (£m)	4.01
Pipework / distribution capex (£m)	1.55
Other capex (£m)	0
Total capex (£m)	5.56

Annual heat demand (GWh)	10.81
Project IRR*	4%

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	University of Reading
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

£4.4m project for first phase decarbonisation of Energy Centre, for an open loop ground source heat pump from the below-ground aquifer –



HNIP APPLICATIONS

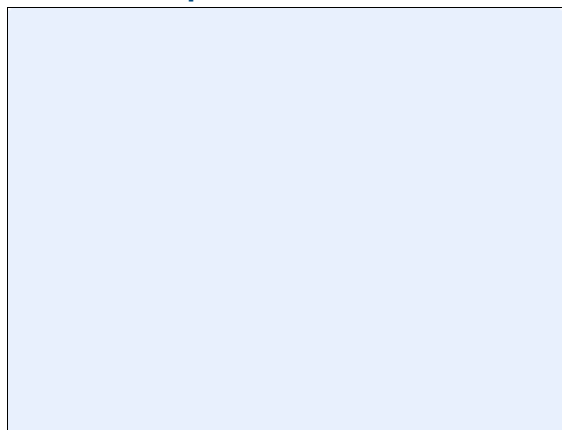
SEEKING COMMERCIALISATION AND/OR CONSTRUCTION FUNDING

Rookery South Heat network

Project Sponsor:

Vital Energi Utilities Ltd

Network Map:



Summary forecast financial information:

Total capex (£m)	£71.50
Annual heat demand (GWh)	40.14
Project IRR*	9.43%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2022	2023	2023	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	TP Heat Networks
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£14.13
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

The proposed Energy Centre shall be located adjacent to the Rookery South Energy Recovery Facility, and will utilise heat from a turbine steam bleed line to supply heat energy to the local housing developments and beyond. This heat energy will be transferred to the heat network via plate heat exchangers, into a resilient energy centre. The energy centre shall be equipped with thermal storage to improve network control and ERF heat utilisation, and back-up heat generation to form a resilient energy supply to the connected buildings. From here, low temperature hot water shall be pumped out to connected buildings via pre-insulated below ground pipework and heat interface units provided at the final connections. The energy centre shall be located adjacent to the ERF to improve steam distribution and overall efficiency, and to provide good access for maintenance and operation. The energy centre will be constructed in a modular style to facilitate future expansion for other anticipated developments in the area (potentially over 30MW total load). This modularity will also ensure the energy centre is suitable for adaptability to other low carbon technologies in the future. Below ground distribution pipework would be run parallel to the Cambridge/Oxford rail line, in the existing cycle path, to reach the housing developments. Appropriate connections will be left for other future developments, with the facility having the potential to provide heat to much of the local area.

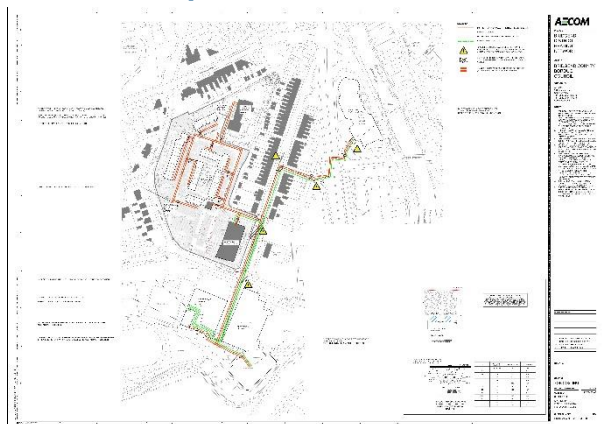
Bridgend Town Heat Network

UNDER CONSTRUCTION

Project Sponsor:

Bridgend County Borough Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£4.20
Annual heat demand (GWh)	2.99
Project IRR*	5.15%

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
2020	2020	2020	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£1.24
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

CHP - gas

Project description:

The project involves the use of an existing plant room located in a Bridgend Council (BCBC) owned Leisure Centre (LC) to host a new Energy Centre (EC). The LC and adjacent Bowls Centre (BC) are currently leased to an operator (GLL who own the leisure operator HALO). It is agreed that the existing contract between BCBC and GLL will be modified so that ownership and control of the EC can pass to the 100% BCBC owned SPV: the SPV will then procure a DBOM contractor to deliver the proposed scheme. The existing EC currently has a gas-fired CHP with back-up boilers - these will be replaced with a larger CHP unit and new back-up/peak boilers. A thermal storage tank will be installed to the rear of the LC. The existing incoming gas to the LC is sufficient to support the proposed scheme but there will need to be an upgrade to the capacity of the transformer: the connection offer has been requested from the DNO concerned to whom a G99 application will then be submitted. The new EC will supply the existing LC (including swimming pool) and the BC with heat and power. In addition, the EC will supply heat and power to the nearby BCBC Civic Office and a Registry Office, the latter being located next to the Sunnyside development site which is ear-marked for mixed-use development. The lead developer for Sunnyside is Linc Cymru, a Registered Social Landlord (RSL) who is building 59 residential units (of different types) as well as a Medical Centre that will be owned and occupied by Cwm Taf Health Board. The Sunnyside development will be completed by December 2020. The EC will supply heat and power to the Medical Centre as well as heat to the residential units.

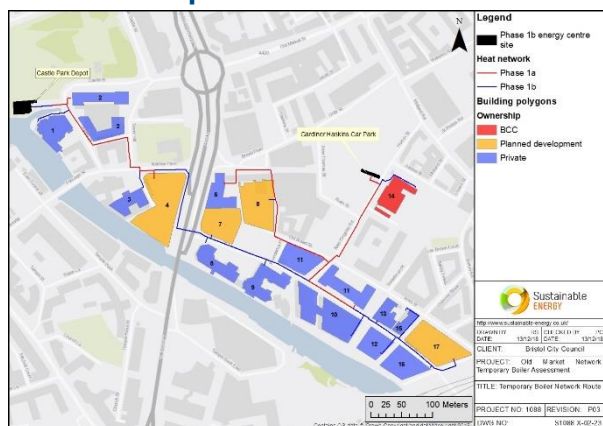
Old Market Network

UNDER CONSTRUCTION

Project Sponsor:

Bristol City Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£18.15
Annual heat demand (GWh)	14.36
Project IRR*	5.90%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2020	2020	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£6.59
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Heat pump: marine source

Project description:

A new network in Bristol, as the City Council seeks to install a city centre-wide provision of low carbon heat through heat network pipes. Designed to supply low carbon heat from the Energy Centre at the current Castle Park Council Depot site, at full build out the energy centre will comprise of a Water Source Heat Pump, Gas CHP and Gas peak and reserve boilers. The Phase 1 Old Market Network will supply 17 buildings including 4 residential blocks, 10 office blocks, 2 hotels and 1 school with an annual demand of 14.4MWh, through 1.6km of DH pipe. Over the next 25 years, the Old Market Network Phase 1 project will save around 76,911 tonnes of carbon. In the longer term, there may be more opportunities for new low or zero carbon sources of heat to connect to the network.

Redcliffe Heat Network

UNDER CONSTRUCTION

Project Sponsor:

Bristol City Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£8.06
Annual heat demand (GWh)	13.89
Project IRR*	>10%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2020	2020	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£3.63
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

CHP - gas

Project description:

The extension of the Bristol Redcliffe heat network will involve the expansion of the existing network and the installation of a second low carbon energy centre to supply heat to a number of new commercial developments in the area. The current scheme, which utilises biomass boilers, was completed in 2016 and supplies 700 social housing properties. The extension will use the additional capacity within the current energy centre as well as the new energy centre, located within the council's offices, which will include new gas CHP and back up boilers. The scheme will also include future proofing works to enable the network to be connected to additional existing loads and proposed new developments around Bristol Temple Meads. In addition to this section of the network the council will also be expanding to new areas of the city which will be served by new renewable sources such as water source heat pumps and geo-thermal technology.



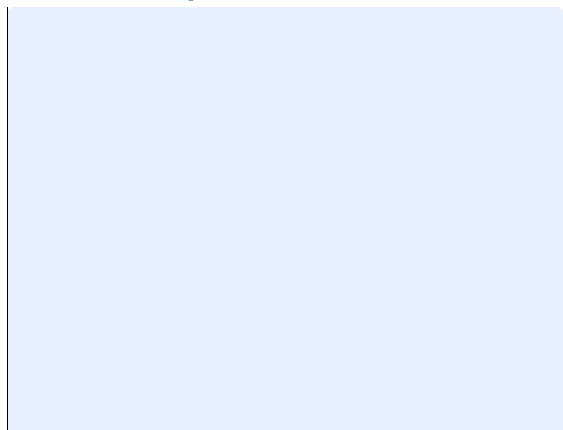
Swaffham Prior Community Heat Network

UNDER CONSTRUCTION

Project Sponsor:

Cambridgeshire County Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£12.17
Annual heat demand (GWh)	4.61
Project IRR*	5.69%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2021	2022	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£3.27
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

Swaffham Prior Community Land Trust and Cambridgeshire County Council are developing a fossil-fuel-free heat network for a rural community in East Cambs. This project will save 46,000tCO₂e over 40 years, whilst also improving biodiversity in the area, offering learning opportunities to local schools, businesses, public sector; tackling fuel poverty and energy security in the village. This is a crucial strategic opportunity to demonstrate the capacity for retrofit heat networks in the UK at the village scale. The project is configured to remove dependence on fossil-fuels for heating and hot water in homes of all ages- another UK first. The board regularly receive enquiries from other communities, in Cambridgeshire and beyond, looking to implement similar projects – this is a flagship, pioneering project with huge potential for replication nationally. The scheme comprises 108 boreholes on agricultural land to the south of the village and air-source heat collectors above ground; an energy centre where the heat pumps are located; and the network itself, distributing heat to the properties connected to the scheme. The County Council has invested in the project. The HNIP funding covers commercialisation funding for the project and capital towards the heat network. The commercialisation funding covers the set up of the preferred commercial structure, procurement of the different aspects of the construction programme to inform the Investment Grade Proposal and performance guarantees, negotiating warranties and service agreements on the operation and maintenance of the scheme, structuring the detailed heat tariff arrangements, and subsequent drafting of final legal documents. The remaining capital funds the bulk of the heat network.



Last update: 2019

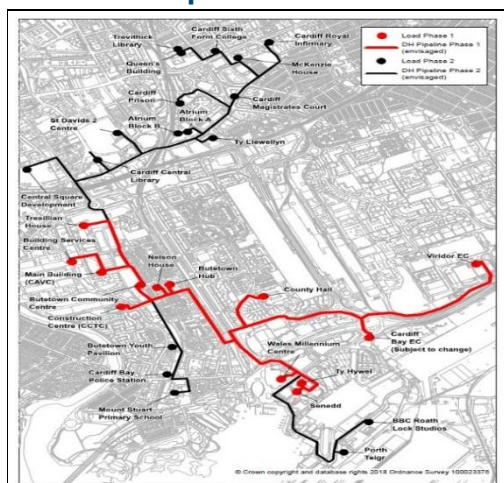
Cardiff

UNDER CONSTRUCTION

Project Sponsor:

County Council of the City and County of Cardiff

Network Map:



Summary forecast financial information:

Total capex (£m)	£15.63
Annual heat demand (GWh)	34.50
Project IRR*	4.00%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2022	2024	2024	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£6.63
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

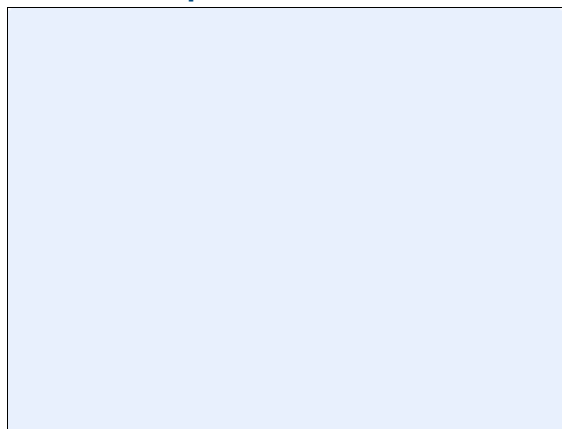
The proposed Cardiff Heat Network is envisaged to begin at the Trident Park Energy from Waste (EfW) plant in Cardiff Bay and run through large parts of the Bay area before crossing the main Cardiff to London railway line. It will then skirt the southern edge of the city centre and finally end in the western parts of Newport Road. Phase 1 will reach to the area immediately south of the railway line and Phase 2 will complete the network to points north and east of this as well as providing further reach into the southern Bay area. The proposed primary heat source for the network is envisaged to be the EfW plant. Low pressure steam from the EfW plant will be used to heat water which will then circulate in the distribution network at a temperature of around 90C. A heat exchange process will ensure physical separation of the fluid at the EfW plant from those in the distribution network. A separate "energy centre" containing top-up/back-up gas boilers will also be required to ensure resilience for the network. This facility will step in to guarantee heat supplies in the event that the EfW cannot deliver sufficient heat as a result of routine maintenance requirements or other operational issues. The feasibility study work focussed on public sector customers. This is because these organisations are more able to commit to the long term heat supply contracts required to instigate the network. They are also bound by the same carbon reduction targets and so have other non-financial motivations to participate. This committed and stable customer base is a particular feature that potential funders are looking for to give confidence that any scheme is financially stable and sustainable in the longer term. The envisaged route of the network shown in the feasibility study identifies the potential public sector customers along this route. There is also a considerable private sector customer pool in the vicinity of the proposed network. The public sector connections for the full network (Phases 1 and 2) have a combined annual heat demand of 34 GWh. Adjacent to the full network are private sector buildings with a combined annual demand of around 22 GWh. From a technical perspective the existing EfW plant could supply over 85% of the total combined public and private heat demand of buildings in close proximity to the distribution pipes. The network will therefore be sized to allow the potential connection of these private sector loads from the outset. The delivery model envisages that the network will be developed in two key phases as described above. Phase 1 will be the focus of the initial grant. This is the most expensive phase as it contains all of the costs of initial connections to the EfW plant, the development of the backup energy centre and the costs of "future proofed" heat distribution pipes to accommodate future growth.

South Seaham Garden Village Heat Network

Project Sponsor:

Durham County Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£18.70
Annual heat demand (GWh)	7.23
Project IRR*	5.70%

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
2020	2022	2023	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£4.30
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Heat pump: mine water

Project description:

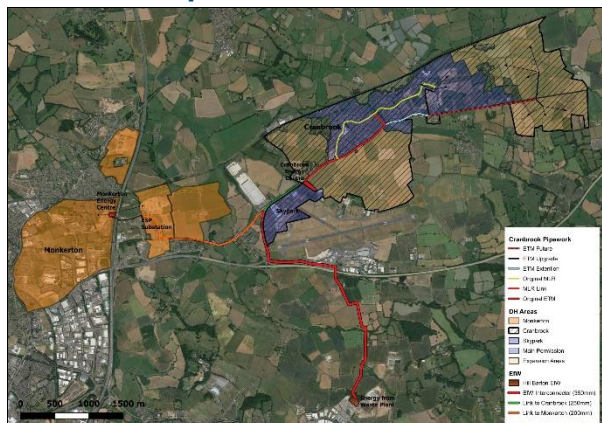
The South Seaham Garden Village district heat network will be a supplying low-carbon geothermal heat from abandoned coal mines to a new development to the south of Seaham. This will be a commercially viable sustainable energy demonstrator project that can be duplicated across the UK coalfields which contains ¼ of UK population and as such is of strategic importance. It will be a 'no gas' network with heat supplied by mine water source heat pumps and electric peak and reserve boilers supplying 1500 houses, a primary school, local centre, health and wellbeing hub and an innovation hub. 50% of homes will be affordable developed by Karbon Homes. Mine water is continuously pumped from the mine and treated to remove contaminants at the Dawdon Mine Water Treatment facility adjacent to the development. The mine water is heated by geothermal processes to circa 20°C providing low-cost low-carbon heat via heat pumps operating at COP4 with no seasonal variation. At circa 6MW the mine energy source exceeds peak demand. Network phasing follows the development. The energy centre will supply heat sourced from mine water to a new underground pre-insulated plastic heat network built out over 3 x phases with a total trench length of 20.551km. Procurement to appoint a Concessionaire to run the network will be complete by November 2022. The development will complete its first home in 2023 and the site will complete by 2030. It is planned that the heat network will be installed in tandem with the housing infrastructure including roads, roundabouts etc, to minimise costs and installation time.

Cranbrook Expansion

Project Sponsor:

East Devon District Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£20.79
Annual heat demand (GWh)	64.18
Project IRR*	7.95%

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
Not Provided	Not Provided	2023	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£3.70
Corporate Loan req. (£m)	£7.08
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

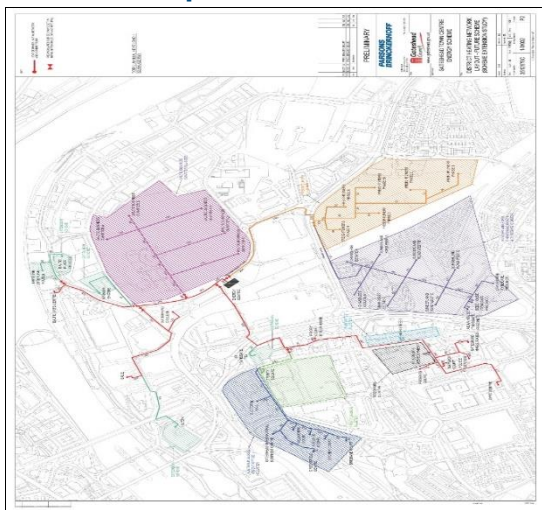
This project will connect two existing heat networks with a forthcoming Energy from Waste Plant and existing waste heat and biomass facilities at the Hill Barton Business Park. The project objectives are to support the long-term decarbonisation and supply security of the Cranbrook and Monkerton areas. The two networks are Cranbrook/Skypark (3,500 homes and 1.4m sq ft commercial space) and Monkerton (4,600 homes + 800k sq ft commercial space). Both concessions are controlled by E.ON. The project will enable the bulk supply of heat to both networks including all necessary resilience and back up. The project will also support the planned expansion of the Cranbrook new town to circa 8,000 houses through enabling the delivery of a Future Homes Standard compliant energy solution. A special purpose vehicle will be created to own the asset and to contract with the heat supplier (Stuart Partners), E.ON and whichever Energy Services Company is selected to serve the Cranbrook expansion areas.

Gateshead District Energy Scheme - East Extension **UNDER CONSTRUCTION**

Project Sponsor:

Gateshead Council

Network Map:



Technical Information:

Primary energy source:

Heat pump: mine water

Project description:

The project aims to construct a 5km expansion of the heat network within Gateshead District Energy Scheme. This will enable the scheme to supply lower cost, lower carbon energy to an extra 11 GWh of heat load. In addition, it will provide future connection points for the Exemplar Neighbourhood (Gateshead's largest housing development site of 1200 dwellings). The scheme also proposes to add a 6MW minewater source heat pump to the network, to increase the proportion of heat supplied from renewable sources

Summary forecast financial information:

Total capex (£m)	£15.60
Annual heat demand (GWh)	12.40
Project IRR*	1.51%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2021	2022	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£5.91
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

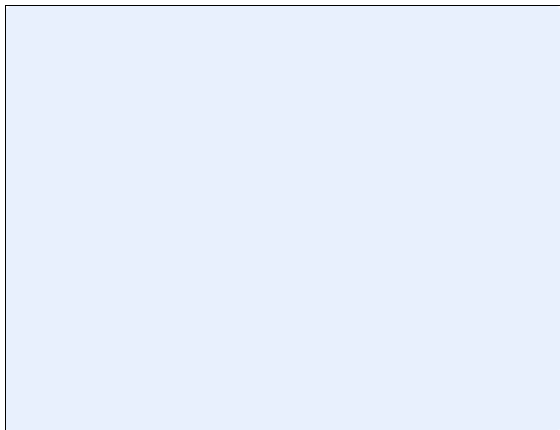


Gateshead Low Rise council estates

Project Sponsor:

Gateshead Council

Network Map:



Summary forecast financial information:

Total capex (£m)	Not Provided
Annual heat demand (GWh)	5.92
Project IRR*	Not provided

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
2022	2022	2023	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	Not provided
Corporate Loan req. (£m)	Not provided
Project Loan requested (£m)	Not provided

Technical Information:

Primary energy source:

Heat pump: mine water

Project description:

The project will extend Gateshead District Energy Scheme into low rise social housing estates for the first time, proving viability of heat network retrofit as a means to achieving zero carbon heat for Council homes, which supports our Zero Carbon Heat Strategy to connect 15,000 Council Homes to heat networks by 2030. The heat network currently terminates adjacent to Old Fold / Nest House estates, comprising 550 Council homes, of which 470 are Council owned, with 80 (15%) privately owned. We will also connect 2 primary schools, and 1 care home. We will install ca. 3.7km of DH mains, and 3.3km of house spurs, to 100% of homes, including all privates. We have derisked resident uptake by targeting a social housing area, and can then test offers to drive uptake in private homes. All heat to be provided by Gateshead Minewater Heat Pump, which has spare capacity to supply all heat required. Over 15 years, carbon savings improve, as power decarbonises, to provide 19,234 tonnes and 96 GWh over 15 years.

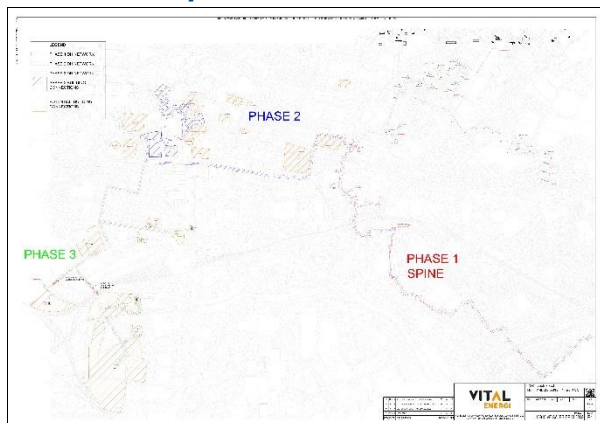
Leeds PIPES - City Centre (Phase 2)

UNDER CONSTRUCTION

Project Sponsor:

Leeds City Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£5.30
Annual heat demand (GWh)	27.10
Project IRR*	>10%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2019	2019	2021	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£2.44
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

The Leeds PIPES scheme is a recently-completed district heat network that has already begun delivering heat to Leeds. It currently comprises a network of around 16km of pipework, delivering low carbon heat and hot water, generated from waste steam created by the Recycling and Energy Recovery Facility (RERF), to commercial properties and council-tenanted properties. HNIP funds will be used to extend the network into the city centre, connecting five council buildings and allowing other existing buildings and developments to connect in the future. The pipework therefore will be sized to enable a future extension to the South Bank, an area of major development and regeneration. The extension of the network comes at a key time, as Connecting Leeds will deliver extensive highways remodelling in the city centre.

Liverpool Waters District Heat Network - Phase 1B Road Crossings **UNDER CONSTRUCTION**

Project Sponsor:

Peel NRE Developments Ltd

Network Map:



Summary forecast financial information:

Total capex (£m)	Not Provided
Annual heat demand (GWh)	7.30
Project IRR*	Not provided

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2019	2020	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	Not provided
Corporate Loan req. (£m)	Not provided
Project Loan requested (£m)	Not provided

Technical Information:

Primary energy source:

Boiler - gas

Project description:

Peel NRE Developments Ltd (previously Peel Energy), through its supply company (ESCO) Mersey Heat is delivering a district heat network to serve Peel L&P's Liverpool Waters development and surrounding areas. The development is to include 9,000 residential units, 2,000,000m² of development floorspace, 315,000m² of business space and 53,000m² of hotel and conference facilities. The awarded funding will support the supply of heat to multiple residential and commercial buildings with a temporary energy centre and connect two early phases of the district heat network. This is made possible by the early investment and construction of 2 major road crossings and a link pipe. A planned transition to a low carbon heat source will occur in the near future to reduce carbon emissions across the network.

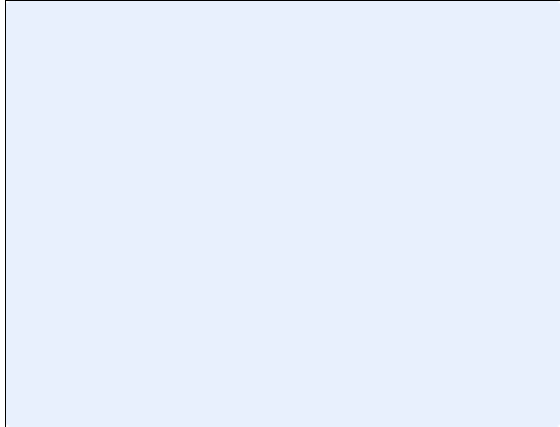


Central Cluster extension and heat pump

Project Sponsor:

Peel NRE Developments Ltd

Network Map:



Summary forecast financial information:

Total capex (£m)	Not Provided
Annual heat demand (GWh)	16.08
Project IRR*	Not provided

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2022	2022	2023	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	Not provided
Corporate Loan req. (£m)	Not provided
Project Loan requested (£m)	Not provided

Technical Information:

Primary energy source:

Heat pump: water source - centralised

Project description:

Peel NRE, through Mersey Heat are delivering a district heat network to the Liverpool Waters development and the surrounding areas. Mersey Heat is underway with the delivery of the heat network to supply identified loads within the Princes Parade area and also around the Stanley Dock development. We have a mixture of connections including new build and retrofit. The scheme has been designed on a Gas CHP generation however we are seeking support from HNIP to bring forward a heat pump solution as our main source of heat. This decarbonisation of the Mersey Heat network is especially important for the 1C extension. We have been in discussion with a number of the key stakeholders in this area and they have advised consideration to connect to the heat network would be preferable if we can provide low carbon heat from the outset.

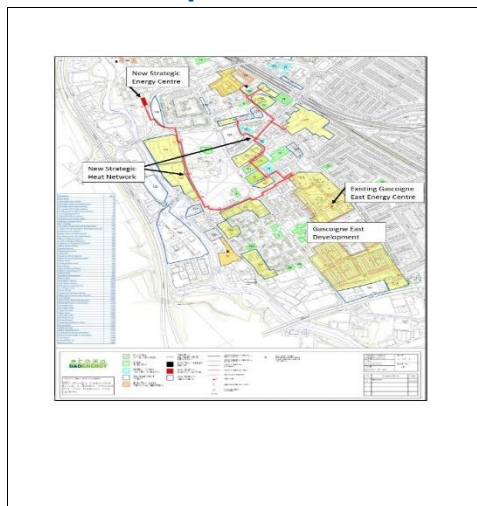
Barking Town Centre District Energy Scheme

UNDER CONSTRUCTION

Project Sponsor:

London Borough of Barking and Dagenham

Network Map:



Summary forecast financial information:

Total capex (£m)	Not Provided
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Annual heat demand (GWh)	32.40
Project IRR*	5.86%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2020	2020	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£13.50
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

CHP - gas

Project description:

Barking and Dagenham Council has been awarded £5m by the Government's Heat Network Investment Project (HNIP) to co-fund the creation of a landmark low carbon UK district heating scheme in Barking Town Centre. The project has been classified as strategically significant by the GLA and builds on the borough's ambitions to become the green capital of London. It involves modification of the existing energy centre on the Gascoigne East Estate, Weavers Quarter, and the construction of a new large-scale energy centre. Together these will supply over 30 GWh per year of low carbon heat into a new Barking Town Centre wide heat network, serving a mixture of new developments comprising over 8,000 homes, together with existing buildings. Initially, supplies of heat will come from gas-fired combined heat and power units, but over time these will be replaced with existing sources of waste heat in the borough to deliver zero carbon heat supplies.

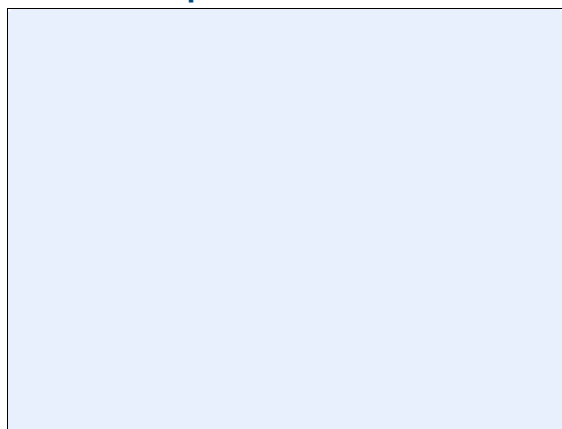


Riverside Heat

Project Sponsor:

Riverside Resource Recovery Limited /
Vattenfall Heat UK Limited or an entity over
which those party(ies) have control

Network Map:



Summary forecast financial information:

Total capex (£m)	Not Provided
Annual heat demand (GWh)	43.92
Project IRR*	Not provided

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2022	2024	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	Not provided
Corporate Loan req. (£m)	Not provided
Project Loan requested (£m)	Not provided

Network

Last update: 2019

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

Cory and Vattenfall have partnered with the aim of developing one of the largest heat networks in the UK. Through this we aim to deliver affordable, reliable and low carbon heat to communities in South East London. The Riverside Heat Network, originating in Bexley, will connect Cory's Riverside Resource Recovery Facility (RRRF) with properties in the London Borough of Bexley and the Royal Borough of Greenwich. The RRRF has the capability to provide up to 28.6MW heat and will form the anchor source for the heat network. In addition, Cory's recent grant of a Development Consent Order for the Riverside Energy Park (REP) will be CHP enabled with the potential to provide a further 30MW heat, scheduled for operation by 2024/25. The Riverside Heat Network is envisaged in three-phases, reflecting the location of the RRRF and REP and the potential heat loads, mainly Peabody and the various regeneration schemes in the area. With the proposed scope we anticipate that the network could deliver approximately 430GWh of low carbon heat in its first 15 years of operation, supplying over 25,000 local homes and businesses with sustainable heat with spare capacity, making the heat network one of the largest in the UK. The project aims to connect several new build developments, assisting them to achieve compliance with planning regulations, and to also connect to existing properties along the route. This will enable to replace and upgrade older, less economical and efficient fossil fuel heating systems. The Riverside Heat Network represents the first stage and building block that would unlock a wider East London Heat Network with the potential to supply heating and cooling to residential, commercial, retail and industry with a scale equivalent of 75,000 homes. More information is provided in the Outline Business Case, and the Commercialisation Plan attached to this submission.

Meridian Water Heat Network **UNDER**

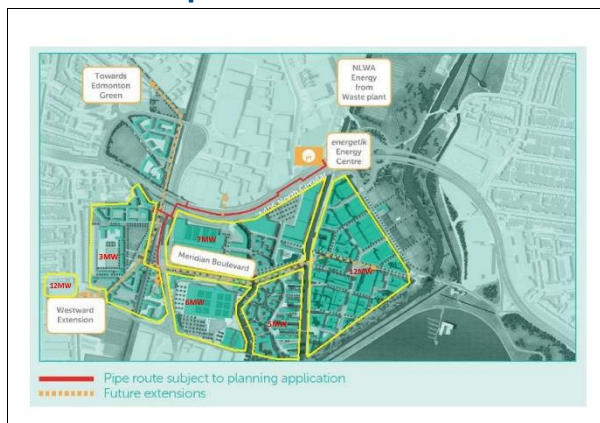
CONSTRUCTION

Last update: **2020**

Project Sponsor:

London Borough of Enfield

Network Map:



Summary forecast financial information:

Total capex (£m)	£34.40
Annual heat demand (GWh)	44.00
Project IRR*	9.09%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2020	2022	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£5.00
Corporate Loan req. (£m)	£9.76
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

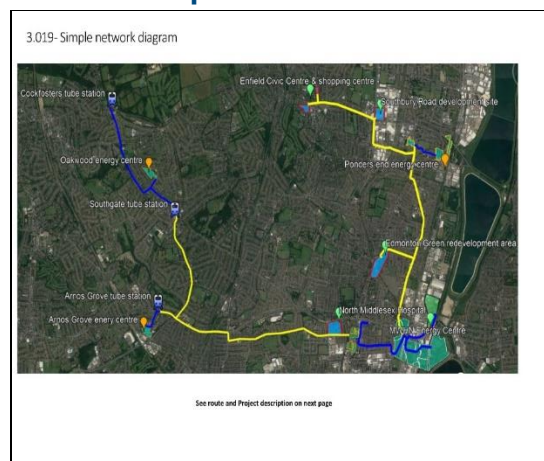
Meridian Water Heat Network will supply low carbon heat to 10,000 homes, with potential to rise to 30,000 in the lifetime of the network. The project is planned to be operational in 2022 and extended as new developments are built, with connection to the North London Waste Authority's new Energy Recycling Facility (ERF) when built in 2026. Temporary energy centre boilers will be installed in the meantime, enabling the heat network and future connection to the ERF to supply up to 60MW heat. The network's construction will enable 8.9km of heat network piping to be installed, serving three large housing developments and connecting to other networks in neighbouring London boroughs. Once the ERF is connected in 2026, the equivalent annual carbon savings will exceed 2200 tonnes and will rise rapidly over the next 10 years to over 5700 tonnes per annum in 2036.

North and west strategic extensions to Meridian Water Heat Network

Project Sponsor:

London Borough of Enfield (C/O Energetik)

Network Map:



Summary forecast financial information:

Total capex (£m)	£48.65
Annual heat demand (GWh)	42.78
Project IRR*	8.14%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
Not Provided	2023	2024	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£12.00
Corporate Loan req. (£m)	£11.86
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

North and western strategic extensions from the Meridian Water Heat Network to connect significant new heat loads as well as to connect existing satellite schemes, creating significant carbon savings. Extension northwards from Meridian Water to connect and serve two large new housing developments totalling ca. 3300 dwellings, as well as to connect to the existing Ponders End Heat Network, then westwards to connect to Enfield town, including civic centre building. Extension westwards to connect two care homes along the route towards the Arncliffe Grove Heat Network, and then north to connect to the Oakwood Heat Network, which will significantly decarbonise existing networks and will create opportunities to connect further buildings/developments along each route, creating a strategic scale heat network in North London.

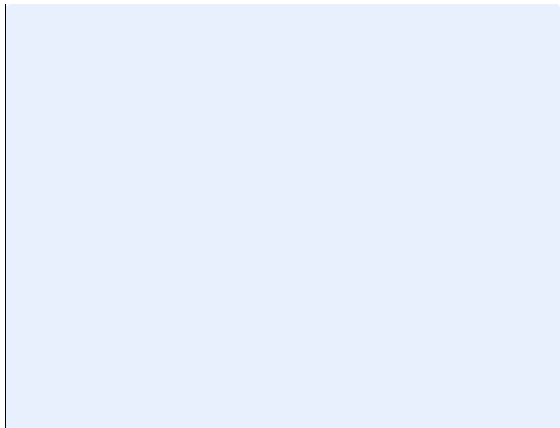


Tottenham Hale and Broadwater Farm District Heating Network

Project Sponsor:

London Borough of Haringey

Network Map:



Summary forecast financial information:

Total capex (£m)	£32.47
Annual heat demand (GWh)	43.97
Project IRR*	5.62%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2022	2023	2024	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£4.60
Corporate Loan req. (£m)	£12.65
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

The Tottenham Hale and Broadwater Farm District Heating Network will supply 25 connections in Tottenham Hale and the Broadwater Farm Estate in Tottenham. The scheme consists in total of 7,495 dwellings and 125,548m² of commercial floor space. The Broadwater Farm Estate district heating scheme currently serves 937 existing homes across 11 blocks and two schools. One of the high rise blocks is to be demolished which will reduce the load to 835 homes and two schools but redevelopment of the estate will see the Council add another 350 new homes to the system over the next 5 years. The network will connect to and purchase heat from Energetik who are connecting to the new North London Heat and Power Energy Recovery Facility. The interconnector will run southwards of the facility towards the Tottenham Hale Energy Centre and will branch off en route westwards to supply the Broadwater Farm Estate. The Energy Centre in Tottenham Hale will be located in close proximity to the connected loads and will be equipped with thermal stores and top-up/back-up gas boilers. The Broadwater Farm (BWF) Estate will be supplied only with ERF heat, top-up and back-up will be provided by existing local gas boilers located within an existing local Energy Centre. The thermal substation in the BWF Estate will be accommodated within the existing energy centre.

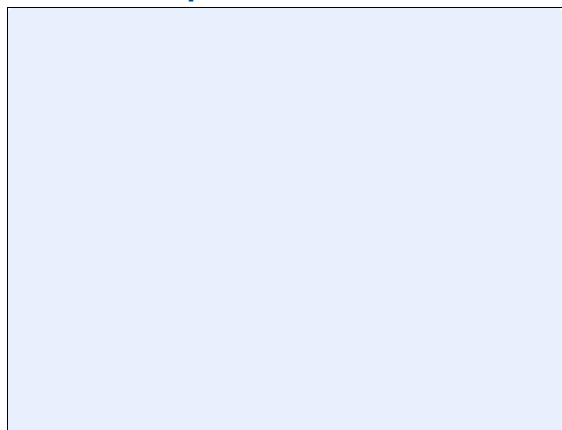


Wood Green District Heating Network

Project Sponsor:

London Borough of Haringey

Network Map:



Summary forecast financial information:

Total capex (£m)	£33.89
Annual heat demand (GWh)	36.24
Project IRR*	5.54%

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
2022	2023	2025	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£8.03
Corporate Loan req. (£m)	£2.56
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

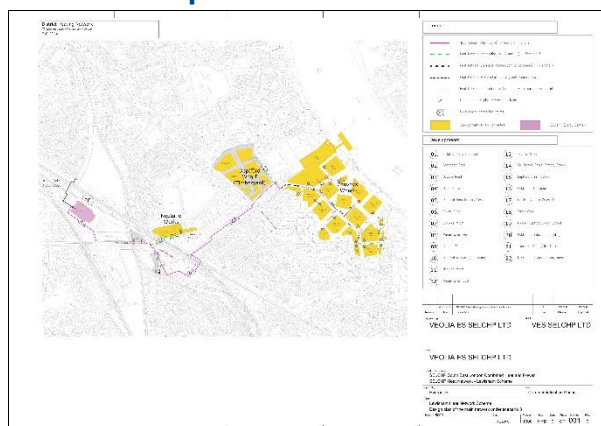
Project description:

The Wood Green District Heating Network will supply 28 site Wood Green. The scheme consists in total of 5,054 dwellings and 144,533m2 of commercial floor space. The network will connect to and purchase heat from the proposed Tottenham Hale District heating network (Phase 1) which is connecting to the Energetik network who are connecting to the new North London Heat and Power Energy Recovery Facility. The interconnector to Wood Green will connect to phase 1 near Broadwater Farm and will run westwards to the wood Green area and the Energy Centre located in the Clarendon Square development. The Energy Centre Wood Green will be located in the Clarendon Square development where the developer is providing a EC shell to LBH as part of the S106 agreement. It will be equipped with thermal stores and top-up/back-up gas boilers.

SELCHP Phase 2 UNDER CONSTRUCTION

Project Sponsor:
 Veolia ES (UK) Limited

Network Map:



Technical Information:

Primary energy source:
 Industrial heat - EFW

Project description:

This private sector applicant to Round 1 will create a new pipework branch from an existing waste heat source to serve a new-build development comprised of 3,500 homes with additional heat loads which could be served in the future.

Summary forecast financial information:

Total capex (£m)	Not Provided
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Annual heat demand (GWh)	30.00
Project IRR*	5.92%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2021	2022	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£5.20
Corporate Loan req. (£m)	£0.30
Project Loan requested (£m)	£0.00

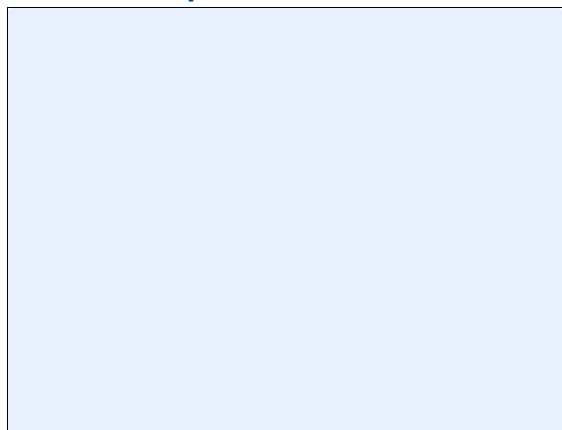


Silvertown Quays

Project Sponsor:

E.ON Energy Infrastructure Services Ltd

Network Map:



Summary forecast financial information:

Total capex (£m)	£20.89
Annual heat demand (GWh)	26.62
Project IRR*	7.29%

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
2022	2023	2023	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	Anthony Poole
Email:	Anthony.poole@eonenergy.com

HNIP Application Information:

Grant requested (£m)	£6.30
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Heat pump: water source - decentralised (ambient loop)

Project description:

The Silvertown Quays project is a major urban regeneration scheme in East London with a total area of over 820,000sqm and a broad variety of usage including, retail, office, residential, hotel and cultural space. For this property, E.ON delivers an innovative and sustainable energy solution to supply heating and cooling: E.ON will bring its developed ectogrid solution for the first time to the UK market and adopt it to the specific needs of Silvertown Quays and London's ambitious climate targets. Ectogrid allows buildings to self-generate and manage their own demands maximising efficiency during simultaneous heat and cooling demand. When loads exceed simultaneous heating and cooling, decentralised heat pumps draw energy from the ectogrid. Traditional networks act as a pathway only, whereas with ectogrid, the Silvertown Quays network acts as a pathway, a source and a store of energy on-site. Compared to traditional heating networks, ectogrid's benefits are (1) a simple space-saving one flow and return piping system for both heat and cooling; (2) over 50 years of operating life at ambient temperatures to protect asset value; (3) lower thermal losses than traditional systems to increase carbon efficiency and (4) facilitating a modular expansion to mitigate stranded asset risk and being future-proof for upcoming extensions. With this innovative solution, Silvertown Quays follows London's ambitious plan to decarbonize by firstly being a lean energy system with using less energy and efficiently reusing energy. Secondly, by being clean in exploiting a local energy resource and thirdly by being green in generating, storing and using energy on-site of Silvertown Quays, leading to a carbon-reduction of over 70%. E.ON's scope of work includes the construction of the ectogrid network, installation of decentral heat pumps and chillers for heating and cooling, a connection from a bulk heat connection, and integration of smart and digital control tools.



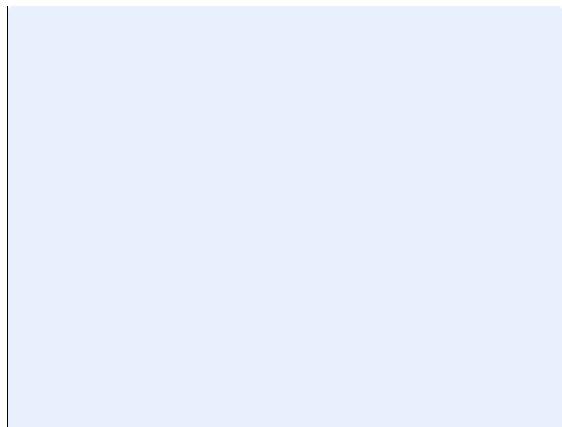
SELCHP Southwark: LBS2.0 DHN Expansion

Scheme **UNDER CONSTRUCTION**

Project Sponsor:

Veolia ES Southwark Limited

Network Map:



Summary forecast financial information:

Total capex (£m)	£28.86
Annual heat demand (GWh)	64.13
Project IRR*	>10%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2022	2022	2023	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£9.56
Corporate Loan req. (£m)	£6.84
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

This project will bring an EfW sourced, low-carbon, heat network to a new area of Southwark. The scheme proposes to supply heating and hot water to several existing estates and schools that depend on gas boilers. Many of these Energy Centres are reaching the end of their operating life. While the existing estates drive the initial viability of the scheme, it also supports the future growth to a new regeneration area aimed to accommodate 20,000 new homes over the next 15 years - Old Kent Road (OKR). This mixed use of existing and new buildings defines the strategic value of the project and structures a long-term sustainable DHN. The project requires three main work packages - First modifications to an EfW energy centre (SELCHP) to enable further extraction of heat, second construction of a DHN with approx. 6km of trench while crossing areas of high risk (i.e. rail, IP/HV utilities) and third, modifications to existing boiler houses allowing the transfer of heat while defining the resilience strategy of the overall system. Some of these Boiler Houses will be adopted as part of the fail-safe and fall-back plans. The proposed network will provide immediate and long-term carbon reductions to these developments compared to the proposed counterfactuals while providing good value to residents and businesses. The current structure of the project results in an unfinanceable IRR and carries significant construction risks and high operational costs. HNIP commercialization will enable financial support to conduct all required due diligence and construction grants would unlock the investment of a major infrastructure scheme while delivering the base for a heat exclusion zone around the Old Kent Road Opportunity Area.



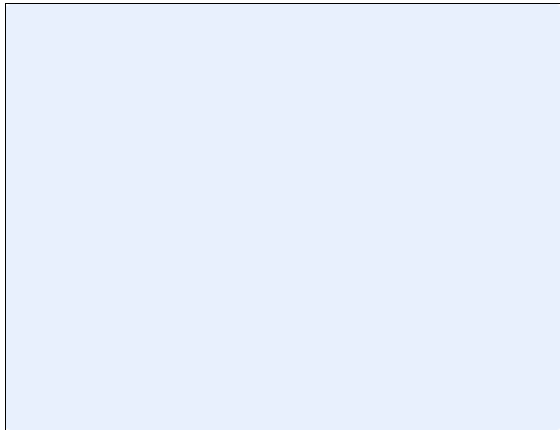
Manchester OPEN

UNDER CONSTRUCTION

Project Sponsor:

MEPL

Network Map:



Summary forecast financial information:

Total capex (£m)	Not Provided
Annual heat demand (GWh)	69.55
Project IRR*	Not provided

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2022	2020	2021	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	Not provided
Corporate Loan req. (£m)	Not provided
Project Loan requested (£m)	Not provided

Technical Information:

Primary energy source:

CHP - gas

Project description:

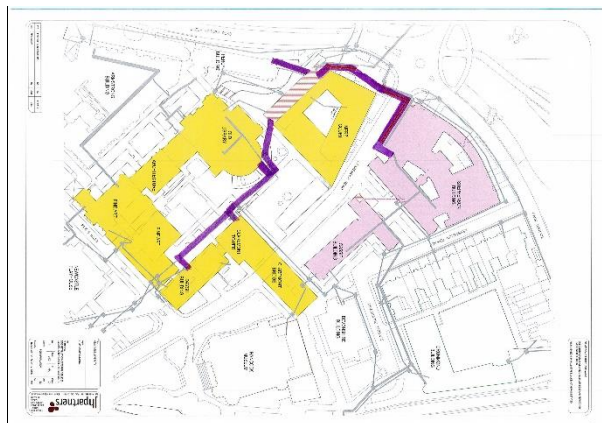
"The OPEN will distribute locally generated, low-carbon electricity, heat and cooling, to a diverse Stakeholder group, each with different energy consumption profile, located within a major city. The Project Area includes Manchester University NHS Foundation Trust, University buildings, a mix of social and private housing (serviced by an existing DHN), numerous Student Accommodation blocks and commercial organisations, such as Heineken brewery. The project is led by Manchester Energy Partnership Limited ("MEPL") a JV between Octagon Estates Ltd., (developer of the Octagon Project) and Electricity North West (Contracts and Maintenance Division) Ltd, (part of the local DNO) and supported by Manchester City Council and Greater Manchester Combined Authority. MEPL will initially construct 9.9Mw of CHP generation at the Octagon site, combined with renewables throughout the network, to supply stakeholders with sustainable, price stable and resilient energy sources. Each off-taker is at various stages of engagement, ranging from 'interest expressed' to having signed an MOU (an engagement methodology leading to a Supply Agreement). The total Phase 1 demand is; heat 75 GWh and electricity 84 GWh, producing an annual revenue of circa £9.0m. The estimated phase 2 expansion is heat 96 GWh and electricity 126 GWh. The min Anchor Load is the largest NHS trust in the UK, supporting a 21-year supply contract, representing 65% of the above revenue. The OPEN incorporates advanced monitoring systems, to assist stakeholders in efficient resource use, with value for money assured by a guaranteed Annual Percentage Price Differential, maintained below a Benchmark throughout the Supply Agreement. The future network development strategy incorporates both retrofit opportunities, to reduce off-taker consumption, together with the introduction of emerging sustainable technologies into the generation centre. Connection to the OPEN will assist stakeholders to reduce carbon emissions in line with Manchester City Council's targets to become carbon neutral by 2035."

Newcastle University Merz Court Energy Centre **UNDER CONSTRUCTION**

Project Sponsor:

Newcastle University

Network Map:



Summary forecast financial information:

Total capex (£m)	£6.00
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Annual heat demand (GWh)	10.86
Project IRR*	4.80%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2021	2021	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£0.00
Corporate Loan req. (£m)	£2.90
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Boiler - biomethane

Project description:

Extension and upgrade of existing District Heat (DH) network on Newcastle University's city centre campus in Newcastle upon Tyne. Key work packages include: New pipework from an existing DH Energy Centre (Merz Court) to serve a University development project (The Stephenson Building project - part demolition & new build, part retain and refurbish) over a nearby road. The road crossing will either utilise an existing asbestos contaminated duct (following asbestos removal), or an entirely new crossing. The secondary network i.e. after the PHE within the development is not within the scope of this DH project. Energy centre plant replacement and integration with existing heat network: removal of redundant gas boilers, installation of a liquid biofuel CHP (1060kW_e, 1275kW_{th}), installation of new natural gas (backup) boilers, flues, controls etc. for the above. HV/LV network integration. The university owns and operates its own 11KV network. The project includes costs for both LV and HV integration of the CHP.

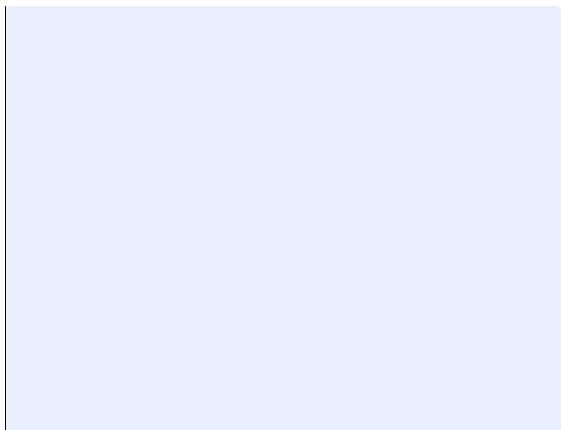


Portsmouth Naval Base Low Carbon Heat Network

Project Sponsor:

Ministry of Defence

Network Map:



Summary forecast financial information:

Total capex (£m)	Not Provided
Annual heat demand (GWh)	56.00
Project IRR*	Not provided

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2022	2023	2024	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	Not provided
Corporate Loan req. (£m)	Not provided
Project Loan requested (£m)	Not provided

Technical Information:

Primary energy source:

Industrial heat - other

Project description:

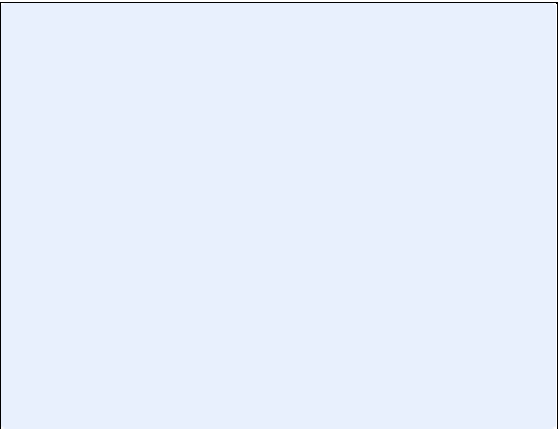
Installation of heat network to distribute heat from MOD CHP asset to end-users. The MOD are the owners of existing CHP and peaking boilers providing steam into an existing distribution network. However, the CHP is wasting approximately 50% of the generated heat as this is produced by the engine jacket and unsuitable to raise steam. Therefore this is currently being vented via a dry air cooler to atmosphere. This project will install a Low Temperature Hot Water network to replace the existing steam network, to ensure full utilisation of the available heat from the CHP. The network will also be extended to cover network adjacent buildings currently operating on their own gas boilers; a new section of the base and areas to be redeveloped including plans to relocate sports facilities from an off-site location, onto the Naval Base, including a swimming pool.

Notting Dale Heat Network

Project Sponsor:

Royal Borough of Kensington and Chelsea

Network Map:



Summary forecast financial information:

Total capex (£m)	Not Provided
Annual heat demand (GWh)	6.94
Project IRR*	Not provided

** Real pre-tax pre-finance post-Grant*

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2021	2022	2023	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	Not provided
Corporate Loan req. (£m)	Not provided
Project Loan requested (£m)	Not provided

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

Notting Dale Heat will provide a new zero-carbon heat network for a core scheme of 826 existing homes on Lancaster West Estate (vast majority social); Kensington Aldridge Academy; Kensington Leisure Centre and Baseline Studios (start-up business units). All are located on the Lancaster West Estate in North Kensington. Currently the existing supply of heat to 652 homes (80% of the Estate) uses two time-expired heat networks that are 50 years' old. 142 homes on the Estate use individual gas combi boilers, with a further 32 new homes using gas CHP. The Leisure Centre and Academy use gas boilers and CHP. Baseline Studios is all electric. The lack of individual control and unreliability are the highest source of resident complaints for homes connected to the two existing heat networks. By using Air Source Heat Pump technology, the Heat Network will be 100% zero-carbon from first 'Heat On' in 2024, which is 6 years earlier than planned. It will form a key strategic asset in the Council's plans for the Estate to become Net-Zero Carbon by 2030 and importantly, will act as a launchpad for heat network expansion to help the Council achieve its objective for the Borough to be carbon neutral by 2040. The project is supported by HNDU, HNIP and the GLA's Local Energy Accelerator.

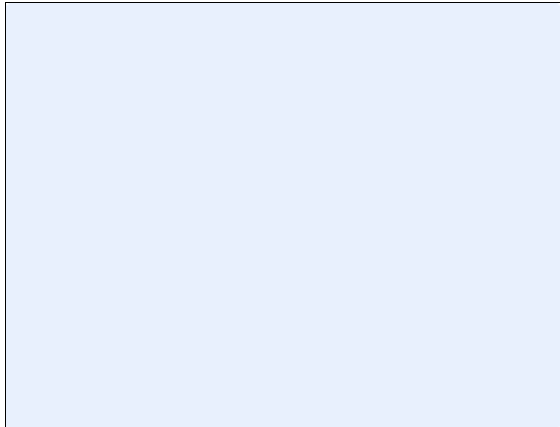


Solihull Town Centre

Project Sponsor:

Solihull Metropolitan County Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£18.39
Annual heat demand (GWh)	12.91
Project IRR*	6.39%

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
2020	2021	2024	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£9.49
Corporate Loan req. (£m)	£0.00
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

CHP - biomass

Project description:

The network will supply public and commercial buildings using a combination of a 1.7MWth air source heat pump, 1,560 kWe gas-fired Combined Heat and Power engine (prioritised for network heat supply) and auxiliary gas boilers. Electricity generated by the CHP will supply the Energy Centre and heat pump operations, 4 public and private sector customers via private wire supply and or grid export depending on electricity demand and grid electricity prices. The network will supply heat to four education sites to the south, Tudor Grange Leisure Centre and then cross under the railway line to supply further public sector and commercial buildings including Solihull Library, National Grid Headquarters, Paragon Bank and the UK Border Agency to the east. Stakeholders for all proposed phase 1 connected sites are supportive and site surveys have been carried out. Letters of Intent to work towards signed Heads of Terms have been received from 2 customers so far: Solihull College (a heat and private wire customer) and Tudor Grange Academy. Letters are expected from other customers prior to submission of the full application. There are further significant existing connection opportunities in Phase 2 as identified in the Outline Business Case, including John Lewis and Touchwood Shopping Centre. The phase 1 network connects 9 existing buildings including 4 school campus sites with multiple plant room connections, and one commercial development on council-owned land (The Gateway or Westgate); designed to accommodate heat network connection. The network accommodates expansion to new developments within the town centre masterplan. No domestic connections are envisaged in phase 1, although new developments in the town centre are likely to include residential apartments. The network is being sponsored by Solihull Council with full engagement across all department and Cabinet support for the OBC and submission of funding applications. The project steering group is chaired by the Assistant Director for Managed Growth. Please note that in further clarification to 2.010, if in the full application it is assumed that the ASHP (and associated M&E) will receive RHI or an equivalent replacement subsidy, these capex items will be removed from the HNIP as non-eligible costs.

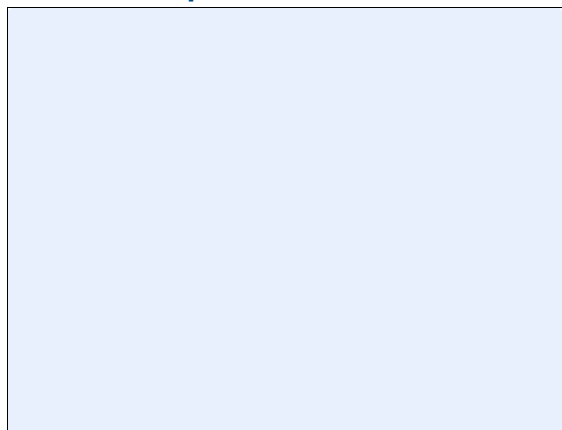


This is Gravity

Project Sponsor:

Eon

Network Map:



Summary forecast financial information:

Total capex (£m)	£47.14
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Annual heat demand (GWh)	14.36
Project IRR*	Not provided

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
2022	2022	2023	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£0.00
Corporate Loan req. (£m)	£14.48
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Heat pump: water source - decentralised (ambient loop)

Project description:

Our vision at Gravity is to provide a home for tomorrow's workforce. To achieve this the UK must shift to a cleaner economy that embraces innovation by creating spaces that allow forward-thinking companies and local communities to thrive. That is why we created Gravity – a clean, smart campus where new businesses can grow. Ideally located in Somerset, with direct access to the M5 and accessible by rail, air and sea, the site will offer over 635 acres with opportunities for up to 8 million sq ft of scalable, flexible and shared working space. No other UK site is ready to be developed at such scale and speed. It provides occupiers with the ability to build, expand and develop faster and more efficiently. Gravity will be a beacon for evolving a clean growth economy in the South West

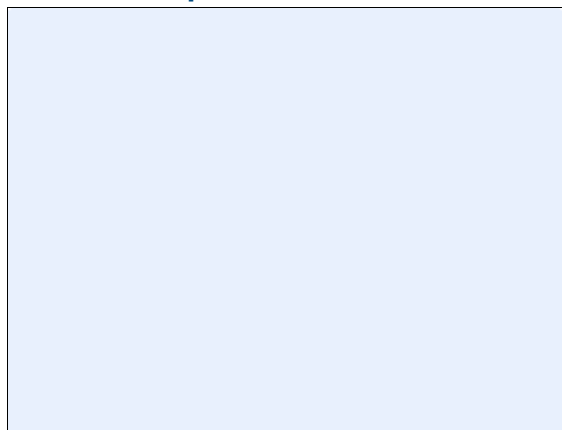


The Galleries Re-development Project

Project Sponsor:

Wigan Metropolitan Borough Council

Network Map:



Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

This £190m project comprises the demolition and redevelopment the Galleries Shopping Centre, Market Hall buildings (8.2 Ha) in the Heart of Wigan Town Centre. The redevelopment comprises a new basement and energy centre, podium, 464 new homes over 7 residential towers, 140 bed hotel, new cinema, new market hall, a retirement living unit and associated public realm and new square.

Summary forecast financial information:

Total capex (£m)	Not Provided
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Annual heat demand (GWh)	8.60
Project IRR*	Not provided

* Real pre-tax pre-finance post-Grant

FID	Construction Start	Heat On (initial)	Heat On (full)
2023	2023	2023	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	Not provided
Corporate Loan req. (£m)	Not provided
Project Loan requested (£m)	Not provided

Woking Heat Network

Project Sponsor:

ThamesWey Energy Limited

Network Map:



Summary forecast financial information:

Total capex (£m)	£19.21
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Annual heat demand (GWh)	27.68
Project IRR*	5.96%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2021	2022	2024	Not Provided

Project Stage

Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£0.00
Corporate Loan req. (£m)	£9.42
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

CHP - gas

Project description:

ThamesWey Energy Limited (TEL) has, since 2000, operated gas CHP-led trigeneration plant, district heating, cooling and power distribution networks supplying public sector, commercial and residential customers in Woking town centre and is recognised as a pioneer in district energy in the UK. Woking is experiencing a period of major growth with commercial, retail and residential developments underway and planned. Consequentially, new generation equipment and distribution infrastructure is required to meet the growth in energy demand. The major expansion coincides with a ten year plan to achieve net carbon neutral by 2030. In response TEL has already made significant progress towards increasing capacity with the development of a 10MW energy centre (completed in 2021) and installation of 890 metres of new primary energy heat network, comprising an investment of £22m. The project comprises two principal initiatives to progress this investment to the next stage and will achieve twin objectives of meeting growth in demand in Woking and enabling progress towards carbon neutrality. Firstly it will connect its heat and cooling networks serving the east of the town centre to the new networks that will serve the west and the south of the town ("interconnection"). Secondly it will provide new infrastructure to distribute heat to major developments elsewhere in the town, including south of the main railway lines ("Expansion"). Interconnection will provide additional capacity to supply up to 800 new residential units planned in the east of Woking town centre. Significantly, it will also enable network temperature to be reduced by transition from an 82 degree C network generated by CHP to 63 degree C supplies from heat pumps. Investment in new infrastructure through Expansion will enable up to 3,450 new homes to be supplied as part of a major strategic infrastructure scheme in the west and south of Woking.

Worthing Civic Centre

Project Sponsor:

Worthing Borough Council

Network Map:



Summary forecast financial information:

Total capex (£m)	£14.70
Annual heat demand (GWh)	16.50
Project IRR*	>10%

* Real pre-tax pre-finance post-Grant

FID	Construc tion Start	Heat On (initial)	Heat On (full)
2020	2021	2024	Not Provided

Project Stage

Commercialisation&Construction

Project Contact Details:

Contact Name:	HNIP
Email:	BDM@tp-heatnetworks.org

HNIP Application Information:

Grant requested (£m)	£4.36
Corporate Loan req. (£m)	£1.28
Project Loan requested (£m)	£0.00

Technical Information:

Primary energy source:

Heat pump: sewer source

Project description:

The Worthing Borough Heat network will distribute heat generated via a sewer source heat pump to 27 buildings across Worthing. These 27 connections range from new build development and existing buildings including Worthing Hospital. The 27 connections are owned by just 5 parties who have signed letters of consent. West Sussex County Council and University Hospitals Sussex NHS Foundation Trust are assisting the council with the procurement exercise.



HNDU DEVELOPMENT PROJECTS

Please note that we have switched to a new system this quarter. This has resulted in HNDU live and abandoned projects being mixed together by accident. We hope to correct this by next quarter.

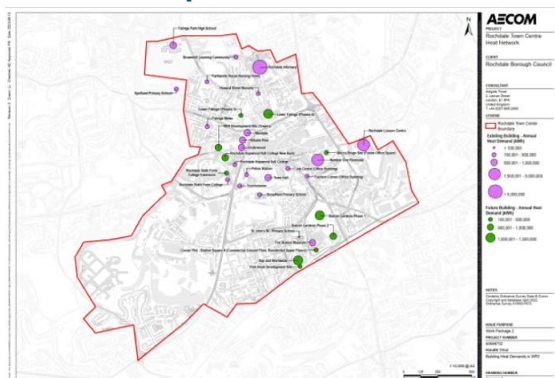
To see which HNDU projects are no longer being pursued by Local Authority sponsors please refer to the accompanying spreadsheet.

HNDU Feasibility Rochdale Town Centre Heat Network

Project Sponsor:

Rochdale Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	10.5
Pipework / distribution capex (£m)	14.4
Other capex (£m)	11.45
Total capex (£m)	36.35

Annual heat demand (GWh)	30.7
Project IRR*	0%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
Unknown on Start (initial)

Unknown	2031	2032
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Project Contact Details:

Organisation:	Rochdale Metropolitan Borough Council
Contact Name:	Mark Bramah
Email:	mark.bramah@rochdale.gov.uk

Technical Information:

Primary energy source:

Heat pump: sewer source

Project description:

A new District Heating Network (DHN) in the Town Centre area of Rochdale. The network will provide low carbon heat via a Sewer Source Heat Pump (SSHP) to multiple council buildings, other public sector buildings, as well as future planned developments.

Energy centre description:

A development site on Smith Street (previously Mecca Bingo) has been identified as the preferred Town Centre location for the energy centre. The site is located within the town centre near to some of the key anchor loads of the network and;

- It is situated in close proximity to a large sewer distribution along Smith Street.
- It is under the ownership of Rochdale Borough Council (RBC).
- It is located within an identified area for development.
- Importantly, it does not fall within any environmental designation areas.

Heat/cooling demand phasing description:

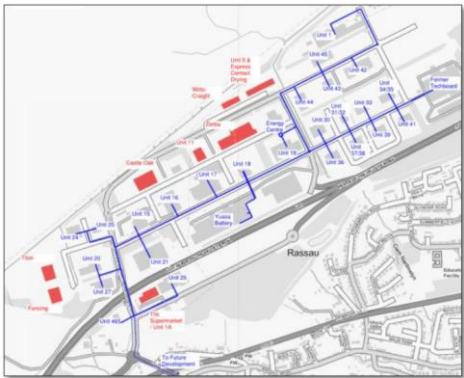
Based on techno-economic modelling, the network is anticipated to commence operation in 2026, encompassing all existing customers and completed developments by that time. Furthermore, the network will undergo expansion in two subsequent phases to accommodate future developments. The second phase is projected to take place in 2030, followed by a third phase in 2032. It will be useful to model a more detailed phasing breakdown when a construction programme for future developments has been produced; this could potentially be done at the detailed project development (DPD) or commercialisation stage.

Ebbw Vale

(Rassau)_FES

Project Sponsor:
 Blaenau Gwent County Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0
Annual heat demand (GWh)	5.83

Project IRR*	9%
Considering third party finance?	

** Real pre-tax pre-finance post-Grant*

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

Rassau Estate is an industrial park in Blaenau Gwent County. There is opportunity for a district heat network for businesses on the estate to be served by a CHP. Thirty-seven distinct loads were identified at Rassau Estate, and are exclusively private sector light industrial / manufacturing, distribution and commercial.

Energy centre description:

New energy centre would be located at Rassau Estate. Technology: CHP and back up boilers.

Heat/cooling demand phasing description:

All demand will be online day one.

The Works_FES

Project Sponsor:

Blaenau Gwent County Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0.92
Other capex (£m)	0

Total capex (£m)	0.92
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Annual heat demand (GWh)	43.59
Project IRR*	-4%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Boiler - biomass

Project description:

Opportunity to connect on local loads to the existing Works district heat network in the Ebbw Vale area.

Energy centre description:

Existing energy centre with CHP, biomass boilers and gas boilers. Located in Ebbw Vale.

Heat/cooling demand phasing description:

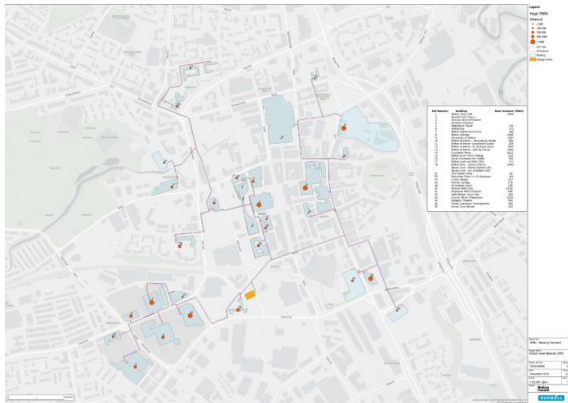
Loads are phased online over six years. Mixture of residential and commercial loads to be added over this time period. There are 19 loads added over seven years, three per year for the first five years, then two per year for the last two. Seven residential plots, five commercial plots and seven mixed use.

Bolton Town Centre Heat network

Project Sponsor:

Bolton Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	13.8
Pipework / distribution capex (£m)	8.6
Other capex (£m)	0
Total capex (£m)	22.4

Annual heat demand (GWh)	9.66
Project IRR*	1%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID **Constructi** **Heat On**
 on Start **(initial)**

2021	2021	2027
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

Ramboll was commissioned by Bolton Council to undertake a techno-economic study on the feasibility of developing a new heat network serving Bolton Town Centre. Kew Consult was commissioned to undertake commercial and financial work and Womble Bond Dickinson were commissioned to undertake legal work.

Energy centre description:

The energy centre is proposed to be located at Black Horse Street Car Park, in Bolton town centre. Ramboll modelled this to include:

- 2 No. Gas Engine CHP's – 2.0MWe (Total installed capacity 4.0MWe, operating between 2023-2037)
- Thermal Storage – 250m3 (Phase 1 – 2023)
- ASHP 1 – 2.0 MWth (2038 onwards)
- ASHP 2 – 2.0 MWth (2038 onwards)

Heat/cooling demand phasing description:

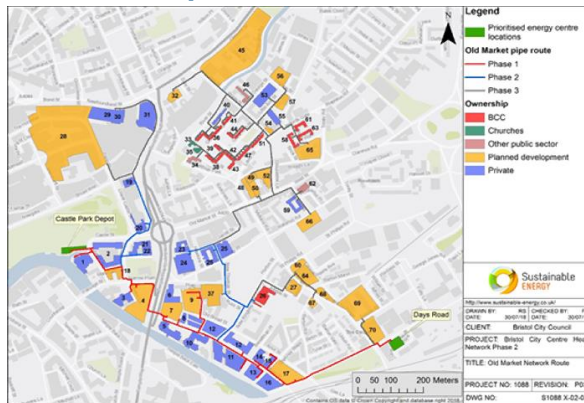
There are 3 phases to the project including both existing and future developments. The estimated years of connection for each phase are 2023, 2025 and 2027.

City Centre Phase 2_FES

Project Sponsor:

Bristol City Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	2.39
Pipework / distribution capex (£m)	10.86
Other capex (£m)	1.12
Total capex (£m)	14.37

Annual heat demand (GWh)	39.27
Project IRR*	6%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID Constructi on Start Heat On (initial)

Unknown	2020	2021
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - centralised

Project description:

Bristol City Council's ambition for the city to be carbon neutral by 2050 led to the council's desire to implement heat networks throughout the city.

This network is served by a WSHP and gas CHP engine (which supplies electricity to the HP) located at Castle Park Depot, abstracting water from the Floating Harbour. The phase 1 network comprises of many large planned development sites and commercial buildings. The proximity of the network to the Floating Harbour and significant planned development heat loads results in a prime opportunity for a district heat network.

Note on Bristol's Heat Network Investment Strategy:

Bristol City Council is seeking external investment of up to £1 billion to support a city-scale low carbon, smart energy infrastructure programme which includes investment in the Bristol Heat Network. For more information please visit www.energyservicebristol.co.uk/prospectus/

Energy centre description:

The Castle Park Depot energy centre includes a combination of gas CHP, WSHP and peak and reserve gas boilers, integrated with thermal storage tanks. The gas boilers will be used to provide heat at times of peak demand and when network temperatures are required to be higher than the heat pump set point, or as a reserve heat source during times of gas CHP or WSHP maintenance or failure. Controls will prioritise heat from the gas CHP unit and WSHP using thermal stores with priority over the gas peak and reserve boilers to maximise the use of low carbon technologies.

Heat/cooling demand phasing description:

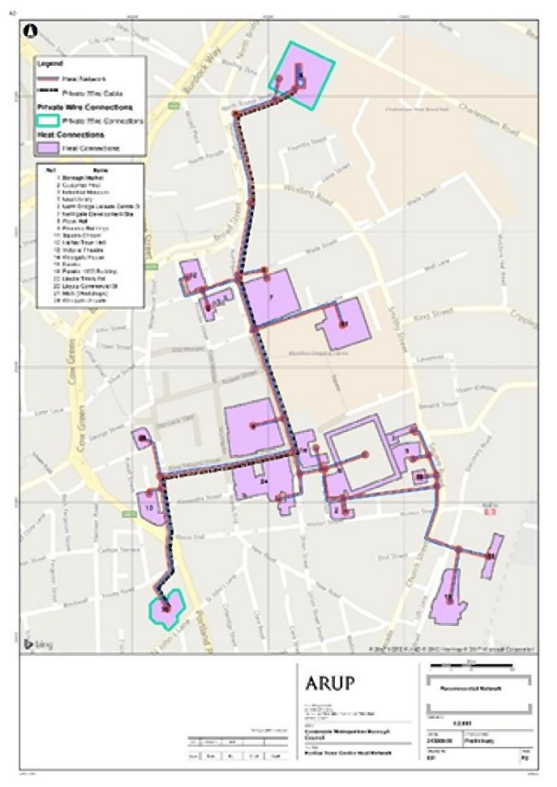
The phase 1 network option connects routes of high linear heat density to privately owned sites and planned developments. Phase 2 connects Hannah More Primary School (owned by BCC) and additional private sector and planned development sites. The phase 3 network extends to a significant number of connections including lower linear heat density routes, longer term planned developments and surrounding existing sites.

Halifax Town Centre_FES

Project Sponsor:

Calderdale Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	Not disclosed
Pipework / distribution capex (£m)	Not disclosed
Other capex (£m)	Not disclosed
Total capex (£m)	Not disclosed

Annual heat demand (GWh)	4.5
Project IRR*	Not disclosed%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
on Start (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

The network is designed around CMBC buildings incorporating all viable CMBC owned buildings in the Town Centre, including the Town Hall, Piece Hall, Northgate Development Site and North Bridge Leisure Centre Development amongst others. The scheme also connects to key private consumers in the area including Lloyds Trinity Rd and Eureka. A private wire connection is intended to be incorporated between the Energy Centre and Lloyds, a key anchor load central to the scheme viability. The scheme is designed to allow for future heat network expansion to Dean Clough but requires further engagement with the developer for this to be realised.

Energy centre description:

The Energy Centre proposed is part of a Leisure Centre development north of the Town Centre (provision has been given in modelling and report for a standalone Energy Centre if this is not possible). The Energy Centre would contain two 1.5MWe gas-fired CHP engines along with ancillary and back-up plant including four 3.3MW gas boilers and a 150m3 thermal store. As a standalone Energy Centre, the building would have an estimated 290m3 footprint. The operational strategy is heat-led.

Heat/cooling demand phasing description:

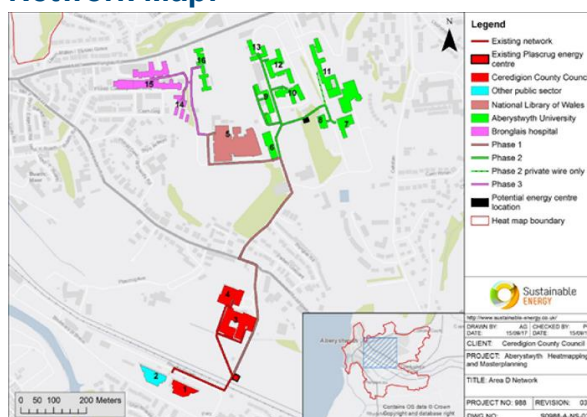
Through consultation with CMBC and HNDU, the scheme has been specified as a single phase. This has been selected as the network is not large enough to require multiple phases and all key internal and external stakeholders have engaged with the scheme. It is acknowledged that the major transport works planned throughout the Town Centre may impose build out constraints; however, the programme for this is unknown and therefore cannot be addressed at this stage.

Aberystwyth_MAP

Project Sponsor:

Ceredigion County Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	1.77
Pipework / distribution capex (£m)	2.17
Other capex (£m)	0
Total capex (£m)	3.94

Annual heat demand (GWh)	19.28
Project IRR*	4%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Boiler - biomass

Project description:

There is potential to extend the existing district heating network at Plasrugg (currently connecting Ceredigion County Council (CCC) offices, Welsh Government offices, Ysgol Penweddig and Plasrugg Leisure Centre) extending to include the National Library of Wales, Aberystwyth University and Bronglais Hospital. The network would be served by the existing biomass boiler, gas CHP and an additional biomass boiler. The project would have a material impact on heat decarbonisation in Aberystwyth. Benefits for CCC include reducing carbon emissions, potential revenue generation, reducing operational / energy costs, utilising local energy sources, improving energy security, and reducing fuel poverty.

Energy centre description:

The network would be served from 2 energy centres; the existing Plasrugg energy centre and a new energy centre at Aberystwyth University. Plasrugg would house the 500kW gas CHP engine and backup boilers required for phase 1. For additional network phases, backup boilers would need to be housed at Aberystwyth University. Gas CHP units for additional network phases would be located in containerised units adjacent to the existing Plasrugg energy centre. For the full phase 3c network, an additional area of approximately 300m² would be required adjacent to the Plasrugg energy centre and approximately 220m² at Aberystwyth University.

Heat/cooling demand phasing description:

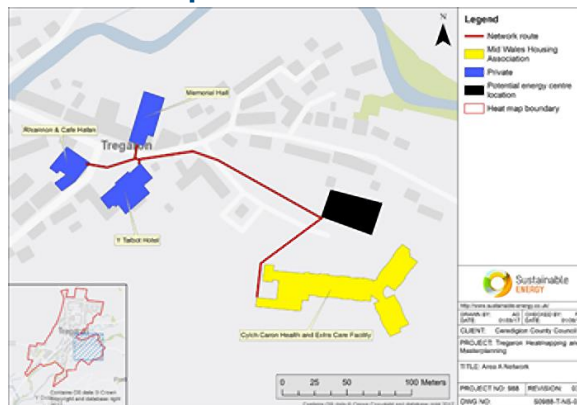
Phase 1 will extend the existing network to the National Library of Wales and connect existing heat network connections to private wire. Phase 2 will connect key buildings at Aberystwyth University. Phase 3 will then connect Bronglais Hospital and Pantycelyn (an additional Aberystwyth University building).

Tregaron_MAP

Project Sponsor:

Ceredigion County Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0.23
Pipework / distribution capex (£m)	0.16
Other capex (£m)	0
Total capex (£m)	0.4

Annual heat demand (GWh)	1.05
Project IRR*	7%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
on Start (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Boiler - biomass

Project description:

A district heat network in this area would supply heat to Cylch Caron planned development, Y Talbot Hotel, Rhiannon and Café Hafan, and the Memorial Hall by means of a biomass boiler. The network will provide benefits to Ceredigion County Council (CCC) including generating revenue, local carbon reduction, and utilising local energy sources, through woodchip purchase. The network could also potentially improve energy security and resilience against rising energy prices.

Energy centre description:

An energy centre and woodfuel delivery area to accommodate a 250 kW biomass boiler would require a land area of approximately 1,000 m². It has been assumed that this would be located adjacent to the Council-owned car park to the north of the Cylch Caron development.

Heat/cooling demand phasing description:

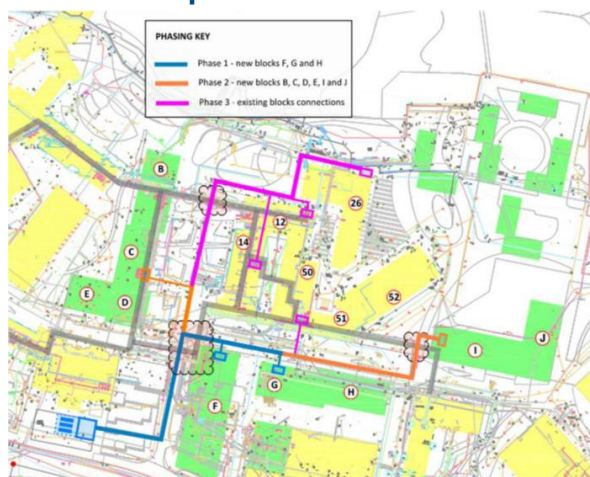
No potential viable network extensions have been identified. The network has therefore been presented as a single phase.

Alderley Park_DPD

Project Sponsor:

Cheshire East Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	5.83
Pipework / distribution capex (£m)	1.35
Other capex (£m)	0
Total capex (£m)	7.18

Annual heat demand (GWh)	2.58
Project IRR*	2%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

Unknown	Unknown	2025
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - centralised

Project description:

Network at Alderley Park - Ambient loop solution utilising WSHPs in buildings and aquifer water used via PHEX, ASHPs and CHP wasted heat in energy centre.

Energy centre description:

New energy centre proposed to be built to the south of the site to accommodate all equipment. Phase 1 assumes same energy centre location and specifications to account for future expansion

Heat/cooling demand phasing description:

Phase 1 – Serving buildings F, G and H, 4 boreholes initially. Two abstraction and 2 return

Phase 2 – Connection of B, C, D, E, I and J with additional capacity from open loop boreholes (another 4)

Phase 3 – Ambient loop extended to laboratory (existing) buildin. Continual energy saving through improved network and building efficiencies

Crewe Town Centre DPD

Project Sponsor:

Cheshire East Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	11
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Project IRR*	2%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

Heat and Power from CHP, with gas back up. Heat to be provided to Lifestyle Centre, Courthouse, Lyceum Theatre and Municipal Buildings. Electricity sold to Lifestyle Centre, Lyceum Theatre and Municipal buildings via a private wire network.

Energy centre description:

Energy Centre to include 360kW_e (389 kW_{th}) CHP, 600 kW gas boiler, and 50m³ thermal store. Potential EC location in an extension of the plantroom of the Lifestyle Centre. The extension footprint to house scheme energy plants is proposed over two floors.

Heat/cooling demand phasing description:

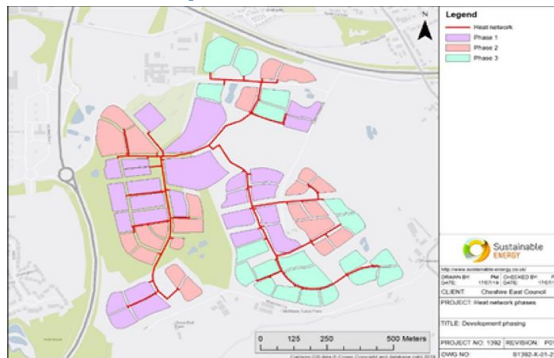
Peak heat demand will be met by existing and new CHP and supplementary gas boiler. Heat network will be installed as a single phase but has been sized to allow expansion into planned developments in close proximity to the network.

North Cheshire Garden Village_FES

Project Sponsor:

Cheshire East Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.18
Pipework / distribution capex (£m)	4.83
Other capex (£m)	0.52
Total capex (£m)	8.53

Annual heat demand (GWh)	15.28
Project IRR*	-1%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID **Constructi** **Heat On**
 on Start **(initial)**

Unknown	1905	1905
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

The Garden Village at Handforth network serves the proposed garden village developments and is served by a ground source heat pump (GSHP) located at the centre of the development site. The network connects the garden village developments only that are to be designed for DH connection and allows for lower network temperatures. BGS borehole records suggest the site is a suitable location for GSHPs.

Energy centre description:

The energy centre is located in Parcel 9 of the development, at the centre of the site, near the village centre. The energy centre is to include 580 kW GSHP and a 389 kWth gas CHP installed in phase 1 and additional 580 kW GSHPs installed in phase 2 and 3 to serve the later development phases.

Heat/cooling demand phasing description:

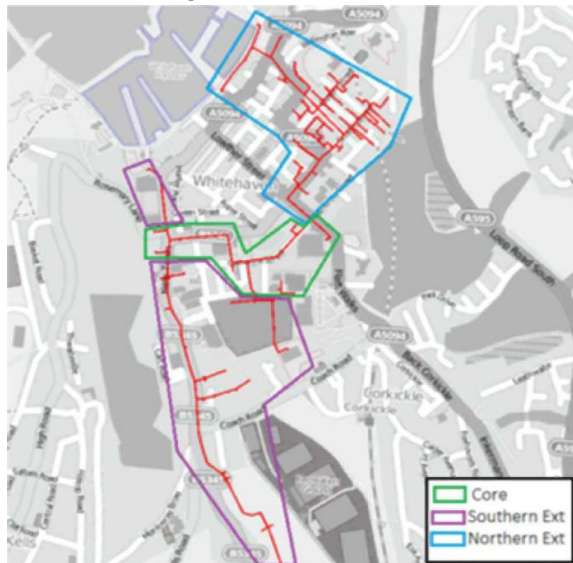
The network phasing follows the development phasing. Phase 1 connects the majority of the village centre, including the primary school and the extra care facility. The high density housing located towards the centre of the site is also connected in phase 1. Phase 2 connects the remaining village centre buildings and further residential parcels. Phase 3 connects the remaining and primarily lower density housing.

Whitehaven Minewater Heat Kells Lane_FES

Project Sponsor:

Copeland Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	6.03
Project IRR*	4%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2021	2021

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: mine water

Project description:

Feasibility shows that minewater-fed network for Whitehaven town centre is technically feasible though financial performance is very poor, and without RHI payments the scheme is highly unlikely to make an operating surplus. Analysis shows that a low temperature scheme, serving only new developments with low temperature heating systems would make a profit, and without grant funding approaches an investible IRR. Such a scheme is dependent on buildings that do not yet exist so scheme development will need to wait until their construction is more certain.

Energy centre description:

Suitable locations for an energy centre to house a 4MW minewater heat pump and ancillary equipment were identified. The preferred site – Castle Meadows car park – is council-owned and is in close proximity to a suitable minewater abstraction borehole and the key heat loads.

Heat/cooling demand phasing description:

For the low temperature network, connections begin in 2021; Civic Quarter replacement, Plot 1 of The Ginns, Plot 1 of the Meadows, 13 Quay St developments. 2022: Plots 2 and 5 the Ginns, Plot 2 at 6 The Meadows. 2023 Plot 3 at the Ginns, and Plot 3 at 6 the Meadows, Preston St Gateway developments. 2024: Plot 4 at 6 the Meadows. 2025: Plot 4 The Ginns. 2026: Plot 5 at 6 The Meadows.

Whitehaven Westlakes Science Park_FES

Project Sponsor:

Copeland Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.67
Pipework / distribution capex (£m)	4.04
Other capex (£m)	2.72
Total capex (£m)	10.43

Annual heat demand (GWh)	5.1
Project IRR*	-2%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID Constructi on Start Heat On (initial)

Unknown	Unknown	2020
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: mine water

Project description:

The preferred option is for a network to supply the Westlakes Science Park, though the IRRs are unlikely to be investible even with HNIP funding. It has been advised that further funding be sought in addition to HNIP. (p.116). Investigations considering viability of connecting the Eastern Whitehaven cluster did not improve the economics. The Westlakes Science Park is a majority private sector proposal, that would serve non-domestic loads.

Energy centre description:

A new energy centre site to the north side of Westlakes Science Park has been identified as the preferred option. The network would be supplied by 2x 1180kWth gas CHP engines. (p.62)

Heat/cooling demand phasing description:

The network is proposed in 3 phases. The first connections (a selection of existing and planned buildings) are planned in 2020, the second phase includes the proposed buildings known as Plot 526, and the third phase, Summergrove Hall is planned for after 2025.

Town Centre Heat Network_COM_CST

Project Sponsor:

Crawley Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	5.27
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	5.27

Annual heat demand (GWh)	14.85
Project IRR*	3%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	2024

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

The first phase of the Crawley Town Centre heat network is under construction with heat on in May 2022. It will serve the new Town Hall and commercial offices (11,700 m2) as well as three adjacent new residential developments with a total of 310 units. Total heat demand of 1.3 GWh. Feasibility study for phase 2 expansion (heat demand 10.5 GWh) to start in Spring 2022. This will look at switch to low/zero carbon heat sources to further contribute towards Crawley Borough Council's net zero by 2040 commitments.

Energy centre description:

The main heat source is a 133kWe gas fired CHP with private wire. The energy centre has been constructed as phase 2 ready as far as possible, so that the phase 1 investment can be maximised.

Heat/cooling demand phasing description:

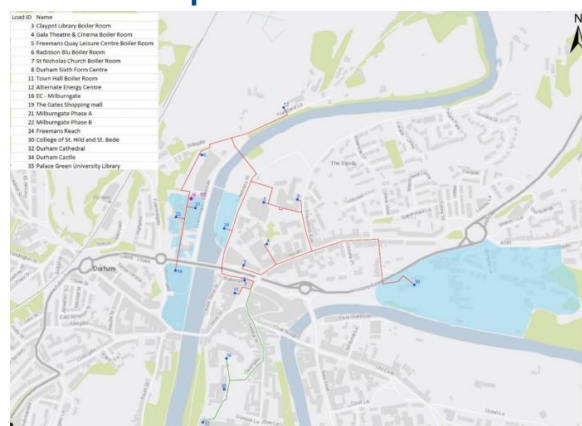
Key customers committed to this first phase are: 310 new residential units and the new town hall and commercial offices. Phase 2 connections include a police station, a library, a college and new residential and commercial developments that are all located within the town centre zone covered by the Local Plan Heat Network Planning Policy ENV 7.

Durham Town Centre_FES

Project Sponsor:

Durham County Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	4.94
Pipework / distribution capex (£m)	4.38
Other capex (£m)	1.84
Total capex (£m)	11.15

Annual heat demand (GWh)	4.06
Project IRR*	3%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID Constructi on Start Heat On (initial)

Unknown	Unknown	2019
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - centralised

Project description:

The core scheme is based upon new and existing public and private sector development on the east and west side of the River Wear. River Source or Sewerage Source Heat pumps are to be the primary heat generators. CHP will not be considered.

Energy centre description:

A number of energy centre locations have been considered. The feasibility was based upon the energy centre being located in the Milburn Gate development. The best economically performing option of the preferred scenarios is for 2x1MW River Source Heat pump.

Heat/cooling demand phasing description:

The heat demand for the Town Centre North and Northern Quarter is 4055MWh in 2019, rising to 8,267MWh in 2020, 11,647MWh in 2021 and finally 14,769MWh in 2022. The Council is unlikely to develop a private wire network.

Durham University_FES

Project Sponsor:

Durham University

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	8.32
Pipework / distribution capex (£m)	12.56
Other capex (£m)	1.23
Total capex (£m)	22.11

Annual heat demand (GWh)	0
Project IRR*	7%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

Unknown	2019	2020
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

The report concluded that a CHP only system would be preferable, though the exact configuration has not been decided on yet. The figures in this appendix refer to CHP, Option B, with 23% of Capex supplied by grant funding. Private wire cables to use same trenches as the network pipes.

Energy centre description:

The preferred location for the Energy Centre is known as EC1, the green space at A177 adjacent to Ogden Centre. Option B proposes 2 x 3333kWe CHP units and 1x 300m3 thermal store.

Heat/cooling demand phasing description:

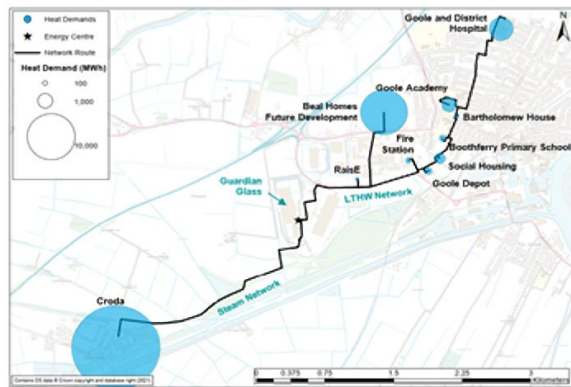
The scheme is divided up into clusters-the Northern, Western, Eastern and Southern clusters. These clusters will be connected in phases as follows. PHASE 1: Northern Cluster in year 2020, (13,900MWhth, 15650MWhe), PHASE 2: Western cluster in year 2021 (6630MWhth, 5360MWhe) PHASE 3: Eastern cluster in year 2022 (6850MWhth, 2910MWhe), and PHASE 4: Southern Cluster in year 2023 (3610MWhth, 1280MWhe). (Table 7-1 p67). This phasing arrangement and timetable has been used for theoretical demonstration purposes, and the real timetable will depend on the University construction timetable.

Goole District Energy Network_DPD

Project Sponsor:

East Riding of Yorkshire Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.23
Pipework / distribution capex (£m)	19.08
Other capex (£m)	4.82
Total capex (£m)	27.14

Annual heat demand (GWh)	30.76
Project IRR*	6%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2023	2024

Project Contact Details:

Organisation:	Unknown
Contact Name:	Ivan Horoshenkov
Email:	ivan.horoshenkov@rendes co.com

Technical Information:

Primary energy source:

Waste heat recovered (no heat pump)

Project description:

The Goole District Heat Network will harness waste heat from a glass manufacturing plant (Guardian Glass) to supply LTHW heat and process steam to a mixture of residential, commercial and industrial sites. The network makes use of heat that is currently rejected to the atmosphere to facilitate the decarbonisation of public and private sector buildings in and around Goole.

Energy centre description:

Energy centre located on the Guardian Glass site nearby to the source of waste heat. EC contains gas boilers for peaking and back-up along with 75m3 of thermal storage and water treatment etc.

Heat/cooling demand phasing description:

The Goole District Heat Network has been modelled over 3 phases (heat on 2024, 2030 and 2035). Connection dates principally based on ages of existing plant but most buildings expected to connect in phase 1.

East Runcorn Daresbury Energy Network_FES

Project Sponsor:

Halton Borough Council

Network Map:

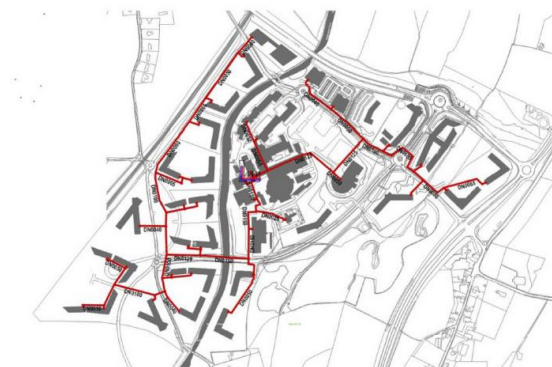


Figure 2-4 SIC Gas CHP heat network

Summary forecast financial information:

Energy generation capex (£m)	3.45
Pipework / distribution capex (£m)	4.77
Other capex (£m)	1.9
Total capex (£m)	10.12

Annual heat demand (GWh)	13.65
Project IRR*	6%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	2034

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Boiler - EfW

Project description:

Over the next twenty years the construction of a new community in East Runcorn - with up to 2800 new homes alongside new schools and retail buildings, and the expansion of the existing Science and Innovation Campus and Business Park - represents a significant opportunity to develop a shared energy network.

Energy centre description:

Gas CHP is assumed to provide baseload heat, hot water and power, with 3.3 MW (thermal) CHP and 5.8 MW of gas boilers required once all consumers are connected. Absorption chillers are considered for use to supply cooling to the Science and Innovation Campus data centre.

Heat/cooling demand phasing description:

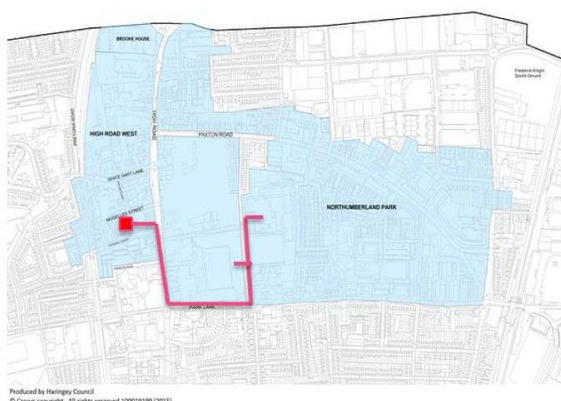
First stage connection forecast (as at 2016) to connect in 2018 with 4.5MW of thermal capacity installed (estimated 1.16GWh p.a. heat demand). This increases to installed capacity of 8MWth in 2026 (estimated 9.92GWh p.a. heat demand) rising to full capacity of 9MWth in 2031 (estimated 12.56GWh p.a. heat demand).

North Tottenham_DPD

Project Sponsor:

London Borough of Haringey

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	4.65
Pipework / distribution capex (£m)	3.89
Other capex (£m)	2.13
Total capex (£m)	10.67

Annual heat demand (GWh)	29.58
Project IRR*	0%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2020	2022	2024

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Boiler - EfW

Project description:

The summary financial forecast is based on 2016 analysis which assumed 3 large and adjacent development sites anticipated to commence before 2020 with 10 year build out. Spurs new 61,000 seat stadium opening in 2018, hotel and leisure facilities. Potential for up to 2700 new homes at High Road West and up to 5000 new homes in Northumberland Park, relocation of two schools into new facilities, new library and community facilities, and mix of employment space. Regeneration of the largest site has been suspended but scheme still viable and there is still strong political support for the project which is being actively progressed.

Energy centre description:

Heat and private wire. 2016 analysis of full build out: peak heat c.30MW. Initially gas CHP, with gas boilers and thermal store. Potential to deliver future transition to lower carbon heat source at scale, and further carbon savings via connection to future ERF in Edmonton. Energy Centre Shell to be delivered by the High Road West Development Partner in early 2020s.

Heat/cooling demand phasing description:

Final build-out estimates 40MW boiler plant and 8MWe CHP with 40GWh annual heat sales. Assumes build out of 400 units pa at HRW over 8yrs and 350 units pa at NP over 15 years. Spurs stadium assumed to be added in initial phase. Additional 80,000m2 non-residential development added at approx. 5,500m2 pa over 15yrs.

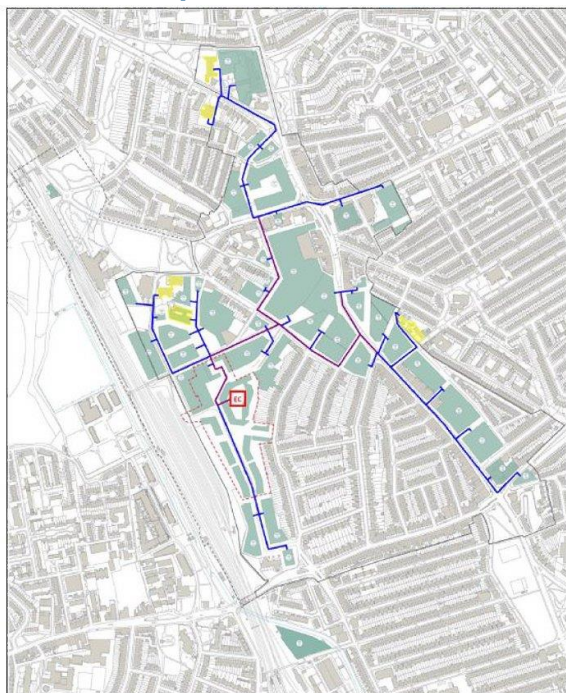
Potential to add c1,000 existing homes at Broadwater Farm Estate (not currently included)

Wood Green_FES

Project Sponsor:

London Borough of Haringey

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	22.1
Pipework / distribution capex (£m)	6.8
Other capex (£m)	2
Total capex (£m)	30.9

Annual heat demand (GWh)	28.21
Project IRR*	3%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	2023

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

Feasibility study in 2016 analysed a new network to serve a large programme of regeneration around Wood Green. The initial source of low carbon heat was anticipated to be gas-fired combined heat and power, with an aspiration to connect to the energy from waste plant in Edmonton in the longer term. It envisaged that electricity can be sold via private wire to Haringey Council. Heat would supply mainly new developments proposed in the area, alongside some existing loads. Expect updated feasibility and business case to be completed by Haringey Council in 2019/20.

Energy centre description:

The proposed energy centre was expected to be integrated into the Clarendon Square development. The energy centre was assumed to be made available in early 2020s to allow construction of scheme to commence. The feasibility work suggested the fully built out scheme is estimated to require around 28MW of gas boiler plant and 5.3MWth of gas-fired CHP. See the summary forecast financial information opposite from 2016. Note: the scheme's feasibility, phasing and delivery timescales are expected to be revisited by Haringey Council in updated feasibility work and subsequent business case in 2019/20.

Heat/cooling demand phasing description:

Feasibility work in 2016 estimated the total annual heat demand on full build out of the masterplan at 28.2 GWh Phase 1 was assumed to be Clarendon Road, areas adjacent to the railway and the Cultural Quarter. Phase 2 assumed to include the Mall, Morrisons and High Road South. Phase 3 assumed to include the Civic Centre, Bus Depot and Mecca Bingo sites. Future timelines are uncertain - FID unlikely to be prior to 2021 with build out dates to follow.

North Lewisham Heat Network_FES

Project Sponsor:

London Borough of Lewisham

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	47.11
Project IRR*	>10%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Boiler - EfW

Project description:

The opportunity is to connect the SELCHP energy from waste facility to a number of new developments in the north Lewisham area. The North Lewisham continues from the point of interface with the New Cross study, which is the junction of Surrey Canal Road and Grinstead Road. The pipework running between SELCHP and this interface point (i.e. down Surrey Canal Road) was assessed in the previous feasibility study and the sizing included an allowance for the loads included in this North Lewisham extension study.

Note that the use of two different heat network names across the two studies gives the impression that there would be two separate heat networks – the New Cross and the North Lewisham heat networks. These two names are used to define two separate studies, focusing on two areas of what would be the same heat network if all loads connected.

Energy centre description:

n/a - all heat to be supplied by SELCHP.

Heat/cooling demand phasing description:

The scope of this feasibility assessment is therefore to build upon the analysis undertaken in the New Cross Heat Network feasibility assessment to include the following development sites: The Wharves, Deptford; Cannon Wharf; Marine Wharf East; Marine Wharf West; Yeoman Street; Neptune Wharf; Convoys Wharf; Arklow Road. Annual heat demand is estimated at 47GWh.

LBL planning officers and local housing associations will also be consulted to determine whether there are additional sites that should be considered for connection.

Chatham Maritime_FES

Project Sponsor:

Medway Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	66.66
Project IRR*	2%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - centralised

Project description:

Network 2 encompasses Network 1 consumers north of Chatham town centre, key consumers including Medway Campus, Royal School of Military Engineering, Medway council and Chatham Historic Dockyard properties as well as an expansion including the Medway Maritime Hospital and Brompton Academy. The network is supplied by water-source heat pumps utilising the Medway River as source of heat.

Energy centre description:

The energy centre is located on the riverside at H1 development site or in an identified existing building in Chatham Historic Dockyard. The EC houses the WSHP units, peak/backup gas boilers and heat storage.

Heat/cooling demand phasing description:

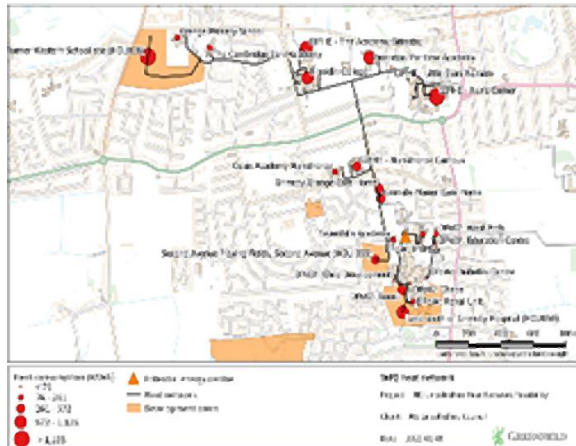
Apart from the H1 development, all other consumers within the area are existing consumers. Consumers can be connected to the network immediately as the network is built. Hospital and Bromspton Academy are connected last (year 3)

GIFHE(peak)_FES

Project Sponsor:

North East Lincolnshire Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	5.64
Pipework / distribution capex (£m)	10.54
Other capex (£m)	3.25
Total capex (£m)	19.43

Annual heat demand (GWh)	9.16
Project IRR*	2%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Helen Norris
Email:	helen.norris@nelincs.gov.uk;

Technical Information:

Primary energy source:

Waste heat recovered (no heat pump)

Project description:

Heat network serving educational facilities, hospital outbuildings, care facilities and residential developments around the Grimsby Institute (Further and Higher Education Campus) and Diana Princess of Wales Hospital in Grimsby.

Energy centre description:

Energy centre is proposed to be located on the estate of Diana, Princess of Wales Hospital adjacent to an existing Energy Centre (separate building). The energy centre is proposed to employ gas CHP (to meeting a significant power load), Groundwater sourced Heat Pumps, heat recovery from the hospital and (peaking) gas boilers. The proportion of the heat supplied from Heat Pumps is an important consideration since this could significantly improve the carbon performance of the scheme as compared a scheme dominated by gas CHP.

Heat/cooling demand phasing description:

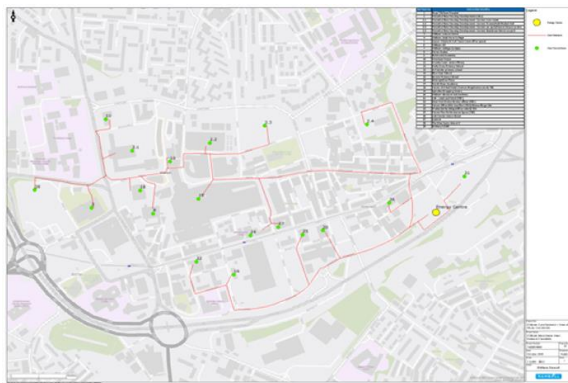
Connection of existing consumers is phased based on known boiler ages for key consumers. Developments are connected as they are built out. The network is proposed to originate from the Diana, Princess of Wales Hospital site, which is also among the first connections. A potential major re-build of the hospital within the next 10 years will enable significant expansion.

Oldham_MWSHP Town Centre_Scenariro 1A_FES

Project Sponsor:

Oldham Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	6.82
Pipework / distribution capex (£m)	5.51
Other capex (£m)	5.35
Total capex (£m)	17.68

Annual heat demand (GWh)	12.5
Project IRR*	0%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2022	2023	2024

Project Contact Details:

Organisation:	Unknown
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Contact Name:	Andrew Hunt
Email:	andrew.hunt@oldham.gov.uk

Technical Information:

Primary energy source:

Heat pump: mine water

Project description:

Ramboll was appointed by Oldham Metropolitan Borough Council (OMBC, the Council) in June 2020 to undertake a techno-economic feasibility study for a new District Heating Network (DHN). The aim is to supply with low carbon heat the Oldham Town Centre redevelopment area, including ground source heat using mine water from disused coal mines beneath the town centre as the main energy source. Throughout the study, Ramboll has closely engaged with Oldham Council to inform its work, especially regarding new developments in the Civic Quarter and regeneration areas of the Town Centre.

Energy centre description:

The Energy Centre is assumed to be located at the Rhodes Bank site. This site was identified as the preferred location for a borehole by the Coal Authority. If the trial borehole is not successful, an alternative location would be the Woodstock Street site. The footprint of the Energy Centre is 25m x 16m (LxW), 400m². The Energy Centre houses 4 MW MWSHP, 3No. 3.5 MW gas boilers (1 of these to be installed for Phase 4), 1No. 480kW summer gas boiler, DH pumps, pressurisation units, expansion vessels and ancillary equipment. 2No. 100m³ thermal stores are located outside the Energy Centre main building.

Heat/cooling demand phasing description:

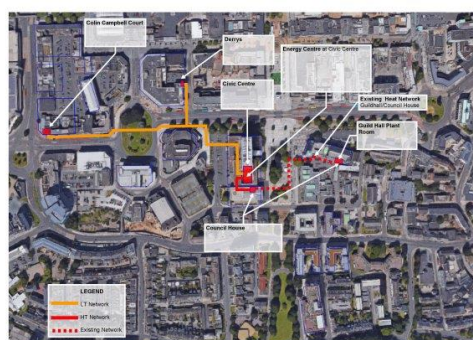
The core connections were assessed for when they could practically connect to a district heating network. The DHN is proposed to be built in 5 phases, from 2023 to 2027 with heat supply date being 2024. Existing commercial buildings proposed to be connected to the district heating were given a connection date of 2024 (Phase 1). For new developments, the Client provided indicative connection year. Potential new housing developments have been assumed to connect in 4 phases between 2025 and 2028.

Plymouth Southern City Centre District Energy Scheme

Project Sponsor:

Plymouth City Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.23
Pipework / distribution capex (£m)	0.78
Other capex (£m)	0.32
Total capex (£m)	4.33

Annual heat demand (GWh)	3.49
Project IRR*	4%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2027	2028

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

A district heating network centred around the redevelopment of the Civic Centre in Plymouth. The scheme connects new development at Colin Campbell Court to the Civic Centre, Council House, Guildhall, with the opportunity to also connect the Derrys building. The energy centre for the scheme is to be located in the Civic Centre basement. The scheme uses ground source heat pumps and gas CHP as the low carbon heat sources. There is a private wire to the Council House. Additionally investigated is the expansion of the scheme through phases two and three, although these do not improve performance.

Energy centre description:

The energy centre may contain 350 kW of ground source heat pumps, or utilise air source heat pumps, pending open loop viability. These pumps feed a 70 oC flow network, feeding the new/ redeveloped buildings. This scheme utilises a high temperature top up (80 oC) which is generated by CHP and gas boilers. This 80 oC circuit also feeds the Council House and Guildhall. There is a private wire connection from the CHP unit into an existing private wire network serving PCC buildings.

Heat/cooling demand phasing description:

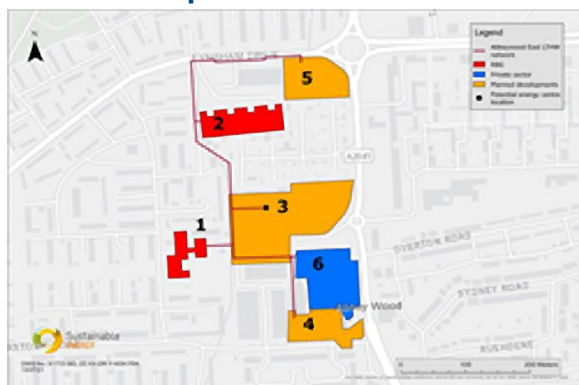
Phase 1 of the scheme contains 3.5 GWh/a heat load, the addition of Phase 2 raises this to 4.5 GWh/a, with Phase 3 bringing it to 7.3 GWh. It is recommended that the build out of the scheme commences with Phase 1 initially due to economic viability and also the proving of a starter scheme before being extended further.

RBGreenwichAbbeywoodE_FES

Project Sponsor:

Royal Borough of Greenwich

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	1.55
Pipework / distribution capex (£m)	0
Other capex (£m)	0.51
Total capex (£m)	2.06

Annual heat demand (GWh)	6.05
Project IRR*	3%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

Unknown	2023	2024
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

A cluster of heat demands around the Cross Quarter development has been identified as a potential heat network being served by the proposed transmission main.

Energy centre description:

The preferred energy centre location is within the Cross Quarter development. Further engagement with the developers are required to secure this EC location.

Heat/cooling demand phasing description:

- Phase 1: connects existing buildings including Boxgrove Primary School, Thistlebrook Industrial Estate and Sainsbury's as well as the Cross Quarter planned development
- Phase 2: connects key planned developments, these include the Land at Felixstore Road and Cross Quarter developments

RBGreenwichDecentralised Energy_FES

Project Sponsor:

Royal Borough of Greenwich

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	7.65
Pipework / distribution capex (£m)	4.7
Other capex (£m)	1.08
Total capex (£m)	13.44

Annual heat demand (GWh)	16.76
Project IRR*	5%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2023	2024

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - centralised

Project description:

The Charlton area has been identified as a regeneration area and there is an opportunity to serve the large amount of new developments with a heat network

Energy centre description:

An energy centre located within the RBG Commercial development is currently the preferred option. This will house a 3.5MW water source heat pump abstracting from the Thames.

There is an alternative EC location on the riverside which is currently owned by Cory and has been indicated as potentially available for rent. This should be explored further as the project progresses.

Heat/cooling demand phasing description:

- Phase 1: connects short term key planned developments including Stone Foundries, 9 Herringham Road and existing sites such as Sainsbury's Thameside and Royal Greenwich Trust School.
- Phase 2: connects medium term planned developments including VIP Trading Estate, RBG Commercial, RBG Residential and Proposed 3FE School site.
- Phase 3: no additional heat demands are connected, but a connection to the proposed transmission main is made.

RBGreenwichThamesmeadN_FES

Project Sponsor:

Royal Borough of Greenwich

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	7.06
Pipework / distribution capex (£m)	0
Other capex (£m)	6.86
Total capex (£m)	13.91

Annual heat demand (GWh)	22.17
Project IRR*	>10%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
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Unknown	2031	2032
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

The Thamesmead North area is the location of the Thamesmead Waterfront development of 15,000 homes. This has been identified as an area for a potential heat network which could connect existing buildings, allowing them to decarbonise in the most cost effective manner.

Energy centre description:

The preferred energy centre location is in the shopping centre car park, however further discussions with developers of Thamesmead Waterfront are required to determine if housing the energy centre within the development is a viable option.

Heat/cooling demand phasing description:

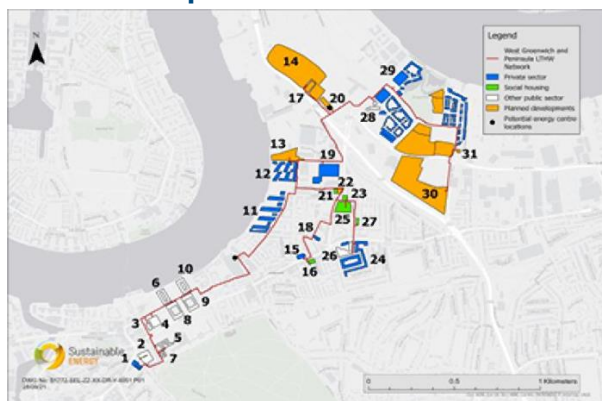
- Phase 1: connects the first third of the Thamesmead Waterfront development alongside existing sites such as Woolwich Polytechnic School for Boys, Hawksmoor School and Thamesmead Medical Associates.
- Phase 2 & 3: each connect another third of the Thamesmead Waterfront

RBGreenwichWestGr Pen_FES

Project Sponsor:

Royal Borough of Greenwich

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	16.63
Pipework / distribution capex (£m)	0
Other capex (£m)	9.46
Total capex (£m)	26.09

Annual heat demand (GWh)	29.27
Project IRR*	2%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	2023	2024
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed

Email:

Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - centralised

Project description:

A network serving several existing comunally heated developments, Greenwich University and Maritime museum.

The main heat source will be a water source heat pump, and the network will connect to the proposed transmission main from Cory EfW when available.

Energy centre description:

Two proposed energy centres:

Greenwich Power Station houses a 5MW heat pump in phase 1 and an additional 5MW heat pump in phase 3.

The Pinnacle Power/KnightDragon energy centre houses the required peak and reserve boilers and is also the connection point for the proposed transmission main in 2040.

Heat/cooling demand phasing description:

- Phase 1: connects short term key planned developments including Greenwich Millennium Village phases 3, 4 and 5 and Site Between A102 and Millennium Way, as well as key existing sites including Greenwich Wharf, Enderby Wharf phase 1 and Greenwich Millennium Village phase 1 and 2.

- Phase 2: connects the medium term planned developments Enderby Wharf phase 2 and 87 Blackwall Lane

- Phase 3: connects long term planned developments including Site Between A102 and Bugsby_s Way, Knight Dragon and Millennium Retail Park

RBGreenwichWoolwichTC_FES

Project Sponsor:

Royal Borough of Greenwich

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	9.94
Pipework / distribution capex (£m)	29.06
Other capex (£m)	0
Total capex (£m)	39.01

Annual heat demand (GWh)	19.44
Project IRR*	2%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2033	2034

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: water source - centralised

Project description:

The Woolwich Town Centre has been identified as an area of high heat density with a mix of existing buildings and planned developments.

Energy centre description:

The energy centre at the Monk Street car park site will house a 5MW water source heat pump abstracting from the river Thames. The energy centre size is limited by the available footprint and so the scheme will be restricted in size until a connection to the proposed transmission main is made.

Heat/cooling demand phasing description:

- Phase 1: focuses on connecting short term planned developments, in the case of Woolwich Town Centre this is defined as any planned development assumed to be connecting before 2030. These include Mortgramit Square, Island Site and Woolwich Leisure. This phase also connects existing buildings such as Plantagenet House, Woolwich New Road 47 and Woolwich Dockyard
- Phase 2: connects more existing buildings, including both private and public sector owned connections, such as Gill Court, Former Woolwich Theatre and Ogilby Housing Society Site
- Phase 3: connects long term planned developments such as Burrage Road/Spray Street, Royal Artillery Barracks and Former New Look

2019/20 HNDU_ Notting Dale Heat Network DPD

Project Sponsor:

Royal Borough of Kensington and Chelsea

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	2.4
Pipework / distribution capex (£m)	9.44
Other capex (£m)	2.26
Total capex (£m)	14.1

Annual heat demand (GWh)	6.94
Project IRR*	Not disclosed%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2026	2029

Project Contact Details:

Organisation:	Unknown
Contact Name:	James Caspell
Email:	James.Caspell@rbkc.gov.uk

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

The Lancaster West Estate (LWE) is located within the Notting Dale Ward, in the Royal Borough of Kensington and Chelsea (RBKC) and is currently undergoing a comprehensive refurbishment to deliver on a government promise to "Deliver a model social housing estate for the 21st century where residents can live in affordable comfort". The deep energy retrofit will improve the energy performance of the Council's housing stock, whilst the Notting Dale Heat Network project will provide a new zero-carbon heat network for up to 826 existing homes on the Lancaster West Estate (75% social rent); Kensington Aldridge Academy; Kensington Leisure Centre and Baseline Studios (start-up business units). The two existing heat networks, which supply 80% of homes on Lancaster West Estate, are over 40 years' old and time expired. The lack of individual control in people's homes is a significant source of resident complaints, alongside frequent outages.

Energy centre description:

The new heat network's energy centre will use a large Air Source Heat Pump and electric boiler, to make the Notting Dale Heat Network 100% zero-carbon by 2030. Having been co-designed with residents, the renewable heat network is a key strategic asset in the council's plans for the Estate to become carbon-neutral by 2030. It will also create a launchpad for significant heat network expansion, with the opportunity for wider roll-out able to help the council deliver a net-zero carbon Borough by 2040. The project is supported by HNDU, HNIP and the GLA's Local Energy Accelerator.

Heat/cooling demand phasing description:

The buildings will be connected to the Notting Dale heat network across four phases, as shown below:

- Phases 1 and 2 would come online in Spring 2025
- Phase 3 would come online in April 2026
- Phase 4 would come online in April 2029

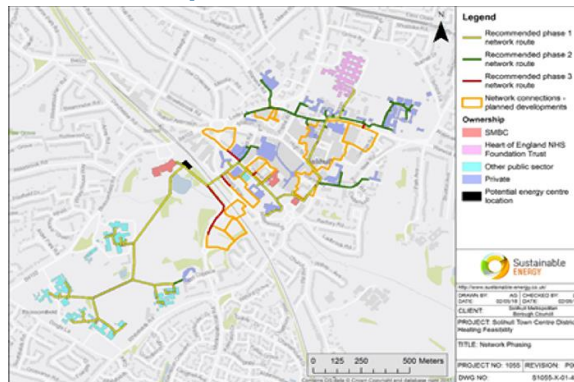
The phasing schedule was developed in line with the requirements of the refurbishment programme, technical viability, commercial aspects, and RBKC's strategic objective to be carbon neutral by 2030.

Solihull Town Centre_FES

Project Sponsor:

Solihull Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	4.6
Pipework / distribution capex (£m)	15.27
Other capex (£m)	0
Total capex (£m)	19.48

Annual heat demand (GWh)	18.98
Project IRR*	4%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
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Unknown	Unknown	2027
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

Solihull Town Centre has been identified as an area of high enough heat density to support a heat network.

Energy centre description:

The energy centre would contain a 1.7MW air source heat pump a 1.6MWe CHP, and 7.5MWth of auxiliary boilers for phase 1. In phase 2, a 776kWe CHP, a 1.7MW heat pump and 1.5MWth of auxiliary would be added. In phase 3, approximately 5-6MW of auxiliary and 1.7MW heat pump would be added to the network, although most likely not at the energy centre but in one of the developments connecting to the network in phase 3.

Heat/cooling demand phasing description:

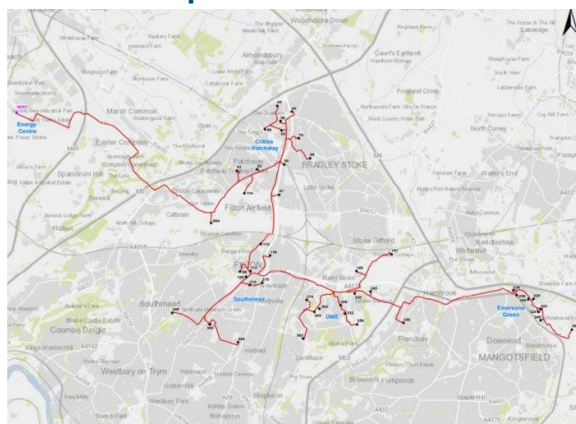
The proposed network would connect up council buildings, schools and a few private sector buildings in phase 1. A small private wire network would also be part of phase 1, serving Solihull College, council buildings and a private sector building. Phase 2 adds several private sector connections, and phase 3 connects proposed developments.

SERC EfW heat supply_MAP

Project Sponsor:

South Gloucestershire Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.05
Pipework / distribution capex (£m)	27.83
Other capex (£m)	3.03
Total capex (£m)	33.91

Annual heat demand (GWh)	0
Project IRR*	0%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EfW

Project description:

A heat network is proposed to connect the significant heat loads in Cibbs Patchway, Southmead and UWE to the Sita Severnside energy recovery centre. With baseload heat estimated at 137.8GWh per year and potential additional annual heat loads of 33.2GWh the project offers an estimated heat density of just under 9MWh per meter of pipe installed and an undiscounted payback of 9 years.

Energy centre description:

Not provided

Heat/cooling demand phasing description:

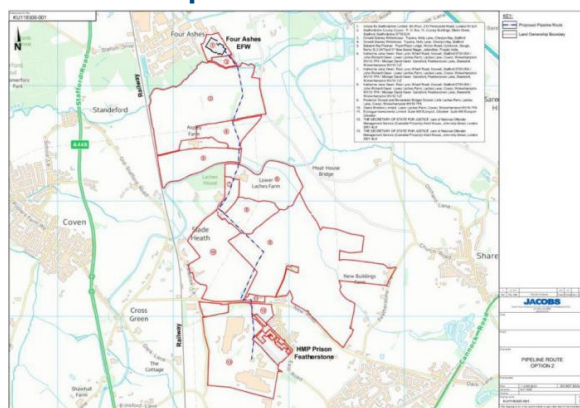
Cibbs Patchway is estimated to provide 49GWh p.a. of existing heat demand with a potential further annual 9.3GWh. Southmead is estimated to provide 33.3GW p.a. of existing heat demand with a potential further annual 22.9GWh from GKN Aerospace and Airbus. UWE is estimated to provide an annual 55.4GWh of heat loads. As such total heat loads assessed in the area have been estimated at 170GWh per year.

Veolia Energy from Waste_FES

Project Sponsor:

Staffordshire Moorlands District Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	12.16
Project IRR*	7%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

Staffordshire County Council (SCC) contracted with Veolia Environmental Services (Veolia) for the delivery of a 300,000tpa Energy Recovery Facility (ERF) at Four Ashes Industrial Estate, Staffordshire. This facility became fully operational in 2014. The plant is Combined Heat and Power (CHP) enabled and the turbine has the capacity to provide up to 18.5MWth hourly which has the potential to be exported through a Heat Network (HN) Scheme. The Council is investigating the feasibility of a HN and private wire connection between the ERF and a prison cluster (located 2.5km from the ERF), which includes HMP Featherstone, HMYOI Brinsford and HMP Oakwood. Due to the nature of the operation of the three prisons, there is a demand for heating over a 24-hour period throughout the year, although this naturally fluctuates with the season, occupancy etc. Relative to other HN schemes (providing domestic hot water) this project offers the potential to supply constant and relatively predictable base load heating requirement over a 40 year period.

Energy centre description:

The HN scheme considered includes modification of the existing ERF to accommodate a new heat recovery system, HN heat exchanger, pipework and associated pumps, end users heat delivery substations and the modifications to the prisons' existing boiler plant to accommodate the heat delivery substations.

Heat/cooling demand phasing description:

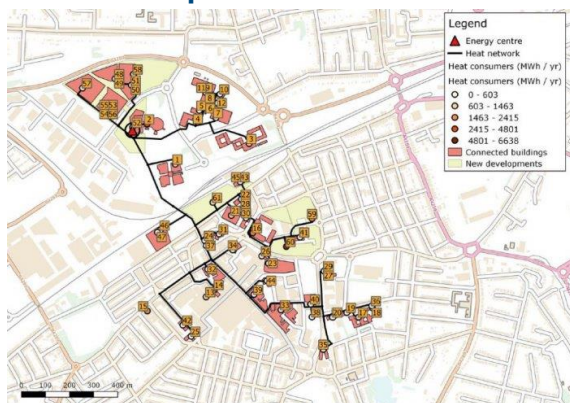
Not available

North Star and Town Centre_FES

Project Sponsor:

Swindon Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	45.47
Project IRR*	8%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	2027

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

North Star is located to the north of Swindon town centre, the two areas divided by the London to

Bristol rail line. The North Star area is a focus for major redevelopment involving the redevelopment

of the Oasis Leisure Centre, the construction of an indoor ski facility, arena and associated leisure and retail development.

Energy centre description:

3 x 5.8MWth gas CHPs plus 22.3MWth of gas boilers proposed to supply the full network. Absorption chillers considered for supplying cooling to the ski facility. The figures presented reflect the heat only scheme. The inclusion of cooling is still estimated to provide a positive return (6.2_ PIRR over 40 years) but is slightly lower than the heat only scheme.

Heat/cooling demand phasing description:

Within the Town Centre area 35 buildings were identified with sufficient heat consumption and proximity to a probable heat network route (from the North Star site) to enable connection to a heat network. Assumed connections include the station and Kimmerfields developments. These developments present an ideal opportunity where

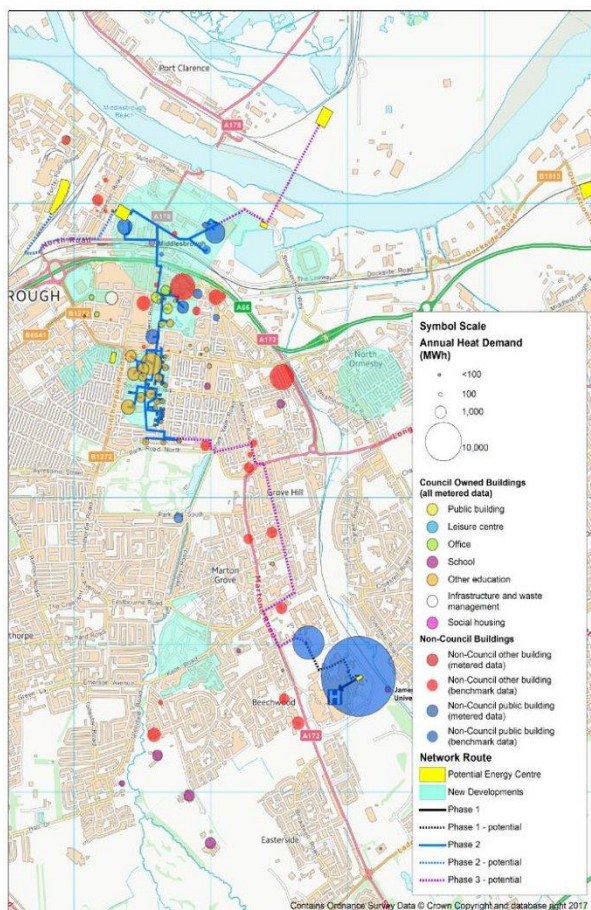
their phasing can coincide with the establishment of a network, particularly Kimmerfields which present a major load from a mix of commercial and residential properties.

Middlesbrough_DPD

Project Sponsor:

Tees Valley Combined Authority

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	30

Annual heat demand (GWh)	44.37
Project IRR*	0%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

New gas CHPs in each of the town centre and hospital, connected via a heat network. Private wire network around the town centre. Potential to connect both the heat and private wire networks to local AD biogas CHP, biomass and waste industrial heat sources.

Key core off-taker partners identified and actively supporting the development of the project are: James Cook University Hospital, Teesside University and Middlesbrough Council. A number of other potential off-takers have been identified in the Outline Business Case - October 2017 (OBC) for inclusion in the scheme and discussions are on-going. This creates a potential for c52,000MWh pa thermal demand and c53,000MWh pa electrical demand.

Energy centre description:

In the OBC the town centre energy centre location is proposed on Richmond Street, on the western edge of the Middlehaven Regeneration area. The site is approximately 6,000m² and is bound on its north, south and west sides by roads, with further open space to the west of the site. This site is located north of the A66 and is considered suitable for gas CHP, standby boilers. The site is also well suited for the potential connection to one of two existing AD CHP plants, a biomass plant (under construction) or a WSHP. The hospital energy centre will be at the existing boiler house (within the hospital complex) or immediately adjacent (depending on access issues).

Work has started on developing the Full Business Case and is currently at the pre-procurement stage. A review of the proposed energy centre location is on-going as the proposed site may now not be available.

Heat/cooling demand phasing description:

In the OBC a 3 phase build out was proposed: Hospital CHP scheme, town centre DE scheme, then the heat connection between the two.

The current pre-procurement work is reviewing this proposed phasing approach to ensure that it still meets the needs and timescales of key partners for



replacement of existing infrastructure and / or
proposed new developments which have the

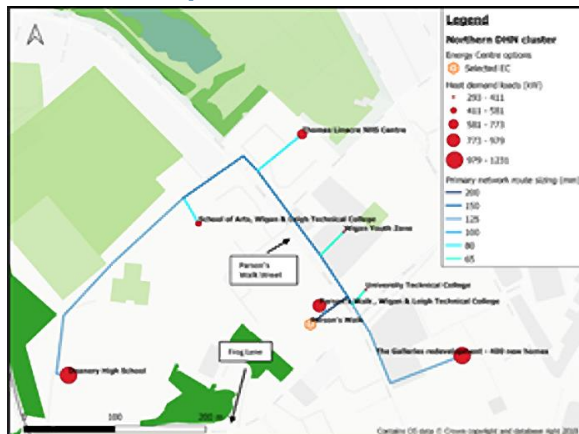
potential to be connected to the network.

Wigan Town Centre_FES

Project Sponsor:

Wigan Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.35
Pipework / distribution capex (£m)	2.34
Other capex (£m)	0

Total capex (£m)	5.69
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Annual heat demand (GWh)	6.11
Project IRR*	5.20%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
---------	---------	---------

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

New district heating network in Wigan Town Centre

Energy centre description:

EC located in Wigan & Leigh Technical college.

Heat/cooling demand phasing description:

Existing CHP will be used until end of life. This will be replaced by a heat pump.

Alternative heat sources_DPD

Project Sponsor:

Adur District Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	5.98
Pipework / distribution capex (£m)	3.41
Other capex (£m)	2.45
Total capex (£m)	11.84

Annual heat demand (GWh)	10.64
Project IRR*	0%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

Unknown	Unknown	Unknown
---------	---------	---------

Project Contact Details:

Organisation:	Unknown
Contact Name:	Chris Jones
Email:	chris.jones@adur-worthing.gov.uk

Technical Information:

Primary energy source:

Heat pump: air source

Project description:

Development of a new 4th generation heat network in the Shoreham Harbour area serving current and future new developments in the area

Energy centre description:

Two air source heat pump based energy centres (gas boiler back-up) serving two initial heat clusters that will ultimately interconnect as developments along the harbour front are completed.

Heat/cooling demand phasing description:

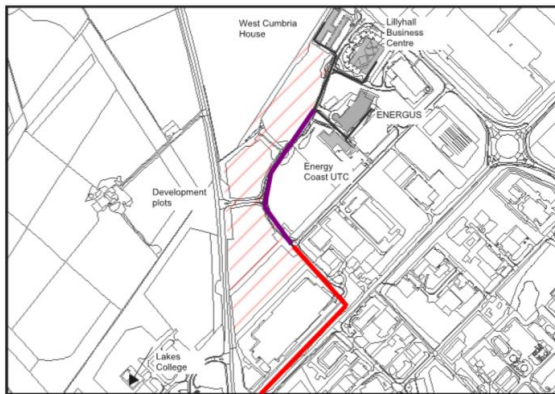
The Shoreham DHN scheme will initially consist of two heat network clusters serving 5.7 GWh/year, interconnecting in year 8 and expanding to supply a total heat demand of 11.7 GWh/year at full build out in year 13

Lillyhall Hub_FES

Project Sponsor:

Allerdale Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	2.44
Total capex (£m)	2.44

Annual heat demand (GWh)	1.24
Project IRR*	0%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

Unknown	2018	Unknown
---------	------	---------

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Boiler - biomass

Project description:

Lillyhall Hub. a proposed standalone network located at an out of town business park with a series of offices and light industry. The only economically feasible option, but still only feasible with grant funding. Scheme is in two phases, and is dependent on phase 2 connections being built, as at present they are not in existence.

Energy centre description:

Biomass. Containerised woodchip biomass energy centre. 0.5MW. 85% Efficiency. 100m3 thermal store. 3MW gas back up boiler providing 26% of the load.

Heat/cooling demand phasing description:

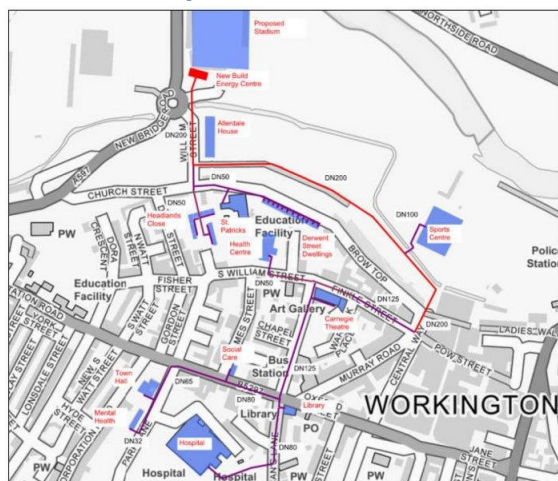
The most feasible project would be the Lillyhall Hub. There are several plots nearby earmarked for future development, which would provide phase 2 of the network. The network is only feasible if phase 2 heat demands are constructed. Total heat demand is 2,111MWh/yr.

Town Centre Hub_DPD

Project Sponsor:

Allerdale Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	0
Project IRR*	0%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

Heat would be provided to a potential new Stadium planned for construction in 2020/21, Workington Hospital, Workington Leisure Centre and a variety of smaller public sector buildings. No commercial or private residential loads are envisaged as part of the initial build-out, reducing project risk, but connections to some social housing owned by Derwent & Solway Housing Association is included. To aid project economics, electricity is exported by private wire to the Stadium, to local Council offices and to the Leisure Centre.

Energy centre description:

A central energy centre could be located on the site of the new Stadium, allowing benefits for both projects via a coordinated approach. Options appraisal arrived at a 600kWe engine being the optimum size for the Day One load. The engine is of sufficient size to provide more than 75% of the annual heat load from the engine but will also achieve economic running hours. Residual heat will be provided by backup gas boilers. There is insufficient local electrical demand to make use of all electricity produced from the engine, and a proportion will be exported to the national grid.

Heat/cooling demand phasing description:

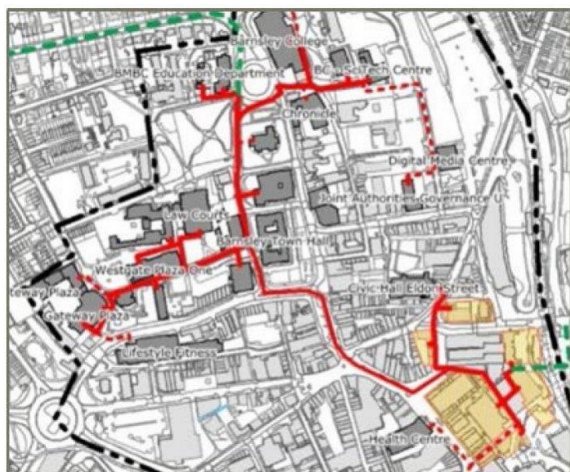
The project would be constructed over fifteen months from January 2020 and it is expected to cost £4.773m, with the largest percentage of this being related to below ground pipework.

Barnsley Civic Quarter_FES

Project Sponsor:

Barnsley Metropolitan Borough Council

Network Map:



The Town Wide Vision Scheme

Summary forecast financial information:

Energy generation capex (£m)	2.37
Pipework / distribution capex (£m)	3.04
Other capex (£m)	6
Total capex (£m)	11.41

Annual heat demand (GWh)	7.25
Project IRR*	0%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

Unknown	2018	2019
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

The feasibility study concluded that the Town Centre Wide - Scenario 1 scheme is to be taken forwards to stage 2. This scheme includes all loads identified in the EMP, with inclusion of St Marys Church, the Digital Media Centre, Joint Authorities Governance Unit, Civic Hall, and Centre for Voluntary action. To also include the Alhambra Shopping Centre. Heat and power to be supplied to the Better Barnsley development phase 1, with only power being supplied to phases 2 and 3. Should this scheme not pass stage 2, there is the option to fall back on the Civic Quarter scheme.

Energy centre description:

The site for the proposed EC is within the Better Barnsley development. The EC will contain Natural Gas CHP units. The proposed plant includes 7MW gas boilers, and 1,200kW gas CHP engines, 2x115m2 thermal stores.

Heat/cooling demand phasing description:

Heat demand is 7,254 MWh/yr. Peak heat demand 4.7MW. Phase 1 in operation from 2019 is proposed to connect all stakeholders except St Marys Church, power from CHP to supply Better Barnsley Phase 1, and the Alhambra shopping centre. Phase 2 and 3, 2020 and 2021 would see power connected to the final phases of the Better Barnsley development. Phase 4 would see St Marys Church being connected in 2022.

Barnsley Town Centre Civic Quarter

Project Sponsor:

Barnsley Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	4.94
Pipework / distribution capex (£m)	2.85
Other capex (£m)	3.15
Total capex (£m)	10.95

Annual heat demand (GWh)	1.05
Project IRR*	1%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2021	2021	2022

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

The project is to implement a district heating scheme in Barnsley Civic Quarter, generating low carbon heat and electricity using an ambient loop network coupled with building level WSHP, to be located in an existing energy centre location. Heat off takers include public sector buildings such as Barnsley Council (Town Hall, Westgate Plaza, Gateway Plaza), Barnsley College, South Yorkshire Police and Berneslai Homes

Energy centre description:

During site visit it was realised that Westgate Plaza, Digital Media Centre and The Core have sufficient plant room space to house plant items relating to the distribution system as well as their own separate circuit equipment. The exact location of the central pump system will depend on the location of the abstraction boreholes. At this stage, it was assumed that Westgate Plaza will house the central plant items as it is included in all three scenarios. Pump house and the filtration system would require an area of 10m x 8m.

Heat/cooling demand phasing description:

Scheme is designed as the second phase to be built in 2025

Basingstoke FES

Project Sponsor:

Basingstoke and Deane Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	2.1
Pipework / distribution capex (£m)	3.21
Other capex (£m)	3.06
Total capex (£m)	8.36

Annual heat demand (GWh)	18.13
Project IRR*	6%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
2023	2024	2025

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

There is an opportunity for Basingstoke and Deane Borough Council to develop a district heating network around North Hampshire Hospital in Basingstoke.

Energy centre description:

The proposed route would require a new energy centre to be built in the existing hospital carpark, behind their water tanks. This energy centre would contain gas CHP and boilers and would require planning permission.

Heat/cooling demand phasing description:

The hospital cluster and hotel would connect first (scenario 6), with the Parklands cluster coming online when the stakeholders were engaged potentially 2025 (scenario 5)

Castle Lane East Network_FES

Project Sponsor:

Bournemouth, Christchurch and Poole (BCP)
Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	9.1
Total capex (£m)	9.1

Annual heat demand (GWh)	0
Project IRR*	0%

Considering third party
finance?

* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

Unknown	Unknown	2020
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Boiler - EfW

Project description:

There is potential for a viable DH network in Bournemouth, with the Hospital being the key anchor load, and location for the EC. Viability depends on the expansion of the hospital and development of adjacent land.

Energy centre description:

It is proposed to locate the EC at the Hospital and use the Incinerator as the main heat supply source. 2x CHP units each with capacity of 1580kW will be located alongside the incinerator to supply heat and power in the best performing scenario. Existing boilers are to be omitted from the scheme.

Heat/cooling demand phasing description:

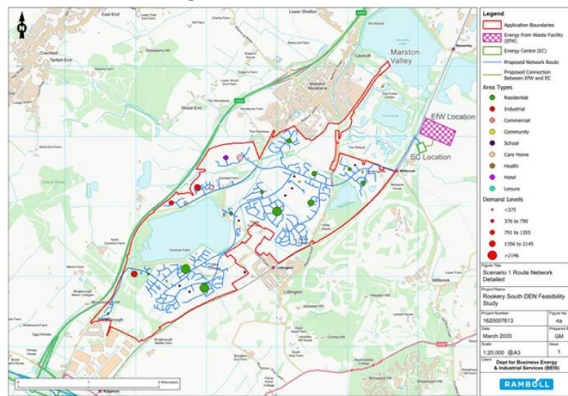
The phasing of the scheme will be coordinated to try and do most of the work in the summer when there is the lowest demand for the heat. The development is assumed to be connected in 3 equal loads in 2020, 2021 and 2023.

Rookery South - Scenario 1_FES

Project Sponsor:

Bedford Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	6.57
Pipework / distribution capex (£m)	14.77
Other capex (£m)	9.66
Total capex (£m)	31

Annual heat demand (GWh)	25.82
Project IRR*	6%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID **Constructi** **Heat On**
on Start **(initial)**

Unknown	2021	2022
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed

Email:

Not disclosed

Technical Information:

Primary energy source:

Boiler - EfW

Project description:

To establish the potential for a district heating network (DHN) supplying heat from Rookery South Energy Recovery Facility (ERF) to new developments in Marston Valley and potentially also other loads in the wider area.

The main aims of the study were to carry out techno-economic modelling to establish the viability of a new heat network, to define any gap funding requirements and develop initial Stage 2 design information for the heat offtake, heat network and building interfaces.

Energy centre description:

The Energy centre is assumed to be located south of the ERF (Approx 50-100 m). To minimise the footprint requirement of the Energy Centre building, the EfW district heating condensers, which extract heat from the EfW steam for the district heating, have been assumed to be located within the ERF. The footprint of the Energy Centre is 28m x 19m (LxW), 530m². The Energy Centre houses 1No. 0.8MW and 3No. 8.5MW gas boilers, DH pumps, pressurisation units, expansion vessels and ancilliary equipment. 2No. 150m³ thermal stores are located outside the Energy Centre main building.

Heat/cooling demand phasing description:

Under Scenario 1, phasing of the network was assumed to follow the phased growth of the

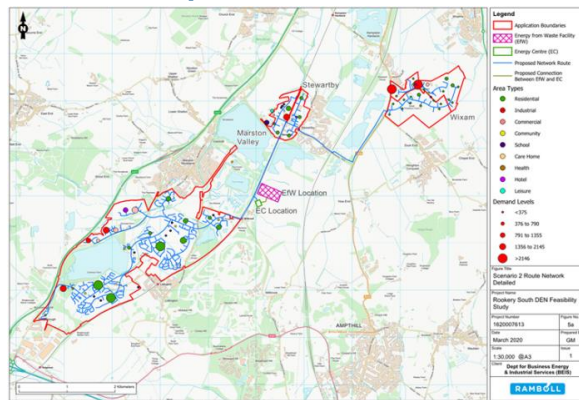
development over 17 years. Similarly, under Scenario 2 the network is phased in parallel with the evolution of each development. There is also some scope for phasing the development of the heat offtake infrastructure at the ERF and the Energy Centre itself, although this would need careful consideration to avoid additional cost. At this stage it was assumed the necessary infrastructure is installed in year 1.

Rookery South - Scenario 2_FES

Project Sponsor:

Bedford Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	8.09
Pipework / distribution capex (£m)	24.25
Other capex (£m)	14.24
Total capex (£m)	46.58

Annual heat demand (GWh)	32.8
Project IRR*	5%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
on Start (initial)

Unknown	2021	2022
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed

Email:

Not disclosed

Technical Information:

Primary energy source:

Boiler - EfW

Project description:

To establish the potential for a district heating network (DHN) supplying heat from Rookery South Energy Recovery Facility (ERF) to new developments in Marston Valley and potentially also other loads in the wider area.

The main aims of the study were to carry out techno-economic modelling to establish the viability of a new heat network, to define any gap funding requirements and develop initial Stage 2 design information for the heat offtake, heat network and building interfaces.

Energy centre description:

The Energy centre is assumed to be located south of the ERF (Approx 50-100 m). To minimise the footprint requirement of the Energy Centre building, the EfW district heating condensers, which extract heat from the EfW steam for the district heating, have been assumed to be located within the ERF. The footprint of the Energy Centre is 28m x 19m (LxW), 530m². The Energy Centre houses 1No. 0.8MW and 3No. 8.5MW gas boilers, DH pumps, pressurisation units, expansion vessels and ancilliary equipment. 2No. 150m³ thermal stores are located outside the Energy Centre main building.

Heat/cooling demand phasing description:

Under Scenario 1, phasing of the network was assumed to follow the phased growth of the

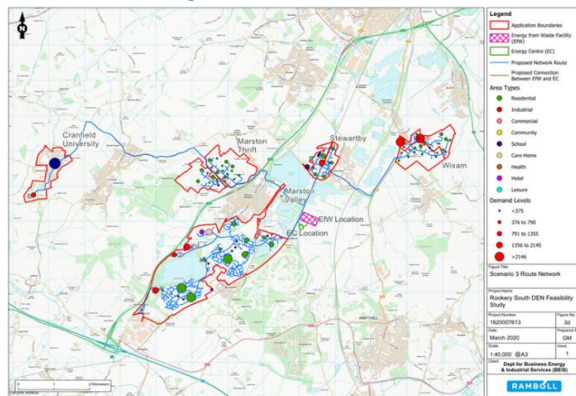
development over 17 years. Similarly, under Scenario 2 the network is phased in parallel with the evolution of each development. There is also some scope for phasing the development of the heat offtake infrastructure at the ERF and the Energy Centre itself, although this would need careful consideration to avoid additional cost. At this stage it was assumed the necessary infrastructure is installed in year 1.

Rookery South - Scenario 3_FES

Project Sponsor:

Bedford Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	10
Pipework / distribution capex (£m)	36.34
Other capex (£m)	20.08
Total capex (£m)	66.42

Annual heat demand (GWh)	52.24
Project IRR*	5%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID **Constructi** **Heat On**
on Start **(initial)**

Unknown	2021	2022
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed

Email:

Not disclosed

Technical Information:

Primary energy source:

Boiler - EfW

Project description:

To establish the potential for a district heating network (DHN) supplying heat from Rookery South Energy Recovery Facility (ERF) to new developments in Marston Valley and potentially also other loads in the wider area.

The main aims of the study were to carry out techno-economic modelling to establish the viability of a new heat network, to define any gap funding requirements and develop initial Stage 2 design information for the heat offtake, heat network and building interfaces.

Energy centre description:

The Energy centre is assumed to be located south of the ERF (Approx 50-100 m). To minimise the footprint requirement of the Energy Centre building, the EfW district heating condensers, which extract heat from the EfW steam for the district heating, have been assumed to be located within the ERF. The footprint of the Energy Centre is 28m x 19m (LxW), 530m². The Energy Centre houses 1No. 0.8MW and 3No. 8.5MW gas boilers, DH pumps, pressurisation units, expansion vessels and ancilliary equipment. 2No. 150m³ thermal stores are located outside the Energy Centre main building.

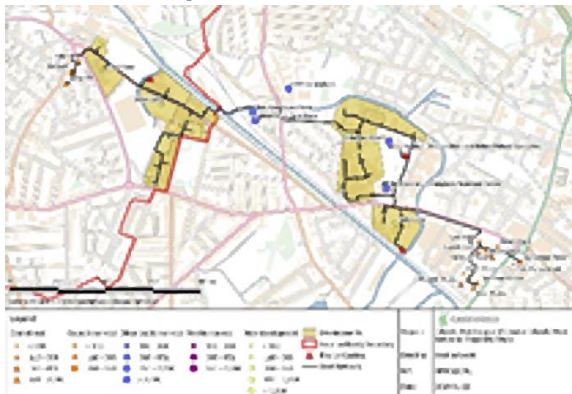
Heat/cooling demand phasing description:

Under Scenario 1, phasing of the network was assumed to follow the phased growth of the development over 17 years. Similarly, under Scenario 3 the network is phased in parallel with the evolution of each development. There is also some scope for phasing the development of the heat offtake infrastructure at the ERF and the Energy Centre itself, although this would need careful consideration to avoid additional cost. At this stage it was assumed the necessary infrastructure is installed in year 1. Also it is assumed that Cranfiled University connects in year 1 as well.

Icknield Soho Loop & Smethwick Gas CHP/WSHP_MAP

Project Sponsor:
 Birmingham City Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	10.06
Pipework / distribution capex (£m)	13.77
Other capex (£m)	5.06
Total capex (£m)	28.89

Annual heat demand (GWh)	0
Project IRR*	0%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID **Constructi** **Heat On**
on Start **(initial)**

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

Heat network connecting City Hospital buildings, HMP Birmingham, BCC residential buildings, care homes and new residential developments in the area, plus residential developments and (SMBC) tower blocks in Smethwick.

Energy centre description:

Energy Centre proposed at Birmingham City Hospital site. Houses Gas CHP units and gas boilers. Second energy centre in Smethwick near canal, houses WSHPs and gas boilers.

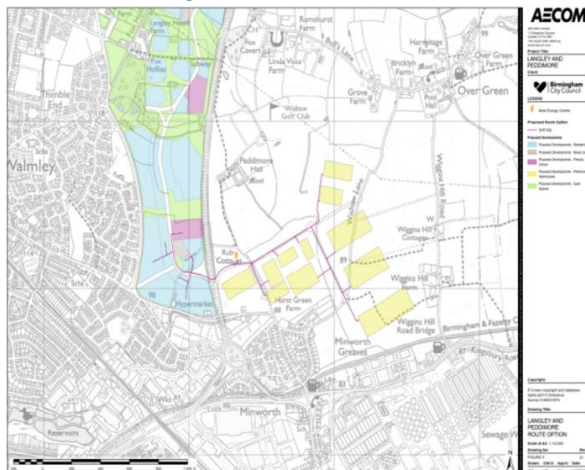
Heat/cooling demand phasing description:

All consumers connected in 2021-2032.

Langley & Peddimore_FES

Project Sponsor:
 Birmingham City Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	0
Project IRR*	0%
Considering third party	True

finance?

* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

The district heat network consists of the new residential development parcel Langley South and the Peddimore Industrial Park development. Heat is supplied to Langley South and Peddimore by the CHP units at Peddimore along with a private wire electrical supply on the Peddimore site.

Energy centre description:

The Energy Centre will be located on the Peddimore site, near the site's main entrance. The Energy Centre will contain 2 gas-fired CHP units (both 2 MWe capacity), backup gas-fired boilers, and thermal stores.

Heat/cooling demand phasing description:

Because the network is comprised entirely of new developments, the demand phasing will be in sync with the completion of the buildings / residential areas. The construction of the new developments is expected to begin in 2020, completing in 2030.

Blackburn Town Centre_MAP

Project Sponsor:

Blackburn with Darwen Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.14
Pipework / distribution capex (£m)	6.61
Other capex (£m)	2.6
Total capex (£m)	12.36

Annual heat demand (GWh)	14.61
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Project IRR*	0%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

Heat network connecting Daisyfield cluster and Blackburn Town Centre cluster.

Energy centre description:

Daisyfield: Energy Centre proposed at Daisyfield Pool, which would house GSHPs and gas boilers. Boreholes located on green space around tower blocks. Town Centre: Energy Centre proposed on council-owned empty plot near Blackburn College, which would house Gas CHP and gas boilers.

Heat/cooling demand phasing description:

Consumers connected 2021-2028.

Daisyfield_MAP

Project Sponsor:

Blackburn with Darwen Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	2.5
Project IRR*	0%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Heat pump: ground source

Project description:

Heat network connecting Daisyfield Pool and nearby residential tower blocks.

Energy centre description:

Energy Centre proposed at Daisyfield Pool, which would house GSHPs and gas boilers. Boreholes located on green space around tower blocks.

Heat/cooling demand phasing description:

All consumers connected in 2021.

Shadsworth Industrial Estate_MAP

Project Sponsor:

Blackburn with Darwen Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	0

Annual heat demand (GWh)	33.74
Project IRR*	0%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID

Constructi on Start

Heat On (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

Heat network connecting Royal Blackburn Hospital and surrounding sites and developments.

Energy centre description:

Energy Centre proposed at RBH, which would house Gas CHP and gas boilers. Additional energy centre at RPC Containers (outfitting existing power generators with heat recovery).

Heat/cooling demand phasing description:

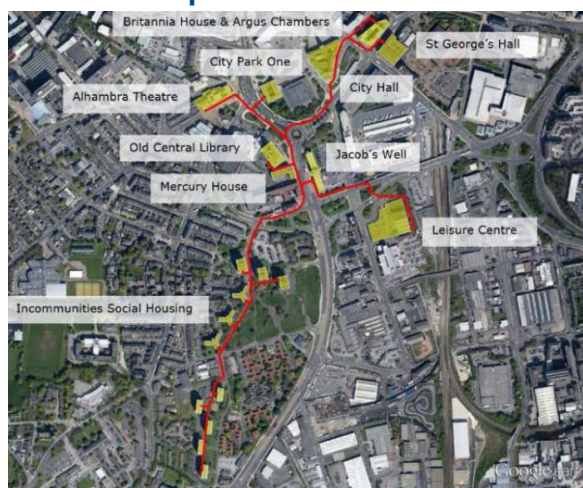
Consumers connected 2021-2026.

Bradford Civic Quarter_FES

Project Sponsor:

Bradford Metropolitan District Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.02
Pipework / distribution capex (£m)	3.84
Other capex (£m)	1.24
Total capex (£m)	8.09

Annual heat demand (GWh)	0
Project IRR*	0%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	Unknown

Project Contact Details:

Organisation:	Unknown
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Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

A priority network has been identified that offers a preferred business case; this comprises the installation of a 3MWe gas CHP in an Energy Centre within the Leisure Centre and 1MW of biomass heating capacity within the Old Central Library. The network would supply Britannia and Argus Chambers, City Park One, Alhambra Theatre, Old Central Library, Mercury House, St George's Hall, City Hall, Public Service Hub, Leisure Centre and eleven In-communities social housing blocks.

Energy centre description:

A 2MWe CHP and 1MW biomass boiler would be the primary heat sources. The CHP is intended to operate at full capacity between the hours of 6am and 7pm due to the large heat demand of the buildings. The biomass boiler is intended to operate throughout the day to satisfy the remaining demand, although peak demand from around 6am to 1pm exceeds capacity of both the CHP and biomass boiler and would be met by the existing fossil fuel boilers.

Heat/cooling demand phasing description:

The priority network represents the first phase of development of a district energy network for the City of Bradford. In the future, additional heat demands may be added via extension to the network, as new developments are constructed near to the priority network or lower cost and carbon heat sources become available. In order to future proof the scheme and network outline design, consideration of proposed existing and planned heat loads was undertaken and future proofing design measures developed, such as increasing pipe sizes and specification to accommodate future increased

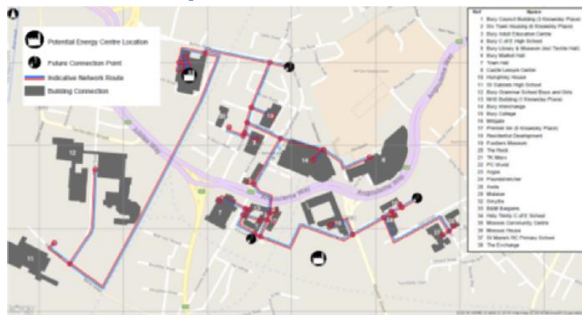
heat flow.

Bury Town Centre_FES

Project Sponsor:

Bury Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	4.52

Annual heat demand (GWh)	0
Project IRR*	0%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2018	Unknown

Project Contact Details:

Organisation:	Unknown
Contact Name:	Chris Horth
Email:	c.horth@bury.gov.uk

Technical Information:

Primary energy source:

CHP - gas

Project description:

The preferred option for the town centre extends from St Gabriels High School in the West to Moses Community Centre in the East and covers the areas to the north and south of the A58. Once completed heat will be provided to 17 buildings. The network will be built in 3 phases, and future proofed to allow for further expansion. The network will be supplied with heat and power from CHP gas backup and thermal storage.

Energy centre description:

The preferred energy centre location is in the Castle Leisure Centre. The energy centre has been developed as a phased build up over the duration of the network development to reduce initial CAPEX and redundant heat generation.

- Phase 1 - Two CHP units and two boilers

- Phase 2 - An additional boiler

- Phase 3 - An additional CHP unit and Boiler

The complete energy centre will contain 3x 400 kW_e (504 kW_{th}) CHP engines, and 4x 2MW gas boilers, with 60 m³ thermal storage.

Heat/cooling demand phasing description:

Phase 1: Connection to buildings to the east of the Energy Centre up to the Metrolink underpass

Phase 2: Connection to Bury Grammar Boys school, Bury Grammar Girls school and St Gabriels High School with the pipe route along East Lancs Railway.

Phase 3: Connection to buildings east of the Metrolink. The network has been future proofed to take account of potential new development by including planned blank connections, for future connections to:

- Eastern retail loads in Angouleme retail park

- Residential development on Knowsley Street

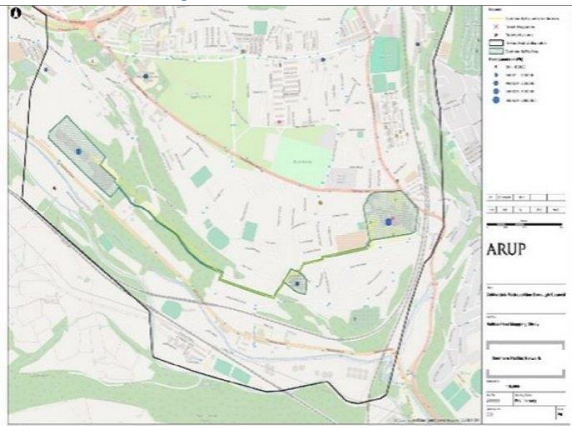
- Future connection to the Rock and Millgate retail (Exec Sum p6)

South Halifax

Project Sponsor:

Calderdale Metropolitan Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	1.65
Pipework / distribution capex (£m)	2.92
Other capex (£m)	0.27
Total capex (£m)	4.85

Annual heat demand (GWh)	23.03
Project IRR*	0%
Considering third party finance?	

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
 on Start (initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

The network is designed around two major heat users to the south of Halifax Town Centre. The network route is predominately soft dig. CMBC have little to no influence on the commercial connections both of which are expected to have high resilience requirements.

Energy centre description:

The Energy Centre would contain one 1.75MWe gas-fired CHP engine along with ancillary and back-up plant including three 3.6MW gas boilers and a 100m3 thermal store. As a standalone Energy Centre, the building would have an estimated 255m3 footprint. The operational strategy is heat-led.

Heat/cooling demand phasing description:

Due to the small number of anchor loads this is a single phase development. There is minimal scope to connect to additional buildings through network expansion as the surrounding areas are either undeveloped or low density detached and semi-detached private housing.

Cherwell - Bicester EcoTown_FES

Project Sponsor:

Cherwell District Council

Network Map:

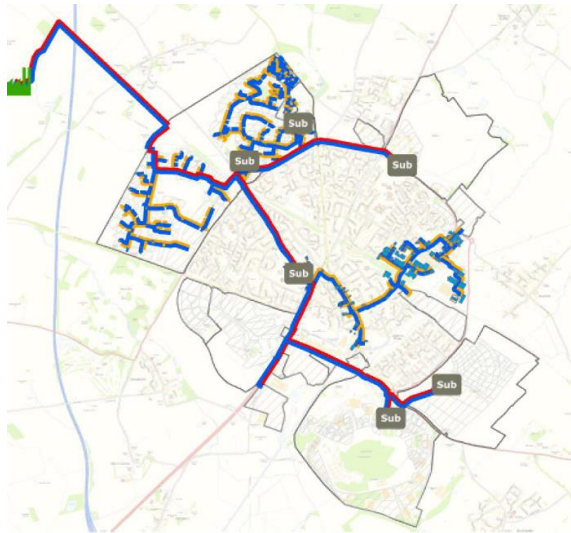


Figure 53: Option 1 – Wide Area Network

Summary forecast financial information:

Energy generation capex (£m)	0
Pipework / distribution capex (£m)	9.74
Other capex (£m)	0
Total capex (£m)	9.74

Annual heat demand (GWh)	120
Project IRR*	0%

Considering third party finance?	False
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* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	Unknown	2023

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

Following an initial feasibility study looking at heat demand in Bicester and possible networks, a more detailed analysis of utilising waste heat from the Ardley EFW to be provided to the new 6,000 home Eco Town (with a zero carbon planning requirement) is being conducted.

This opportunity is not being actively pursued by Cherwell District Council. Any third party investor who would need to lead the scheme, and support will be given where necessary under the Council's jurisdiction only.

Energy centre description:

It is proposed that heat will be supplied from the 12.5MW capacity Ardley ERF facility

Heat/cooling demand phasing description:

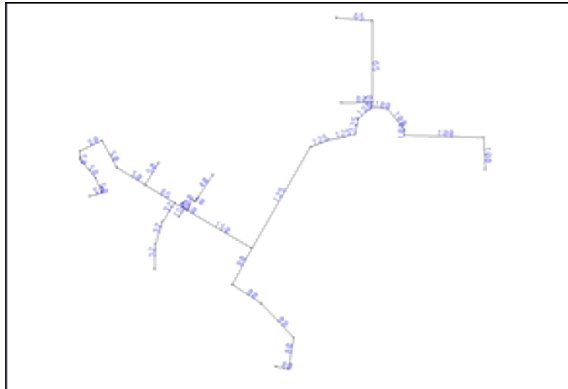
Much of the development is to be new build, and heat demand is projected to steadily grow from 2023 to full build out in 2042.

Manor Royal _ Industrial and business area_MAP

Project Sponsor:

Crawley Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3
Pipework / distribution capex (£m)	2.38
Other capex (£m)	0.97
Total capex (£m)	6.35

Annual heat demand (GWh)	6.65
Project IRR*	4%

Considering third party finance?	True
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* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2020	2021

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

Industrial and office building area with a total heat demand of 6.6 GWh/year and an electricity demand of 10.3GWh/year. The opportunity is located on the west site of the business park. The project consists of connecting with a district heating network main anchor loads in the area selected in order to supply heat and electricity.

Energy centre description:

The location of the Energy centre is likely to be on CBC trucks car park, located within the Cluster. A CHP engine supplying heat to the cluster and electricity to a selection of stakeholders is modelled.

Heat/cooling demand phasing description:

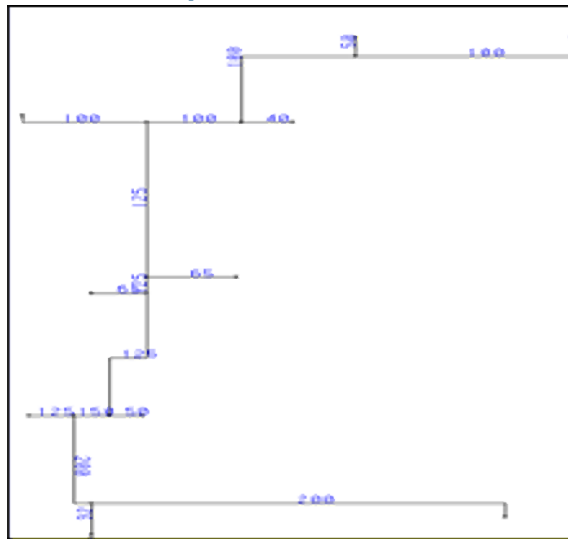
No phasing schedule as this stage has been included in the model.

Manor Royal_Fleming Way and Manor Royal Road_MAP

Project Sponsor:

Crawley Borough Council

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	3.58
Pipework / distribution capex (£m)	2.52
Other capex (£m)	1.03
Total capex (£m)	7.14

Annual heat demand (GWh)	9.72
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Project IRR*	8%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID	Constructi on Start	Heat On (initial)
Unknown	2020	2021

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

Mainly offices located between Fleming Way and Manor Royal road. Total heat demand of 9.7 GWh/year and an electricity demand of 31.1 GWh/year. The opportunity is located on the centre of the business park. The project consists of connecting with a district heating network main anchor loads in the area selected in order to supply heat and electricity.

Energy centre description:

It was indicated that available land on the south side of Harwoods Jaguar Land Rover showroom (south side of Manor Royal and Faraday Road junction) could be used for an energy centre. This land is a non-allocated business hub at the time of the writing.

Heat/cooling demand phasing description:

No phasing schedule as this stage has been included in the model.

Chesterfield_MAP

Project Sponsor:

Derbyshire county

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	14.09
Pipework / distribution capex (£m)	15.92
Other capex (£m)	1.85
Total capex (£m)	31.86

Annual heat demand (GWh)	0
Project IRR*	0%
Considering third party finance?	True

* Real pre-tax pre-finance post-Grant

FID

Constructi
on Start

Heat On
(initial)

Unknown	Unknown	Unknown
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Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

CHP - gas

Project description:

New network opportunity in central Chesterfield sourcing heat from a single energy centre containing gas CHP and gas boiler plant.

Energy centre description:

Energy centre is proposed to be on the Royal Chesterfield Hospital Site and is estimated to require the following capacities of plant to serve the scenario 6 network: Initial phase - 6.6MWe of gas CHP, 13MW gas boiler, Final phase - additional 10MW gas boiler

Heat/cooling demand phasing description:

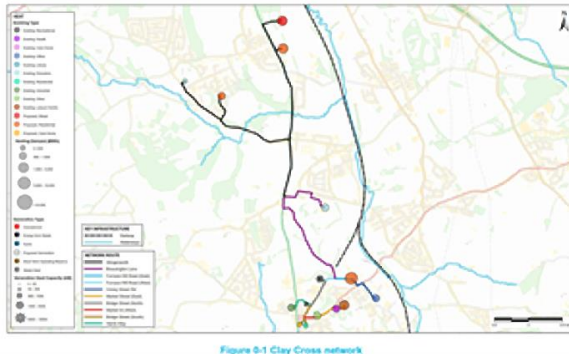
Scenario 6 total heat demand is expected to be 60,006MWh p.a. with a peak demand of 19.6MW, the first phase (containing existing buildings only) has a peak demand of 11.3MW.

Clay Cross_MAP

Project Sponsor:

Derbyshire county

Network Map:



Summary forecast financial information:

Energy generation capex (£m)	1.64
Pipework / distribution capex (£m)	0
Other capex (£m)	0
Total capex (£m)	1.64

Annual heat demand (GWh)	0
Project IRR*	0%
Considering third party finance?	False

* Real pre-tax pre-finance post-Grant

FID Constructi Heat On
Unknown on Start (initial)

Unknown	Unknown	Unknown
---------	---------	---------

Project Contact Details:

Organisation:	Unknown
Contact Name:	Not disclosed
Email:	Not disclosed

Technical Information:

Primary energy source:

Industrial heat - EFW

Project description:

New network opportunity sourcing heat from the proposed Clay Cross Energy from Waste facility and serving 11 sites in Clay Cross.

Energy centre description:

The proposed Clay Cross Energy from Waste facility - planning permission on the facility has been

granted and is to be installed and operated by Larkfleet group. Lark energy confirmed that the district heating network energy centre could be located on the same site as the EfW facility.

Heat/cooling demand phasing description:

Boiler installation will be split into two phases (2020 and 2025). 12MW installed operational capacity is proposed in 2025 allowing full load to be met without any heat recovery element. Demand is estimated to be 3MW and 6MW for 2020 and 2025 respectively.