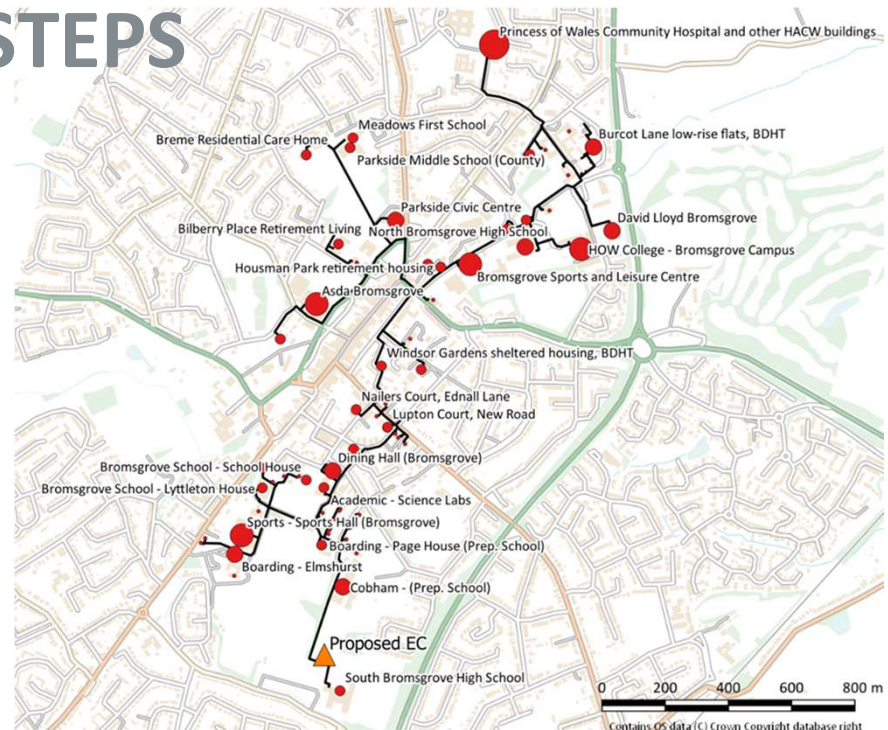




BROMSGROVE HEAT NETWORK: VIABILITY, CONCLUSIONS & NEXT STEPS



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Decarbonising heat – a critical challenge

- Heat is a key part of the UK Climate Change response in the net zero carbon 2050 target
- CCC estimates 18% of heat will need to come from heat networks by 2050
- Various policy & support in place, e.g.
 - Oct 2019 Consultation on “Future Homes Standards” (precursor to non-housing).....big jump towards a no-gas solution through heat networks and heat pumps

“Heat networks can decarbonise more easily.....new technologies can be added to the system with little disruption.....

.....unique opportunity to exploit larger scale, renewable and recovered heat sources [not possible at building-level]

..... also provide system benefits such as thermal storage and reducing [grid] demand at peak times.”
 - BEIS Heat Network Development Unit
 - Heat Network Investment Project (HNIP) - £320m capital programme
- Growing market response from investors and heat network suppliers
- At local level Bromsgrove is leading heat network exploration and other initiatives in response to Climate Emergency policy

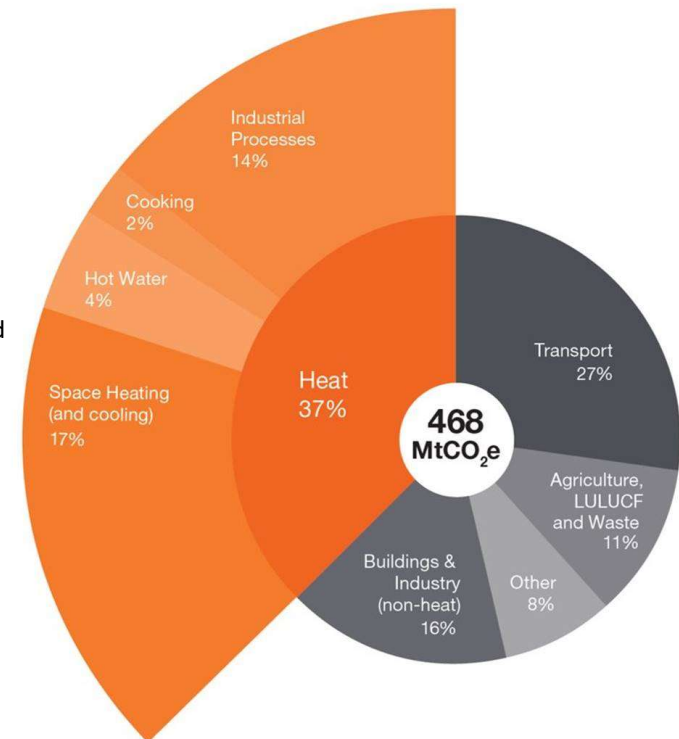


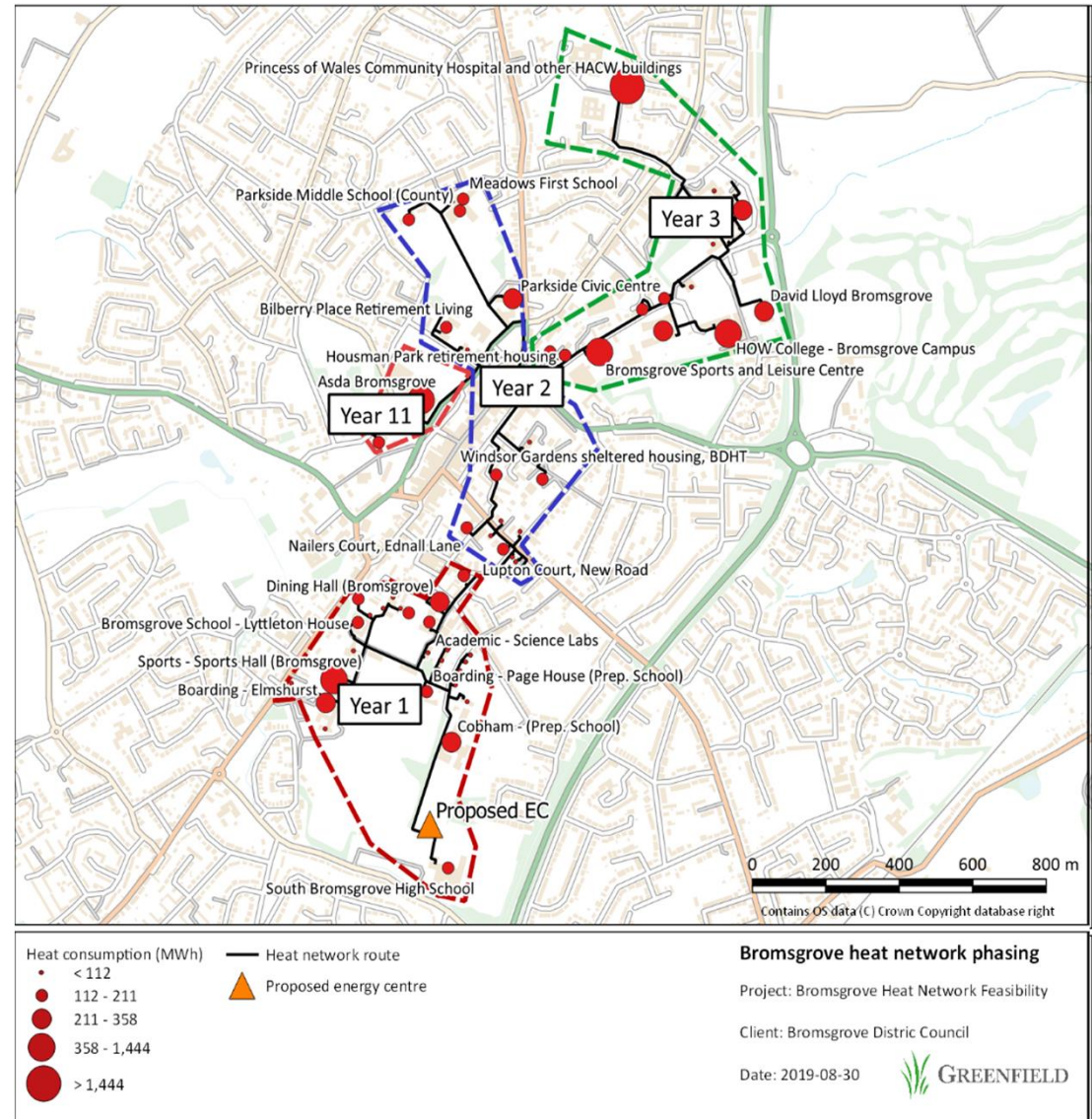
Figure 2.1 UK emissions in 2016 across different sectors⁴

What could it mean for Bromsgrove?

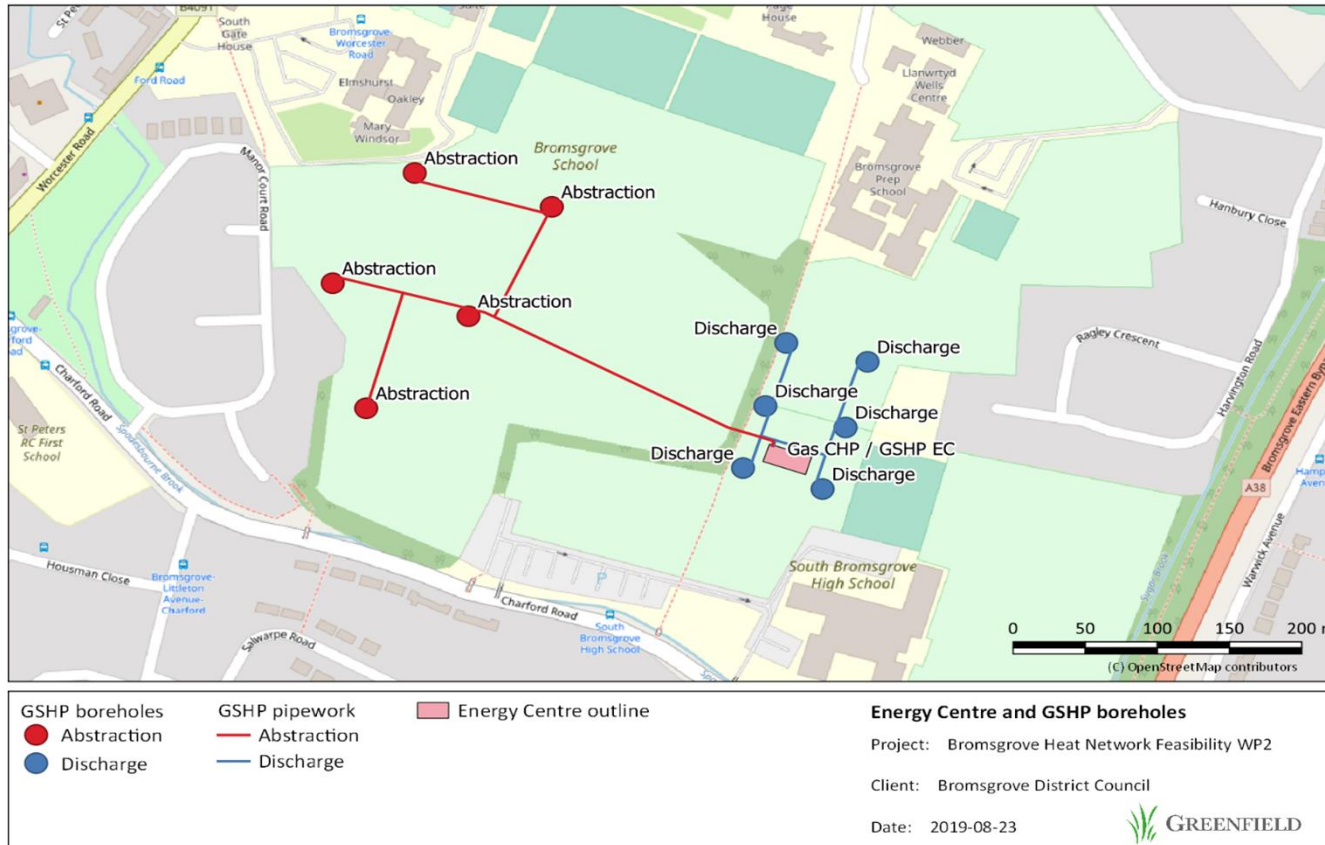
- **Cost of living / doing business :**
 - Energy cost
 - ❖ 5% reduction modelled (depends on economic performance of final solution, investment strategy and cost of finance)
 - ❖ Locally set e.g. could support local 'fuel poverty' aims
 - ❖ Could help manage energy cost volatility
 - Reduced property-level liability (i.e. boilers) and release of internal property space
 - Land rent for energy centre
- **Carbon saving / climate change response**
 - A solution for existing properties and new-build
 - Direct carbon reduction to connected consumers 32% - 61% in modelled option for connected properties
 - Potential to expand as town-wide heat decarbonisation strategy
- **Inward investment (c. £15m-£20m – current scheme)**
- **Reputational benefit**
- **Return on investment for council and/or other investors**

Proposed energy network

	Units	
Demand		
Heat demand	<i>GWh/yr</i>	19.3
Peak demand	<i>MW</i>	9.7
Number of connections		
Non-residential	<i>No.</i>	38
Residential (dwellings)	<i>No.</i>	601
Total	<i>No.</i>	639
Network		
Network trench length	<i>km</i>	7.5
Linear heat density	<i>GWh/yr/km</i>	2.6
Main pipe size	<i>DN</i>	250
Heat losses	<i>%</i>	11 %
Design temperatures (Flow / Return)	<i>°C</i>	90 / 55
Soft dig / Hard dig	<i>%</i>	34 / 66



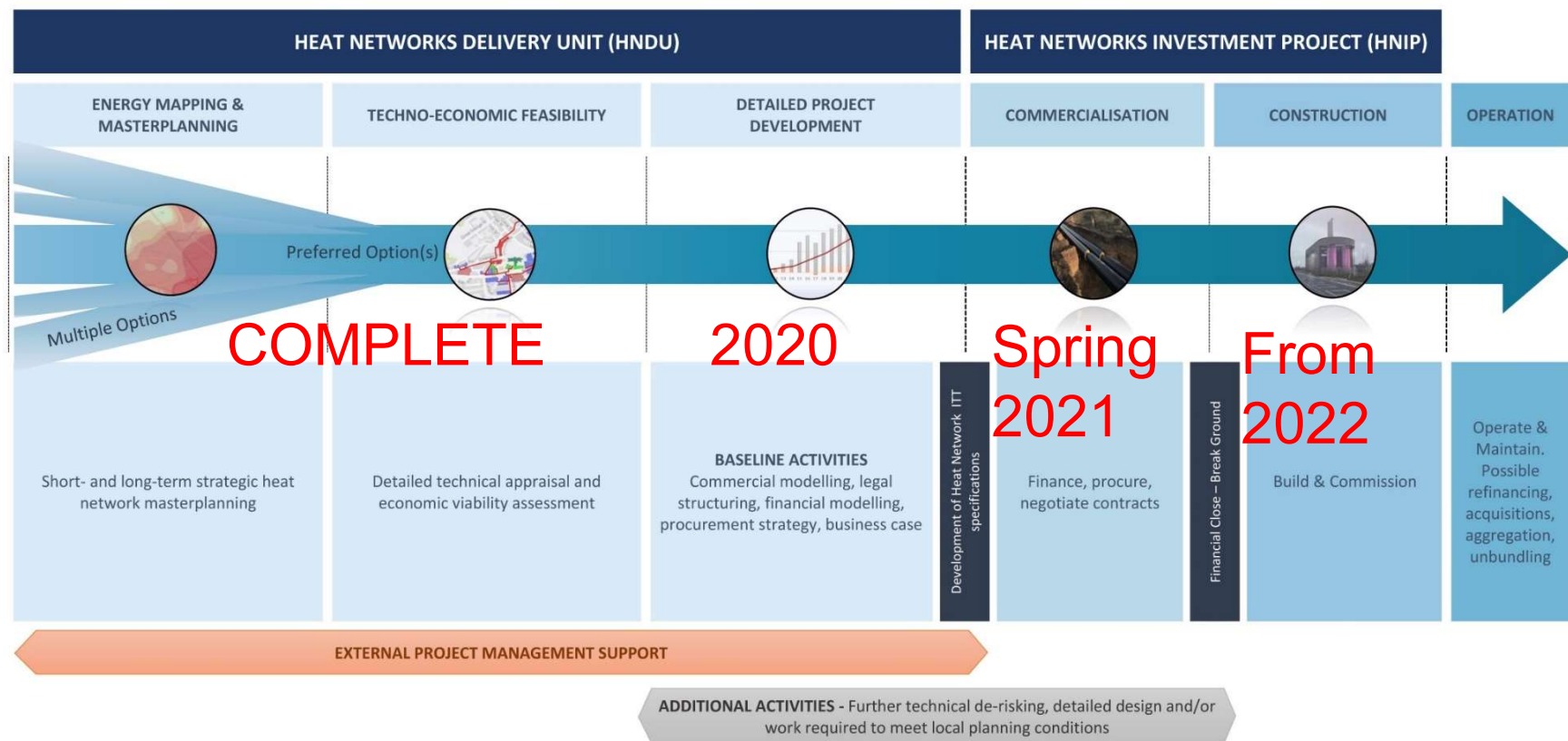
GSHP indicative arrangement



- Design and cost uncertainty:
 - Requires further hydro-geological analysis + test boreholes
 - Borehole lining - Sandstone rock?
- Gas-fired CHP supplies power to Heat Pump + school properties (private wire)
- Renewable Heat Incentive income potentially available (COP > 2.9)

Conclusions

1. Credible economic and environmental case a heat network in Bromsgrove
 - Key stakeholders generally supportive (at this early stage)
 - Reasonable ROI could be delivered (with typical risks / uncertainties and requiring suitable grant)
2. Requires “Detailed Project Development”:



FUNDING BREAKDOWN

Item	Cost
Project Management	Fully funded by HNDU
Test Borehole	£100K
DPD	£150K
Total	£250K
Funding from HNDU@ 66%	£165K
Funding from Bromsgrove School	£10K
Funding from NHS Trust	to be determined
Funding from BDHT	to be determined
Remainder to Fund	£75K

