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# BROMSGROVE ZERO-CARBON HEAT NETWORK PROJECT STRATEGY REVIEW

PETER.NORTH@CALOREM.CO.UK  
CALOREM LTD

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Author: Peter North Calorem Ltd

Owner: Kath Manning Bromsgrove District Council

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## Nomenclature

AMR	Advanced Modular Reactor
ASHP	Air Source Heat Pump
BAU	Business As Usual
BECCS	Bioenergy with Carbon Capture and Storage
BEIS	Department of Business Energy and Industrial Strategy
BDC	Bromsgrove District Council
CCC	Committee on Climate Change
CHP	Combined Heat and Power
CO <sub>2</sub>	Carbon Dioxide
DH	District Heating
DPD	Detailed Project Development
GHNF	Green Heat Network Fund
GSHP	Ground Source Heat Pump
GW	Giga Watt
HM	Her Majesty's
HNDU	Heat Network Development Unit
HNIP	Heat Network Investment Project
HNTP	Heat Network Transition Programme
HP	Heat Pump
LEP	Local Enterprise Partnership
MW <sub>th</sub>	Mega Watts Thermal
TWh/a	Terra Watt Hour per annum
UK	United Kingdom

# 1 Introduction

This paper reports the first project objective: a review of the project strategy accounting for possible changes since completion of feasibility, e.g. insight on key stakeholders, local/national policy and related public funding arrangements for heat network schemes.

## 2 Background

Following a Worcestershire-wide Heat Mapping and Master-planning study conducted by Mouchel in 2017, Bromsgrove District Council (the Council) commissioned Greenfield to carry out a district heating feasibility study that was published in 2019. The study concluded that compared with natural gas heat only boilers (business as usual - BAU), there was a marginal economic case for a hybrid 1.3 MWth open loop ground source heat pump (GSHP)/1 MWth combined heat and power (CHP) district heating network with thermal store and 6.6 MWth of back-up boilers, supplying affordable low carbon heat to specific heat consumers in Bromsgrove Town Centre. The study predicted that the scheme would result in a 32.2% reduction in CO<sub>2</sub> emissions over a 25-year period compared with business as usual. An alternative 2.6 MWth biomass boiler option with thermal store and 6.3 MWth of back-up boilers was also identified with a poorer economic case but almost double the CO<sub>2</sub> emission reductions.

In 2019 BDC declared a climate emergency and is in the process of developing a decarbonisation plan with the aim of carbon neutrality across all council services and wider sphere of influence. The low carbon heat network has the potential to contribute to the delivery of the Council Strategic Purposes and Priorities and the 'green thread' that runs through the decarbonising plan.

## 3 National Strategy, Policy and Support Review

### 3.1 Introduction

This section reviews national strategy and policy since 2019, the pivotal year when parliament amended the 2008 Climate Change Act to revise the government's legally binding greenhouse gas reduction target from the original 80% reduction to net zero by 2050. All relevant government strategies and policies that have since followed have been drafted to enable government to meet its 2050 obligation.

### 3.2 Spring Statement 2019: Philip Hammond's speech

In his March 2019 Spring Statement<sup>1</sup> the Chancellor of the Exchequer, Philip Hammond, announced the intention to introduce a Future Homes Standard mandating the end of fossil-fuel heating systems in all new houses from 2025. It has since been clarified that this will be subject to a consultation on the Standard.

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<sup>1</sup> <https://www.gov.uk/government/speeches/spring-statement-2019-philip-hammonds-speech>

### 3.3 The Climate Change Act 2008 (2050 Target Amendment) Order 2019

In June 2019, parliament passed legislation requiring the government to reduce the UK's net emissions of greenhouse gases by 100% relative to 1990 levels by 2050 [1]. Doing so would make the UK a 'net zero' emitter. Prior to this, the UK was committed to reducing net greenhouse gas emissions by at least 80% of their 1990 levels, also by 2050. The Order empowers government to take whatever measures are necessary to meet the 2050 target.

### 3.4 Heat Network Market Framework Consultation, February 2020

The BEIS Heat Network Market Framework consultation ran between February to June 2020. It consulted on proposals to drive forward low-carbon heat networks' growth in a regulatory framework that protects consumers and ensures fair pricing. The key questions focused on:

- Regulation and consumer protection based on an authorisation regulatory model rather than a licensing model
- Market growth
- Statutory powers of heat networks
- The decarbonisation of heat networks

The conclusions have yet to be published.

Government reaffirmed heat networks as a crucial aspect of the path towards decarbonising heat. In the right circumstances, they believe heat networks can reduce bills, support local regeneration and can be a cost-effective way of reducing carbon emissions from heating. The framework principles put consumers at the heart of heat network market growth along with the need to include transparency on the agreements, price transparency and a high quality of service. The aim is to make it easier for investors to enter the sector and level the playing field with other utilities. The objective is to introduce regulatory certainty and reduce the development burden and risks (including standardisation) while maximising carbon savings from both new and existing networks.

The consultation stated that heat networks are best developed as local solutions to local circumstances. Many local authorities have been exploring and taking forward strategic heat networks. This includes the designation of heat network zones, concession arrangements, and use of planning requirements to encourage or enforce connection to networks. BEIS think there is potential for greater use of these approaches by local authorities. They will be piloting a programme to help local authorities develop local heat decarbonisation plans, identify heat network zones, and understand how they can use supportive policy measures to reinforce connection to networks.

### 3.5 The Ten Point Plan for a Green Industrial Revolution, November 2020

In November 2020, HM Government published it's the Ten Point Plan for a Green Industrial Revolution [2]. Underpinned by the need to address climate change, the plan sets out how government investment will leverage billions of pounds more of private investment in clean technologies and support up to 250,000 jobs by 2030 to *build back better*, support green

jobs, and accelerate the path to net zero. The relevant points associated to building heating are highlighted below.

Point 1: the plan aims to quadruple offshore wind capacity with a policy target of 40GW by 2030 to generate more power than UK homes use today to meet the increasing demand resulting from the electrification of transport and heat.

Point 2: the plan emphasises the possibility of using low carbon hydrogen to replace fossil fuels for, amongst other things, heating UK homes. Government is supporting trial schemes. It also references the scaling-up of the electric heat pump market to ensure the UK can exploit a range of low carbon heating options available for UK consumers. The policy impacts are listed as:

- Aiming for 5GW of hydrogen production capacity by 2030 in partnership with industry
- Lower carbon heating and cooking with no change in experience for domestic consumers through hydrogen blends and reduction emissions of the gas used by 7%.

Included in the milestones are:











- By 2023 government will support industry to begin hydrogen heating trials in a local neighbourhood, and
- In 2025, government will support industry to begin a large village hydrogen heating trial, and set out plans for a possible pilot hydrogen town before the end of the decade

Point 3: the plan sets out the intention to expand new and advanced nuclear power by 2050 to accommodate the increasing demand for low-carbon electricity in sectors like heat. The policy impact highlights the likely role of Advanced Modular Reactors (AMR) in decarbonising industry, heat and transport. The milestone to deploy the first AMR demonstrator is 'Early 2030s'.

Point 7: the plan sets out the approach to greener buildings over the next fifteen years to set a path to gradually move away from fossil fuel boilers as individuals replace their appliances and are offered a lower carbon, more efficient alternatives. Acting on buildings can support jobs and provide an opportunity to develop the growing UK heat pump manufacturing base. The plan emphasises the intention to implement the Future Home Standards in the shortest possible timeline so that new buildings have high levels of energy efficiency and low carbon heating. Government policy will aim for 600,000 heat pump installation per year by 2028. The choice whether to pursue hydrogen heating, electrified heating or a mixture of both remains open. Various grant schemes are available to help buildings with the upgrades to heating systems.

The plan sets out a number of papers, plans, strategies and reviews that government intend to publish. Of these, the Energy White Paper was published in December 2020 and is summarised below. The Heat and Buildings Strategy will be published during 2021.

Figure 1 Government's Green Industrial Revolution: Papers, Plans, Reviews and Strategies

<p><b>Energy White Paper</b></p>  <p>The White Paper will set out how the transformation of our energy system can drive economic growth and jobs, all whilst reducing emissions, consistent with our 2050 net zero target, and keeping bills affordable. It signals the transition away from unabated fossil fuels to clean energy solution; setting out actions that build on our success in power generation, look forward to challenges in heat and industry, and provide support to our vital oil and gas sector as it adapts to a net zero world. As we undergo this change, our energy system will evolve, becoming more integrated, more dynamic and more decentralised. Our strategy enables us to exploit smart, digital-enabled technologies to drive competition and harness innovation for the benefit of consumers.</p>	<p><b>Transport Decarbonisation Plan</b></p>  <p>The Transport Decarbonisation Plan will set out how we will move further and faster to decarbonise the entire UK transport system. The bold and ambitious plan will take a holistic and cross-modal approach to put us on a pathway to net zero by 2050. Alongside delivering the technical measures required, the Transport Decarbonisation Plan will seek to maximise the benefits of decarbonisation through place-based solutions and developing the UK as a green transport leader.</p>	<p><b>Heat &amp; Buildings Strategy</b></p>  <p>The Heat &amp; Buildings Strategy will set out the immediate actions we will take for reducing emissions from buildings. These actions include the deployment of energy efficiency measures and low carbon heating as part of an ambitious programme of work required to enable key strategic decisions on how we achieve the mass transition to low-carbon heat and set us on a path to decarbonising all homes and buildings.</p>
<p><b>National Infrastructure Strategy</b></p>  <p>The government will publish the National Infrastructure Strategy, setting out how infrastructure can support the economic recovery and deliver our long term growth ambitions. The NIS will focus on decarbonising our infrastructure networks and levelling up the economy, as well as supporting private finance and accelerating infrastructure delivery through project Speed.</p>	<p><b>Industrial Decarbonisation Strategy</b></p>  <p>This strategy will set out the Government's vision for a prosperous, low carbon UK industrial sector in 2050. Working closely with the Devolved Administration partners, we will set out how the low carbon transition can support industrial competitiveness and the green recovery across the UK, including identifying opportunities for new markets and sectors to develop.</p>	<p><b>Hydrogen Strategy</b></p>  <p>The strategy will outline government's ambitions for a UK hydrogen economy, and set out the near-term actions that need to be taken to ensure low carbon hydrogen can play a vital role in decarbonising industry, heat and heavy transport, whilst also providing system value through grid balancing and integration of increasing levels of intermittent renewable electricity.</p>
<p><b>England Tree Strategy</b></p>  <p>The Tree Strategy will set out our long-term vision for trees, woodlands and forestry in England, and the role we expect them to play in tackling climate change and biodiversity loss. It will set out actions we will take over the coming years to move towards this vision and meet our manifesto commitment to increase planting to 30,000 hectares per year, building on the announcement of the £640m Nature for Climate Fund to support tree planting and peatland restoration.</p>	<p><b>Net Zero Strategy</b></p>  <p>This strategy will set out the Government's pathway for transitioning to a net zero economy, making the most of new growth and employment opportunities across the UK. Building on the sectoral plans we will bring forward in 2020/21, we will develop a comprehensive net zero strategy building on the 10 Point Plan. The strategy will also consider what is needed to enable change at scale over the next 30 years – the skills we need in the economy, the shifts to our energy systems, finance flows and behaviours at individual, local and national level required to fully decarbonise our economy, recognising the complex interactions between energy systems, land and individuals in a net zero world.</p>	<p><b>HMT Net Zero Review</b></p>  <p>The Net Zero Review will consider how the transition to net zero will be funded and where the costs will fall, helping ensure an equitable balance of contributions between households, businesses and taxpayers.</p>
		<p><b>Nature Strategy</b></p>  <p>Our new strategy for nature will set our ambition to conserve and enhance England's biodiversity, delivering on our global targets under the Convention on Biological Diversity and the goals set out under our 25YEP. The Nature Strategy will be clearly linked to other strategies, including those for Trees, Peat and Pollinators. We plan to publish in 2021 but are already implementing key commitments such as the Nature Recovery Network.</p>

### 3.6 National Infrastructure Strategy, November 2020

The Nation Infrastructure Strategy was published in November 2020 by HM Treasury [3] and sets out the government's long-term ambitions to deliver an infrastructure revolution: "a radical improvement in the quality of the UK's infrastructure to help level up the country, strengthen the Union, and put the UK on the path to net zero emissions by 2050".



Chapter 3 sets out the government's plans to decarbonise power, heat, heavy industry and transport networks, which together account for over 80% of UK emissions. This is where heat is addressed and cross-references the government's 10 Point Plan for an Industrial Revolution (see previous section). Key measures include heat decarbonisation by supporting the roll-out of existing technologies like heat pumps and the development of emerging technologies like hydrogen. Reference is made to government interventions to kick-start the heat network market and future-proofing new homes for low carbon heat.

The chapter states that with boilers only lasting about 15 years on average, 2050 is only two heating system replacements away. Therefore by the early 2030s the UK needs to be in a position to ensure that the estimated 1.7 million new heating systems being installed each year are ready for net zero. Today, that number is nearer 30,000. It is therefore necessary to take the steps now to inform decisions about what kind of installation must be made.

### 3.7 The Energy White Paper, December 2020

Following on from the Ten Point Plan for a Green Industrial Revolution, the Department of Business Energy and Industrial Strategy (BEIS) published the Energy White Paper [4] in December 2020. The white paper puts net zero and the government's effort to fight climate change at its core and signals a decisive shift away from fossil fuels to using clean energy for heat and industrial processes, as much as for electricity generation. The key principles set out in the paper regarding heat include:

- Where taxpayers' money is used to fund the transition to clean energy, government will leverage private capital as much as possible.
- Energy bills will remain affordable over the 2020s by a major push on improving the home energy efficiency homes to significantly reduce demand and households save money on their bills.
- Largely eliminating the use of natural gas to heat homes. The government will be consulting on whether it is appropriate to end gas grid connections to new homes being built from 2025, in favour of clean energy alternatives.
- Growing the installation of electric heat pumps for household heating, from 30,000 per year to 600,000 by 2028.
- Better, smarter controls.

The white paper stated that smart local energy systems are community-based initiatives which bring together a range of energy issues, typically including heat, power and transport, to reduce emissions in an integrated way, while also promoting local jobs and businesses. Local Authorities are key to delivering these systems by combining energy into their wider statutory work on housing, transport, waste and planning, making delivery more cost-effective and preparing for a net zero future. Government provides funding for Local Authorities to deliver programmes that support decarbonisation and will continue to work with communities to enable projects to be tailored and delivered to meet local needs. The white paper noted that retired fossil fuel electricity generating capacity will need to be replaced to keep pace with existing levels of electricity demand; government modelling suggests that overall demand could double out to 2050. This is because of the electrification

of cars and vans and the increased use of clean electricity replacing gas for heating. As a result, electricity could provide more than half of final energy demand in 2050, up from 17 per cent in 2019.

Other pertinent points raised in the white paper regarding building heat:

1. Government will issue a call for evidence: 'Biomass for net zero', to inform the development of their strategy. A preliminary position paper will be published by summer 2021 once the evidence has been reviewed.
2. Delivering net zero target means largely eliminating emissions from domestic and commercial buildings by 2050.
3. Support will be provided for the transformation of heating for homes and workplaces from oil and gas to clean energy sources.
4. The switch to clean energy is expected to support up to 50,000 jobs across the UK by 2030.
5. Government will publish a dedicated **Heat and Buildings Strategy** in early 2021 which will set out ambitious plans in further detail, including the suite of policy levers that will be used to encourage consumers and businesses to make the transition.
6. The **Future Homes Standard** will ensure that all new-build homes are zero-carbon ready.
7. Government will use a new **Heat Network Transformation Programme** to co-ordinate the support for the roll out of district heating systems, including the switch to low or zero-carbon heat sources. £122 million of funding has been committed towards the programme that will be implemented by local authority zoning by 2025. See Funding Sources below.
8. Government intends to legislate in this Parliament for the **regulation of heat networks** to protect consumers and reduce carbon emissions. They will take powers to reduce the 90 per cent reliance on natural gas in heat networks, as well as enable consumer protection for heat network customers.

### 3.8 Climate Change Committee Sixth Carbon Budget, December 2020

The Climate Change Committee (CCC) is an independent, statutory body established under the Climate Change Act 2008. Their purpose is to advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change.

The CCC published its Sixth Carbon Budget in December 2020 [5] as required under the Climate Change Act to provide ministers with advice on the volume of greenhouse gases the UK can emit during the period 2033-2037. The CCC recommended pathway requires a 78% reduction in UK territorial emissions between 1990 and 2035, in effect, bringing forward the UK's previous 80% target by nearly 15 years. The Sixth Carbon Budget can be met through four key stages:

1. Take up of low carbon solutions including, amongst other things, all boiler replacements in homes and other buildings are low-carbon – largely electric.

2. Expansion of low carbon energy supplies with offshore wind becoming the backbone of the UK energy system. Hydrogen is used as a shipping and transport fuel and in industry, and potentially in some buildings, as a replacement for natural gas for heating.
3. Reducing demand for carbon-intensive activities by improving building insulation, changing diets away from high-carbon meats and dairy products, and fewer car miles travel and demand for flights grows more slowly.
4. Land and greenhouse gas removals through transformation of agriculture and use of farmland without effecting food production by increasing woodlands and energy crops.

To achieve the Sixth Carbon Budget targets (78% reduction by 2035) based on the balanced pathway modelling:

- All fossil fuel boilers are phased out in advance of 2035. A central phase out date of 2033 was adopted for gas boilers across buildings, with public buildings moving faster and phasing out by 2030.
- The use of solid biomass in combustion boilers is phased out by 2040s.
- 20% of buildings in heat dense urban areas should be connected to low-carbon heat networks.

The CCC's Sixth Carbon Budget Building Sector Summary [6] modelling assumptions and conclusions included:

- Prioritisation of the expansion of the rollout of low-carbon heat networks in heat dense areas like cities, using anchor loads such as hospitals and schools.
- Preparing the shift away from using fossil fuel Combined Heat and Power (CHP) as a supply-source towards low-carbon and waste heat by preference from the mid-2020s. This entailed the phaseout of CHP for new low carbon networks in 2025 and conversion of all legacy schemes to low-carbon sources by 2040.
- Zoning for heat networks: given the spatial nature of heat networks and the importance of managing demand-risk, a zoning approach supported by policy such as licensing will help provide a robust framework for deployment at scale.

### **3.9 The Role of Biomass in Achieving Net Zero – Call for Evidence, April 2021**

BEIS published a call for evidence in April 2021 [7] on the role of biomass in achieving net zero with a closing date of 15 June 2021. The call sought stakeholders' views on a forthcoming Biomass Strategy to strengthen the evidence base and is interested in the amount of sustainable biomass in the UK, how it is best used, improved sustainability standards, and the role of bioenergy with carbon capture and storage (BECCES).

Chapter 2 of the call discusses the use of biomass and the government green gas initiatives to support the production of biomethane for gas grid injection. In the context of heat, the government expects there be a niche and limited role for other forms of biomass in some harder to treat off gas grid buildings, in line with advice from the CCC.

### 3.10 The Carbon Budget Order 2021

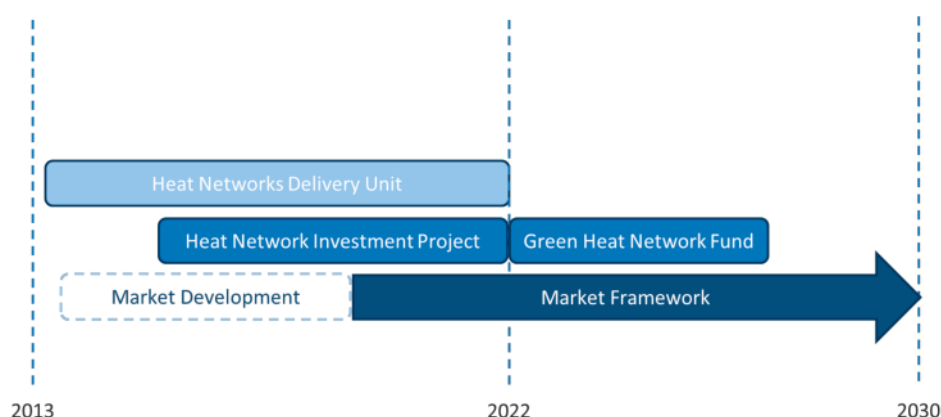
The Secretary of State laid the draft Carbon Budget Order 2021<sup>2</sup> before Parliament on 21 April 2021 with the aim of enshrining the CCC's sixth carbon budget for the period 2033 - 2037 into law by the end of June 2021. The budget sets a cap of 965 million tonnes of carbon dioxide equivalent as the maximum level of the net UK carbon emissions for the five-year budgetary period. The cap aims to achieve a 78% reduction in carbon dioxide emissions by 2035. The draft of the Order was approved by Parliament and is an indication that government is being guided by the advice of the CCC's Sixth Carbon Budget.

### 3.11 Funding and Support

#### 3.11.1 Introduction

The following is taken from a BEIS presentation dated 2020 [8]. It sets out government's support through to 2025 to create a market framework for heat networks (Figure 2). It could be assumed that direct government intervention for heat networks would cease by the end of 2025 after which it would become self-sustaining market driven by local authority heat network zoning and regulated by Ofgem to protect consumers and ensure decarbonisation.

*Figure 2 Government Interventions in Creating a Heat Network Market Framework*



#### 3.11.2 The Heat Networks Delivery Unit (HNDU)

HNDU has supported local authorities in England and Wales in early heat network development since 2013. Its supported is expected to finish at the end of 2022. The Unit has played a key role in standardising the way in which projects are developed, ensuring consistent quality and projects begin to look alike.

#### 3.11.3 Heat Networks Investment Project (HNIP)

The £320m capital support programme HNIP was launched by government in October 2018 and will run until 2022. The project is managed by a fund manager, Triple Point Investment

<sup>2</sup> <https://www.legislation.gov.uk/ukdsi/2021/9780348222616>

Management, who were appointed to deliver HNIP on behalf of BEIS. Applicants can be any type of public (except central government), third or private sector organisation in England and Wales. Funding is specifically offered as 'gap funding' through a combination of grants and loans to help make schemes investable and government is seeking to leverage in around £1 billion of private and other capital.

#### 3.11.4 Green Heat Network Fund (GHNF)

The GHNF is a new fund intended to comprise a 3-year capital grant making scheme which will run from April 2022 to 2025. The total is £270 million in England and Wales. The fund is designed to incentivise the heat network market to move away from the use of high carbon heat sources, to low carbon heat sources. The aim is to connect both existing and new heat networks to low carbon heat sources and focusses on low carbon heat production and will be open to a range of low carbon technologies.

The GHNF will help build on the momentum of previous projects such as HNIP and ensure there is limited to no funding gap for heat networks. This will also help ensure continued market confidence and growth for the heat network market.

#### 3.11.5 Heat Network Transition Programme (NHTP)

The NHTP is a new government proposal intended to support Local Authorities to designate new heat network zones, no later than 2025. Zoning entails the identification of areas which can be readily connected to a low-carbon heat network and mandating connection unless it is not cost-effective to do so. The certainty of connection for projects, which zoning affords, will ensure that heat networks are better able to grow and deliver lower-cost, clean heat for consumers.

The government will consider how local heat network zoning can be most effectively integrated with wider local area planning for the environment, infrastructure and place. They intend to work with local authorities to optimise delivery of this and related interventions by working with local authorities and through a consultation due to be published in spring 2021.

## 4 Local Strategy and Plan Review

### 4.1 Introduction

This section reviews the current strategies and plans for Bromsgrove District Council and those of Worcestershire that guide the Council's activities. The strategies and plans are informed by the 2008 Climate Change Act and the legally binding greenhouse gas reduction target of an 80% reduction by 2050 compared to 1990 levels. The Climate Change Act was amended in 2019 replacing the original 2050 80% target with a net-zero target. The Council's currently published strategies and plans are now out of step with national targets.

## 4.2 Worcestershire County Strategies

### 4.2.1 The Worcestershire Partnership: A Single Sustainability Community Strategy for Worcestershire 2011-2021 Bromsgrove Partnership

The Worcestershire Partnership have combined the districts' and county sustainable communities strategies into a single strategy. This has enabled a greater focus on a reduced number of priorities in the light of reduced resources and increasing demands. The single strategy improves the links between the county and district partnerships to establish a strong local vision. The strategy has identified three key priorities:

1. A skilled and prosperous economy
2. An environment that is cherished and resilient
3. Improving health and well-being

Each district has its own sustainable community strategy and partnership priorities. Bromsgrove Partnership operates a Board and four Theme Groups and it is those Theme Groups which are the delivery arm of the Partnership. The top three priorities, key outcomes agreed for each priority, and the Theme Groups responsible for delivering on those priorities, are shown

Figure 3 below. The highlighted text relates to the heat network project.

*Figure 3 Bromsgrove Partnership Priorities and Theme Groups: Relevant Priorities etc Highlighted*

Priorities	Key Outcomes	Theme Groups
<b>Economic Growth</b>	<ul style="list-style-type: none"> <li>● Regeneration of the town centre</li> <li>● Effectively market Bromsgrove District</li> <li>● Encourage business growth (including retention of businesses)</li> </ul>	<b>Economic Development Theme Group</b>
<b>Balanced Communities</b>	<ul style="list-style-type: none"> <li>● Reduce alcohol misuse and smoking, encourage healthy diet and exercise and improve perception of mental health issues</li> <li>● Implement an age well scheme and focus on falls prevention</li> <li>● Deliver accessible, localised and sustainable services for vulnerable neighbourhoods via The Trunk (Areas of Highest Need Project)</li> <li>● Provide positive activities for young people</li> </ul>	<b>Balanced Communities Theme Group</b>
	<ul style="list-style-type: none"> <li>● Reduce the fear of becoming a victim of domestic burglary</li> <li>● Maintain safe clean streets by tackling night time economy and reducing graffiti</li> <li>● Protect communities by tackling domestic abuse, youth related anti-social behaviour and supporting vulnerable people</li> </ul>	<b>Bromsgrove Community Safety Partnership</b>
<b>Environment</b>	<ul style="list-style-type: none"> <li>● Reduce CO<sub>2</sub> emissions through improved energy efficiency in housing and businesses</li> <li>● Explore improving biodiversity and nature in key strategic sites; and how land use influences carbon emissions/carbon sinks</li> <li>● Ensure shared priorities are delivered in a cohesive way e.g. environmentally sustainable town centre</li> </ul>	<b>Better Environment Theme Group</b>

The environment priority recognises that Bromsgrove has approximately 37,772 households and most CO<sub>2</sub> in Bromsgrove is produced from housing, followed by transport and businesses. With the cost of fuel increasing, more people are likely to suffer fuel poverty which has social and health implications. Good energy management makes good

environmental and economic sense. Reducing CO<sub>2</sub> emissions is a considerable challenge and remains a national priority.

#### 4.2.2 Worcestershire Local Enterprise Partnership Energy Strategy 2019 – 2030

The Energy Strategy<sup>3</sup> replaces the Worcestershire Climate Change Strategy 2012 to 2020.

The county strategic ambition by 2030 is to have high-quality energy-efficient housing stock and a robust, diverse energy infrastructure, underpinned by low carbon generation which utilises Worcestershire's unique local resources. There are three key measures that the strategy aims to deliver:

- Reduction in carbon emissions of 50% on 2005 levels by 2030.
- Double the size of the low carbon sector between 2016 and 2030
- Tripling energy production from renewable generation by 2030

Four priority theme areas have been developed from the evidence base and in consultation with local stakeholders of which three are relevant to the heat network project:

1. Access to affordable, clean energy
  - To improve the ability of Worcestershire to offer low cost, low carbon energy
  - To reduce instances of fuel poverty and reduce the overhead cost of energy on small businesses
2. Clean economic growth
  - To enable Worcestershire to achieve its ambitious growth targets whilst reducing carbon emissions
  - To promote and encourage the flourishing low carbon supply chain to expand further
3. Overcoming infrastructure and development barriers
  - To remove barriers to development by encouraging alternative means to achieve secure energy supply through smart systems

At least six potential sites of geothermal energy resource have been identified, but none extend to Bromsgrove. The strategy highlights the opportunity for local councils to lead by example in their own activities.

#### 4.3 The Bromsgrove District Council Plan, 2019 – 2023

The Council Plan [9] and the strategic purposes contained within it help to set the direction for the Council and how it works with its partners. The Service areas will be working towards these purposes to ensure that everything the Council does relates to the demands and needs of their customers. Each of the five Strategic Purposes have a 'green thread' that runs them. The heat network project can potentially accord with the Purposes and 'green thread' Priorities:

1. Run and Grow a Successful Business: green thread priority - stimulating the growth of low carbon industries

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<sup>3</sup> [https://www.worcestershire.gov.uk/info/20235/sustainability/1092/county\\_strategies/2](https://www.worcestershire.gov.uk/info/20235/sustainability/1092/county_strategies/2)

2. Work and Financial Independence: green thread priority – employment in low carbon industries; helping alleviate fuel poverty.
3. Promoting Affordable and Sustainable Homes: green thread priority – work with developers to deliver more energy efficient homes.
4. Communities Which are Safe, Well-maintained and Green; green thread priority - review services to understand how they can adapt to address the implications of climate change.
5. An effective and sustainable council; green thread priority – sustainability in the context of opportunities and benefits to council services.

#### 4.4 Bromsgrove District Plan 2011 to 2030, Adopted 2017

The Bromsgrove District Plan [10], (BDP or The Plan) sets out the long-term vision for how Bromsgrove Town, the villages and countryside will develop and change in the period up to 2030. It sets out how this vision will be delivered through a strategy of promoting, distributing and delivering sustainable development and growth. The original Plan was called the Core Strategy and the work that was progressed under the Core Strategy forms the basis of the Plan.

It is noted that the Council no longer prepares a separate Area Action Plan (AAP) for the Town Centre. The key policies that were proposed for the draft Town Centre AAP are incorporated into the Plan to contain the important policies affecting the District in one document. The adopted Plan reflected national and local aims for reducing carbon emissions at the time of adoption but is now dated regarding national strategies.

The Plan also reflects the Bromsgrove Partnership Priorities as set out in the Single Sustainability Community Strategy for Worcestershire.

The Plan is currently under review<sup>4</sup> according to the following timetable:

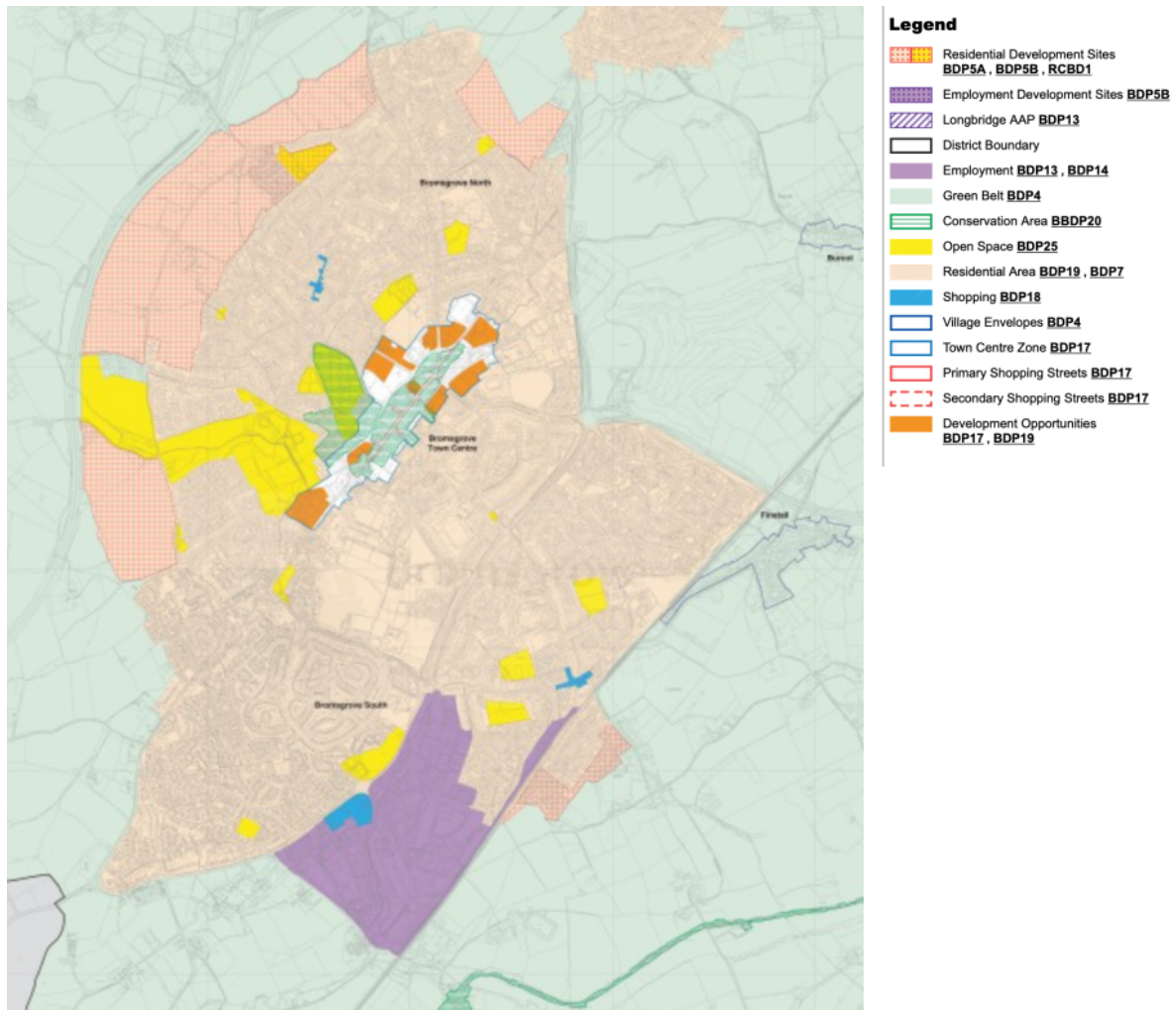
<b>Plan Stage</b>	<b>Target Date</b>
Preferred Option Plan	July 2022
Publication Plan	July 2023
Submission	September 2023
Examination	November 2023
Inspector’s Report	March 2024
Adoption	May 2024

A map of the town is published in the Plan, Figure 4.

<sup>4</sup> <https://www.bromsgrove.gov.uk/council/policy-and-strategy/planning-policies-and-other-planning-information/bromsgrove-district-plan-review.aspx>



Figure 4 Bromsgrove Town



The Plan sets out a number of policies that guide decision-making:

8.214 Clean, Green and Healthy: Policy BDP22 Climate Change:

Mitigation: reducing energy use and moving away from fossil-fuel. Refers to the now superseded 80% emission reduction and notes that local authorities have most scope to influence emission reductions.

To reduce the carbon-emissions generated from fossil fuel use, improve the energy affordability to local businesses and households and maximise the opportunities of local job creations, all developments in the District are required to follow the energy hierarchy:

1. Reduce use of energy through good design
2. Make the most use of efficient energy, heating and cooling systems
3. Move to energy from renewable or low carbon sources (on site preferred to off-site)
4. Use remaining fossil fuels efficiently

8.222 Renewable Energy

Refers to DECC (now BEIS) heat mapping and initiatives.

8.223 The Council will support large scale/zero-carbon energy projects  
Expects developers to incorporate district heating where feasible. Where there is a firm plan on the delivery of a district heating supply, developments nearby will be required to connect to these energy supplies.

BDP 22.1 The Council will delivery low carbon climate resilient developments

By:

- e. Supporting developments to incorporate zero or low carbon energy generation technologies, especially installations that improve the energy security of developments in the rural areas. Where there is a firm delivery plan of a district heating scheme, developments nearby are expected to provide infrastructure/ to connect to that scheme;
- f. Supporting zero or low carbon energy generation schemes when adverse impacts are addressed satisfactorily

Bromsgrove Town Expansion Sites: BDP5A.7

It is required that:

- o) The developments should seek to incorporate zero or low carbon energy generation technologies e.g., Combined heat and power, ground source heat pumps and/or solar power; and
- p) Financial contributions for infrastructure provision will be required as detailed in BDP6 Infrastructure Contributions.

#### 4.5 Bromsgrove Council Climate Emergency Plan

In 2019 BDC declared a climate emergency and is in the process of developing a decarbonisation plan with the aim of carbon neutrality across all BDC services and wider sphere of influence.

## 5 Summary and Conclusions

1. In 2019, Climate Change Act 2008 amended its legally binding 2050 CO<sub>2</sub> emission reduction target from an 80% reduction to net-zero carbon. This means emissions from domestic and commercial buildings need to be largely eliminated by 2050.
2. The government's response to the amended target in the context of heat, one of the UKs largest sources of CO<sub>2</sub> emissions, was to set out the approach to greener buildings over the next fifteen years (2035). It set a path to gradually move away from fossil fuel boilers as individuals replace their appliances and to offer lower carbon, more efficient alternatives such as electric heat pumps, hydrogen and low carbon district heating.
3. Government intends to consult on their proposal to phase out the use of fossil fuels in new build by 2025, probably through the Future Homes Standards.
4. To achieve the CCC Sixth Carbon Budget targets (78% CO<sub>2</sub> reduction by 2035):

- a. All fossil fuel boilers are phased out in advance of 2035 with public buildings moving faster and phasing out by 2030.
  - b. 20% of all buildings to be connected to heat networks prioritising the rollout of low-carbon heat networks in heat dense urban areas like cities, using anchor loads such as hospitals and schools.
  - c. A shift away from using fossil fuel CHP as a supply-source towards low-carbon and waste heat by preference from the mid-2020s with CHP being phased out for new low carbon heat networks in 2025 and conversion of all legacy schemes to low-carbon sources by 2040.
  - d. The use of solid biomass in combustion boilers is phased out by 2040s. Its use in heating being for niche off-grid hard to decarbonise cases.
  - e. Zoning for heat networks supported by policy to provide a robust framework for deployment at scale.
5. With a typical boiler life of 15 years, we are only one system replacement away from the 2035 boiler phase out target and the public sector should not be undertaking any like-for-like boiler replacements.
  6. The extent to which hydrogen will be used for building heat remains unclear in government's mind, however:
    - a. By the government's own figures for hydrogen production capacity by 2030 (5GW, equivalent to 44 TWh/a), it is an order of magnitude less than the national heat demand (434 TWh/a [11]). This excludes the significant demand from industry and transport which will be harder to decarbonise than heat and therefore more in need of hydrogen and better able to afford it.
    - b. The CCC expects the 'heavy lifting' of decarbonised heating to be undertaken by zero-carbon electricity and heat pumps with hydrogen playing a very limited niche role.
  7. The government will be extending their financial support for heat networks with the introduction of the £270m Green Heat Network Fund from April 2022 to 2025. The capital grant funding aims to connect both existing and new heat networks to low carbon heat sources and focusses on low carbon heat production and will be open to a range of low carbon technologies.
  8. The government is aiming to create a sustainable heat network market and discontinue its financial support by the end of 2025. The proposal is to create a market framework through local authority zoning and heat network regulation to protect consumers and ensure decarbonisation.
  9. The government is minded to support Local Authorities to designate new heat network zones no later than 2025 through a £120m Heat Network Transformation Programme. Zoning entails the identification of areas which can be readily connected to a low-carbon heat network and mandating connection unless it is not cost-effective to do so. The government will consider how local heat network zoning can be most effectively integrated with wider local area planning for the environment, infrastructure and place and intend to publish a consultation in spring 2021.

10. County and Council strategy and plans, although are now out of step with national targets, remain valid in terms of their general approach and priorities. Subject to the outcome of the government's initiatives on heat network zones, Future Homes Standards and the phasing out of existing boilers, the Bromsgrove District Plan may need to be amended to implement national policy.
11. BDC 2019 district heating feasibility study has been overtaken by the measures needed to achieve the amended national 2050 climate change target of net zero. If the scheme intends to align with present government action, then:
  - a. The BAU assumption individual natural gas heat only boilers should include individual air source heat pumps where appropriate since the like-for-like replacement of boilers will not be permitted within the next 15 years.
  - b. The CHP should be removed as this is an explicit government aim to decarbonise heat networks. GHNF capital grants will be available to support the change.
  - c. The biomass boiler alternative should be replaced with a Plan B alternative since government do not envisage the use of solid biomass for heat in all but the most exceptional cases.

## 6 Recommendations

It is recommended that:

1. The Bromsgrove heat network scheme is realigned with the current government direction to ensure it will qualify for GHNF funding and in anticipation of the introduction of local authority zoning.
2. The scheme should therefore be reviewed by the Detailed Project Development (DPD) consultant to:
  - a. Establish a zero-carbon heat network scheme entailing, amongst other things, the removal the CHP plant, optimising the heat network design and building connection requirements and addressing the use of natural gas in the standby boiler plan.
  - b. Establish a replacement for the biomass boiler with 'Plan B', a smart, optimised, centralised air source heat pump.
  - c. Account for a future individual air source heat pump counterfactual.
3. BDC planners are engaged regarding the prospect of local authority zoning and the extent to which the Town Centre heat network scheme could provide the nucleus for a Bromsgrove Town Concession Zone embracing new developments and additional heat sources (sewage treatment works and canal).

## References

- [1] Parliament of the United Kingdom. Climate Change Act 2008. HM Gov 2008:1–103. <https://doi.org/10.1136/bmj.39469.569815.47>.
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- [10] Bromsgrove District Council, Cartogold. Bromsgrove District Plan 2011-2030 2011.
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