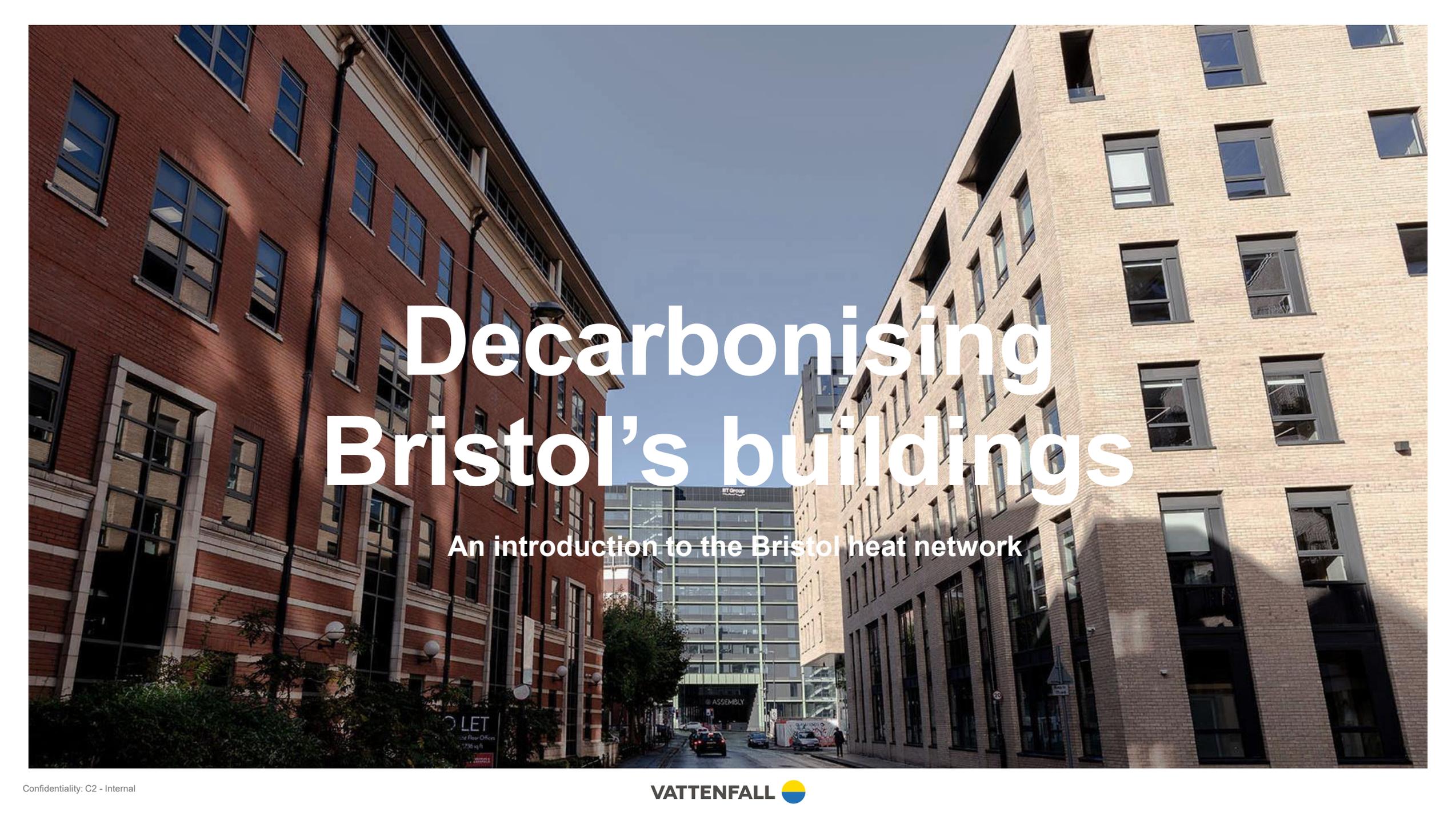


VATTENFALL





Decarbonising Bristol's buildings

An introduction to the Bristol heat network

Vattenfall in Bristol

Bristol heat network

Vattenfall **fully owns and operates** the heat network in Bristol.

Over **the first five years**, Vattenfall will be investing £475 million to grow the Bristol heat network, providing enough heat to supply 12,000 homes.

Our vision is that **over half of all Bristolians living, working and learning in the city will be kept warm by the Bristol heat network by 2050.**



A ground-breaking twenty-year partnership has been created to deliver over **£1 billion of investment into Bristol's energy system.**



VATTENFALL



140 tonnes of carbon saving



180MW of zero carbon generation assets



327GWh of zero carbon energy generated



£61.5m of social value including £50m of contracts delivered by local supply chain



A guaranteed £1.5m Community Energy Fund



410 new jobs created in Bristol and 1,000 jobs in total, all paying at least the 'Real Living Wage'

Bristol planning policy

The Heat Priority Area is part of adopted local policy showing areas where heat networks are expected and will be supported. It is the basis for the City Leap concession.

New build developments

Major developments in this area must connect to the Bristol heat network if available.

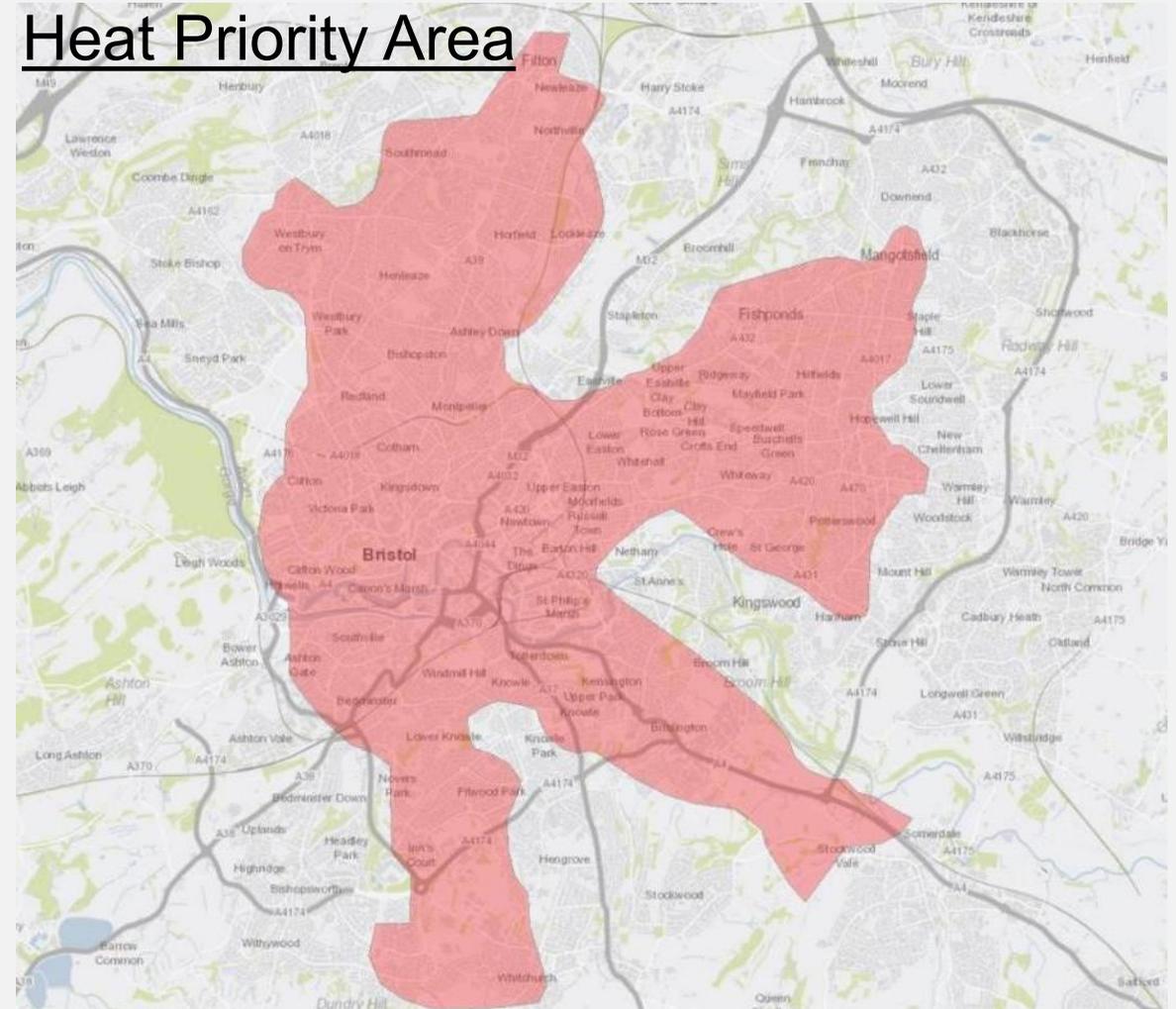
Other buildings in the Heat Priority Area will be required to be 'heat network ready' or futureproofed for later connection

Without this policy, heat network development in Bristol would not have happened

Residential retrofit

Bristol's One City Climate Strategy states that 62k residential and 2k commercial buildings should be connected to heat networks to achieve lowest cost, lowest carbon decarbonisation.

No current delivery plan for these areas due to a lack of commercial grant support but it is deemed the best pathway for residents and from a UK PLC perspective

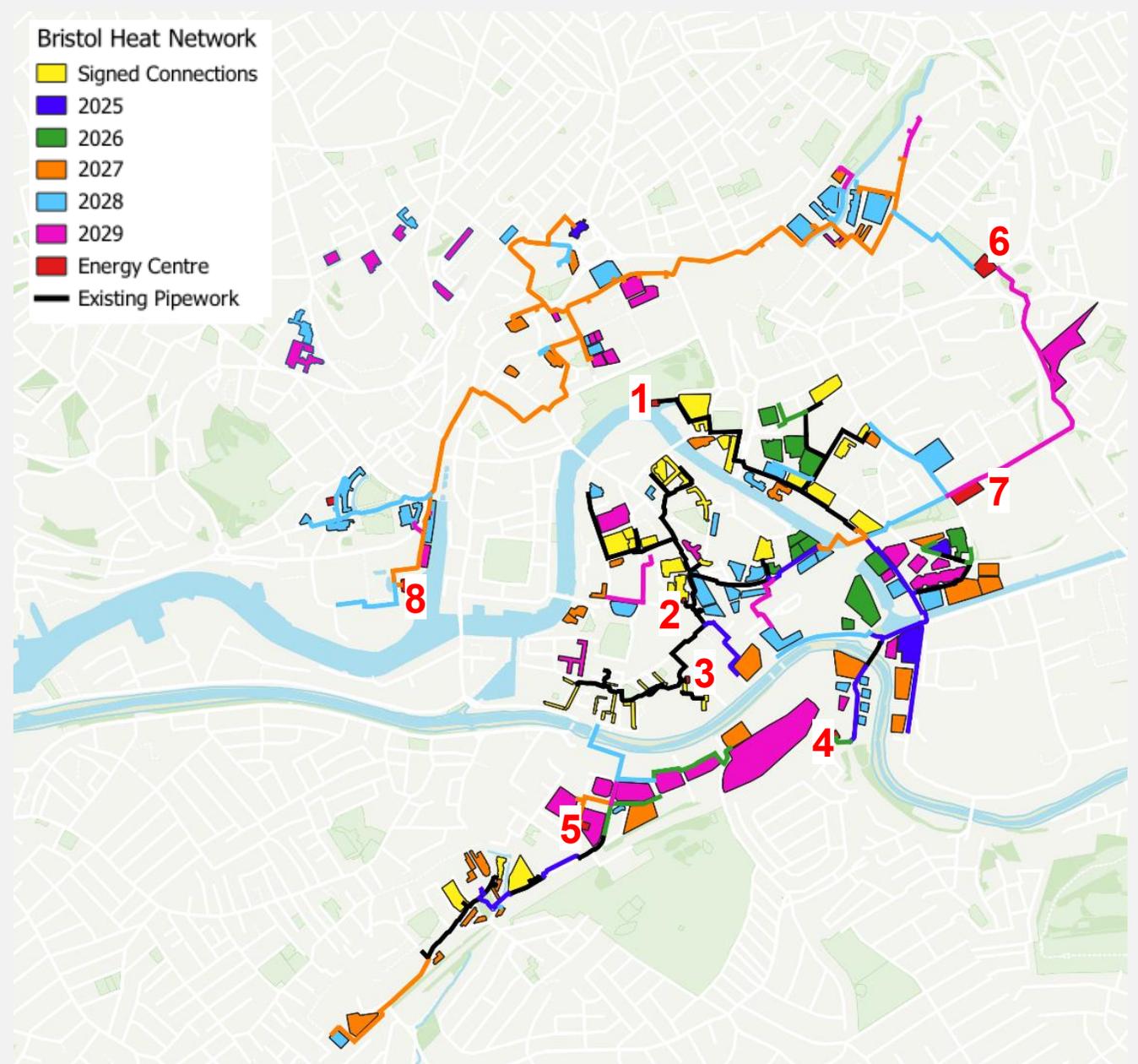


Bristol Heat Networks Business Plan 2025-2029

- Heat network connections, energy centres and pipework by year.

Energy Centres

1. *Castle Park*
2. *100 Temple Street*
3. *Broughton House*
4. *Plot 12*
5. *Willway Street*
6. *Speedway*
7. *Days Road*
8. *Millenium Square*



Guide to heat networks

Castle Park – award winning 3MW energy centre

UK's largest harbour-based water source heat pump, providing heat from Bristol's floating harbour to up to 2,500 homes. The first of many similar facilities across the city.



Award
Winning

New build examples (heat network connection is mandatory for new planning applications)



Assembly Building BT Group



Soapworks



Welcome Building



EQ



Halo



Castle Park View

Retrofit examples



Central Health Clinic



Temple Fire Station



100 Temple Street Offices



Temple Quay House Offices



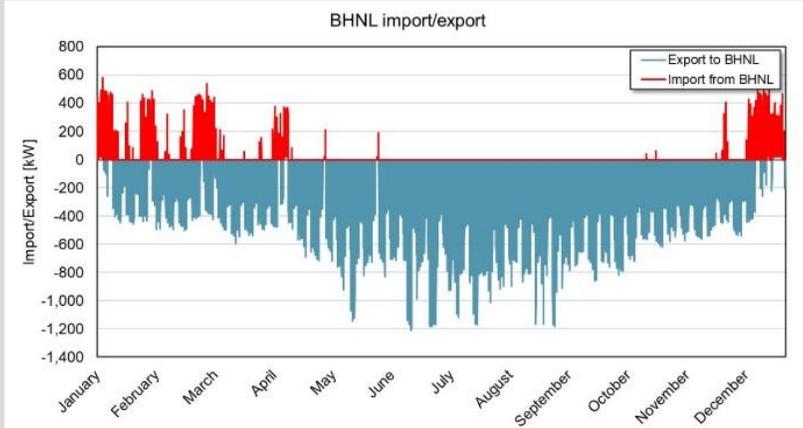
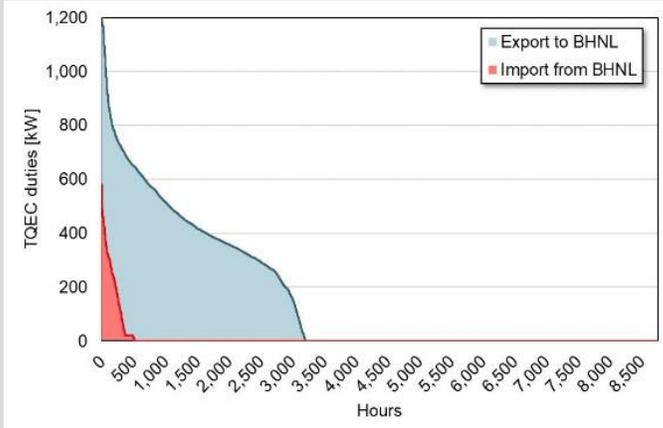
Redcliffe Residential Blocks



Hannah Moore Primary School

Temple Quarter enterprise campus

- One of the country's most innovative, low carbon heating systems will soon be active in Bristol when Vattenfall connects the University of Bristol's Temple Quarter Enterprise Campus to its low carbon heat network, providing heating, cooling and hot water
- This is one of the first times in the country, that a building connected to a citywide heat network will be able to sell excess heat produced from its own computer servers back into the heat network to help heat other buildings.



“We are committed to reducing our carbon emissions and the city-wide heat network offered an opportunity for lower carbon heat energy that is commercially viable long term. Our approach in the technical design has been to effectively use, capture and reuse heat energy in the building, and to incorporate the capability to export waste heat to the city-wide network in the future as it matures.”

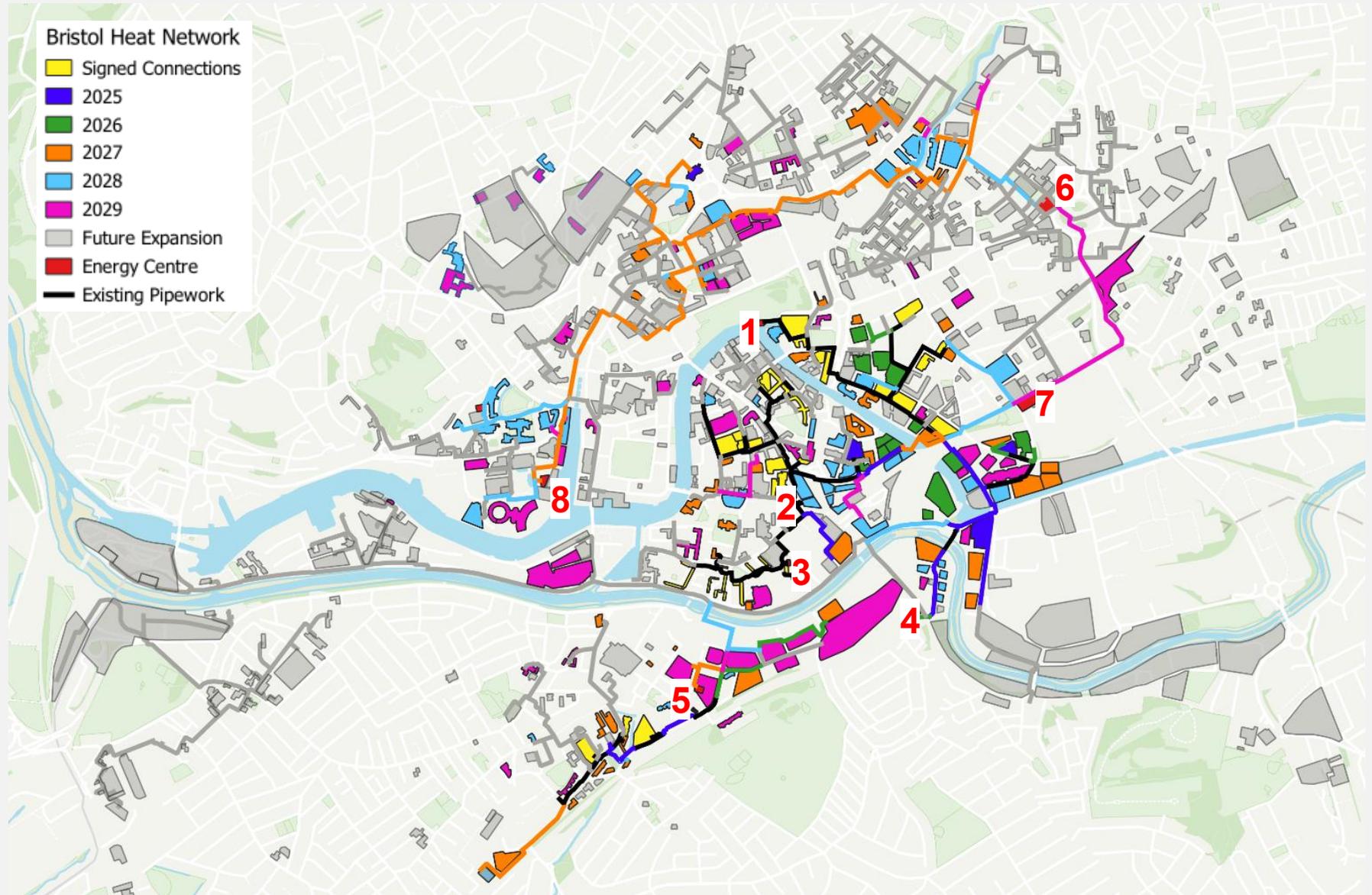
- Stephen Runicles, interim Temple Quarter Project Director

Bristol Heat Networks Full network plans

- Heat network connections, energy centres and pipework by year, with additional future expansion

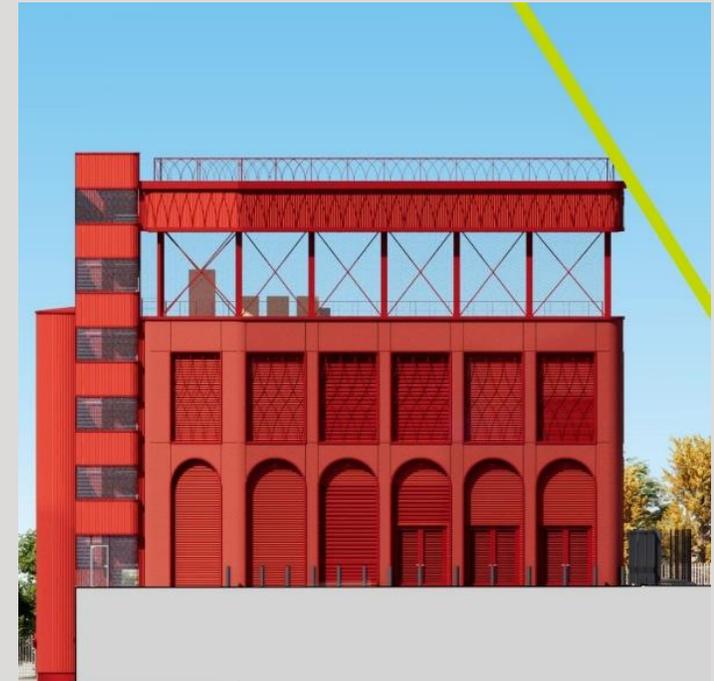
Energy Centres

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Bath Road Energy Centre

- New permanent low carbon energy centre situated adjacent to Bristol Temple Quarter and near the new TQEC building
- The Energy Centre is set to produce 13MW of low carbon heat generated by an air source heat pump and electric boilers for the new Temple heat network area
- It will produce heating and hot water for up to 7,085 houses and reducing carbon emissions by up to 65%
- Public consultation was held in April 2025
- The planning application was submitted in August and validated in September 2025

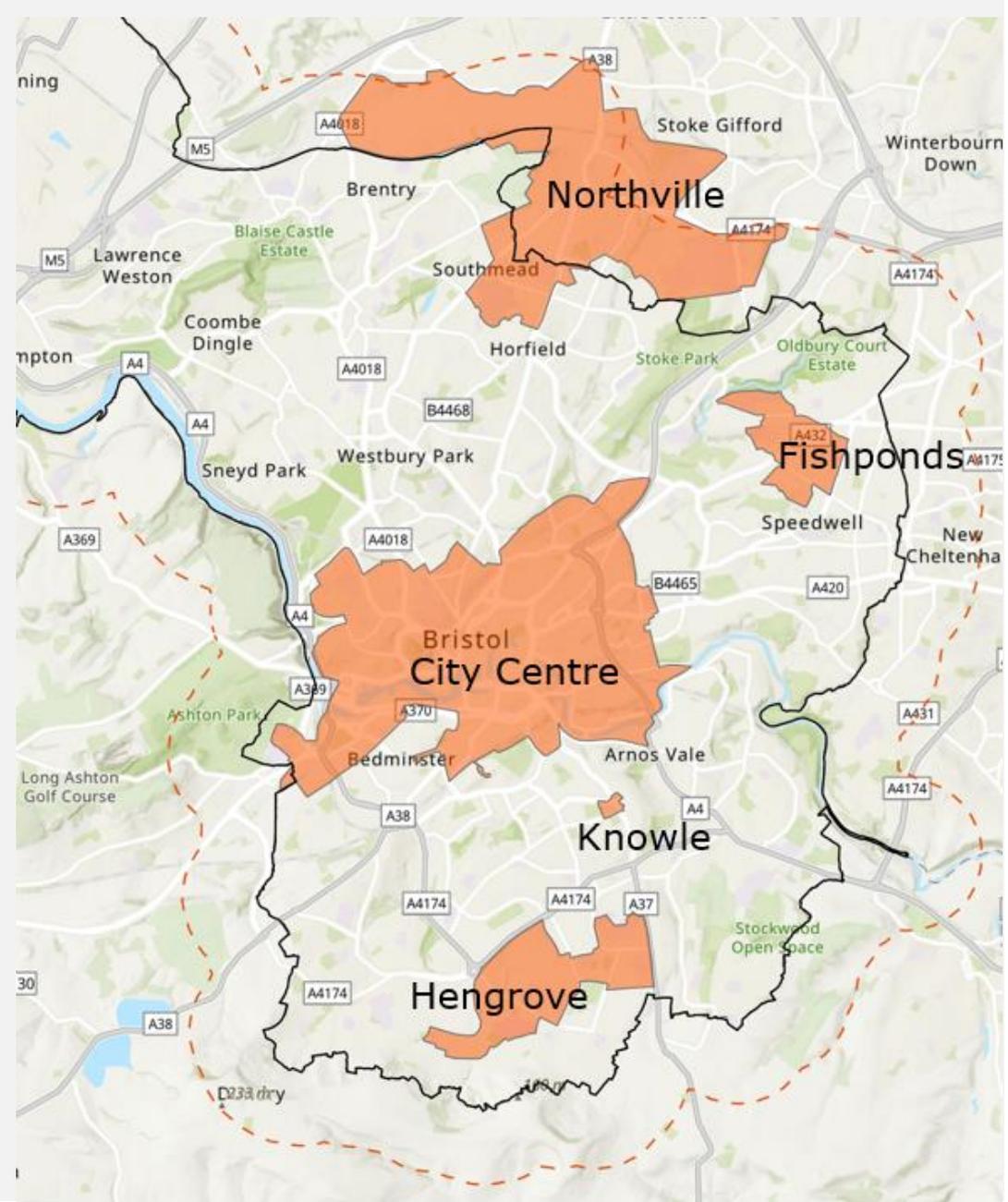


Incoming Regulation

Heat network zoning

Legislated for in the Energy Act October 2023

- Rolled out by DESNZ and will support the growth of the market and accelerate HN deployment alongside Ofgem becoming the regulator of heat networks
- Within targeted city areas suited to heat networks both new and existing large **buildings would be required to connect**
- By identifying where networks are cost-effective for heat decarbonisation, zoning **provides stakeholders with clarity and confidence for connection**
- Demand assurance gives **investors security**, supporting delivery of large-scale heat networks
- It is anticipated that the central Bristol zone will be one of the first 6 in the UK to become official in the next 2 years
- This map is in draft and is the output of a model which is still in development but it appears to demonstrate that the New Town area is already at sufficient density to enable a zone to be put in place.



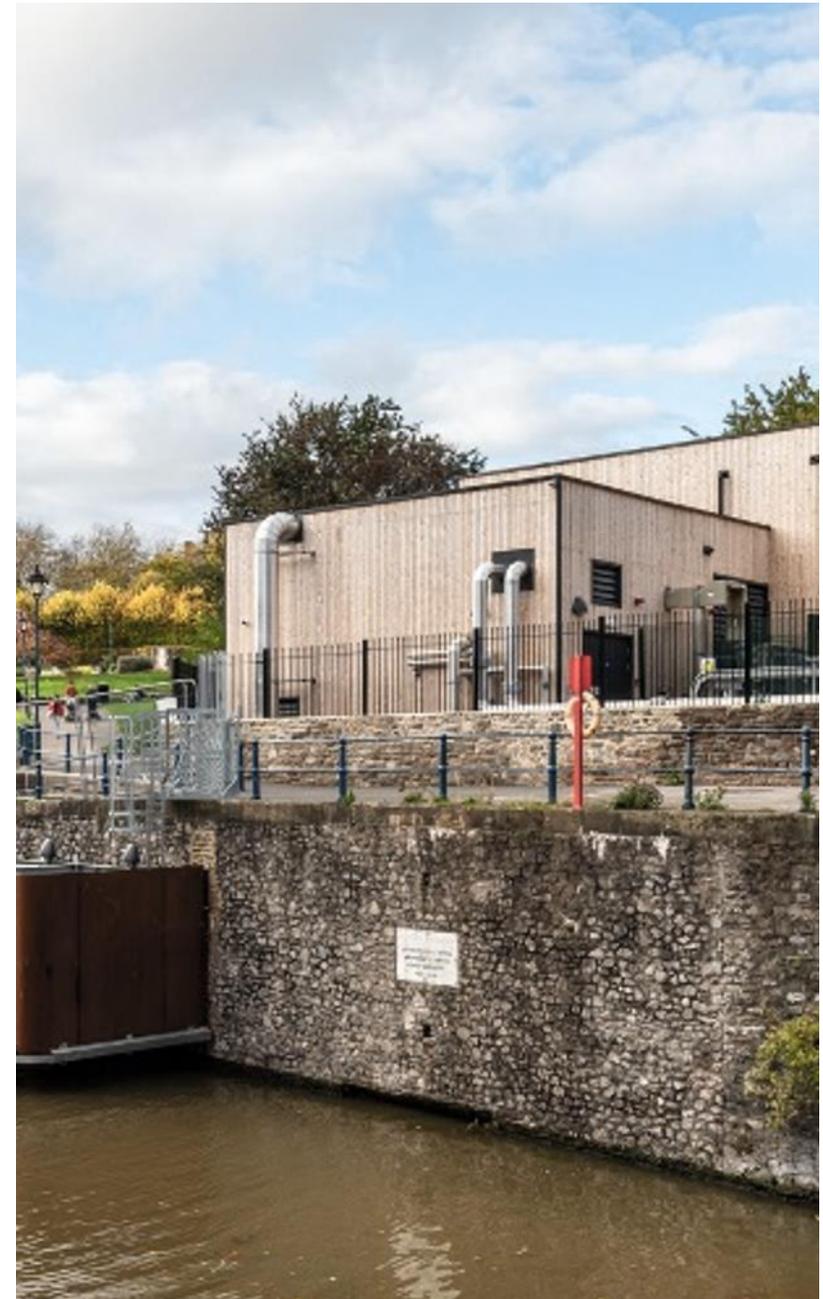
Energy system benefits

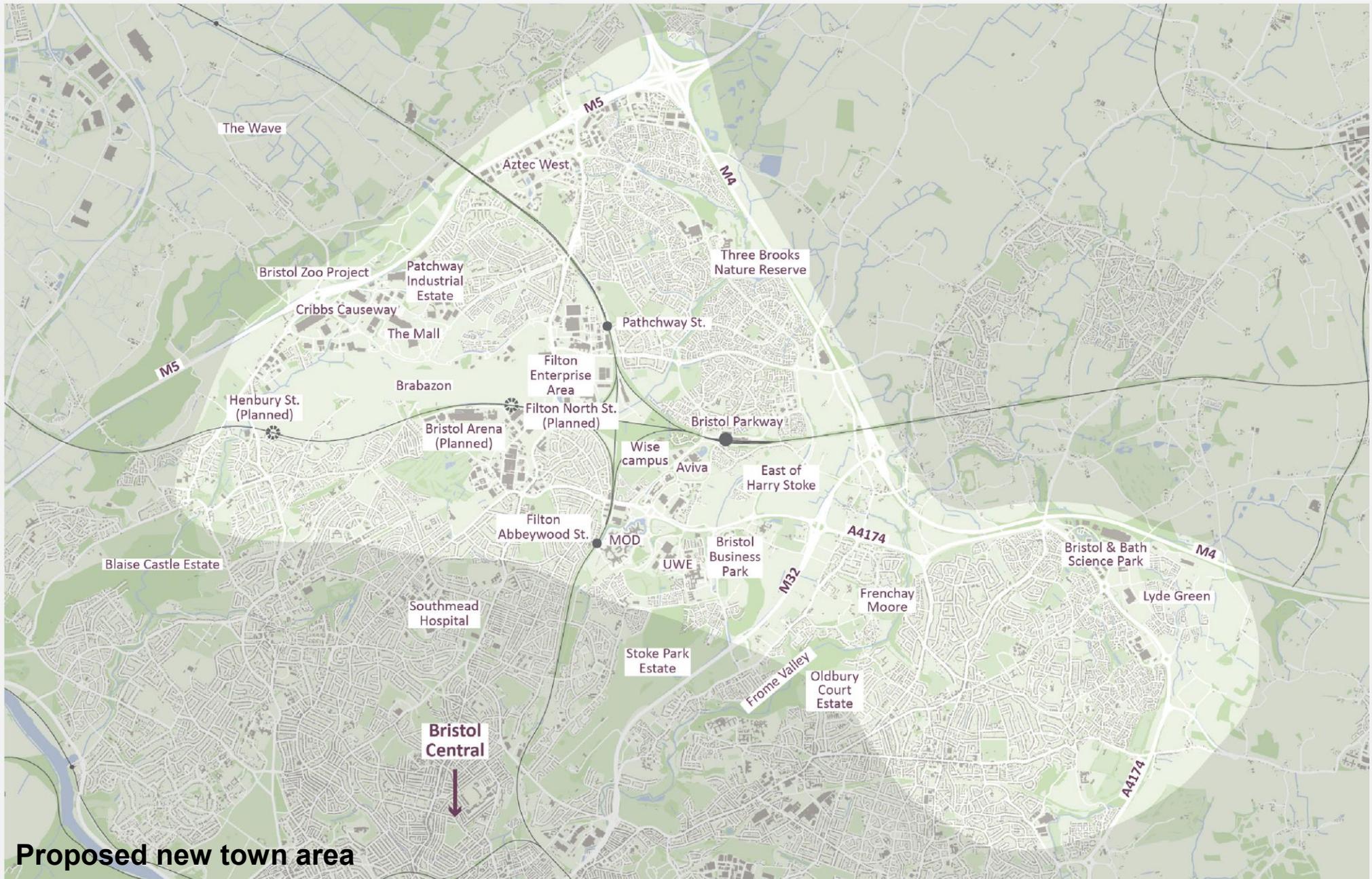
Targeted heat network deployment will have huge benefits to the wider energy system. A study published in *Electric Power Systems Research* in 2024 found that:

“Implementing centralised electric heating to partially supply 30% of the electrified heat demand is found to reduce the overall system costs by up to £1.57bn/yr compared to decentralised solutions to fully supply the electrified heat demand.”

- **Demand side response and flexibility** We can use lower cost electricity when it is abundant and when others don't need it
 - Thermal storage is a cost-effective store of energy (cheaper than lithium for e.g.)
 - Heat networks themselves are a store of energy
 - Temperatures across the network and generation can be flexed to respond to electricity price signals and intermittency
- **Reduction in peak electricity demand**
 - Diversity and variation in demand profiles of buildings on the heat network reduce the overall peak heat generation capacity required and electrical capacity that needs to provide for it
 - Centralised energy centres require electricity upgrades in fewer, central locations
 - Private wire – locally generated renewables can plug straight into a heat network energy centre at a scale not possible with individual heat pumps
 - PPAs and local supply arrangements – code changes (P441 and P442) will enable heat networks to access local renewables without the need to pay full policy and use of service costs
 - Excess capacity – heat network energy centres require large electrical connections but there are times when these won't be fully utilised and can be made available to other flexible users such as EV charging if they can be co-located
- **Reduction in electricity consumption**
 - Large scale highly efficient heat pump-based energy centres
 - Access to waste heat sources and large cooling demands, saving energy

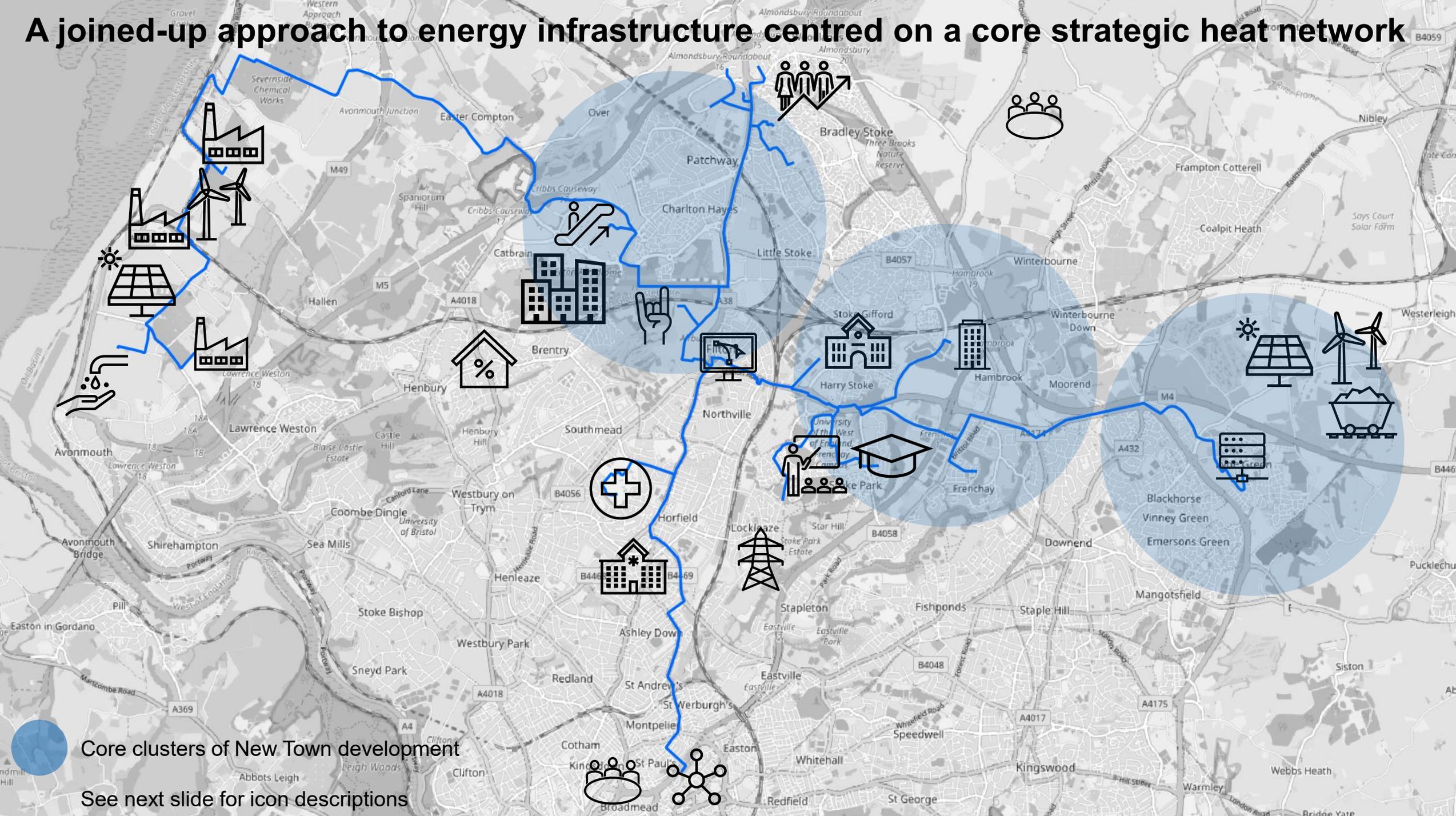
Overall, heat networks will lead to a reduction in grid reinforcement and electricity generation capacity





Proposed new town area

A joined-up approach to energy infrastructure centred on a core strategic heat network



Core clusters of New Town development

See next slide for icon descriptions

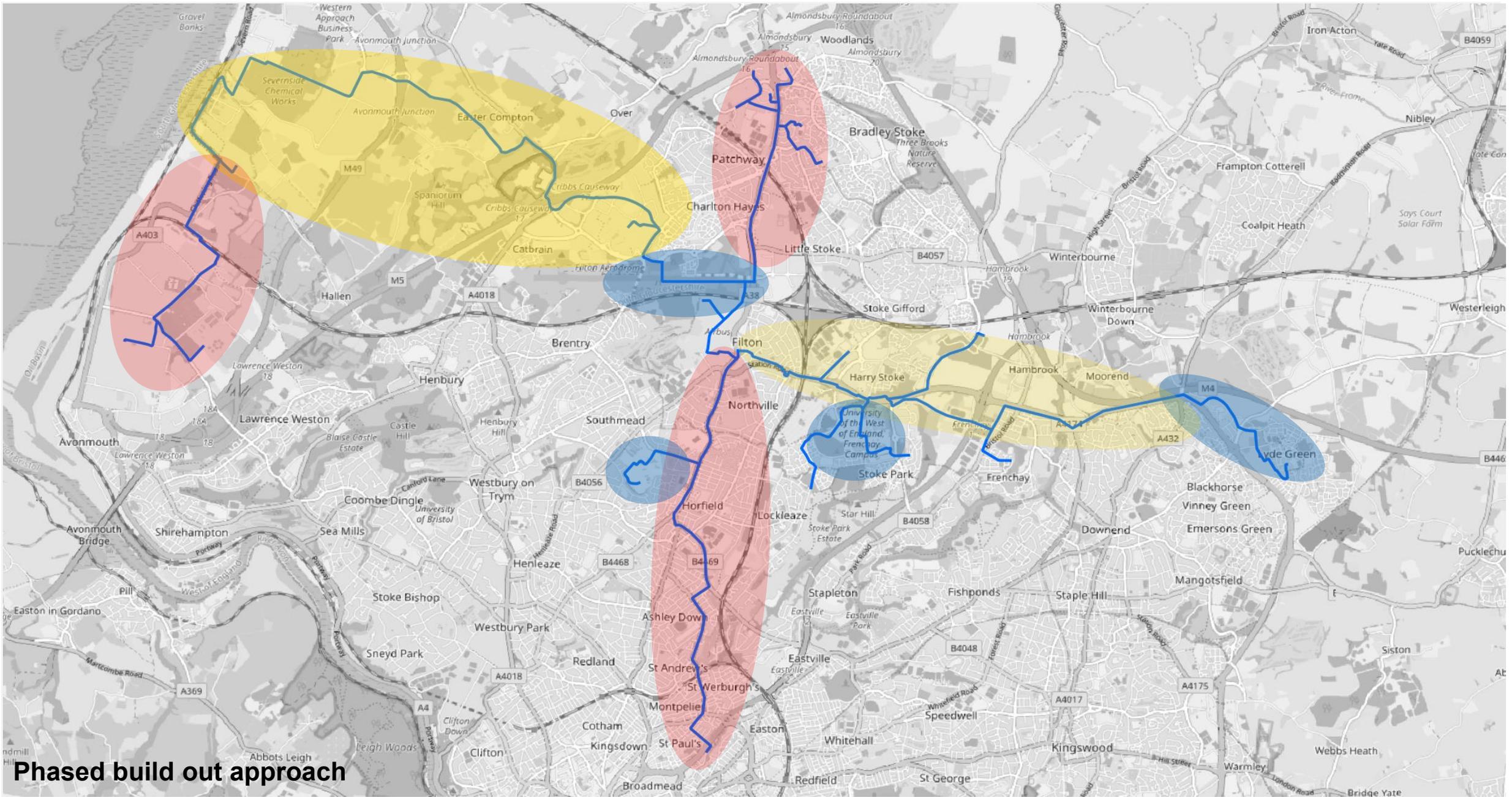
Heat network deployment across the New Town area could have significant benefits to the energy system by reducing the burden on the electricity network

- The following table sets out 5 demand scenarios focussed on the current Brabazon masterplan and adding in additional homes.
- It then looks at the possible electrical capacity requirement for each scenario and the potential reduction from deployment of heat networks, through efficiencies of centralisation and the ‘diversity’ effect of networked demand.
- Finally, it considers a conservative estimate of waste heat available from 2 of the EfWs at Avonmouth to show how the electrical capacity requirement (or strain on the local grid) could come down further. There is further upside available from inclusion of additional heat sources such as the Isambard AI supercomputer and there would be further demand on the network from large heat demands such as UWE, Southmead Hospital and eventually Bristol City Centre
- A more in-depth discussion of the **Energy system benefits** of heat networks can be found in the Garage

Demand Scenario	# homes ('000)	1. BAU Peak Demand (MW)	2. BAU Elec Connection (MVA)	3. DHN Peak Demand (MW)	4. DHN Elec Connection (MVA)	5. DHN Elec Conn with EFW Heat (MVA)	Elec capacity Reduction 4 vs 2 / 5 vs 2
Brabazon East End (Vattenfall offer)	2.8	20	11	15	10		10%
Brabazon masterplan	6.5	40	20	25	15		25%
Brabazon intensification	20	90	50	50	35	20	30% / 60%
B&WEIA – New Town	40	170	95	80	50	25	39% / 74%
New Town plus existing homes in area	47.5*	200	110	95	60	30	45% / 73%

- Homes with individual or block-level air source heat pumps would have a **peak heat demand** of 170MW, or 80MW if supplied by a heat network
- Homes with individual or block-level air source heat pumps would require 110MVA of **electrical connection capacity**. This would be reduced to 60MVA if supplied by a heat network and to 30MVA if that heat network could be connected to the EfWs

* Estimates for the following wards are for 15k homes (Patchway, Bradley Stoke, Filton, Stoke Park & Cheswick, Frenchay, Lyde Green). A conservative estimate has been made that 7.5k homes are close enough to the proposed heat main and with sufficient density (see Garage for breakdown by ward)



Phased build out approach

'COST OF HEAT' REPORT

Published May 2025 – seeking to address concerns around the cost of connection to the district heat network (as flagged in slide 6 of this document). Led to establishment of new connection fees that offer comparable value to the alternatives.



A scenic view of a river at sunset. The sun is low on the horizon, creating a bright lens flare and casting a golden glow over the scene. The river reflects the sky and the surrounding landscape. On the left bank, there are colorful residential buildings and a small bridge. On the right bank, there are trees and a building. The overall atmosphere is peaceful and serene.

Bristol heat network 2050 vision

Our vision is that over half of all Bristolians living, working and learning in the city will be kept warm by the Bristol heat network by 2050.

Watch the video to see
how we'll make our
vision a reality

The Bristol heat network 2050 vision

