Appendix B – Markets and Policy

Markets

1.1 In the UK, around 4% of homes (400,000) are currently served by DENs although these are predominantly at building level. Unsurprisingly, these are concentrated in urban centres and rely heavily on natural gas.

1.2 Projections from BEIS and the Committee on Climate Change are that the market share will need to increase to around 20% if the UK is to reach its climate change targets and that networks will need to switch from gas to greener energy sources, predominantly waste heat from industry and other processes and naturally occurring heat from e.g. rivers, mines and, where geology is suitable, geothermal resources.

1.3 As a result, the UK Government, via BEIS, have been heavily investing in heat network projects over the last several years. This includes a revenue support scheme targeted at Local Authorities (HNDU), which has delivered £12m over 7 years including c.£600k to Haringey). Consecutive capital grants schemes (HNIP and GHNF) which together commit >£500m to the heat network market over an 8-year period running to 2025, have also promoted growth.

1.4 Following a market study into heat networks (conducted in 2018), Government has committed to introducing a heat network regulator and establishing a clearer market framework for heat networks. Government recently announced a forthcoming consultation on Heat Network Zoning which is essentially the creation of exclusive zones where (some or all) heat users are mandated to connect to a heat network. A wider Heat Policy Framework is also in the pipeline which will set wider policy for heat beyond heat networks. This will give greater clarity over how costs of investing in heat networks (and other technologies) should be shared across society.

1.5 The GLA also provides (primarily revenue) support to DEN projects. One such source is the £6m DEEP programme, which has provided around £450k to Haringey, and its £3.25m successor LEAF. The GLA also made a recent £0.75m capital grant to Enfield Council to pay for increased capacity in their network which safeguards extension into Haringey and Hackney.

1.6 These schemes and others like them have created a buoyant Heat Network Market in the UK. Many of the big energy companies have heat network undertakings, and several high profile energy companies from Europe, where heat networks have significant market share in the supply of heat, have also moved their heat network offerings to the UK.

1.7 There are large DENs in several London Boroughs and UK cities including Enfield (Energetik), Lewisham/Southwark (SELCHP), Newham/Hackney (the Olympic Park), Sheffield, Nottingham, Leeds, Coventry, Southampton and a variety of business models have been deployed in their set-up. Many of these schemes are led by the relevant Local Authority and this is exclusively the case where schemes serve multiple developments.

1.8 Worldwide, DENs are common in North America (e.g. New York, Denver, Seattle, Boston and most large Canadian cities), Europe (especially Scandinavia and Eastern Europe but also Paris, Berlin, Turin and Vienna), Asia and the Middle East (often supplying cooling alongside or instead of heat). Some of these systems are city wide (e.g. Copenhagen has 95% market penetration) and others are focussed in particular areas (e.g. New York's network, co-founded y Thomas Edison in the 1800s, is restricted to lower Manhattan but has high market penetration in this area)

1.9 A list of notable UK schemes is provided at the end of this document including links to case studies.

Policy

1.10 The National Planning Policy Framework[1] recognises the importance of heat networks and decentralised energy. For example, Paragraph 20 requires policies to set out an overall strategic vision for provision of energy (including heat) and Paragraph 151 requires Local Planning Authorities to provide a positive strategy to maximise deployment of low carbon heat

1.11 Planning policy in central and inner London has been pro-heat network since the London Plan was introduced in 2007. The map below from the new London Plan[2] shows where new development is required to install heat networks and this zone covers the vast majority of Haringey. The GLA have an extensive evidence base to support this which has analysed the heat density of London and the availability of waste heat.

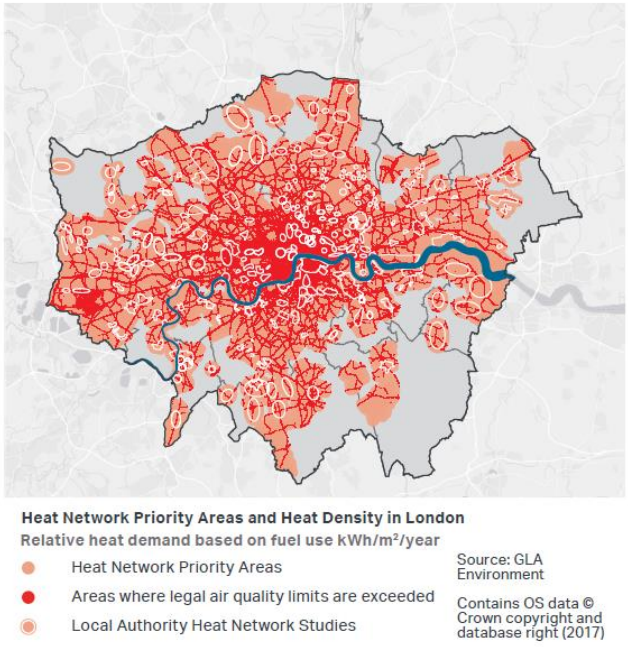

Figure 0-1 - Heat Network Zones Identified in the New London Plan

1.12 In addition, the GLA's Upper Lea Valley Opportunity Area Planning Framework (ULVOAPF) identified the potential for a large heat network and set delivery of a heat network across the Lea Valley (in line with the figure below) as an objective

1.13 Haringey's own planning policy[3], which needs to be in conformity with the London Plan, is also supportive of heat networks. Policy DM22 requires development in certain areas to be designed to connect to heat networks. The Council also uses planning conditions and obligations to support DENs through obligations on developments in these areas to connect where feasible (including mechanisms to generate connection payments) and through obligations to provide infrastructure to support a DEN (e.g. as at Clarendon Square where the developer is required to provide an energy centre).

1.14 These planning agreements commit the Council to progressing DEN projects in the areas shown in the DM22 map.

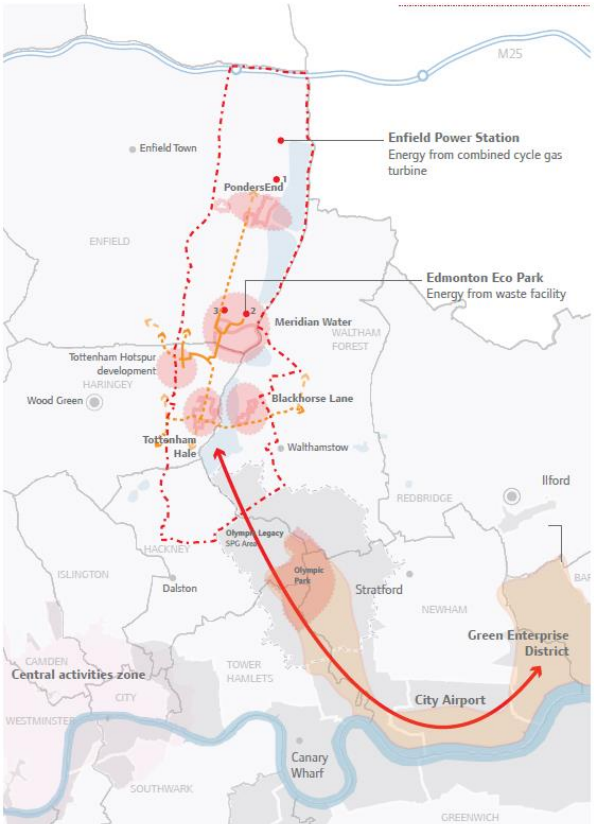

Figure 0-2 - Lea Valley Heat Network as Envisaged in ULVOAPF

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

[2] https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan

[3] https://www.haringey.gov.uk/sites/haringeygovuk/files/06_haringey_dmp_dtp_221215.pdf

1.15 Haringey's evidence base for these policies includes the Decentralised Energy Masterplan[4] which analysed opportunities for decentralised energy/heat networks in the borough.

1.16 The masterplan essentially links supply and demand. There is enough waste heat available from the forthcoming Energy Recovery Facility (ERF) being built by the North London Waste Authority at Edmonton to heat tens of thousands of homes. The London Plan and Haringey's own strategic planning policies anticipate tens of thousands of new homes will be built in the vicinity of the ERF which all need heat. The map below shows the strategic vision which emerged from this study.

1.17 This was supported by individual studies into North Tottenham, Tottenham Hale and Wood Green funded by central government.

[4] https://www.haringey.gov.uk/sites/haringeygovuk/files/160107_haringey_emp_report_rev7.pdf

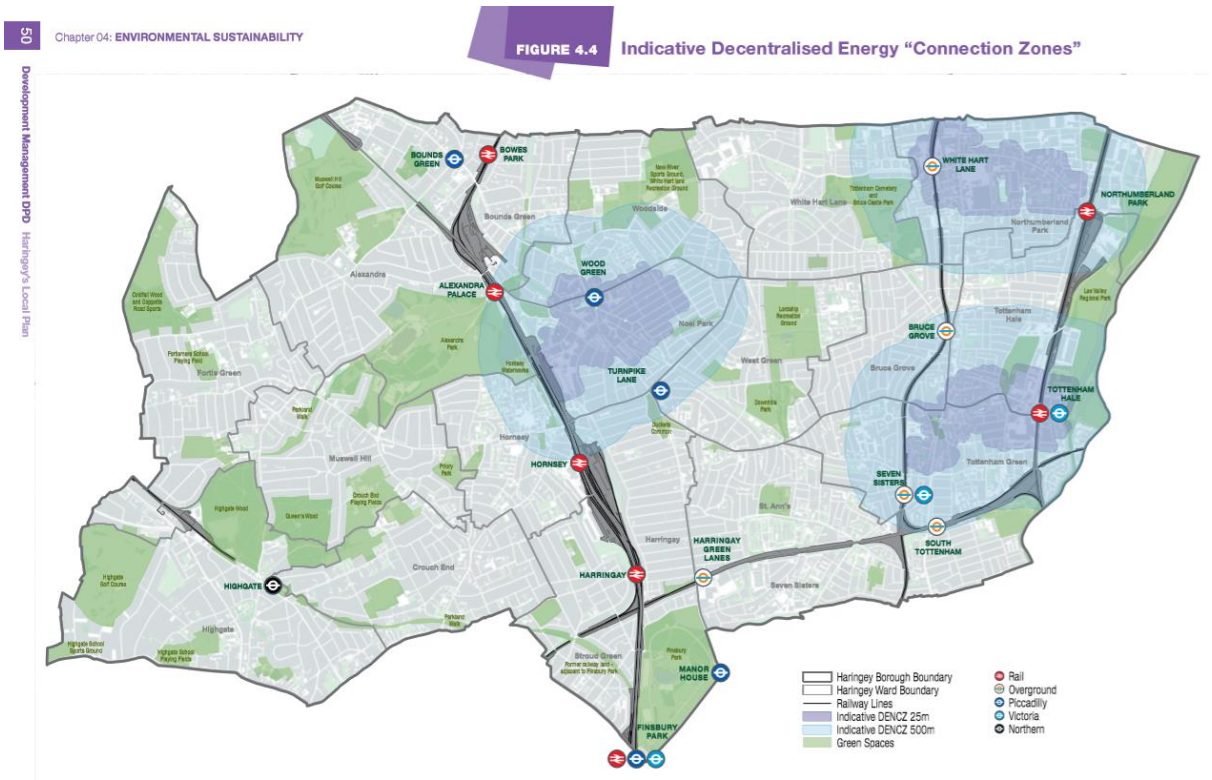

Figure 0-4 - Decentralised Energy Connection Zones as Identified in Haringey's Development Management Policies DPD

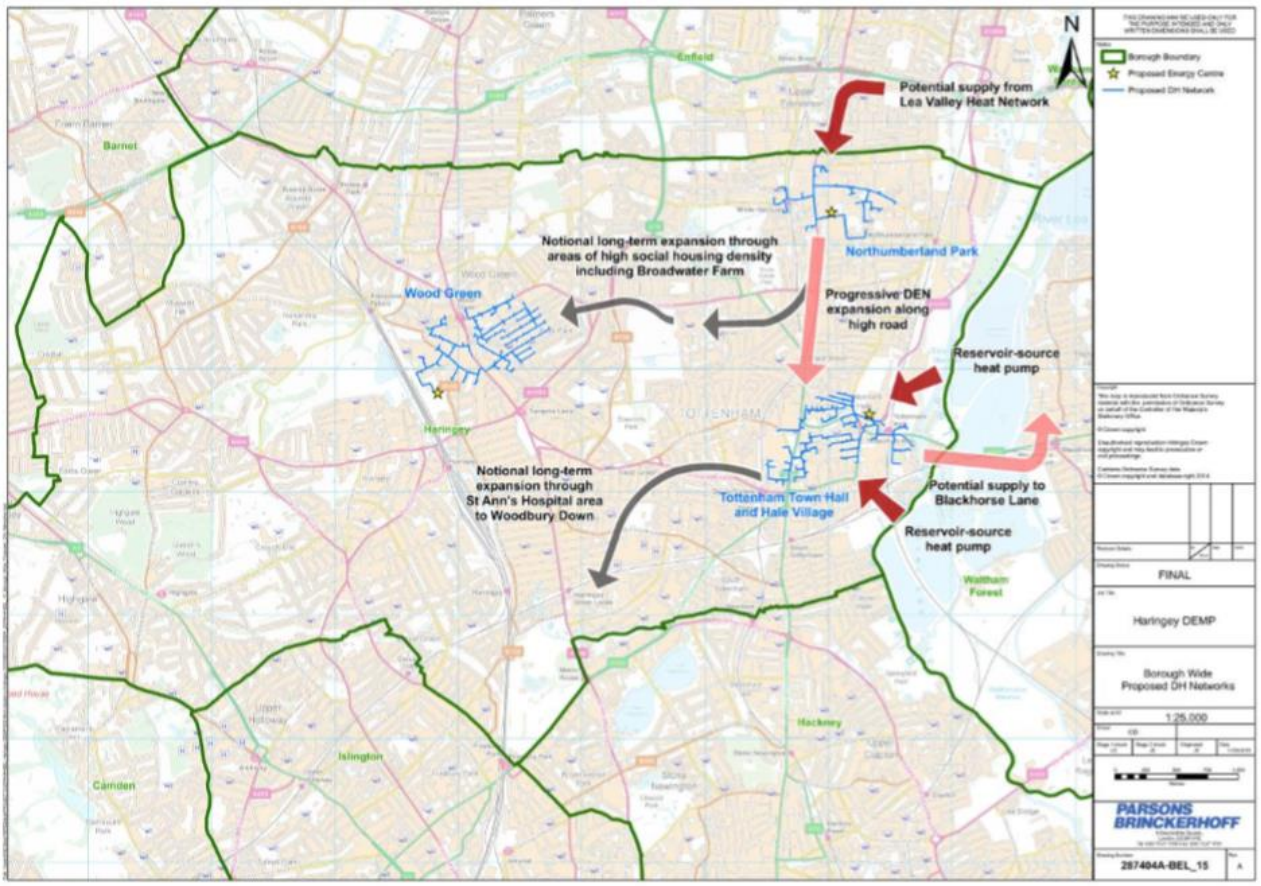

Figure 0-3 - Strategic Vision of a Borough-wide DEN from Decentralised Energy Masterplan

Specific Growth in Haringey

1.18 In Tottenham Hale, the Council has entered into numerous s106 agreements with developers which commit the Council to investigating the viability of a DEN and developers to connecting if the Council makes a viable offer. There are now around 2,100 homes with planning approval, the majority of which are under construction, and are poised to connect to a network.

1.19 This is similar at Wood Green, although the construction programme is not as progressed as at Tottenham Hale. In Wood Green the Council has gone further in that the developer of Clarendon Square is required to build a c.£3m energy centre (shell) and provide it for use in an area wide DEN.

1.20 At High Road West / North Tottenham, Haringey Council acting as landowner, have procured a delivery partner that is required to construct substantial DEN infrastructure and then transfer it to the Council as well as ensuring that occupants of the development will buy energy from the scheme. The council have committing to setting up a council-owned DEN at High Road West to serve 2,500 new homes (and then expand to the wider area) as part of the procurement of Lendlease as delivery partner on this large regeneration project. An OBC has been approved for the project and a budget of £13m is included in the Capital Budget. Although the North Tottenham OBC was approved in 2017, work on the DEN has been on-hold until recently due to several issues which needed to be resolved around the funding of the regeneration project.

1.21 The Council decided in 2017 to refurbish and expand a DEN at Broadwater Farm (BWF) in response to an urgent need to remove individual gas boilers from the apartments in the estate. The DEN at BWF was first operational in the 1970s across the estate but was scaled back to only serve around 200 homes in the two high rise blocks in the noughties. It has now been extended back to the entire estate and is expected to grow to serve around 1,200 homes, as well as two neighbouring schools, as further parts of the estate are regenerated.

1.22 The Council's commitment to providing 1,000 new council homes will mean a further expansion in the Council's heat supply business as planning policy will mean the majority of these homes will be built with shared heating services.

1.23 At the former St Ann's hospital site, the GLA as landowner are requiring an onsite DEN and setting a target for it to be zero carbon although has not specified how heat should be sourced. Planning is likely to require the site to seek to connect to a borough wide DEN fed from the ERF in preference to any other solution. This site will include around 950 new homes.

1.24 At Woodberry Down (in Hackney), Hackney Council procured Berkeley Homes as a regeneration partner and required the scheme to include a DEN. The planning obligations on Berkeley Homes require them to agree a low carbon strategy over the next two years.

1.25 The Secretary of State granted a Development Control Order (DCO) for North London Waste Authority's new Energy Recovery Facility. The development is required to be constructed to supply both heat and power and there is a condition that, prior to operation, NLWA must submit details of the commercial opportunities for heat sales to Enfield Council for approval. The application for the DCO included evidence around potential for growth of heat networks including suggestions that these would extend to Haringey and beyond.

Case Studies of Notable UK and International Schemes

1.26 Below is a list of various DEN examples from around the work where a variety of different business models have been deployed.

Various UK and international case studies:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691643/Heat_Network_Case_Study_Brochure.pdf

London Boroughs operating large DENs in-house

Camden [Somerstown] https://www.camden.gov.uk/supplying-low-carbon-energy

Islington [Bunhill operating from 2016-ish, just completing Bunhill Phase 2] https://www.theade.co.uk/case-studies/district-heating/bunhill-heat-and-power

Westminster [PDHU – 1950s but still growing]

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/413034/The_Pimlico_District_Heating_Undertaking_-_CHP_operations.pdf

LAs who have set up district heating companies

Enfield https://www.energetik.london/

Gateshead https://www.theade.co.uk/case-studies/district-heating/award-winning-chp-district-energy-scheme-brings-low-cost-energy-to-gateshea

Sutton http://sden.org.uk/about-us/

Barking and Dagenham https://bdenergy.org.uk/

Woking https://www.theade.co.uk/case-studies/trigeneration/woking-town-centre

Nottingham [see the document with various case studies link above]

Aberdeen https://hub.communityenergyengland.org/resources/resource/129/aberdeen-heat-and-power-project-case-study/

Leeds https://www.leeds-pipes.co.uk/

Cardiff [under construction]

Bridgend [under construction]

Colchester [under construction]

Bristol [under construction]

Lerwick (community owned) https://gov.wales/sites/default/files/inline-documents/2019-05/case-study-6-lerwick-district-heating.pdf

LAs/Public bodies who have let concessions/levered private sector delivery [typically to serve existing large sites under control of person letting contract or, for new build, where there is a very clear delivery programme as at the Olympics]

Southampton https://www.theade.co.uk/case-studies/visionary/southampton-district-energy-scheme

Birmingham https://www.theade.co.uk/case-studies/visionary/birmingham-district-energy-scheme

Coventry https://www.engie.co.uk/energy/district-energy/coventry/

Olympic Delivery Authority [Queen Elizabeth Olympic Park] [see the document with various case studies link above]

Sheffield https://www.theade.co.uk/case-studies/district-heating/sheffield

Tower Hamlets [Barkantine] https://www.theade.co.uk/case-studies/district-heating/barkantine-district-heating-scheme-london

Camden [Royal Free Hospital] http://www.renewableenergyfocus.com/view/42570/gospel-oak-a-district-heating-success-story/

Developers letting concessions [requires large site >500 homes]

Argent (Kings X)

https://www.metropolitan-uk.co.uk/document/downloads/Metropolitan_Kings_Cross_Case_Study.pdf

Knight Dragon (Greenwich) https://www.pinnaclepower.co.uk/case-studies/greenwich-peninsula-district-energy/

Various councils/housebuilders in Exeter (Monkerton) https://www.eonenergy.com/About-eon/media-centre/eon-to-provide-low-carbon-energy-for-monkerton-development/

International examples of long established (now citywide) networks

Copenhagen https://www.c40.org/case_studies/98-of-copenhagen-city-heating-supplied-by-waste-heat#:~:text=What%20is%20it%3F,reduces%20CO2%20emissions%20and%20pollutants.

Paris [JV between city and private sector grew in 1920s] https://www.c40.org/case_studies/cities100-paris-greening-district-heating-cuts-emissions