CITY OF LONDON

Heat Network Supply Zones in the Thames Policy Area

Draft Planning Advice Note

Planning Advice Note (Draft)

Heat network supply zones in the Thames Policy Area

Contents

1. Executive Summary

This Planning Advice Note (PAN) sets out plans for the supply of strategic heat, particularly those aspects relating to the Thames Policy Area, to enable the development of heat network development in the Square Mile.

The development and expansion of heat networks is a priority for national government, the Mayor of London and the City of London Corporation as a critical contribution to decarbonising heat, achieving net zero goals and increasing energy security.

The government's forthcoming Heat Network Zoning regulations provides a legal framework for scaling the deployment of heat networks as the lowest cost, low carbon option for decarbonising heat in major urban areas. In preparation for the Heat Network Zoning regulations, the City Corporation has been participating in the government's Advanced Zoning Programme (AZP) to better understand the potential impact of the regulations on the Square Mile. This work suggests:

- The City of London has the highest density of heat demand in the UK
- The whole of the Square Mile will form part of a designated Central London Heat Zone
- Around 1200 Square Mile buildings will be mandated to connect to heat networks, based on the government's threshold of heat demand above 100 MWh/y
- These buildings collectively have a heat demand of c.1,000 GWh

While the high density of heat demand of the Square Mile is clear, the main constraint to heat network development is the current availability of low carbon heat to meet the scale of demand. The work undertaken through the AZP programme recommends a phased approach to the delivery of heat networks across the Square Mile which combines both short-term and long-term scenarios for heat supply:

- Short-term development: prioritising access to local/neighbouring heat sources – the River Thames, and datacentres.
- Long-term development: access to larger scale waste heat from outer London sources (such as Energy From Waste facilities) via new large-scale cross-London strategic heat pipe mains.

The Thames and the riverside area play a critical role in both short-term and long-term scenarios to enable large-scale heat network development in the Square Mile. In the short-term a major opportunity is the provision of heat via thermal barges from the Riverside Energy from Waste plant in Bexley. A longer-term option is a strategic heat main from Bexley to central London which would follow the Thames corridor. In combination, these scenarios constitute a major strategic opportunity for supplying a substantial amount of low cost, low carbon heat to the Square Mile and Central London.

In August 2025, the strategic heat main project, proposed by Cory, was recognised as a project of national significance by the Secretary of State for the Department of Energy Security and Net Zero.

The City of London Corporation's adopted Local Plan 2015, the London Plan 2021 and the draft City Plan 2040 all seek to deliver greater use of the river Thames for river-based transport of freight (which would include the transport of low carbon heat on thermal barges) and seek to facilitate the infrastructure requirements of the Square Mile. The City Plan 2040 is aligned with the City

Corporation's Climate Action Strategy in seeking to ensure that the City is environmentally sustainable and transitions to a net zero carbon City by 2040.

The following sets out the main considerations from the work undertaken to date on strategic heat supply planning for the City:

- Swan Lane foreshore has been identified as the priority location for the mooring of thermal barges and the discharge of heat to a wider City network.

- Several other sites have been identified as potential / priority sites for thermal barges. These are:
  - HMS President – vacant jetty site
  - Area west of Blackfriars jetty
  - East of Blackfriars jetty
  - West of Walbrook Wharf
  - Walbrook Wharf
  - LB PLA Upper Moorings

- The proposal for a strategic heat main from Cory's Riverside campus in Bexley to the south east and central London has been designated a project of national significance by the UK government.

Planning advice:

Development proposals within the Thames Policy Area should consult City of London Corporation and other relevant stakeholders on any plans which may affect:

- the use of Swan Lane foreshore for the use of thermal barges;

- the use of other priority sites identified as potential mooring locations for thermal barges;

- the development of the strategic heat main project as a project of national significance

2. Introduction

The development of heat networks in the UK is being shaped by a rapidly evolving regulatory landscape aimed at accelerating the decarbonisation of heat. This Planning Advice Note sets out the relevant policies, regulations and studies which collectively set the framework for heat network development in the City of London, with a particular focus on the planning considerations for the supply of low carbon heat to the City.

The Energy Act 2023 introduced powers for the UK Government to implement heat network zoning in England, with the first zones expected to be designated from 2026. This is widely seen as the most significant regulatory driver for heat network development.

Key features of the zoning framework include:

- **Designated Zones**: Local areas will be identified where heat networks are the most cost-effective and low-carbon solution for heating.
- **Mandatory Connection**: Certain building types - such as large commercial buildings, public sector sites, and new developments - may be required to connect to a heat network within a designated zone.
- **Zone Coordinators**: Local authorities or appointed bodies will oversee planning and delivery within each zone.
- **Demand Assurance**: Zoning will provide certainty to developers by securing anchor loads and enabling long-term investment planning.
- **Unlocking Waste Heat**: Zoning supports the use of otherwise inaccessible heat sources, such as waste heat from industry or data centres.

This regulatory framework is designed to accelerate the rollout of heat networks, particularly in dense urban areas like the Square Mile, where heat demand is concentrated and infrastructure can be efficiently shared. It also aligns with the Government's ambition for heat networks to supply up to 18–20% of UK heat demand by 2050, up from around 3% today.

A key challenge for heat network development in the Square Mile is the supply of low carbon heat. Whilst there are potential local sources of waste heat in the City and in neighbouring areas which should be prioritised, supplying heat to match the scale of demand in the City requires access to larger scale waste heat.

A major source of potential waste heat is from the Riverside Energy from Waste plant in Belvedere, Bexley. The City of London already transports a significant amount of its residual waste by barge from a waste transfer facility at Walbrook Wharf down the River Thames to the Bexley Energy from Waste facility. Work is underway to assess the potential for utilising this waste heat, via mobile thermal barges as well as a strategic heat main.

This document provides guidance on the material planning considerations arising from the strategic infrastructure required to supply waste heat from Riverside Energy from Waste facility to the City.

3. Heat Networks - National Policy and Regulatory context

Key points:

- UK Government policies identify low carbon heat networks as making a critical contribution to the delivery of its legally-binding target of net zero by 2050.
- The Energy Act 2023 established the legal basis for regulating heat networks in Great Britain.
- The UK Government's forthcoming Heat Network Zoning regulations will designate Heat Network Zones where heat networks are expected to be the lowest cost, low carbon heating option; create Zone Coordination bodies; and require certain buildings to connect to a heat network.

3.1 National Planning Policy Framework

The National Planning Policy Framework says:

"Strategic policies should set out an overall strategy for the pattern, scale and design quality of places and make sufficient provision for.. b) infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat)." (section 20).

"To help increase the use and supply of renewable and low carbon energy and heat, plans should:

a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);

b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co- locating potential heat customers and suppliers." (section 165)

"Local planning authorities should also give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings, both domestic and non-domestic." (section 167)

3.2 Climate and Energy Policy

Climate Change Act

The Climate Change Act 2008 (2050 Target Amendment) Order 2019 made the UK the first major economy to commit to a 'net zero' target. The new target requires the UK to bring all greenhouse gas emissions to net zero by 2050.

Sixth Carbon Budget

In April 2021, the government legislated for the sixth carbon budget (6BC), which requires the UK to reduce GHG emissions by 78 per cent by 2035 compared to 1990 levels. The 6CB published by the Climate Change Committee in December 2020 makes clear that the actions required to meet the budget and the UK's Nationally Determined Contribution.

6CB expects low carbon heat networks to be built imminently, 'through 2020-2050, with scaling up through to 2028, from which point around 0.5% of total heating demand is converted per year. By 2050, around a fifth of heating is distributed through heat networks.' (page 115)

The Seventh Carbon Budget ('7CB'), published in February 2025 and due to be set by Government in 2026, continues to see a key role for low-carbon heat networks', delivering '22% of heat demand in non-residential buildings by 2040' (page 254).

Minimum Energy Efficiency Standards (MEES)

The MEES regulations, introduced in 2018 and updated in 2023, currently require all privately rented non-domestic buildings in England and Wales to meet a minimum EPC rating of E. However, the Government has proposed a phased tightening of these standards:

- By 2027: EPC rating of C required for all non-domestic rented buildings.
- By 2030: EPC rating of B proposed, with a two-year compliance window.

While MEES does not directly mandate low-carbon heat, it is expected to drive long-term demand for energy-efficient and low-emission heating systems. Heat networks can support compliance, especially in buildings where on-site upgrades (e.g. heat pumps) are limited by space, cost, or grid constraints. With around 28% of commercial properties currently rated D or lower, the tightening of MEES will create a strong incentive for building owners to explore shared, low-carbon heating solutions.

Energy Act 2023

The Energy Act 2023 establishes the legal framework for regulating heat networks in Great Britain, introducing measures to create an effective heat network zoning system and ensure technical standards are met to help reduce energy costs and reach Net Zero.

Heat networks will become a key part of the energy system, with powers granted to the Secretary of State to create secondary legislation and for local authorities to designate zoning areas where buildings must connect to the networks. This regulation aims to foster market growth, provide consumer protections, unlock investment, and simplify development for heat networks.

- **Regulatory Framework**: The Act provides powers for the government to establish a regulatory framework for heat networks, which are communal heating and cooling systems that supply multiple buildings from a central source.
- **Heat Network Zoning**: The Act contains legislation to introduce heat network zoning in England, a system that allows local authorities to designate areas where buildings will be required to connect to a heat network.
- **Technical Standards**: The Act also empowers the government to set technical standards for heat networks to ensure they are efficient and effective.

Energy Policy 2024

In May 2024, Government published 'Strategy and Policy Statement for Energy Policy in Great Britain' ('Energy Policy 2024') demonstrating its intent to deliver strategic policies for energy supply.

Energy Policy 2024 makes clear that 'Government expects private sector investment of around £100 billion in the energy sector in the period to 2030, with the expectation that this will support up to 480,000 jobs in 2034. Through the effective pursuit of their statutory objectives, undertaken with reference to this SPS, Ofgem and NESO will help grow the economy, facilitate the net zero transition, and keep bills down for energy consumers, while maintaining a secure supply of energy.' (paragraph 7)

This includes through the development of heat networks that, with heat pumps, are recognised as 'established technologies that will be the primary means for decarbonising heating over the next decade and play a key role in all 2050 scenarios.' (paragraph 66)

Energy Policy 2024 confirms 'heat networks are a crucial aspect of the path towards decarbonising heat and reaching net zero by 2050. In the right circumstances, they can reduce bills, support local regeneration and be a cost-effective way of reducing carbon emissions from heating.' (paragraph 67)

The development of heat networks in the UK is being shaped by a rapidly evolving regulatory landscape aimed at accelerating the decarbonisation of heat. The Figure below illustrates key national policy and regulatory milestones that are expected to influence the sector between now and 2026. This timeline highlights key developments including:

- The Energy Act 2023 and Ofgem's new regulatory role.
- The launch of the Heat Network Technical Assurance Scheme (HNTAS).
- The rollout of consumer protection measures and mandatory registration for heat network operators.
- The commissioning of the National Energy System Operator (NESO) and the Clean Power 2030 initiative.

Figure 1 below provides a summary of the main policy and regulatory developments relating to heat networks.

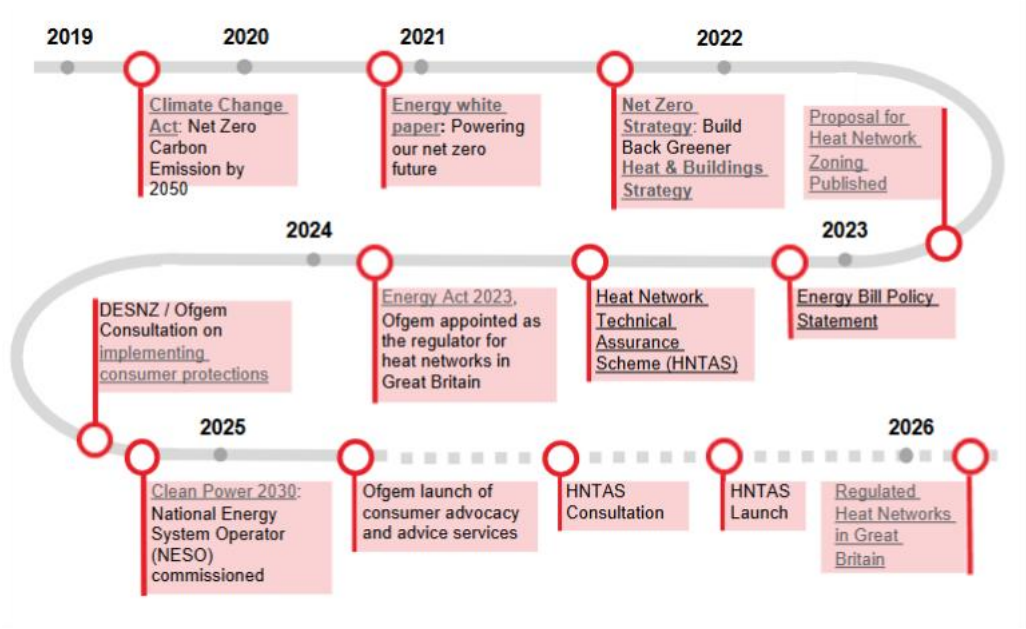

Figure 1: main policy and regulatory developments relating to heat networks

3.3 Heat Network Policy and Regulation

The Energy Act 2023 introduced powers for the UK Government to implement heat network zoning in England, with the first zones expected to be designated from 2026. This is widely seen as the most significant regulatory driver for heat network development.

Key features of the zoning framework include:

- **Designated Zones**: Local areas will be identified where heat networks are the most cost-effective and low-carbon solution for heating.
- **Mandatory Connection**: Certain building types - such as large commercial buildings, public sector sites, and new developments - may be required to connect to a heat network within a designated zone.
- **Zone Coordinators**: Local authorities or appointed bodies will oversee planning and delivery within each zone.
- **Demand Assurance**: Zoning will provide certainty to developers by securing anchor loads and enabling long-term investment planning.
- **Unlocking Waste Heat**: Zoning supports the use of otherwise inaccessible heat sources, such as waste heat from industry or data centres.

The Heat Networking Zoning regulation is expected to come into effect in early 2026.

4. Heat Networks - London context

Key points:

- The **London Plan** identifies Heat Network Priority Areas where the heat density is sufficient for heat networks to provide a competitive solution for supplying heat to buildings and consumers.
- The **Sub-regional Local Area Energy Plan for Central, Inner East and North** (CIEN) London identifies Central London as one of the top five priority areas in the sub-region for heat network development. The relatively small scale of local heat sources 'means transmission of heat into the area is a major subregional consideration which will require a significant amount of cross-borough coordination.'
- The **London Waste Heat Study** focuses on London's largest known recoverable waste heat sources: Energy Recovery Facilities, Sewage Treatment Plants and Data Centres, and illustrates how they could catalyse the development of seven strategic multi-borough heat networks.

4.1 London Environment Strategy 2018

The London Environment Strategy (LES) presents a policy framework for heat networks, identifying them as 'an effective and low carbon means of supplying heat in London, and offer opportunities to transition to zero carbon heat sources faster than individual building approaches.' (page 256). Policy 6.2.1 of the LES is to deliver more decentralised energy to London, moving from the current position of meeting just 2% to 15% by 2030.

4.2 London Plan 2021

The London Plan sets out a series of policies to inform the development of decentralised energy systems and heat networks.

Policy SI 3 Energy Infrastructure:

"London will need to shift from its reliance on using natural gas as its main energy source to a more diverse range of low and zero-carbon sources, including renewable energy and secondary heat sources. Decentralised energy and local secondary heat sources will become an increasingly important element of London's energy supply and will help London become more self-sufficient and resilient in relation to its energy needs." (Paragraph 9.3.2)

"The Mayor has identified **Heat Network Priority Areas**, which can be found on the London Heat Map website. These identify where in London the heat density is sufficient for heat networks to provide a competitive solution for supplying heat to buildings and consumers." (Paragraph 9.3.4)

The Square Mile is covered in its entirety by a Heat Network Priority Area, as displayed in Figure 2 below.

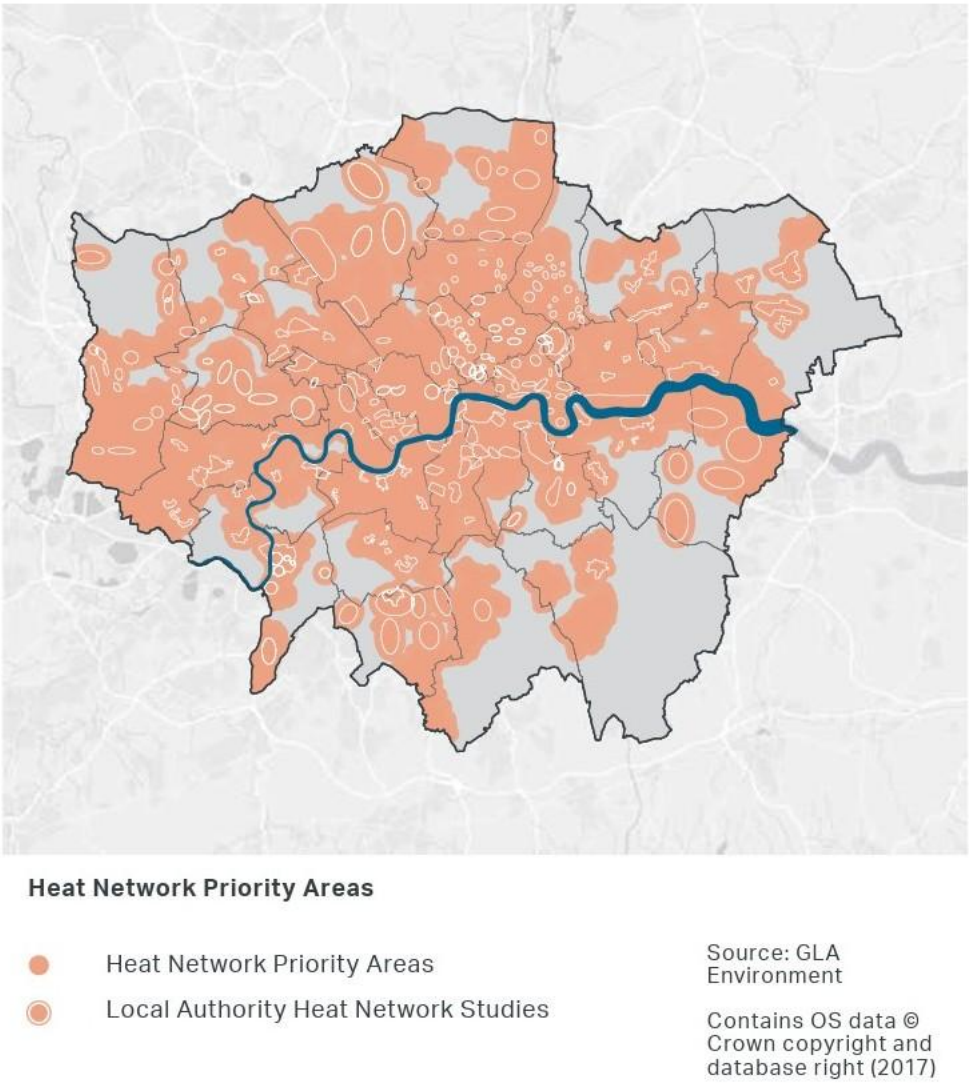

Figure 2: Heat Network Priority Areas (London Plan 2021)

4.3 Sub-regional Local Area Energy Plans

In 2024, the GLA funded Sub-regional Local Area Energy Plans ('LAEP') across London intended to identify the most effective route to decarbonise a local area's energy system. The LAEP is based on a data driven approach considering a range of technologies, including heat networks.

The Central, Inner East and North (CIEN) London Local Area Energy Plan identifies 5 initial cross-borough heat network focus areas, set out in Figure 3 below.

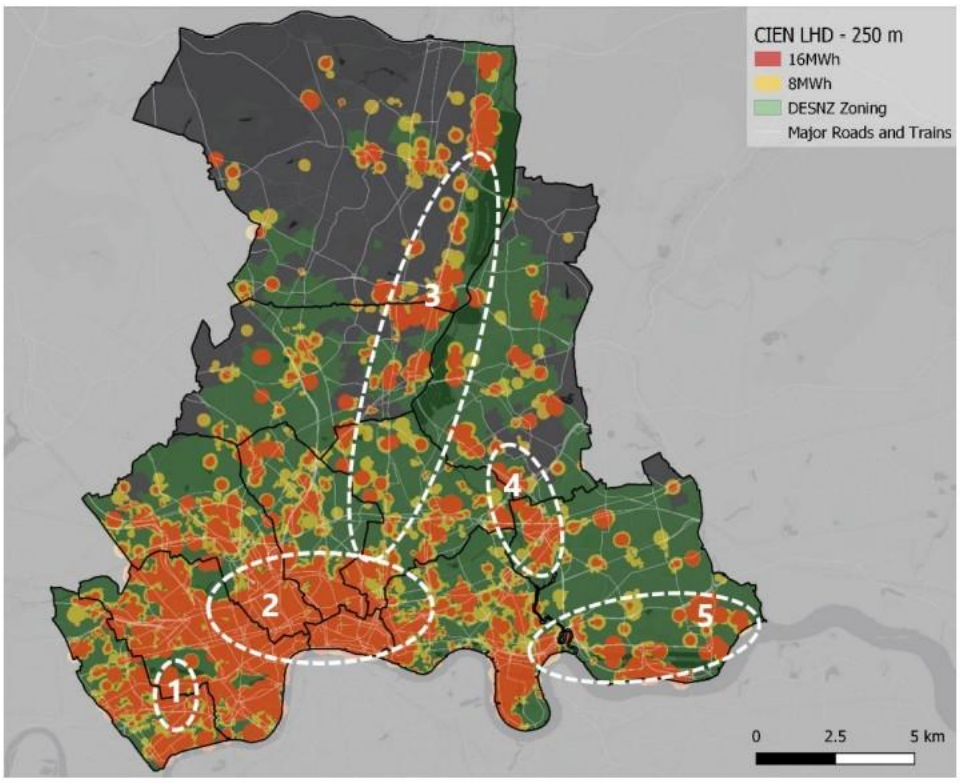

Figure 3: overview of initial cross-authority heat network focus areas (Central, Inner East, North London Sub-regional Local Area Energy Plan , 2024)

Area 2 - "This is the single densest area of heat demand in the subregion and in the UK. It is dominated by non-domestic demands and includes three AZP areas (Westminster, Islington and City of London). The main challenges are the limited space for large energy centres and, although there are heat sources such as sewers, vent shafts, the Thames, data centres and pumping stations, they are not of the same scale as the calculated heat demand. This means transmission of heat into the area is a major subregional consideration which will require a significant amount of cross-borough coordination." (section 4.3.1)

4.4 London Waste Heat Strategic Areas

In December 2024, the GLA published its report 'London Energy Accelerator. Waste Heat Strategic Areas Summary'. The report takes London's largest known recoverable waste heat sources and examines how they could catalyse the development of strategic multi-borough heat networks that can support the decarbonisation of heat supply in London.

The study identified significant waste heat sources including but not exclusive to Energy from Waste (EfW) facilities, Waste Water Treatment Works (WWTW), industrial processes, and data centres. These sources and their relative waste heat potential, along with heat demands, were used to develop seven strategic areas:

- Strategic Area A: North London Waste Authority
- Strategic Area B: Beddington
- Strategic Area C: Royal Dock
- Strategic Area D: Mogden & Twickenham
- Strategic Area E: Hayes & West Drayton

- Strategic Area F: Crossness & South Bermondsey
- Strategic Area G: Old Oak Common and Park Royal Development Corporation

Figure 4 below shows the studied Strategic Area Networks and the strategic goal of capturing and distributing this heat with long range transmission mains.

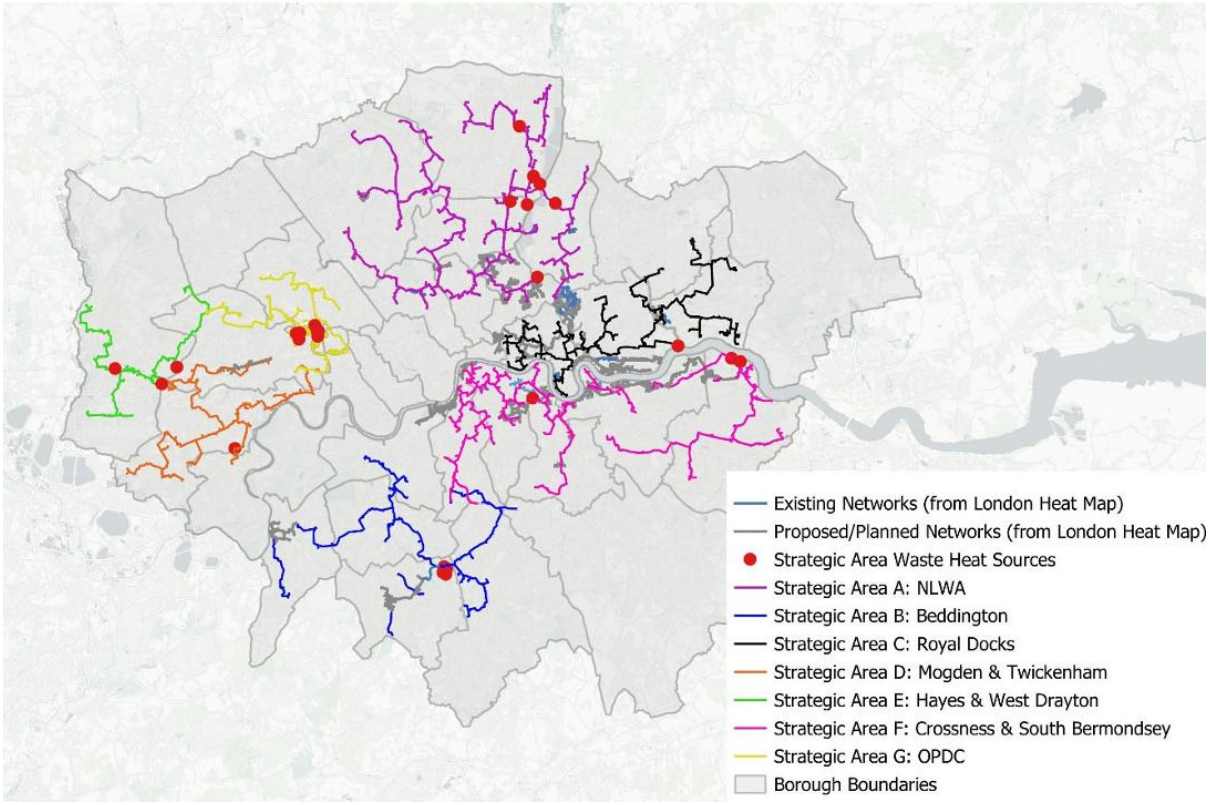

Figure 4: All Strategic Area Potential Networks (Waste Heat Strategic Areas Summary, 2024)

Strategic Area F (Crossness & South Bermondsey Strategic) is of particular relevance to the City of London. The area consists of the following main waste heat sources:

Heat Source	Type	Annual Heat Rejected (GWh/yr)	Peak Heat Output (MW)
Riverside Energy Park (Sites 1+2)	Energy Recovery Facility	2952*	369
SELCHP EFW	Energy Recovery Facility	401	60
Crossness Sewage Treatment Works (STW)	Sewage Treatment Plant	652	78
Total		**4,005**	**507**

(*Annual heat updated June 2025 after verification with Cory Riverside)

Table 1: Crossness & South Bermondsey Waste Heat Sources (Waste Heat Strategic Areas Summary, 2024)

"These sources are:

- Cory Riverside Heat Network, which utilises the Riverside Energy from Waste Facility. Vattenfall are currently partners with Cory to bring this heat to the area. The Vattenfall arrangement looks at local export only (the agreement is geographically specific) and they are also working with a range of other ESCOs in other areas.
- A planned network extending into Greenwich has been identified.

- SELCHP Future Heat Network which will utilise the SELCHP heat from waste facility with ~7km of new piping. This is being brought forward by Southwark and Veolia. A planned network extending into the North Lewisham area is also planned.

These networks are on a local level but in combination with the two other waste heat sources in the area, the three waste sources could stretch to serve a wider area. This strategic area has been modelled to serve a wider region, and in combination with these heat networks have the potential to be a large sub-regional district heat network." (section 11.2)

"To realise this opportunity requires a partnership approach and a 'departure from the current development model which is largely happening at an individual borough level and led, in most cases, by the relevant London Borough. This is often constraining the ambition and size of London's district heat networks and with the introduction of heat network zoning in 2025, there is real opportunity for London Government – the GLA, London Councils and London Boroughs -to coordinate and develop these strategic opportunities." (chapter 13).

4.5 Local Energy Accelerator: River Thames Study

This report complements the 'Waste Heat Strategic Areas' report as part of the strategic work undertaken for the GLA within the Local Energy Accelerator Programme. This report undertakes an initial assessment of the potential energy capacity of the River Thames, from Teddington Lock in the west to Dartford Creek in the east. It also looks at the licensing processes and permissions required for developing open-loop schemes.

The study identified that approximately 444 MW of thermal energy could be extracted from the river using Water Source Heat Pumps (WSHPs) - equating to 600 MW of delivered heat once electrical input is accounted for. This capacity could supply around 5% of London's annual heat demand, making it a strategic resource for urban decarbonisation.

A Strategic Zone was identified with a total of six clusters with a high potential for district networks were identified, set out in Figure 5 below and an indicative annual and peak heat demand has been summarised in Table 2 below.

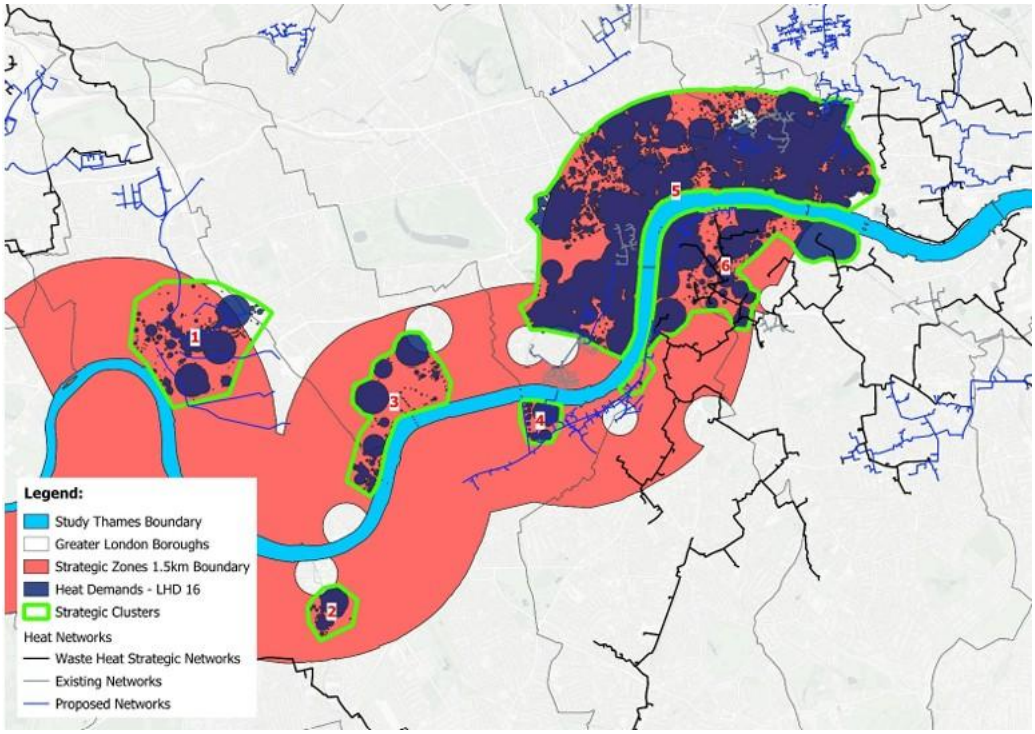

Figure 5: strategic zones that offer a high potential for connection to a district heat network based off their heat demand

Cluster ID	London Boroughs included	Annual heat (MWh)	Peak (undiversified) (MW)
1	Hammersmith & Fulham	116,000	70
2	Wandsworth	18,000	10
3	Hammersmith & Fulham and Kensington & Chelsea	121,000	70
4	Wandsworth	16,000	10
5	Westminster, Camden, Islington, and City of London	1,110,000	610
6	Lambeth and Southwark	221,000	120
Total		**1,598,000**	**870**

Table 2: Annual and peak heat per cluster identified in Strategic Zone

This initial analysis suggests that there is good alignment with heat availability from the Thames and that the 6 identified strategic zones each have good potential for supporting a viable heat network.

5. Heat Networks - City of London context

Key points:

- **City Plan** encourages the development of district heating systems
- **Climate Action Strategy** includes a target of a net zero Square Mile by 2040.
- In preparation for the UK Government's Heat Network Zoning regulations, the City Corporation's participation in the **Advanced Zoning Programme (AZP)** suggests the whole of the Square Mile will be confirmed as part of a Central London heat zone and 1000+ buildings within this zone may be required to connect to a heat network.

The City of London has the highest heat demand density of any local authority in the UK. Despite its small geographic footprint, the Square Mile's dense, vertical development - where nearly 90% of buildings are five storeys or more - results in a highly concentrated thermal load.

While neighbouring boroughs such as Islington, Camden, and the City of Westminster have anchor loads distributed across their areas, the Square Mile demonstrates a notably higher heat demand density. Its heat density exceeds that of neighbouring London boroughs, including those already recognised as high-density urban environments. This makes the Square Mile particularly well-suited for heat networks, as shorter pipe runs can serve more buildings, reducing infrastructure costs and improving overall efficiency.

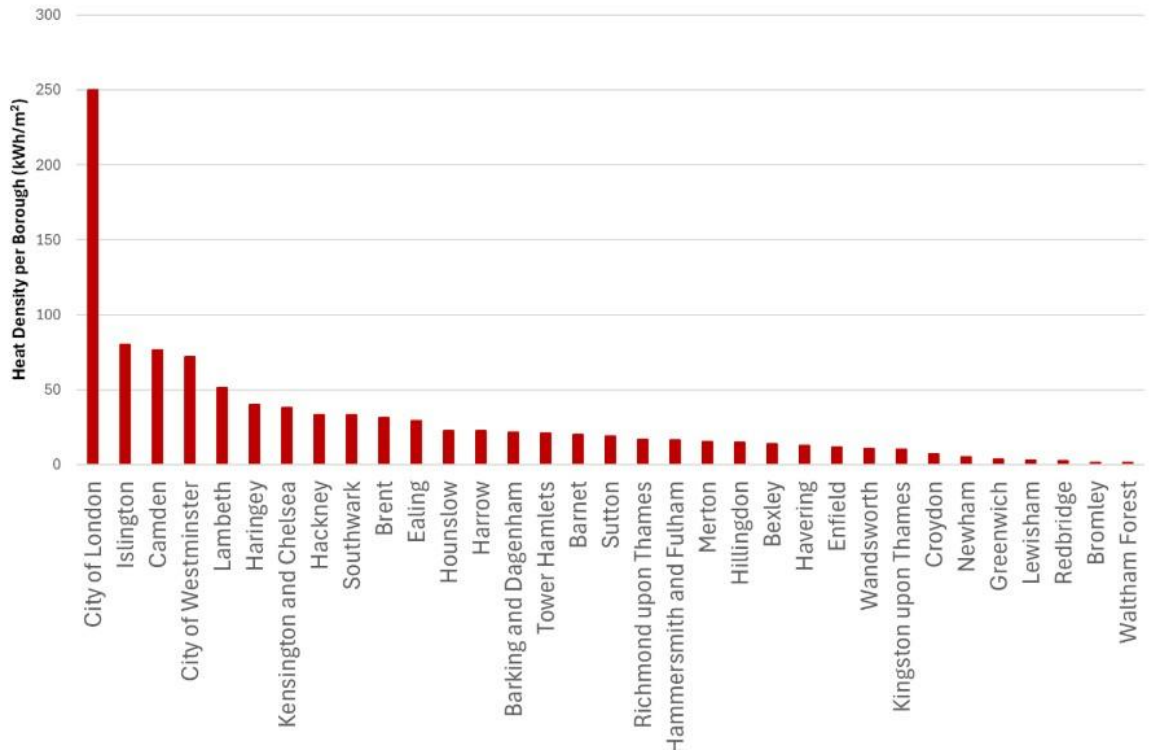

Figure 6: heat density per London borough and City of London (source: London Heat Map)

5.1 City Plan 2015

The current City Plan 2015 sets out policies which are relevant to heat network development in the City:

- **Policy DM 2.1 Infrastructure provision and connection:** Utility infrastructure and connections must be designed into and integrated with the development wherever possible. As a minimum, developers should identify and plan for: heating and cooling demand and the viability of its provision via decentralised energy (DE) networks. Designs must incorporate access to existing DE networks where feasible and viable.
- **Core Strategic Policy CS15: Sustainable Development and Climate Change:** Requiring development to minimise carbon emissions and contribute to a City wide reduction in emissions: (ii) enabling the use of decentralised energy, including the safeguarded Citigen Combined Cooling Heating and Power (CCHP) network, CCHP ready designs in areas where CCHP networks are not yet available, and localised renewable energy technologies.

5.2 City Plan 2040

The new City Plan 2040 sets out the long-term spatial and development vision for the Square Mile, guiding planning decisions up to 2040. It prioritises sustainable growth, infrastructure resilience, and the transformation of the Square Mile into a vibrant cultural and economic hub.

Key strategic policies include:

- **Policy DE1 Sustainable Design**: Proposals for major development will be required to Incorporate collective infrastructure such as heating and cooling networks, smart grids and collective renewable energy storage (for example batteries) wherever possible, to contribute to a net zero carbon, zero-waste, climate resilient City; and Prioritise the objectives of the City of London Local Area Energy Plan (LAEP) to create or link into local energy networks and waste heat sources, and include opportunities for heat and cooling transfer to/from nearby developments
- **Policy IN1: Infrastructure provision and connection**: Utility infrastructure and connections must be designed into and integrated with the development. The following infrastructure requirements should be planned for…Heating and cooling demand and viability of provision. Designs should incorporate connections to existing decentralised energy networks where feasible.

5.3 Sustainability Supplementary Planning Document (SPD)

The Sustainability Supplementary Planning Document (SPD) sets out practical guidance for developments in relation to heat network development:

“Applicants for new development in the City are strongly advised to consider the implications of UK government heat network regulations. It is likely that all future new developments and major refurbishments will be required to connect to a nearby heat network within a defined timeframe.

To prepare in advance, the City Corporation is encouraging new developments to assess the cost and carbon advantages of heat networks, and to mitigate any future risks of mandated connection (with respect to any future necessary re-design or change of heating/cooling strategy). The City Corporation strongly encourages applicants to take a pro-active approach by:

- Incorporating a heat network connection into their development.
- Designing in flexibility solutions including smart systems and energy storage technologies.

- Engaging with the City Corporation and district network providers to facilitate extensions to and new networks.

5.4 Climate Action Strategy

The Climate Action Strategy (CAS) sets the foundation for the City's commitment to achieving net zero carbon emissions by 2040. It outlines a comprehensive approach across several key areas:

- Net Zero Targets:
  - Achieve net zero emissions from the Corporation's own operations by 2027 and across the full value chain by 2040.
  - Support the Square Mile in reaching net zero by 2040.
- Climate Resilience:
  - Integrate resilience into buildings, infrastructure, and public spaces to prepare for climate-related risks
- Investment in Sustainability:
  - £68 million allocated over six years to fund climate action initiatives. This investment is fully allocated through to 2027 and supports a detailed action plan with annual targets to ensure measurable progress.
  - A programme of 13 fully funded projects has been developed, structured around four key themes: Buildings, Supply Chain, Financial Investments, Open Spaces.

5.5 Local Area Energy Plan (LAEP)

Initiated under the Climate Action Strategy and adopted in 2023, the Local Area Energy Plan is a spatial, data-driven roadmap for decarbonising the energy system in the Square Mile.

The LAEP sets out seven targeted intervention areas, each designed to accelerate progress toward net zero. These include maximising building energy efficiency, expanding rooftop solar PV, decarbonising transport and heat, reinforcing the electricity distribution network, harnessing waste heat, and deploying energy system flexibility. Together, these interventions form a coherent framework that enables place-based, data-driven decision-making.

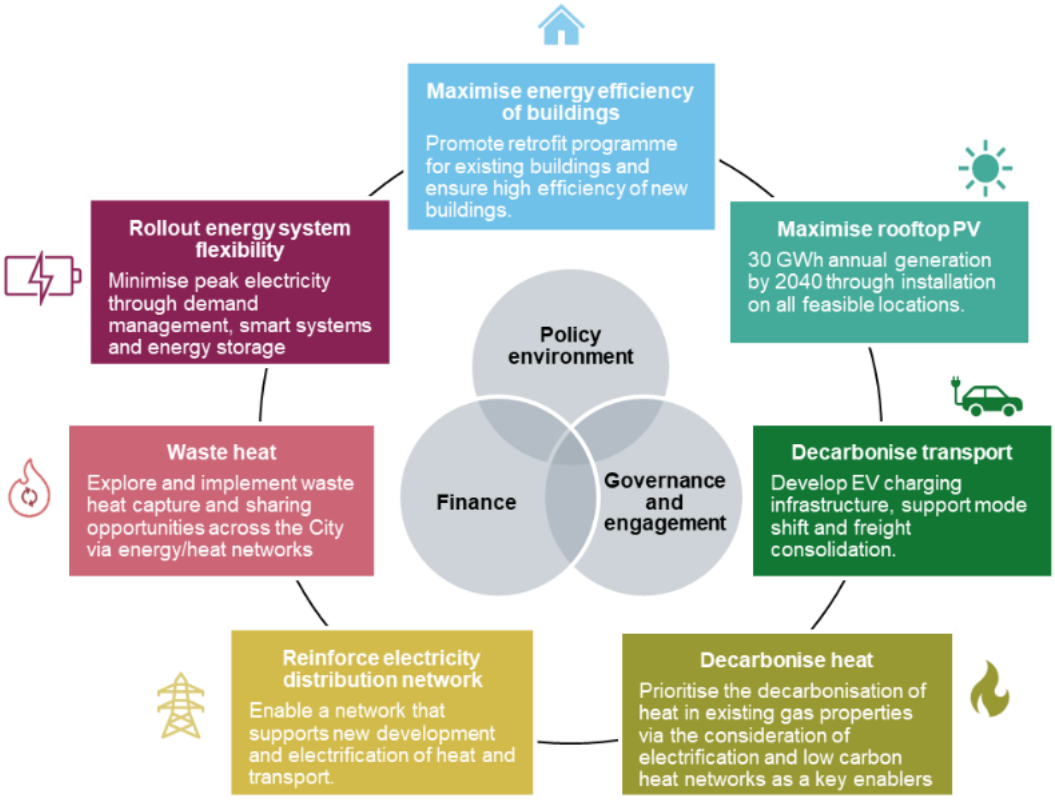

Figure 7: summary of key action areas in City of London Local Area Energy Plan, 2023

In 2023, Policy and Resources Committee agreed that the "recommended pathway to a net-zero energy system by 2040 is a blend of deep retrofit interventions applied to the City's building stock and heat networks, using both centralised and decentralised heat pumps" as part of the Local Area Energy Plan.

5.6 Heat Network development - Advanced Zoning Programme (AZP)

The Advanced Zoning Programme (AZP) is a pioneering initiative aimed at accelerating the development and implementation of heat networks as part of the government's Heat Network Zoning pilot program for 19 cities. Through its participation in AZP, the City Corporation has worked in collaboration with government consultants to explore the implication of the forthcoming Heat Network Zoning Regulations for the Square Mile and how they may support delivery of large-scale heat networks.

AZP has identified the whole of the City of London (Square Mile) will likely be designated as part of a wider central London Heat Zone where the new regulations would apply.

Figure 8: refined heat network zone (shaded area) created in the National Zoning Model.

High-level modelling through the AZP has identified circa.1,200 buildings which could be required to connect to a heat network under the regulations, highlighted in green in Figure 9 below. These buildings collectively have a heat demand of c.1,000 GWh and the development of heat network infrastructure to supply them would cost in the region of £1.26 billion CAPEX.

Figure 9: all buildings within the Square Mile which have been identified as Required to Connect under the Heat Network Zoning Regulations (AZP Stage 1 Technical Report – City of London)

6. Strategic heat supply to the City – the role of the Thames Policy Area

Key points:

- Analysis of heat supply options for the City underlines the importance of the river in the phased development of heat networks across the Square Mile, as a source of heat itself, transporter of heat and in support of a strategic heat main corridor.
- The river/riverside offers both short-term development opportunities, via thermal barges, as well as longer-term access via strategic heat mains, particularly from Cory's Riverside Energy from Waste facility in Bexley.
- An appraisal of the short-term thermal barges option has explored various mooring options along the riverside. The preferred option would be to utilise the Swan Lane pier, east of Walbrook Wharf.
- A series of other mooring locations have also been identified and should be recognised
- In August 2025, Cory received direction by the Secretary of State under section 35(1) of the Planning Act 2008 for its Heat Main 1 project to be brought under the Nationally Strategic Infrastructure Projects and Development Control Order Regime.

6.1 Analysis of strategic heat supply options for the City

The main constraint to heat network development is the current availability of low carbon heat to meet the significant demand within the Square Mile.

The London Waste Heat Study (2024) identified the large sources of waste heat available within the London area. These have been provisionally assessed for their viability to supply the Square Mile, based on their available heat and understanding of current plans for their utilisation.

Figure 10 below presents an extract from the study with highlights added on three priority sources for the Square Mile:

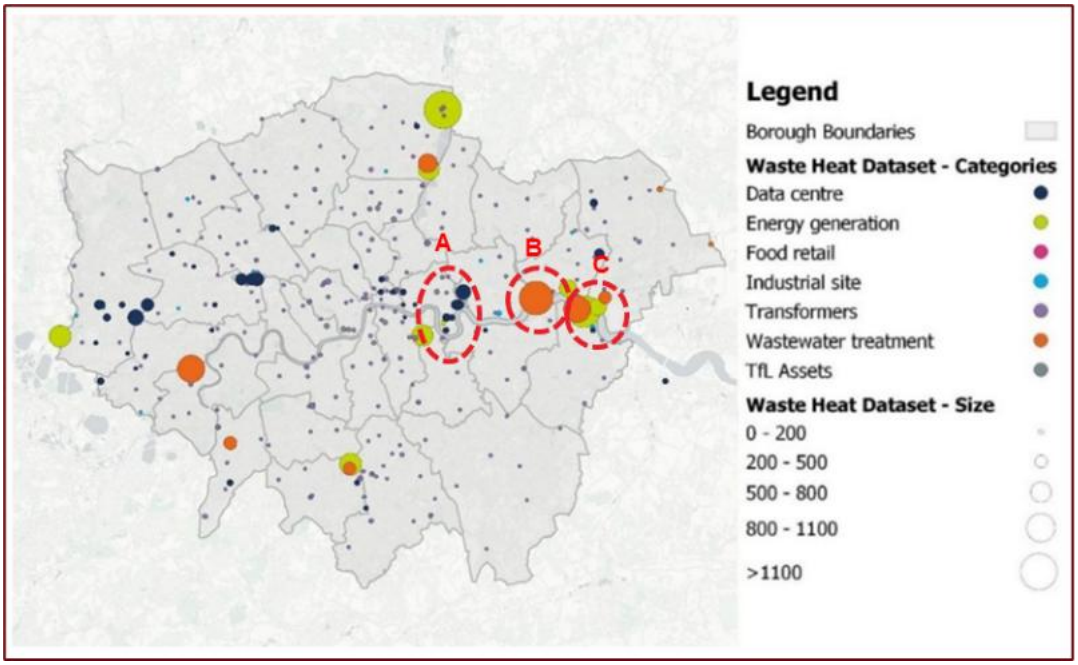

Figure 10: strategic heat sources across Greater London (London Waste Heat Study, 2024) with highlights added on three priority sources for the Square Mile.

The three priority sources are:

A. Datacentres located in Tower Hamlets (combined waste heat rejection to be confirmed).
B. Beckton Sewage Treatment Works (1029 GWh/yr heat rejection), an operational Thames Water site and is the largest sewage treatment works in Europe
C. Riverside Energy Park - Energy from Waste facility (917 GWh/yr heat, increasing to c.3,000 GWh/yr heat following planned enlargement). Owned and operated by Cory.

Looking more specifically at the Square Mile, Table 3 below summarises the identified local low-carbon heat sources, including Cory's proposed heat supply opportunities from its Riverside Energy Park.

Local Low Carbon Heat Source	**Square Mile** Annual Heat Potential, GWh	**Neighbouring Area*** Annual Heat Potential, GWh	**Source**
Data Centre	-	95.2	AZP1
Office Cooling **	40 – 50	-	AZP2
Electrical Transformers	-	123	AZP1
TfL Vent Shaft	4	58.2	AZP1 & AZP2
Sewers **	10 - 210	-	AZP1 & AZP2
London Aquifer	4	-	AZP2
River Thames ***	100 – 350	-	GLA River Thames Study
Cory EfW Heat Transfer (Conceptual Estimates)	40 – 240 (via thermal barge) 917 – 3,000 (via SHMs)	-	Cory

* The cross-boundary heat opportunity identified in the AZP Phase 1 Technical Report is limited to the Square Mile and Islington areas.
** The annual heat potential has undergone further evaluation.
*** Findings from the Greater London Authority's River Thames Study have been incorporated to inform the river source potential.

Table 3: summary of identified local low-carbon heat source for Square Mile and neighbouring areas.

In collaboration with the Advanced Zoning Programme, these potential energy sources located within or around the Square Mile have been assessed using a RAG (Red-Amber-Green) rating system to evaluate their suitability for integration into a future heat network. The assessment considered the potential scale of energy which could be provided; technical feasibility; CAPEX and OPEX. These are set out in Table 4 below.

Source	Scale	CAPEX	OPEX	Technical	Preferred Option Indicator
Data Centres					✓✓▪
Office Cooling					✓✓▪
Electrical Transformers					-
TfL Vent Shaft					-
Sewers					✓▪
London Aquifer					-
River Thames					✓✓✓▪
Large-scale ASHP					✓✓▪
Cory - Thermal Barge					✓✓▪
Cory - Strategic Heat Mains					✓✓▪

Table 4: RAG assessment of potential energy sources to evaluate their suitability for future integration into a future network, including preferred options

The Preferred Option Indicator column reflects the overall outcome of the RAG assessment across all evaluation criteria. It highlights which energy sources are most suitable for further consideration and should be prioritised for development in zonal-scale heat networks across the Square Mile.

The five most preferred options – data centres; office cooling; river source; thermal barge; and strategic heat main - are presented in spatial form in Figure 11 below.

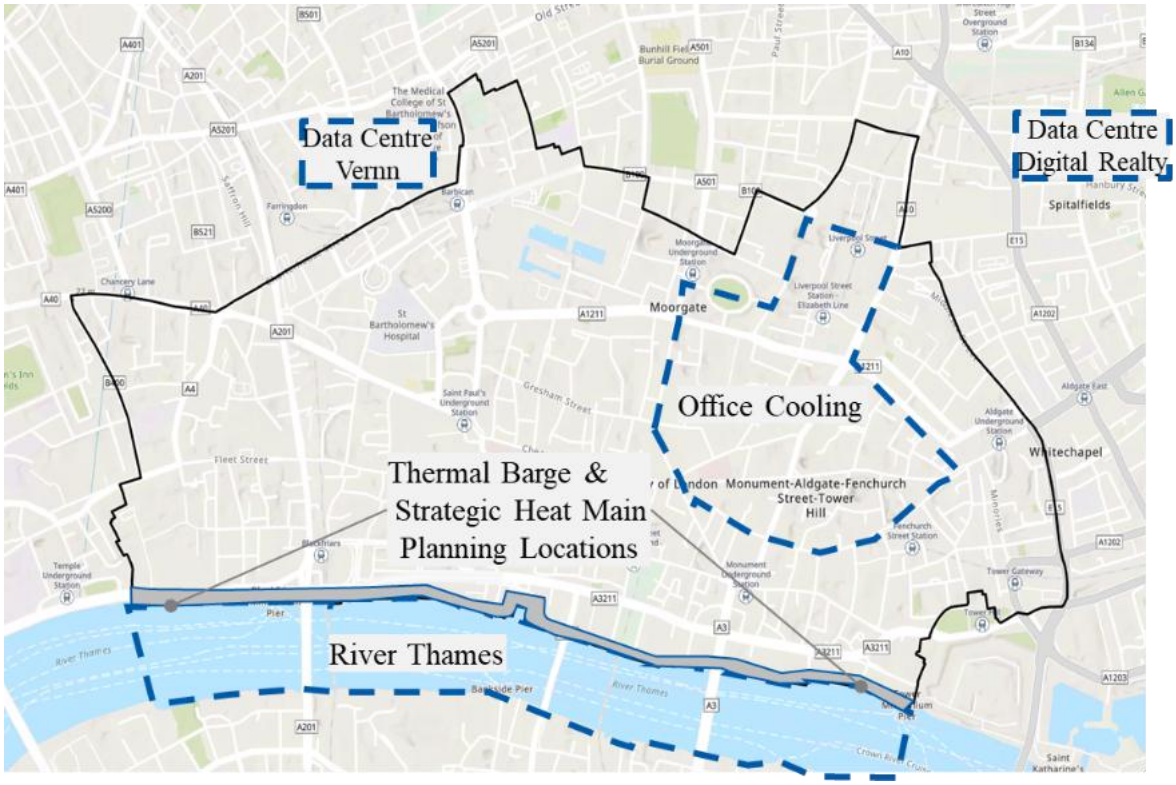

Figure 11: spatial allocation of the five most preferred heat source options.

It is clear from the analysis of potential heat sources that the river and riverside have the potential to provide the most substantial amount of heat for the development of heat networks in the Square Mile and Central London. As well as being a direct source of heat via Water Source Heat Pumps (WSHP), accessing heat from Cory's Riverside Energy from Waste facility offers the potential scale of heat supply to meet the City's decarbonisation objectives.

Cory has been responsible for managing the City of London's waste since 1996. Cory processes residual waste from the City of London at the waste transfer station at Walbrook Wharf. From there, the waste is transported by barge down the Thames to Cory's Riverside Energy Recovery Facility (ERF) in Belvedere, Bexley.

Cory operates the Riverside 1 Energy-from-Waste (EfW) facility and is currently constructing Riverside 2, which will double its processing capacity. Together, these facilities are expected to generate up to 3 TWh of waste heat annually - sufficient to meet the entire heating demand of the Square Mile (approximately 1,200 GWh) and half of Westminster (around 4,000 GWh per year). Cory are also developing a Carbon Capture and Storage project at the Riverside site which will involve the installation of technology to capture 90% of the emissions from Cory's existing and new facilities.

The work undertaken AZP programme recommends a phased approach to the delivery of heat networks across the Square Mile which combines both short-term and long-term perspectives:

- Short-term development: prioritising access to local/neighbouring heat source – the River Thames, datacentres, electrical transformers and sewer heat.
- Long-term development: access to larger scale waste heat from outer London sources (such as Energy from Waste facilities) via new large-scale cross-London strategic heat pipe mains.

The following sections

6.2 Short-term heat supply – River Source and Thames Mobile Heat

River source – Water Source Heat Pumps (WSHPs)

The River Thames presents a significant and underutilised opportunity for low-carbon heat supply within the Square Mile. Heat can be extracted using Water Source Heat Pumps (RSHPs), which operate by abstracting water from the river, transferring its thermal energy via a heat exchanger, and discharging the slightly cooled water downstream.

As part of the Advanced Zoning Programme, a single site with a 16 MWth RSHP was assessed as feasible to supply heat to Square Mile. With substantial thermal storage, this installation could meet approximately 10% of the Square Mile's total heating demand.

Thames Mobile Heat

The Square Mile has a unique opportunity to harness low-carbon heat transported via the River Thames using thermal barges. This innovative approach enables the transfer of waste heat from energy-intensive areas - such as Cory's Riverside Energy from Waste (EfW) plant in Belvedere - to high-demand zones like the City of London, supporting its decarbonisation goals.

The City has commenced engagement with Cory on opportunities to deliver waste heat via river barges utilising thermal storage which could supply the Square Mile in the short-term while considering a longer-term piping option.

Thermal barges are floating platforms equipped with thermal storage systems that can transport waste heat. Waste heat is collected from sources like energy-from-waste plants or industrial processes, or other heat-generating facilities. The heat is transferred to a thermal storage medium, such as water or phase change materials, using heat exchangers. The captured heat is stored in insulated thermal storage tanks on the barge. The barge is transported via waterways to the discharge location and upon arrival, the stored heat it transferred from the barge to the heat network via heat exchangers. This leverages the mobility of barges to deliver heat efficiently and sustainability, making use of the existing water ways to transport thermal energy from source to areas where it is needed.

Mobile Heat enables the direct delivery of waste heat from Riverside Campus to heat networks along the River Thames, by moving barges filled with heated water to discharge locations, each holding 120MWh of thermal energy. Each barge carries up to 2,000 m^3 of water heated to 125°C using a steam bleed from the EfW plant - a standard method for heat recovery in UK and international networks. Travelling with the tide, a barge can deliver up to 120 MWh of usable thermal energy per discharge, with a maximum of 240 MWh per day.

With approximately 2 km of accessible river frontage, the City is well-positioned to receive heat deliveries by barge. However, realising the full potential of this system will require careful evaluation across spatial, technical, and environmental dimensions:

Spatial Considerations

- Berthing & Jetty Access: Discharge requires jetty infrastructure to connect pipes to onboard heat exchangers. Site selection must consider tidal access, vessel clearance, and proximity to heat network infrastructure.

- Containerised Design: Batteries are housed in standardised shipping containers, simplifying logistics and enabling flexible deployment across multiple sites.
- Navigation & Safety: Barges must comply with Port of London Authority regulations, including safe navigation, mooring permissions, and visibility protocols.

Technical Considerations:

- System Integration: Thermal barges are compatible with 4th and 5th Generation heat networks.
- Grid Independence: Unlike electric heat pumps, thermal barges do not require grid connections, reducing infrastructure costs and avoiding grid congestion.

Environmental Considerations:

- Carbon Intensity: Heat supplied via thermal barges is modelled at 12 gCO_2/kWh, significantly lower than gas-based systems (~216 gCO_2/kWh)[10].
- Water Quality & Temperature: Discharge operations must monitor thermal impacts on local water bodies, especially in sensitive ecological zones.
- Tidal Scheduling: Operations must align with tidal cycles to ensure consistent berthing and discharge performance.
- Ecological Safeguards: Intake and discharge systems must be designed to avoid harm to aquatic life, with consideration for flow velocity and temperature gradients.

An initial assessment has been undertaken of suitable mooring and discharge sites. The following sets out the locations considered
:

- HMS President – vacant jetty site
- Area west of Blackfriars jetty
- East of Blackfriars jetty
- West of Walbrook Wharf
- Walbrook Wharf
- Swan Lane pier / East of Walbrook Wharf
- LB PLA Upper Moorings

Figure 12 and 13 below sets out the location of the sites assessed in both aerial view and map formats

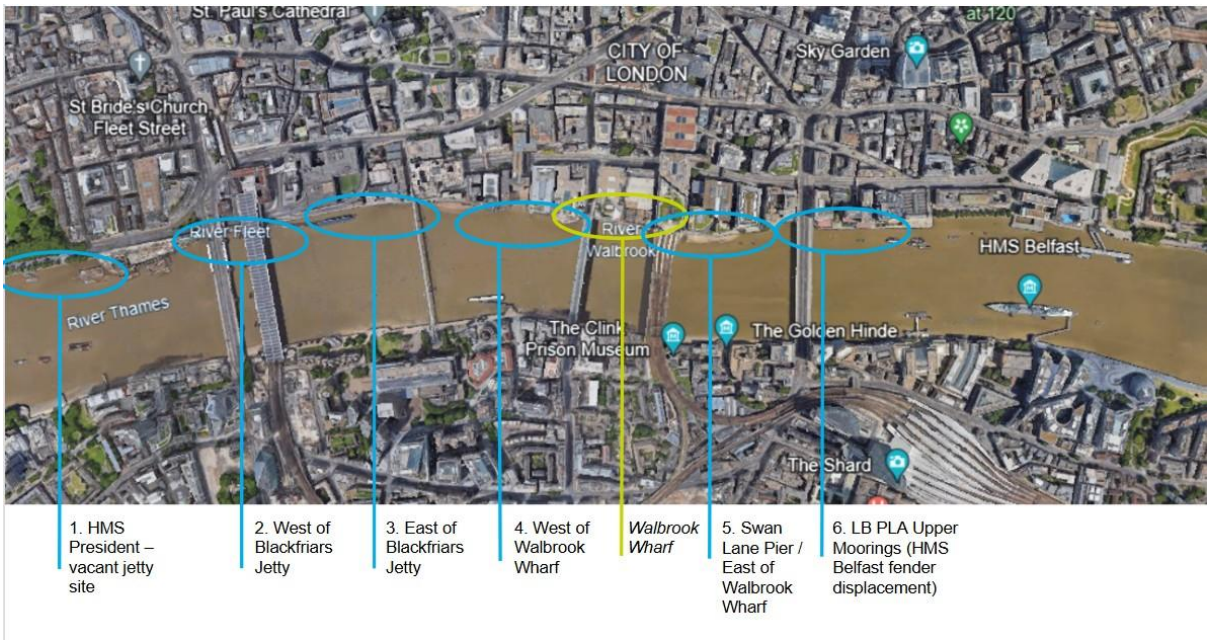

Figure 12: aerial view of potential mooring locations for thermal barges

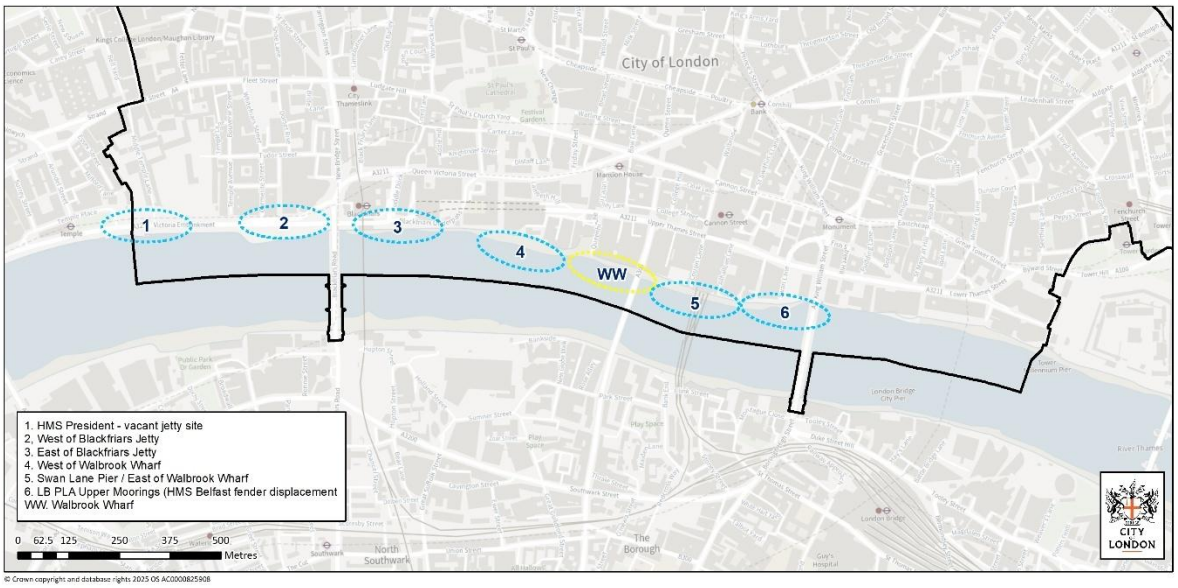

Figure 13: map view of potential mooring locations for thermal barges

Swan Lane foreshore, east of Walbrook Wharf has been identified as the strongly preferred site, in part due to the relatively good condition of the existing campsheds but also due to its proximity to Walbrook Wharf as a potential energy centre for distributing heat across the Square Mile. The viability of heat supply via thermal barges would be put at risk if the Swan Lane foreshore location would be lost to other uses.

The following aerial images set out the notional location of the static barges at Swan Lane foreshore, highlighted as a blue box.

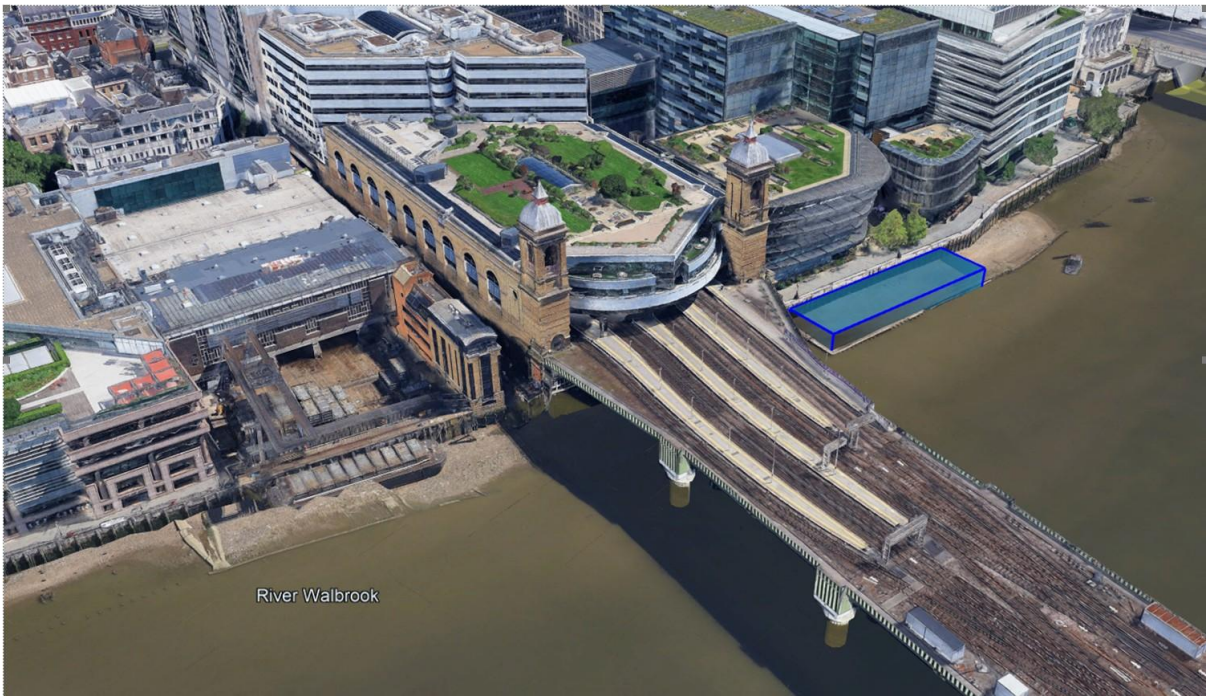

Figure 14: location of static barge (highlighted as blue box) on the Swan Lane foreshore, as seen from west of Cannon Street Railway Bridge

Figure 15: location of static barge (highlighted as blue box) on the Swan Lane foreshore, as seen from above Cannon Street Railway Bridge

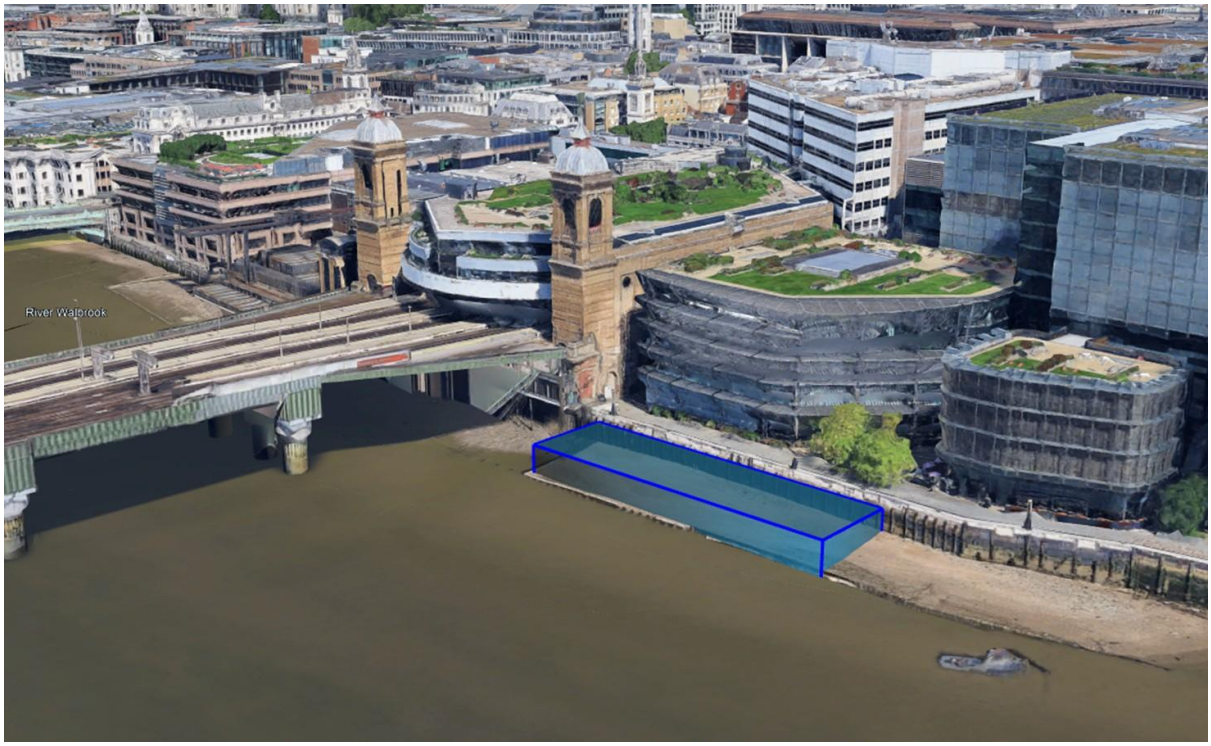

Figure 16: location of static barge (highlighted as blue box) on the Swan Lane foreshore, as seen from the east of Cannon Street Railway Bridge

6.3 Longer term heat supply - Strategic Heat Main

In addition to the development of mobile heat on the river, Cory's longer-term vision includes the development of a Strategic Heat Main (SHM) crossing the River Thames to deliver low-carbon heat directly into Central London. A high-level strategic review of routing scenarios - led by the City Surveyor's Department - has explored the feasibility of delivering this infrastructure via pipe jack tunnelling, referred to as Small Bore Tunnels (SBTs).

At the end of August 2025, the Secretary of State for Energy Security and Net Zero provided direction under Section 35 of the Planning Act 2008 for the Cory Heat Main Project 1 to be classified as a National Significant Infrastructure Project (NSIP) and has been consented through a Development Consent Order (DCO). The Secretary of State is of the opinion that the Direction should be issued because:

"The Applicant's existing energy from waste facilities at the Riverside Campus play an important and strategic role in treating residual waste and will have the capacity to supply significant amounts of hot water to central London. The Proposed Development is intended to create a transmission route to enable connection for heat distribution networks and operators.

The Proposed Development will play an important role in enabling an energy system that meets the UK's commitment to reduce carbon emissions and the Government's objectives to create a secure, reliable and affordable energy supply for consumers."

The project has the support a number of stakeholders as seen in the letters of support enclosed with the application, including from the GLA, heat network developers, several London boroughs and the City of London Corporation.

An indicative route for the project is shown in Figure 17 below. This indicative route covers a distance of some 30km and runs through six London boroughs (Bexley, Greenwich, Lambeth, Lewisham, Southwark, City of Westminster) and the City of London that would readily be served by the project.

The indicative Heat Main 1 route set out in Cory's application is for both a trunk (the green line) and branches (blue arrows) that could serve district heat networks and/or other off-takers. It is noted that this plan does not constitute a red line boundary for the Project at this stage, and the 'Request for Direction' from the Secretary of State did not set out a specific route.

Figure 17: indicative route of strategic heat main for both trunk (green line) and branches (blue line)

As with the use of thermal barges, the strategic heat main would need to connect to foreshore infrastructure. It will require a reception shaft location as well as multiple further shafts as the heat would be piped onwards through the Square Mile and Central London. Potential site options are currently being considered.

6.4 Local Policy considerations for use of the Thames and the Riverside

The current City Plan 2015 has a series of policies which relate to the Thames and the Riverside.

Core Strategic Policy CS9: Thames and the Riverside (page 85)

The policy seeks "to ensure that the City capitalises on its unique riverside location, sustaining the river's functional uses in transport, navigation and recreation, whilst minimising risks to the City's communities from flooding."

"It seeks to do this by "promoting the functional uses of the River Thames and its environs for transport, navigation and recreation, particularly through:

- encouraging the use of the River Thames for the transport of construction and deconstruction materials and waste;
- retaining Blackfriars Pier, and access to Tower Pier, and encouraging the reinstatement of Swan Lane Pier and the use of these facilities for river transport. Applications to remove these facilities will be refused unless suitable replacement facilities of an equivalent or higher standard are provided;
- refusing development on or over the River, except for structures which specifically require a waterside location for river-related uses;

- resisting the permanent mooring of vessels; if moored vessels are exceptionally permitted they must be of national importance, have a special connection with the City and the River Thames, be used for a river related purpose and not have a detrimental impact on navigation, river regime or environment."

Policy DM 16.8 River transport

"River piers, steps and stairs to the foreshore, the Walbrook Wharf safeguarded site, and other river-based transport infrastructure will be safeguarded and improvements will be supported.

Development adjacent to or over the River Thames must be supported by a Transport Assessment and a Construction Logistics Plan addressing the potential for the use of the river for the movement of construction materials and waste."

A Transport Assessment and Construction Logistics Plan would be required for the use of thermal barges to transport waste heat.

Core Strategic Policy CS17: Waste

"Enabling the sustainable transport of materials including waste and recyclables by river: safeguarding Walbrook Wharf as a wharf suitable for river transport of materials including waste; exploring the potential for further use of waterways for the transport of waste and construction materials subject, where appropriate, to the potential impact on Natura 2000 sites."

Key City Places: Thames and the Riverside (page 21)

"There is significant potential for increased transport use of the River, making greater use of existing piers for passenger services, the movement of construction and deconstruction materials, and continuing to make full use of Walbrook Wharf for the movement of materials including waste." (page 21)

Thermal barges would provide an opportunity for increased use of the river, making use of existing piers for the movement of waste heat.

City Plan 2040 has an objective of "Promoting greater use of the River Thames for passenger and freight transport, increased enjoyment of the City's riverside and improvements to flood defences."

Policy VT2: Freight and Servicing (page 158)

"Developers should minimise congestion and emissions caused by servicing and deliveries through ensuring, last mile deliveries are made by foot, cycle or zero emission vehicle, and should seek opportunities to support deliveries to the City by river and rail freight. Developers will be encouraged to identify opportunities for last mile logistic hubs where appropriate."

Policy VT4: River Transport (162)

1. The City Corporation will support improvements to river piers, steps and stairs to the foreshore.

2. Improvements to piers and other river-based transport infrastructure to enable an increase in passenger and freight transport by river will be supported, alongside opportunities for new river-based transport.

3. The City Corporation will seek the reinstatement of Swan Lane Pier for river transport uses. Development that prejudices this reinstatement will not be permitted.

4. The permanent mooring of vessels along the riverfront will be resisted in order to maintain views of the river and heritage assets, allow public enjoyment of the riverfront and minimise potential impacts on archaeology, ecology, and amenity.

5. The City Corporation will continue to safeguard Walbrook Wharf as a river wharf and waste transfer site, support improvements to Walbrook Wharf that would improve its operation, and seek opportunities for the use of the wharf for transfer of goods, where this would not undermine its safeguarded role.

6. All development within the City must consider use of the River Thames for the movement of construction materials and waste. Development adjacent to, or over, the river must be supported by a Transport Assessment and a Construction Logistics Plan addressing the potential of using the river for the movement of construction materials and waste and servicing of the development.

Strategic Policy S17: Thames Policy Area

3. Promoting the use of the River Thames and its environs for transport, navigation and recreation, particularly through:

a. safeguarding Walbrook Wharf for waste and river related freight traffic, including freight consolidation;

b. encouraging the use of the River Thames for the transport of construction and deconstruction materials and waste;

c. retaining Blackfriars Pier, and access to Tower Pier, and encouraging the reinstatement of Swan Lane Pier and the use of these facilities for river transport. Applications to remove these facilities will be refused unless suitable replacement facilities of an equivalent or higher standard are provided;

d. refusing development on or over the River Thames, except for structures that specifically require a waterside location for river related uses;

e. resisting the permanent mooring of vessels;

f. and maintaining and enhancing access points to the River Thames foreshore, from both land and water, for public or private use as appropriate, subject to health and safety and environmental safeguards.

<u>Summary</u>

The overarching objective of the Local Plan 2015, City Plan 2040 and London Plan 2021 is to protect and enhance the value of the Thames and to support river freight. Thermal barges would meet this overarching objective as well as providing a substantial amount of low cost, low carbon heat to enable the development of heat networks at scale by

The City Plan 2040 seeks to resist permanent mooring of vessels in order to maintain views of the river and heritage assets, allow public enjoyment of the riverfront and minimise potential impacts on archaeology, ecology, and amenity. Any scheme for permanent mooring – including thermal barges – would need to overcome these issues. When considering relevant applications, decision-makers would need to consider the merits of delivering low cost, low carbon heat via thermal barges to enable heat networks in the City and the increased use of the river Thames for freight in the overall planning balance.

6.5 Roles and responsibilities of relevant agencies

In addition to the City Corporation, the following bodies have specific regulatory roles and responsibilities relating to the Thames and the Riverside:

Environment Agency

The Environment Agency [EA] is an executive non-departmental public body, sponsored by the Department for Environment, Food and Rural Affairs (DEFRA). The EA are the regulatory body responsible for water quality and resources, fisheries, ecology, and flood risk.

The Port of London Authority (PLA)

The PLA is the statutory harbour authority for the Port of London, with responsibility for maintaining safe access and managing the safety of vessels, the public and all users of the tidal River Thames. They are also responsible for consenting all works and dredging. The PLA own the majority of the riverbed of the tidal Thames. The PLA is not a statutory consultee on planning applications.

The Marine Management Organisation (MMO)

The MMO is an executive non-departmental public body of DEFRA. The MMO licence and regulate marine activities in the seas around England and Wales. In relation to the potential for open loop heat pumps in the River Thames, the MMO are responsible for planning and licencing for marine construction. The MMO is a statutory consultee on planning applications.

These agencies would need to be closely involved in the strategic heat supply schemes as they develop. The following table sets out the main regulatory requirements of each body (GLA River Thames, page 16)

		Regulatory Body			
		Local Authority (Local Planning Authority)	**The Environmental Agency**	**The Port of London Authority**	**Marine Management Organisation**
Project Stage	**Consultation**	Pre-application consultation recommended.	Pre-application consultation (charged advice service) recommended.	Consultation not required but recommended on inlet/outlet location and design.	Pre-application consultation not required (the MMO are statutory consultees for the Local Authority and EA) but beneficial to ensure EIA includes relevant additional studies (it is a charged service).
	Planning Requirements	Environmental Impact Assessment – (screening / scoping / assessment)			
	*Associated documents or modelling requirements**	Requirements include: • Land Contamination Desk Study • Noise Assessment • Air Quality Assessment • Transport Assessment • Visual and Heritage Impact Assessment • Archaeological Desk Study *(Plus those adjacent)*	Requirements include: • Flood Risk Assessment. • Water Framework Directive Assessment (screening, scoping, assessment). • Biodiversity Assessment - including intertidal / benthic ecology. • River wall condition survey. • Flood defence consents would be required for certain infrastructure within proximity of the flood defences (usually the river wall/Embankment).	Requirements include: • Navigational risk assessment. • Hydrodynamic assessment. • Riparian life-saving equipment proposals. • Water Framework Directive Assessment.	Requirements include: • Scour modelling of riverbed. • Biodiversity Assessment - including intertidal / benthic ecology, underwater noise.
	Construction Permits		Environmental Permit - Flood Risk	River works licence required for construction works including temporary works and dredging license if any bed disturbance.	Marine Licence for construction works including temporary works.
	Operation / ongoing permits or licences		Abstraction Licence Discharge consent	River works licence and ongoing charge.	*None, unless requested as part of EIA.*
Decommissioning			Depending on the detail of the works, possible EIA and associated documents required.	River works licence and associated documents required for construction works to remove in-river structures; continue in perpetuity if structures remain under the bed.	Marine Licence for construction works to remove in-river structures.

*In the event that an EIA is found not to be required through the screening process, the supplementary documents suggested may still be required by the regulatory authorities, just as standalone documents rather than as appendices to the EIA

7. Conclusions

Securing a supply of waste heat is a critical aspect of enabling the City of London to decarbonise and achieve its climate goals over the coming year. The work undertaken to date, through the government's Advanced Zoning Programme and other actions, has identified key heat supply sources to enable the delivery of heat networks in the Square Mile.

The Thames and the riverside play a crucial role within the plans. The river has a role to play as both a source of heat as well as a transporter of heat via thermal barges. The river and riverside area also act as a corridor for the delivery of strategic heat supply infrastructure into central London. The amount of heat available from these sources is substantial and is at a scale which aligns with the needs of the Square Mile.

The following sets out the main considerations from the work undertaken to date on strategic heat supply planning for the City:

- Swan Lane foreshore has been identified as the priority location for the mooring of thermal barges and the discharge of heat to a wider City network.

- Several other sites have been identified as potential / priority sites for thermal barges. These are:
  - HMS President – vacant jetty site
  - Area west of Blackfriars jetty
  - East of Blackfriars jetty
  - West of Walbrook Wharf
  - Walbrook Wharf
  - LB PLA Upper Moorings

- The proposal for a strategic heat main has been designated a project of national significance by the UK government.

Planning advice:

Development proposals within the Thames Policy Area should consult City of London Corporation and other relevant stakeholders on any plans which may affect:

- the use of Swan Lane foreshore for the use of thermal barges;

- the use of other priority sites identified as potential mooring locations for thermal barges;

- the development of the strategic heat main project as a project of national significance