
CRYSTAL POOL

6

DECENTRALISED ENERGY

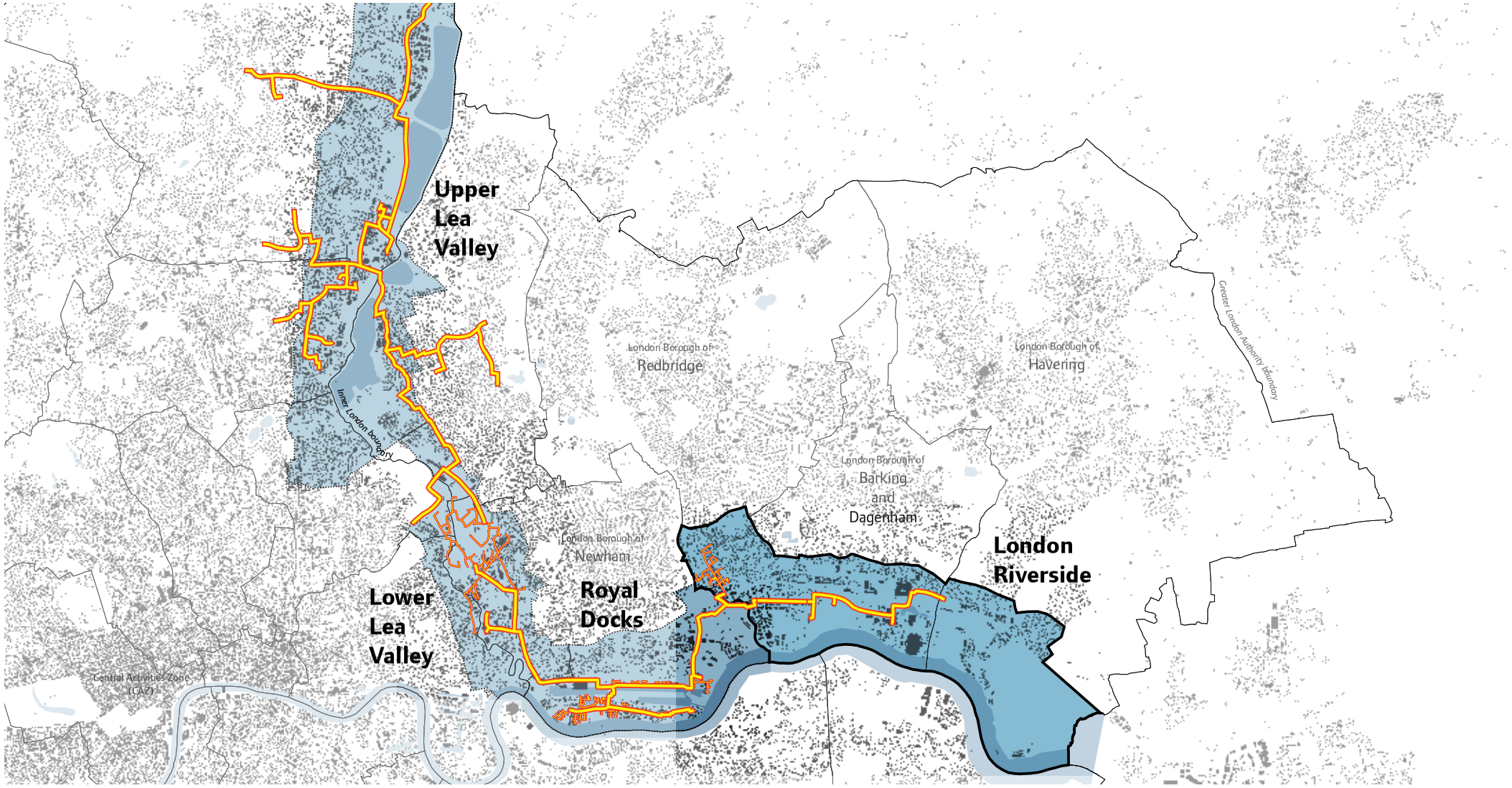

Figure 6.1 Long term East London heat network

6.1 Introduction

The Mayor has set a target to generate 25% of London's energy from decentralised sources by 2025. District heating (DH) networks connecting low to zero carbon and waste energy sources to consumers are a key element to the achievement of these targets. The London Plan seeks the connection to district heat networks to supply new build developments with heat where feasible. The £10m infrastructure package currently being delivered at the LSIP includes installation of a district heat network. Several more are already in place and others are planned.

Decentralised energy production using local energy resources, CHP technology and waste heat utilisation could provide a means to decarbonise the heat supply across London Riverside. Using more local energy sources for heat production and supply would reduce the dependence on fossil fuels, enhance security of supply and reduce the exposure of the end consumer to the volatility in the market for traditional fuels. In combination with area-wide heat networks, multiple heat sources could allow more competitive heat prices to be offered to the consumer.

Havering Council, with the support of the Department of Energy and Climate Change and the GLA has produced an Energy Masterplan focussing on a Rainham and Beam Park district heatnetwork delivering low carbon heat. It also sets out the role of satellite district-heat networks across the opportunity area that could interconnect over time to supply locally produced low to zero carbon and waste energy sources. The Rainham and Beam Park Energy Masterplan should be taken into consideration alongside this framework.

The GLA is also looking at an Energy Masterplan with Bexley Council based on the energy from waste plant at Belvedere that is considering potential for a heat network under the Thames to London Riverside.

6.1.1 East London Heat Network

The concept of an East London heat network follows from work carried out by the LDA in relation to the development of the London Thames Gateway Heat Network (LTGHN). The LTGHN project, now owned by the GLA, established the vision for developing a hot water transmission network that would connect diverse sources of affordable low/zero carbon heat to communities across the east of London. As originally envisaged, the LTGHN transmission line would be built in phases. The first of the phases would see a transmission network developed across the London Riverside area supplying a range of heat customers including Barking Town Centre. A transmission network in the Royal Docks area would also be developed, connecting existing and proposed new build development in the area. Future phases would see the connection of the London Riverside and Royal Docks area heat networks.

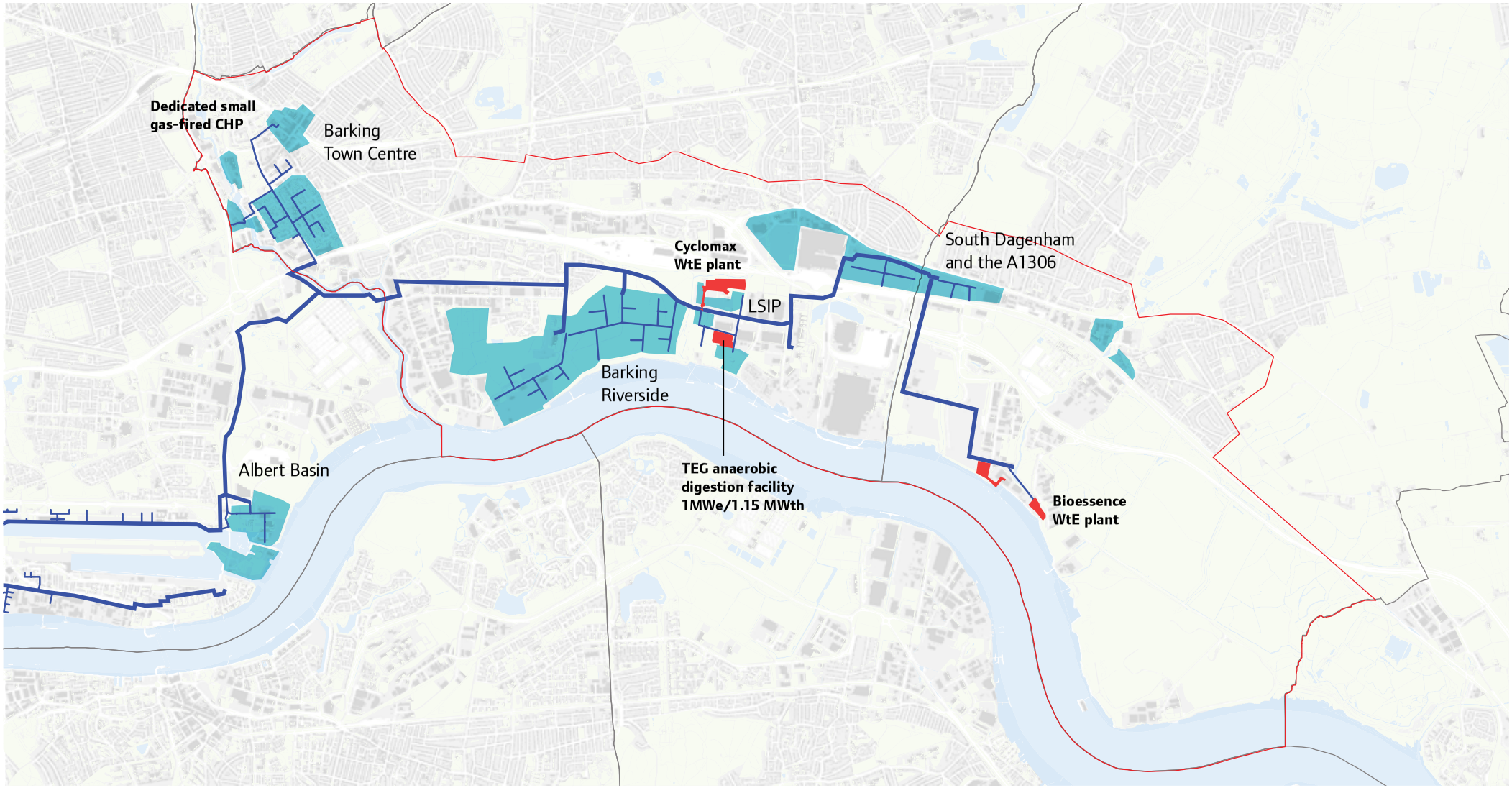

Figure 6.2 Potential London Riverside heat network supplied from a range of sources

6.2 The energy strategy is to:

- Set out a framework to enable the area to support the Mayor's zero to low carbon aspirations for London Riverside;
- Identify opportunities for decentralised energy production and distribution to meet current and future energy needs through the development of satellite district heat networks across London Riverside that interconnect over time to supply locally produced low to zero carbon and waste energy sources.
- In the longer term, the aspiration is to develop a district heat network across London Riverside to supply the heating requirements of existing and future development.

6.2.1 Low to zero carbon energy potential in London Riverside

As well as those emerging in the LSIP, potential heat sources within London Riverside include several waste to energy (WtE) facilities.

The aspiration is to develop satellite district-heat networks across London Riverside that, over time, will interconnect to supply heat customers in the area with locally available low to zero carbon and waste energy sources. It is therefore important that WtE facilities are built as combined heat and power plants able to supply heat to a future heat network.

6.2.2 LSIP, Barking Riverside, South Dagenham and the A1306 sites heat networks

The planned and realised waste to energy (WtE) plants in the LSIP will generate around 17MW of electricity and up to 66 MW of heat. In the short term, this heat could be distributed to existing and potential heat customers across the LSIP and surrounding areas in the network currently under construction.

Given the proximity, heat could also be distributed to users at Barking Riverside. Under such a scenario, a district heat network could provide heat for space heating and hot water to areas of Barking Riverside where this is viable.

There is the potential to export heat to the existing development at Rippleside and the regeneration areas at South Dagenham and the A1306 sites. This would require a heat main to be extended from the LSIP across the A13 and railway line and further studies would be required to evaluate the feasibility and viability of this option.

6.2.3 Barking Town Centre district heat networks

New and existing development in Barking Town Centre is typically high density and mixed use, which makes it suitable for district heating. A number of previous studies have reinforced the case for using district heating to supply existing and planned development in Barking Town Centre.

As there is no immediate energy source that could be used to supply Barking Town Centre in the short term, it is likely that new locally-based gas fired CHP units will be used. In the medium term, the individual heat networks across Barking town centre could be interlinked to form an area-wide heat network and supply other sites. Within this timescale, the area-wide heat network might link to lower cost heat sources such as the LSIP and displace the use of the CHP plant where this is more economic.

6.2.4 London Riverside area wide heat network

An area-wide heat network could:

- Take heat from the different heat sources across London Riverside.
- Act as a balancing mechanism for heat supply and demand across the area.
- Export heat beyond London Riverside.

At this stage, the exact route that an area-wide network would follow is uncertain, however, an indicative route for the spine of the network linking the satellite networks is shown in Figure 6.2.

	Heat Source	Loads	Priority	Actions required
LSIP heat network	Chinook WtE plant TEG Anaerobic digestion plant	New build development in the SIP New housing development at Barking Riverside	High	An investigation of the requirements for the exportation of heat from the Chinook WtE and TEG plants, including: • Understanding of the grade of the heat required by the LSIP users • Optimum heat recovery and heat network design for the provision of an adequate grade of heat.
Barking Town Centre	Gas fired CHP	Large regeneration projects across Barking Town Centre	High	A large amount of work has already been undertaken looking at the implementation of a district heat network to supply Barking Town Centre. Building upon the studies undertaken the following is required: • review and if necessary update of existing studies • development of a business case • the Borough to act as a coordinator of stakeholders • initiation of a procurement process
Havering Riverside heat network	WtE, i.e Biossence	Beam Reach Park	Medium	An investigation of the feasibility of recovering heat from the planned WtE facilities at Havering Riverside to serve a heat network supplying the Beam Reach industrial park and other users in the area.
South Dagenham, A1306 sites	Gas fired CHP	South Dagenham and development in the western expansion of Rainham Village	Medium	A feasibility study investigating the viability of using DH networks to supply the planned development across South Dagenham and up to the western extension of Rainham Village. This study should investigate the viability of exporting heat from the LSIP plants to the area north of the A13 and the railway line.
Others	2OC	OAPF area-wide heat network	Low	A feasibility study investigating the viability of using DH networks to supply the planned development across South Dagenham and up to the western extension of Rainham Village. This study should investigate the viability of exporting heat from the LSIP plants to the area north of the A13 and the railway line.
	Thames Water Beckton Sewage Works	Royal Docks OAPF area-wide heat network	Low	Feasibility study
	Riverside Resource Recycling EfW Plant	OAPF area-wide heat network	Low	Monitor EMP outputs

Figure 6.3 Summary of satellite heat networks across London Riverside and supporting short-term investigations

6.3 Implementation and way forward

6.3.1 Milestones and short term actions

The energy plans put forward in this document rely on the short term development of a series of satellite heat networks across the OA. In the medium term, these heat networks would expand and interconnect to form an OA-wide heat network supplied with heat from lower-cost heat sources such as WtE plants. In the longer term, the London Riverside heat network would be extended and connected to other heat networks in East London. Figure 6.4 identifies the milestones.

6.3.2 Planning

The Boroughs will need to ensure compliance with the London Plan and Local Plan Policies on decentralised energy in order to:

- Future-proof new developments to allow connection to district heat networks.
- Safeguard routes for a district heat network supplying SIP heat customers, where appropriate.
- Ensure that the Chinook Power WtE plant and similar facilities at the LSIP are built as combined heat and power plants and are able to provide heat in the form of hot water to their site boundary. The London Heat Network Manual provides more technical guidance.
- Ensure that new developments facilitate the heat distribution network and connections to it.

With the assistance of the GLA, boroughs should carry out further development work to plan and facilitate the implementation of decentralised energy schemes.

This involves a review of existing heat mapping work to identify suitable clusters of buildings for the establishment of heat networks. These reviews should form the basis of an energy master plan to identify the extent of market competitive heat networks that should be incorporated in local planning guidance. Detailed feasibility study should be undertaken following the recommendations of the energy master plans.

6.3.3 Stakeholder engagement

The Boroughs, assisted by the GLA, land owners of the largest sites in London Riverside and heat source owners, should establish stakeholder groups to take forward the development of each of the individual heat networks and to support the long term aspiration of the London Riverside wide district heat network.

The table opposite highlights the satellite heat networks and the actions required in order to initiate the next steps in their development thus supporting the realisation of the short-term plans for London Riverside OA. This provides a first step in identifying the different roles and responsibilities required to support the energy proposals put forward in this document.

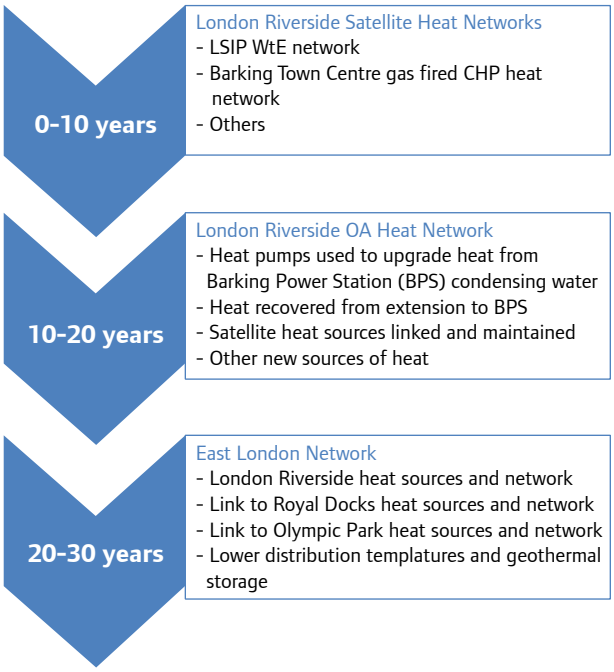

Figure 6.4 Envisaged time scales of emerging and future heat networks