LONDONASSEMBLY

January 2026

Environment Committee

Calls for Evidence are open to anyone to respond to. In November 2025, the Committee published a number of questions related to its investigation, which can be found on **page 2**. The Call for Evidence was open from 28 November 2025 to the end of January 2026. We have redacted personal information

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Submission from the Data Centre Alliance (DCA)

Call for Evidence: How can the GLA support Heat Network Zones to reduce London's carbon emissions

About the Data Centre Alliance (DCA)

The Data Centre Alliance (DCA) is the UK's leading industry body representing data centre operators, investors, developers, technology providers and ecosystem partners. Our members design, build and operate critical digital infrastructure across London and the wider UK, including facilities with significant potential to supply recoverable waste heat into district and local heat networks.

The DCA supports policies that enable rapid decarbonisation, infrastructure efficiency and local economic benefit, while ensuring the resilience of essential services.

1. The strategic role of Heat Network Zones

Heat Network Zones represent one of the most important mechanisms available to the GLA to decarbonise heat at scale. Heating remains one of London's largest sources of carbon emissions, and zoning offers a practical way to align planning, infrastructure investment and long-term energy strategy.

For Heat Network Zones to succeed, they must do more than identify areas of theoretical heat density. They must actively unlock heat sources, de-risk early investment, and coordinate infrastructure delivery across multiple stakeholders.

2. Waste heat as a strategic asset for London

London contains substantial sources of recoverable waste heat, including Energy-from-Waste facilities, wastewater treatment works, underground and transport infrastructure, large commercial and industrial buildings, and data centres.

Data centres are particularly well suited to heat network integration because they operate 24/7 with predictable thermal output, are often located close to high-density demand, and can provide long-term, stable heat supply when commercial frameworks are clear.

3. Key barriers that the GLA can address

The DCA recommends that the GLA provide clear zoning implementation guidance, enable waste heat integration through model commercial frameworks, reduce early-stage financial risk through targeted funding, and improve coordination through enhanced data and mapping.

4. Role of data centres within Heat Network Zones

Data centres should be recognised as strategic energy infrastructure and engaged early in the heat network planning process. Policies should encourage heat reuse without compromising operational resilience.

5. Wider co-benefits

Well-designed Heat Network Zones can deliver carbon reductions, lower long-term heating costs, local employment and skills development, improved air quality, and greater energy system resilience.

The DCA welcomes the opportunity to contribute to this investigation and would be pleased to support further work with the London Assembly, the GLA and London boroughs.

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Call for Evidence: Heat Network Zones

Peabody response to London Assembly Environment Committee

More than 160 years after it was established, Peabody is one of the oldest not-for-profit housing associations in the UK. The Peabody Group is responsible for more than 108,000 homes, with around 220,000 residents across London and the Home Counties. We also provide care and support services to around 23,000 customers.

We are getting closer to residents by taking a local approach. Our Group Strategy is focused on improvement: better services for residents, better homes and places for the long term, and better teamwork across Peabody to deliver for residents.

We work with councils and communities to promote economic inclusion, tackle inequality and poverty, and prioritise wellbeing. With an average rent of £147 per week we offer significant value for residents and communities. Last year we spent £430m looking after residents' homes. We are also committed to building much-needed affordable homes.

Peabody also has a significant and growing heat network portfolio. We currently operate heat networks serving around 10,900 homes, with all applicable networks registered with Ofgem ahead of the January 2026 requirement. We have a dedicated heat network team overseeing performance, compliance and resident impacts, with regular reporting to our Building Safety Board. This gives us direct operational insight into the affordability, reliability and consumer protection issues raised by heat networks in practice.

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1. **What are Londoners' experiences of new low-carbon heat networks? Are they providing cheap and reliable heat?**

We see a mixed picture across London. Many residents using heat networks face persistent affordability and transparency issues, even on newer low-carbon systems.

Affordability remains a serious concern. On a number of legacy and communal networks, gas is purchased under commercial contracts, so residents are not protected by the retail price cap. Evidence from across London shows that, on some air source heat pump led heat networks, charges can be significantly higher – sometimes up to three times more – than gas-fired networks. This reflects the fact that electricity currently costs between three and four times more per unit than gas, despite producing roughly half the carbon emissions. On some London estates this has translated into steep post-crisis bill increases and confusion over how charges are calculated. For those residents, the cost gap remains very real. We recognise that well designed new ASHP heat networks, supported by robust technical assurance, can mitigate some of these risks. However, affordability pressures are more acute where low carbon systems are retrofitted onto existing networks, or where network efficiency and charging structures are not well optimised.

Billing, metering and customer service frequently cause frustration. We regularly receive reports of poor communication, back-billing, opaque tariffs and limited redress options. These issues contribute to low resident confidence in the system. While this should improve under the Heat Network Technical Assurance Scheme (HNTAS) regulations, implementation will take time.

Many residents struggle to understand how heat is priced, which leads to anxiety and complaints, particularly when bills increase sharply or when network operation seems unreliable.

Reliability and system performance vary considerably depending on network condition, management and operational practice. Heat networks with inefficient design, poorly insulated distribution pipes, or poorly configured heat interface units (HIUs) often produce delivery problems, heat losses, overheating and inefficiencies, and high operating costs. While targeted upgrades can help, these problems remain widespread across a notable proportion of networks.

Despite these challenges, the arrival of a formal regulatory framework is a positive development. Since April 2025, consumers of heat networks in England and Wales have been able to access independent advice and support through Citizens Advice and escalate unresolved complaints to the Energy Ombudsman. We welcome the phasing in of statutory protections from 2026-27, but it is worth noting that this will increase management and administrative costs, some of which will be passed on to residents.

Additionally, targeted funding programmes for technical improvements – including existing-network upgrades and funding for new or expanded heat networks – offer an opportunity to boost performance and close governance gaps. However, requirements for match funding creates a material barrier in many cases.

Overall, we support the wider shift towards low-carbon heat, but experience across our estates shows that heat networks only deliver fair and reliable outcomes when they are designed well, priced transparently and supported by strong billing and metering systems. Without that, residents face high costs and an inconsistent service. Therefore, before committing to a heat network, the business case needs to be clear and tested against alternatives. Whole-life assessments can, in some cases, show that highly energy-efficient buildings using non-networked heating and hot water solutions, such as direct electric heating or individual exhaust-air heat pumps, offer lower running costs, greater certainty for residents, and fewer regulatory risks. It is worth noting that these outcomes depend on factors such as dwelling size, building form and occupancy patterns support this.

Developers are already adopting these approaches to improve energy efficiency and resident control, and this shift should inform future decisions about where heat networks are appropriate.

2. **What is the process for connecting existing sources of ambient or waste heat to heat networks, and how can this process be accelerated?**

No answer.

3. **Is the GLA providing effective support and working with the key stakeholders in central and local government to accelerate the uptake of heat networks?**

The GLA has taken some helpful steps to support the growth of heat networks in London. We recognise the clear strategic signal set by the Mayor, with a pathway to around 460,000 connections by 2030 and planning policy that prioritises decentralised, low-carbon heat solutions in development and regeneration decisions. Programmes such as the Local Energy Accelerator and the London Heat Map have helped boroughs and providers understand opportunities and build early-stage pipelines. The current investigation also provides active oversight, which we think is the right forum for bringing together boroughs, major landowners, DESNZ, Ofgem and delivery partners.

At the same time, there are opportunities to strengthen the approach in ways that could accelerate uptake while ensuring residents are protected. The strongest driver of delivery will be a proven business case; a robust, whole-life appraisal, with heat networks progressing only where they offer the best overall balance of costs, performance and risk for a specific area or building type. This should include consideration of:

- capital and replacement costs
- operating and maintenance costs
- lifecycle carbon emissions
- regulatory compliance
- technology maturity
- future resilience and system complexity
- plant redundancy
- spatial requirements

We think GLA strategy would benefit from applying this type of whole-life assessment more consistently, including comparisons with higher fabric-first approaches such as Passivhaus, where these may offer better long-term value and certainty for residents.

There is also scope to strengthen support for delivery. Housing providers would significantly benefit from practical, city-wide tools such as commercial templates, clear pricing principles and standardised resident communications. Additionally, faster borough-level decision-making on consents would help schemes progress where the business case is already viable.

Lastly, there is an opportunity for the GLA, ahead of full Ofgem protections in 2026–27, to coordinate voluntary Fair Pricing Principles for London, supporting transparency and helping residents manage the risk of sharp cost increases. This would send a positive signal and help build trust in heat networks during a period when many residents remain wary of high and uncertain charges.

4. **What lessons can be drawn from heat network zoning pilots to inform the new London Plan and wider rollout of heat networks in London?**

The zoning pilots give a useful indication of what is likely to work in London. They show that delivery roles need to be clear from the start. When the Central Authority and Zone Coordinators are properly defined, investment decisions move faster and responsibilities are easier to manage. Furthermore, early engagement with the market makes a material difference. Pilots with a Zonal Market Prospectus progressed more quickly because developers and operators had a clear view of demand, infrastructure routes and commercial expectations.

A stable and long-term funding model is another consistent requirement. Without certainty on funding, interest in networks can drop away once the pilot phase ends.

These lessons should inform the new London Plan. The Plan should map and safeguard heat corridors within planning policy in a way that aligns with zoning, so that infrastructure routes are protected and disputes with later developments are avoided. Connection policies should also be supported by a clear viability test. Requirements to connect should apply only where a network meets recognised technical standards and can demonstrate long-term financial viability and price comparability, supported by transparent exemptions where connection is not in residents' interests. This is essential if London is to avoid locking new homes into systems that cannot guarantee fair and stable costs.

Design standards have a place in the London Plan, and it is reasonable to reference HNTAS, TS1 and CP1. They can also improve transparency and accountability for residents, supporting more reliable system performance over time. Simultaneously, the Plan should recognise that these standards, through additional assurance, reporting and compliance requirements, raise management and administrative costs, which eventually feed through to bills. In many cases this represents a worthwhile trade off where higher standards deliver better performance and clearer pricing, but it should be recognised explicitly. If standards are to be strengthened, London needs a parallel approach to resident affordability and long-term operating costs, otherwise confidence in heat networks will weaken.

5. **Are the government's policy frameworks and support around heat network zones in line with what London needs? Are new technical standards likely to be effective?**

The Energy Act 2023 and Heat Networks (Market Framework) Regulations 2025 establish Ofgem's role in regulating heat networks and lay the groundwork for zoning. This is a positive step, providing clarity on oversight and regulatory expectations. However, the scale of management, compliance and reporting requirements is significant and can raise viability challenges for heat networks in comparison to alternatives such as individual heat pumps, particularly when considering whole-life costs and resident affordability.

Technical standards, including HNTAS and TS1, should improve quality and reliability across networks. However, standards alone will not deliver the desired outcomes. Effective enforcement, clear retrofit pathways, and ongoing funding

support are essential to ensure these standards are met and maintained, and to prevent networks from becoming costly or inefficient for residents.

Additionally, there are still gaps where London needs more support. Interim consumer safeguards are required ahead of the full protections coming into force in 2026–27. Guidance on unbundling heat charges from service charges would also help avoid tenancy risks and provide residents with clearer billing and pricing transparency. Overall, while current policy frameworks and technical standards provide a foundation, careful implementation and additional support measures are critical to ensure that heat networks deliver reliable, affordable, low-carbon heat for Londoners.

6. **What other policies or support are needed to achieve 460,000 heat network connections in London by 2030**

To meet the Mayor's target of 460,000 heat network connections by 2030, London needs a mix of clear policy, practical guidance and targeted support. A robust business case options appraisal methodology is essential. The GLA should publish a framework for whole-lifecycle analysis comparing heat networks with alternatives such as individual heat pumps and direct electric heating. This would ensure investment decisions deliver the best value for both residents and providers. Key drivers that should be included in such an assessment are:

- capital and replacement costs
- operating and maintenance costs
- lifecycle carbon emissions
- regulatory compliance
- technology maturity
- future resilience and system complexity
- plant redundancy
- spatial requirements

It is worth reiterating that interim affordability protections and funding for legacy network upgrades are needed to prevent residents from facing steep bills before full regulatory safeguards are in place. Strategic heat corridors and fast-track planning permissions could also help, provided they are applied where network viability has been demonstrated, avoiding situations where unviable connections increase costs for residents. The risk for housing associations can be reduced through procurement packs, commercial templates, and performance guarantees, supporting consistent delivery across London. Furthermore, workforce training and compliance support will be critical to ensure new technical standards are implemented effectively and maintained over time.

Decarbonisation is essential, but heat networks should not be treated as a universal solution. For housing associations, the priority must be selecting the option that delivers the best whole-life value for each building or estate, balancing capital and operating cost, regulatory risk and resident affordability. In some cases, this will be a heat network; in others individual heat pumps may be more appropriate. Policy and funding should enable this flexibility, so providers can select the solution that delivers the best long-term value for residents.

QVANTUM

Qvantum contribution to the London Assemblies Call for evidence on Heat Network Zones

London is rightfully considering extending heat networks across the city to collect waste heat from different sources and to provide heat to the many residential and commercial users that today still rely on fossil fuel to provide heating.

Ambient temperature networks are particularly suitable for this task, as

- they are comparatively easy to deploy (uninsulated PE pipes can easily be connected, need less space and require fewer specialist skills to install).
- they can collect a much larger share of waste heat, as waste heat on temperature levels 20-25°C and above can be collected through easy to install heat exchangers.
- they are easier to dimension, and they can deploy heat at -10 – 25°C to heat pumps on the building and apartment level which then execute the heavy lifting.
- they have very low levels of heat loss, as they operate on the same temperature level as the ground that surrounds them. They may even serve as an extended energy collector.

London's current support for heat networks is substantial. However, the current guidance and zoning language is still framed around conventional district heating. Heat networks are often referred to as "low-carbon" and not all of them are. In addition, they should not only be low carbon but also be "low and very low temperature" networks. In practice, this means ambient networks can be included under the current support umbrella, but without explicit recognition and criteria they risk being overlooked in favour of familiar higher-temperature district heating solutions.

In order not to overlook their advantage, the consideration of ambient temperature networks should be hard-wired into zoning, technical guidance and investment criteria, rather than seen as individual heating systems.

This enables borough strategies that explicitly require networks to "prioritise waste, ambient and renewable sources of heat".

Hence, we suggest the GLAs recognition of thermal networks to be temperature level agnostic. Due to the listed advantages of ambient temperature networks, it should enforce a feasibility check to deploy ambient temperature "5th generation" when thermal networks are considered. Such check should specifically be executed, when traditional high temperature networks are deemed unsuitable.

On top of this general recommendation, Qvantum would like to answer questions 3 and 6 in more detail:

Comment regarding Q3: Is the GLA providing effective support and working with the key stakeholders in central and local government to accelerate the uptake of heat networks?

GLA support for heat networks is substantial but *not yet sufficient* because it structurally favours conventional high-/medium-temperature DH networks over ambient temperature thermal networks, which are essential to unlock most low-temperature waste heat sources. A clear policy level definition and explicit recognition of ambient temperature thermal networks would be a key correction, both conceptually and for planning practice.

However, current guidance explicitly treats "ambient loop" systems as individual/communal heating, not as heat networks, and in some cases indicates they will *not* be supported where a conventional district heat network is viable.

As a result, support for ambient temperature thermal networks could be more prominent, recognising their importance for decarbonisation and efficient use of waste heat.

Comment regarding Q6: What other policies or support are needed to achieve 460,000 heat network connections in London by 2030?

GLAs support to accelerate the update of heat networks could be enhance by following these concrete steps:

1. Explicitly recognise ambient temperature heat networks (5GDHC, Thermonet, cold thermal networks, shared geothermal, ambient loops) within GLA policy, energy assessment guidance and heat network zoning criteria, alongside conventional district heating. Extend traditional wording of "district heat networks" and "heat mains" to include "ambient temperature" and provide specific technical or commercial guidance for ambient loops, decentralised booster heat pumps, bidirectional networks or near-neutral temperature design.
2. Require all new and expanded heat network planning to assess ultra-low and ambient temperature options by default, especially in areas with major waste-heat sources (data centres, sewer heat, large building residential and commercial cooling), and document why higher-temperature systems are chosen where they are.
3. Align GLA financial and technical support (e.g. pre-feasibility, sub-regional Local Area Energy Plans (LAEP) work, energy accelerator support, zoning pilots) so that projects using ambient loops and building-level booster heat pumps are eligible on equal terms, with performance benchmarks and business-model templates tailored to decentralised heat pump-based systems.

Qvantum would be pleased to provide further evidence from operating ambient networks and building-level booster heat pump systems to help the GLA and boroughs de-risk such projects at scale.

[redacted]

qvantum.com

Written Evidence Submission

Environment Committee – Heat Network Zones Call for Evidence

Submitted by: Uravu Labs Pvt. Ltd.

Focus question: Question 2 – Integration of ambient and waste heat into heat networks

About the organisation

Uravu Labs Pvt. Ltd. is an India-based company specialising in waste-heat-driven atmospheric water harvesting (AWG) systems. Our proprietary liquid desiccant technology converts low-grade waste heat (approximately 30–60°C) into potable water while simultaneously acting as a flexible thermal sink for cooling systems. Our experience is primarily in data centre and commercial building applications. While deployments to date are outside the UK, the operating temperature ranges, integration challenges, and system interfaces are directly applicable to London's emerging heat network zones.

Question 2: Connecting ambient and waste heat to heat networks

Existing heating scenario in London and the relevance of waste heat

London's current heating landscape is dominated by natural-gas-based boilers at the building level, complemented by a growing number of district heat networks (London heat map) that rely on gas CHP, gas boilers, energy-from-waste plants, and increasingly, large heat pumps (London Heat network manual). While this transition has reduced carbon intensity compared to fully decentralised gas heating, it still relies heavily on fossil fuels and electrically driven heat pumps to meet peak and shoulder-season demand.

In parallel, significant urban assets within London, such as data centres, commercial buildings, transport infrastructure, and industrial facilities, continuously reject low-grade waste heat in the range of 30–60°C. Much of this heat is currently dissipated to ambient air or cooling water systems, even in areas where heat demand exists nearby. This represents a missed opportunity to reduce fuel consumption, lower peak electricity demand, and improve the utilisation factor of existing heat networks (London Data Centres solutions).

Coupling existing heating infrastructure with locally available waste heat sources enables a hybrid heating architecture, where base and mid-load demand can be met using recovered heat, while conventional systems are retained for resilience and peak demand coverage.

The table shows London's "Secondary Heat Study" and heat map identify thousands of potential sites. While a few large "anchor" sites (like Energy from Waste plants) provide the bulk of the energy, the vast majority of sites are too small for networks.

Waste Heat Source	Heat Load	Heat Network Viability	% of Sites "Too Small"
Power Stations & Incinerators (EfW)	>20 MW	**High** (Anchor loads)	0%
Large Data Centres	>10 MW	**High**	~20%
Industrial / Manufacturing	1–5 MW	**Marginal** (Needs nearby demand)	~60%
Supermarkets (Refrigeration)	0.1–0.5 MW	**Very Low** (Too fragmented)	**100%**
Electrical Substations	0.5–2 MW	**Low** (Hard to capture)	**95%**
London Underground Vents	0.5–2 MW	**Low** (Distributed & low grade)	**90%**
Cable Tunnels	<1 MW	**Very Low**	**100%**

How much downtime is in London in the context of heating?

Large-scale heat pumps, even when well-designed, exhibit variable performance throughout the year because their efficiency (Coefficient of Performance, COP) depends strongly on the temperatures of both the source and sink. Empirical data from heat pump monitoring in the UK and Europe demonstrate that heat pump efficiency **declines significantly outside optimal temperature ranges**, particularly at high wet-bulb temperatures or when delivering high-temperature heat. This has the practical effect of reducing operating margins, increasing electricity demand, and leading system operators to **curtail or limit heat pump use during peak periods** (Research Published by Imperial College of London)

Although comprehensive heat pump downtime statistics for London specifically are not published centrally, analogous studies indicate significant **performance reductions during the summer seasons** when supply temperatures exceed design values (e.g., for on-site cooling rejection) and when wet-bulb temperatures are elevated. Heat pump systems typically reduce output or rely on **auxiliary systems** during these periods to maintain comfort and operational reliability.

For planning purposes, therefore, heat pump downtime, understood as periods of curtailed operation or significantly reduced efficiency, can reasonably be expected to fall within the range of **several hundred to more than a thousand hours annually in London's mixed climate**, especially during periods of *elevated wet-bulb temperatures* and *grid constraint events*.

Coupling waste heat with existing heat networks

Waste heat sources in London align well with the operating temperatures of modern low-temperature heat networks (typically 55–70°C, with a trajectory toward lower supply temperatures). Integration can be achieved through:

- **Intermediate heat exchangers and buffer loops** that transfer waste heat into district networks without disrupting primary operations.
- **Modular, containerised thermal interfaces**, such as Uravu's systems, are capable of absorbing variable waste heat flows across seasons. As shown in Uravu Labs' white paper "The Cloud that Rains: Turning Data Centers Water Positive", data centres typically reject waste heat in the 30–60°C range, overlapping with the lower end of heat network input requirements but often remaining underutilised due to interface and demand-matching constraints.
- **Chiller load reduction**: During heat pump downtime periods, Uravu systems act as a continuous thermal sink, achieving a **15–30% reduction** in active chiller load. For a representative 10 MW data centre in Greater London, this corresponds to **1.5–3 MW of avoided mechanical cooling** during high wet-bulb conditions, reducing electricity demand and improving operational resilience.
- **CO_2 emissions reduction:** Using London grid emission factors, avoided electricity consumption during downtime periods translates to **2,000–4,000 tonnes of CO_2** reduction per 10 MW data centre per year, with benefits concentrated during periods of peak grid stress.
- **Water production during downtime periods:** In parallel, recovered waste heat is converted into potable water. A 1 MW data centre can produce up to **20,000 litres per day** during downtime periods, equivalent to approximately **4–5 million litres per year**, offsetting municipal water supply and associated embedded energy.
- **Zonal integration**, where waste heat assets located within or adjacent to designated heat network zones are prioritised as local heat contributors.

Such coupling reduces reliance on gas boilers and limits the run-hours of large heat pumps, particularly during periods when waste heat is abundantly available.

Peak-load operation and role of Uravu systems

During peak heating periods—such as cold winter days or concurrent high-demand events—existing gas boilers or heat pumps can continue to provide supplementary capacity, ensuring the security of supply. Uravu's systems are designed to be **plug-in thermal modules** that operate in conjunction with these assets.

At peak load:

- Uravu systems absorb available waste heat and inject it into the heat network, reducing the marginal load on boilers or heat pumps.
- Conventional systems respond dynamically to residual demand, ensuring reliability without oversizing.

Outside peak periods, Uravu systems can operate continuously, improving overall system load factors and reducing curtailment of waste heat. This hybrid approach aligns well with London's decarbonisation goals by reducing annual gas consumption and limiting electricity-intensive heat pump operation to instances where it is genuinely necessary.

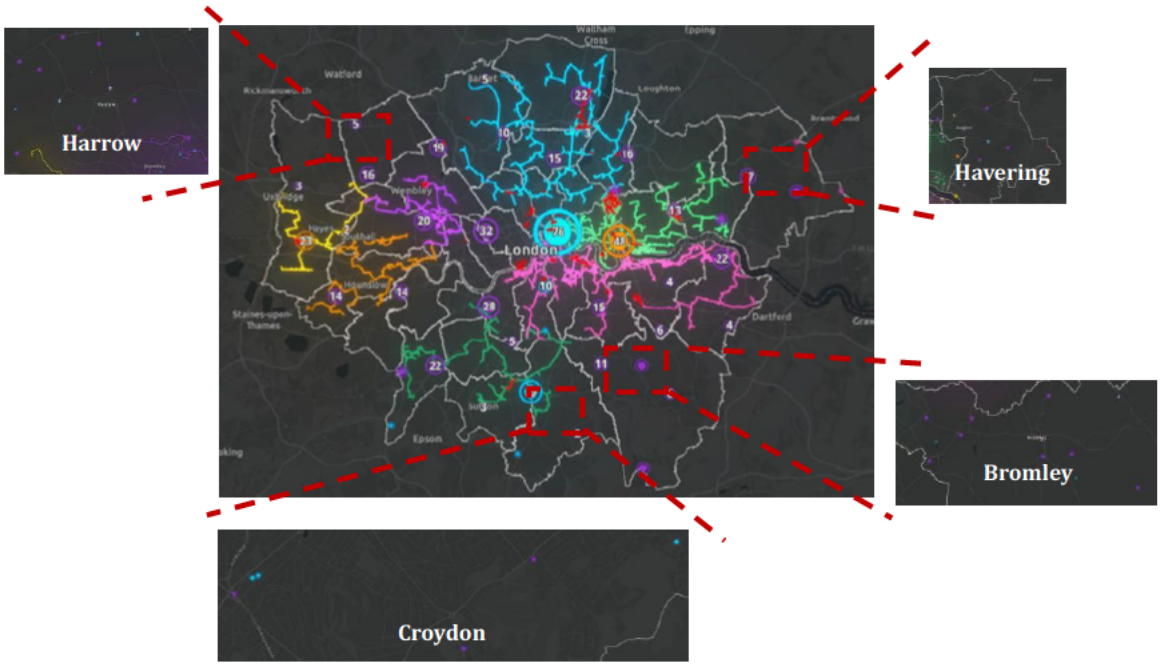
Zones without a proximate heat network

The [London Heat Map] provides detailed, publicly accessible data on existing district heat networks, potential heat demand clusters, and where infrastructure is *absent or underdeveloped* across Greater London. It highlights **the uneven distribution of heat networks and denotes areas currently lacking proximate network connections, i.e., areas where waste heat cannot be economically** exported into an existing or planned heat network.

Examples of such areas include (but are not limited to):

- **South London boroughs,** including parts of *Bromley and Croydon*, where heat network development is nascent, and opportunities for proximate anchor heat loads are sparse; and
- **Outer boroughs** such as *Havering and Bexley* exhibit relatively low heat density and limited existing network infrastructure.

This spatial mismatch reinforces the **value of local waste-heat re-use systems**: where expanding or connecting to a district network is delayed, infeasible, or economically prohibitive, these systems can **utilise local waste heat on-site** to deliver cooling relief and ancillary benefits (e.g., potable water production) without requiring proximate infrastructure.



The figure presents an overview of the London Heat Map, which illustrates the spatial distribution of existing district heat networks, areas of high heat demand, and potential anchor loads across Greater London. The map highlights an intense concentration of heat network infrastructure within central and inner London, with significantly lower coverage in many outer boroughs. In the outer London boroughs, where existing district heat network infrastructure is limited or absent, waste heat from assets such as data centres cannot readily be exported to a heat network and is typically rejected to ambient air.

Policy implications for London heat network zones

To enable large-scale and resilient decarbonisation of heat in London, heat network zoning policy should recognise that **waste heat is not solely a heating resource**, but a multi-service urban energy asset. Technologies such as Uravu's waste-heat-driven systems demonstrate how low-grade heat can simultaneously support **heat decarbonisation, cooling resilience, and local water security**, particularly in zones with partial or delayed heat network deployment.

- *Explicitly recognise low-grade waste heat (30–60 °C) as a strategic heat source*:
  Current policy frameworks often prioritise high-temperature heat sources or electrically driven upgrades. Zoning guidance should explicitly classify **low-grade waste heat from data centres and commercial assets** as a primary, strategic resource that can be utilised directly or indirectly. Uravu systems show that such heat can be productively consumed even when it does not fully meet district network supply temperatures, ensuring year-round utilisation rather than seasonal curtailment.

- *Encourage hybrid system designs that combine waste heat, limited heat pump operation, and conventional backup*:
  Zoning policy should promote **hybrid thermal architectures** in which:

  - Waste heat provides base and mid-load contributions,
  - Heat pumps operate selectively for temperature lift or shortfall periods,
  - Conventional systems are retained only for peak and resilience functions.

  Uravu systems operate as **non-electrically driven thermal sinks**, reducing both chiller load and heat pump run-hours, particularly during periods of high wet-bulb temperatures and grid stress. This approach improves system resilience while avoiding over-sizing of electrical infrastructure.

- *Support modular and flexible technologies that can be deployed incrementally as zones develop*:

  Many heat network zones will develop incrementally over time. Zoning policy should therefore support **modular and containerised solutions**, such as Uravu's systems, that can be:

  - Deployed early,
  - Operated independently of full network connectivity,
  - Integrated later as zones mature.

  This enables **early decarbonisation benefits** without waiting for complete network infrastructure, particularly in outer London zones or redevelopment areas.

- *Promote water generation as a complementary use case for waste heat in non-networked zones*:

In zones where proximate heat networks are absent or delayed, zoning policy should recognise **water generation from waste heat** as a valid and valuable utilisation pathway. Uravu systems convert recovered waste heat into potable water while simultaneously reducing cooling electricity demand.
This is particularly relevant for:

- Outer London zones lack heat network infrastructure,
- Data-centre-led development clusters,
- Areas facing increasing water stress and infrastructure constraints.

By recognising water generation as an approved waste-heat use case, zoning policy can unlock **co-benefits across heat, cooling, water, and carbon reduction**, even where heat export is not immediately feasible.

- *Promote early-stage waste heat mapping and engagement with asset owners during zoning and master-planning:*

  Heat network zoning should mandate early identification of:

  - Waste heat sources,
  - Cooling-dominated assets,
  - Opportunities for co-products, such as water.

Engagement with asset owners—particularly data centres—should occur at the zoning and master-planning stage, enabling solutions like Uravu systems to be integrated as **permanent infrastructure elements** rather than retrofit additions.

Conclusion

Integrating low-grade waste heat into London's heat network zones offers a resilient and cost-effective route to decarbonisation, particularly given the constraints on heat pump performance and the uneven availability of network infrastructure. Large volumes of data centre waste heat remain underutilised, despite being well-aligned with modern low-temperature heat networks. Evidence shows that waste-heat-driven systems, such as the Uravu atmospheric water generation unit, can reduce chiller electricity demand, deliver CO_2 savings during peak grid stress, and generate potable water as a valuable product. These benefits are especially relevant in zones without proximate heat networks, where waste heat would otherwise be rejected. Recognising waste heat as a multi-service urban resource within heat network zoning policy would enable flexible and scalable deployment, accelerating emissions reduction while improving system resilience.

VATTENFALL

Vattenfall Heat UK: Response to the London Assembly Heat Networks Call for Evidence

1. Introduction about Vattenfall and London projects

Vattenfall Heat UK (VHUK) specialises in delivering large scale, low carbon district heat networks across the UK.

We are already delivering one of the largest all electric heat networks in the country in Brent Cross Town and we are developing the Riverside Heat Network, a large-scale multi-borough heat network, with our partner Cory; one of the UK's leading recycling and waste management companies. VHUK also owns and operates the Bristol Heat Network and is developing it across the city as part of Bristol City Leap. We also have a 50:50 joint venture with Midlothian Council in Midlothian Energy Limited which is developing and already operating what will be one of the largest heat networks in Scotland.

VHUK aims to partner with the UK's leading low carbon cities to deliver citywide heat networks. London is one of our core regions and it is our intention to continue to grow in the London market. London, as a densely populated urban environment, is well placed to take advantage of the many benefits that heat networks can offer.

2. Questions

2.1 What are Londoners' experiences of new low-carbon heat networks? Are they providing cheap and reliable heat?

At VHUK, we serve customers a direct end-to-end service in both London and Edinburgh. In London, we have been serving customers on our heat network at Brent Cross Town since December 2024. We have over 500 customers currently connected to the network which include private residents, social housing tenants and student accommodation. In the long term, the heat network will serve 6,700 new homes which will also include retirement and co-living buildings.

Where we serve customers directly, we are responsible for maintenance and servicing from our energy centre to the Heat Interface Unit (HIU) inside the customer's home. We're also responsible for the maintenance and servicing of the customer's In-Home Display (IHD).

We consistently monitor the performance of the heat network, so that if an interruption does arise, we can mobilise an engineer to investigate and arrange temporary heat for our vulnerable customers, if required. We also issue proactive customer communications directly to customers, as well as building managers and developers. If a customer becomes aware of an issue with their supply they can get in touch with our UK based customer care team, who are available 24/7 in case of emergency.

In addition to this, we provide metering and billing services. Our meters automatically send readings to our systems, removing manual effort and the risk of incorrect reads. These readings are then used to calculate monthly bills which customers can pay online or by direct debit. Customers can manage their account, view bills and previous usage online or through a mobile app.

Alternatively, customers can have pay-as-you-go (PAYG) meters, allowing then to top up throughout the month at their convenience. There is no difference in our tariff for PAYG or monthly billing customers. All customers pay a:

- **Fixed charge** – a daily set amount which covers the cost to maintain the network and deliver heat, provide full maintenance and servicing, as well as metering and billing.
- **Variable usage charge** – charged per kwh of heating and hot water that the customer uses

We are committed to fair, transparent pricing and we review our tariffs annually as set out in our contracts with our customers. These price reviews consider factors like changes in wholesale costs, such as electricity and gas rates, and inflation. We commit to reviewing our charges at least once a year, but no more than twice in a 12 month period and always provide at least 31 days' notice of a tariff change in line with Heat Trust guidance.

We successfully registered the Brent Cross Town heat network with the Heat Trust in 2024. This registration ensures that customers benefit from consistent customer service standards, similar to those for gas and electricity suppliers.

In summary, our customers benefit from:

- **An all-inclusive service** – We take care of the entire heating delivery system into the home – from servicing to maintenance and upgrades – for a fair price (when compared with the full lifetime cost of a low carbon counterfactual benchmark[1]). The customer only has to look after the home's central heating system (e.g. internal pipes, taps, showers, radiators and thermostat).
- **Dedicated monitoring and support** – Our engineers monitor the network to make sure we keep the heat network running at its best. As part of our service, customers will receive support from a UK-based call centre and a local team of response engineers. For emergencies, we're available 24/7.
- **Expert customer care** – Meeting our customer's needs and providing them with the best care is our number one priority, backed by our Guaranteed Standards of Service. We provide financial compensation if we fall below our service standards. We also understand that some of our customers will need additional support. We offer additional services, called Extra Care, to customers that have specific communication needs or are in vulnerable situations. This may be temporary or for the duration of their contract with us.

We recognise the need to clearly communicate the above and ensure that customers are aware of the heat network before purchasing or renting a home. We utilise a number of avenues to increase consumer awareness including on site events, developer training and comprehensive welcome packs. Looking ahead there is room to enhance the general public's knowledge of heat networks and we'd welcome sector collaboration to achieve this goal.

[1] For fairness, the benchmark for heat network costs should be other low-carbon heating options like heat pumps. We do not believe that heat networks are comparable to a gas solution because gas is being phased out and does not reflect the future decarbonised energy system. Comparing to gas risks creating an unrealistic expectation and undermines the transition to net zero.

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2.2 What is the process for connecting existing sources of ambient or waste heat to heat networks, and how can this process be accelerated?

At the moment, there is very little incentive for heat sources to proactively explore opportunities to better utilise their waste heat, save for enhancing their community acceptance. Existing London Plan policy 5.17 is potentially a key driver for some EfW facilities as this policy stipulates that technologies generating energy from London's non-recyclable waste must achieve a minimum greenhouse gas performance level, known as the Carbon Intensity Floor (CIF). The CIF is set at 400 grams of carbon dioxide equivalent generated per kilowatt hour (kWh) of electricity generated. It is our understanding that any new EfW facilities are unlikely to achieve a CIF of below 400 (gCO2e/kWh) without heat export to district heating.

The 'Towards a New London Plan' consultation document indicates that we may see a further strengthening of policies around optimising the use of waste heat, potentially requiring waste heat from 'all significant, feasible sources' to be made available for new networks or supporting decarbonisation of existing networks. We welcome this approach and would strongly encourage the GLA to consider what strategic role they can play in matching heat sources with heat demand to provide more upfront certainty for heat network developers.

Another key area the GLA can play an important role, is helping the set expectations in relation to cost of waste heat. It is our view that this waste heat should be made available to heat networks at a price that supports an equitable and fair energy transition.

At the national level, there is a proposal in current zoning policy to mandate heat offtake to make available to the heat networks market. Again, we are supportive of this proposal, but it needs to be implemented alongside a robust and rational approach to first of all exemptions (as elsewhere in the zoning proposals) and the cost of the heat offered in this way.

Our experience elsewhere, specifically in our JV with Midlothian Council at Shawfair, demonstrates the value of making EfW and ambient heat sources available at low cost in terms of being able to provide affordable low carbon heat to customers and to make this attractive to the new build market.

New assets and any renewal of permits require EfW plants to demonstrate that they will make heat available to heat networks but are not obliged to develop heat networks.

In Scotland it can be a condition of the Environmental Permit that the EfW "works towards" achieving certification under the CHPQA regime. Achieving an CHPQA index of >93. We believe that this could be more robustly applied:

- The guidance and permitting that is in place to drive the utilisation of heat from EfW plants requires strict enforcement.
- There are mechanisms by which energy from waste plant operators can get around or avoid these obligations that need tightening and the loopholes closing; and
- Equivalent obligation on existing and new assets that are produce excess or waste heat (i.e. data centres, high energy use industries like pharma, refineries, etc) should come forward through appropriate policy and permits.

For other new waste heat sources (data centres, water treatment works and high energy use industries like pharma, refineries, etc) it would be welcome to bring forward equivalent permitting requirements to consider utilisation of waste heat.

Vattenfall has experience of developing heat networks in both England and Scotland. Below is a comparison of the differing approaches adopted in relation to the use of EfW in each geography demonstrating a stronger requirement in Scotland.

Aspect	Scotland (SEPA)	England (Environment Agency)
Regulatory Framework	Pollution Prevention and Control (Scotland) Regulations 2012; Thermal Treatment Guidelines; transitioning to Environmental Authorisation (Scotland) Regulations (EASR)	Environmental Permitting Regulations (England & Wales) 2010; Industrial Emissions Directive (IED)
Heat Use Expectation	Promote Combined Heat and Power (CHP) or heat networks where feasible. Demonstrate heat offtake plans and integration with local demand during planning and permitting. Maximise energy recovery efficiency.	Facilities must be CHP-ready. Strong emphasis on heat export to district heating or industrial users. Integration with local heat networks expected.
Energy Efficiency	Apply Best Available Techniques (BAT). High energy efficiency required for energy recovery. Material recovery before energy recovery.	Apply BAT for energy efficiency. CHP-readiness assessment required. Carbon capture readiness for new plants.
Licence Type	Environmental Authorisation (Scotland) (from Nov 2025) replacing PPC permits. Includes waste management and pollution control.	Environmental Permit (standard rules or bespoke) for waste incineration and energy recovery.
Licence Application Details	Technical competence & financial standing. Site plans & planning permission. Evidence of compliance with energy efficiency and pollution control standards. Heat recovery strategy.	Energy efficiency measures (e.g., ISO 50001 or BAT). CHP-readiness and potential heat loads. Compliance with emissions and monitoring standards. Heat recovery integration plan.
Additional Requirements	Demonstrate local heat demand feasibility. Align with Scottish Heat Policy and circular economy principles.	Align with Waste Hierarchy and circular economy. Carbon capture readiness for new EfW plants.

We believe GLA should play a central and active role convening sources of waste heat and areas of high heat demand through expansion of current and recent activities. E.g. London Heatmap, Secondary Heat Study and an expanded role for the London Energy Accelerator Programme.

2.3 Is the GLA providing effective support and working with the key stakeholders in central and local government to accelerate the uptake of heat networks?

The GLA has set clear policy support for heat networks through the London Plan, which has been successful in securing 'heat network ready' developments and setting the framework for more consistent energy policies across the 32 London boroughs and the City of London. The GLA will need to build on this good foundation to deliver heat networks at the scale needed to meet the mayor's ambitious net zero targets.

In order to create the market conditions and secure the scale of financial investment needed to deliver transformational change, the GLA needs to take on a more strategic and proactive role. Below are three key areas where we believe the GLA should take a proactive role:

- **Facilitating strategic planning coordination across London boroughs** - Whilst it is essential that heat network projects are locally developed, with local support, many of the heat network opportunities recognised by the GLA extend across borough boundaries. Heat network opportunities will work most efficiently at this scale, but it will be difficult for private sector investment to navigate the planning and political risks associated with the delivery of multi borough schemes. There is a pressing need for additional strategic co-ordination from the GLA.
- **Playing a key role in the national framework** - The 'zone co-ordinator' role could help to address some of these challenges, but it is not currently clear at what level the zone co-ordinator role will operate and with what jurisdiction over local authorities. There is also no certainty as to when the 'zone co-ordinator' role will come into effect. The GLA is well placed to take on or advise the 'zone co-ordinator' on the best opportunities for Londoner's and we would expect significant involvement from the GLA in the designation and management of zones.
- **Providing funding support to unlock investment** - The GLA can also play an important role in providing public sector funding to help to unlock the delivery of strategic infrastructure ahead of need. Contributions from the public sector, which could take the form of public / private partnerships (as is the case for our JV with Midlothian Council) or alternative financing products can help to derisk private sector investment and improve viability, enabling upfront capital costs that put in place the right infrastructure to cover long term infrastructure needs.

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2.4 What lessons can be drawn from heat network zoning pilots to inform the new London Plan and wider rollout of heat networks in London?

Our national experience with AZPs thus far has highlighted a number of areas of concern about the way in which these opportunities are coming to market. These factors all result in the Heat Network developer having to take on significant risk upfront (before a Financial Investment Decision is made) with at times, significant penalties for failing to meet challenging KPIs. In order to make these opportunities more attractive to the market, we believe the following concerns should be addressed:

- **Certainty and commercial feasibility of connections**: we are concerned that some opportunities coming to market rely on key anchor load connections that are unlikely to connect to a heat network for technical or commercial reasons. This may be because the building owner /occupier does not have revenue budget to pay for low carbon heat (priced above a gas counterfactual) or where public sector buildings are not able to pay for connection charges in the absence of Public Sector Decarbonisation Scheme (PSDS) funding.
- **Availability of land:** Where AZP opportunities rely on the provision of an energy centre, it is not always clear or certain that suitable land can be found within the appropriate timescale to support the Heat Network development. How and where this land is secured can have significant implications for the cost and complexity of a project.
- **Timescales for delivery:** in our experience, many of the timescales proposed are exceptionally tight and often linked to Green Heat Network Funding (GHNF) commitments that require any underspend to be handed back which is a significant commercial risk for the Heat Network developer.
- **Novel technical solutions:** at Vattenfall Heat UK, we embrace innovative solutions and are keen to bring the lessons learned from our experience of delivering heat networks in Sweden, the Netherlands and elsewhere to the UK. However, where novel technical solutions are proposed in some AZP opportunities, this can make economic modelling very challenging. It is therefore difficult to commit to commercial KPIs during the early stages of project development.
- **Legal documents that are strongly drafted in favour of the public sector:** in our view, and especially where growth KPI's are based on certain factors outside of the Heat Network developer's control, we believe the legal documents need to apportion a fair distribution of risk across both the public and private sector.
- **Timing of AZP opportunities:** whilst we recognise that this is a competitive market, the heat network industry is still relatively small and the number of AZP opportunities coming forward concurrently and with similar project timescales, means we are having to take difficult decisions on how we manage our pipeline. A key role for the GLA could be to help Heat Network developers better understand the strategic opportunities across London and the potential timescales for delivery to enable a more informed assessment of the opportunities across the piece.

More broadly, as a sector we are still awaiting publication of the UK Government's final report on zoning. This is overdue and is much needed to provide a clearer picture of the Government's detailed policy intent. In the meantime, there are a number of areas where we have concerns or where we seek clarity which we have outlined below:

- **Certainty over the requirement to connect:** Some uncertainty remains on the security of the requirement to connect for new buildings, as revisions to the Future Homes and Buildings Standard are yet to be confirmed. Where zoning cannot deliver

infill of commercially driven connections alongside the requirement to connect, the overall viability of schemes will be challenged, with an associated uplift in heating costs for customers.

- **The application of exemptions:** Currently there is very little detail on how conditional and temporary exemptions will be applied, and by which criteria. If cost grounds are legitimate grounds for exemption, issues on Cost of Heat vs existing gas fundamentally challenge zoning in the current context. The allowable timing of exemptions proposed (up to phase consents) implies ongoing uncertainty if additional buildings are granted exemptions, which may result in constant revisions to scheme designs and business plans – challenging the policy intent of 2 above. Zone developers (ZD) should also have the ability to decline connections where these are not economically viable
- **The future status of existing projects:** Continued uncertainty on the future status of Existing Heat Network (EHN) projects, including those progressed through the AZP, is a deterrent to investment, which could persist until award of zoning rights in any given area. The current proposal for EHNs within zones gives no exclusivity for these projects, instead creating a zone of 'competition' with the Zone Developer for connections in this area. This threatens to undermine the policy intent here, as well as the most cost-effective and rational delivery of heat network infrastructure in any competed zone. Projects with zoning-equivalent exclusivity (e.g. concessions and AZP projects) are inhibited by uncertainty on future status following zone designation. Planned heat networks proceeding on merchant basis without GHNF commercialisation grant are penalised by proposals for EHN proximity rights, whilst the approach to projects under construction has not been confirmed.

2.5 Are the government's policy frameworks and support around heat network zones in line with what London needs? Are new technical standards likely to be effective?

It is important to add a caveat that the sector is waiting to see the full UK Government zoning report which will provide more details of the zoning methodology. There is some urgency about seeing this as it sets a policy agenda which affects the current and near future investment environment. The role of zone coordinator needs to be robust and cross LA boundaries for strategic deployment. We need clarity but what is already clear is that this role will be key in driving delivery of heat networks and needs thought as to how it will be resourced.

Vattenfall wants to see a zoning route to market that encourages public/private partnership.). Our existing projects in London, Bristol and Midlothian show the value of this approach and we have outlined the breadth of commercial arrangements we have entered into below:

- **Brent Cross Town:** At Brent Cross Town, Vattenfall is working in partnership with Related Argent and Barnet Council to supply low carbon heating to 6,700 new homes and three million square feet of commercial space, as well as low carbon cooling to selected plots. In 2020, Vattenfall signed a 47-year concession agreement with Related Argent to operate the heat network and deliver heating to Brent Cross Town. In 2022, Vattenfall signed an additional concession agreement to provide cooling to selected plots. The Brent Cross Town heat network has been designed and constructed by Related Argent with technical expertise inputs from Vattenfall.
- **Bristol City Leap:** Bristol City Leap is a twenty-year joint venture partnership between Bristol City Council, Ameresco and Vattenfall which will enable the delivery of over £1 billion of investment into Bristol's energy system. In January 2023, Vattenfall acquired Bristol Heat Networks Ltd, the company set up by Bristol City Council in 2018 to deliver a city-scale heat network. To accelerate heat decarbonisation in the city, Bristol City Council transferred ownership of the existing Bristol heat network to Vattenfall in 2023. We now operate four heat network areas - Redcliffe, Old Market, Bedminster and Temple. As part of Bristol City Leap, Vattenfall will invest to expand the network into new areas, with the long-term plan to interconnect each network area to create one singular Bristol heat network.
- **Midlothian (Edinburgh):** Vattenfall has entered into a 50/50 co-investment partnership with Midlothian Council to deliver low carbon energy projects across Midlothian and the surrounding areas distributing heat collected and generated at the Millerhill Energy Centre, which captures heat from the Millerhill Recycling and Energy Recovery Centre – an energy from waste plant operated by FCC Environment.

The Heat Networks Technical Assurance Scheme (HNTAS) plays a vital role in ensuring robust technical standards across the sector, which is essential for delivering reliable, efficient, and safe heat networks. However, the scheme in its current form is overly complex, will likely increase costs to customers and as proposed currently creates unnecessary barriers for stakeholders. Through zoning, heat networks will need to be designed with expansion in mind and as such the current pass/fail criteria for efficiency on new networks means that any oversized pipe will face efficiency issues needing an agreed derivation from the standards before systems can be effectively signed off. If every zone requires such a derivation and the growth of heat networks is being driven through zoning it will be important that the technical assurance scheme when introduced aligns with this vision. Finally, we understand that without such certification, new build developer will not be able to sell the properties they have built. Alternative heating solutions have no such complex certification and approval processes thus creating an uncompetitive barrier. Simplifying HNTAS's design and processes would make compliance more practical and accessible, while still maintaining the high standards needed to protect consumers and support industry growth.

2.6 What other policies or support are needed to achieve 460,000 heat network connections in London by 2030?

Below are a number of areas where we believe greater support is needed to unlock heat network delivery:

Mandation/Requirement to Connect: A requirement for certain buildings, such as public facilities and large-scale commercial properties, to connect to heat networks is essential to provide demand assurance for developers. Heat networks involve significant upfront investment in infrastructure, and their financial viability depends on securing a stable and predictable heat load. By mandating connection for high-demand buildings, developers can reduce the risk of underutilization, achieve economies of scale, and ensure long-term operational efficiency. This guaranteed baseline demand not only attracts investment but also accelerates network expansion, enabling broader decarbonization goals and delivering cost-effective, low-carbon heat to communities.

Warm Homes Plan: A Place-Based Opportunity: The Warm Homes Plan, backed by £13.2 billion, aims to retrofit five million homes and reduce energy bills. It presents a unique opportunity for local authorities to integrate heat networks into spatially targeted retrofit programmes, especially in areas with high heat demand and fuel poverty.

We are expecting publication of the Warm Homes Plan imminently with, we hope, specific proposals to drive investment in heat networks. Vattenfall is strongly advocating with government to:

- Align retrofit funding with heat network zoning to maximise local impact.
- Empower councils to deliver area-based solutions that combine insulation, low-carbon heating, and community engagement.
- Commit to a further extension of the Boiler Upgrade Scheme to support heat networks connections
- Ensure local advice and support services are funded and accessible.

Statutory undertaker Rights for Authorised Heat Network developers/operators: Heat networks need statutory undertaker rights (SURs) to ensure they can install, maintain, and operate infrastructure efficiently, just like other essential utilities such as water, electricity, and gas. Without these rights, projects face delays and higher costs due to complex negotiations for land access and street works, which undermines timely delivery and affordability. Granting equivalent status provides certainty, reduces risk, and supports the rapid expansion of low-carbon heating.

The Energy Act 2023 included a provision to confer certain rights to heat networks developers over land access and development. The provision was a general one, with specific powers to be conferred via secondary legislation, collectively titled statutory undertaker rights. The UK government (and separately the Scottish Government) are currently working on policy proposals for SURS for heat networks which they are describing and installation and maintenance powers and it is essential that the introduction of these powers is expedited.

Compulsory Purchase Orders for Heat Networks: As details of the statutory undertaker rights emerge we know that the Government has made it known that it will not include compulsory purchase orders. Compulsory purchase orders (CPOs) confer the right of developers to purchase parcels of land from a private landowner if deemed crucial for the strategic development of the heat network.

Vattenfall, in the consultation, made a strong case for why CPOs are necessary. Landowners refusing to grant access is a significant factor in scheme delays and escalating costs. We continue to believe that the introduction of CPOs is required to reduce risk and cost, based on

our experience of gaining land access on our existing schemes but believe that if not included in statutory undertaker rights currently being developed, CPOs (especially on land for energy centres) might be introduced via the zoning framework.

Continuation of Grant Funding: Heat Networks operate best at scale but capital investment for such large-scale infrastructure projects can be high risk, especially where it takes significant periods of time to build out the network and there is an element of uncertainty over future heat demand.

Public sector investment can help to support the delivery of infrastructure ahead of need, enabling the private sector to invest in long term, complex projects that ultimately save money for customers through the provision of more efficient heat networks.

Continued planning support for heat networks: In London, the London Plan policy support for heat networks has been beneficial for the sector. In order to ensure continued investment into the sector, we urge the GLA to retain and strengthen these policies through the new London Plan. There is some concern that the 'Towards a new London Plan' consultation document makes reference to 'removing duplication with national requirements. Whilst we understand the drivers for this, whilst there is uncertainty over the direction of travel from central Government and timescales for implementation, we believe the GLA should take a strong leadership role in advocating for heat networks and driving consistency across London boroughs.

Public Support Campaign to raise awareness and acceptance of heat networks with Londoners. We need to promote the benefits for end customers to drive demand for schemes.

Submission from: Veolia Environmental Services

Question 1: N/A

Question 2 - What is the process for connecting existing sources of ambient or waste heat to heat networks, and how can this process be accelerated?

The process for connecting existing sources of ambient or waste heat to heat networks is currently complex, fragmented and slower than it needs to be, largely because of uncertainty over long-term demand. At present, project developers, local authorities and asset owners often have to negotiate bespoke agreements for each site, work through planning and permitting on a case-by-case basis, and manage counterparty risk without a clear policy backstop.

To accelerate progress, it is essential to embed connection of waste and ambient heat within a robust zoning framework that provides guaranteed offtake and clear demand visibility. A clear, published list of buildings and asset types to which a connection and offtake mandate will apply would give investors and operators confidence to make the necessary capital commitments in pipework, energy centres and heat recovery equipment. Coupling this with long-term funding support, including grants and low-cost finance to de-risk schemes, would accelerate the development of anchor networks, enabling more waste and ambient heat to be captured at scale.

Question 3 - Is the GLA providing effective support and working with the key stakeholders in central and local government to accelerate the uptake of heat networks?

The GLA's work on spatial planning, area-based energy strategies and the integration of heat networks into the London Plan has helped to establish the case for district heating and provided a platform for boroughs and developers to collaborate. The GLA should support boroughs to turn these policies into deliverable, long-term frameworks that underpin investment, including standardised approaches to connection requirements and heat offtake from public estates and major developments. By coordinating with DESNZ, Ofgem and boroughs so that London Plan policies align with national zoning, consumer protection and fair pricing frameworks, the GLA can help secure bankable projects and accelerate the rollout of heat networks across London.

Question 4: N/A

Question 5 - Are the government's policy frameworks and support around heat network zones in line with what London needs? Are new technical standards likely to be effective?

The move towards statutory zoning, with obligations on certain buildings to connect, is welcome and broadly consistent with what is needed to unlock large-scale investment in London. However, London's high density, diverse building stock and complex infrastructure require a particularly clear and stable framework for investors, including confirmation that connection mandates will apply not only to new developments but also to existing communally heated buildings, public buildings and larger heat users within zones.

The emerging technical standards for heat networks are likely to be effective if they strike the right balance between driving up performance and reliability, and allowing for innovation and local flexibility. It will be important that these standards are introduced in a proportionate, phased manner, recognising the relative maturity of the sector and avoiding undue burdens on smaller operators. Policy frameworks must also allow pricing to be managed holistically across portfolios,

where this helps to keep bills fair and affordable while maintaining investment signals. Ensuring that zoning policy, consumer protection, pricing regulation and funding support are designed as a coherent package will be critical to delivering what London needs.

Question 6 - What other policies or support are needed to achieve 460,000 heat network connections in London by 2030?

Reaching 460,000 heat network connections in London by 2030 is highly challenging and will not be achieved without additional, targeted support beyond existing measures. A long-term, multi-year funding and financing programme is needed, expanding on the Green Heat Network Fund and combining capital grants, low-interest loans and public-private investment models. Integration of heat networks into the UK ETS should positively recognise exported heat, for example through free allowances or reduced surrender obligations, so that carbon pricing supports rather than penalises low-carbon heat. Sustained, coordinated engagement between the GLA, central government, boroughs, operators and major heat users will be needed to maintain momentum and make the 460,000-connection target credible and deliverable.

[redacted]

www.veolia.co.uk

EdgeNebula Limited

Environmental Committee Heat Network Zones call for evidence

Response to Question 2

Heat reuse has often been stated by traditional datacentres as an option or aim but very rarely (with some notable exceptions) has it been executed in practice. Local heating networks have been a mandatory recipient of waste heat from data facilities in the Nordics for many years and this process is now being introduced into the UK by the government (Department of Energy, Security, and Net Zero – DESNZ).

Now a mandatory requirement in the UK providing a suitable local heat network is available, which hopefully is something which this current process is going to address at least for London. From discussions we have had with heat network companies one of their problems is often finding enough waste heat for their needs. Datacenters have lots of waste heat even the small ones, that they could provide to a heat network via a suitable interface/heat exchanger.

In an ideal world this would mean we could remove the current heat rejection plant itself, potentially saving some physical space and CAPEX and OPEX costs. However, for us the target heat load not only requires it to be very local, but one that can continually consume the waste heat 24/7/365.

While some of the current heat network off-takers contractually undertake to-do so, our own research indicates that they sometimes (more often than one would expect) fail in this regard, with intermittent voids between periods of draw down not being that unusual.

Our prime responsibility is for the provision of ‘secure, always on data resources’ rather than that of being an energy supplier. So for the time being at least, it is important for our data facilities to retain their own heat rejection capability just in case it should be needed.

We are seeking to have a close working relationship with heat network and power companies as they potentially could assist us by taking our waste heat and reusing it and avoid us having to reject it to atmosphere via dry air coolers.

All of the energy entering a data facility ends up as waste heat. As a datacenter operator our preferred alternative to rejecting this waste heat arising from our ICT workloads directly to atmosphere, is to reuse it either directly on site, or at a nearby adjacent site.

Firstly, we need to capture almost all of this heat within the closed liquid cooling circuits we use to remove it from the ICT. This is a very efficient and effective process

and currently directly transfers between 95 to 97 percent of the ICT heat into the liquid. The latter being a very suitable medium for transferring it for reuse by a district heating network or similar local off-taker.

The remaining 3 to 5 percent of the ICT heat load plus other residual heat from other plant and cables, is indirectly transferred to the liquid cooling circuit via air-to-liquid cooling systems, and then to the off-taker. This aligns with our own sustainability goals effectively moving each of our distributed network nodes (datacenters) nearer to being able to be regarded as 'energy neutral'.

Return water temperatures within the primary cooling circuit are ~ 47°C, which although low grade heat in general engineering terms should I believe be of interest to a heat network.

The table below shows the heat input required for various building heating distribution systems.

- Underfloor heating is the most efficient way of distributing space heating.
- Technologies such as heat pumps and solar thermal panels should only be used in combination with energy-efficient space heating such as air-to-air heating, underfloor heating and low surface temperature radiators.
- EdgeNebula's policy in comparison to traditional datacenter builds is to first use what is already there, property, power, and connectivity. For example, in many parts of London older office property which no longer attracts the best level of rents has seen office floors converted to domestic accommodation. If we were to place one of our network nodes on the site our waste heat could deliver the space heating via underfloor heating and pre-heat the domestic hot water supply saving energy.

Building heating distribution system	**Heat input temperatures required**
Conventional radiators	60 - 90°C
Domestic hot water	60 - 65°C
Low temperature radiators	45 - 55°C
Hot air fan coil unit	35-45°C
Underfloor heating	30 - 40°C

On-site or adjacent use examples for the waste heat might be for hotel, laundries, elderly care facilities, hospitals, social housing, homeless accommodation, community

facilities, bakeries, breweries, space heating (underfloor not radiator emitters) domestic hot water services or horticulture under glass for food production.

Commercial property developers undertaking degasification of their premises and installing heat pump replacements for fossil fuel technology, have shown interest in taking our waste heat and in turn making some of their surplus plant room space available to us in which to locate our network nodes.

Unfortunately heat network installation programs very rarely match the pace of our own datacenter deployments for a number of valid reasons, so both aligning and balancing the two will likely prove to be difficult.

Therefore, our cooling pipework return is always fitted with capped off tees with three-way motorised valves, to enable an off-taker to complete connection to our system at any time they are ready without requiring us to shut down or delay our own installation program.

Also, to this end we always need to allocate some physical space required by the off-taker for their plant (heat exchanger) in any building where we are locating a network node. Typically, we always have spare space adjacent to our equipment for this purpose, but it would be advantageous to define these requirements in some form of standard or best practice guide.

It is now compulsory for data companies producing waste heat over an annual threshold of 100 MWh to feed this waste heat into district heat networks in UK locations where these exist.

In theory with our overall facility load per network node of ~ 600 kW total this will produce ~14.4 MWh per day or ~ 5.2 GWh per annum of heat. How much is recovered will depend amongst other things upon the efficiency and effectiveness of the heat network operator’s onsite recovery plant (provided at their cost and operated and maintained by them, we just provide the space).

Our roll out in the UK is programmed to server the top 300 cities and towns (rated by population density - London being the largest) across the 12 regions, where 90 percent of the UK population live. Networks typically start with 5 network nodes but can scale out to whatever number is required to serve the business requirements.

Clients do not share the network with others, there is only one client per private network, which allows EdgeNebula to ensure data sovereignty and security concerns are protected. A secure gateway with ‘zero trust’ firewall is provided to allow clients access to the Internet or Public Cloud when required.

Reuse of existing real-estate with minimum adaption reduces planning delays, environmental impact of major new construction work, and the associated embedded carbon created, along with less disturbance to the local domestic and business communities during the retrofit build out.

Transport for London (TfL) supports the Mayor's ambition to reduce London's carbon emissions through the development of heat networks and recognises the challenges in achieving this aim.

TfL's principle experience in this area is related to a single site, where low-grade waste heat from the Northern line is supplied to the Islington Borough-owned and operated heat network called Bunhill II. The network currently supplies 1,350 homes, two leisure centres and a school.

In 2024/25, the Bunhill Heat Network has delivered approximately 2,800 tCO_2e of carbon savings. This reflects the combined impact of waste-heat recovery from the Northern Line ventilation shaft and the reduced reliance on gas boilers across the connected estate.

This level of carbon reduction demonstrates the effectiveness of the Bunhill II scheme as a live proof-of-concept for urban waste-heat utilisation. It also reinforces the value of strong governance, clear delivery responsibilities, and robust commercial arrangements between partners - key lessons already highlighted from TfL's involvement.

Islington Council continues to monitor and manage the system's performance, but the 2024/25 carbon savings figure provides a solid evidence base for assessing the wider potential of waste-heat integration across London's heat networks, particularly as Heat Network Zoning accelerates future opportunities.

TfL's involvement in Bunhill II acted as a proof of concept for what can be achieved when decarbonising heat in London. As with any pilot there were many lessons learned in the delivery of this project, with the most significant being the importance of strong project governance and clear responsibilities, backed up with legal and commercial agreements between delivery partners. Upgrading the TfL infrastructure (vent shaft) to supply waste heat to the network was complex due to the challenges of retrofitting infrastructure on an operational railway. Any information requested on the ongoing performance of Bunhill II and the experiences of those tenants / facilities to which the heat is provided should be directed to Islington Borough who manages the facility.

Since Bunhill II became operational, TfL has engaged with several third-party stakeholders to discuss the potential of utilising more of its waste heat assets across its network, and in doing so has been happy to share relevant information to inform more detailed studies on whether these developments would be viable. This includes working with the GLA to provide data on potential waste heat sources to be shown on the London Heat Map and LAEP Data Hub. Whilst no schemes have been delivered to date, TfL remains open to discussing initiatives with developers.

TfL anticipates that a greater number of opportunities will become available as a result of the UK Government's Heat Network Zoning legislation. We submitted a response to the Department of Energy Security and Net Zero's consultation on this matter at the start of 2024. As more developments will be required to connect into a heat network, a greater number of potential waste heat sources will be needed to support this. TfL continues to welcome discussions with potential developers, and the future Zone Coordinator when Heat Network Zoning arrives, on opportunities to utilise the waste heat from its operations, and welcomes a strategic shift in the

progression of district heat network development that is expected to be provided by zoning legislation.

The delivery of heat networks at scale will have implications for London's road and public transport networks during construction. Installation of large-diameter pipework, often within the carriageway on strategic roads, can result in prolonged works and disruption to bus routes and key arterial corridors.

Due to the size and depth of these assets, construction is likely to be slower and more disruptive than other utility works, increasing the importance of early planning and coordination. As Heat Network Zoning accelerates delivery, these impacts are likely to become more frequent in certain locations.

The GLA has a role in supporting cross-system coordination between heat network delivery, highway authorities and transport operations, including how lane rental schemes incentivise efficient delivery while recognising potential impacts on scheme viability. Where road space is disrupted, reinstatement also offers opportunities to build back better, supporting public realm, urban cooling, SuDS and climate resilience.

Dr Catherine Caine, Senior Lecturer in Law, University of Exeter
Dr Matthew Cole, Senior Lecturer in Law, University of Exeter

Environment Committee Heat Network Zones call for Evidence response in response to question 6: what other policies or support are needed to achieve 460,000 heat network connections in London by 2030?

Background

In 2019, the UK heating sector produced almost a quarter of the UK's total greenhouse gas emissions, 74% of this came from residential heating, 17% from commercial heating and 9% from public heating (Secretary of State for Business, Energy and Industrial Strategy, 2021 p 23). The UK relies heavily on gas heating with 85% of residential buildings connected to the gas grid in 2017 (DBEIS, 2022 p 7). To meet our 2050 net zero targets, the rate at which residential emissions decrease needs to be six times faster for the next three decades compared to the last three (DBEIS, 2022 p 7). The Committee on Climate Change estimate that 42% of heating in homes would need to be provided by low-carbon heat networks by 2050 (Committee on Climate Change, 2020 p 115). Currently heat networks serve less than 3% of the UK's total heating needs, with approximately 480,000 heat network customers being supplied by around 14,000 networks; almost all of which use fossil fuels as their primary fuel source (Energy UK, 2023). Whilst it is believed that these figures are underestimated due to inaccurate reporting (Stephen Knight, p 7), the Mayor of London's proposal for 460,000 new heat network connections nevertheless signifies a considerable contribution towards this target.

The UK heating sector has been identified as 'the most difficult of the major energy consuming sectors of the economy to decarbonise' (DBEIS, 2018 p 23). Encouraging the UK public to move away from their familiar gas boiler is a significant task. By their nature, heat networks often require consumers to sign up to a monopolistic contract where they can be locked in for many years. In some instances, private and metered heat networks have been found to be associated with higher unit prices and total charges (CMA, 2018 para 1.9-1.15). Consumer awareness of heat networks in the UK is generally poor and it has been recognised that for the plans to decarbonise UK heating to be successful, consumer buy-in needs to improve (DBEIS 2022, ch 5). Additionally, a piecemeal approach to heat network regulation has resulted in numerous planning issues relating to the design and build of networks (CMA, 2018 ch 4).

Despite the first heat network being introduced in the UK in the 1960s, and the fact that some 500,000 consumers are served by heat networks, regulation over the sector has been very slow to materialise and is still developing today. This has resulted in situations where heat network customers have been left at the mercy of their heat network provider with respect to the price that they pay for their heat, the information that they receive about it, and the efficiency of the service that they receive. In 2014, the Heat Network (Metering and Billing) Regulations 2014 came into force in response to the requirements of the 2012 European Energy Efficiency Directive. These regulations introduced an obligation on heat network operators to notify the Secretary of State (in England) of their operation of a heat network and required that individual

meters be installed for properties to ensure that heat network customers were only being charged for the heat that they were using. However, aside from this, no sector specific regulation existed until the introduction of the Energy Act 2023. This designated Ofgem as the regulator of heat networks in England, Wales and Scotland (effective from 27th January 2026).

Some of the issues that have arisen to date:

Regulation of heat network providers:
Many of the problems faced by existing heat network consumers arose as a result of a lack of regulation over the sector. Ofgem has now been appointed as the regulator of heat networks, and the Heat Networks (Market Framework) (Great Britain) Regulations 2025 has made it illegal to operate or supply heat from a heat network without authorisation. Thus signifying an important first step to regulating heat networks and working through specific problems that have arisen thus far.

Pricing:
Heat network customers have been subject to wildly varying bills. Whilst on average, it has been shown that heat network customers pay about £100 less than those on individual schemes (Caroline Bragg, p 11), some heat network customers saw their bills rise by as much as 700% during the energy and cost of living crisis in 2021 without being able to take any action to reduce their bills other than to sell their house and move (Heat Trust 2022). The Energy Bill Relief Scheme and the Heat Networks Energy Bill Discount Scheme were introduced with the aim of sheltering heat network customers from volatile energy markets, however this still left the minority in a position where they were paying 50% higher unit rates than domestic gas customers (Caine 2023, p 248). The Energy Act 2023 now allows for Ofgem to monitor and regulate heat network providers by setting conditions on authorisations for new heat networks (Energy Act 2023, sch 18, s 14(4); The Heat Networks (Market Framework) (Great Britain) Regulations 2025, s 20(e)). Ofgem have also recently consulted on and produced guidance on fair pricing and cost allocation (Ofgem, 2026). The regulatory developments in this area have provided the necessary tools to prevent unfair pricing in the future, however as regulation is currently underway, it is not possible to state whether these tools have been effective at ensuring fair prices for all heat network customers.

Design and Build problems:
The Competition & Markets Authority found that planning law has encouraged developers to incorporate heat networks into their plans, even if it is not the most cost-effective solution to provide heat and hot water to consumers, so that they have a better chance of obtaining planning permission. London was provided as an example of this by the Competition and Markets Authority (CMA 2018, p 22). To combat these problems, the Energy Act 2023 introduces the new concept of Heat Network Zones which is a strategic planning exercise aimed at identifying zones which are best suited for future heat network placement. In October 2021, the Department for Business, Energy and Industry consulted on the concept of Heat Network Zoning and subsequently launched an ongoing pilot programme to determine the best methodology for identifying heat network zones (DBEIS 2022). It appears that heat network

zoning has the potential to tackle the problem outlined by the CMA relating to a conflict of interest with planning law and the designation of heat networks. However, many of the details of heat network zoning are yet to be determined.

In addition to this, the design and build of heat networks have been managed by developers who have an incentive to minimise upfront costs (for example by not installing key components up front). This has led to some instances where there has been a reduction in the operational efficiency of the network which consumers then have to pay for within their bills at a later date. The Energy Act 2023 has taken steps to resolve this by providing the power for government to mandate heat network technical standards in Great Britain through regulations. As a result, the Heat Network Technical Assurance Scheme (DESNZ 2026) is being introduced which will set out technical requirements to be mandated in upcoming regulation.

Transparency for consumers:
The Competition and Markets Authority found that many consumers on heat networks did not adequately understand the system that their properties were being heated by when they either purchased or rented their property. When consumers were viewing their property it was found that the heat network was not explained to them properly, and that they generally received the most information during the stage prior to moving in (CMA 2018, p 65). This led to an information overload at a time when the consumer was already pre-occupied with mortgage documents and other significant paperwork. It was not until the consumer had moved into the property that they really began to understand that their residence was being supplied by a heat network. Only a few consumers received contracts from their heat supplier before purchasing their property and there was a varying degree of explanation and information given to consumers about what a heat network is and how it affects them. Another key complaint regarding information provided to heat network consumers was that, in one particular survey, ‘almost all participants surveyed…said the property had been marketed as having ‘low cost’ heating, but did not feel this was the case once they had received a bill’ (CMA 2018, p 66). The Energy Act 2023 provides an indication of how secondary legislation may require conditions relating to information and terms of service to be added to heat network authorisations, however at this stage there has been little detail about the type of information that consumers could expect to receive if such conditions were to be put in place.

What policies/support are needed to achieve 460,000 heat network connections in London by 2030?

As outlined above, the sector has undergone significant regulatory development over the past 3 years. By designating a regulator over the sector, forcing all heat network providers to be authorised, undertaking consultations on heat network zoning and pricing, and setting up the Heat Network Technical Assurance Scheme, seismic steps have been taken to overcome the problems in the sector. However, a number of challenges remain:

- There has been a debate surrounding the introduction of a price cap for heat networks (Caine 2024, p 248-249) the decision has been taken not to do so. This situation should

be monitored by Ofgem – particularly where future volatilities in the energy market could result in disproportionate price rises for heat network customers. It may be useful to engage in more limited forms of price regulation, such as maximum price increases, price increases linked to inflation or pricing linked to energy prices plus inflation. This will not control prices fully and therefore allow some variation, but it would control the rate of change, which would be particularly important during periods where there is an external supply shock, such as the during the Russian invasion of Ukraine.

- Whilst efforts have been made to ensure fair pricing of heat networks, it is contended that to achieve consumer buy-in, a more ambitious approach is desirable. As heat networks gradually move towards utilising waste heat rather than gas, pricing models should be reassessed with the aim of moving away from the traditional model of pricing based on gas. Lower pricing would be a very attractive factor for customers who are wary of moving away from their traditional gas boiler towards a new heating method.
- To ensure that heat networks are installed in the right location to deliver both a cost-effective and low-carbon heating solution, effective heat network zoning is essential. As lessons are still being learnt from heat network zoning pilots, this is a matter for continued research. However, it is unclear how heat network zoning will be governed and how it will interact with existing planning processes.
- Whilst the new regulatory powers allow for Ofgem to tackle the problem of consumer transparency, it is not yet clear how this will take place. It is important that new and existing heat network consumers understand their heat network and that they are not mis sold the idea. If consumers are not brought on board with the idea, it will be very difficult and politically unpopular to roll out heat networks on the desired scale. It might be better to roll these regulations out gradually and well, than roll out regulations quickly and risk undermining public confidence in a nascent heating technology, upon which the government pins its hopes for decarbonisation.

Environment Agency
London Team

Please find below our comments where relevant. These are confined to questions 5 and 6. Apologies for the delay in our submission to the call. I hope you find them useful in informing the work of the Environment Committee.

5. *Are the government's policy frameworks and support around heat network zones in line with what London needs?* ***Are new technical standards likely to be effective?***

Currently EA regulatory involvement is in the permitting of medium combustion plant for power generation, in respect of emissions to air. Going by the examples of Ponders End and Kings Cross Energy Centres, the permits are likely to be bespoke for each application, meaning there is no 'standard rules' route.

In reference to the soon-to-be-adopted Draft: Heat network technical standard (TS1) - GOV.UK from an environmental standpoint, there is no mention of risks to soil, groundwater, etc from system failure, including leaks. TS1 stipulates *1.14.3. A statement shall be made on the proposed approach to the management of the potential impact of water leakage and the consequential* ***impact to property*** *during the construction and operation of the Heat Network*, and in the example given for a risk assessment of a major leakage, consideration is only given to heat provision to customers (p. 270):

Stage 3: Technical Design

At the Technical Design stage, the designer has built on the resilience risk assessment, identified the key threats to system and equipment failure using the information available, and quantified the risk associated with these threats, in accordance with Requirement 2.9.1/3.9.1

Table G.3 outlines an example of the risks posed by these threats and associated risk score without any mitigation measures in place, which makes up part of the Resilience Strategy produced in accordance with Requirement 2.9.2/3.9.2.

Table G.3: Unmitigated risks at Technical Design stage

Ref No.	Threat identified	Risk considered	Likelihood	Severity	Risk score
		Unmitigated risk			
TH-DD-01	System failure: Major leak on District Distribution Network	Major leak on the section of the District Distribution Network (indicated in Figure G.1) which would result in a major outage to heat supply to the block of 100 domestic consumers. Consumers served by the Substation would be without space heating and domestic hot water for the duration of the outage caused by the leak. At the Technical Design stage, it has been estimated that this leak could last in excess of one week whilst the source of the leak is identified and repaired.	4	5	20
:	:	:	:	:	:

Environment Agency would support a consultation stage for heat networks, although this will depend on National policy. If EA consultation does become standard outside of permitted activities, design proposals should incorporate environmental risks to speed up the process.

6. What other policies or support are needed to achieve 460,000 heat network connections in London by 2030?

- Consideration of mandatory connection to heat networks by data centres, may ease conflicts for and impacts on water resource.
- Alignment with ‘dig once’ policies eg SuDS schemes being implemented in surface water catchments under the London Surface Water Strategy

[redacted]

[redacted]

[redacted]

Written evidence to London Assembly Environment Committee

1. Introduction and context

1.1. In 2018, the Competition and Markets Authority (CMA) carried out a market study of the heat networks sector. The study found that "*monopoly supply and supply chain incentives may mean that heat network providers face little competitive pressure to offer reasonable prices, reliable supply and high quality of service*" and expressed concern about the poor outcomes for heat network customers. The CMA recommended the sector should be subject to regulation and that heat network customers should be afforded the same degree of protection as gas and electricity customers. It recommended Ofgem would be well placed to take on the role of the regulator.

1.2. Heat networks have previously been subject to some regulatory requirements through the Heat Network (Metering and Billing) Regulations first introduced in 2014. These required notifications containing information on the location of the heat network, energy type, network size, numbers of customers and building supplied and set rules on information for billing. The intention was that customers should only be billed for their consumption on the heat network where meters were installed, and that meters must be installed where required. The scheme was overseen by the Office for Product Safety and Standards.

1.3. Following the CMA Study, the government consulted on building a market framework for heat networks in 2020 and sought to put consumers at the heart of heat network market growth.

1.4. In October 2023, the government passed the Energy Act 2023 naming Ofgem as the regulator for heat networks across Great Britain.

1.5. Shortly after, Ofgem and the Department for Energy Security and Net Zero ("DESNZ") carried out a joint consultation on Heat networks regulation – consumer protection: Informing secondary legislation and authorisation conditions. This consultation marked our first step towards the development of Ofgem's authorisation conditions, or "rulebook" for the sector, focusing on consumer protection rules.

1.6. The Heat Networks (Market Framework) Regulations 2025 introduced the heat networks authorisation regime setting out the process for the introduction of authorisation conditions, as well as the scope of the subject matter the authorisation conditions can cover. This instrument also created a framework for

consumer advocacy with Citizens Advice, Citizens Advice Scotland and Consumer Scotland named as consumer advocacy bodies for the heat networks sector replicating provision in the gas and electricity markets. It also created a complaint handling and redress scheme for heat network consumers administered by the Energy Ombudsman scheme. Redress, advocacy and advice services went live in April 2025.

1.7. The consumer protection authorisation conditions, and our regulatory role, will formally come into force on 27 January 2026.

1.8. The heat network sector is diverse, with an estimated over 14,000 networks ranging from small blocks of flats to large district heating systems, from large social housing schemes through to small private landlords, using a range of technologies such as gas boilers, biomass and heat pumps. There are also complex interactions with existing housing legislation, and DESNZ and the Ministry for Housing, Community, and Local Government (MHCLG) have committed to further work in this area.

1.9. This range of regulated entities means that one set of prescriptive regulations would not be suitable for every network in every situation. There are also challenges of moving from a largely unregulated, to a regulated sector. That's why our rulebook will focus on principles and driving better consumer outcomes, rather than trying to create a rigid set of prescriptive rules.

1.10. These new authorisation conditions set a consumer objective for heat networks to be fair in their dealings with their consumers, as well as setting out that prices charged must be fair and not disproportionate. The approach recognises the importance of attracting ongoing investment in the sector and balances consumer protections with the right for developers to make a reasonable return, which will be considered on a principles basis rather than through prescriptive price controls.

1.11. With the introduction of regulation, and through our digital service which will be launched in Spring, we will be collecting a range of data from the sector that will help us to better understand consumers experience, identify good practice, and also highlight issues that may cause consumer detriment.

2. Overview of our approach to fair pricing and future work on benchmarking

2.1. The goal of the pricing framework is to deliver good outcomes for heat networks consumers, ensuring that consumers are protected from disproportionate

pricing and monopoly power. The approach also supports growth and investment in a nascent market by recognising variation across the sector and the right for developers to make a reasonable return.

2.2. The fair pricing framework is underpinned by an authorisation condition setting out that prices charged must be fair and not disproportionate. Alongside this condition, we are publishing guidance to support the sector in understanding their obligations. We will also introduce data reporting requirements to build a picture of the sector, including requiring registered networks to report their prices to us. Our intention is for this guidance to be iterative, to accommodate phased pricing protections and other policy developments as we gather data from regulated heat networks.

2.3. The framework set out in guidance has an overarching objective and consumer and industry outcomes, as well as principles to be followed. It also includes a 'fairness test' element to support its implementation. To help us identify pricing issues and cases of disproportionate pricing we will develop benchmarks to compare heat networks prices against reference points such as external benchmarks (cost of alternative heating technologies), comparator benchmarks (expected prices based on cost drivers), and own past price benchmarks (historical prices).

2.4. In addition to protecting against instances of disproportionate pricing, our fair pricing guidance, along with our data reporting initiatives, will help us identify if there are systemic issues of disproportionate pricing in the market. This will also inform future policy development. As the market matures and evidence grows, we will refine and strengthen the framework.

Why are you not implementing a price cap?

2.5. Given the diversity of the sector, a single counterfactual, for example one based on alternative heat sources, is unlikely to reflect competitive prices for many networks, particularly over time. This approach risks networks pricing above a more competitive level. A price cap at this level is also likely to be below the cost of supplying heat for some heat networks, in particular older networks. To avoid significant disruption to the supply of heat to customers, higher prices on these less efficient networks need to be addressed through improvements in technical standards. The Department for Energy Security and Net Zero is developing an approach to address this through the Heat Networks Technical Assurance Scheme.

Pricing protections within heat network zones

2.6. These pricing rules will apply to networks both inside and outside of zones. Zoning is led by the Department for Energy Security and Net Zero but we are working closely with them to ensure requirements are clear and compatible inside and outside of zones. Further details will be published by DESNZ in their government response to the zoning consultation.

3. Installation and Maintenance licence

3.1. The installation and maintenance licence will be a new and optional licence that will place developers and operators of a relevant heat network[1] on a similar footing to other licenced utility providers.

3.2. The installation, development and maintenance of a relevant heat network will not require a licence[2]. The benefit of the licence is that for purposes related to the installation, development or maintenance of a relevant heat network, a licence holder will have the ability to exercise the rights specified in the licence in relation to land in England - to carry out street works, cross linear obstacles (such as railway and tram tracks and canals), and require wayleaves for use of land[3].

3.3. We are currently working with DESNZ on secondary legislation to give effect to the installation and maintenance licence. The legislation, which will be in the form of a statutory instrument introduced by DESNZ, will set out the rights that may be included in an installation and maintenance licence, give Ofgem the power to issue the licence, specify the types of conditions that may be included in the licence, and provide powers for Ofgem to enforce the licence conditions.

3.4. DESNZ intend to introduce this secondary legislation this year. This will enable us to consult on how we will give effect to the regime and subsequently bring

[1] A relevant heat network is defined as being a district heat network or a communal heat network. See section 216 of the Energy Act 2023.

[2] Ofgem's regulations for heat networks will start to come into effect from 27 January 2026. All heat networks operating before January 2027 will be automatically authorised. This is called 'deemed authorisation'. After this period, authorisation will be granted by application to Ofgem. Operators of heat networks with deemed authorisation must register with Ofgem using the heat networks digital service by 26 January 2027.

forward the necessary regulations to bring it into effect.

3.5. Our public consultation will seek feedback on how we intend to implement the licensing regime, including:

- Draft Ofgem regulations that will govern applications for the licence, which Ofgem will be required to make in the form of a statutory instrument;
- The licence conditions that will bind licence holders, including the circumstances in which a licence may be revoked;
- The licence application form;
- How we will assess applications for the licence;
- The licence application fee.

3.6. In our response we aim to confirm the process to apply for a licence, the licence application fee, the licence conditions and to share a copy of the Ofgem application regulations that we intend to come into force.