Department for
Business, Energy
& Industrial Strategy

Heat network zoning

Closing date: 19 November 2021

October 2021

Any enquiries regarding this publication should be sent to us at:
heatnetworks@beis.gov.uk

Foreword

In 2019 the UK became the first major economy in the world to pass laws to reduce its greenhouse gas emissions to net zero by 2050. This landmark commitment, together with the UK's hosting of COP26 this November, places us at the forefront of global efforts to combat climate change. To achieve net zero, virtually all emissions from heat in buildings and industry must be eliminated. Decarbonising heat underpinned proposals in last year's Energy White Paper and will be a focal point of our forthcoming Heat & Buildings Strategy.

While there is no single solution for decarbonising heat, heat networks will undoubtedly play a key role in the journey to net zero – the Climate Change Committee has estimated that heat networks could provide around 18% of UK heat demand in 2050, up from 2% today. Since 2013 we have been supporting the growth of the heat network sector and in 2020 launched our Heat Network Transformation Programme. This programme includes new funding to deliver low-carbon heat networks at scale through the Green Heat Network Fund and a new regulatory framework to enhance consumer protection and develop heat network zoning.

The proposals in this consultation are the first step in delivering this Energy White Paper commitment to implement heat network zoning by 2025, ensuring that heat networks are deployed where they are most appropriate. Our proposals are for central and local government, industry and local stakeholders, to work together to identify areas where heat networks are the lowest cost, low carbon solution for decarbonising heat. Identifying these areas and developing heat networks within them will help move us towards the potential levels of heat network deployment indicated by the Climate Change Committee.

Heat network zoning is just one example of how central Government intends to support and empower local communities to take action and support the journey to net zero. The forthcoming Heat & Buildings Strategy will set out the broader range of work we have planned to help drive and co-ordinate progress towards net zero, in a way that maximises the benefits to local communities.

Lord Callanan

Minister for Business, Energy and Corporate Responsibility

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General information

Why we are consulting

In this consultation we are seeking views on our proposed approach to deliver heat network zoning in England to inform primary legislation.

Our proposals envisage central and local government working together with industry and local stakeholders to identify and designate areas within which heat networks are the lowest cost, low carbon solution for decarbonising heating. This will help heat network developers to accelerate deployment of heat networks where they are most appropriate and deliver their contribution to our net zero commitments. We ask questions throughout the consultation to gather views on aspects of the policy including the zoning process, the methodology for identifying and designating zones, the delivery of networks within zones, review periods and interactions with wider policies. In some areas our questions are specific to reflect our preferred approach. In other areas, questions are more open to gather stakeholder views and further evidence.

Consultation details

Issued: 8 October 2021

Respond by: 19 November 2021

Enquiries to:

BEIS Heat Networks Team

1 Victoria Street

London SW1H 0ET

Tel: 020 7215 5000

Email: heatnetworks@beis.gov.uk

Consultation reference: Heat network zoning

Audiences:

This consultation will be of particular relevance to those with an interest in the heat network industry in England as well as stakeholders interested in the net-zero target and the decarbonisation of heat. Furthermore, we are seeking views of, among others, local authorities, electricity and gas distribution network operators, housing associations, owners of large public sector and commercial non-domestic buildings (for example, NHS trusts, universities, hotels, supermarkets, office blocks), owners of potential waste heat sources (energy from waste operations, data centres, industrial operators, sewage utilities) and consumer advocacy groups.

Territorial extent:

England only.

How to respond

The consultation is available online. If possible, we would prefer to receive responses via Citizen Space (link below) or use the response form available on the gov.uk consultation page.

Respond online at: https://beisgovuk.citizenspace.com/heat/heat-network-zoning-consultation

or

Email to: heatnetworks@beis.gov.uk

Write to:

BEIS Heat Networks Team

1 Victoria Street

London SW1H 0ET

A response form is available on the GOV.UK consultation page: www.gov.uk/government/consultations/proposals-for-heat-network-zoning

When responding, please state whether you are responding as an individual or representing the views of an organisation.

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential please tell us, but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

We will process your personal data in accordance with all applicable data protection laws. See our privacy policy.

We will summarise all responses and publish this summary on GOV.UK. The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the government's consultation principles.

If you have any complaints about the way this consultation has been conducted, please email: beis.bru@beis.gov.uk.

Executive summary

The Government is committed to achieving net-zero greenhouse gas emissions by 2050. Meeting this legal commitment will require virtually all heat in buildings to be decarbonised, and heat in industry to be reduced to close to zero carbon emissions. Presently, heat is responsible for a third of the UK's greenhouse gas emissions.

Heat networks transfer heat (hot water and/or cooling) from a central source or sources to buildings including domestic dwellings, public buildings, businesses, factories, sport facilities, hospitals and universities. They are uniquely able to unlock otherwise inaccessible large-scale renewable and recovered heat sources such as waste heat from industry and heat from rivers and mines. They currently provide 2% of UK heat demand and the Committee on Climate Change estimated in 2015 that with government support, they could provide 18% of heat demand by 2050 in a least-cost pathway to meeting carbon targets. Delivering more and larger heat networks in the right places is crucial to achieving cost effective decarbonised heat and minimising costs for the consumer.

There is significant potential for the number and scale of heat networks to increase dramatically. However, heat networks, like other strategic energy infrastructure, are characterised by high upfront capital costs with long payback periods. Successful deployment also requires coordination between a range of parties and identifying where heat networks are best suited is not straightforward. These factors, amongst others, deter investors and result in fewer, smaller and less strategically placed heat networks which means that the sector isn't likely to achieve its potential without strategic interventions by government.

We committed in the 2020 Energy White Paper to introduce zoning to address these issues no later than 2025. In this consultation we set out our proposals for how heat network zoning could operate. In developing our proposals, we have engaged internationally to learn lessons from those countries which have already deployed heat network zoning. Drawing on this research we envisage central and local government working together with industry and local stakeholders, to identify and designate areas within which heat networks are the lowest cost solution for decarbonising heating. This will help heat network developers to accelerate deployment of heat networks where they are most appropriate and help heat networks increase their contribution towards meeting our net zero commitments.

We propose that in a heat network zone all new buildings, large public sector and large non-domestic buildings – as well as larger domestic premises which are currently communally heated – would be required to connect to a heat network within a prescribed timeframe. Exemptions could be sought where it would not be cost-effective to connect, compared to an alternative low carbon solution. We will also introduce a low carbon requirement to ensure that new heat networks built within heat network zones are compatible with our net zero commitments. Furthermore, customers will be protected with the introduction of our separate regulatory framework for the sector.

Our proposals envisage a standardised methodology used to identify and designate heat network zones, prior to delivery of heat networks within the zone, with certain roles and responsibilities at a central level and others at a local level. Broadly speaking we envisage central government setting the overarching methodology for identifying zones in England with further refinement occurring at a local level with central support.

To address situations where a promising heat network zone has been identified but not designated, we are also seeking views on whether the Secretary of State for Business, Energy and Industrial Strategy should intervene to direct a local authority to designate a heat network zone, or designate it on their behalf.

Our market framework consultation published in February 2020 proposed that we would appoint Ofgem as heat network regulator and introduce sector-specific protections on pricing, transparency, quality of service and step-in arrangements for heat network customers. The heat network regulator will cover all heat networks developed and operated in zones and we are seeking views on whether additional consumer protections are needed for heat network customers within zones.

The Impact Assessment accompanying this consultation estimates that our proposals will deliver benefits worth £560 million and enable an additional 31 TWh of deployment in the period to 2050 (around 7% of total UK heat demand). This is a useful contribution towards the levels of heat demand which the Climate Change Committee considers heat networks can provide. However, it demonstrates that zoning on its own will not be sufficient to deliver the full potential of heat networks in contributing towards net zero. We will continue to explore complementary measures to drive the heat network market, and work with colleagues across Government to ensure zoning aligns with other policies which support local action in making progress towards net zero.

Aspects of our heat network zoning proposals will require new primary legislation, which we will seek to introduce when parliamentary time allows. Responses to this consultation will help us to refine and finalise our proposals for the development of these primary powers. Secondary legislation (regulations) will be used to implement the policy, and we envisage consulting as necessary in future to support the development of these regulations and ultimately the implementation of heat network zoning by 2025.

1. Introduction

Heat networks & net-zero

Heat in buildings is one of the biggest sources of greenhouse gas emissions in the UK, accounting for 23% of total UK emissions. In 2019, the UK committed in legislation to bring all greenhouse gas emissions to net zero by 2050. In 2021, the government laid legislation for the UK's sixth carbon budget, proposing a world-leading target which would reduce greenhouse gas emissions by 78% by 2035 compared to 1990 levels.[1] This is in line with the level recommended by our expert advisers at the Climate Change Committee (CCC).

Decarbonising heat is a key part of the Government's strategy and underpins the Prime Minister's Ten Point Plan for a Green Industrial Revolution, the Energy White Paper, and our upcoming Heat and Buildings Strategy. It is a challenging undertaking that has no single solution and will require a combination of leading-edge technologies and increased customer options to make it happen. However, it is certain that heat networks will be vital to making net zero a reality. They are a proven, cost-effective way of providing reliable, low carbon heat at a fair price to consumers, while supporting local regeneration.

Heat networks can deliver space heating, hot water, and/or cooling from a central source or sources to a wide range of buildings. Heat networks can benefit from economies of scale and can make use of otherwise inaccessible low-carbon sources such as heat from energy from waste, or heat recovered from industry or environmental sources such as ground and river source heat. This can also mean less pressure on our electricity networks as we decarbonise our heating. The scale of heat networks and ability to harness thermal storage means they can provide demand flexibility to the energy system helping to balance supply and demand and alleviate network constraints.

Heat networks currently provide approximately 2% of UK heat demand and the CCC estimated in 2015 that with Government support, they could provide 18% of heat demand by 2050 in a least-cost pathway to meeting carbon targets. There are over 14,000 heat networks (12,000 communal and 2,000 district) in the UK, providing heating and hot water to approximately 480,000 consumers.[2]

Given their potential, government has been supporting heat networks since 2013 to grow the sector and create the conditions for a sustainable market. Government initiatives include the Heat Networks Delivery Unit (HNDU)[3] and the £320m Heat Networks Investment Project (HNIP)[4] which have provided financial support and guidance to the developers of networks.

To sustain this growth, BEIS is increasing this investment to over half a billion pounds in the Heat Network Transformation Programme. This programmatic approach brings together several heat networks initiatives into a single transformation programme that includes providing

[1] BEIS (2021), UK enshrines new target in law to slash emissions by 78% by 2035: https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035
[2] BEIS (2018), Energy Trends: March 2018, special feature article - Experimental statistics on heat networks: https://www.gov.uk/government/publications/energy-trends-march-2018-special-feature-article-experimental-statistics-on-heat-networks
[3] BEIS (2021), Heat Networks Delivery Unit (HNDU): https://www.gov.uk/guidance/heat-networks-delivery-unit
[4] BEIS (2018), Heat Networks Investment Project (HNIP): https://www.gov.uk/government/collections/heat-networks-investment-project-hnip-overview-and-how-to-apply

new government funding to deliver more low-carbon heat networks to unlock large scale, low or zero carbon sources of heat[5], facilitating more efficient heat networks using sector regulation, targeted support for existing networks and building up skills in the sector encouraging investment and jobs growth to support the growth of the sector and keep costs down.

We are also developing options for regulating the market to drive decarbonisation and enhance consumer protection, including on pricing, whilst supporting market growth ('Heat Networks: Building a Market Framework'). Work is currently underway to engage further with stakeholders and refine the policy ahead of implementing the regulatory framework.

Heat networks are also important as part of our upcoming Heat and Buildings Strategy which we will publish in due course. Local-level energy planning could help areas better prepare for the transition to net zero, reduce overall costs, mitigate risks and seize local opportunities. The Government and Ofgem are currently evaluating existing action and exploring further options to support local energy system mapping and planning for the transition to net zero.

Local area energy mapping and planning could support a heat network zoning policy: helping to identify where heat networks offer the most cost-effective and appropriate decarbonisation pathway for a given local area, taking into account alternative solutions, electricity network capacity and access to waste heat sources.

1. Do you have views on how local area energy mapping and planning can best support heat network zoning?

This work also supports Government's wider reform of the planning system. In August 2020, the Government published a consultation on proposals for reform of planning to streamline and modernise the planning process.[6] At a high level this proposed:

- more democracy taking place more effectively at the plan making stage;
- taking a digital, data-driven approach to modernise the planning process;
- a new focus on design and sustainability, including ambitious improvements in buildings' energy efficiency standards to help deliver our net-zero commitments;
- improving infrastructure delivery in all parts of the country and ensuring developers play their part, through reform of developer contributions;
- taking steps to support renewal of towns and city centres.

All principles which have guided the development of heat network zoning.

The heat network sector will therefore be crucial for the overall decarbonisation of heat, offering a low regrets option, across all CCC pathways. This requires the sector to shift towards low-carbon heat sources, whilst continuing to grow in order to supply more of the overall heat demand. Our aim is therefore to maximise the amount of carbon savings within the heat network industry in the mid-2020s, but also to encourage projects that have the prospect

[5]The Green Heat Network Fund (GHNF) is a £270m capital grant fund, available for the public and private sector in England from April 2022 that will support the development of low and zero carbon heat networks. We believe that the introduction of zoning will facilitate a greater number of applications to the GHNF https://www.gov.uk/government/consultations/green-heat-network-fund-proposals-for-the-scheme-design

[6] See the "Planning for the future" consultation available: https://www.gov.uk/government/consultations/planning-for-the-future

of expanding, so that the sector is well prepared to meet future carbon budgets in the 2030s and onwards.

Heat networks & Devolution

Heat network policy is devolved to Wales, Scotland, and Northern Ireland, therefore the proposals in this consultation apply to England only. Scotland recently enacted the Heat Networks (Scotland) Act 2021 which includes proposals similar to zoning, while Wales has introduced heat network policy in the context of the spatial planning document the National Development Framework, Future Wales. We work closely with the devolved administrations in Scotland and Wales and Northern Ireland on heat network policy and regulation in order to secure consistency for the sector and will continue to do so.

What is heat network zoning?

A heat network zone will be a designated area within which heat networks are the lowest cost, low carbon solution for decarbonising heating for an area. Within a zone, certain types of building must connect to their local heat network in a given timeframe.

Whether a heat network or an individual building-level solution is lowest cost depends on a range of factors which will be considered ahead of designation, including the heat density of an area, the availability of natural (ground, water, air) or recovered (industrial or process) heat sources and the costs of upgrading the local distribution network.

Why heat network zoning?

Heat network zoning will provide clarity by demonstrating where heat networks are the most viable solution for decarbonising heat, will enable long term planning and coordination between stakeholders and increase investor certainty.

Zoning is intended to mitigate a number of risks relating to heat network deployment. These risks deter investors, force projects into particular ownership models, and result in smaller, less strategic and higher carbon networks. This is holding back growth in the sector and has limited the role which heat networks play to support delivery of our net zero commitments.

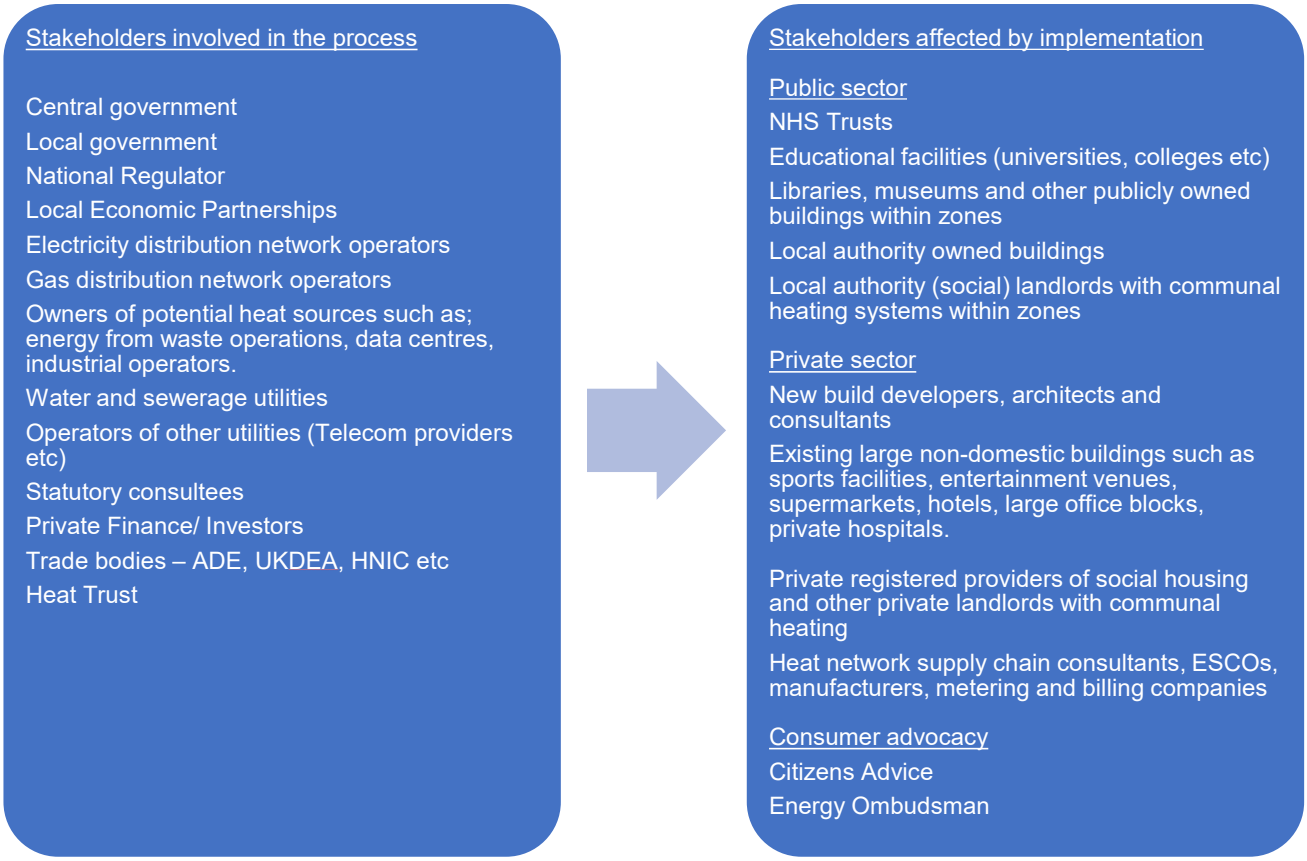
By identifying where heat networks are low regrets solution to heat decarbonisation in certain areas, zoning will provide local stakeholders with clarity and confidence as to where heat networks should be located.

By providing clarity on the respective roles and responsibilities at the national and local level, zoning will also provide a framework for engaging stakeholders, allowing for better long-term planning and coordination, faster roll-out of networks and reduce cost.

The risk of future heat loads not connecting to networks can create uncertainty which further hampers investment. Due to this perceived risk, projects need to achieve higher rates of return than other similar types of infrastructure to attract investors. Certain buildings in heat network zones will be required to connect to a heat network if cost effective which will unlock scale, increase the number of viable opportunities and drive the pace of deployment while reducing cost and enabling new investment models.

Who will this policy affect?

The diagram below indicates stakeholders who may be affected by zoning and who may wish to respond to the proposals in this consultation.



In addition, individuals living within zones, especially those living in buildings with communal heating may also be affected by the introduction of heat network zoning as the building may be required to connect to a new district heat network. BEIS has commissioned a social research consultancy to conduct a series of workshops and surveys with consumers likely to be affected by the zoning proposals to identify their views. We will use the results of this research to refine our policy development, ensuring that zoning takes local perspectives into account.

Heat network market framework

In February 2020 we published the market framework consultation[7] on policy options for regulating heat networks. This confirmed our intention of establishing a regulatory framework for heat networks which protects consumers, promotes technical standards, and drives forward the growth and decarbonisation of the heat networks market.

With the introduction of a regulatory framework, our expectation is that all heat network domestic consumers, and some non-domestic consumers such as those operating microbusinesses, should have ready access to information about their heat network, a good quality of service, fair and transparently priced heating and a redress option should things go

[7] Heat networks: building a market framework. Consultation link: https://www.gov.uk/government/consultations/heat-networks-building-a-market-framework

wrong. The introduction of mandated technical standards will drive efficiency, reliability, and quality of service. We also intend to use regulation to ensure continued heat supply to consumers in the event of supplier or operator failure.

Under our proposals, heat network schemes will be authorised to operate under the market framework if they demonstrate compliance with certain minimum consumer standards. There will also be an optional licence for entities wishing to become 'statutory undertakers' which will enable these entities to have certain rights and powers such as permitted development rights, linear obstacle rights, street work permits and ancillary easements and wayleaves.

In the future regulated market, we intend for the experience of a heat network consumer living within a zone to be broadly the same as heat network consumers living outside of a zone. We consider the implications of zoning for consumers in the Consumer Implications section of this consultation. The heat network regulator will take enforcement action where there are cases of non-compliance causing significant consumer detriment. The areas where we think zoning specific enforcement actions are required are discussed in the Enforcement, Monitoring and Reporting section of this consultation.

Lessons learnt from other countries

The concept of using regulatory levers to encourage the deployment of heat networks is not new in England. There are a handful of examples where local authorities encourage heat networks in certain areas or under certain conditions. Examples include the Greater London Authority (planning guidance),[8] Bristol City Council (a heat priority area)[9] and Leeds City Council (a local development order)[10] amongst others.

Heat network zoning has played a substantial role in the development of heat networks of many neighbouring countries, and the introduction of it in England will match commitments by similar countries, like the Netherlands, that are also trying to grow their domestic markets from a low base. We have summarised the cases we have considered below and refer to them where relevant in the sections which follow.

In Denmark and Germany, heat network zoning was seen as necessary to assist the growth of the market. In both countries, municipalities are responsible for updating and preparing heating plans. Germany's approach is to define zones by the density of heat loads within a given area, with some variation possible between states, and then mandate certain buildings to connect within the zone.

In Denmark, mapping of heat network areas and natural gas areas began in 1979 following the Heat Supply Act. This required municipal authorities to identify zones where district heating was the most suitable based on an options appraisal. Many of these zones have been updated over time and in some cases has resulted in former natural gas areas being converted to heat networks. Heat network zoning in Denmark has been reformed in recent years as the market has reached near saturation.

[8] See: https://www.london.gov.uk/sites/default/files/gla_guidance_on_preparing_energy_assessments_-_march_2016.pdf
[9] See: https://www.energyservicebristol.co.uk/business/heat-networks/
[10] See: https://www.leeds.gov.uk/docs/Leeds%20District%20Heating%20Network%20adopted%20LDO%202017.pdf

Scotland and the Netherlands are both developing their zoning policy although these policies are at different stages, in both countries a tool has been developed to allow authorities / municipalities to determine whether an area is suitable for heat networks. In Scotland, where zoning is governed by the Heat Networks (Scotland) Act 2021, once an area has been deemed suitable further investigations are undertaken to assess the area in more detail.

In the Netherlands, municipalities will be required to assess the suitability of different low carbon technologies (including heat networks) in respective 'catchment areas' under the Heat Act 2.0 bill. These assessments then form part of the transition outlook for the area. A consumer may opt out of connection to the network, but they would be required to present a viable alternative method of low carbon heating. There are also specific carbon targets for both new and existing heat networks and, under new proposals, every heat network operator must comply with a performance standard for CO2 emissions which is made more stringent each year with the aim that all heat will be zero carbon by 2050.

2. Zoning process, and roles and responsibilities

In this section we first describe the type of heat networks which will be included in the heat network zoning policy. The following sections then give a high-level outline of the proposed process from zone identification and designation, through to delivery of heat networks, their operation, and the review of the zone.

We provide further details on a number of functions and roles and each stage of the zoning process in the subsequent sections.

Heat networks in scope

The zoning policy will support the delivery of district heat networks. These are heat networks which distribute heat to multiple buildings from a central source or sources (compared to communal heat networks, which distribute heat from a central source(s) to multiple dwellings in a single building). We are focussing on district schemes because by serving more customers these can deliver economies of scale and make better use of large low carbon heat sources and thermal stores. At the same time their scale increases the barriers to their deployment today, even where they would be cost-effective.

Communal heating systems will still be an important part of the market in zones. Existing communal networks may be connected to larger district heat networks in zones, and we are proposing that new buildings within zones should be required to install a communal system if appropriate to facilitate the later connection of the building to the larger district scheme.[11]

At this stage we do not propose a minimum size for district heat networks within a zone. On balance, we believe that maintaining flexibility in the policy is more appropriate than setting upfront a minimum threshold of annual heat supply or heat demand.

Finally, the initial focus of zoning will be on delivery of heating although we will ensure that cooling demand can be accounted for later as the policy develops and matures.

2. Do you agree or disagree that the scope of the proposed zoning policy should prioritise district heat networks with cooling permitted but not required? If you disagree, please explain your reasoning.

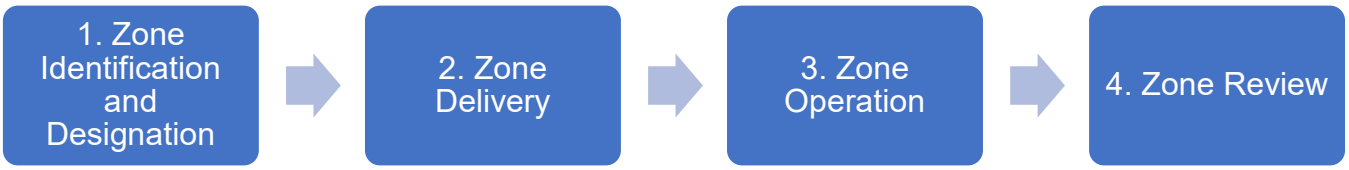
3. Is there anything else we should consider with regards to cooling in the context of the zoning policy?

4. Do you agree or disagree that there should be no minimum threshold for heat supply or heat demand?

[11] 'District heat network' means the distribution of heat from a central source of production through a network to multiple buildings or sites. 'Communal heat network' means the distribution of heat from a central source to multiple dwellings in a single buildings.

The zoning process

In this section we provide an overview of the proposed zoning process. We provide further detail on each stage in following sections.



Stage 1: Zone identification and designation

We propose that the first step of zone identification is a national mapping exercise which would identify and publish areas where heat network zones are likely to be appropriate. These national outputs would then be refined at local level, consulting within the local community including buildings that would be required to connect. Based on this work, zones can be designated in areas where heat networks are the lowest cost low carbon heat solution. We generally expect zones to be designated by local government but there will be some flexibility.

Stage 2: Zone delivery

Delivery of heat networks in the zone would begin simultaneously with the designation of the heat network zone. We propose that local government would determine, with advice from the central authority (with some flexibility regarding the roles), how the development and operation of a heat network in a zone is procured and delivered. This would include deciding whether one or multiple heat networks are to be developed in the zone.

Stage 3: Zone operation

In the operational stage of the process, heat network(s) will be built, expanded and operated within the zone. Heat networks will report on performance, and their compliance with zoning and market framework regulations will be enforced.

Stage 4: Zone review

We think it is sensible to allow for reviews of a designated heat network zone. We don't expect heat networks zones to be fixed in shape and we acknowledge that the pathway to net-zero will result in changes in the energy market between now and 2050. We will need to balance this requirement for flexibility against the risks that zones are intended to mitigate.

The role of the central authority

In order to identify, designate, deliver, and review heat network zones a range of functions will need to be carried out. Some we propose should be carried out by a central national body, to ensure standardisation and because some tasks are most efficiently carried out at this level. Other functions may be best fulfilled at local level to ensure local experiences and knowledge are brought into the process.

To identify suitable areas for zoning across England, we consider a standardised national methodology is required for the identification and designation of zones. We consider this should be developed by a central authority and presently we consider central government is best suited to deliver this function. We envisage the standardised national methodology would entail an initial national mapping exercise, also carried out by central government, followed by refinement and input from actors at a local level to identify a potential zone. We discuss details of the role of the central role, and flexible approaches for supporting local actors, in the methodology section (part 3).

We propose the central government body would also act as the national Zoning Data Custodian. This role would be responsible for collating, using and managing data from a wide range of sources to inform the methodology. We expect the Data Custodian to have responsibility for the collation, verification, cleaning and improvement of data, including where it is derived from publicly available data, data available to certain public sector bodies, data from local authorities and data from private organisations.[12] The zoning Data Custodian would also have responsibility for managing the access and security of data. Data reporting requirements placed on the Zoning Coordinator, heat network operator and others are discussed in more detail within the enforcement, monitoring and reporting section.

We envisage the functions of central government to include the below and explore the implications of these functions in more detail in later sections.

- Developing standardised methodologies and national datasets to identify potential heat network zones.
- Setting, at a national level, which categories of buildings within a zone are required to connect to a heat network, and the exemption process.
- Specifying whether heat sources must connect to the heat network, and in what circumstances.
- Introducing a carbon standard for heat networks in heat network zones.
- Determining which parties may be required to provide information to facilitate heat network zones identification and designation.
- Establishing the procedure for how the ‘local Zoning Coordinator’ is established, governed and funded.
- Establishing an appeal process for decisions taken in the zone designation and operation stages.
- Acting as Data Custodian for relevant national and local data sets,
- Establishing the criteria for reviewing the methodology used to determine a heat network zone, and/or the zone itself.

5. Do you agree or disagree that some functions should be carried out centrally? If you disagree, please indicate why.

[12] Some local-level data will not fall into the remit of the zoning Data Custodian, but instead will be held and managed at local level by local government. This could include technical zone-specific data and information such as stakeholder details.

6. Is there specific data you think should not be collated and managed at a national or central level?

The role of heat network zoning coordinator

In addition to the functions described for a central authority in the previous section, the policy requires a range of functions at a local level. We propose to introduce the new role of heat network Zoning Coordinator, which we generally expect to be undertaken by local government. We propose that local government in the relevant area can opt to act as the Zoning Coordinator at county, district, or metropolitan level, or as several local authorities working jointly.

We envisage the functions of the Zoning Coordinator to include the below and discuss these in more detail in later sections ('designation of heat networks' and 'delivery and operation of heat networks'):

- Optional engagement in zone identification;
- Obtaining the local data that is required for the methodology;
- Local engagement and consultation on zone designation;
- Formal designation and registration of the zone;
- Determination, with advice from central authority, on the zone delivery model;
- Carry out the procurement process, with support from central authority, if needed;
- Enforcement of local zoning requirements;
- Monitoring heat network development within the zone;
- Monitoring and reporting on the performance of a heat network zone; and
- Carrying out zone reviews if and when appropriate.

7. Do you think there are any additional functions that we should consider for the Zoning Coordinator? If so, please describe these functions and explain why they may be required.

8. Do you think any of these functions are better situated with a central authority? If so, please explain why.

We have considered two options for how the functions of the Zoning Coordinator are delivered at local level:

- Option 1: a local authority (county, district, or metropolitan level), or a combination of local authorities, directly carry out the functions of the Zoning Coordinator;
- Option 2: A separate body, established by a local authority or authorities (county, district, or metropolitan level), carries out the functions of the Zoning Coordinator.

For Option 2, legislation would set out how the separate Zoning Coordinator can be constituted, its functions, governance structure and funding, with oversight by the local authorities which established it.

9. Which of the options do you consider is most appropriate for the Zoning Coordinator? A) where functions are fulfilled by a local authority or authorities jointly, B) where a local authority (or authorities jointly) establish a Zoning Coordinator as a separate entity or C) another design approach. Please explain your reasoning.

Given the strategic importance of heat network zones, we are also considering that in specific circumstances the BEIS Secretary of State (or a central authority on his behalf) can fulfil the functions of the Zoning Coordinator after consultation with local government. This may be where there is a significant opportunity for a zone but it has not been designated within a specified timeframe following its identification or where there may be insufficient capacity, despite additional resources from central government, to carry out the functions of the Zoning Coordinator itself (see further in Section 3 'The designation of heat network zones').

10. Do you agree or disagree that in specific circumstances the Secretary of State should fulfil the functions of the Zoning Coordinator after consultation with the local authority? If so, in what circumstances would you consider this appropriate?

The role of the Heat Network Regulator

Our 2020 consultation on the Heat Network Market Framework proposed that the national heat network regulator will be responsible for setting and enforcing regulatory requirements relating to the provision of information, pricing, technical standards and quality of service standards to protect domestic and micro-business consumers. The regulator will be supporting the market in case of supplier failure, have responsibility for issuing licences for statutory rights and powers to heat network operators in England and be involved in assessing the decarbonisation of networks.

Within zones we propose that the protection provided by the national regulator should be extended, in some areas such as pricing, to include all consumers who are required to connect in zones. The section on consumer implications below discusses these considerations in further detail.

In addition, we are considering whether the national regulator should have the power to regulate the costs for heat network connections in a zone. This is discussed in detail in the section on requiring connections. Finally, we are considering the most appropriate and cost-effective approach to managing the registration of zones and Zoning Coordinators; to avoid duplication and overlap between roles and responsibilities.

11. Are there additional functions that we should consider for the national regulator with regards to zoning? If yes, please describe these and explain why.

Funding, resources and skills

The roles and responsibilities presented in this consultation will have resource implications on government at different levels. We have been exploring which roles and responsibilities best sit with either national or local government, and what the resultant costs would be.

In the Impact Assessment (IA) which accompanies this consultation we present more detail on the cost implications of the proposals on different parts of government. How these extra costs will be met, particularly for local authorities, will be an important consideration at the forthcoming Spending Review and we acknowledge that heat network zoning policy will only be successful where local authorities have the right resources to implement their responsibilities effectively.

As described in the section above on 'the role of the heat network Zoning Coordinator', in most cases, we would expect the Zoning Coordinator role to be undertaken by the local authority (or local authorities acting jointly). To help improve our evidence base, we would be interested in your estimate of how many staff may be required to fulfil all the functions of the Zoning Coordinator at a local authority level.

12. Considering similar functions in local government (such as those related to local plans, strategic flood risk mapping and clean air zones), what do you consider are the key resources and skills needed to fulfil the functions of the Zoning Coordinator at local authority level?

3. Designation of heat network zones

Introduction to the proposals in this section

This section sets out proposed key elements of the methodology, and how it is applied, for identifying and designating heat network zones. We discuss proposals regarding who should develop and apply the methodology and consider whether certain parties should be consulted before a heat network zone is designated.

In this section we also consider whether and in what circumstances certain buildings within a heat network zone should be required to connect to the network and use the heat generated, and whether potential heat sources should also be required to connect.

Finally, this section considers whether specific parties should be required to provide relevant data to support zone identification and designation and makes proposals for ensuring heat networks in zones are low carbon.

Methodology

Overview

We require a range of low carbon heating technologies to replace fossil fuels and meet our Net Zero target at lowest cost, including heat pumps, heat networks, and potentially the use of

hydrogen. Different areas, and different buildings within the same area, will be suited to different heating technologies. Heat network zones are areas where heat networks are considered the most suitable because they are the lowest cost, low carbon solution.

As part of our City Decarbonisation Delivery Programme, BEIS have worked with six cities (Bristol, Birmingham, Greater Manchester, Leeds, Newcastle and Nottingham) to pilot the identification of potential heat network zones. This work has informed the approach outlined in this consultation, particularly in relation to the methodology and the data likely to be required.

The term "methodology" refers to the processes and tools for identifying a geographic area as a heat network zone and getting the heat network opportunity ready for the market. This will include several stages of modelling and mapping as well as engagement of local stakeholders and further feasibility work, all of which is set out in more detail in the following sections.

We propose that central government develops a standardised, national methodology. This would enable a robust and transparent approach for heat network zones to increase overall efficiency, drive consistency and improve understanding for stakeholders. It will minimise the duplication of effort at a local level and ensure that local input is best targeted at the stage it is needed – the refinement and designation of the zone. Furthermore, a standard methodology, implemented alongside the introduction of common data standards, will also better enable the policy to adapt to new assumptions, parameters, carbon targets or policies when those are introduced.

We plan to set out the methodology using an 'Approved Document' approach, similar to how Building Regulations are specified. This involves specifying the overarching requirements for the methodology in regulations, while the detail of how the requirements are achieved are laid out in a separate 'Approved Document'. The 'Approved Document' will not be legislative and whilst updates would require consultation it would not require an amendment to legislation, providing a level of flexibility which will ensure the methodology remains up-to-date.[13]

We propose that the methodology will specify the data, parameters, and the approach to modelling that will enable the mapping of heat network zones. The objective of the methodology will be to determine where heat networks are lower cost than low carbon alternatives in an area. Key elements will include the level of local heat demand and its geographic density, heat supply, any alternative low carbon heat sources, performance and costs assumptions, and relevant local socio-political and environmental considerations. It may also need to account for any likely fabric efficiency improvements which reduce the demand in each building to ensure that the zone designation remains appropriate over time.[14]

The fabric efficiency of buildings may also affect the choice of heat source, network design and operating temperatures. Because of this further work is being carried out to establish how and against which low carbon alternative (counterfactual) the methodology will test heat networks against.

[13] Further information and a brief description of "Approved Documents" in the context of Building Regulations can be found in the Manual to the Building Regulations, HMG 2020 (available at: https://www.gov.uk/guidance/building-regulations-and-approved-documents-index#manual-to-the-building-regulations).

[14] A number of policies which promote and require the installation of fabric efficiency measures in buildings already exist or will be introduced (for example, Minimum Energy Efficiency Standards, the Social Housing Decarbonisation Fund and the Future Homes Standard). We intend to factor these into the identification and designation of heat network zones where feasible.

While we are not pre-determining the mechanism or outcome of the methodology in this consultation, we expect the factors that are more likely to make heat networks lower cost in an area include higher density of heat demand, access to low carbon heat sources such as recovered heat from industrial processes or energy from waste plants, and opportunities to reduce the need for electricity network reinforcement (for example by using alternative low carbon fuels).

We further expect the modelling of a heat network solution against a low carbon alternative to reflect a range of costs, such as:

- Installation costs (for heat networks this would include the generation and distribution infrastructure);
- Costs of replacing heating assets;
- Operation costs including fuel and maintenance costs;
- Energy system costs, including costs of reinforcing the electricity network to meet increased electricity demand (and could include revenue opportunities from demand side response and other forms of flexibility);
- Enabling costs such as fabric efficiency measures or internal improvements to wet heating systems.

This may best be achieved through a robust set of nationally agreed cost benchmarks. We will consider responses to this consultation and, through further industry engagement and testing in zoning pilot projects, continue to develop and test the methodology.

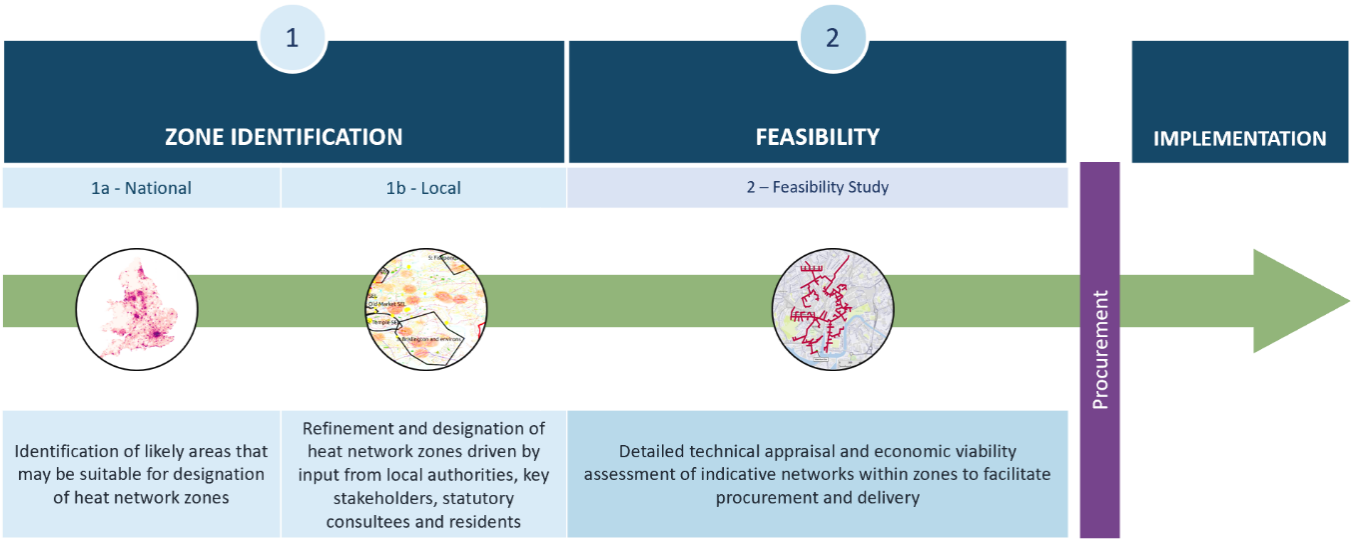
13. Do you agree or disagree that a standardised national methodology would help to A) enable a transparent approach for identifying and designating heat network zones, B) increase overall efficiency, C) drive consistency, and D) improve understanding for stakeholders?

14. Do you agree or disagree with an 'approved document' approach whereby the methodology can be updated without legislative amendments? Would you recommend alternative approaches?

Zone identification and feasibility stages

The proposed methodology is divided into two key stages as outlined in the image below. It reflects an emerging preferred approach which is being developed in collaboration with the six areas which are part of BEIS' City Decarbonisation Delivery Programme. The methodology will continue to evolve as we pilot more areas. These stages are:

- Zone identification: A national analysis and prioritisation of heat network opportunity areas followed by local refinement to determine heat network zones.
- Feasibility: A feasibility study or studies of heat networks within zones to inform the business case for deployment and, where relevant, procurement of a developer.



Stage 1: Zone identification

The zone identification stage is split into two steps:

1a) National: A national mapping exercise will be undertaken at the granularity of building and street level (linear heat density approach[15]) as opposed to a district or neighbourhood level as this (heat density approach) has been deemed to be too high-level and therefore unlikely to lead to robustly designated zones. It will make use of heat demand data, heat supply data, likely distribution routes and known constraints, heat network costs and assumptions which are available at a national level. Where data is unavailable, we will consider an approach to temporarily filling data gaps and/or using placeholder data to allow better quality datasets to be utilised in the future. The output from this stage will be a national heat network zone priority map.

1b) Local: Following the initial data-driven exercise, the zone boundaries will be refined. The refinement would incorporate better quality heat demand or heat supply data that is collected through engagement with key stakeholders, and also using some powers for the Zoning Coordinator to require data/information from relevant parties (see 'requirement to provide information' below) to account for a variety of other factors not present in national data sets. This will likely comprise new build developments; planned town or city regeneration; building refurbishment or asset rationalisation plans; lifetime of heat generation assets; local grid infrastructure; boiler replacement and planned fabric works; political, social or environmental sensitivities and any local net zero or carbon reduction targets.

The outputs from Stage 1 will be identification of local heat network zones, on the basis of which zones would be formally designated. We further discuss who may formally designate the zone in the following section ('Application of the methodology and designation of the zone').

[15] Linear Heat Density is the total heat demand divided by the length of the heat network pipes (demand/length). This calculation is often used as a proxy for economic viability as it approximates how much revenue can be generated against the capital cost of installing the heat network. A heat density approach divides a given area by the demand (area/demand) and therefore does not sufficiently account for the length of the network, its cost, or potential revenues resulting from its operation.

Stage 2: Feasibility

The feasibility stage would follow a similar approach to that outlined in the CIBSE/ADE Heat Network Code of Practice (2020)[16] and existing Central Government support for heat network feasibility stages.[17] However, it is envisaged that with scale, a standard heat network tool would be developed to partly automate some of the process to increase the speed at which opportunities are taken to market and reduce the development costs associated with this work. This is something we are developing as part of zoning pilot projects.

This stage is intended to support either a business case for delivery by the local authority or to sufficiently de-risk the procurement, contracting and delivery stages where a private sector heat network developer will develop networks within a zone(s). The level of detail at which the feasibility study is undertaken will generally be determined by how commercially attractive the zone is. Where it is deemed likely that a heat network developer will be procured to develop and operate the zone, a sufficient level of detail is required to ensure that the procurement is robust and well-defined to articulate the key performance indicators or outcomes to be delivered as part of any contract or agreement. This will also give greater reassurance to the developers being procured.

We consider that the feasibility stage is unlikely to include very detailed design work as that would take significant time and could result in some unnecessary work as a heat network developer is likely to want to adapt any plans for their particular requirements.

15. Do you agree or disagree with our proposal for how zone identification should be undertaken?

Application of the methodology and designation of the zone

We recognise that there will be varying levels of input and interest from local authorities in the identification, designation, and delivery of heat network zones. To ensure consistency in the application of the methodology and avoid duplication, we consider some central coordination is necessary and at present central Government is best placed to deliver this central function. This includes the national mapping exercise (stage 1a) which we propose should be carried out and published by central government. However, there is some flexibility as to the roles played by central and local government, as well as the private sector, following this initial mapping exercise. Although there will be flexibility with regards to the lead and support roles in the various stages, we expect that local authorities and communities will always need to be engaged with the local refinement of the zone (stage 1b) to ensure that local factors, data, and engagement is integrated into the methodology.

We have identified three potential delivery models, set out in the table below, which would provide flexibility to reflect local variations:

A: Central government led: Central government would commission and lead the zone identification and feasibility stages, with critical support from the local authority and other key local stakeholders			
	Central government	Local authority / Zoning Coordinator	Private Sector

[16] https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q3Y00000IMrmGQAT
[17] https://www.gov.uk/government/collections/heat-networks-guidance-for-developers-and-the-supply-chain

National mapping and identification of likely suitable areas (stage 1a)	✓		
Local refinement (stage 1b)	✓	*	
Feasibility (stage 2)	✓	*	
B: Local authority-led: Central government would commission and lead the initial analysis required to identify a potential heat network zone (stage 1a). The local authority (or local Zoning Coordinator) would take the lead for the local refinement (stage 1b) and feasibility stages, with support as necessary from central government			
	Central government	Local authority / Zoning Coordinator	Private Sector
National mapping and identification of likely suitable areas (stage 1a)	✓		
Local refinement (stage 1b)	*	✓	
Feasibility (stage 2)	*	✓	
C: Private sector-led: Central government would commission and lead both aspects of the zone identification stage (initial analysis for identifying heat network zones and local refinement), with critical support from the local authority and other key local stakeholders. The feasibility stage would then likely be led by the private sector.[18]			
	Central government	Local authority / Zoning Coordinator	Private Sector
National mapping and identification of likely suitable areas (stage 1a)	✓		
Local refinement (stage 1b)	✓	*	
Feasibility (stage 2)			✓

✓ = Lead role; * = Support role

In our pre-consultation engagement, we spoke to local authorities and heat network developers and operators. Local authorities told us that they want to combine national support which helps identify where heat networks may be sensible, with local democratic accountability and insight. We envisage that robust national guidance and support would give local authorities greater ability and confidence to identify appropriate zones and overcome challenges from buildings resistant to connection. This was echoed by heat network developers and operators. We expect that all three delivery models will address this issue and will be supported by the policy.

We further propose that, where a heat network zone has been identified based on the output of the national mapping and local refinement (stage 1), the Zoning Coordinator formally designates the zone. We expect the local authority to fulfil this function in the majority of cases.

[18] In some extreme cases this may continue to be developed by central government.

In some cases, where there is a significant opportunity but the zone has not been designated, the BEIS Secretary of State may designate or require the local authority to designate the zone. We intend that these designation powers would be used infrequently and only in situations where there is a risk of not developing a substantial low-carbon network. These designations of zones would always be done in consultation with the local community with assistance from the local authority. The Secretary of State would be required to consider the position of the local authority and the extra resources they would require in order to designate the zone.

We believe our approach combines local decision-making and accountability with sufficient support and guidance from central government. This 'two-stage' approach of having national mapping combined with more local zone design and designation should avoid the duplication that would come from many local areas identifying and designating zones in different and potentially inconsistent ways.

16. Do you agree or disagree that central government should carry out the national mapping identification stage? If you disagree, please explain why.

17. Do you agree or disagree that the formal zone designation should occur at local government level (allowing for exceptional cases)? If you disagree, please explain why.

18. Do you agree or disagree that the BEIS Secretary of State should be able to require local authorities to designate a zone, or designate it him/herself where it has been identified? Please explain your reasoning.

Key local stakeholders and statutory consultees

We propose that during the local refinement of the zone there will be input from local communities and stakeholders, with opportunities for them to contribute to the design of the zone and provide views ahead of its designation. We consider that the following parties should be involved in stages 1 and 2 of the methodology:

- Zone identification (Stage 1): local authorities, electricity distribution network operators (DNOs), gas distribution networks (GDNs), owners of potential heat sources;
- Feasibility (Stage 2): local authorities, DNOs, GDNs, water and sewerage utilities, operators of other utilities, e.g. telecoms providers, owners of potential heat sources and buildings which would be required to connect.

We consider there may be benefits in specifying these – and potentially other parties – in legislation as bodies that must be consulted, i.e. 'statutory consultees'. Not introducing this requirement could risk an inconsistent approach to seeking and considering local stakeholder input.

A similar approach has been taken by the Scottish Government in the Heat Networks (Scotland) Act 2021: section 48(2) which requires that, "before deciding whether to designate an area as a heat network zone, a local authority must consult such persons, and in such manner, as the Scottish Ministers may specify by regulations."[19]

[19] Heat Networks (Scotland) Act 2021: https://www.legislation.gov.uk/asp/2021/9/contents/enacted

We propose that this list of statutory consultees would be set out in secondary legislation, rather than primary legislation, as this would ensure a more flexible approach should the list of statutory consultees need amending over time. An initial list of potential statutory consultees is included in the appendix, but we will likely consult again on the final list before including in later regulations.

19. Do you agree or disagree that the legislation should set out a list of statutory consultees who must be consulted before a heat network zone is designated?

Requiring connections (buildings and heat sources)

The risk of future heat loads not connecting to networks creates uncertainty which can hamper investment. Knowing that certain types of building within a heat network zone will connect to a district heat network and use the heat provided, provided it is cost-effective to do so, gives project sponsors and investors greater assurance which helps support delivery of viable, large-scale heat networks.

Another key factor in determining the viability of a heat network zone is whether there are existing sources of low carbon heat which can provide the supply for a heat network within the zone.

Successfully addressing these supply and demand considerations can further support the optimisation of the scale of a heat network, with associated local emissions reductions from heat, and potentially lead to a fall of fixed costs of the network per consumer.

Requiring buildings to connect

There are a range of potential options for which buildings within a heat network zone may be required to connect to the district heat network and use the heat provided:

- No buildings are required to connect, although they may be incentivised to connect or required to assess for connection;
- Some types of building are required to connect;
- All buildings are required connect.

To meet the scale of ambition for heat network deployment suggested by the Committee on Climate Change, a baseline annual growth rate of around 6% will be necessary. We do not propose pursuing the first option as we do not consider that it would support delivery of this level of ambition.

At the other extreme, requiring all buildings within a heat network zone to connect would increase costs, for example where an individual building's heat demand is low and/or where the network needs to be extended over long distances to connect to an existing building. Requiring all buildings in a heat network zone to connect would also increase administrative burdens on building owners and users, many of whom would not be equipped to engage in negotiations with heat network operators.

We therefore consider that requiring only certain building types within a heat network zone to connect to district heat networks is the most appropriate approach to ensure delivery of more practical, viable and large-scale heat networks.[20]

There are broadly three ways for determining whether an individual building within a heat network zone should be required to connect, based on:

- the purpose/class of building, e.g. private residential, social housing, public sector, commercial, etc.
- the levers for introducing the obligation, e.g. new builds where planning rules could oblige connection; public sector where Government can commit to connect; private sector where new powers or incentives are needed.
- a building's annual heat demand, e.g. where it is above a specific (MWh) threshold.

These approaches are not mutually exclusive and in practice some combination of these factors could be applied. Furthermore, as discussed in the exemptions section below, we propose introducing a process whereby individual buildings could seek an exemption from any requirement to connect. This is intended to prevent suboptimal outcomes – for example, where connection might result in unaffordable heat or higher carbon emissions than would otherwise be the case.

The following options have been identified:

- Low option (Option 1): All new buildings and large public sector buildings are required to connect, others are encouraged to connect. This option would use powers that are mainly available already, through planning rules and commitments that government can make for public sector buildings.
- Medium option (Option 2): All new buildings, large public sector buildings and large non-domestic buildings are required to connect.
- High option (Option 3): All new buildings, large public sector buildings, large non-domestic buildings and large residential buildings which already have communal heating, or are undergoing major refurbishment are required to connect.

While option 1 would be more straightforward to implement, it does not tackle all of the barriers to deployment that heat network zoning is intended to address. In particular, this option may not ensure sufficient numbers of buildings in heat networks zones connect to a heat network, which could undermine its viability. Options 2 and 3 address this issue by requiring a broader range of buildings to connect.

We consider options 2 and 3 are more likely to support the deployment of heat networks at scale within heat network zones. Option 3 is our preferred option as it is more likely to deliver the policy objectives of heat network zoning by requiring a broader range of buildings to connect.

As discussed in the accompanying Impact Assessment (IA), option 3 delivers quantified Social Net Present Value (SNPVs) benefits worth £560 million, compared to £290 million under option 2 and net costs of £110 million under option 1. While the capital and operating costs are higher under option 3, the benefits delivered – in terms of carbon savings, air quality benefits and net

[20] Within our definition of district heat networks we would consider ambient networks and shared ground loops as district heat networks as long as they meet the previous requirement.

energy savings – are also greater than the other options. Option 3 also leads to greater deployment of heat networks compared to options 1 and 2, reaching around 31 TWh in 2050 compared to around 21 TWh under option 2 and around 5 TWh under option 1. It is also anticipated that some of the key non-monetised benefits, such as the ability for large scale heat networks to offer grid flexibility benefits, would be higher for the preferred policy option.

In reaching this position we have considered the specific impact of the proposal on domestic consumers, recognising that the approach we take for them may need to be different from that taken for non-domestic customers. In particular, it may not be feasible to require domestic consumers within a heat network zone who have individual heating systems, to connect to a heat network. However domestic customers in shared blocks with communal heating systems already have experience of using heat from a heat network and they could be transferred to a district heat network relatively easily. We recognise there may be costs involved, both in terms of the connection itself and any works within the building to enable effective use of the heat provided, and this issue is discussed in 'Costs of connections' below.

Under option 3, domestic premises within a heat network zone which do not have communal heating systems installed will not be required to connect but may still choose to connect to the heat network. The owners of these premises may be able to negotiate favourable terms or may otherwise recognise that the heat network is the most cost-effective way to decarbonise their building. Overtime, voluntary connections to the heat network within a zone may make up a significant proportion of the overall connections within a zone. Our section on consumer implications below discusses consumer protection for domestic and non-domestic consumers.

We propose that the categories of buildings within heat network zones which are required to connect would be set out in legislation and apply across England, rather than be locally determined. Setting the categories in this way would respond to local government's desire to be supported by robust national guidance on how to designate zones and would avoid regional lobbying and discrepancies between zones with regards to assessment of which buildings are required to connect. We intend to allow flexibility by setting the categories within secondary legislation and consulting in more detail on the categories of buildings at a future date. This will enable us to adapt the heat network zoning policy in future, for example as we learn more about its impact in practice.

20. Do you agree or disagree that the option 3 level of ambition is a proportionate approach to deliver the policy objectives of heat network zoning? Please provide evidence to support your answer.

21. Do you think it is likely or unlikely that buildings not required to connect will voluntarily connect to a heat network within a zone? Please explain your reasoning.

22. Please indicate the kind of buildings you think are likely to connect voluntarily.

We are also considering how to define "large" non-domestic public sector and commercial buildings with regards to the requirement to connect specific buildings. For the analysis in the Impact Assessment "large" is defined as having a heat demand of over 100 MWh per year.

23. Do you agree or disagree that annual heat demand of over 100 MWh is the most appropriate threshold to use for large buildings which are required to connect? If not, what would you propose instead?

Cost of connections

A key element that requires consideration is how to calculate and allocate costs of connection. There are two issues which require consideration:

- Who should pay connection costs; and
- Whether connection costs should be subject to any oversight.

In Denmark's zoning model the building owner is generally required to pay for their connection to the heat network. These works are typically carried out by the heat network company to allow both cost-effective delivery and a well-integrated system. The customer pays a standing charge on the assumption that they are taking heat from the network. While they are not required to take heat, the vast majority of consumers do.

There are different elements of potential costs that may be relevant:

a) The main heat network pipe along the street where the building is located;

b) The 'spur' pipework connecting the building from the main network;

c) The heat exchanger/building interface;

d) Works within the building to enable effective use of the heat from the network (e.g. secondary and tertiary pipework, changes to heat emitters and fabric upgrades);

e) Ongoing maintenance, repairs and replacement of relevant components.

In general, we would expect that a) would be for the network operator, but b), c) and d) could be paid either by the network operator or the building owner/occupier, and e) paid by the party that owns each element. We recognise that cost d) can be significant, for example depending on how energy efficient the building is currently. We also recognise that the nature of these costs will differ between new and existing buildings. For new buildings we would expect that the cost of connection would be included in the overall build cost and is likely to be a marginal increase to the overall building cost, whereas for existing buildings the cost of connecting to a heat network may be more significant.

We are seeking views on two broad options on the issue of who should pay connection costs:[21]

> Option 1: government leaves it up to contractual negotiations between the heat network and the buildings to be connected to determine who pays for what element of the connection infrastructure.

Because buildings will have a timeframe within which to connect, we would expect the heat network to often offer advantageous terms in order to connect to a building sooner. Nevertheless, option 1 would likely give the heat networks negotiating advantage and buildings may be required to pay for b) to e).

> Option 2: government introduces rules (potentially cost caps) as part of zoning which prevent heat networks from charging the buildings for connection to the network

[21] We have also considered the option where the building owner pays all the connection costs, including parts of the network cost. However, this is not expected to be attractive to the potential heat network customers and is not proposed for consultation.

(predominantly to avoid charging for part b of costs above). The national heat network regulator would have oversight of this regulation.

The aim of option 2 would be to prevent the heat network developer from taking advantage of its market position (the fact that buildings will be required to connect to the networks) to charge connection costs to buildings.

24. Which of the above two broad options do you consider preferable regarding who should pay for connection costs and why? Are there other options we should consider?

Exemptions

Introducing a requirement on all building of a particular category in a heat network zone to connect may lead to sub-optimal outcomes. For example, for some buildings it may not be cost-effective to connect whereas other buildings may already have a low carbon heat source installed and therefore there are no CO2 emissions reductions to be gained from connecting to the heat network. We therefore consider that an exemptions process is needed, which could be based on the following criteria:

a) Thresholds on heat load size and profiles (e.g. certain MW, MWh p.a., building type, floor area). This could be either a threshold for all building types or different thresholds depending on building type or heat profile (such as buildings used intermittently);

b) Distance from the heat network to the building connection point;

c) Existing heating system type or condition/age (in particular where major internal changes are needed due to the form of heating at present, e.g. gas fired air heaters or direct electric heating);

d) Carbon performance of the existing/planned heating system in a building or development, i.e. a building could be exempted from connecting if the network had a higher carbon factor than the existing heating system in the building

e) Impact on consumers' bills and affordability (for example, where the ownership structure of a building may increase the risk that residential occupants of a building enter fuel poverty because of being required to connect).

These criteria would be used to assess the viability of requiring a particular building to connect to the heat network where an exemption from the requirement to connect has been sought. We propose that a standardised tool would need to be developed. This would allow assessment of exemption criteria to be undertaken on a consistent and transparent approach across England. We envisage that the details of the assessment method to be used by the tool will be part of a separate methodology document, akin to the Standard Assessment Procedure used to generate ratings for Energy Performance Certificates.

In practice, we envisage that the tool could be applied at stage 1b and/or stage 2 of the methodology phase (see above methodology section). Where the tool is applied at stage 2, we note that the tool would have to be consistent with the approach used for initially designating the zone.

25. Do you agree or disagree that a process is necessary to assess, where requested, whether an individual building should be exempt from the requirement to connect to the heat network within a zone?

26. Do you agree or disagree with the proposed exemption criteria that would be used to assess the viability of a particular building? If you disagree, please explain your reasoning.

Timescales and triggers for connecting

We propose that the requirement for specific buildings within a heat network zone to connect will need to be time-bound. Allowing buildings to connect at any time of their choosing would not help deliver investor certainty regarding heat customers. Equally, we do not consider it is reasonable to require that buildings connect immediately. Instead, we consider that a notice period will be needed which is determined in relation to one or more of the following trigger points:

a) Delivery dates of the network to provide heat, which is likely to be staggered/phased across a heat network zone;

b) Construction/completion dates for new developments;

c) Major refurbishments of existing properties;

d) When existing heating systems are replaced;

e) Other changes or regulatory requirements, including those relating to property sales.

We recognise that these triggers may not coincide. For example, a new development may be completed before the heat network can supply heat. Conversely, a heat network may be able to supply heat to an existing building which has recently installed a new heating system. We will consider appropriate timeframes in relation to these trigger points at a later stage.

Ultimately these trigger points alone may not be sufficient for enough buildings to connect and a longer-term deadline for connection may also be required. Where there is a requirement to connect within a zone in Denmark, a grace period of nine years is allowed prior to connection of an existing building to account for the condition of existing heating systems. We have considered whether a similar approach should apply in England. We note that any grace period would need to consider the policy context in England, for example implementation of the Future Buildings Standard and the Future Homes Standard from 2025, and how this will impact the expected rate at which heat networks in England will build out.

We consider it reasonable that a building within a heat network zone which is required to connect, but where an earlier trigger point does not apply, should **be required to do so within 10 years** from the point it is requested to connect by the network operator. We consider introducing this length of grace period would strike the right balance between ensuring timely delivery of heat network connections to buildings within zones which are required to connect, while not adding unnecessary additional costs that a requirement to connect within a shorter timeframe may give rise to. We welcome views and evidence on whether the proposed grace period is appropriate.

27. Do you agree or disagree with the proposed trigger points for requiring buildings to connect to heat networks?

28. Do you agree or disagree with the proposed grace period of 10 years for buildings to connect where an earlier trigger point does not apply? Please explain your response and suggest alternatives if you disagree.

Heat sources

Sources of low carbon heat are central to the case for many heat networks. For example, heat from an energy from waste plant can often be cost-effectively distributed to nearby demand. A range of other heat sources could potentially be used by heat networks, including heat from thermal power stations, industrial processes, and cooling and refrigeration.

There is a significant amount of heat available from thermal power stations and industrial and commercial sites which could be used to supply heat networks. Research conducted for our 'Opportunity Areas for District Heating Networks in the UK' report has identified some 310 TWh/year of heat generated by various different installations located around the UK (current annual heat demand from buildings in the UK is of the order of 486 TWh/year).[22] In practice, only a small proportion of this is likely to be useful due to local technical and economic factors, such as designs of specific installation and distance to demand. As part of the report, we undertook a nationwide geospatial analysis to estimate the economic potential of heat networks and the proportion of heat that could be supplied by waste heat sources. The results show waste heat supplying 14 TWh of a total 76 TWh of heat being met by district heat networks in England, which is about 19% of all heat demand in England. We note the technical potential could be lower due to local conditions.

We have considered several options for how these heat sources could best be recovered in heat network zones:

Option 1: No intervention

Option 2: Requiring owners of potential heat sources to provide relevant information to the Zoning Coordinator

Option 3: A process of consultation with industries to lead to a sector-by-sector approach, where some can be required to connect and others not; and

Option 4: Any owner of a useful source of heat, regardless of sector, can be required to connect

Without intervention, i.e. option 1, there will still be a financial case for a source of heat to provide heat. A heat network developer will have the incentive to pay the heat source owner for the heat so long as it is cheaper than an alternative heat source. The heat source owner will have the incentive to supply the heat so long as it is paid more than the cost of providing it. Furthermore, some heat sources may be incentivised to supply heat to a heat network if it supports corporate carbon objectives.[23] However, we note that for some businesses the sale of heat repays relatively small amounts of additional income compared to their primary business. From our stakeholder engagement, we understand that some heat network schemes have not progressed due to this extra revenue being insufficient.

Option 2 may be sufficient in many cases. This would require heat source owners to respond to requests for information in given timeframes (see following section on 'Requirements to provide information') with the objective of assessing the technical and economic case for connection. However, given the importance of access to heat and currently limited

[22] 'Opportunity Areas for District Heating Networks in the UK' https://www.gov.uk/government/publications/opportunity-areas-for-district-heating-networks-in-the-uk-second-national-comprehensive-assessment

[23] In some regulated sectors, such as water utilities, carbon emissions are subject to regulatory incentives. In these cases, carbon accounting methodologies will be needed.

understanding of how effective this approach will be, we consider it reasonable to introduce powers to require heat sources to connect if information sharing and cooperation between potential heat sources and the Zoning Coordinator and/or heat network developers does not deliver the intended outcomes.

Some sectors may be more suitable than others, for example due to temperature, costs to connect, effects on existing business and duties. Option 3 reduces the potential scope of required connections and focusses effort on the most valuable sectors. Alternatively, in option 4, the power to require connections could be linked to another metric of usefulness such as temperature. Further analysis of the importance and complexity of each sector work is needed to establish the most appropriate sources, and in turn which option is more appropriate.

We therefore propose that the legislation introduces powers for requiring information provision and also an option to require sources to connect and supply heat. The latter option would only be implemented if the requirement to provide information was not delivering the intended outcomes.

Furthermore, we will consider whether certain new developments, for example those relating to cooling, water treatment or larger electrical infrastructure, should be required to be 'heat network ready' if likely to be near a zone. It is generally easier if the system is designed and built with heat capture in mind and ensuring certain types of building or infrastructure are designed so as to be able to supply heat to a heat network could be part of planning powers. Some of these requirements are already in place for Energy from Waste plants, and so could potentially be extended to other regulated systems like water treatment or thermal power stations.

We are also considering whether additional legal powers are necessary to ensure that prices paid to the owners of heat sources are fair. In practice we expect regulation should not be needed, as disproportionately high prices will be constrained by the cost of alternative heat technologies. Nevertheless, we think it important to prevent the outcome that operators with heat sources maximise their income on the basis of limited competition. A system of required connections, backed by fair pricing, should allow those supplying heat to make a fair return, but not an excess profit artificially created by regulation.

29. Are there any reasons why owners of heat sources should not be required to provide information to the Zoning Coordinator?

30. Are there any reasons that we should not include powers to require heat sources to connect to a heat network (provided it is technically and economically viable)? Please explain your reasoning.

Requirement to provide information

Overview

Data is essential for the development of heat networks projects and will be equally important for robustly identifying and designating zones.

We are proposing to introduce a requirement on parties within areas likely to be heat network zones to provide data and information for the methodology so that zones can successfully be designated. We propose the parties who would be subject to this requirement will be:

- Owners of buildings in a potential or designated heat network zone;
- Owners of heat sources;
- Heat network owners;
- Landowners;

Those subject to the requirement would have to provide information, when requested, to the central authority or the Zoning Coordinator. Specifically, we propose that the requirement would provide for:

- Certain information and data to be shared;
- Responses to requests to be submitted within specified timeframes;
- Penalties for non-compliance with requests.
- The information and data we consider relevant for zoning includes:
- Data on specific heat source (e.g. generation, specification, condition, age);
- Data on heat demand (e.g. consumption profiles, type of current heating system, age of current heating system);
- Data on other heat system assets (e.g. current heat networks, radiator systems) and if available information on future plans for assets and heat demand.

We recognise the need to balance the value of this information with the cost to provide it. As such we expect to consult further to specify the way in which the power may be exercised, including prior notice, form of notice, insurance and liability arrangements, and means of escalation. We also think there is a need for a clear code of practice and mechanisms to prevent unreasonable requests of building owners, and for relief to be provided if unreasonable requests are made.

We also recognise that consideration is needed regarding how to identify who is subject to the requirement, and how they should be informed of their obligations. For example, notices could be published, served on the buildings/sites affected at the properties themselves, or served on property interests as identified through Land Registry searches.

Finally, we are also interested in views on whether it would be feasible and appropriate for the local Zoning Coordinator to delegate its information collection powers to heat network developers operating within the zone. Our proposed model for this would be if a Zoning Coordinator wanted to give exclusive rights to one or a limited number of developers within a zone so that they could request data necessary for development of the heat network. The Zoning Coordinator would be required to take on oversight of the powers and have appropriate safeguards on data collection to ensure the developers were not burdening building/land owners and avoiding anti-competitive practices. In line with the recent Energy Data Taskforce's recommendations on open data, longer term we will be working towards a market where data is more discoverable, searchable and understandable.

31. **Do you agree or disagree that a legislative requirement for third parties to provide relevant information would be necessary to help ensure the successful designation of heat network zones?**

32. **Do you have views on the scope of the proposal to require information, specifically: A) who can request the information; B) the information/data that may be sought, C) the range of parties to whom the requirement could apply?**

33. **What rules and mechanisms do you consider should be in place to protect the interests of parties who are subject to the requirement?**

34. **Do you agree with the proposal that the Zoning Coordinator should be able to delegate these powers to a limited number of heat network operators/developers in the zone in some circumstances to facilitate build-out of the zone and as long as there was appropriate oversight from the Zoning Coordinator?**

Low carbon requirement

One of our key policy objectives is that heat network zoning delivers carbon savings at scale and pace. In this section, we consider the rationale for requiring heat networks in zones to meet a low carbon requirement, and if so, how this should operate.

The case for intervention

Without additional intervention on carbon, heat networks will already face constraints on their carbon intensity. Regulatory requirements and voluntary carbon targets of building owners will limit which buildings are able to, or would choose to, connect to a high carbon heat network.

The government has a package of policies to decarbonise heat and buildings. These include regulatory requirements and funds to improve fabric efficiency and to decrease carbon emissions. We set out in our 'Energy white paper' our goal to largely eliminate emissions from domestic and commercial buildings by 2050. To meet this goal, we committed to new build-homes being low carbon ready from 2025, set a target for installing 600,000 heat pumps a year by 2028, and stated our expectation that by the mid-2030s all newly installed heating systems will be low-carbon or be appliances that we are confident can be converted to a clean fuel supply[24] and highlighted our aim for as many existing homes as possible reaching EPC Band C by 2035. We include some examples of specific measures to achieve these objectives in .

Table 1 Examples of regulatory measures to decarbonise our building stock

Building type	Examples of regulatory measures to limit carbon of heating
New buildings	Future Homes Standard: From 2025, new houses will need a heating solution with a carbon (and primary energy) performance at least towards that of a heat pump to cost-effectively comply.

[24] Energy white paper: Powering our net zero future https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future

	Future Building Standard: Similarly, this standard will be introduced from 2025 which would require new non-domestic buildings to use low-carbon heating and hot water systems to meet carbon targets in almost all circumstances.
Existing buildings	Part L of the Building Regulations: Where existing buildings connect to a heat network, Part L requires that the heat delivered by the heat network does not produce any more CO2 than the system being replaced, which in most cases will be a gas boiler. Minimum energy efficiency standards (MEES) for non-domestic private rented sector: In March 2021 we consulted on measures to implement and enforce the 2030 EPC Band B target for this sector. Decent Homes Standard review for social rented sector: The current Decent Homes Standard requires a degree of thermal comfort broadly equivalent to EPC Band F. The social housing White Paper committed to a review of the Decent Homes Standard and will consider how the standard can work to support better energy efficiency and the decarbonisation of social homes. The Clean Growth Strategy outlined an ambition for all rented homes to meet EPC Band C by 2035. Part of the review will consider how the Standard could best support this ambition. Grants and loans: For example, the Public Sector Decarbonisation Scheme is a £1bn fund to improve energy efficiency and invest in low carbon heating in public sector buildings; the Clean Heat Grant, due to launch in 2022, will be targeted at households and small, non-domestic buildings to support the installation of heat pumps.

Some businesses will additionally have their own voluntary decarbonisation initiatives. We encourage such initiatives,[25] which can incentivise the choice of low-carbon heating systems prior to it being required or beneficial in the context of a regulatory requirement.

Without a low carbon requirement for all heat networks in zones there would be no single decarbonisation limit or trajectory for heat networks in zones. The carbon intensity will depend on the carbon limit and preferences of the set of buildings the heat network is seeking to connect to. We assume buildings should not be required to connect to a heat network if it is non-compliant with a regulatory carbon target. Owners of buildings which are not mandated to connect may choose not to connect to a heat network if it is non-compliant with a voluntary carbon target. In turn those targets depend on organisations' carbon ambitions, the type, size and tenure of the building, and the mechanism of regulatory measures.

Setting and enforcing a low carbon requirement

We propose that the heat network zone low carbon requirement shall be based on a metric of grams of CO2 emissions per kWh of heat delivered. This metric reflects the approach taken for

[25] The Government recently launched the Together for our Planet 'Business Climate Leaders' campaign, a new drive to encourage small and micro businesses to commit to cutting their emissions in half by 2030 and to net zero by 2050 or sooner through the new UK Business Climate Hub.

the carbon gate in the Green Heat Network Fund (GHNF) Transition Scheme and our proposed approach for wider carbon regulation as part of the heat network market framework.

We propose emissions shall be reported to and compliance enforced by the heat network regulator reflecting proposed requirements in the heat network market framework.

At this stage we are not proposing the level at which the requirement shall be set; we intend to define this in secondary legislation. In this consultation we are seeking views on how we can appropriately set that value, though we envisage consulting as necessary in future to support the development of secondary legislation.

In any case we will need to balance our objective to deliver carbon savings with effects on heat prices and in turn the investment case for heat networks. In our decision on the limit of the low carbon requirement, we will consider evidence from this consultation, ongoing work we are undertaking on the economics of heat networks and how this will be affected by any changes to gas and electricity prices and the ability to require heat demand and heat sources to connect. The GHNF currently provides financial support for networks looking to decarbonise and government will keep under review whether additional financial support is necessary to deliver low carbon heat networks as required by the zoning policy.

Scope of a low carbon requirement: where it applies

We propose that the low carbon requirement shall apply from as soon as the zone is implemented for new networks in zones. We propose it shall also apply to new connections of existing heat networks in zones. That is, if a heat network built prior to the designation of a zone then expands after the zone has been designated, a proportion of heat delivered commensurate to the new demand would have to meet the heat network zone low carbon requirement.

Heat delivered to connections made prior to the designation of a zone would not be subject to the heat network zone low carbon requirement. Instead, heat delivered to these customers would be subject to carbon regulation as part of the market framework in England. In our market framework consultation we signalled our intent to introduce carbon regulation that would take effect from the 2030s.[26] That the heat network zone low carbon requirement will apply to new connections is to level the playing field between new and existing networks in offering new connections in zones. It also recognises that connections made prior to zone designation did not have the advantages which zoning will bring to projects such as powers to require connections.

We propose that the low carbon requirement will represent the upper limit of carbon emissions for heat networks in zones nationally. Local authorities may have more stringent carbon plans, that require lower carbon emissions than would be allowable under the national low carbon requirements. We consider the Zoning Coordinator should be able to take local carbon plans into account in determining conditions of heat network operation in a zone.

We propose the Zoning Coordinator should be able to offer grace periods for compliance, i.e. a time-limited period following connection where a heat network does not meet the requirement. Some locally specific factors may make this appropriate in achieving objectives of the policy. For example, it may be more cost effective for a building to connect to a heat network before a planned low carbon source becomes available. There is precedent for such time-limited

[26] Heat networks: building a market framework: https://www.gov.uk/government/consultations/heat-networks-building-a-market-framework

exemptions; applicants to the Green Heat Network Fund Transition scheme may make the case in their application that additional time is required to achieve the carbon intensity threshold. We consider it appropriate for Government to provide rules or guidance of how Zoning Coordinators apply such time allowance to help ensure fairness and consistency across heat network zones and these will be coordinated between the heat network regulator, government and the local Zoning Coordinators. We intend to consult on any rules or guidance in future.

35. Do you agree or disagree that heat networks developed in zones should be subject to a low carbon requirement?

36. Do you have a view on what level, or what mechanism, we should use to set a level of CO2 emissions per kWh as appropriate?

37. Do you agree or disagree that the low carbon requirement should apply to all new connections in zones (including new connections of existing heat networks), but not to heat delivered to existing connections? If you disagree, please explain your reasoning.

4. Delivery and operation of heat networks in zones

Introduction to the proposals in this section

In this section of the consultation, we describe our proposals for how heat networks are delivered in zones, what this means for consumers, and how we expect zones to be monitored and enforced.

Heat network deployment strategy

In our engagement with the heat network industry and with local government, stakeholders highlighted a desire for flexibility in how heat networks are delivered within zones. Areas suitable for heat networks are likely to be diverse and zones could vary markedly in size across the country. Moreover, different local areas may have different priorities about how they want heat networks to develop (i.e. attaching more importance to supporting business growth or regeneration of a particular district).

We want this flexibility to be a key principle for the deployment of heat networks within zones. As such we do not think that heat networks zoning legislation should limit the delivery models for zones. We envisage that the Zoning Coordinator, supported as necessary by advice and guidance from a central authority, determines the most suitable delivery model for the size and nature of its zone. We are consulting on three broad options for how heat networks are delivered in zones which are set out in more detail below (section ‘Ownership and procurement models’).

We propose that where the Zoning Coordinator procures the delivery of the heat network it is under a duty to promote effective competition. At local and central government level, the existing procurement regime and related legislation[27] supports fair and open competition for the supply of works and services and we expect a similar approach to be taken with regards to procuring the delivery of heat networks in a zone.

As previously discussed in the section 'The role of the heat network', we recognise that there may be instances where, following consultation with the local authority, the BEIS Secretary of State (or a central authority acting on behalf of the Secretary of State) could discharge the duties of the Zoning Coordinator.

Relevant delivery decisions we consider in this section are:

- Whether there should be single or multiple networks in a zone;
- Whether the Zoning Coordinator grants a heat network developer exclusive rights to the zone (or parts of the zone)
- Ownership and procurement models for the heat network developer

38. Do you consider there to be a potential conflict of interest between a local authority fulfilling the functions of the Zoning Coordinator and delivering the heat network in a zone? If yes, how could this be mitigated?

Single or multiple heat networks

We propose that the Zoning Coordinator shall determine whether one or multiple heat networks are to be developed in a zone.

There are potential benefits to having a single heat network in a zone. High start-up costs and economies of scale may mean a single heat network can provide heat more efficiently. More certainty of demand availability – as less competition from other heat network operators – can lower risk and cost of capital.

In other zones having multiple networks serving only portions of the zone may be more appropriate. Where this is the case, multiple networks could be delivered in different parts of the zone at once, potentially leading to faster delivery of networks across the zone. Allowing multiple developers to deliver a zone may also widen participation in heat network delivery and promote competition. Some heat network developers may not have the resources to serve a whole zone but can effectively serve part of it.

Risks of multiple networks in zones include overlapping pieces of infrastructure, increasing the costs and complexity of network routes.

39. Do you agree or disagree that the Zoning Coordinator should have the flexibility to determine whether a zone is delivered by one developer or several developers?

Exclusive rights to connections

A related question is whether the Zoning Coordinator should have the power to grant exclusive rights to a single heat network operator to connect buildings in all or part of the zone.

[27] Public Contracts Regulations 2015 and Concession Contracts Regulations 2016.

By appointing the heat network developer, the Zoning Coordinator can ensure competition via procurement for the developer and operator (and/or contractors) and set terms on the operation in an exclusive zone or area within a zone. These may include requirements around rates of expansion, carbon, tariffs and generally ensuring consistency with any local authority plans for an area.

The primary benefit of granting exclusive rights to a zone or area within a zone is the greater certainty of demand availability. This should lower the risk profile and could lead to a lower cost of capital and ultimately cheaper heat for customers. It also guarantees the avoidance of the overlapping infrastructure risk described in the 'Single or multiple heat network operators' section.

There are however risks with exclusivity. If a heat network developer with exclusive rights to a zone or area within a zone does not expand throughout that area as quickly as expected, no alternative heat network operator can offer those customers a heat network connection, potentially delaying deployment. While heat network developers would bid for the exclusive rights initially, heat networks could not compete against one another for customers in exclusive areas once those rights were in place.

With those risks and benefits in mind we propose:

- Zoning Coordinators are permitted to grant heat network developers exclusive rights to operate in a zone or an area within a zone;
- That we develop a set of standardised outline conditions and guidance documents for granting exclusive rights (e.g. related to rates of expansion, carbon, tariffs);
- That the use of these outline conditions is mandatory where exclusive rights are proposed.

40. Do you agree or disagree that some zones could opt for heat network developers to have exclusive rights to connections in a zone/area of a zone?

41. Do you agree or disagree that use of outline conditions should be mandatory where exclusive rights are proposed?

Ownership and procurement models

There are a range of ownership and delivery models that could be employed in zones. Table 4 summarises these at a high level and we intend that these are available to the Zoning Coordinator.

Table 2 High level overview of ownership and delivery model categories

Delivery model	Description
Category 1 Public sector delivery	The local authority has direct involvement in the delivery and ownership of the scheme. Alternatively, it could set up an energy service company (ESCO) to deliver the network either entirely owning it or entering a joint venture with a third party. While the local authority would finance and own the heat network assets, we would expect it to generally tender for external contractors to undertake the design, build, operation and maintenance of the heat network.
Category 2 Third party delivery (private sector ESCO etc)	The Zoning Coordinator may alternatively procure a third party/ies, for example a private ESCO or community group, to develop the heat network. Under this option the Zoning Coordinator may decide to grant exclusive rights to the heat network developer as outlined in section above 'Exclusive Rights to Connections'.
Category 3 Open Market	In this category, heat network developers are not appointed. Instead, prospective and existing heat network developers are free to establish and expand heat networks by independently contracting with heat off-takers (including owners of buildings required to connect) and heat sources in zones.

Category 1 - Public sector delivery

In some circumstances the Zoning Coordinator may choose local authority sector delivery without running a procurement process, where it would be able to exercise greater control over future expansion, tariffs and operating contracts in ways more appropriate for local needs. The public sector may also be able to tolerate lower financial returns than the private sector, making local authority led networks viable where private networks are not. Finally, local authorities which deliver networks could benefit financially from project successes (which can be re-invested), though also bear greater risks from funding, construction, and operation.

We would be interested in your views on whether there might be a perceived conflict of interest between a local authority fulfilling the functions of the Zoning Coordinator and having the option to deliver the heat network in a zone, and if so, how this could be mitigated.

As discussed earlier in the section on zone designation, in some circumstances the local authority may decide it does not have the resource or is otherwise unable to take on the role of developing the zone and deciding on a delivery model. In these circumstances, the BEIS Secretary of State (or a central authority on his behalf), following consultation with the local

authority, may fulfil the role of the Zoning Coordinator and procure a developer for the heat network zone.[28]

Category 2 - Third party delivery (private sector ESCO etc)

The Zoning Coordinator may procure, through a competitive process, a heat network developer or developers to design, build, operate, and maintain the heat network(s) in a zone. There are some clear benefits to competitively procuring the heat network developer/s. For example, the Zoning Coordinator could include conditions of operation including for connections to buildings in the zone which they may own. These conditions could go beyond those required in the Heat Network Market Framework[29] for example including requirements around expanding networks across the zone within a given timeframe, ensuring multiple heat suppliers can use the network, or capping heat prices for example. There may be limits to this approach (as compared to category 1) as the Zoning Coordinator may lose some strategic control over some aspects of the heat network unless accounted for within procurement agreement.

Category 3 - Open Market

In the first two categories the local authority would have significant strategic control over development of the zone. For category 3, the 'Open market' model, this would be less. In this model multiple networks would be able to develop and operate in a zone. For example, a housing association or large private facility may wish to develop a network supplying their own estate in a zone. Alternatively, a heat network operator may engage directly with multiple building owners and develop a heat network based on those multiple energy supply agreements and speculative future demand. In some areas of the zone multiple heat networks could compete for customers.

There are risks with this approach. As the Zoning Coordinator is not the counterparty, it has less ability to set terms of heat networks developed in this way. For example, it may result in networks that are not so aligned with local priorities. Whilst some control over development would be possible through local planning powers it may be less likely that large and optimally arranged networks are built.

Nonetheless, we think the policy should be flexible enough to allow this delivery model as it may be more appropriate for certain types of developers and could lead to faster delivery.

Split responsibilities

Finally, it may be possible to separate ownership of generation and distribution assets, and therefore for competition to exist around the generation of heat to the network and the supply of heat to end users. For example, the Zoning Coordinator may decide that the public sector will be responsible for developing the network infrastructure, but may allow private suppliers and generators to compete over a single, shared-access network.

Competition for generation could result in reduced prices and/or improved services to end users but would require significant regulatory oversight and potentially system balancing infrastructure to be in place, and is only likely to be practical at large scale.

[28] As discussed previously, we consider it may also be appropriate for the BEIS Secretary of State to fulfil the role of Zoning Coordinator in circumstances where there is a significant opportunity for a zone.
[29] Heat networks: building a market framework: https://www.gov.uk/government/consultations/heat-networks-building-a-market-framework

42. Do you agree or disagree that all the models described in Table 4 could be employed in zones? Do you consider there to be any other delivery options? Please provide evidence to support your view.

43. What would need to be in place for an open market model to work? Do you see any risks with this approach?

44. Do you agree or disagree that the Zoning Coordinator should have the flexibility to choose the ownership and delivery model? A) agree, B) neither agree nor disagree or C) disagree.

45. We estimate that it may take a heat network developer one full day to familiarise themselves with the requirements of the regulation and disseminate to teams. Based on your view of the proposals in this consultation, do you agree or disagree with this familiarisation assumption?

Consumer implications

We recognise that a requirement to connect to a heat network within a heat network zone may reduce consumer choice and has the potential to increase the monopoly power for heat suppliers in zones.

However, our Heat Network Consumer Survey 2017[30] showed that most consumers living on heat networks receive a good quality of service and are satisfied with their heat suppliers. In addition, government is committed to introducing consumer protections under our Heat Network Market Framework that will give equivalent levels of protection as consumers of electricity and gas have

Consumer protection and non-domestic consumers

As described in our market framework consultation[31], our intention is for all domestic consumers as well as micro-businesses to be protected by the regulatory regime, including consumer protection requirements on pricing, transparency, quality of service and step-in arrangements. These protections will apply to heat network consumers both inside and outside of zones.

Typically, larger businesses can negotiate their own prices and terms of service with a heat supplier, and contractual arrangements often provide adequate routes to redress for these types of consumers. We therefore did not consider that large businesses needed to be covered by the consumer protections of the market framework.

As outlined in our section on requiring connections above, we are proposing that large non-domestic buildings within zones will be required to connect unless they are exempt from doing so. This will mean owners and users of these buildings are less well placed to negotiate favourable terms. Considering this, we have assessed options to ensure that large non-domestic consumers within zones receive the appropriate level of consumer protection.

[30] See: https://www.gov.uk/government/publications/heat-networks-consumer-survey-consumer-experiences-on-heat-networks-and-other-heating-systems
[31] Heat networks: building a market framework: https://www.gov.uk/government/consultations/heat-networks-building-a-market-framework

We have considered:

- Option 1: No additional protections for large non-domestic consumers (i.e. the market framework protections would only apply to domestic and microbusiness consumers),
- Option 2: All large non-domestic consumers who are required to connect within a heat network zone receive certain consumer protections,
- Option 3: All large non-domestic consumers who are connected to the heat network within a zone, including those who are not required to connect, receive certain consumer protections.

Due to the reduced bargaining power that non-domestic buildings will have if they are required to connect, we think there is a case for extending certain consumer protections to large non-domestic consumers required to connect under zoning and therefore do not view option 1 as sufficient.

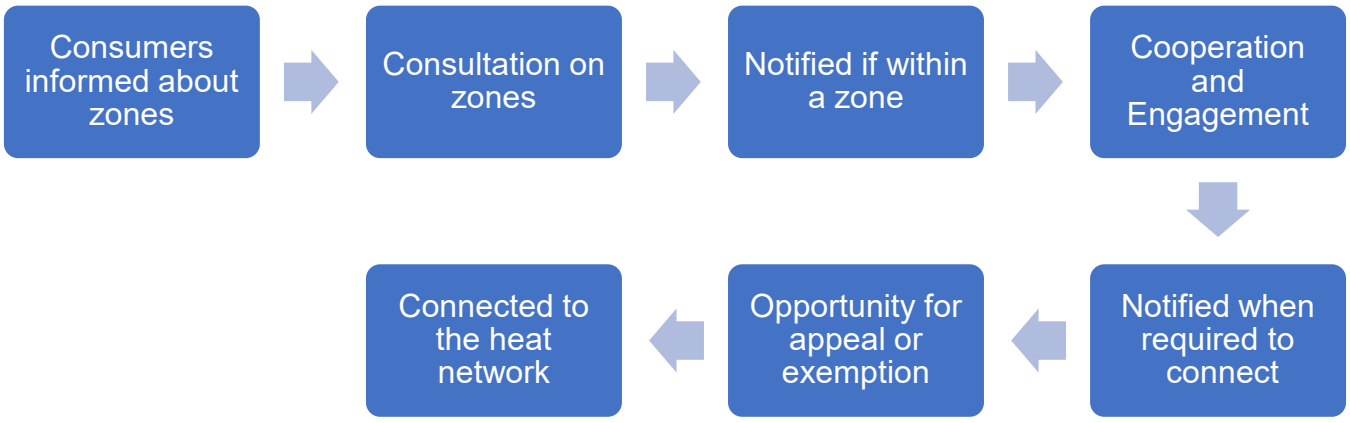
Option 3 does not appear proportionate because, on occasions where large non-domestic consumers have made the choice to connect, they are likely to have done so due to favourable terms.

We propose to take forward option 2, which extends certain provisions of the market framework, such as fair pricing. This would be proportionate to extend to large non-domestic consumers within zones who are required to connect as this would help address the risk of lost bargaining powers.

46. Do you agree or disagree that a requirement to connect provides sufficient justification for extending certain consumer protection measures to all consumers who are required to connect, including owners of large non-domestic buildings?

Consumer Journey

The below diagram sets out a potential consumer journey within a heat network zone and key points on each stage of the process.



- Firstly, the consumer is made aware about what heat networks are and informed on why they are required to decarbonise heat.
- The consumer is then consulted by a local government body asking for their opinion on the scope or else given an opportunity to provide a comment. If their building is particularly important for the designation of the zone, they may be required to provide further information.
- If a zone is designated by a Zoning Coordinator (or in some cases by BEIS Secretary of State) this will be followed by formal notification to consumers within certain areas.
- During refinement and design, engagement between the consumers and potential operators / Zoning Coordinator will occur. For example, requests to share energy consumption data, notice of works etc.
- Consumers will be notified when to connect in line with the triggers described in the 'Requiring Connections' section above (major refurbishment, heating upgrades etc).
- After notification, consumers would have an opportunity to seek an exemption.
- Finally, connection to the heat network would take place.

Consumer Pricing

As described in our market framework consultation[32], we propose for the regulator to have powers to mandate and enforce price transparency and set requirements on cost allocation for domestic and micro-business consumers. We propose that the regulator will have data collection powers and the ability to conduct investigations into heat networks where prices for consumers appear to be disproportionately high compared to systems with similar characteristics. The regulator will also have powers to introduce rules and guidance on fair and consistent pricing, powers to take enforcement action against disproportionately high pricing, and the ability to set price comparison and benchmarking methodologies.

As set out above, within zones, we propose that all those required to connect, including large non-domestic consumers, will be protected by these pricing provisions. It is likely that, due to

[32] See: https://www.gov.uk/government/consultations/heat-networks-building-a-market-framework

the strategic placement of zones, heat networks developed within zones will be larger than those outside of zones and may connect to more consumers over time. This emphasises the need for a mechanism to ensure fair pricing within zones.

We currently do not intend to introduce price caps or direct profit regulation given the nascent state of the heat networks market. However, as set out in our market framework consultation we propose that the Secretary of State keep this option open in future should there be evidence of widespread consumer detriment inside or outside of heat network zones, or as a mechanism to encourage growth.

47. Do you agree or disagree that the approach to pricing outlined above is proportionate for consumers who are required to connect within a zone? If you disagree, what alternative approach could be taken to support consumers required to connect within a zone?

Quality of Service

The market framework consultation proposed that the regulator would be provided with powers to set outcome-based quality of service standards to ensure domestic consumers, and those operating micro-businesses, receive a good quality of service. Our proposed approach is intended to allow flexibility both in terms of implementation and enforcement and utilise existing service standards such as those developed by Heat Trust[33]. The quality-of-service outcomes listed below, taken from the market framework proposals, would apply to domestic and micro-business consumers both inside and outside of zones.

- Consumers are clear about the terms and conditions of their heating service (via a heat supply agreement etc)
- Consumers understand when there will be a planned interruption to their supply, (via an outage or notice agreement etc)
- Consumers understand how to make a complaint (complaint handling procedure etc)
- Consumers understand who to contact to report faults and expected response times (Customer helpline or similar)
- Consumers understand how to access independent arbitration services such as the Energy Ombudsman
- Consumers understand who is eligible for guaranteed service payments and / or compensation (via written compensation arrangements etc)
- Consumers understand how heat will be assured in event of network or supply failure (via step-in arrangements)
- Vulnerable consumers identified and clear about available support (via priority consumers register etc)

It is our view that an extension of these proposed quality-of-service outcomes to large non-domestic consumers would not be appropriate as we continue to believe that non-domestic

[33] See introduction to heat trust standards: https://heattrust.org/the-scheme

consumers are able to cover outcomes such as; terms of service, complaints processes and reporting faults through their contractual negotiation.

48. Do you agree or disagree that the proposed market framework quality of service standards are sufficient for domestic and micro-business consumers within zones?

49. Do you agree or disagree that large non-domestic consumers may not require the above listed quality of service outcomes? If you disagree, which of the outcomes listed above do you believe should be extended to large non-domestic consumers within zones?

Transparency & Information sharing

As described in our market framework consultation, many consumers typically have low awareness of heating systems at the point at which they take decisions regarding renting or buying a property. Zoning will introduce requirements for certain buildings to connect and therefore transparency of information for consumers will be critical.

We consider that the quality-of-service outcomes described above will go some way to ensure that domestic and micro-business consumers have a good awareness of their rights immediately prior to connection to a heat network both inside and outside of zones. To maximise access to information for consumers within zones, we propose that priorities for each stage of the zoning process should include:

During the zone identification and designation stage:

- Provision of relevant information to consumers, including on the need to decarbonise heat and the role heat networks and heat network zoning can play. We expect that this role would likely be carried out by the Zoning Coordinator during the stakeholder consultations and engagement phase,
- When designation has been completed, the Zoning Coordinator would formally notify relevant consumers in a zone.

During the delivery stage:

- As per market framework proposals, we expect certain information to be provided to all consumers in zones who are required to connect such as connection timelines, pricing information, information on building works required etc.
- As set out in requiring connections section, we expect information on the exemptions and appeal processes should also be provided to consumers by the Zoning Coordinator
- As per the market framework proposals, confirmation that pre-operation compliance and transparency checks have been undertaken on operators.

During the Operation and Review stages:

- Transparent pricing information, for all consumers required to connect within a zone, will be critical to improve consumer confidence and acceptance of heat networks

The market framework consultation proposed requiring suppliers to produce guidance and make available certain pre-contractual information to domestic and micro-business consumers. This would include information about the expected contractual arrangements in place, a

summary of terms of service and price information. We currently consider that the same pre-contractual information requirements are not required for large non-domestic consumers. We consider large non-domestic consumers may be better placed than domestic consumers to assess terms of service, price information and annual costs themselves. Businesses or organisations required to connect under zoning would also have been formally notified of their requirement to connect and provided an opportunity to apply for an exemption.

50. Do you agree or disagree with the suggested priorities for transparency and information provision during each stage of zoning implementation?

51. Do you agree or disagree that large non-domestic consumers will not require the same pre-contractual information as domestic and micro-business consumers?

Consumer Redress

Ensuring consumers understand how to access independent arbitration services, such as those provided by the Energy Ombudsman, will be important aspects of the future heat networks market. For consumers living within a zone the route to redress may look slightly different to those outside a zone and may depend on the specific issue and whether the Zoning Coordinator or national regulator is responsible for monitoring.

A possible redress journey may include the following steps:

- Initial contact with the network operator, developer and/or heat supplier to resolve the issue;
- Consumer seeks expert advice from a body such as Citizens Advice or the Energy Ombudsman (or potentially the local government ombudsman);
- Consumer contacts the Zoning Coordinator should the matter involve local policies, mandated actors, notice period, exemptions;
- Potential involvement of the national heat network regulator – will monitor and enforce heat network technical standards, fair pricing and KPIs for all networks including those within zones.

We note that bodies such as Citizens Advice act primarily on behalf of domestic consumers and micro-businesses. Large non-domestic consumers are more likely to have specific teams responsible for the maintenance of heating arrangements or otherwise are able to access legal advice more readily. Independent arbitration may also be more readily available for non-domestic consumers due to pre-determined routes negotiated as part of their contracts or by other means. As a result, we consider that a specific arbitration route should continue to be reserved for consumers most likely to need it (i.e. domestic consumers and micro-businesses).

52. Do you agree or disagree that large non-domestic consumers may not require a specific consumer advocacy body, or a pre-determined arbitration route to have been identified, prior to zone designation?

Step-in Arrangements

Under the market framework, we are developing “step-in” arrangements to cover worst-case scenarios where there is a risk of consumers being left without heating or cooling suddenly. Within the market framework consultation we described three overarching scenarios where

step-in arrangements could be required: operational failure, insolvency or where repeated non-compliance leads to the de-authorisation of a supplier.

Although our priority is to ensure that domestic consumers, particularly vulnerable consumers, are not left without heat we also aim to ensure all consumers supplied by a heat network, including non-domestic consumers, are not left stranded.

The aim of zoning is to increase the deployment of heat networks in appropriate areas which emphasises the need for robust step-in arrangements especially in situations where there is one heat network operator supplying heat within the zone. As part of our market framework proposals, we are considering commercial solutions, supplier continuity plans, special administration and operator of last resort as possible routes for ensuring the continued supply of heat.

Technical Standards

Design and technical performance of a heat network can significantly impact on network reliability and service for the end consumer. The heat networks market has already developed a voluntary industry code of practice known as the CP1: Heat Networks: Code of Practice for the UK[34]. The technical standards required under the market framework will further build on CP1.

We expect the market framework standards to be in place by the time this zoning policy is implemented. However, if market framework standards are still in development when zoning is implemented, we propose to select CP1 as the basis of technical standards for heat networks within zones. We consider this would be a sensible choice to bridge the gap as CP1 is well known in the market and will form the basis of the market framework standards when implemented.

Should CP1 be utilised as a bridge to market framework standards, schemes could provide a Heat Networks Code of Practice (CP1) checklist (2020) to the Zoning Coordinator confirming that work-to-date is compliant with CP1 requirements. Additionally, the scheme could provide written confirmation that the project will continue to be developed in compliance with the requirements of CP1 and that all contractors will be procured on this basis.

53. Do you agree or disagree with our proposed approach to technical standards within zones? If not, please explain why.

Enforcement, monitoring, and reporting

Enforcement

As discussed earlier, we expect the role of the national heat networks regulator to cover all heat networks including:

- the regulation of minimum technical standards;

[34] CP1: Heat networks: Code of Practice for the UK (2020) https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q3Y00000IMrmGQAT

- customer protection standards; and
- supporting the market in case of supplier failure.

The proposed role of the national regulator is set out in more detail in our market framework consultation.[35]

In addition, we are proposing that a number of zoning specific activities, including local enforcement, are carried out by the Zoning Coordinator. Skills, functions and processes relevant to this role already exist at local government level, e.g. with planning authorities and building control or trading standards, but it would require further funding to expand these functions.

We expect the local enforcement functions in heat networks zones to cover the following:

- Requirement to provide information for the methodology (section 'Requirement to provide information'),
- Connection of buildings to heat network where legally required to and management of the exemptions process for these buildings (section 'Requiring connections') and,
- Potentially in the future a requirement for low carbon heat sources to connect to the heat network (section 'Requiring connections').

Any breaches of contract, such as a concession contract or connection agreements would not be within scope of local zoning enforcement powers as this would be covered by existing legislation and routes to resolve disputes.

We are proposing that the local enforcement body is given powers to impose civil (non-criminal) financial penalties in cases of continued non-compliance. We consider these civil sanctions to be a more proportionate response in this context than criminal penalties.

We further propose that there will be a route of appeal set out in legislation where zoning requirements are enforced and penalties apply for non-compliance. We expect to consult further on both the penalties and the appropriate route of appeal.

54. Do you agree or disagree with our proposal for the Zoning Coordinator to carry out local enforcement functions? A) agree, B) neither agree nor disagree, or C) disagree. Please explain your reasoning.

55. Do you consider the payment of a fine to be an appropriate route to come into compliance instead of providing A) required information or B) connecting a building to a heat network where required? (Y/N for A) and B)).

56. Do you consider civil (non-criminal) penalties to be proportionate for non-compliance with requirement to provide information and requirement to connect? If not, please explain your answer.

Monitoring and reporting

We envisage that heat network zoning will require effective monitoring and reporting between different entities involved in the process when a zone has been designated. Our approach to

[35] See: https://www.gov.uk/government/consultations/heat-networks-building-a-market-framework

reporting and monitoring within zones will build on and integrate with relevant proposals set out in the market framework consultation, for example for the heat network regulator to monitor compliance with relevant technical standards or for heat network operators to report on customer service standards.

Overall, our aim is to ensure that the central authority and/or the heat network regulator has the information it needs to determine whether heat networks that are developed in zones are operating effectively, and that consumers are being treated appropriately. We consider that Zoning Coordinators would have a role in both receiving relevant information from heat network developers/operators, and sharing relevant information with the central authority and/or the regulator. For example, Zoning Coordinators may receive information from network developers/operators on performance against procurement terms and share information with the central authority or regulator on exemption applications or their enforcement activities.

The below sets out possible reporting requirements for the Zoning Coordinator and heat network operator / developer.

Examples of zone-specific reporting requirements	
Zoning Coordinator (reporting to regulator or central authority)	Heat network operator / developer (reporting to Zoning Coordinator / heat network regulator)
• Data required to facilitate periodic zone reviews; • Data required to allow the central authority to carry out its role as Data Custodian; • Enforcement actions taken within zones, (to ensure proportionality etc)	• Report to Zoning Coordinator progress against contractual terms and any outline conditions; • Report to the Zoning Coordinator compliance with any low carbon requirement.

57. Do you agree or disagree that a monitoring and reporting framework for heat network zoning is necessary?

58. Do you consider that specific information should be provided to A) the central authority, B) the heat network regulator, C) the Zoning Coordinator? Please specify what this information should be and who you consider should be responsible for providing this information.

5. Zone review

Rationale for zone review provisions

Zone designation may need to change as over time the factors and assumptions underlying it change also. Such changes could include changes to the economics of heat networks, new local infrastructure and other developments, as well as wider regulatory changes or changes to assumptions used in the methodology.

We are considering whether fixed term reviews, reviews after a minimum period, reviews triggered by material changes, or a combination of these options are the most appropriate approach. We are also continuing to work on what constitutes material triggers for a zone review and propose that the Secretary of State will have the powers to set these out in secondary legislation.

The process for the review of a zone will follow the same process as the initial designation of the zone as described in 'Designation of heat network zones' above. We do not envisage zone reviews to always put the whole existing zone up for reconsideration or removal and the Zoning Coordinator will be able to consider varying a part of an existing heat network zone.

59. To what extent do you agree or disagree that a zone review may be necessary at some point? A) Agree, B) neither agree nor disagree, C) disagree. Please explain your answer.

60. In addition to material triggers being set out in legislation, should others be able to call for the review of a zone? Indicate all that you agree with: local Zoning Coordinator/authority, local stakeholders, heat network developer/operator in the zone, other (please specify).

6. Next steps

This consultation closes on 19 November 2021. Consultation responses should be sent:

- via email to heatnetworks@beis.gov.uk,
- online via Citizen Space (https://beisgovuk.citizenspace.com/heat/heat-network-zoning-consultation) or
- in writing to BEIS Heat Networks Team, 1 Victoria Street, London SW1H 0ET.

We will aim to publish a government response to the consultation within 12 weeks of the closing date.

Timeline for introducing heat network zoning

Policy and legislation

Aspects of our heat network zoning proposals will require primary and secondary legislation and we will seek to introduce these before 2025 to meet our Energy White Paper commitment.

Pilot projects and further engagement

We will continue to develop the definition of 'lowest cost' through a small number of pilot projects and to develop a toolset to identify areas where heat networks could be the lowest cost low carbon solution.[36] We aim to inform local authorities where pilots will take place later this year. In the piloting, which we expect to take nine months, we will test the proposed methodology and toolkit to identify heat network zones. Throughout this process, we will

[36] We expect the invitation to tender/procurement exercises to commence shortly.

engage closely with local stakeholders, including local authorities, DNOs, heat source owners and owners and occupiers of buildings with significant heat demand. The pilots are a critical part of our learning process, and by their nature will be testing methodologies, cooperative approaches and governance frameworks. As such, once the pilots have been completed and we have further developed our policy, we may need to apply a revised methodology again in these pilot regions before progression to formal identification of heat network zone and the procurement and delivery of heat networks within them.

For further information on the pilots please contact us at: heatnetworks@beis.gov.uk.

Bringing zones into operation

Following the piloting phase we expect to be able to begin the zone identification process for early adopter schemes, applying the proposed methodology to identify zones across an estimated 50-60 towns and cities. As in the pilot schemes, this will require significant engagement with local stakeholders.

Once the necessary legislation has been passed, the formal zoning process may commence, with local government being able to establish local Zoning Coordinators, zones being designated, and the procurement and delivery of heat networks in zones.

Supporting work

Following publication of this consultation we will kick off a programme of engagement with the supply chain and investor community. As well as improving industry awareness and understanding of zoning, this will help shape our policy development. Towards the end of next year (2022) we expect to provide training on the methodology and guidance to the sector.

Following publication of the consultation we also intend to engage with a wider range of stakeholders to improve awareness and knowledge about heat networks, our zoning proposals, and their role in supporting our net zero commitments. We want to encourage domestic and non-domestic consumers to understand the benefits of connecting to a heat network, how it compares to other low carbon heating technologies, and understand their rights and the consumer protections which apply.

We will develop guidance related to the zoning process and associated roles include on the use of the zoning methodology, how to comply with a low carbon requirement, and on exemption and connection processes.

Glossary

Central Authority – This is the body responsible for developing the standardised, national methodology and carrying out initial zone identification.

Communal heat network – The distribution of heat from a central source to multiple dwellings in a single building.

Concession agreement - A concession contract is a contract between one or more contracting authorities or utilities for the execution of works or the provision and the management of services by the concessionaire. Two key factors distinguish concessions from a normal works or services contracts:

- consideration must consist either solely in the right to exploit the services (ie to make money from third parties) or in that right together with payment from the procuring body,
- the contract must transfer to the contractor the operating risk plus real exposure to the vagaries of the market

Data Custodian – A data custodian is a person (or entity) who performs tasks related to the storage and use of data sets. In the context of zoning, the data custodian will likely sit at central authority level and provide access to the data when needed to carry out the zoning methodology.

Decarbonisation - A process of reducing the amount of carbon dioxide released into the atmosphere.

Delivery Model – In the context of this consultation, this means the way in which a heat network is delivered within a given area to achieve its objectives. A given delivery model may be characterised by a certain procurement mechanism or contractual arrangement.

District heat network – The distribution of heat from a central source of production through a network to multiple buildings or sites.

ESCo (energy service company) - a company offering a total energy supply service, taking responsibility for the provision, financing, operation and maintenance of energy facilities. Energy services contracts may define the outcome of the service provided, such as temperatures, rather than how much energy is to be supplied.

Heat demand – The heat supply required to meet domestic and non-domestic purposes at a given time.

Heat network developer – A body, which may be appointed by the zoning authority or coordinator, which undertakes the development of a heat network within a zone.

Heat network market framework – The proposed legislation and structure which will oversee the future regulation of heat networks.

Heat network operator – A body which operates the heat network once constructed and typically has a heat supply agreement, or other contractual arrangement, with the end customer.

Heat Network Zone – A designated area in which heat networks are the lowest cost, low carbon solution for decarbonising heat (and cooling).

Linear heat density – This is the total heat demand divided by the length of the heat network pipes (demand/length). This calculation is often used as a proxy for economic viability as it approximates how much revenue can be generated against the capital cost of installing the heat network

Micro-business – A business which employs fewer than 10 people.

Statutory consultee - Statutory undertakers are bodies that have been given statutory powers and may have rights to carry out works without certain permissions or may have obligations such as the supply of utilities. They include public and private bodies performing functions in relation to railways, canals, electricity supply, gas, water, sewerage and telecommunications.

Zoning Coordinator – an entity which sits at a local level, carries out stakeholder engagement and formally designates a heat network zone in collaboration with the central authority. Once designated, the Zone Coordinator would determine how the development and operation of a heat network in a zone is procured and delivered.

Zoning Methodology – A standardised national methodology which aims to determine areas in England where heat networks are the lowest cost, low carbon solution to decarbonising heat.

List of Acronyms

ADE – Association for Decentralised Energy

BEIS – Department for Business Energy and Industrial Strategy

CCC – Climate Change Committee

COP26 – The 26th UN Climate Change Conference of the Parties

DNOs – Distribution Network Operators

EPC – Energy Performance Certificate

ESCo – Energy Service Company

GDNs – Gas Distribution Networks

GHNF – Green Heat Network Fund

HNDU – Heat Network Delivery Unit

HNIC – Heat Network Industry Council

HNIP – Heat network Investment project

IA – Impact Assessment

KPI – Key Performance Indicator

MEES – Minimum Energy Efficiency Standards

MWh – Megawatt hour

NHS – National Health Service

SNPV – Social Net Present Value

TWh – Terawatt hour

UKDEA – UK District Energy Association

Consultation Questions

Introduction

1. Do you have views on how local area energy mapping and planning can best support heat network zoning?

Zoning process, and roles and responsibilities

2. Do you agree or disagree that the scope of the proposed zoning policy should prioritise district heat networks with cooling permitted but not required? If you disagree, please explain your reasoning.

3. Is there anything else we should consider with regards to cooling in the context of the zoning policy?

4. Do you agree or disagree that there should be no minimum threshold for heat supply or heat demand?

5. Do you agree or disagree that some functions should be carried out centrally? If you disagree, please indicate why.

6. Is there specific data you think should not be collated and managed at a national or central level?

7. Do you think there are any additional functions that we should consider for the Zoning Coordinator? If so, please describe these functions and explain why they may be required.

8. Do you think any of these functions are better situated with a central authority? If so, please explain why.

9. Which of the options do you consider is most appropriate for the Zoning Coordinator? A) where functions are fulfilled by a local authority or authorities jointly, B) where a local authority (or authorities jointly) establish a Zoning Coordinator as a separate entity or C) another design approach. Please explain your reasoning.

10. Do you agree or disagree that in specific circumstances the Secretary of State should fulfil the functions of the Zoning Coordinator after consultation with the local authority? If so, in what circumstances would you consider this appropriate?

11. Are there additional functions that we should consider for the national regulator with regards to zoning? If yes, please describe these and explain why.

12. Considering similar functions in local government (such as those related to local plans, strategic flood risk mapping and clean air zones), what do you consider are the key resources and skills needed to fulfil the functions of the Zoning Coordinator at local authority level?

Designation of heat network zones

13. Do you agree or disagree that a standardised national methodology would help to A) enable a transparent approach for identifying and designating heat network zones, B) increase overall efficiency, C) drive consistency, and D) improve understanding for stakeholders?

14. Do you agree or disagree with an ‘approved document’ approach whereby the methodology can be updated without legislative amendments? Would you recommend alternative approaches?

15. Do you agree or disagree with our proposal for how zone identification should be undertaken?

16. Do you agree or disagree that central government should carry out the national mapping identification stage? If you disagree, please explain why.

17. Do you agree or disagree that the formal zone designation should occur at local government level (allowing for exceptional cases)? If you disagree, please explain why.

18. Do you agree or disagree that the BEIS Secretary of State should be able to require local authorities to designate a zone, or designate it him/herself where it has been identified? Please explain your reasoning.

19. Do you agree or disagree that the legislation should set out a list of statutory consultees who must be consulted before a heat network zone is designated?

20. Do you agree or disagree that the option 3 level of ambition is a proportionate approach to deliver the policy objectives of heat network zoning? Please provide evidence to support your answer.

21. Do you think it is likely or unlikely that buildings not required to connect will voluntarily connect to a heat network within a zone? Please explain your reasoning.

22. Please indicate the kind of buildings you think are likely to connect voluntarily.

23. Do you agree or disagree that annual heat demand of over 100 MWh is the most appropriate threshold to use for large buildings which are required to connect? If not, what would you propose instead?

24. Which of the above two broad options do you consider preferable regarding who should pay for connection costs and why? Are there other options we should consider? Option 1, Option 2, Other?

25. Do you agree or disagree that a process is necessary to assess, where requested, whether an individual building should be exempt from the requirement to connect to the heat network within a zone?

26. Do you agree or disagree with the proposed exemption criteria that would be used to assess the viability of a particular building? If you disagree, please explain your reasoning.

27. Do you agree or disagree with the proposed trigger points for requiring buildings to connect to heat networks?

28. Do you agree or disagree with the proposed grace period of 10 years for buildings to connect where an earlier trigger point does not apply? Please explain your response and suggest alternatives if you disagree.

29. Are there any reasons why owners of heat sources should not be required to provide information to the Zoning Coordinator?

30. Are there any reasons that we should not include powers to require heat sources to connect to a heat network (provided it is technically and economically viable)? Please explain your reasoning.

31. Do you agree or disagree that a legislative requirement for third parties to provide relevant information would be necessary to help ensure the successful designation of heat network zones?

32. Do you have views on the scope of the proposal to require information, specifically: A) who can request the information; B) the information/data that may be sought, C) the range of parties to whom the requirement could apply?

33. What rules and mechanisms do you consider should be in place to protect the interests of parties who are subject to the requirement?

34. Do you agree with the proposal that the Zoning Coordinator should be able to delegate these powers to a limited number of heat network operators/developers in the zone in some circumstances to facilitate build-out of the zone and as long as there was appropriate oversight from the Zoning Coordinator?

35. Do you agree or disagree that heat networks developed in zones should be subject to a low carbon requirement?

36. Do you have a view on what level, or what mechanism, we should use to set a level of CO2 emissions per kWh as appropriate?

37. Do you agree or disagree that the low carbon requirement should apply to all new connections in zones (including new connections of existing heat networks), but not to heat delivered to existing connections? If you disagree, please explain your reasoning.

Delivering and operation of heat networks in zones

38. Do you consider there to be a potential conflict of interest between a local authority fulfilling the functions of the Zoning Coordinator and delivering the heat network in a zone? If yes, how could this be mitigated?

39. Do you agree or disagree that the Zoning Coordinator should have the flexibility to determine whether a zone is delivered by one developer or several developers?

40. Do you agree or disagree that some zones could opt for heat network developers to have exclusive rights to connections in a zone/area of a zone?

41. Do you agree or disagree that use of outline conditions should be mandatory where exclusive rights are proposed?

42. Do you agree or disagree that all the models described in Table 4 could be employed in zones? Do you consider there to be any other delivery options? Please provide evidence to support your view.

43. What would need to be in place for an open market model to work? Do you see any risks with this approach?

44. Do you agree or disagree that the Zoning Coordinator should have the flexibility to choose the ownership and delivery model? A) agree, B) neither agree nor disagree or C) disagree.

45. We estimate that it may take a heat network developer one full day to familiarise themselves with the requirements of the regulation and disseminate to teams. Based on your view of the proposals in this consultation, do you agree or disagree with this familiarisation assumption?

46. Do you agree or disagree that a requirement to connect provides sufficient justification for extending certain consumer protection measures to all consumers who are required to connect, including owners of large non-domestic buildings?

47. Do you agree or disagree that the approach to pricing outlined above is proportionate for consumers who are required to connect within a zone? If you disagree, what alternative approach could be taken to support consumers required to connect within a zone?

48. Do you agree or disagree that the proposed market framework quality of service standards are sufficient for domestic and micro-business consumers within zones?

49. Do you agree or disagree that large non-domestic consumers may not require the above listed quality of service outcomes? If you disagree, which of the outcomes listed above do you believe should be extended to large non-domestic consumers within zones?

50. Do you agree or disagree with the suggested priorities for transparency and information provision during each stage of zoning implementation?

51. Do you agree or disagree that large non-domestic consumers will not require the same pre-contractual information as domestic and micro-business consumers?

52. Do you agree or disagree that large non-domestic consumers may not require a specific consumer advocacy body, or a pre-determined arbitration route to have been identified, prior to zone designation?

53. Do you agree or disagree with our proposed approach to technical standards within zones? If not, please explain why.

54. Do you agree or disagree with our proposal for the Zoning Coordinator to carry out local enforcement functions? A) agree, B) neither agree nor disagree, or C) disagree. Please explain your reasoning.

55. Do you consider the payment of a fine to be an appropriate route to come into compliance instead of providing A) required information or B) connecting a building to a heat network where required? (Y/N for A) and B)).

56. Do you consider civil (non-criminal) penalties to be proportionate for non-compliance with requirement to provide information and requirement to connect? If not, please explain your answer.

57. Do you agree or disagree that a monitoring and reporting framework for heat network zoning is necessary?

58. Do you consider that specific information should be provided to A) the central authority, B) the heat network regulator, C) the Zoning Coordinator? Please specify what this information should be and who you consider should be responsible for providing this information.

Zone review

59. To what extent do you agree or disagree that a zone review may be necessary at some point? A) Agree, B) neither agree nor disagree, C) disagree. Please explain your answer.

60. In addition to material triggers being set out in legislation, should others be able to call for the review of a zone? Indicate all that you agree with: local Zoning Coordinator/authority, local stakeholders, heat network developer/operator in the zone, other (please specify).

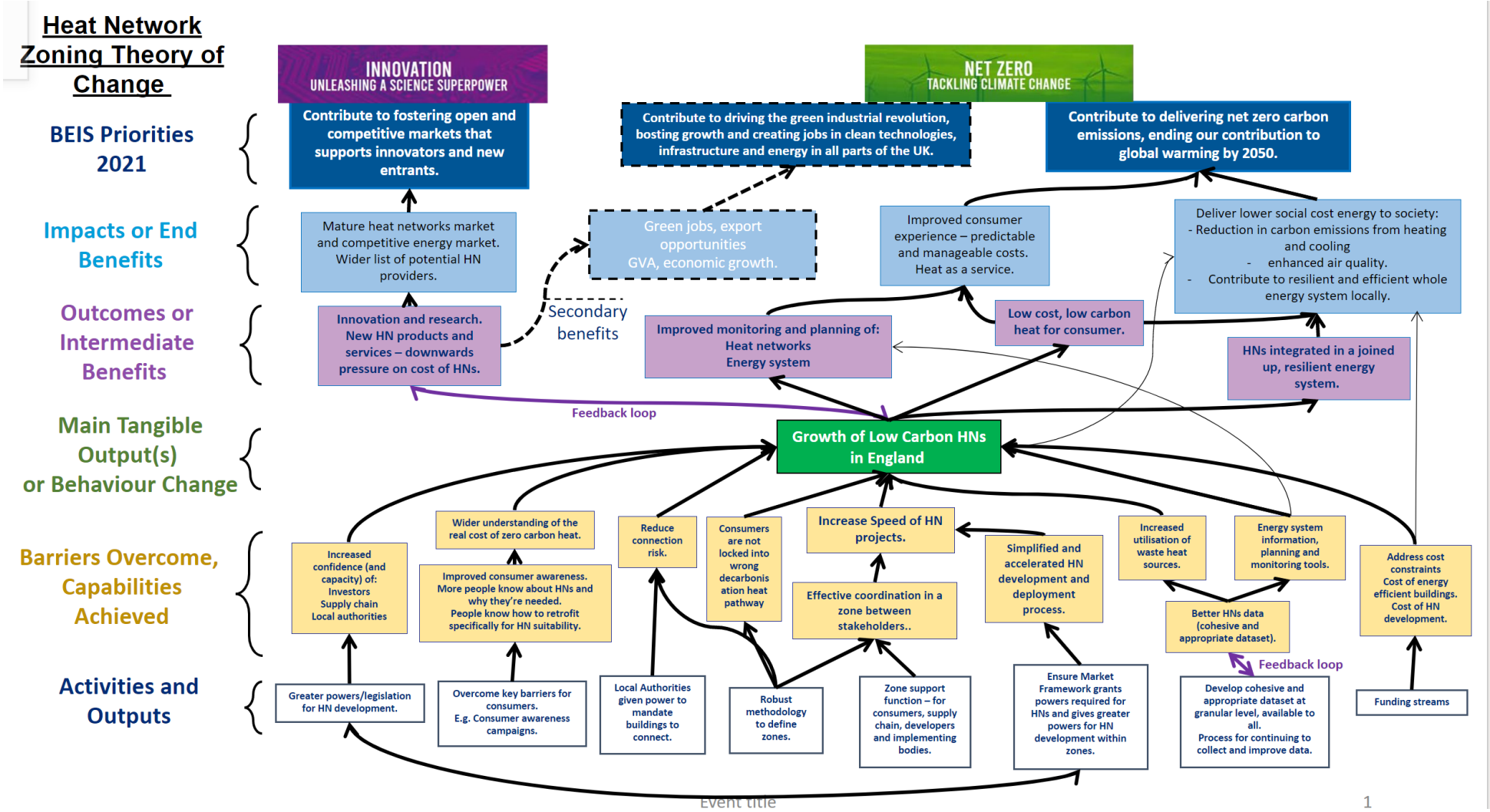
Appendix

Potential statutory consultees

This consultation seeks views on whether the legislation should set out a list of statutory consultees who must be consulted before a heat network zone is designated (see question 19 on page 30). Should we decide following consultation to introduce this approach, the following organisations have been identified as potential statutory consultees.

Local authorities (at all levels) within a potential heat network zone;	Owners of anchor loads and other buildings which are in scope of the requirement to connect	The Coal Authority	Natural England
Local authorities (at all levels) in areas adjoining a potential heat network zone;	Water and sewerage utilities	The Environment Agency	Network Rail
DNOs	Other relevant utilities, e.g. telecoms providers	English Heritage	Highways England
GDNs	Canal and River Trust	Marine Management Organisation	Homes England
Owners of potential heat sources			

Theory of change diagram



This consultation is available from: https://www.gov.uk/government/consultations/proposals-for-heat-network-zoning

If you need a version of this document in a more accessible format, please email enquiries@beis.gov.uk. Please tell us what format you need. It will help us if you say what assistive technology you use.