



Department for
Business, Energy
& Industrial Strategy

HEAT NETWORKS: BUILDING A MARKET FRAMEWORK

Closing date: 1 June 2020

February 2020



OGL

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

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Foreword

The UK is the first major economy in the world to pass laws to reduce our greenhouse gas emissions to net zero by 2050. We have already shown the world that it is possible to cut emissions whilst achieving economic success. However, to meet this new target we must go further still.

To achieve net zero, virtually all emissions from heat in buildings and industry must be eliminated. There is no one solution that can provide the best option for everyone - a mix of technologies and customer options will need to be available to decarbonise heat. Heat networks are a crucial piece of the puzzle. They are a proven, cost-effective way of providing reliable low carbon heat at a fair price to consumers, while supporting local regeneration.

We are investing £320m to grow the market through our Heat Networks Investment Project. Private sector companies have committed to more than match government's investment. There is still significant potential for further and faster growth, though, to maximise the use of renewable heat sources and heat that would otherwise be wasted.

Our proposals put **consumers at the heart of heat network market growth**, with new regulatory powers to ensure all consumers are treated fairly and networks are run to high standards. We will also help operators run their heat networks as cost-efficiently as possible, delivering further savings for consumers.

Our proposals will make it easier for investors to enter the sector and level the playing field with other utilities. Investors tell us that a clear regulatory framework will raise their confidence in the sector further. We are proposing new statutory rights for developers that will reduce their build out costs and burdens. In addition, we are responding to stakeholders' request for greater standardisation across the sector.

We need to **maximise carbon savings from both new and existing networks.** We are setting out proposals to decarbonise our existing networks, and we will pilot assistance to local areas to develop plans for building low carbon heat networks which are worthy of investment.

This is an exciting time for the heat network market. It has a critical role to play in our path to decarbonising heat. We are committed to ensuring it does so in a way that both protects consumers and contributes to a thriving economy.

Rt Hon Kwasi Kwarteng
Minister of State for Business, Energy and Clean Growth

General information

Why we are consulting

To set out the UK government's preferred approach to regulation of heat networks and to seek stakeholder's views on the proposed system.

Consultation details

Issued: 6 February 2020

Respond by: 1 June 2020 In the light of COVID-19, we have extended the consultation period (from May 1 to June 1) to give people more time to respond.

Enquiries to:

BEIS Heat Networks Team
1 Victoria Street
London
SW1H 0ET

Tel: 020 7215 5000

Email: heatnetworks@beis.gov.uk

Consultation reference: Heat Networks: Building a Market Framework

Audiences:

This consultation will be of particular interest to the heat network industry in Great Britain as well as stakeholders interested in the net-zero target to decarbonise the UK's heating.

Territorial extent:

This consultation relates to regulation of heat networks across Great Britain.

How to respond

Outline whether responses should be provided in a particular preferred format, where electronic responses should be emailed to, which address to send hardcopy responses to, whether to use different addresses for responses for the devolved administrations, etc.

Respond online at: <https://beisgovuk.citizenspace.com/heat/heat-networks-market-framework>

or

Email to: heatnetworks@beis.gov.uk

Write to:

BEIS Heat Networks Team
1 Victoria Street
London
SW1H 0ET

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 are a crucial aspect of the path towards decarbonising heat. In the right circumstances, they can reduce bills, support local regeneration and can be a cost-effective way of reducing carbon emissions from heating. In this consultation we set out our proposals to drive forward low-carbon heat networks' growth in a regulatory framework that protects consumers and ensures fair pricing.

There are currently over 14,000 heat networks in the UK, providing heating and hot water to approximately 480,000 consumers. Heat networks deliver heating, hot water, and/or cooling from a central source or sources to domestic dwellings, public sector buildings, shops, offices, sport facilities, hospitals and universities. They are uniquely able to unlock otherwise inaccessible larger scale renewable and recovered heat sources such as waste heat and heat from rivers and mines.

We know there is significant potential for the number and scale of heat networks to increase dramatically. We estimate that up to £16 billion of capital investment could be needed for heat networks to deliver their full contribution to net-zero. There is already a growing heat network market in this country on which to build. This is supported by strong Government commitment through our Heat Network Investment Project (HNIP) of up to £320m and the work of the Heat Network Delivery Unit (HNDU) supporting local authorities and project developers in the early phases of scheme development. The Government's commitment to low-carbon heating in new homes from 2025 (the Future Homes Standard) creates a further significant opportunity for faster roll-out of low-carbon heat networks. This consultation includes consideration of approaches to accelerate the move of heat networks to low carbon generation such as waste heat and heat pumps.

The market is still in relatively early stages, however, compared with other utilities. We think it is critical to share learning and expertise across the sector to give parties a strong starting base and encourage market growth at pace. We will be disseminating data, tools and good practice informed by our learning from HNIP and HNDU. With our delivery partner, Triple Point, we are producing standardised documentation to ease parties' burdens and costs, including for due diligence processes to reduce the burden on investors, and a set of [Sales, Operations and Maintenance Set](#) ('SOMS') contract documentation for heat network developers and operators¹.

Heat networks are best developed as local solutions to local circumstances. We are encouraged by the level of commitment and support provided by many local authorities exploring and taking forward strategic heat networks. This includes the designation of heat network zones, concession arrangements, and use of planning requirements to encourage or enforce connection to networks. We think there is potential for greater use of these approaches by local authorities. We will be piloting a programme to help local authorities develop local heat decarbonisation plans; identify heat network zones; and understand how they can use supportive policy measures to reinforce connection to networks.

¹ Heat Contract Templates "Sales, Operations and Maintenance Set (SOMS)": <https://tp-heatnetworks.org/heat-contract-templates/>

We are also proposing legislative changes to give heat network developers equivalent statutory rights and undertakings to other utilities, such as gas and electricity. These additional rights would ease developers' costs and burdens when building out new networks or extensions. We set out in this consultation plans to establish a licensing arrangement for parties who wished to secure these additional powers.

We believe that market expansion must be accompanied by consumer protections to ensure people receive good quality outcomes at a fair price. Our analysis shows that most heat network consumers do have comparable levels of satisfaction to people on gas and electricity networks, and that they are paying a fair price. However, we know this is not always the case. We are committed to supporting heat network operators to identify and address performance issues in poorer performing existing networks. We are working with some existing projects to identify solutions to performance challenges on their networks to improve their consumers' experience. We will use our findings to develop guidance to inform business case development for cost effective interventions that will improve consumer outcomes.

The Competition and Markets Authority (CMA) published a market study in 2017 which recommended that Ofgem, the gas and electricity regulator, should be given powers to regulate domestic heat networks. In this consultation, we are proposing a regulatory framework that would give Ofgem oversight and enforcement powers across quality of service, provision of information and pricing arrangements for all domestic heat network consumers. We also explore options for ensuring networks are built to robust technical standards. Given the numbers of networks, we are proposing using an authorisation regulatory model for consumer protection rather than a licensing model. This would be funded through fees scaled according to the regulated party's size. As our policy evolves, we will keep under review the balance between robust consumer measures and proportionate regulatory costs and burden.

The devolved status of heat policy and heat network regulation in the UK is complex. Consumer protection is a reserved matter for heat network regulation across Great Britain and therefore our proposals in this area apply to England, Scotland and Wales.

Other elements of our proposed framework, addressing market growth and the statutory powers of heat networks, and decarbonisation of networks will apply to England and Wales, or England only. We provide further detail in the relevant sections of the consultation. The Scottish Government is introducing its own legislation in relation to heat network regulation. We are working closely with the Scottish Government to align our frameworks where appropriate.

Consumer protection and heat policy are devolved to Northern Ireland, and so arrangements for heat networks in Northern Ireland are out of scope for this consultation. We will continue to work with the devolved governments to maximise transparency of arrangements for heat network consumers and businesses across the UK.

Following this consultation, we will engage further with stakeholders as we refine our policy ahead of implementing the regulatory framework. The establishment of a heat network regulator will require new primary powers. We will seek to introduce these when the parliamentary timetable allows.

Context

Heating is responsible for over a third of the UK's greenhouse gas emissions. In 2019 the UK Government set a legally binding target to achieve net-zero greenhouse gas emissions by 2050. Meeting our net-zero target will require virtually all heat in buildings to be decarbonised, and heat in industry to be reduced to close to zero carbon emissions.

Heat networks are a crucial aspect of the path towards decarbonising heat and achieving net-zero commitment. They deliver heating, hot water, and/or cooling from a central source or sources to a variety of different customers such as domestic residential units, public sector buildings, shops, offices, sport facilities, universities. Heat networks are uniquely able to unlock otherwise inaccessible sources of larger scale renewable and recovered heat such as waste heat and heat from rivers and mines. In 2013 BuroHappold estimated that 38% of London's heat demand could be met from this kind of waste-heat recovery.²

In 2015 the Committee on Climate Change (CCC) estimated that around 18% of UK heat will need to come from heat networks by 2050 if the UK is to meet its carbon targets cost-effectively. Up to £16 billion of capital investment in heat networks is likely to be needed to deliver such growth. Therefore, while the number of networks is rising steadily, we need a step-change in the pace of rollout and adoption of heat networks with lower-carbon heat sources to meet our carbon reduction targets.

In England, one important development is the introduction of the Future Homes Standard by 2025, for new build homes to be future-proofed with low carbon heating and very high fabric standards. We intend to implement the Future Homes Standard through changes to the Part L of Building Regulations on which Government is [consulting](#).³ This is a huge opportunity for heat networks. To date, the dominant heating competitor to heat networks has been individual gas boilers. The change in carbon factors means that developers may have moved to direct electric heating. Therefore, within the consultation we have proposed that a householder affordability rating is introduced to make it harder for property developers to install direct electric heating where it results in higher costs for consumers. We expect to see a shift towards heat networks on new developments where this is the best low carbon solution for the local circumstances. Presently, the majority of heat networks are themselves fuelled by gas CHPs. However, there is a broad range of low-carbon technology options for networks (see figure 1) and we are already seeing an encouraging uptake of lower carbon solutions among new networks.

The Welsh Government are also consulting on related changes to Part L (Conservation of Fuel and Power) and Part F (Ventilation) of the Building Regulations for new homes and the associated statutory guidance. The proposed changes are aiming to make new homes more energy efficient and to future-proof them for the introduction of low-carbon heating systems. It also proposes changes to Part L.⁴

² BuroHappold (2013), Secondary Heat Study- London's Zero Carbon Energy Resource: <https://www.london.gov.uk/WHAT-WE-DO/environment/environment-publications/secondary-heat-study-londons-zero-carbon-energy>

³ The Future Homes Standard: changes to Part L and Part F of the Buildings Regulations for new dwellings consultation: <https://www.gov.uk/government/consultations/the-future-homes-standard-changes-to-part-l-and-part-f-of-the-building-regulations-for-new-dwellings>

⁴ Building Regulations Part L and F Review: <https://gov.wales/building-regulations-part-l-review-0>

In the right circumstances, heat networks deliver good quality outcomes for consumers, support local regeneration and can be a cost-effective way of reducing carbon emissions from heating. In this consultation we set out proposals for a market framework that brings these three strands together. Although we focus on heating, we recognise the growing role heat networks are likely to play increasingly in providing cooling services. Therefore, our proposals should be read in relation to both heating and cooling.

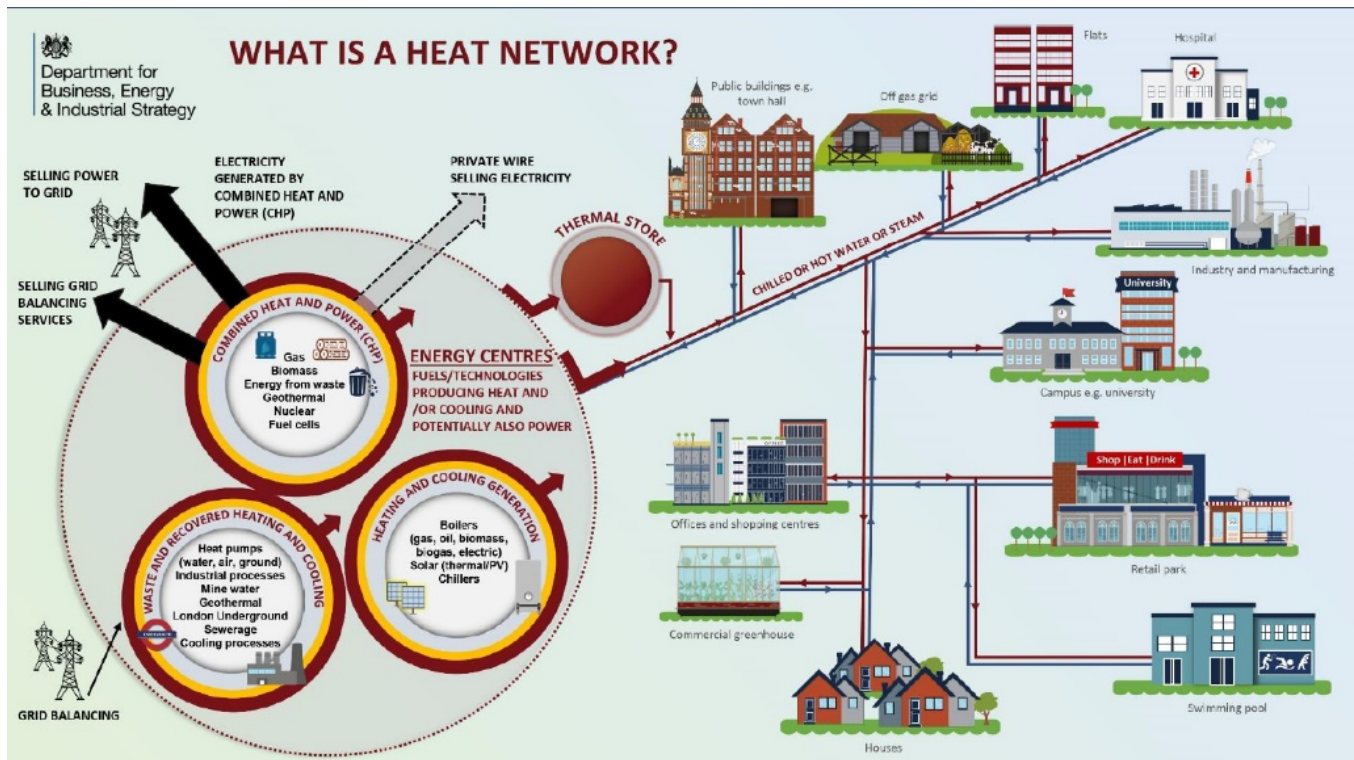


Figure 1: What is a heat network?

Government support for heat networks

Our plans for the heat network market build on a strong track-record of support for the sector. The [Heat Networks Delivery Unit](#) (HNDU) in BEIS was set up in 2013 specifically to support local authorities in England and Wales through the early stages of heat network project development. Its remit has since expanded in response to stakeholder needs to include facilitating the delivery of a wider range of projects, both public and private, including major housing developments, hospitals, and utilising energy from waste heat sources. **HNDU has invested over £20m in grant funding to more than 200 projects across 140 local authorities to act as the catalyst to build a thriving market.**⁵

⁵ Heat Networks Delivery Unit: <http://www.gov.uk/guidance/heat-networks-delivery-unit>



Figure 2: Areas supported by HNDU

HNDU has led progress in sharing of best practice and knowledge across the market by promoting new guidance on technical standards, creation of standardised documentation and facilitating project development. In addition, we continue to increase the visibility of heat networks among investors through annual conferences with Triple Point Heat Networks Investment to promote heat networks opportunities; publication of a list of interested investors; and publication of a quarterly pipeline of projects.⁶ The near term pipeline (from 1 to 5 years) is currently worth up to £1.2 billion. We will continue to update this on a quarterly basis in order to provide investors with up to date, reliable information.

In tandem with HNDU, government are providing a major boost to the market by investing up to £320m through the [Heat Network Investment Project](#) (HNIP) to support the commercialisation and construction of heat networks across England and Wales. Through the provision of capital grants and loans we want to accelerate market growth and reduce carbon emissions. It is expected that HNIP will leverage in approximately £1bn of private and other investment.⁷ To date, we have already announced up to £40M funding to seven projects in the first two rounds of the scheme. Additionally, [Triple Point Heat Networks Investment](#), our delivery partner on HNIP, has a dedicated investor relations team that engages with the investor community and broadens the reach of heat networks investment by raising third party finance for projects applying to HNIP.

HNIP will deliver a step-change in the heat networks market, improving skills and capability and demonstrating to banks and investors that heat networks are a viable investment proposition, thereby reducing costs and improving returns. Commissioned research from the Carbon Trust has highlighted several ways in which cost reductions can be achieved.⁸ We

⁶ BEIS (2019), HNDU pipeline: <https://www.gov.uk/government/publications/hndu-pipeline>

⁷ BEIS (2018), Heat Networks Investment Project: <https://www.gov.uk/government/publications/heat-network-case-studies>

⁸ Carbon Trust (2018), Estimating the cost reduction impact of the heat networks investment project on future heat networks: <https://www.gov.uk/government/publications/estimating-the-cost-reduction-impact-of-the-heat-networks-investment-project-on-future-heat-networks>

expect a growing market to drive greater competition between developers. An expanded market will also encourage greater harmonisation of sector standards. This should reduce operation risks and increase investors' overall certainty. Combined, these factors will lead to a lowering of finance and investment costs and facilitate greater economies of scale from larger heat networks.

We are clear that we need to ensure delivery of sustained investment in the market beyond the lifetime of HNIP. Our intention has always been that HNIP should inform the development of a longer-term market framework.⁹ We set out in the [Supporting Market Growth section](#) below the core work we are doing in this area to build on the success of HNIP.

We are working closely together with industry on improving the ongoing market conditions. The Heat Networks Industry Council (HNIC) began work in 2018 and is led by the Association for Decentralised Energy (ADE). HNIC is made up of leaders of the heat network industry and convened to support government in achieving a sustainable market. HNIC will identify measures and set out their ambitious commitments, including creating jobs and investment, cutting costs, reducing carbon, creating more 'liveable', smarter cities and driving excellence in customer service and standards.

Although the market is relatively nascent in the UK, it is much more firmly established in other countries, particularly within Europe where heat network market arrangements vary considerably. This is reflective of each country's differing reasons and timing for widespread heat network growth. In developing our proposals to support market growth, we have considered a number of differing approaches and their applicability to the UK market.

Protecting consumers

In the UK there are approximately 480,000 customers spread across around 12,000 communal heat networks (serving only one building) and 2,000 district heat networks (serving multiple buildings).¹⁰ District heat networks currently supply around 10TWh of heat which represents just under 2% of UK heat demand.¹¹ Further detail on the location of heat networks is given in Figure 3 below.

In 2018 the Competition and Markets Authority concluded its market study into heat networks and found that many consumers are supplied heat at comparable consumer standards and price to the gas and electricity markets. This was supported by our own consumer survey in 2017 which reported positive satisfaction among the majority of people living on a heat network. However, it is also evident from the CMA and our own analysis that some people experience poor service, including examples of high pricing. Currently, there are no sector specific protections for heat network consumers, unlike for people on other utilities such as gas, electricity or water.¹² In addition, a consumer living in a building serviced by a heat

⁹ BEIS (June, 2016), Consultation on the heat networks investment project:

<https://www.gov.uk/government/consultations/consultation-on-the-heat-networks-investment-project-hnip>

¹⁰ "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 building.

¹¹ BEIS (March, 2018): <https://data.gov.uk/dataset/26afb14b-be9a-4722-916e-10655d0edc38/energy-consumption-in-the-uk> The experimental statistics may not wholly reflect the true position of the current heat network market due to networks not reporting or providing incorrect returns

¹² The exception to this is the Heat Network Metering and Billing Regulations (2014) which provide some limited requirements regarding metering and billing arrangements. See [Heat Metering and Billing section](#)

network does not have the same opportunities to switch supplier as they would for most gas and electricity supplies.

The CMA concluded that “a statutory framework should be set up that underpins the regulation of all heat networks.” They recommended that “the regulatory framework should be designed to ensure that all heat network customers are adequately protected. At a minimum, they should be given a comparable level of protection to gas and electricity in the regulated energy sector.”¹³

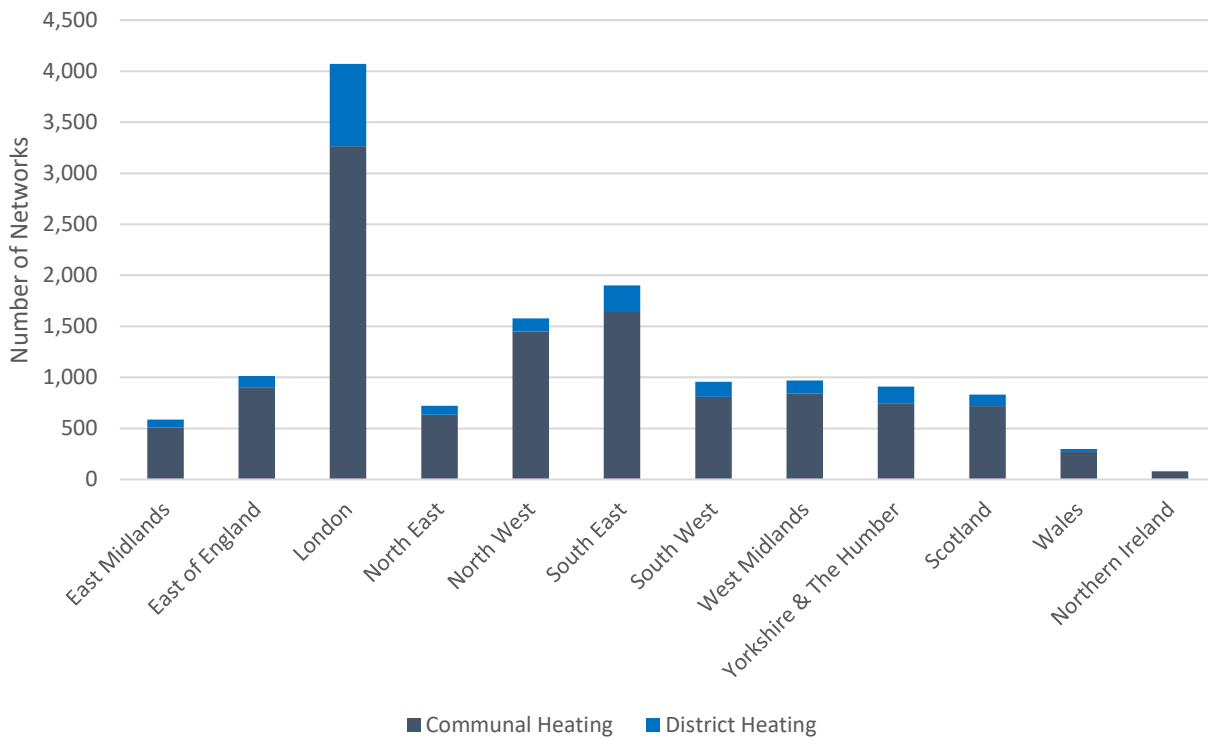


Figure 3: Location of heat networks

Source: Experimental heat network statistics¹⁴

We published a [response](#) to the CMA’s recommendations in December 2018 (the “December document”) in which we agreed with the arguments for heat network regulations and committed to consult further.¹⁵

In this consultation we set out our proposed overarching regulatory model (see [Proposed Regulatory Framework](#)) for the heat network market. In the section ‘[Protecting Consumers](#)’ we are consulting on the scope of consumer protections in the regulatory framework. These are designed to build on existing good practice within industry. Our expectation is that all heat network domestic consumers 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 wrong.

¹³ CMA (2018), Heat Networks Market Study: <https://www.gov.uk/cma-cases/heat-networks-market-study>

¹⁴ BEIS (March, 2018), Energy Trends, 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>

¹⁵ BEIS (2018), Heat Networks: ensuring sustained investment and protecting consumers: <https://www.gov.uk/government/publications/heat-networks-developing-a-market-framework>

Regulation will not only help protect individuals from poor experience but will help increase confidence in the sector and facilitate its further expansion. Investors and heat network developers have told us that targeted heat network regulations will help to drive up areas of lower standard, improve the market's overarching reputation and bring it more into line with other utilities, such as the water and telecoms industries.

Improving consumer outcomes ahead of regulation

We expect future consumer protection regulation to build on existing cooperation between government and the sector. We worked closely with industry and consumer groups to support the development of the UK-wide Heat Trust scheme, an independent consumer protection scheme designed specifically for heat network consumers.¹⁶ It puts in place a common standard for the quality and level of customer service that is provided to domestic and micro-business consumers by their heat energy supplier. It also provides an independent dispute resolution service through an agreement with the Energy Ombudsman, the independent body for resolving consumer complaints. The Heat Trust does not cover pricing and as a voluntary scheme is limited in the sanctions it can impose.

We expect the Heat Trust to have an important role in preparing the industry as we move towards sector regulation. We anticipate that all existing heat network schemes will be covered by future regulatory requirements. In April 2019, we wrote to all heat network operators reminding them of the need to continue to drive up the consumer experience in the interim before regulation takes effect. By joining Heat Trust now, organisations will not only be able to demonstrate the quality of their service to consumers right now, but they will also be better prepared for the transition to regulation.

We have also worked with industry to establish minimum standards for the design, installation and operation of heat networks across the UK through the development of the ADE-CIBSE Code of Practice¹⁷. These voluntary requirements are comparable to the quality and performance standards for regulated utilities such as gas and electricity and draw on legislation and industry best-practice. All networks receiving HNIP funding must meet the Heat Trust standards or equivalent and comply with the Code of Practice's technical standards.

We know that as the market builds, some heat networks have struggled to keep up standards in line with the rest of the sector, leading to less effective and poorer performing networks. It is important to address this gap, both to improve the experience of consumers on poorer performing networks and to address the negative impact on the sector's overarching reputation.

In light of the above, we are committed to supporting heat network operators to identify ways to optimise their networks in order to improve the end consumers' experiences. We have heard that some network operators can struggle to make the case for interventions that could improve consumer outcomes. We have commissioned an evaluation of some existing schemes where sub-optimal outcomes are currently being experienced. We will be working with those network operators to develop outline business case documentation for the recommended measures, supporting sign-off within their organisations and implementation.

We will use our findings to develop guidance for dissemination to wider project sponsors and industry – it will identify how, across various project types, causes of sub-optimal performance

¹⁶ Heat Trust: <https://www.heattrust.org/>

¹⁷ ADE, Code of Practice: <https://www.theade.co.uk/resources/publications/code-of-practice-for-heat-networks1>

can be identified and operation of network assets can be improved. It will assist sponsors to set out clear business cases for their organisations to act upon and which the organisations can then use to fund and deliver cost-effective interventions and improvements. This project will influence positive change for existing networks and better outcomes for their consumers.

Heat Networks and devolution

The devolution of heat policy and heat network regulation in the UK is complex.

While heat policy is devolved in Scotland, consumer protection is reserved to the UK Parliament. With regard to Wales, heat networks (and schemes incentivising or facilitating them) are devolved, but their regulation remains a reserved matter for the UK Parliament. In Northern Ireland both regulation and consumer protection are devolved to the Northern Ireland Assembly.

This consultation sits alongside the Scottish Government's wider work, using its devolved powers, to develop a long-term framework for heat networks. The Scottish Government has announced in the Programme for Government (PfG), published in September 2019, that it will now move to introduce a Heat Networks Bill to regulate the heat networks sector in Scotland in a way that attracts investment in this key heat decarbonisation infrastructure.¹⁸ As the Scottish Government develops the Heat Decarbonisation Policy Statement, which it has committed to publishing in Summer 2020, the design of the wider policy framework to accelerate the deployment of low carbon heat will be considered.

Our proposed measures to protect consumers will apply to customers of heat networks in England, Wales and Scotland (i.e. Great Britain) as the UK Parliament has reserved powers to legislate in this area. Consumer protection is a devolved matter for the Government of Northern Ireland; therefore, this framework will not apply for consumers there. Other elements of our proposed framework, addressing market growth, the statutory powers of heat networks, and decarbonisation of heat networks will apply to England and Wales, or England only. Further information on territorial applicability of the different elements of the framework is given in the [devolution section](#).

We are working with governments across Great Britain to ensure that the future frameworks work coherently across the different devolved areas.

¹⁸ Scottish Government (2019): <https://www.gov.scot/publications/protecting-scotlands-future-governments-programme-scotland-2019-20/pages/5/>

Supporting market growth

Heat Networks are a crucial aspect of the path towards decarbonising heat and achieving net-zero commitments. The sector will need to expand significantly over the coming years, creating a substantial long-term investment opportunity. The Government's role in this challenge is to raise and promote the profile of the heat networks market and to enable the right conditions for the market to grow. The commitment to phasing out gas in new buildings from 2025 will be a critical component of this.

We want to go further in increasing levels of investment in the sector; we are committed to working with market participants to drive confidence in the sector and maximise the strong potential for growth. Using a cross-cutting range of approaches, we are already leading the provision of market information, sharing of data, and standardisation of documentation. We are also providing support and expertise at local level to strengthen approaches that will help generate additional demand certainty on projects. This chapter sets out ways government can strengthen market arrangements for participants and attract new investors.

In our [December publication](#), we identified existing challenges for the market and have since been considering how they can be addressed. Many of the existing perceived challenges are at least in part due to the nascent state of the market rather than fundamental barriers. We summarise these below:

- Relatively low visibility of the market and project pipeline;
- Perception of financial burden and risk for developers and investors created by complexity of market arrangements and a lack of standardised documentation or shared data;
- Limited understanding of potential costs and return on investment;
- Relatively low reputation of the sector, tending to focus on incidents of poorer consumer service/pricing. This results in weaker awareness of the benefits to individuals and local areas of heat networks, and can deter investment (e.g. in relation to outcomes for consumers on heat networks);
- Ensuring greater certainty, both in terms of the framework within which the sector operates, and the volume and timing of connections to a network.

This last point on uncertainty of connections is known as connection risk. Heat network projects need to make sufficient returns if they are to cover the high upfront cost of the infrastructure and make returns in the long-term. While the sector is increasingly attractive to investors, one of the challenges is securing firm commitments from buildings or consumers to connect to the network during the often-lengthy project development phase. When coupled with the high upfront capital costs, this uncertainty over consumer demand can deter some investors.

Below we set out progress in addressing the challenges outlined above, and where we believe further action is needed from either government or industry. It should be noted that tax matters, including business rates, are out of scope for this consultation as this policy area is reserved for HM Treasury.

Reducing developer burden

We know that developers of heat networks can face specific complexities and challenges associated with the market. In the sections below we concentrate on the action taken by government and industry to address this disparity and reduce the overall burden for developers in initiating and maintaining the development of heat networks projects.

Unlike other established utilities, heat networks are not classified as statutory undertakers and do not have the range of statutory powers available to water, electricity, gas and telecommunications firms. To drive market growth and reduce the regulatory burden for heat networks we are proposing to develop equivalent powers for heat networks as part of sector regulation (more information is given in the [rights and powers section](#)).

In comparison to established infrastructure markets there is a lack of accessible established tools and standardised documentation to aid the development of robust business cases in the heat networks market. Our work with local government projects has demonstrated that this can create a considerable drain on time and cost resources. We are therefore providing tools to ease this process significantly:

- a. Through the [Standardised Due Diligence Set](#) ('SDDS') for heat networks created by our delivery partner Triple Point¹⁹, government is playing an integral role in facilitating greater connection of project sponsors, developers and investors. The aim of standardised due diligence is to provide the lender or investor with a detailed understanding of the company or project and, specifically, to help enable clearly defined risks that can be assessed and managed. To carry out due diligence and negotiate relevant finance or equity documents on a project, finance funders will usually appoint their own legal advisors. This is the first time the investment community has detailed their appraisal process for heat networks in order to ensure projects coming forward are of higher quality, more deliverable and more likely to perform in line with expectations, thereby securing returns on investment. The SDDS for heat networks will be critical for the market by ensuring risks on projects are manageable for investors and developers, and by improving the capability of the market to deliver on high quality heat networks at pace; and
- b. Through HNIP and their work with Triple Point, we are also producing a standardised set of contracts. This will include the preparation of a Sales, Operations and Maintenance Set ('SOMS') of contract documentation for heat network developers and operators. The creation of standardised contracts is significant to developers by introducing a best practice approach and removing the cost of creating fundamentally similar contract forms multiple times for each project. SOMS will remove a key obstacle faced by developers and enable faster development on projects. This will in turn build market confidence by making projects more investable and improving conversion rates through the commercialisation stage and into construction. The reduction in project capex will improve returns and costs to consumers.

¹⁹ BEIS (2019) Creating a Standardised Due Diligence Set (SDDS) for heat networks: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/807289/HNIP_SDDS_Guidance_final.pdf

These tools, in combination with other wider supporting actions will ultimately reduce the cost of capital to sponsors as standardised documentation allows risks to become uniform across projects, and therefore better understood.

Increasing understanding of costs and potential returns

Currently parties can struggle to secure investment in heat network development proposals. This is partly a combination of the complexity of some projects and limited understanding of how best to determine associated costings. We know that access to quality data is critical to enabling strategic investment and business development decisions. We have taken steps to improve the sharing of data:

- a. While market participants have a core role in the provision and dissemination of much of this, government has unique access to some data sources. HNIP provides us with a growing source of data across an expanding number of high-quality projects in the HNIP pipeline. We are also committed to aggregating and sharing anonymised project data from the [combined pipeline](#) including data such as total capex and generation technologies to inform other project development and delivery. We will be drawing on experiences from HNIP projects to share best practice and knowledge.
- b. To build on these efforts to share data, we are developing a ‘Heat Data Strategy’ that will enable us to understand better and build evidence of heat consumption. Understanding heat consumption, both of a single building and of a group of potentially connected buildings, is an essential part of good heat network design. Heat consumption is a complex area which cuts across different disciplines, such as facilities management, architecture and engineering as well as involving occupants’ preferences and behaviour. We are exploring the data that is already collected, where there are gaps, and what role government should play in filling these. This will enable investors and network developers to build their business cases on a more robust evidence base which in turn should help to reduce uncertainty and cost. Development of an appropriate heat data strategy will be important not just for heat network market development but also as a contribution to wider ambitions around the transition to low carbon heating.
- c. We know that understanding the actual cost of heating a building can be complex, however it is critical to securing investor confidence. We have published a [Whole Life Cost of Energy Calculator](#) to evaluate the cost of on-site energy generation for a building. It can be used by building owners considering connecting to a heat network; if they know their existing cost of heat, they will be in a better position to assess prices of alternative heating options. The output of the Calculator can feed into heat network tariff negotiations as well as improve the credibility of heat off-take tariffs modelled for heat networks. This should provide investors with greater confidence that the energy tariffs proposed and modelled will be reflective of a discount to the true cost of self-supplying energy by key off-takers.
- d. A well developed and open supply chain is critical to market growth and success. Current information on supply chain activity is relatively limited. We will be using

information from HNIP projects to provide greater transparency on the heat networks supply chain involved in the various project stages from advisors, hardware and service providers as part of wider market reporting. As an initial step, we are committed to publishing annual low carbon heating metrics, which will give a high-level overview of the low-carbon heating supply chain, using a basket of indicators grouped across the three key themes of increased market demand, increased supply and market efficiency and innovation.

Addressing connection risk

Our discussions with industry stakeholders have indicated that there is some appetite for an interventionist approach such as 'Regulated Asset Base' and 'Demand Assurance' to address connection risk. These approaches rely on providing financial support mechanisms to address the risk that expected connections to a heat network do not materialise. We have set out consideration of these approaches below.

Regulated Asset Base

The Regulated Asset Base (RAB) model has been considered due to its success in sustaining investment and socialising cost and risk across a wide consumer base in other regulated markets, such as gas and electricity.²⁰ It is also being considered in consultation by government in relation to the financing of new nuclear generation and as a model for financing carbon dioxide transport and storage networks in carbon capture, usage and storage (CCUS) projects.

A RAB model is a type of economic regulation typically used in the UK for monopoly infrastructure assets such as water, gas and electricity networks. The company receives a licence from an economic regulator, which grants it the right to charge a regulated price to users in exchange for provision of the infrastructure in question. To prevent monopolistic disadvantages, the charge is set by an independent regulator who holds the company to account to ensure any expenditure is in the interest of users.

In 2016 the model was applied successfully for the first time to a single asset construction project – the £4.2bn Thames Tideway Tunnel (TTT) sewerage project. Much of the almost £1bn of private sector equity finance that was raised to deliver the project came from UK pension funds, representing 1.7 million pensioners, or a quarter of the UK's largest 25 pension funds.

RAB-funded infrastructure has received significant quantities of investment from private sector players over the last 20-30 years. As of 2018 the total RAB value across the UK electricity, gas, water and airport sectors is almost £160bn (2018 prices).

A potential RAB model for heat networks would entail a central regulator that scrutinised the finances of projects and decided on a 'permitted return' that would determine the prices that operators would charge to consumers. Aspects of this price can be flexed to permit extension

²⁰ BEIS (2019), BEIS published consultations looking at whether a RAB model would be appropriate to finance the development of new nuclear generation and as a potential model for financing carbon dioxide transport and storage networks. <https://www.gov.uk/government/consultations/carbon-capture-usage-and-storage-ccus-business-models>

or development of new networks to share the costs between the heat network companies and consumers.

In theory, this cost-sharing mechanism could ensure that the connection risk is mitigated. This is because in instances where connections fall through, the overrun costs are split between the company and the consumers. This model works well in the electricity and gas sectors because cost overruns can be spread across the large numbers of consumers connected to a distribution network. We believe that this principle would not be appropriate for heat networks, as the benefits of extending one heat network through a RAB cost-sharing mechanism would not be equally shared by consumers connected to other separate heat networks. It would therefore be unfair to levy charges that are not shared by all consumers. This problem would still apply even if the model was applied regionally as in the electricity distribution market or across company portfolios.

In addition, any RAB model requires a regulator to assess the finances of the projects and companies being funded to determine if the returns being earned are legitimate. The costs of doing so are then levied on consumers. Such burdens are appropriate for the electricity and gas sectors because of the scale of the market but, considering that heat networks currently represent under 3% of UK heat demand, we believe the administrative costs to a future regulator of scrutinising the finances of heat network projects would be disproportionately high.²¹ This cost, which would have to be levied on consumer bills, would be disproportionate to the benefits it could bring.

Having considered its applicability, we do not think RAB is appropriate at this stage of the heat networks market. This is primarily due to the difficulties in socialising costs across the heat networks consumer base, which is not extensive enough and could mean high increases in consumer costs. We will continue to consider a RAB model as the market develops, as in future it may be better suited to funding the separate piping and transmission infrastructure of large-scale networks. We believe that such systems, common in continental Europe, are likely to develop in the UK as the market matures.

Demand Assurance

Demand Assurance is a model designed to address connection risk, recommended by the ADE led Industry Task Force in their report [Shared Warmth](#) in January 2018.²² Under this model a heat network developer would seek approval of a strategic plan (from a regulator or local agent) which sets out estimated heat demand arising from consumer connections as the heat network is built out. If approved, the heat demand, would be assured to cover any future demand shortfall or some element of it. It is assumed that this risk would need to be underwritten by government and funded by either taxpayers or through consumer bills (potentially heat network consumers or wider energy consumers).

We have considered a range of ways in which demand assurance could work in practice. We recognise that it could create additional confidence in the market by reducing investment risk. However, there are a number of issues which make it unfeasible for government to take forward in its current incarnation. Firstly, it would create uncertain and potentially costly liabilities for the body responsible for underwriting the risk, which is likely to be government. In

²¹ BEIS (March, 2018), Energy trends, 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> The experimental statistics may not wholly reflect the true position of the current heat network market due to networks not reporting or providing incorrect returns.

²² ADE (2018), Shared Warmth: <https://www.theade.co.uk/resources/publications/shared-warmth-a-heat-network-market-that-benefits-customers-investors-and-t>

addition, we believe there are risks that a demand assurance scheme could reduce the incentive for developers to deliver cost effective projects and maximise returns, by providing an incentive for projects to over-expand. The scale of regulatory intervention required to assess the strategic case for a large number of schemes is likely to be burdensome with high administration costs. This is particularly true given the need for stringent checks to guard against spurious applications for possible future connections. Ultimately, it is likely these costs would be passed on to consumers as a result of the high financial burden, it is therefore unlikely that demand assurance will be appropriate for the whole heat networks sector.

There may be benefit in considering how demand assurance could be targeted at certain sections of the heat networks market. For example, where it supports the development of large, strategically important networks or alternatively where it is used to underwrite the risk for retrofitting buildings to allow them to connect to a heat network. However, at the current stage of market development for heat networks, we do not see such an intervention as necessary. As a result, we do not consider demand assurance to be an appropriate or feasible model to take forward at present.

We are committed to ensuring that there are sustainable routes to investment in low-carbon strategic networks. Both of the options considered above, however, assume a national central body having a role in managing connection risk. Heat networks consist of local infrastructure, providing local solutions to low carbon heating. They are more effective when taken forward as part of wider local infrastructure planning. We therefore see most benefit in considering how best to address connection risk and associated concerns through local interventions. We are therefore focusing on opportunities to work with local areas to understand whether any further government intervention may be required.

Strengthening local approaches

Many local authorities have announced climate change targets for the 2020s and beyond to deliver net-zero commitments, and we anticipate more will follow. Heat networks are already an important way to decarbonise a local area's heating requirements, balance demands on the local power grid, and to provide a catalyst for business and housing regeneration. Our engagement with local authorities has shown that much can be achieved where there is a unified approach across the authority's development of heat networks and their overarching planning office and policy enforcement. Many local authorities have already undertaken considerable deployment of investable heat networks, using a range of approaches to manage potential connection risk, such as the designation of heat network zones, concession arrangements, and use of planning requirements to encourage or enforce connection.

Zoning

Zoning policies are a recognised approach to heat network developments both internationally and in this country. By the term 'zoning' we are referring to where a municipal authority uses local heat planning to identify a **defined locality for a strategic heat network development**. The municipal authority can use supportive policy to drive the network forward, such as:

- 1) Using existing planning powers to ensure that new buildings in the zone connect to the heat network

- 2) Incorporating public sector buildings in the zone as anchor loads to incentivise investment
- 3) Offering discounts on connection fees to encourage early connections to the network

These measures work most effectively where there is strong commitment and alignment across the local authority towards maximising the opportunity of the heat network.

Planning policies in combination with concession arrangements can also be used as part of a zoning approach to ensure new build developments connect and/or to grant an area of exclusivity that enables development of one or more designated networks. A 'concession arrangement' can be described as a contract between a municipal authority and another party (generally from the private sector); creating a vehicle to support the implementation of heat networks projects for joint benefit, such as the provision of upfront capital or guarantee of consumer demand. Concession arrangements can be a useful tool to develop a heat network if private sector investment is required and where local authorities can guarantee initial anchor load to the network for instance through planning requirements for certain buildings, such as public sector buildings. We have seen that these arrangements work well where good communication, shared objectives and clear targets exist.

Case study - Bristol Council

Bristol Council are committed to tackling climate change and meeting the challenge of becoming carbon neutral. In order to meet this, Bristol have launched the 'City Leap' initiative which will attract £1bn of investment to transform the city's energy system, creating a cleaner, greener and healthier Bristol. City Leap will create a **partnership between the council and the business sector** to grow its ever-increasing delivery of renewable, smart and low carbon energy projects.

A **city-wide approach** has been taken towards decarbonisation through the use of planning and regeneration. Through the provision of a '**Heat Priority Area**' covering a large region of the city, the Council has used planning requirements to enable connection to the heat network. Bristol's Core Strategy requires developers within the Heat Priority Areas to incorporate, where feasible, infrastructure for heat networks, and connect to existing heat networks, where technically and financially viable.

Bristol Council takes a **unified approach with planning officers** in order to enforce connection to the network within the Heat Priority Area. Using an educational campaign and carrying out stakeholder engagement, the council ensures that those involved in overseeing planning requirements are engaged with the importance of the planning policy and the benefits of heat network development.

Through use of master planning and feasibility studies Bristol has been able to ascertain **strategic placement of heat network sites and areas for expansion**. The network is currently connected to over 1,000 social housing properties and construction is underway to extend the network to connect commercial buildings including Castle Park View which will be Bristol's tallest building and the first commercial development to sign up to the

Bristol Heat Network. Bristol Council's approach to heat decarbonisation aims to create a blueprint for other local authorities to follow suit.

Through our stakeholder engagement we have also seen that making public sector buildings available for connection to heat networks can help guarantee an anchor load from day one. For instance, Birmingham Council collected information regarding the future demand that could be utilised from public sector buildings in the city before building the heat network which now connects to Aston University, Birmingham Children's hospital and Birmingham New Street Station. Birmingham's heat network scheme has developed and expanded into one of the largest schemes in the UK. In the absence of sufficient private sector investment, Leeds Council provided public buildings and social housing as the first anchor load of connection in the development of the city's flagship heat network. Local authorities can use this route to enable heat networks to get off the ground in the early stages where there is a risk of insufficient demand.

Case study – Leeds City Council

Leeds City Council is undertaking a £5.3m extension to their existing heat network for which they have received £2.5m of HNIP funding. The extension will supply five major council buildings and additional public and private sector partners. Leeds City Council is now converting 1,440 council flats from ineffective storage heaters to lower cost and lower carbon wet central heating systems to connect to the heat network. Typically, tenants can expect to save between 5 and 20% every year, depending on how they use their heating. The network uses heat generated by processing waste at the Council's recycling and energy recovery facility.

To enable development, the Council has introduced **positive planning policies** to help facilitate the construction of heat networks and to encourage developers to connect to them. Leeds Council's planning policy includes a requirement for major development sites to connect to existing district heating networks.

Leeds successfully took the approach of setting up a **Local Development Order** specifically for district heating infrastructure, where a local authority extends permitted development rights for certain forms of development. This would equally apply to private developers seeking to develop or extend heat networks.

Under government's [Modern Energy Partners](#) project, we are developing a toolkit for local energy managers on public sector campus sites to drive effective solutions for low-carbon energy efficiency. Integration of public sector buildings can be fundamental to securing the necessary anchor loads for a heat network. By helping to up-skill local energy managers on energy efficiency measures and management of existing infrastructure, the toolkit will encourage wider engagement between campus sites and local heat decarbonisation plans.

We believe that local authorities are best placed to identify where developing a heat network is the right solution for local needs and to incorporate this within any wider local decarbonisation plans. Local authorities have the requisite local knowledge to identify appropriate energy sources, sites, opportunities for storage and areas for expansion. However, we have considered the differing roles central government could play in supporting further development of local zoning.

The **Scottish Government** agrees that local authorities are best placed to identify zone locations. They are planning to introduce a requirement on local authorities to develop **Local**

Heat and Energy Efficiency Strategies (LHEES) which would identify optimal decarbonisation approaches, including the identification of heat network zones. While it is not expected that the local authority would be mandated to act on the plans, the intention is that the process would drive local commitment to take forward the most appropriate decarbonisation route, and funding and/or supportive policies may be targeted.

We have considered the need for a similar approach to mandate heat planning in England and Wales. While we are very interested in learning from the Scottish approach, we are cautious about imposing an additional burden on local authorities to make this a requirement at this stage of market development. However, we have not identified any legislative barriers to local authorities who may already wish to undertake their own heat mapping approach to develop heat networks in certain areas.

We understand that not all local authorities currently have the capacity and capability to develop heat network zones and turn these into investable delivery plans. We are also aware that some authorities can have near-term reservations about moving forward more quickly on low carbon heating than neighbouring areas. We will be working with and learning from our existing **Local Energy Programme** as part of our associated work to help address these points. The programme works with **Local Enterprise Partnerships (LEPs)**, local authorities and combined authorities (CAs) to drive development of clean growth as a core plank of Local Industrial Strategies and to support local clean growth investment. The key focus is building capability and expertise to identify and deliver projects, and mobilisation of green finance to support projects at a local level. As part of this programme BEIS funded all LEPs to develop local energy strategies. These will be used to identify a pipeline of investable energy projects and will feed into Local Industrial Strategies.

The **Welsh Government** has published a draft **National Development Framework²³ (NDF)**, which contains a policy identifying Priority Areas for District Heat Networks in 14 towns and cities across Wales. In these areas the NDF requires planning authorities to identify opportunities for heat networks.²⁴ The NDF also contains a policy where large scale mixed used development should have a heat network where feasible and that planning applications for such development should be supported by an energy masterplan.

Piloting heat planning for the future

We will **pilot enabling local areas to develop local heat decarbonisation plans**. We will work with these pilot sites to undertake mapping and master-planning of their future energy needs. This will take into account building stock and interdependencies across heat, power and transport. This will deliver an understanding of the full potential for a heat network to both provide cheap low carbon heating and balance local demands on the power grid through storage and local CHP generation. These pilots will lead to the identification of heat network zones. We will then work with the local area to establish whether further policy interventions would help to maximise the potential of these areas.

The pilots will result in identified heat network zones with an associated:

- a. **Pipeline of investable decarbonisation projects** that reflects the interaction across heat, power and transport;

²³ Draft National Development Framework

<https://gov.wales/draft-national-development-framework>

²⁴ <http://le.gov.wales/catalogue/item/NDFHeatDemandMap/?lang=en>

- b. **Tangible investment and delivery plan** for the agreed projects. These pilots will use a **common methodology** to enable join up across boundaries and which can be applied in other localities; and
- c. Identification of whether local policy could be strengthened to help local authorities use their existing powers and take more advantage of heat network zone opportunities.

In particular, we wish to explore whether granting powers to local authorities to **mandate any buildings** to connect to a heat network within locally designated zones could be of significant future benefit. Mandating connections, either centrally or locally, would clearly be a mechanism for reducing connection risk. However, a centrally imposed approach would be a significant intervention into local planning and development decisions. An alternative might be to grant local authorities the powers to take such decisions on mandating. If this were taken forward it would be important to make sure it incentivised implementation of the most appropriate heat decarbonisation approach for a specific locality, and that it did not undermine the technical and financial viability of new development. We will be using the findings from these pilots to inform policy consideration of further actions to ensure ongoing investment in strategic low-carbon heat networks.

Regulatory framework overview

In this chapter we set out our proposed model for the introduction of new regulatory provisions in relation to heat networks.

Overarching scope of the regulator

There is currently no body with statutory powers that is able to set and enforce cross-cutting regulatory requirements specific to heat networks. We are therefore proposing to establish a regulator of heat networks with powers to set and enforce regulatory requirements and set rules and guidance in relation to the distribution and supply of heating and/or cooling through networks.

Across Great Britain, the regulator would be responsible for **protecting the interests of current and future consumers** in relation to the heating and cooling conveyed by heat networks. Their responsibilities would include setting rules and guidance relating to:

- **Provision of information (including contracts and billing), to improve transparency** (see [Transparency section](#))²⁵
- **Pricing** (see [Pricing section](#))
- **Quality of service**, including granting consumers statutory access to a redress scheme for complaints (see [Quality of Service section](#))

The regulator would also be responsible for **monitoring compliance** with any regulatory requirements within their powers and taking **enforcement** action, including issuing financial penalties, where necessary.

In addition, for networks in England and where appropriate also in Wales, we are proposing that the regulator has responsibility for:

- **Monitoring compliance with relevant technical standards**
- **Issuing licences for statutory rights and powers** (see [rights and powers section](#))²⁶

These last two aspects of heat network operations are devolved to the Scottish Government, which is developing separate proposals in these areas.

We are also considering whether it would be appropriate for the regulator in England to have powers to require **compliance with decarbonisation targets specific to heat networks**, or whether this may sit more appropriately with a body separate from the core consumer regulatory function – see further details in the [Decarbonisation section](#))

²⁵ The Heat Networks (Metering and Billing Regulations 2014 contain some provisions relevant to billing. These regulations are currently enforced by the Office for Product Safety and Standards (OPSS) within BEIS. We are considering how best to align requirements on businesses under the existing regulations and any additional legislation to avoid duplication. Further information on the Metering and Billing regulation is in the [Heat Metering and Billing section](#)

²⁶ Some of the statutory rights and powers that we propose in the [Rights and Powers section](#) of this consultation are devolved to the Welsh Government. We will continue to work with the Devolved Administrations to align respective policies where appropriate.

Features of the proposed heat network regulatory framework

We want to introduce a flexible regulatory framework which accommodates both existing and new service models, supports innovation, and maximises the economic and low-carbon potential of heat networks. Any regulatory regime should be proportionate and account for the great variety of players that operate within the heat network sector. We propose to take an outcome-based approach, where instead of prescriptive rules firms are judged based on their ability to deliver certain outcomes. This can give firms flexibility in how they meet the specific needs of their consumers while developing innovative services and business propositions.

The UK heat network landscape is very fragmented, with a large number of small to medium schemes. There are around 2,000 district heat networks, and at least 12,000 communal heat networks. There are also over 2,300 heat network suppliers, based on the data collected from notifications required under the Heat Network (Metering and Billing) Regulations. They range from specialised Energy Service Companies (ESCOs) to small landlords.

This is significantly different from many other European heat network markets, where a much larger proportion of heat demand is delivered by a relatively small number of schemes. It is also different from other potentially comparable utilities in the UK; for example, while there are 32 regulated companies in the water and sewerage sectors in England and Wales²⁷, and around 60 energy suppliers active in the domestic retail market. It is clear that the approaches adopted for regulating these markets cannot simply be implemented for heat networks but require adaptations.

Based on these considerations, we have identified key features that should characterise any approach we take to regulating the sector. These are summarised in the table below.

Table 1: Features of a regulatory framework for heat networks

Feature	Detail
Clear	The framework should provide clarity to industry and consumers about which activities are regulated and who is responsible and/or accountable for implementing them.
Principle-based	Requirements of the framework should, in the main, be outcome-focused rather than prescriptive.
Proportionate	Requirements imposed by the framework should be reasonable and necessary for securing good outcomes for consumers, on both quality and cost, while supporting market growth.
Enforceable	The framework should allow the Regulator to target inspections and interventions on higher risk businesses/activities, minimising burdens on well-performing networks/businesses.

²⁷ Ofwat industry overview: <https://www.ofwat.gov.uk/regulated-companies/ofwat-industry-overview/>

Flexible	The framework should allow innovative business/delivery models to emerge and give the Regulator scope to determine appropriate dispensations or exemptions in cases where requirements may be disproportionately onerous.
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Consumers covered by the proposed heat network regulatory framework

We think **all domestic consumers on a heat network should be protected** by this regime, regardless of the size of the heat network scheme. This includes residential consumers on a mixed-use network (which means one which covers both residential and business properties.) On a mixed-use network, however, we would expect the consumer protection requirements to apply only to the domestic consumers.

We propose that the consumer protections should also apply to **micro-businesses** because, similarly to domestic consumers, they lack resources and negotiating power to ensure good service from their operator. In doing so, we anticipate a consistent approach with that taken by Heat Trust which reflects Ofgem’s definition of micro-business consumers for energy consumptions purposes. Ofgem’s definition includes energy consumption and financial thresholds in addition to the usual size classification for micro-businesses consumers (fewer than 10 employees) and affords additional consumer protections to these types of businesses.²⁸

Non-domestic consumers on the contrary, are better able to negotiate specific prices and terms of service for their connection; hence we do not expect them to be covered by consumer protection requirements.

However, we do expect any requirements relating to **technical standards and/or decarbonisation should apply to all networks, including those consisting exclusively of non-domestic customers**. Technical standards will aim to drive new networks’ performance and facilitate networks’ expansion and interconnection; this would benefit all networks, regardless of the types of consumers served. Similarly, we believe that any potential future decarbonisation requirement should apply to all heat networks and their customers.

Q1. Do you agree with the inclusion of micro-businesses within consumer protection requirements?

Q2. Do you agree that consumer protection requirements should not cover non-domestic consumers (other than micro-businesses)?

Definition of “heat network”

There are a number of ways in which a heat network might be defined. We are keen to ensure that the definition for future regulatory purposes is clearly understandable and reflects existing and emerging technology and infrastructure. It should also cover both communal and district networks, as well as those delivering heating and cooling.

²⁸ Ofgem (2019), Micro-business consumers: your questions answered: <https://www.ofgem.gov.uk/simpler-clearer-fairer/information-business-consumers/micro-business-consumers-your-questions-answered>

There are existing definitions in the Heat Network (Metering and Billing) Regulations 2014 for district heat networks and communal heating systems:²⁹

- Communal heating: *the distribution of thermal energy in the form of steam, hot water, or chilled liquids from a central source in a building which is occupied by more than one final customer, for the use of space or process heating, cooling or hot water;*
- District heat network: *the distribution of thermal energy in the form of steam, hot water or chilled liquids from a central source of production through a network to multiple buildings or sites for the use of space or process heating, cooling or hot water*

We believe that these definitions do not necessarily cover **ambient temperature networks**. These types of network operate at a much lower (ambient) temperature than conventional ones, tend to have both heating and cooling supplied by one combined system of primary piping, and are likely to include decentralised generation and storage. We are aware of a number of such schemes being developed and expect that the number of ambient networks will grow as the sector decarbonises.

We consider that ambient networks are likely to have similar consumer and performance issues which would warrant these networks being in scope of regulation. Principally this is because for the network to operate it requires a party other than the end consumer to be responsible for the supply of heat and/or cooling to the consumers and because consumers have limited freedom to change their heating suppliers. We can see no justification for excluding such consumers.

We therefore do not consider the definition in the Heat Network (Metering and Billing) Regulations to be sufficient for the wider regulatory framework. While we will need to protect against regulatory divergence between the market framework and the existing regulations, and across devolved law, we propose that the framework should have a new definition of heat networks that centres on³⁰:

- **The network being able to distribute thermal energy in the form of steam or liquids (including heating or cooling) from a central source, or a number of significant generation sites, to multiple buildings or consumers where an operator is responsible for delivery of the thermal energy to the consumers.**

We do not believe that **ground source heat pumps with a shared ground-loop**, where the heat is boosted by individual heat pumps for each dwelling, should be in scope of this definition. This is because we believe that there are not the same consumer protection issues that we and the CMA have found in other networks. In shared ground loop networks there is not a central operator of the scheme responsible for interactions with consumers, and the individuals connected to the shared ground loop typically have independent control over their heat pump, are billed separately and are still able to switch their energy supplier (which avoids being locked into the costs of a centralised heat network scheme).

²⁹ The Heat Network (Metering and Billing) Regulations 2014: <http://www.legislation.gov.uk/uksi/2014/3120/made>

³⁰ The Government of Wales Act 2006 contains a reservation for heat and cooling networks, defined as 'a system or network by which steam, hot water or chilled liquid is distributed from a central source for supplying heat or cooling to various consumers or premises'. <http://www.legislation.gov.uk/ukpga/2006/32/schedule/7A>

Q3. Do you agree with our proposed approach to defining a heat network, including that it should cover ambient temperature networks but not ground source heat pumps with a shared ground loop? Are there heat network arrangements you think would not be covered by this and which should, or vice versa?

Preferred Regulator

The Office of Gas and Electricity Markets (Ofgem) is the economic regulator of the gas and electricity markets in Great Britain. Ofgem's main aim is to protect the interests of existing and future electricity and gas consumers. In its market report, the CMA recommended that Ofgem would be best placed to take on the role of regulator. As we set out in our response to the CMA, we agree.

We recognise that the heat network market is considerably different from the gas and electricity markets; for instance, there is no competition in the supply of heat through a heat network and the number, size and types of suppliers active in the heat network market are not comparable to any of the other utility sectors. As set out in this document, we and Ofgem are aware that regulating heat networks will require adopting a novel approach and new set of skills and capabilities, and we are discussing what steps and changes would be needed to administer the new framework.

However, Ofgem has significant experience in developing and enforcing consumer protection measures. Having a single energy regulator would benefit heat network consumers – many already approach Ofgem asking for help on issues relating to their heat supply. We note that Ofgem already adopts different approaches in how separate elements of the gas and electricity markets, such as transmission, distribution and supply, are regulated.

Establishing an entirely new regulatory body would likely incur higher costs and take longer to set up. We therefore propose that the role of Ofgem should be amended to expand its remit to include protecting heat network consumers. This will incur additional resourcing and management costs for Ofgem. We are proposing to grant Ofgem the power to raise fees from regulated heat networks to fund its regulatory activities. We anticipate that fees would be scaled according to the regulated entity's size. We will be considering the balance between potential costs of funding the regulator's activities – which may affect consumer bills – against the level of oversight and anticipated compliance activity required for this market. When doing so we will take into consideration how best to ensure regulation is proportionate and that any resulting costs to consumers remains appropriate to benefits delivered.

Q4. Do you consider Ofgem to be the appropriate body to take on the role of regulator for heat networks? If not, what would be an alternative preference?

Regulatory models

In developing a regulatory framework for the heat network sector, we have reviewed existing models adopted by other utilities, in particular the licensing model used for water and sewerage, gas and electricity and the authorisation model, adopted in the telecommunication sector and financial services. We have found that there are various regulatory models in operation which have evolved depending on the characteristics of the utility or market in question, and which reflect the priorities and risks associated with the activities undertaken. We have also found that there is no single model that could be directly transferable to the heat

network market, given the complex range of ownership and operation structures, the number of participants, and the essentially monopolistic nature of the service to end consumers.

With Ofgem, we have identified that the current energy retail market design, including the ‘one size fits all’ supply licence, is starting to hold back progress by preventing consumers from benefitting from innovation, and is slowing down decarbonisation³¹. In November 2018, BEIS and Ofgem launched a joint review to investigate what policy, legal and regulatory changes might be needed to ensure that the energy retail market is fit for the future³². In developing a regulatory model for heat networks, we have considered the emerging findings from this work. We are keen to maximise alignment with wider changes taking place in the energy market.

Licensing

In a licensing model, entities wanting to undertake regulated activities are required to secure a licence from a regulator before they can provide such services. To secure a licence, entities often need to demonstrate that they have the appropriate capabilities to undertake the regulated activities. The licence to operate is granted on the basis that the licensee will meet all conditions and requirements specified in the licence, which can be tailored to individual entities. The licensee is responsible for ensuring these conditions are met, and ultimately failure to comply can result in the licence being revoked. This model is used in many regulated utilities, including gas and electricity (see box below).

Licensing model: gas and electricity For energy suppliers, the conditions that all suppliers must adhere to, in order to supply gas or electricity to domestic and non-domestic consumers, are set out in Ofgem’s supplier licences. Suppliers must hold a licence (or be granted an exemption) before they can operate in the market and are expected to meet entry requirements to demonstrate that they are ‘fit and proper’ to hold a supply licence. Supply licences describe how the licensee must interact with customers, both domestic and non-domestic (as applicable) structure and market its products. They also define other obligations on the supplier, such as compliance with industry codes. Suppliers are expected to fulfil a specific range of functions although there are options for businesses to undertake only some of the supplier’s function by partnering with a Licensed Supplier, for example through the Licence Lite scheme for electricity suppliers. Despite such dispensations, licensed suppliers are effectively the sole suppliers of energy to customers and are required to comply with an often complex set of rules; recent evidence suggest that this “supplier hub” model has stifled innovation and competition.

While the energy regulator, Ofgem, has recently made steps in moving from prescriptive rules to outcomes-based principles, further reforms are being considered. In November 2018, the Government and Ofgem launched a joint review of the current retail market design in response to evidence suggesting that the existing regulatory framework may be constraining innovation and new service offerings²⁸. The review will identify how the regulatory framework might need to evolve to ensure the energy market is fit for the future, so that consumers can take advantage of the increased flexibility and lower costs of a smart, low carbon energy system, while appropriately safeguarding all consumers.

³¹ BEIS and Ofgem (2019), Flexible and responsive energy retail markets consultation:

<https://www.gov.uk/government/consultations/flexible-and-responsive-energy-retail-markets>

³² BEIS and Ofgem (2019), Future energy retail markets: <https://www.gov.uk/government/publications/future-energy-retail-market-review>

The joint BEIS and Ofgem Future Retail Market Review consultation 'Flexible and Responsive Energy Retail Markets consultation' closed on 16 September and the responses are being analysed.

Authorisation

Under a general authorisation model, entities are authorised to provide specific services, as long as they meet a set of conditions and requirements set by the regulator. This allows a consistent approach towards all entities that provide the same class of service, whilst facilitating market entry by not requiring entities to apply for a licence upfront. However, while the costs of reporting and application are minimised, they are not removed altogether. Service providers are usually required to notify a regulator when they commence providing their services and could be asked to report on their activities.

General Authorisation: electronic telecommunications

Unlike gas and electricity suppliers, since 2003 electronic communications providers do not need any specific licence or permission to operate, because they are "generally authorised" so long as they comply with General Conditions of entitlement set out by the telecommunications regulator, Ofcom.

Some larger providers are however subject to specific terms, of which they are notified separately, for example, in relation to the provision of access to their networks to third-party providers, or in relation to their having significant market power. Additionally, providers of certain types of networks or services need specific authorisation e.g. anyone using radio spectrum, such as satellite service providers, still require a specific licence.

Specific Authorisation: financial services, firms and financial markets

The financial services market is characterised by a large number of players with differing levels of capability. At the end of 2018, the Financial Conduct Authority (FCA) was the conduct regulator for more than 58,000 firms, ranging from large banks to single independent financial advisers. The FCA recognises that complex regulation can be difficult for smaller firms or those new to the market with new products so it uses a specific authorisation regime that operates with a risk based approach. The FCA ensures that all regulated firms meet common minimum standards before being authorised, referred to as 'Threshold Conditions'. For individuals the minimum standards are known as the 'Fit and Proper' test.

Proposed regulatory approach

In this section we identify the issues that any regulatory approach would need to address and the range of regulatory options that are open to us. We outline a possible bespoke regulatory model for heat networks on which we would welcome views.

Considerations in designing the regulatory model

In order to design an appropriate regulatory model for heat networks, we have identified a number of areas where decisions are needed so that the regulatory model can work most effectively for this market. These are discussed in more detail below.

Project stages and requirements that should be subject to regulation

There are generally three main stages of a heat network's development – design, build and operation (including ongoing maintenance). The primary outcome we want from legislation is well-protected consumers. This is largely dependent on how schemes perform in the third stage i.e. once they are in operation. However, the operational phase will be affected by how the network was originally designed and built. Ensuring that networks are correctly designed and built will help optimise their performance and minimise the likelihood of network failures. This in turn should result in lower operating costs and improve the consumer experience and reduce bills.

We also wish to minimise the administrative and regulatory burdens for both regulated entities and the regulator to help manage associated costs. We therefore consider that regulation should focus on the project stages with a direct impact on the consumer experience i.e. operation and maintenance.

We consider that requirements relating to the direct consumer experience such as pricing, quality of service and transparency should be part of the regulatory requirement placed on all schemes with domestic consumers at operation and maintenance stage (see [Protecting Consumers section](#) below). Schemes would then be required to report on their performance against these requirements to allow consumers and the regulator to assess whether they are being offered a good quality service and a fair price for their heat.

This could be balanced with a general requirement that in order for schemes to be allowed to operate, they must be able to demonstrate compliance with a number of design and build requirements, such as for technical standards or decarbonisation. We envisage that this could be achieved through a certification process, whereby regulated entities demonstrate they are compliant with minimum technical standards through an accredited certification scheme (see [Technical Standards](#) and [Decarbonisation](#) sections).

Entity responsible and accountable for meeting regulatory requirements

The heat networks market has a diverse stakeholder landscape with many different models and structures for the ownership and operation of schemes. Quite often the local authority is involved as project sponsor and establishes a dedicated entity or Special Purpose Vehicle (SPV) such as an energy service company (ESCo) responsible for all aspects - the generation, distribution and supply - of a heat network. Alternatively, a corporate entity might be the asset owner who then either sets up its own in-house management company or appoints an ESCo to be responsible for the heat network and the supply of heat to customers. Very frequently elements are sub-contracted to organisations with the relevant expertise including to dedicated heat service companies who are responsible for billing customers but may not necessarily be involved in the day-to-day operation of the network.

Given this complex stakeholder landscape, there may be no single, one size-fits-all approach for selecting who should be the regulated entity. An approach would be to define which activities are subject to regulation and then designate the party (or parties) responsible for carrying out these activities as the regulated entity (or entities). This would allow maximum flexibility of business models but is likely to increase the number of regulated entities and add to the complexity for consumers in understanding where responsibility for their service sits.

At this stage of the market's development, we are keen to keep the regulatory approach as simple as possible in order to minimise the overarching regulatory burden and to ensure there is clarity for the end consumer and the regulator as to where responsibility sits.

We explore below a range of possibilities, therefore, for who the responsible or regulated entity could be:

- (a) **Asset owner** – organisations that own the heat network infrastructure including the pipework, the buildings and the energy centre. This would place the overall responsibility for ensuring that heat networks are designed, built, operated and maintained correctly directly on the owner of the asset, who, unlike operators, are involved in developing the specifications for the project. Asset owners with no direct involvement in the day-to-day running of the heat network could delegate their responsibilities through contractual arrangements. The asset owner would then remain responsible for ensuring regulatory compliance by the third parties through its contractual arrangements.
- (b) **Project Sponsor** – organisations that initiate or direct the development of the heat network. This could include the local authority, a housing association, a building management company, an ESCo or a community energy company. The project sponsor is very likely to be involved at every stage of a heat network's development.
- (c) **Developer** – organisations that develop and build the network or buildings connecting to the network. Developers who build a network have a key role in ensuring any technical standards are met, which will have an impact on how networks perform during their operation. Developers will not necessarily have a direct relationship with end consumers but their involvement will affect the degree to which networks run efficiently and reliably and therefore they have an indirect impact on consumer outcomes, both in terms of the quality of their heat supply and associated costs.
- (d) **Network operator** – organisations that operate the network. Network operators are most likely to have involvement in the day-to-day operation and maintenance of heat networks and therefore have influence over the quality of service outcomes for consumers. They may also have direct relationships with consumers, depending on the structure of the network.
- (e) **Heat supplier** – organisations that supply heat to end consumers. Heat suppliers tend to have a direct contractual relationship with consumers for their heat supply. They will therefore have a significant influence on issues affecting consumers' heating provision including pricing and quality of service.

Scope for exemptions, size thresholds and transition periods

For a light-touch and proportionate regime, the regulator should have the power to differentiate between types of networks when assessing whether a network has met the regulated requirement. This is in order to accommodate the full range of networks from very large mixed-use networks to very small communal schemes.

While our preference is that all domestic and micro-business consumers should be covered by regulatory consumer protections, there are some networks with very few such consumers connected. These can be broadly categorised as either very small communal schemes, or mixed-use schemes with only one or two residential single dwellings connected to a non-

domestic use network. We would be interested in your views about whether there is justification for a **de minimis threshold** for either or both categories. This would exempt the relevant entity from the proposed regulatory consumer protection requirements (other than potentially a basic notification). This would be because the costs of meeting the requirements may be considered overly burdensome and result in detrimentally increased costs for the end consumer.

We would also like to understand whether it would be appropriate to introduce a **size threshold** for regulatory requirements (see box below) on the grounds that **larger** suppliers have greater market power with proportionately greater impact on consumer outcomes, so their activities should be subject to increased levels of scrutiny. For schemes above the threshold this could include additional requirements related to technical standards or decarbonisation at the build phase, or additional requirements on consumer protection, once networks are operational, such as a duty to report in more detail or more frequently to the regulator.

Indicative Size Threshold

There are various options for how a threshold could be implemented including volume of heat capacity, volume of heat generation or number of heat customers. Having carried out analysis of the heat network notification data we propose that a reasonable threshold would be all suppliers delivering heat and/or cooling to more than 2,000 customers. We believe that this threshold would mean that fewer than 2% of heat network suppliers would be captured, representing approximately 40 suppliers.

We expect all networks to be subject to the consumer protection elements of the regulatory framework. Given the diversity of existing networks and current contracting arrangements, there may be grounds for some transitional arrangements in certain cases. We anticipate that any such arrangements would predominantly be applicable to circumstances involving smaller networks less readily able to meet the requirements immediately. We will consider the need for, and potential scope of, transitional arrangements as part of the next phase of our work.

Regulatory model options

We have identified four principal regulatory design options:

- (1) General Authorisation
- (2) Full Licensing Regime
- (3) General Authorisation with obligatory licence above a size threshold and optional licence for rights and powers
- (4) General Authorisation with optional licence for rights and powers (our preferred approach)

In the Impact Assessment attached to this consultation document we have provided indicative costs of each option.

We consider that option (2) – **a full licensing regime**, is not appropriate for the heat networks market. While we recognise that there are a number of benefits to licensing, we consider that these are outweighed by the associated burdens.

We recognise that a licensing system for heat networks would help ensure that the right capabilities were in place to manage each scheme and it would raise standards consistently across the industry. The responsibility for protecting consumers would sit clearly with the licence holder and the licence would specify what actions they would need to take to this effect. However, these advantages need not be exclusive to a licensing route.

We think a full licensing regime would create an unduly burdensome approach for this market. The large number of market participants relative to other utilities could give rise to significant additional regulatory and administrative burden, which could result in higher consumer bills. This would be exacerbated if capabilities had to be tested upfront or the licensing approach had to include exemption options to manage the diverse range of business models being covered. We are therefore not proposing to take this option forward.

We think there is greater advantage in basing our approach on option (1) - **a general authorisation** regime. Primarily this is because placing a duty on networks to notify the regulator of their operation is inherently lighter touch than having to apply for, then be checked and considered suitable for a licence. Authorisation also means there is no need to update or amend individual licences if new innovations or requirements are introduced. Instead, general authorisation requirements can be changed which will then apply to all. It is also possible to introduce specific thresholds within the authorisation regime so that only certain requirements apply to certain types of schemes. Additionally, and perhaps most importantly, general authorisation could allow segmentation of the market by having activity-specific rules that would apply selectively to any entity carrying out each class of activity. For example, the authorisation requirements could, in time be adapted to enable requirements on metering and billing to apply to all metering and billing agents, irrespective of whether they are also directly involved in the supply of heat.

We do not think that adopting a general authorisation approach need negatively affect outcomes for consumers, compared to adopting a licensing system. However, for the authorisation system to work effectively, a different enforcement approach might be required. For example, the Regulator might rely more on the use of consumer complaints to identify when things go wrong which may be the result of a breach of requirements by a regulated entity.

Some licensing and specific (rather than general) authorisation models adopt **a fitness test** to ascertain the suitability of applicants in carrying out regulated activities or their ability to meet predetermined standards. This increases the regulatory burden for both the potential regulated entity and the regulator. In the general case of consumer protections and heat networks, we believe a pre-authorisation fitness test would create unnecessary complexity and burden, potentially creating a barrier to entry. Any such test would need to reflect the wider range of financing and ownership models within the heat network market, including private schemes, local authority-led and housing association ownerships. Instead, we think that the risks of removing such upfront scrutiny could be adequately mitigated by an appropriate enforcement approach.

However, we think there is greater need for **an optional licence arrangement for rights and powers**. This would be a licence which parties could voluntarily apply for, should they wish to take advantage of proposed heat network statutory rights and powers (see [rights and powers section](#)). While we do not think there is a need for a fitness test for regulated entities for the wider framework, we think there is greater justification where the party is seeking rights and powers. By having a licence for rights and powers the regulator would be able to determine whether an organisation would be financially capable of paying compensation in case the

powers are used incorrectly, and that it would be using the powers for the purposes of heat network development.

We therefore propose to take forward a regulatory model that comprises of **general authorisation for all networks (to protect consumers from the point in which the network becomes operational) with an option for parties to apply for a licence for rights and powers (option 4)**. The holder of the rights and powers licence need not be the regulated entity under the general authorisation regime. For example, a developer may want to secure the licence to ease the network build process, but they may not be the relevant body for regulation once the network comes into operation. We discuss this model further below.

We have considered extending this further to include an **obligatory licence option above a certain size threshold (option 3)**. This could offer the benefits of a licensing approach but at reduced burden. Our analysis suggests this could meaningfully reduce the costs of regulation from a full licensing route (see detail in the Impact Assessment). It would concentrate on the regulated entities with capacity to affect outcomes for the largest numbers of consumers. For example, if the indicative size threshold identified in the box above is adopted, this would represent only 2% of the total number of heat network suppliers or 40 suppliers. Schemes captured by the size threshold may be required to meet extra conditions. These could cover technical standards and decarbonisation requirements at the build phase, and additional requirements on consumer protection, once networks are operational. The extra requirements relating to consumer protection could include a duty to report in more detail or more frequently against the same requirements included in the general condition of authorisation or meet a more stringent set of requirements.

However, we anticipate that the regulator would be able to adapt a general authorisation approach to put specific requirements on segments of the market, should this be necessary. We are concerned that adopting an obligatory licence approach above a size threshold could unintentionally incentivise asset owners to restrict the size of their portfolios below the proposed threshold, to avoid having to secure a licence. We therefore do not propose to develop this option (of an obligatory licence for schemes above a size threshold) further.

Proposed model: General authorisation with optional licence for schemes requiring rights and powers

Under this option, all heat networks would be covered by an authorisation to operate. A separate licence, available to entities of all sizes, would only be required for the purpose of being granted rights and powers. **The licence granting rights and powers will not be scheme specific, with the exception of granting easement rights.** We propose that licensees should be able to use the powers granted by the licence on any heat network, or for the purpose of building any new heat network. For easements, the licence will allow licensees to submit an application to the Secretary of State to secure this power in relation to a specific scheme. As easements can amend existing property rights to land, they require decisions to be taken on a case by case basis.

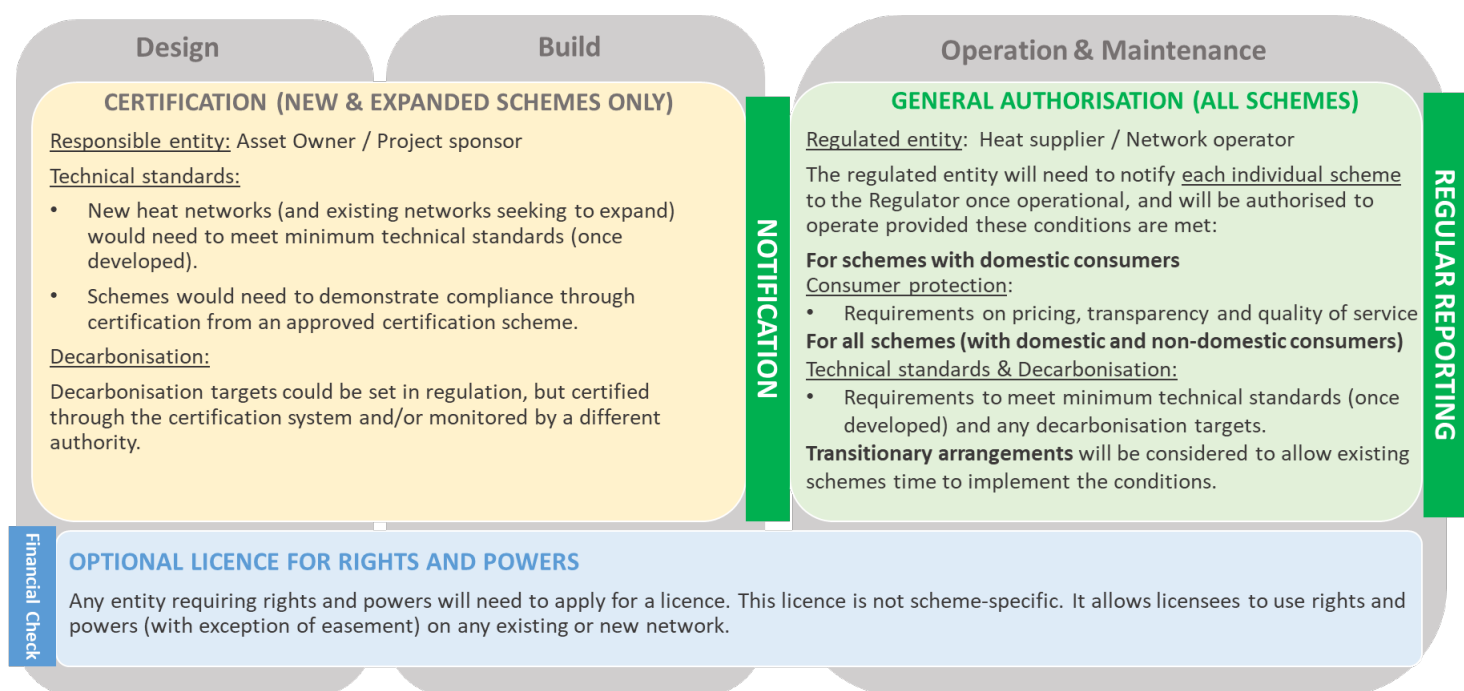


Figure 4: Regulatory Model – General Authorisation with optional licence for rights and powers

In this model, **we envisage the heat supplier or the network operator becoming the regulated entity from the point of operation.** These are the entities most likely to interface directly with consumers so will be well placed to implement consumer protection conditions. Heat suppliers or network operators would be required to notify and secure authorisation from the regulator for each of their schemes at the point at which they become operational. Where the supplier and the heat network operator are not the same entity, we welcome views on which of them should be regulated.

Authorised schemes would be expected to report yearly and pay an annual fee proportionate to their size. We would seek to align with existing reporting requirements under the Heat Network (Metering and Billing) Regulations to avoid duplication of reporting.

For new schemes, at point of operation, the potential regulated entity would need to demonstrate that the scheme had been developed in compliance with any prescribed technical standards in order to secure authorisation. We envisage this would happen through evidence that the scheme had been certified as compliant with standards by an accredited certification scheme (see [Technical Standards](#)). We will be considering further how best to align this with situations in which an existing and authorised network is expanded.

Where the regulated entity was not the same party as that responsible for the design and build, we would expect them to require the asset owner or project sponsor to provide evidence of compliance at the point of agreeing contracts for the network’s operation. The regulated entity would then provide this evidence to the regulator as part of the authorisation process (see Fig 4).

In practice, the asset owner or project sponsor and the heat supplier or network operator could be either the same or a different entity, depending on the type of structure of that particular heat network. The regulations should be sufficiently flexible in this regard. The key stipulation is that only one party is responsible for regulatory compliance at any stage in the process.

Q5. Do you agree that the proposed regulatory model is appropriate for the regulation of heat networks?

Q6. Which entity should be responsible and accountable for regulatory compliance, particularly where the heat supplier and heat network operator are not the same entity? Please explain why you think this.

Q7. Do you agree that consumer protection requirements during the operation and maintenance project stage should be regulated, such as pricing, transparency and quality of service?

Q8. Should there be a de minimis threshold below which a) very small domestic schemes and/or b) non-domestic schemes with very few domestic consumers are exempted from any of the regulatory requirements proposed in this framework? Please explain why you think this.

Q9. Should there be a size threshold above which larger schemes are subject to more detailed regulation and scrutiny? If so, what type of threshold would you consider most appropriate?

Q10. Should an optional licence be available for entities seeking rights and powers? If not, what other approaches could be considered?

Q11. Are there any other adjustments that could be made to the proposed model to enable it to work better?

Q12. Are there circumstances in which transitional arrangements should be introduced? If so, in what circumstances might these apply and for what length of period?

Emerging business models

We wish to ensure that our regulatory framework works for the current market arrangements but is also sufficiently adaptable to respond to emerging business models where these are able to deliver good outcomes for consumers at a fair price. We are aware that there has been ongoing consideration of routes to unbundle investment across different components of a heat network, for example, such as through a PipeCo funding model. We are keen to ensure that the regulatory approach does not preclude such developments. We are interested in your views on whether our proposed regulatory approach would be sufficiently flexible to accommodate this or other potential business models.

PipeCo: the pipework would be unbundled in order to de-risk refinancing of the asset and potentially open up the network to competition in heat supply. Establishing a separate company responsible for the distribution element of the network, which has a longer lifetime of 50-60 years compared with other elements such as the generation assets which have lifetimes of 15-20 years, could offer additional opportunities to attract investors interested in long term, low risk investments such as pension funds who may be prepared to accept lower internal rates of return. It also offers opportunities for dedicated pipework companies to establish a portfolio approach to distribution assets across the country to achieve economies of scale.

With reference to the question below, if you wish to discuss other business models with us in confidence, please email us directly using the email address provided in the “How to respond” section, marking it accordingly.

Q13. Do you consider our proposed approach sufficiently flexible to accommodate emerging business models, including unbundling of different components of a heat network? If not, please suggest ways in which we could ensure alternative business models are not precluded.

Enforcement powers

In general, consumer standards and quality of service in the heat networks market are good and consumers are happy with their service. In their 2018 report the CMA found that standards were, on average, comparable with those on electricity and gas networks. When considering how to structure a regulatory approach we acknowledge the work of the heat network industry and welcome and support the work of the voluntary Heat Trust standard which has helped to drive up industry standards in consumer service.

Government and the heat network industry also know that companies can fall short and their customers are left with inadequate service. Because of this we believe that a future regulator will require enforcement powers to ensure consistent application of the regulatory framework requirements. Our preferred regulator, Ofgem, has the requisite experience as an enforcement agency in the electricity and gas sectors. We would work with the regulator to ensure that oversight and enforcement is reflective of the emerging state of the market and that the smaller entities within it are not unduly burdened by regulation.

We envisage giving Ofgem equivalent enforcement powers in this new role as it currently has in the electricity and gas markets. We want to ensure that Ofgem is able to apply its existing powers to investigate and take action against general contractual terms under the Consumer Rights Act.³³ Specifically, we intend to grant the regulator the powers to levy fines against companies for failure to meet the regulatory requirements described in this consultation, as well as to take legal action against companies to ensure that they comply. There is a risk that fining a company for poor performance may result in the company passing on the costs to the end consumer through higher bills. While this applies to any markets subject to financial penalty regimes, we recognise there may be an increased risk due to the large numbers of smaller companies operating in the heat network market that have a constrained ability to fund unplanned for costs such as fines.

We expect any regulatory fines would be proportionate to the specific circumstances and only imposed once non-financial measures had been tried. We would also expect the regulator to use pricing transparency provisions to monitor for any subsequent price hike that could suggest that fines were being unreasonably passed through to the consumer. Were the regulator to find evidence of such practice occurring on a repeated basis within the market, this could strengthen the argument for increased price control measures. However, where the regulated entity is operating on a not for profit basis the option of financial penalties may be less appropriate. We are considering whether there would need to be a different enforcement approach in relation to such schemes.

When the future regulator does levy fines, we agree with the current approach applied by Ofgem: Ofgem can seek redress payments from companies that can be redistributed to

³³ Consumer Rights Act (2015): <https://www.legislation.gov.uk/ukpga/2015/15/contents/enacted>

consumers where possible but, on occasions where a fine is levied in excess of the level of consumer detriment, some money will also return to government. Ensuring that the regulator is not funded directly through money collected in penalties avoids creating perverse incentives for the regulator to be heavy-handed in using its powers. Regulation will be designed to ensure that in circumstances where a regulated entity considers Ofgem to have taken inappropriate or incorrect enforcement measures that they can appeal through the courts system in the same ways as other regulated entities.

We also believe that the regulator should be able to act on powers to investigate competition issues in the heat networks market, and to refer investigations to the Competition and Markets Authority if necessary, as occurs in other regulated utility markets. Effective enforcement action requires the regulator to have access to relevant data and information from parties under investigation. We will be considering what legislative powers the regulator may require for this purpose. Given our ambition for the market to develop at pace, we think it is particularly important to ensure there is ongoing oversight of any competition concerns that potentially could emerge.

We recognise that there are cases where network owners or operators run a number of schemes rather than a single network. We believe that the regulator should have the power to impose penalties that are proportionate to the scale of all the heat networks controlled by the regulated entity rather than the scale of individual networks. We will be considering whether it is the controlling parent company who should be liable for any enforcement penalty to ensure that they can be issued at the scale necessary to act as a sufficient deterrent. Where only one network within the entity's group of networks is failing to meet its compliance requirements, we envisage that the regulator should have powers to revoke the regulated entity's authorisation for that particular network, without affecting their authorisation or licence to operate the other networks in their group. However, for compliance issues that are more widespread within the entity's entire set of networks, the regulator should have powers to revoke the authorisation or licence at the entity level, rather than the network level.

As in other regulated markets we propose that individual consumer complaints about heat networks should be addressed to an independent ombudsman service. The new powers of the regulator will be reserved for issues which are more systemic by companies. We propose that regulated companies would be required to offer their domestic consumers access to an ombudsman service which would be able to adjudicate on individual complaints, including pricing.

We consider the **Energy Ombudsman** to be best placed for this role. The Energy Ombudsman, as well as resolving approximately 48,000 energy cases per year also collates data and shares insight about its complaint handling to work with energy providers to help them improve the consumer journey and reduce complaint volumes.³⁴ Their remit already covers heat networks which are members of Heat Trust or which have contracted with the Ombudsman directly. They have accumulated four years' worth of knowledge and expertise investigating Heat Network complaints. We would expect the Ombudsman to build on its expertise in handling related issues from gas and electricity consumers. In such circumstances, we anticipate a similar funding model to that used in other areas of the Ombudsman's work - namely individual regulated entities contract directly with the Ombudsman and fees are related to the number of complaints brought against the individual party. This incentivises regulated parties to minimise the number of complaints raised against it and to prioritise its customer service provision.

³⁴ Ombudsman services: <https://www.ombudsman-services.org/sectors/energy>

We think there is merit in requiring all authorised schemes to provide access to the same ombudsman for consistency and clarity for the end consumer. However, there are circumstances where heat network consumers may currently have access to a **Housing Ombudsman**. We are interested to learn whether there are occasions when it may be more appropriate for a consumer to be referred to an ombudsman other than the Energy Ombudsman.

We are also considering whether there are grounds to establish a statutory consumer advocacy role for heat such as those that exist for energy, water and postal consumers. In these other regulated services, the consumer advocacy function ensures that there is a champion able to represent consumer interests collectively, and that individual consumers have access to independent advice and support. The function for these sectors is provided by **Citizens Advice and Citizens Advice Scotland**, who already provide valuable information to heat network consumers and have produced informative reports on areas of sometimes poorer quality of service within the market. Given the current number of heat network consumers relative to these other sectors, we will need to consider further the potential costs and benefits of legislating such a function.

Q14. How should government and the regulator ensure that enforcement action is proportionate and targeted? Are there particular considerations for not for profit schemes?

Q15. Do you agree that imposing fines and removing a licence/authorisation are an appropriate and adequate set of enforcement actions for the regulator of the heat network market?

Q16. Do you agree that the regulator should have powers to impose penalties at the entity level which are proportionate to its size, in a scenario where there are repeated or systemic failures across multiple schemes owned or operated by the same entity?

Q17. Do you agree that the regulator should have powers to revoke an authorisation for single networks owned or operated within a group scenario, so that the entity would still be authorised or licensed to operate those networks within the group that remain in compliance? If not, what alternative approach might the regulator take?

Q18. If compliance issues are more widespread within the group of networks owned or operated by the same entity, do you agree that the regulator should be able to revoke the authorisation or licence for the entity as a whole covering its entire group of networks? If not, what alternative approach might the regulator take?

Q19. Do you agree that individual domestic consumers should have access to ombudsman services for redress? Do you have any views as to which ombudsman is best placed to provide this function for heat networks?

Step-in Arrangements

In addition to general enforcement powers proposed above, we are considering step-in arrangements to cover worst-case scenarios. We would expect these steps to be used very rarely. This is a complex area, not least because of the range of circumstances that might trigger step-in arrangements and the risk of consumers being left without heating or cooling suddenly. This latter aspect is an important distinction from gas and electricity supply arrangements where a supplier may cease to operate or lose their licence, but the

gas/electricity will continue to flow through the distribution network into the end consumer's property.

We envisage three overarching circumstances when step-in arrangements might be required.

- Where the regulated entity is no longer able to provide heating and cooling to its consumers due to insolvency. This creates a clear need for rapid step-in arrangements to manage resulting stranded consumers. We have, however, found very few examples of such cases from either the UK or internationally.
- Where there has been significant and persistently poor performance by the regulated party, causing substantial harm to the end consumer, such as through repeated excessive pricing. In such extreme cases we think there is justification for the regulator to be able to “de-authorise” the party from supplying the consumer or remove its licence as applicable.
- Where there has been significant and persistently poor consumer experience (such as ongoing network failures and/or extremely high pricing) but this is due to historical technical deficiencies of the network that the current regulated entity is unable to address.

Currently, the risk of consumers being left stranded is left to contracting arrangements to designate step-in rights to, for example, the original developer. However, these are not standardised and would not necessarily cover persistent poor performance. Looking abroad, we have seen a notable absence of step-in provisions. In Finland and Germany, for example, no specific provisions were found. Norway has provisions for consumers where connections arrive late but there are none for insolvency. This is despite both Germany and Norway having a range of heat network providers within their markets. In Sweden, there are also no provisions, despite previous government consideration of managing bankruptcies through a mutual fund set up with operator contributors.³⁵ We are, however, also aware of relatively few instances of consumers being left stranded, either in this country or internationally. Nevertheless, we think it is important that all consumers are protected from the risk of their heat supply being discontinued. We also consider that giving the regulator the powers to remove a party's authorisation creates a strong deterrent against sustained poor performance.

Given the complexities of this area, it is likely that the nature of step-in arrangements may vary according to circumstances. For example, the condition of the network assets will affect the viability of another party being willing, or even able, to step in and pick up running the network. Additionally, where the situation has arisen from prolonged poor performance, the regulator will have been better placed to initiate step-in arrangements in advance of any consumers being left stranded. Alternatively, where the situation occurs with limited warning, urgent interim measures will be necessary to ensure continuity of heating.

The ownership of the scheme may affect arrangements. Where a local authority is responsible for a heat network, either directly or via an ESCo, for example, they may be better placed than the regulator to step in and ensure contingency arrangements are applied. We acknowledge that the most appropriate arrangements may be affected by who the regulated entity is. Should this be the heat network supplier, for example, then the asset owner could be considered the

³⁵ BEIS, CAG Consultants (March, 2019), [International Heat Networks](#)

first point of contingency. They would have a vested interest in ensuring the network remained an ongoing concern.

We anticipate that our final step-in arrangements will include a number of components of which this is an illustrative list:

- A requirement on all authorised parties to be able to evidence contingency plans to avoid a loss of heat supply to the consumer;
- A requirement on all authorised parties to hold reserve funds to manage transition through any later financial difficulties that might risk the ongoing operation of the network. Such a provision would need to be proportionate to the size of the regulated entity and its business model; for example, a not for profit organisation may be less able to allocate such reserved funds.
- The right for the regulator to seek an alternative company willing to take over supplying to consumers on the relevant scheme. This would be most viable in circumstances of financial difficulties or poor performance unrelated to the integrity of the network's assets. This model could be similar to the Supplier of Last Resort arrangements for gas and electricity.
- Provisions for an administrator of the scheme to be appointed where, for example, there is no appetite among existing regulated heat network organisations to take up the particular scheme. This could be funded by a requirement on regulated entities contributing to a centrally held reserve fund.

We will continue to explore potential step-in arrangements as we refine the overarching regulatory model. We are interested to hear more about existing contingency arrangements currently managed through contracting and stakeholders' views on potential options.

Q20. Do you agree that step-in arrangements are necessary both to cover the risk of stranded consumers and as a deterrent against sustained failure to meet the regulatory requirements? If not, why?

Q21. Do you have any examples of approaches we should be considering as we develop the step-in arrangements?

Devolution

Heat policy is devolved in Scotland, but consumer protection is reserved to the UK Parliament. Therefore, the measures we are proposing in this consultation that do not directly protect consumers – including provisions covering non-domestic consumers and those encouraging the heat network sector to achieve its full potential such as technical standards or decarbonisation requirements – are not directly applicable to Scotland. It is within the power of the Scottish Government to develop a framework and appoint a regulatory body to undertake these functions in Scotland. The Scottish Government might decide to appoint the same body to act as their independent regulator in Scotland; in these circumstances the regulator could report separately, and exclusively to Scottish Ministers, on these matters.

However, while the Scottish Government may choose to develop separate regulatory standards within its regime, both the UK and Scottish governments are working closely to

ensure that regulatory and administrative burdens are reduced for companies working across Great Britain. In Wales, regulation of heat networks remains a reserved power of the UK Parliament and so all proposals related to regulation, including consumer protection and the powers of the regulator, will apply in Wales.

Climate change policy is, however, devolved to the Welsh Parliament and our proposals on decarbonisation measures (more detail in the decarbonisation section) are for England only. Some of the proposed rights and powers (see [rights and powers section](#)) included in this framework (e.g. permitted development) are devolved to the Welsh Ministers or the Welsh Parliament and would not apply in Wales. We are working with the Welsh Government to understand the potential for alignment in these areas.

The proposals within this consultation will not extend to Northern Ireland. The regulation of heat networks and consumer protection are devolved to the Northern Ireland Assembly.

Heat Network (Metering and Billing) Regulations

The Heat Network (Metering and Billing) Regulations 2014 (“the Regulations”) require heat network notification to the Office for Product Safety and Standards (OPSS). They further contain provisions for the installation of meters, bills and billing information for final customers on district and communal heating and cooling networks, implementing the relevant requirements of the Energy Efficiency Directive 2012 (2012/27/EU). These Regulations apply UK wide and are enforced by the OPSS.

The installation of consumption meters and billing based on consumption support our proposals in this document for greater transparency and fair pricing. In the future it may become necessary to amend the Regulations to be consistent with the UK Government’s heat networks market framework and the regulation of heat networks in Scotland.

As part of the Withdrawal Agreement, the UK and the EU agreed to an implementation period to 31 December 2020 in order to provide assurance, continuity and certainty for businesses and individuals. Amendments to the Regulations may be necessary to implement relevant requirements in the revised Energy Efficiency Directive 2018 during this period. Therefore, we expect to consult further on implementation of these provisions.

More details on current and potential future metering and billing requirements can be found in the [Transparency section](#).

Protecting consumers

We want heat network consumers to be well informed about their heating and cooling, receiving good quality service at a fair price and have ready access to redress should things go wrong. In the typical comparator markets of gas and electricity supply, consumers are in part protected by their ability to switch suppliers. For a heat network consumer, that option rarely applies without moving location. It is therefore particularly important that they have clear information about the service they can expect and what protections are available to them.

Our 2017 consumer survey showed that while the majority of households currently being supplied heat via a heat network are largely satisfied with their provision, some consumers are getting poorer deals in terms of price and service quality³⁶. To enable the sector to grow sustainably and to protect its reputation as it does so, we recognise that issues and concerns raised by consumers on heat networks must be addressed. We are keen to ensure that the outcome of regulation is to drive up the standards of poor performing networks and to provide all consumers on heat networks with higher quality of service and fairer pricing.

Building on the CMA's study, we have identified three core strands for consumer protections:

- Transparency of the heat network service, including before first joining the network;
- Fair and accurate pricing;
- Quality of service - for example expectations on outage management and customer complaints handling.

We think that these three components should in principle apply to all domestic and micro-business heat network consumers and therefore to any regulated entity that covers some such consumers. This would include mixed-use networks (which supply both domestic and non-domestic consumers), although only with regard to residential or micro-business consumers on the network.

However, we recognise that there are circumstances in which the regulatory burden may outweigh the potential benefits for consumers, for example where the network is extremely small such as a single business connected to one or two homes. We are interested in hearing views as to whether there are any such categories which might be exempted from regulation.

The CMA also made recommendations regarding development of technical standards for heat networks. Technical standards can affect how well the system is operated and maintained, and the quality to which it has been built. While it may not be immediately apparent to the consumer where technical standards are not met, they can have significant impacts on the consumer experience. We agree there is a strong argument for a regulatory role in overseeing technical compliance. We set out our thinking on the way forward in the [section on Technical Standards](#).

Transparency

The CMA's market study on heat networks and our own heat network consumer survey found that lack of transparency is a key issue for many domestic heat network consumers, both

³⁶ BEIS (2017), Heat Networks Consumer survey: <https://www.gov.uk/government/publications/heat-networks-consumer-survey-consumer-experiences-on-heat-networks-and-other-heating-systems>

before moving into a property served by a heat network and during residency. In this section we discuss proposals for tackling these issues.

Pre-contractual transparency

The CMA market study and our BEIS Heat Network Consumer Survey both found that domestic consumers typically have low awareness or knowledge of heating systems at the point in which they take decisions regarding renting or buying a property. They often start to understand and appreciate the differences between heat networks and alternatives, such as individual gas boilers or electric heating, only after they have moved into their new property.

Heat networks consumers are already protected by consumer and competition law³⁷, which requires traders to provide consumers with the information they need to make informed purchasing decisions. The CMA's research found that a significant proportion of suppliers and managing agents do not provide pre-transaction documents, or what is provided contains limited information, particularly on the on-going costs of heat networks³⁸.

Transparent information is important to increase current and prospective consumers' confidence in the sector. We believe there is more that suppliers can do to help consumers make informed decisions, by sharing information upfront. Therefore, we propose that regulated companies should be required to make publicly available minimum pre-contractual information in relation to their systems.

Heat suppliers are not necessarily involved in property transactions, and therefore they might not be aware of new residential consumers moving into the properties to which they provide heating until after the transactions have been completed. Hence, we are not proposing that suppliers should be responsible for providing such information directly to individual prospective consumers, as this would not always be possible. Instead, we propose suppliers should develop relevant such information and guidance which can be made available online direct to consumers, and shared with developers and estate/letting agents for prospective consumers.

While the exact information requirements for authorised and/or licensed organisations will be determined by the regulator, subject to further consultation with stakeholders, we expect minimum information to include:

- the age and type of heat network system
- the contractual arrangements in place,
- a summary of terms of service, and
- price information, including estimates of annual costs

Publishing clear and understandable pricing information in an easy to access manner would certainly help consumers understand better their future ongoing heating costs. Measures to increase price transparency are discussed in more detail below.

Potentially, information overload during the transaction process, however, means that consumers might not always consider the implications of their property being served by a heat network, even when adequate information is provided. This is likely to improve as heat

³⁷ The Consumer Protection from Unfair Trading Regulations 2008: <https://www.legislation.gov.uk/uksi/2008/1277/contents/made>; The Competition Act 1998 <http://www.legislation.gov.uk/ukpga/1998/41/contents>; The Consumer Rights Act 2015: <https://www.legislation.gov.uk/ukpga/2015/15/contents/enacted>

³⁸ CMA (2018), Heat Networks Market Study: <https://www.gov.uk/cma-cases/heat-networks-market-study>

networks become more common, but suppliers and government have both a role to play in increasing public awareness of heat networks.

BEIS is committed to work with the Ministry of Housing, Communities and Local Government (MHCLG) on measures to improve transparency, for example by including references to heating systems in existing guidance on property transactions, such as the “how to rent”, “how to let”, “how to lease” and “how to buy” guides. We will also consider the need for further guidance ahead of the regulatory framework coming into force.

Q22. Do you agree that the provision of minimum information would help consumers in making decisions at pre-contractual stages of property transactions?

Q23. Do you agree that heat suppliers should be responsible for developing information and guidance for prospective consumers? If yes, what minimum information should be included?

Q24. How can we ensure new consumers receive or have access to information about the heat network before moving into the property?

Transparency during residency

In addition to issues relating to pre-contractual transparency, the research carried out by the CMA highlighted how only a limited number of domestic customers are currently provided with heat supply contracts. In addition, according to our consumer survey, domestic heat network consumers are also less likely to receive any form of bill, account summary or statement, and these tend to include less information compared with those of non-heat network consumers, as shown in Table 2 below. This poor transparency regarding heating bills, including their calculation, limits consumers’ ability to challenge their heat suppliers, and may reinforce a perception that prices are unjustified. This is exacerbated by a general lack of consistency across schemes in relation to how heating costs are calculated. Measures to improve transparency and consistency in pricing are discussed in [the pricing section](#).

While there are currently some regulations in relation to transparency and billing, we agree with the CMA that further measures are required to adequately protect consumers. These should include provisions relating to back-billing.

What is back-billing?

A back-bill is a ‘catch-up’ bill sent to consumers by their energy supplier when they haven’t been correctly charged for their energy use. Back-bills can be for any amount, but for gas and electricity, Ofgem has put in place rules which define when a supplier can charge its customers, and to prevent back-billing beyond 12 months.

Table 2: Receipt of bills, summaries and statements, and frequency of receipt

	Heat network	Non-heat network
<i>Base (all who pay for heating and hot water / energy separately)</i>	(1,800)	(1,649)
Whether receive a bill, summary or statement	73%	83%
<i>Base (all who receive a bill)</i>	(2,375)	(1,461)
Annually	27%	11%
Twice a year	8%	9%
Quarterly	27%	48%
Monthly (or more often)	25%	18%
No fixed pattern	2%	3%
Online (whenever I like)	4%	9%
Other	2%	1%
Don't know/no answer	7%	5%

Source: Heat network consumer survey 2017³⁹

We therefore propose to secure powers to regulate and monitor the provision of information during residency.

This would include powers to set and enforce:

- Requirements regarding the provision of heat supply agreements or equivalent, which we anticipate would draw on what is already required for schemes registered with the Heat Trust and what Ofgem already requires for gas and electricity consumers under supply licence conditions.
- Requirements regarding billing information, billing frequency, and back-billing, including powers to amend the existing Heat Network (Metering and Billing) Regulation 2014.

Q25. Do you agree that the market framework should regulate and enforce the provision of information during residency?

Transparency during residency – existing provisions

Landlord and Tenant Act 1985

Where the Landlord and Tenant Act 1985 applies, if heating is paid through a variable service charge for the building, the service charge can only include costs for services that are of a “reasonable standard” and “reasonably incurred”. Additionally, leaseholders have a statutory right to seek a summary of the service charge account from the landlord, and there is an 18 month time limit for making demands from when the costs were incurred, unless the landlord has advised the leaseholder during that period that they have been incurred and will be charged for.

³⁹ Heat networks consumer survey 2017, Results report <https://www.gov.uk/government/publications/heat-networks-consumer-survey-consumer-experiences-on-heat-networks-and-other-heating-systems>

Heat Network (Metering and Billing) Regulations 2014

These Regulations require all heat suppliers to notify their network to the Office for Product Safety and Standards (OPSS). In certain cases, the installation of final consumer meters in buildings supplied by district heating is mandatory. In other cases, the obligation to install final consumer meters is subject to being technically feasible and cost-effective. In any case, where meters are installed under the Regulations, billing must be based on consumption, if technically and economically feasible. There are further requirements on billing frequency and information. For example, billing must be based on actual consumption at least once a year and billing information must be issued at least twice a year, or quarterly in case of electronic billing or if requested by the customer.

We have recently consulted on proposals to amend these Regulations to introduce a new methodology for assessing the cost-effectiveness of installing heat meters and to extend provisions on meter accuracy, maintenance, and billing based on consumption to all customers with individual meters, including those whose meters were not required under the Regulations.

Revised Energy Efficiency Directive (2018/2002/EU)

The revised Energy Efficiency Directive (EED 2018) contains additional requirements in relation to metering and billing. This includes the introduction of the concept of a “final consumer” of heat, who may not have a direct contractual relationship with the heat supplier. Furthermore, it introduces a staggered requirement for meters to be remotely readable, changes instances where cost-effectiveness determines the requirement to install final consumption meters and increases the minimum frequency of billing or consumption information.

As part of the Withdrawal Agreement, the UK and the EU agreed to an implementation period to 31 December 2020 in order to provide assurance, continuity and certainty for businesses and individuals. Amendments to the Regulations may be necessary to implement relevant requirements in the revised Energy Efficiency Directive 2018 during this period. Therefore, we expect to consult further on implementation of these provisions.

Pricing

The CMA’s 2018 research suggested that, on average, prices for heat networks consumers were close to or lower than those of consumers served by alternative gas heating systems. However, their study also found that there was great variability on prices between different networks, with some providing poor value for money to their customers. Price variation is a common feature even in mature energy markets. In the heat network market, it is often dependent on the size of the scheme or the type of heat source. However, the CMA also found that higher prices in their sample were often associated with privately-operated schemes, and individually metered schemes. This does not mean that the installation of individual meters results in higher costs; instead it is likely a reflection that privately-owned schemes are more likely to have individual meters, unlike networks that are run on a non-profit basis.

The CMA’s findings were consistent with the results of the 2017 BEIS Heat Networks Consumers Survey. The mean average bill price reported for properties on heat networks and domestic gas systems were similar and the median price suggested that heat network consumers paid, on average, around £100 less for their heating and hot water compared with

non-heat network consumers. There was greater variation in pricing in the heat network sector, however, with pockets of heat network consumers paying high annual prices, including some consumers paying more than £1,000, or £2,000, per year.

While the existing evidence does not show a systematic gap between heat network prices relative to benchmarks based on other sectors, the CMA considered that the drivers for high prices for consumers could become embedded within the market as the sector grows. Based on these considerations, the CMA recommended that “a sector regulator should require all heat networks to comply with ‘principles-based’ rules or guidance on pricing”.

We agree with this recommendation and we propose that the sector regulator should have specific powers to protect consumers from excessive pricing and monopoly power, as outlined in the section below. Given the nascent state of the heat networks market we are keen to ensure that intervention is proportionate, and that it addresses pricing issues where these arise, while imposing the least possible burdens on heat network suppliers.

Interventions to address pricing

Mandatory price transparency

There is an overarching lack of transparency on prices within the sector. This makes price comparison between heat networks schemes very difficult at present and consequently can leave consumers confused about what they are paying and unable to make a fair judgement on whether their prices are reasonable. Consumers would be more empowered to challenge their bills if they were aware of, and understood, prices being charged by equivalent schemes, or wider industry trends. Beside improving consumers’ trust, price transparency will aid competition, both within the sector, where different suppliers compete for a project, and against alternative heating solutions, when seeking to secure new connections.

Evidence from our research of international heat network market frameworks suggests that price transparency is a key measure adopted in both regulated and unregulated markets⁴⁰, see Table 3 below. Price transparency measures have been widely effective in increasing consumer confidence and trust in many heat networks markets. In Denmark, for example, Danish companies report prices to the government, who publish them annually. Most recently, voluntary benchmarking has been introduced to aid transparency in price comparison across schemes. This also drives improvements in the cost-effectiveness of scheme operation and performance.

In markets where there is no price regulation, the effectiveness of transparency measures in protecting consumers from unfair pricing is variable. In Germany, for example, price setting and price charges must be reported and accessible online, but there are claims that the lack of monitoring has undermined its effectiveness.⁴¹ In Sweden, companies are required by law to publish annual reports to allow price comparison. Transparency is also promoted through voluntary initiatives, such as the “price dialogue”, which was set up in 2013. This mediates price setting between suppliers and large customers. In 2019, 75% of Swedish suppliers participated in this voluntary initiative⁴², presumably driven by the reputational impact of not participating.

⁴⁰ BEIS, CAG Consultants (March, 2019), [International Heat Networks](#)

⁴¹ ClimateXChange (2018), Lessons from European Regulation and Practice for Scottish District Heating Regulation: <https://www.climatexchange.org.uk/research/projects/lessons-from-european-regulation-and-practice-for-scottish-district-heating-regulation/>

⁴² BEIS, CAG Consultants (March, 2019), [International Heat Networks](#)

Table 3: Summary of pricing and price transparency measures in other countries

Country	Price regulation	Transparency measures
Denmark	Yes. Allowed recovery of costs, but no profits. Heating supply law defines which expenses can be included in the heating price, and only these expenses can be included. Furthermore, it is a prerequisite that the expense is a “necessary expense”.	Regulatory Authority monitors and compares prices. Companies have to notify the regulator annually about both budgets and accounts electronically.
Sweden	No. Sector deregulated in 1996.	District heating companies must ensure prices (for heating and connection, as well as how price is determined), are easily available for customers and the general public. District heating providers must also justify any price differentials between categories of customers. All price information must be accurate and clear.
Norway	Yes. Prices are capped at the price of electric heating in the same supply area.	Licensed schemes have reporting obligations including the accrued investment costs in heat production and district heating networks and annual heat sales.
Netherlands	Yes. Prices are capped at the price of gas heating.	Study found no specific requirements.
Finland	No.	Voluntary standardised supply terms and conditions, developed by industry in consultation with consumer groups.
Germany	No.	Government-mandated set of rights and responsibilities for district heating suppliers, including price setting and charges to be reported online in an accessible manner.

The UK heat network industry has already developed some elements of self-regulation, such as the voluntary consumer protection scheme, Heat Trust, which was established in 2015. While the scheme has grown and continues to expand, it currently provides protections to ~10% of all residential consumers served by heat networks. It publishes a [Heat Cost Calculator](#) which provides consumers with a general indication of what they could expect to pay for heating and hot water in a similar sized property that uses an individual gas boiler.⁴³ However, in its voluntary membership structure, it is unable to intervene on pricing among its members and would never be able to require schemes charging high prices to participate. It therefore remains difficult to monitor the extent to which pricing is a concern or to implement remedies.

⁴³ Heat Trust Calculator: <https://heattrust.org/heat-cost-comparator>

Given the current lack of transparency and consistency in the market we believe that such voluntary measures would therefore be insufficient in driving the behavioural change required in the industry at the pace that is needed to protect consumers in the near future.

We therefore propose that the regulator should have powers to mandate and enforce suppliers to publicly disclose their fixed charges, tariffs and unit rates and provide clear explanations about how prices are set for consumers. This could be achieved either through publication of prices on suppliers' websites, by regular reporting to the regulator, or both. To ensure intervention remains light-touch and proportionate, the regulator should have the power to differentiate between types of networks when establishing the specific requirements needed to fulfil price transparency. However, we also envisage that the regulator will have additional powers to intervene when there is clear evidence of systematic issues on pricing, as discussed in the [pricing investigation section](#) below.

As mentioned previously, we do not envisage price transparency requirements to apply to networks which provide heating and cooling to non-domestic customers only, who have discretion on negotiating the terms of their larger contract agreements.

We acknowledge that costs can vary significantly with the nature and size of a scheme and therefore price comparisons between different schemes is not always meaningful and could lead to prices being erroneously perceived as unfair. To mitigate this, we anticipate that the regulator will need to work with the industry to design a **system for reporting, monitoring and benchmarking** prices that works effectively and delivers maximum benefits for consumers and suppliers.

While there may be valid reasons for price variability between schemes, depending on the size or type of the scheme or the type of energy source, the widespread lack of consistency across schemes as to how heating costs are calculated needs addressing. Heat network pricing can be particularly opaque due to the lack of consistency as to what is classed as fixed cost and what is variable. A survey carried out by Which? in 2015⁴⁴ found a wide variation in the structure of tariffs for metered consumers. Most metered consumers pay a unit rate and a single fixed charge; however, it is often unclear what costs are recovered through these charges. Furthermore, in some schemes it is possible to find just a single unit rate, or more than one-unit rate, or more than one fixed charge - for example monthly standing charges and capital replacement charges.

Variation in pricing structures is also common amongst unmetered schemes. Residents can pay a flat charge irrespective of property size, or the charge can be set according to occupancy levels, the number of bedrooms, habitable rooms or square footage⁴⁵. This variation can cause confusion amongst consumers and make it very difficult to compare prices.

We therefore propose that the regulations include provisions for the regulator to set upfront pricing requirements such as cost allocation rules e.g. on what costs should be recovered through fixed and variable charges. This will drive fair pricing, aid price transparency and reporting, and help eliminate current inconsistencies in the market.

We think there is merit in developers considering whole life costs during the design and build phases of new networks, and assuming reasonable consumer prices when assessing the

⁴⁴ Which? (2015) Turning up the heat: getting a fair deal for district heating users: <https://www.which.co.uk/policy/utilities/363/turning-up-the-heat-getting-a-fair-deal-for-district-heating-users-which-report>

⁴⁵ Ibid.

financial viability of schemes. We will consider further how this could be achieved in our next phase of work, but we envisage whole life cost considerations to be within the remit of technical standards certification schemes (see [technical standards section](#)).

Q26. Do you agree that the regulator should have powers to mandate and enforce price transparency? Can you foresee any unintended consequences of this?

Q27. What are the current barriers to publishing and maintaining accurate information on fixed charges, unit rates and tariffs? What are the main reasons for information on pricing not being available at present?

Q28. Do you agree that there should be clear, consistent rules on what costs should be recovered through fixed and variable charges?

Pricing investigations

Price transparency would allow consumers to assess if the price they pay is reasonable, by using prices of other heat networks schemes and/or other alternative heating or cooling solutions as a comparator. This information would help empower them to put pressure on suppliers to justify their costs appropriately. This would encourage industry to self-regulate prices, as a result of suppliers wanting to avoid a bad reputation. However, the limited ability of consumers to switch or disconnect from their heat network supplier remains a limiting factor to the effectiveness of this measure in isolation.

We therefore propose that the regulator should also have powers to investigate networks where prices for domestic consumers appear to be disproportionate compared with systems with similar characteristics, or if prices were significantly higher than those consumers would expect to pay if they were served by an alternative heating system. This measure would allow the regulator to intervene in situations where there are systematic issues on pricing. For complaints relating to the supply of heat or cooling through a heat network or relating to the way in which suppliers have handled complaints, consumers would have statutory access to an independent redress scheme (see [enforcement section](#)).

Price investigations would be conducted with a view to identify an appropriate set of actions to lower consumers' cost. If this was not possible, the regulator could consider the suitability of switching to alternative low carbon heating solutions. For example, the regulator could require a scheme to justify their costs and where these are the cause of higher prices, recommend a performance review to identify interventions for long term cost reductions. The extent to which these interventions should be mandated would need to be based on their cost-effectiveness and their potential impact on consumers' bills. Failure to comply with mandated improvement measures could lead to penalties on the regulated party. Additionally, where there is evidence of persistent disproportionate pricing occurring, we expect the regulator to be able to impose scheme specific pricing restrictions.

Investigations could significantly increase regulatory costs, which would then be recovered from suppliers and would most likely be passed onto consumers. Minimising such costs is in the interest of all parties involved. Hence, we propose that the regulator should adopt a risk-based approach to investigations and take into account all available evidence, including monitoring data on network performance, quality of service and complaints, when establishing if an investigation is required.

A clear methodology or framework for price comparisons is needed to identify unfair pricing amongst heat networks. This will require careful consideration and further consultations with stakeholders, in addition to greater access to pricing data. We expect the introduction of

mandatory transparency measures will help inform development of the appropriate framework for investigations.

Q29. Do you agree that the regulator should have powers to undertake investigations on pricing and to enforce directions and remedy actions, where there is sufficient evidence that these could lower prices for consumers?

Price regulation

Price regulation is an additional cross-market upfront measure that would prevent heat network suppliers from using their market power to charge excessive prices. This would entail securing powers for the regulator to set prices for domestic consumers, either by capping prices using alternative heating solutions as a comparison, or by regulating returns of individual companies or schemes to ensure recovery of costs plus a reasonable profit margin.

For example, the energy price cap, which limits the price a supplier can charge per kWh of electricity and gas for domestic consumers, has recently been introduced for prepayment and default tariffs, as a temporary emergency measure to protect disengaged gas and electricity consumers. This is expected to come to an end no later than 2023. BEIS and Ofgem are jointly undertaking a review of the Future Energy Retail Market to ensure appropriate protections for all consumers are in place at the end of the price cap.

International evidence suggests that a price cap for heat networks based on alternative heating solutions could be difficult to implement, as has been the case in Netherlands, due to the level of complexity in developing an appropriate methodology to report prices and calculate the cap⁴⁶. The research commissioned by BEIS on international heat networks frameworks⁴⁷ found evidence that introducing a price cap based on the cost of natural gas has affected the ability of some schemes to recover costs. This is because the tariff calculation system does not reflect the actual costs of the heat supply, which are very different from the costs incurred when using gas boilers. This has led to costs being recovered from building owners when establishing a heat network⁴⁸.

Price-cap regulation could compel suppliers to find ways to reduce their costs in order to improve their profit margins, while ensuring consumers are adequately protected. However, these measures could also deter investors from entering the market. This could be damaging for heat networks at this point in time, as the sector is still in its nascent stage, and investment risks are perceived as high.

Alternatively, prices, revenues or earnings could be capped based on estimates of the running costs and revenue of heat network schemes, rather than in comparison to a counterfactual alternative. Regulation of profits has been adopted in some heat networks markets. In Hungary and Poland, for example, the cost profile of heat networks companies is regulated, and operators must have their tariffs approved on the basis of justifiable costs, plus allowed profits (“cost-plus”)⁴⁹. However, there are significant implementation challenges associated with this approach, particularly in respect of the heterogeneity of the heat network market, and the regulatory costs involved in reviewing tariffs for individual schemes or companies.

⁴⁶ BEIS, CAG Consultants (March, 2019), [International Heat Networks](#)

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ ClimateXChange (2018): Lessons from European regulation and practice for Scottish district heating regulation: <https://www.climatexchange.org.uk/research/projects/lessons-from-european-regulation-and-practice-for-scottish-district-heating-regulation/>

Developing an appropriate framework for capping prices, profits or revenues that takes into account different types of heat networks would be very complex. We do not think the existing evidence justifies such level of intervention at this point in time and nor did the CMA recommend that it was required. Instead, we propose that the regulator, alongside carrying out pricing investigations, should have the power to introduce rules and/or guidance to ensure prices are set in a fair and consistent way and aid enforcement against unfair pricing. This approach is aligned with the recommendations made by the CMA in its market study and we believe it is appropriate in light of the pricing issues that some consumers on heat networks currently face.

We think there is merit in developers considering whole life costs during the design and build phases of new networks, and assuming reasonable consumer prices when assessing the financial viability of schemes. We will consider further how this could be achieved in our next phase of work, but we envisage whole life cost considerations to be within the remit of technical certification schemes (see [technical standards section](#)).

Nevertheless, as the market expands, the risk of excessive pricing for consumers may change, and, given the monopolistic nature of heat networks, price regulation may be required in the future to protect domestic consumers while ensuring companies are able to make a reasonable return on their investment. Consequently, we propose that the Secretary of State for the Department of Business, Energy and Industrial Strategy should be able to direct the introduction of price regulation such as through a price cap, should evidence suggest such measures become required. We anticipate that this would be subject to further consultation on the specifics before any such measure was introduced.

Q30. Do you agree that price regulation in the form of a price cap or regulation of profits should not be implemented at this point in time? Please explain your answer.

Q31. What might cause price regulation to become an appropriate intervention in future? What evidence would be required to demonstrate this?

Quality of Service Standards

The CMA in its heat network market study⁵⁰ said that measurable performance indicators and related minimum standards for service quality are an important part of safeguarding consumers. We agree that steps are needed now to strengthen quality of service standards which underpin the long-term success of heat networks. However, these must reflect the size of the current market and its distinct characteristics relative to other regulated utilities.

Gas and electricity markets are well-established with infrastructure assets deployed at national level and a large customer base across which to socialise costs. The heat network market is much smaller and less well established, with infrastructure scaled to meet heating requirements at a local level. It is more diverse; there are thousands of heat network operators varying in size and structure, from small communal operators to large energy service companies (ESCo), whereas there are less than 200 gas and electricity suppliers. This has practical implications for the application of any regulatory regime. It could also have significant cost implications, particularly for consumers on small schemes where the benefit of a regulated service may be outweighed by the implementation costs that operators may seek to recover from them.

⁵⁰ CMA (2018), Heat Networks Market Study: <https://www.gov.uk/cma-cases/heat-networks-market-study>

The CMA in its study also said that consumers on heat networks should have comparable levels of service and protection as consumers in other regulated utilities such as for gas and electricity. This customer service provision includes information about their service, notice of any system interruptions, addressing faults and emergencies within an agreed timeframe, dealing with customer complaints, having access to independent redress and protecting vulnerable consumers.

We agree with this recommendation in principle. As consumers on heat networks have long term contracts and cannot readily switch heat supplier as consumers of other energy services can, it is essential to ensure that their rights are protected and that they have recourse to independent arbitration services such as those offered by an ombudsman. Additionally, we expect that specific measures will be required to protect vulnerable consumers on heat networks, for example to ensure that information about their heating is accessible. However, we recognise that more complex standards are likely to increase compliance and enforcement costs. We will be considering further how to maintain an appropriate balance between robust consumer protections and associated costs.

Our proposals build on the important work done by industry already in this regard through the development of Heat Trust. We have considered a range of options for driving up consumer protections through improved service standards. This includes building on Heat Trust through further development of the voluntary, industry-led approach; mandating prescriptive minimum service standards in regulations; or focussing on outcomes and allowing a regulator greater flexibility to determine appropriate standards for the industry.

While Heat Trust has made great progress in this area, a voluntary approach is limited in a number of ways. It does not apply to all heat networks, so the consumer experience will not improve uniformly and at the same rate across the whole industry. It also does not come with enforcement powers as seen in equivalent arrangements for other utility customers.

Mandating minimum service standards in regulations would be more precise, and therefore potentially more certain for operators, and could achieve a uniform rate of improvement across the sector. However, it could give rise to higher compliance costs and limit scope for innovation.

An outcome-based approach would be more flexible, can encourage alternative approaches to compliance and encourage operators to take more responsibility and be more adaptive to changes in the market⁵¹. The regulator may wish to provide more prescriptive standards or examples where required to underpin the expected outcome. It would also allow the regulator to tailor its approach to enforcement.

We consider that an outcome-based approach to achieving strengthened customer service provisions for heat network consumers will ultimately lead to lower compliance costs and support sustained investment in the sector. This approach will allow suppliers to tailor their solutions to the specific needs of their consumers and their businesses, whereas prescriptive requirements may, in some circumstances, increase costs without delivering the expected benefits.

We therefore propose to give the regulator powers to set outcome-based quality of service standards in order to improve consumer protections. We envisage an approach that would allow flexibility both in terms of implementation and enforcement, depending on the nature and

⁵¹ BEIS (2018), Goals-based and rules-based approaches to regulation:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/714185/regulation-goals-rules-based-approaches.pdf

size of heat networks, and draw on service standards such as those developed by Heat Trust, along the lines set out in Table 4 below.

Table 4: Outcome-based quality of service standards

Desired Outcome	Example Measure
Consumers are clear about the terms and conditions of their heating service (including many of the issues identified below)	Heat supply agreements
Consumers understand when there will be a planned interruption to their supply, and required periods of notice their supplier needs to give them	Outages and Notice periods
Consumers understand who to contact to report faults and emergencies and what response times they can expect	Customer helpline
Consumers understand how to make a complaint and what response times they can expect	Complaints handling policy and procedure
Consumers understand how to access independent arbitration services such as the Energy Ombudsman if they are unhappy about their service or how a complaint has been handled	Access to independent redress
Consumers understand who is eligible for guaranteed service payments and in what circumstances, the level of any compensation offered and when it will be paid	Compensation arrangements
Consumers understand how heating supplies will be assured in the event of a supply or network failure	Step in arrangements
Vulnerable consumers are identified and clear about available support, including protection they will be offered in the event of a supply failure	Vulnerable/priority consumers register

We encourage all heat network owners to consider joining and learning from the work of the Heat Trust now. This will help build the reputation of the industry, prepare organisations for meeting future regulatory requirements and will ensure that while regulations are being introduced more consumers benefit from improved standards of service.

Q32. Do you agree that consumers on heat networks should have comparable levels of service and protection as consumers in other regulated utilities? How do we ensure the associated compliance costs of such protections remain proportionate?

Q33. Do you agree that minimum standards should be outcome-based to allow the regulator scope to implement these flexibly and proportionately depending on the size

and nature of different schemes? Are there other ways these outcomes could be achieved?

Technical Standards

The quality of the design build and maintenance of a heat network can significantly impact the network's performance and reliability. The CMA recommended that technical standards should be part of the broader regulatory framework. A well designed, built and maintained network can deliver a reliable and efficient service for the end consumer. The consumer should be largely unaffected by the day to day maintenance of the network and feel confident in their heat supply. Conversely, poorly designed, built and maintained schemes are likely to create inefficient and less reliable networks, with more outages and potentially higher consumer bills. This not only affects the end consumers on that network but negatively impacts the wider reputation of the heat network market.

At present, standards vary considerably across heat networks in terms of the quality of the design, the build and/or the ongoing maintenance of the infrastructure. In addition, the implications of a network's design and build can reach well beyond the network initially envisaged. For example, pipework can have an extended lifecycle of up to 60 years. A well designed and built network may be able to capitalise on existing pipework to support network expansion as strategic growth opportunities materialise. On the reverse, poorly installed pipework will be costly and complicated to replace, leading to ongoing inefficiencies in the initial network and lost expansion opportunities.

Existing codes of practice, guidance and standards for heat networks

There are very few formal technical standards for heat networks in this country, and we have found little international evidence of mandated requirements. There is a range of BS and BS EN standards for district heating pipes and proposals on Heat interface unit (HIU) testing standards, currently in development or published by the British Standards Institution (BSI), the national standards body of the UK.

There has been significant work by parts of industry to develop voluntary approaches. The heat networks industry, with government support, developed a voluntary Code of Practice (*Heat Networks: Code of Practice for the UK; or 'CP1'*). This Code was published by CIBSE in July 2015 and was produced as a joint project between CIBSE and the Association for Decentralised Energy (ADE). It covers many aspects of heat networks and offers guidance on their design, installation and operation. It advises on minimum requirements and best practice across the development cycle of a heat network incorporating checklists and evidence packs to support compliance of the Code on schemes. The Code is designed to be applicable to both new and existing buildings. It is now well established within the heat network market and used in some contracting for network builds. It is designed to be applicable to both new and existing buildings. It is currently being updated following industry consultation and review.

Internationally, we have found a tendency towards a reliance on industry developed standards that may be widely adopted. For example:

- In Denmark, technical guidance is well developed but **not mandated**. They are maintained by industry and the Danish district heating association. Standards are usually included in contracts.
- In Germany, there are seven groups of technical standards which are **non-binding**, including customer installations, operational safety and security, heat metering and billing, heat production and heat distribution. These are reported to be widely adopted by operators and they help to maintain high standards.

- Both the Netherlands and Norway have a regulated heat network market, but **neither country seems to have mandated technical standards.**

Rationale for mandating technical standards

We have considered the extent to which regulatory intervention is required on technical standards. The experience from more established international heat network markets suggests that a voluntary approach remains a viable option. To date we have supported a **voluntary, industry-led** approach to raising technical standards in the sector by supporting the industry in its roll out and maintenance of the existing ADE-CIBSE Code of Practice (CP1).

Such an approach could be strengthened by the introduction of a voluntary compliance scheme to monitor practice against the Code. A voluntary approach would mean developers could choose whether to participate in the scheme, reducing directly related costs for those opting out and therefore across the industry as a whole. However, this would also mean that a significant number of schemes could be expected to remain unchecked in terms of technical standard with continued risk of costly interventions being required at a future date.

The CMA was clear in their view that standards needed to be mandated in order to ensure compliance across schemes and protect consumers. There are several reasons why we agree a mandated approach may be more appropriate. Our heat network market is in a strong but relatively early stage of development compared with many comparator countries. Mandatory standards would ensure that the new, larger schemes are designed and built to a high quality. A voluntary approach could continue driving up quality among the market leaders but is likely to have a minimal impact on less engaged developers. A contributing factor is the range and number of players potentially involved in the design, build and operation of a network. In many instances, the same party will not be involved throughout the process. This means that the incentives may be missing in the earlier stages of the development to get the design optimised to meet an end goal of positive consumer experience and fair bills.

We do not think it is reasonable for some consumers to continue experiencing avoidable problems on new networks because of a developer opting for a lower cost but lower quality approach to standards. Mandating requirements or outcomes would enable contracting between the different parties to set out rigorously what is expected in line with national legislation.

Standards have wider benefits. They can accelerate innovation, enhance safety and offer assurance to consumers; they can enhance efficiency, reducing costs and facilitating growth, for example by allowing interoperability between systems and products, and removing barriers to new participants. Standards are designed to set out clear objectives and can be used to support or complement legislation. A robust standards development process involves open consultation with stakeholders to build consensus based outcomes and gives agreed standards wider market acceptance.

Voluntary standards offer a flexible, adaptive and collaborative alternative to regulation, or can be used in support of regulation or to demonstrate compliance with regulation, by providing common terminology, guidelines and good practice developed by and for stakeholders.

We also know that there is a continuing need for further support for training and skills to enable the heat network market to respond to the growth sought. The introduction of mandatory technical requirements can help to drive accreditation processes, in turn encouraging wider roll out of training as parties compete to offer support to the market. In more established markets, that need can be less pronounced. In addition, comparative utility and service markets in the

UK do have mandatory technical standards. The existence of such standards can enhance a market's reputation and build investor confidence: therefore, they would be advantageous to heat networks.

Development of mandatory technical standards

There are some key considerations we think would need applying to any mandatory technical requirements:

- **we do not consider it practicable to impose retrospective minimum build requirements** on those networks already operating. However, we do see merit in considering whether there is benefit to phasing in minimum technical operating standards where these could be reasonably expected to improve end users' outcomes. The Code of Practice, for example, is designed to include elements which may be used to drive improvements post the design and build phase. We have commissioned work to support poorer performing networks that might otherwise struggle to achieve such improvements.
- **we want technical standards to take account of the development of different types of heat networks** to suit local circumstances (for example, the development of low and ambient temperature networks) and we do not want to deter new operators from entering the market.
- **we want technical standards to apply proportionally to scheme size/capacity.** We see benefit in exploring the CMA's recommendation that any standards should be outcome focused so as to reflect the range of network circumstances, including potential cost implications for the end consumers, and to support innovation.
- **we need to avoid unfairly burdening the smallest operators, for example** single building communal heat networks. While our starting assumption is that all new heat networks would be subject to mandatory standards, we are interested in how this would be applicable to expanding networks and whether exemptions or reduced levels of requirement may be appropriate in some circumstances. Development and use of technical standards can increase upfront costs, even though they could deliver savings for suppliers and consumers in the long term.
- **we need to identify the key areas where minimum standards are most appropriate.** It is particularly important for some elements of heat network infrastructure to be of high quality from the start, either due to their impact on efficiencies or their long lifecycle.

There is a range of approaches to developing technical standards, with differing levels of government intervention.

One option could be to adopt the existing ADE-CIBSE Code of Practice (CP1) as the agreed good practice specification to which parties would have to demonstrate compliance. This would have the advantage of building on an existing and recognised approach to network development. It would avoid the added cost and time required to develop an alternative specification. In this scenario, we would need to consider whether there was a role for the regulator or central government in maintaining an oversight of the Code and identifying when updates were required, for example.

Another option would be the development of a Publicly Available Specification (PAS) by the British Standards Institution (BSI). A PAS closely resembles a formal standard (BS, EN or ISO) in structure and format but has a different development model and is often produced in

response to a more urgent need, typically developed within a year. PAS development is guided by subject experts who build consensus. Once developed, a PAS goes through a public consultation stage.

This route would build on an approach already understood by many developers and minimise the costs and time necessary to develop new national standards. A PAS for heat networks could build on the work of the Code of Practice (CP1) and the resulting document could evolve further through regular reviews. A PAS would also move closer to technical standards seen in other markets, while maintaining the industry's core role.

The most prescriptive option might be to develop national standard(s) for heat networks building on those British Standards (BS) and other standards already produced to ensure the development of a full breadth of the CMA's recommendations for design, build and operation standards. Under this approach, BSI would work with industry experts to develop the standards, again building on work done to date. British Standards can individually take over 18 months and are reviewed on a five-year cycle. BS standards can in time be put forward for adoption as European Standards (EN) or international standards (ISOs), helping to position the UK as a market leader and support the export of products.

This latter approach would likely be a lengthy process over a number of years, however and could be seen as rather prescriptive at this stage of the market's development. We think that it could be developed, in the future, in parallel with one of the alternative approaches above, to enhance and further disseminate the outcomes of these approaches.

Approaches for mandating technical standards

The CMA suggested that standards were embedded through **building regulations and planning guidance** at a national level. We are not persuaded that Building Regulations are the most appropriate vehicle for this, although there are some minimum standards for the efficiency of fixed building services⁵². Building Regulations apply when work is being carried out on a building and do not apply on an ongoing basis for a heat network. Building Regulations would therefore not help to improve the technical standards of operating systems in the way that would be most helpful to improve standards for consumers across the sector.

Regulated certification schemes could be mandated to ensure that regulated entities must demonstrate their network was designed and built in compliance with technical standards in order to meet authorisation requirements. We anticipate that this would be achieved through the development of assurance schemes. We believe this approach is suitable, because it would allow such schemes to identify the best way to demonstrate compliance, potentially tailoring processes to the individual needs of specific type of heat networks. Moreover, the industry would have greater opportunity to contribute to the development of such schemes and shape them to ensure they meet their needs.

However, we would expect certification schemes to be able to adequately and consistently assess whether heat networks have met the relevant technical standards required at design and build stages, respectively. We therefore see benefit in considering a body such as the UK's National Accreditation Body (UKAS) having responsibility for monitoring organisations offering a certification function. UKAS is the national body responsible for determining the

⁵² Building Regulations, Draft guidance: Approved document L (conservation of fuel and power) <https://www.gov.uk/government/publications/building-regulations-approved-documents-l-and-f-consultation-version>

technical competence and integrity of organisations offering certification schemes. This would help to maintain an independent oversight of the process and encourage competition, between providers. It would also enable multiple organisations to become accredited to certify that a network is compliant with the standards and it would encourage competition between certification organisations, driving down the compliance costs for individual schemes.

We think using such schemes is likely to be a more efficient and appropriate route to monitoring compliance than, for example, requiring the regulator to develop the technical understanding and resource to oversee compliance directly.

Demonstrating compliance with technical standards would be required for new build networks only. We will be considering how best to ensure this incorporates significant extensions to existing networks and whether operational requirements should be applied to existing networks in due course.

Q34. Do you agree that all new schemes should be subject to minimum technical standards (once developed), given the potential impact on system performance and end consumers?

Q35. How could we ensure the impact of minimum technical standards on new small communal networks is proportionate?

Q36. Do you agree that regulated entities should demonstrate they are compliant through an accredited certification scheme?

Q37. What do you consider to be the most appropriate approach to setting the technical standards?

Q38. Are there examples of the roll out of technical standards or the introduction of compliance schemes which you consider particularly relevant from other markets or technologies?

Rights and powers

Utilities such as gas, electricity and water companies have been given special status in legislation as ‘statutory undertakers’ because of the essential roles that they have in delivering on the basic needs of society. Being a statutory undertaker entitles them to exercise a number of rights and powers that facilitate their commercial operations. As we have heard from stakeholders, these rights and powers are also important in giving investors greater certainty that projects will proceed on time and on budget.

In our December document we agreed to examine the statutory powers of the utilities to see which of them were most appropriate for heat networks and to have discussions with the heat network industry to better understand where statutory powers could improve their operations.

We have worked with heat network developers and operators as well as with local authorities and investors to identify the powers necessary for heat network development. We have found evidence that a lack of equivalent powers to other statutory utilities is hampering market growth and investment and can limit a heat network’s ability to respond to critical consumer issues, such as being able to access piping for maintenance when there is a system failure.

A summary table of the powers that we believe should be given to heat networks is in Table 5 along with a description of our proposed action in each area. The impact of these powers will be to increase the ability of heat networks to develop while ensuring that there are still proportionate levels of oversight.

We propose that the majority of these rights and powers will be introduced through primary legislation and that they will be accessible by licensed heat network developers and operators (under our preferred model this will be an optional licence available to any heat network company that requires it and can prove it will use the powers for the purposes of heat network development). The process by which licences are granted by the regulator will ensure that these heat network companies are appropriate entities to be given these rights and that they are able to pay compensation in circumstances where the rights and powers are used improperly. In addition we are proposing that the regulator will also be responsible for investigating whether a company is systemically abusing their powers and will be able to take enforcement action against the company if necessary (see [proposed regulatory approach and enforcement powers sections](#)).

We have been developing these proposals in consultation with the governments of Wales and, Scotland, who have different levels of devolved authority over some of the areas relevant for rights and powers.

Similar proposals for access rights and permitted development rights, and on the rights to lay pipework under the roadway, have been included in previous consultations from the Scottish government on heat network regulation.

Table 5: Rights and powers of other statutory undertakers in England

	Type of access rights	Permitted Development rights	Rights to install equipment under the roadway	Statutory undertaker for street works	Planning Statutory consultees	Linear obstacles
Electricity (transmission and distribution)	Wayleaves - Electricity Act 1989, Schedule 4 paragraph 8	Town and Country Planning (General Permitted Development) (England) Order 2015 - Schedule 2, Part 15	Electricity Act 1989, Schedule 4, 1	Electricity Act 1989	No	Electricity Act, Schedule 3, Part II
Gas	Compulsory land purchase - Gas Act 1986, Schedule 3	Town and Country Planning (General Permitted Development) (England) Order 2015 - Schedule 2, Part 15	Gas Act 1986, Schedule 4	Gas Act 1986, Schedule 4	No	Gas Act 1986, Schedule 3, Part II
Water	Compulsory land purchase - Water Industry Act 1991, Section 167	Town and Country Planning (General Permitted Development) (England) Order 2015 - Schedule 2, Part 13	Water Industry Act 1991, Section 158	Water Industry Act 1991, Section 158	Yes	Water Industry Act 1991 - Section 159

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	Type of access rights	Permitted Development	Rights to install equipment under the roadway	Statutory undertaker for street works	Planning Statutory consultees	Linear obstacles
Local authorities	Easement powers- Town and Country Planning Act 1990, Section 228, para 3	Town and Country Planning (General Permitted Development) (England) Order 2015 - Schedule 2, Part 12	No*	No*	Yes, as planning authorities	Town and Country Planning Act, Section 226
Telecoms	Easement- Communications Act 2003, Schedule 4, paragraph 3	Town and Country Planning (General Permitted Development) (England) Order 2015 - Schedule 2, Part 16	Communications Act 2003, Schedule 3A, Part 1, 3(a)	Communications Act 2003, Schedule 3A, Part 1, 3(a)	No	Communications Act 2003, Schedule 3A, Part 7
Proposed for Heat Networks:	Yes, easements	Yes	Yes	Yes	No	Yes

*Some local authorities as 'highway authorities' do have the power to carry out 'road works' to ensure the good quality of the highway

Q39. Do you agree that a (licensed) heat network entity should be classified as a statutory undertaker?

Q40. Do you agree that the proposed rights and powers should be given to heat network entities which meet the terms of our proposed licensing system?

Q41. Is it reasonable to assume that the proposed rights and powers would only be relevant to district heat networks (not communal networks)? If not, please explain why.

Q42. What impacts will the proposed rights and powers have on the development and extension of heat networks? And what impacts do you think these rights will have on the operator's ability to maintain and repair heat networks?

Access rights

Constructing a heat network often involves installing equipment across or under privately held land and, in the period following construction, the heat network will typically require ongoing access to sites in order to maintain equipment or respond to equipment failures. Currently, heat networks are required to negotiate these arrangements on a voluntary basis and this can often slow project development or, in extreme circumstances, can significantly increase project costs if a landowner demands high prices from a network in return for the right for the network to install equipment in their land.

To mitigate these issues statutory utilities like electricity, gas and water suppliers have been given the powers to compulsorily purchase access rights to privately held land. The majority of these negotiations are still settled privately, without recourse to their statutory powers, but these utilities can choose, if private negotiations are not progressing satisfactorily, to make an application to BEIS to acquire access to the land in England, with any further decision about compensation determined by the Tribunal Service. The benefit for the current list of statutory undertakers - and the benefits that could be transferred to heat networks is that landowners are unable to demand unreasonably high prices for access to their land when that access is vital for the development of the utility.

There are two types of access right given to statutory undertakers: wayleaves and easements. Wayleaves are commonly granted in the electricity sector for electrical cabling. The right to access land typically lasts for 15 years and the right of entry is not attached to the land deed. Responsibility for enforcing the right is left to the undertaker and they have to provide proof of the right, or renegotiate, if new owners purchase rights to the land. In comparison, easements are permanent access rights to the land which can be registered at the Land Registry in order to ensure that future owners of the land adhere to it. Wayleaves are typically tracked by the owners of the wayleave right and if the land changes hands they may have to inform the new landowner of their rights across the land.

Considering the length of time for which heat networks are in operation - the pipework can last typically for 50-60 years - we are in favour of granting easement arrangements for heat networks rather than wayleaves. This is because easement rights last for longer time periods and give more formalised access rights across the required land. We envisage that these easements powers would primarily be used to install pipework across land and our proposal is that any powers are designed with that primary purpose in mind. These easement powers would also allow heat network operators greater flexibility in responding to any emergency issues in pipes that cross over private land. We envisage a process similar to that operated for

the electricity companies where the application for the easement would be made to the responsible minister, who would also consider any objections to the granting of it. If the easement was agreed, then the reasonable price for the land would be determined either by the parties or if necessary, by the Upper Land Tribunal which is the judicial body responsible for land disputes.

Q43. Do you agree that licensed heat network entities should be granted statutory access rights?

Q44. Do you agree that the process should be similar to that for electricity and gas companies, in that the licensed heat network entity will have to make an application to the responsible minister for the easement and that any compensation arrangements will be determined by the Tribunal Service?

Q45. Do you agree that these access rights would primarily be used to install and maintain pipework, or do you anticipate that they could be used for other purposes?

Street works

In addition to access rights, statutory undertakers have greater powers to excavate the roadways to develop their assets. Non-statutory undertakers who wish to carry out street works (which includes heat networks) have to apply for Section 50 Street Works licences. These licences are often limited to specific circumstances and give licensees less power than an equivalent statutory undertaker. This can lead to higher prices for such street works activity. Statutory undertakers in comparison are able to apply to local authorities for street works permits which gives them more general powers to carry out their activities.

Statutory undertakers are given these powers because they provide essential services and need to be able to excavate the roadway to install and more importantly to maintain their assets. Because heat networks provide services of equivalent importance, in that they provide heating and cooling to homes and businesses, we believe that they warrant similar legal status as other utilities and we propose to use primary legislation for the heat network market to define them as statutory undertakers.

Further detail is given in the section on our [proposed regulatory approach](#) but we propose that companies that are licensed to build or operate heat networks should be given the status of a statutory undertaker through the licence issued by the regulator. This will let them apply for street works permits on the same basis as statutory utilities.

Bringing heat networks within the roadworks structure for statutory undertakers will also improve the ability of local authorities to coordinate excavations and other works in their area.

Q46. Would you consider the ability to apply for a street work permit a considerable benefit compared to a Section 50 Street Works licence? If so, in what way?

Q47. Do you have any experience of applying for a Section 50 Street Works licence? Did you find this delayed either construction or repair and maintenance work required?

Rights to lay pipes under the roadway

The majority of heat networks have to install their pipes beneath the roadway in order to connect the generation of heat to the consumer. The legal rights to lay and keep assets under the roadway can be complicated and our discussions with the heat network industry have confirmed that establishing and then confirming the legal position can occasionally represent a significant cost to heat network developers and can also delay projects. In comparison, the water, electricity, gas and telecoms suppliers have been given the statutory right to install and maintain their assets in the soil beneath any roadway.

We propose to give equivalent powers to licensed organisations that build or operate heat networks in order to reduce the uncertainty and costs of developing the networks. These powers will be strictly limited to soil that is already beneath roadways and so will not represent a loss to landowners. This proposal will not represent a reduction in scrutiny of heat network plans as licensed heat network entities will still have responsibilities similar to gas network companies to notify the Local Highway Authority in good time before carrying out their operations under the roadway.

Q48. Do you agree that heat networks should be given equivalent powers to other utilities to install and keep heat network pipes underneath roadways? Are you aware of any potential unintended consequences?

Permitted development rights

Permitted development rights are a national grant of planning permission enabling certain development, including some infrastructure provision, to be carried out without a specific application for planning permission. Permitted development is subject to limits and conditions in order to minimise the impact of the development. A local planning authority may make an article 4 direction to remove or limit permitted development rights in order to protect the amenity or well-being of an area. Significant infrastructure development, including development requiring an Environmental Impact Assessment, does not benefit from permitted development rights and an application for planning permission would be required, which the local planning authority would determine in accordance with development plan policies for the area.

Statutory undertakers, such as electricity, gas and water undertakings, have certain legal rights and obligations to provide physical infrastructure. In England, some benefit from permitted development rights which are set out in the [Town and Country Planning \(General Permitted Development\) \(England\) Order 2015](#), as amended.⁵³ We consider that licensed heat network operators should, like existing statutory utilities, benefit from permitted development rights for certain development to facilitate the installation and maintenance of heat networks.

This could include permitted development rights for licensed heat network developers or operators to install or replace pipes or electricity cabling and to erect small temporary structures and small ancillary buildings, machinery or apparatus necessary for heat network development.

The proposal to extend permitted development rights to licensed heat network developers would apply in England only as planning, including permitted development rights, is a devolved

⁵³ Town and Country Planning (General Permitted Development) (England) Order 2015, <http://www.legislation.gov.uk/uksi/2015/596/contents/made>

matter in Wales and Scotland. However, similar proposals have been made by the Scottish Government in their consultations on heat network regulation.

Any changes would be implemented through an amendment to the Town and Country Planning (General Permitted Development) (England) Order 2015, as amended.

Q49. Do you agree that licensed heat network developers should have permitted development rights similar to other statutory undertakers? Are you aware of any potential unintended consequences?

Q50. In addition to permitted development rights specified (install or replace pipes or electricity cabling; erect small temporary structures and small ancillary buildings, machinery or apparatus), is there any other development to facilitate the installation and maintenance of heat networks to which a permitted development right should apply?

Consultation rights

Construction projects always have to coordinate with a large number of stakeholders to ensure that the project is following legal requirements, for example in complying with environmental legislation, or so that local stakeholders have an opportunity to comment on the project's plans. If an organisation is particularly relevant to the project, then the requirement to consult them can be enshrined in law and they become classified in the Town and Country Planning Act as a 'statutory consultee'. For example, when a development is beside a canal or water inlet then the Canals and Rivers Trust must be consulted.

Some stakeholders have proposed that regulated heat networks could be granted these statutory rights. This would be to ensure that heat networks are routinely consulted by developers to ensure that they can object to any projects that could infringe on their operations.

We have considered whether this would be an appropriate development for the industry. In particular we have looked at the level of burden it would create for relevant heat network operators since being on the list of statutory consultees means that an organisation is required to review every application within scope of their activities. For example, the Environment Agency is a general statutory consultee for environmental legislation and as a result it has to review a large number of applications, not all of which turn out to be directly relevant to their work. In addition, all statutory consultees also have to produce annual reports on their performance in responding to requests and this can also be time-consuming and expensive for the companies involved.

As a result, we have concluded that regulating to classify heat networks as statutory consultees would be disproportionately burdensome. Instead we believe that it would be a more proportionate move to strengthen the government's [guidance](#) for developers on who should be consulted when starting a new development. We will keep this arrangement under review.

Q51. Do you agree that the administrative burdens of being statutory consultees would be disproportionate for heat networks?

Q52. Beyond improving the guidance on non-statutory consultees, do you think that there are any other areas of government guidance that could be improved to ensure that heat networks are more routinely consulted on relevant development in their areas?

Linear obstacle rights

Developing a heat network frequently involves crossing infrastructure such as railway lines, tramways or canals. Occasionally these 'linear obstacles' prevent expansion because networks find that engaging with the relevant companies is too time-consuming or simply because routing a network through the infrastructure is too difficult or dangerous.

Where expansion of the network poses a risk to the delivery or the integrity of the infrastructure then it is clearly legitimate for a company to refuse a request for access, but in instances where there are viable technical solutions we want to facilitate dialogue between the owners of the assets and heat network companies.

A potential solution can be found in the regulated telecommunications market. The Communications Act 2003 gives broadband providers 'linear obstacle' rights to overcome these issues.⁵⁴ Under the Communications Code broadband companies are given the statutory right to request access from the owners of 'linear obstacles' and to enter into arbitration if there is a legitimate case that they should cross the obstacles. Importantly, the owners of the linear obstacles can refuse access if they believe that it would damage the integrity of their assets or meaningfully disrupt their ability to run the service.

Q53. Do you believe that licensed heat network developers should be given equivalent rights to cross linear obstacles? Can you provide examples of where such rights would be beneficial to heat network development?

⁵⁴ Communications Act, 2003, <http://www.legislation.gov.uk/ukpga/2003/21/contents>

Decarbonisation of heat networks

In June this year the UK Government set a legally binding target to meet net-zero carbon emissions by 2050. This demonstrates our clear commitment to combating climate change. We are the first major economy in the world to legislate for a net-zero target and this action continues our proud tradition of climate leadership.

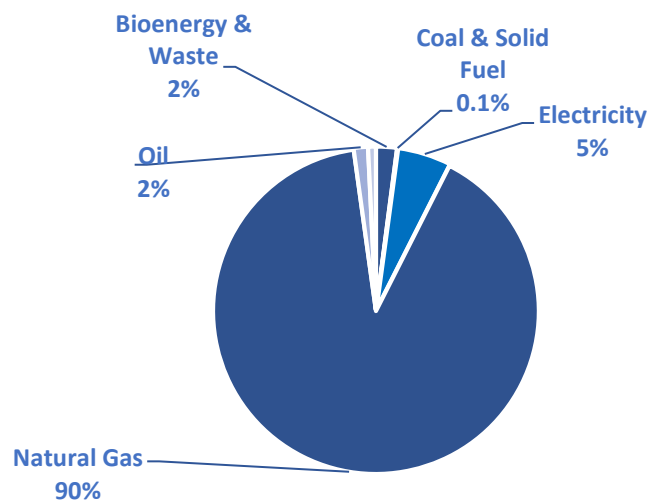
Heating is responsible for over a third of our emissions and meeting our net-zero ambition will require decarbonising nearly all heat in buildings. Heat networks are an integral technology to achieve this target because heat networks are:

- Uniquely able to unlock otherwise inaccessible sources of larger scale renewable and recovered heat such as waste-heat and heat from rivers and disused mines;
- Particularly cost-effective when deployed in dense urban areas;
- Able to be retrofitted with different heat sources so that they can be progressively decarbonised over the period to 2050⁵⁵.

For heat networks the new net-zero target re-emphasises the importance of the approach we expressed in our December 2018 document of both growing the heat network sector and ensuring that it substantially reduces its carbon emissions over the period to 2050⁵⁶.

Heat networks in the UK, including both communal and district schemes, are currently over 90% gas fired and district networks represent just over 2% of the UK heat demand market. Currently the predominant technology for district-sized schemes is gas combined heat and power (CHP) plants. These plants are more efficient, and can deliver additional carbon savings, because they simultaneously generate electricity which can be utilised by consumers on-site or exported to the grid.

Current heat network technology mix



⁵⁵ The Helsinki Heat Network is an example of where a large-scale gas-based system has integrated large water-source heat pumps to reduce carbon emissions. DECC (2016): <https://www.gov.uk/government/publications/heat-pumps-in-district-heating>

⁵⁶ BEIS (2018), Heat Networks: ensuring sustained investment and protecting consumers: <https://www.gov.uk/government/publications/heat-networks-developing-a-market-framework>

Figure 5: Current technology mix representing communal and district heating systems, source: heat networks experimental statistics 2018

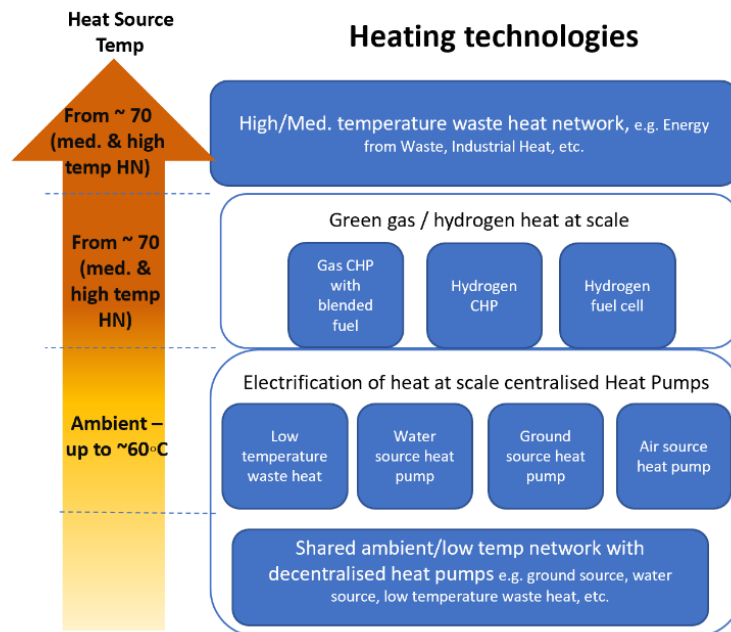


Figure 6: Potential future low-carbon technologies

However, the carbon savings of gas CHP plants are being reduced as the carbon emissions of grid electricity falls. As we move towards 2050, we know that meeting our climate targets will require a transition from gas-fired networks to lower carbon alternatives such as large heat-pumps, hydrogen or waste-heat recovery (a list of potential low-carbon technologies is given in Figure 5).

Low carbon network in Colchester

Colchester Borough Council (CBC) are developing an innovative low-carbon heat network to supply heat to homes, offices and healthcare facilities at Colchester’s new Northern Gateway development. The primary heat source will be an 800 kW open loop water-source heat pump utilising five 135-metre boreholes into a chalk aquifer, with over half a kilometre between abstraction and re-injection. The project, which is supported by BEIS as part of the HNIP pilot scheme, will deliver approximately 5.5 GWh of renewable heat per year when the development is completed and is one of the first examples of a project of this type and size in the UK.

We acknowledge that one of the major reasons why heat network projects do not install low-carbon technologies at the moment is because of the up-front capital cost. While the Heat Network Investment Project is expected to reduce the costs of heat network development by 5% by 2025, we envisage that, even with this reduction, it will remain uneconomic for some heat networks to install low-carbon technologies such as large heat-pumps.⁵⁷

Since 2011 the non-domestic Renewable Heat Incentive has been reducing this gap by funding installation of low-carbon heat sources in heat networks. The non-domestic scheme overall has generated and paid for over 40.5 TWh and is expected to save 122.6 MtCO₂ over its lifetime. The budget for the RHI is confirmed until the end of March 2021 and while the

⁵⁷ Carbon Trust (2018), Estimating the cost reduction impact of the heat networks investment project on future heat networks: <https://www.gov.uk/government/publications/estimating-the-cost-reduction-impact-of-the-heat-networks-investment-project-on-future-heat-networks>

government is considering options beyond this, all decisions will be a matter for future spending rounds.

Below we set out what action the Government is proposing under this market framework to reduce carbon emissions from heat networks.

Consumer information

We believe that consumers on a heat network should be able to access information on what heat sources are generating their heat, so that they can better understand their own impacts on the environment. As part of this market framework, we intend to introduce requirements on heat networks, to make information available on the energy performance of networks and the share of low-carbon heat sources that they use.

Q54. Do you agree that consumers should have access to information on the energy performance and percentage of low-carbon generation of their network?

Building Regulations and the Future Homes Standard

We know that reaching our net-zero target will require a mix of measures to drive decarbonisation and that, where appropriate, we should employ regulation to achieve carbon savings.

Government is consulting on a number of policy changes through Building Regulations (England only) that may be advantageous for heat networks. The recently published consultation on Part L of the Building Regulations and accompanying updates to the Standard Assessment Procedure (SAP)⁵⁸, have proposed monthly emissions factors and a heat network technology factor (better reflecting the variability in heat network supply, as well as their strategic benefits). There will also be a new 'Householder Affordability Test' to ensure that developers are less able to install direct electric heating if it results in high energy costs for consumers. In addition, we are assessing the use of the Product Characteristics Database, which can be used in SAP calculations, for communal heating and heat networks, to ensure it is able to reflect the performance of heat networks appropriately and provides an effective route to assessing dwelling compliance.

Alongside these near-term changes to Building Regulations, we also looking to progress our decarbonisation agenda through the Future Homes Standard (England only), [currently out for consultation]. This policy will be an update to Part L of the Building Regulations in 2025, for new build homes to be future proofed with low carbon heating and very high fabric standards.

The Welsh Government are also consulting on related changes to Part L (Conservation of Fuel and Power) and Part F (Ventilation) of the Building Regulations for new homes and the associated statutory guidance. The proposed changes are aiming to make new homes more energy efficient and to future-proof them for the introduction of low-carbon heating systems. It also proposes changes to Part L.⁵⁹

⁵⁸ SAP is used UK wide.

⁵⁹ Building Regulations Part L and F Review: <https://gov.wales/building-regulations-part-l-review-0>

For heat networks, the intention is that the Future Homes Standard will encourage low-carbon heating sources to be used as the primary energy source in new networks connecting to new developments from 2025. Secondary back-up boilers that run on fossil-fuels could potentially still be installed, as these are key to heat network system reliability, and, because they enable heat networks to operate more efficiently, they can lead to higher carbon savings for individual heating systems. We envisage that this policy will predominantly encourage new heat networks from 2025 to install large heat pumps and, in some circumstances, to connect to waste-heat sources.

The Future Homes Standard will ensure that, from 2025, new networks in England are low-carbon and ready for 2050. We have been considering whether sector regulation could be used to encourage decarbonisation of heat networks attached to existing buildings from 2025, and which will not be affected by the Future Homes Standard.

Regulation of decarbonisation

Regulation of the carbon emissions of heat networks would involve setting a maximum carbon emission standard in future, which regulated heat networks would be obliged to meet. This would be primarily for the larger district-scale heat networks because, with their larger scale and resources, they are better able to manage the transition of installing new low-carbon generation sources. Any such future standard would be set to enable progress towards the UK's 2050 net-zero target and would be in line with other measures to decarbonise the broader heating system. This would be done in order to ensure a competitive playing-field across the broader heating system.

We propose that assessment of a heat network's carbon emissions would be based on each heat network reporting its heat source technology to an appropriate body. We will consider whether this role sits best with the same regulator responsible for consumer protection or whether another body would be more appropriate. We intend that any regulation of decarbonisation would be interoperable with any equivalent regulations or policies introduced by the governments of Wales, Scotland or Northern Ireland.

In addition, we will be considering how regulated heat networks could best contribute to the Government's Adaptation Reporting Power Strategy for England. This strategy, which sits alongside our [National Adaptation Programme](#) under the Climate Change Act, enables Government to invite infrastructure providers (i.e. airports, ports, water and energy companies, etc.) and public bodies to report on actions they are taking to strengthen their preparedness for climate change. Over [90 organisations](#) have committed to provide an adaptation report before the end of 2021. This reporting is currently voluntary, but government keeps this requirement under review. Any changes would be subject to consultation.

Q55. Do you agree that regulation is necessary to encourage decarbonisation of heat networks over the period to 2050? Are there alternative means by which government could act to support the decarbonisation of heat networks?

Waste-heat sources

Finally, in order to facilitate the development of lower-carbon heat networks now, we are exploring how best to encourage commercial and industrial sources of waste heat to connect to local networks. Currently, the Environmental Permitting (England and Wales) Regulations

require that whenever a thermal power plant or an installation that produces heat is developed, the owners are obliged to assess whether they could feasibly connect to a local heat network.⁶⁰ The National Comprehensive Assessment that the Department commissioned in 2015 found that over 50TWh of heat was technically recoverable from waste-incinerators, thermal power plants and industrial processes, without considering the heat that could be boosted with the aid of heat pumps.⁶¹ In order to better utilise this low-carbon and low-cost resource, and meet the scale suggested by these kinds of studies, we will work together with the Department for Environment, Food and Rural Affairs (Defra), environmental regulators and devolved administrations to assess whether the implementation of the Environmental Permitting Regulations could be improved and to assess whether the regulations could be amended to ensure that more sources of waste heat are encouraged to connect to heat networks.

Q56. How could the Environmental Permitting Regulations be amended to ensure that waste-heat sources connect to networks when it is cost-effective and feasible to do so? What do you consider are the main barriers for waste heat sources to be connected to heat networks?

Q57. Which sources of industrial and commercial heat could government bring within the scope of the Environmental Permitting Regulations in addition to the sources already being identified?

Next steps

We welcome responses to our proposals for future arrangements for the heat network market. The consultation closes on 1 June 2020.

This consultation includes our thinking for the new legislative arrangements for the heat network market. We will use the responses we receive to help us refine our policy proposals, and we will continue to discuss emerging issues with stakeholders. We will consult further in 2020 on any significant changes to our proposals or new issues if required. We will continue to work closely with Ofgem as the proposed regulator in this process.

Following our policy development phase, legislation will be introduced when parliamentary time allows. We anticipate that there may be grounds for transition arrangements for some aspects of the requirements. As indicated in the document, we are keen to hear views on this.

In parallel with our proposed legislative changes, we will continue to share learning and guidance with the sector to support ongoing investment and project delivery. We continue to encourage parties to follow existing good practice, such as that set out by the Heat Trust and the ADE-CIBSE Code of Practice.

⁶⁰ Environmental Permitting (England and Wales) Regulations 2016, <http://www.legislation.gov.uk/ukxi/2016/1154/schedule/24/made>

⁶¹ DECC (2015), The national comprehensive assessment of the potential for combined heat and power and district heating and cooling in the UK: <https://www.gov.uk/government/publications/the-national-comprehensive-assessment-of-the-potential-for-combined-heat-and-power-and-district-heating-and-cooling-in-the-uk>

Consultation questions

Regulatory Framework overview

Q1. Do you agree with the inclusion of micro-businesses within consumer protection requirements?

Q2. Do you agree that consumer protection requirements should not cover non-domestic consumers (other than micro-businesses)?

Q3. Do you agree with our proposed approach to a definition of heat network, including that it should cover ambient temperature networks but not ground source heat pumps with a shared ground loop? Are there network arrangements you think would not be covered by this and which should, or vice versa?

Proposed regulatory approach

Q4. Do you consider Ofgem to be the appropriate body to take on the role of regulator for heat networks? If not, what would be an alternative preference?

Regulatory model options

Q5. Do you agree that the proposed regulatory model is appropriate for the regulation of heat networks?

Q6. Which entity should be responsible and accountable for regulatory compliance, particularly where the heat supplier and heat network operator are not the same entity? Please explain why you think this.

Q7. Do you agree that consumer protection requirements during the operation and maintenance project stage should be regulated, such as pricing, transparency and quality of service?

Q8. Should there be a de minimis threshold below which a) very small domestic schemes and/or b) non-domestic schemes with very few domestic consumers are exempted from any of the regulatory requirements proposed in this framework? Please explain why you think this.

Q9. Should there be a size threshold above which larger schemes are subject to more detailed regulation and scrutiny? If so, what type of threshold would you consider most appropriate?

Q10. Should an optional licence be available for entities seeking rights and powers? If not, what other approaches could be considered?

Q11. Are there any other adjustments that could be made to the proposed model to enable it to work better?

Q12. Are there circumstances in which transitional arrangements should be introduced? If so, in what circumstances might these apply and for what length of period?

Emerging business models

Q13. Do you consider our proposed approach sufficiently flexible to accommodate emerging business models, including unbundling of different components of a heat network? If not, please suggest ways in which we could ensure alternative business models are not precluded.

Enforcement powers

Q14. How should government and the regulator ensure that enforcement action is proportionate and targeted? Are there particular considerations for not for profit schemes?

Q15. Do you agree that imposing fines and removing a licence/authorisation are an appropriate and adequate set of enforcement actions for the regulator of the heat network market?

Q16. Do you agree that the regulator should have powers to impose penalties at the entity level which are proportionate to its size, in a scenario where there are repeated or systemic failures across multiple schemes owned or operated by the same entity?

Q17. Do you agree that the regulator should have powers to revoke an authorisation for single networks owned or operated within a group scenario, so that the entity would still be authorised or licensed to operate those networks within the group that remain in compliance? If not, what alternative approach might the regulator take?

Q18. If compliance issues are more widespread within the group of networks owned or operated by the same entity, do you agree that the regulator should be able to revoke the authorisation or licence for the entity as a whole covering its entire group of networks? If not, what alternative approach might the regulator take?

Q19. Do you agree that individual domestic consumers should have access to ombudsman services for redress? Do you have any views as to which ombudsman is best placed to provide this function for heat networks?

Step-in Arrangements

Q20. Do you agree that step-in arrangements are necessary both to cover the risk of stranded consumers and as a deterrent against sustained failure to meet the regulatory requirements? If not, why?

Q21. Do you have any examples of approaches we should be considering as we develop the step-in arrangements?

Protecting consumers

Transparency

Q22. Do you agree that the provision of minimum information would help consumers in making decisions at pre-contractual stages of property transactions?

Q23. Do you agree that heat suppliers should be responsible for developing information and guidance for prospective consumers? If yes, what minimum information should be included?

Q24. How can we ensure new consumers receive or have access to information about the heat network before moving into the property?

Q25. Do you agree that the market framework should regulate and enforce the provision of information during residency?

Pricing

Q26. Do you agree that the regulator should have powers to mandate and enforce price transparency? Can you foresee any unintended consequences of this?

Q27. What are the current barriers to publishing and maintaining accurate information on fixed charges, unit rates and tariffs? What are the main reasons for information on pricing not being available at present?

Q28. Do you agree that there should be clear, consistent rules on what costs should be recovered through fixed and variable charges?

Q29. Do you agree that the regulator should have powers to undertake investigations on pricing and to enforce directions and remedy actions, where there is sufficient evidence that these could lower prices for consumers?

Q30. Do you agree that price regulation in the form of a price cap or regulation of profits should not be implemented at this point in time? Please explain your answer.

Q31. What might cause price regulation to become an appropriate intervention in future? What evidence would be required to demonstrate this?

Quality of Service Standards

Q32. Do you agree that consumers on heat networks should have comparable levels of service and protection as consumers in other regulated utilities? How do we ensure the associated compliance costs of such protections remain proportionate?

Q33. Do you agree that minimum standards should be outcome-based to allow the regulator scope to implement these flexibly and proportionately depending on the size and nature of different schemes? Are there other ways these outcomes could be achieved?

Technical Standards

Q34. Do you agree that all new schemes should be subject to minimum technical standards (once developed), given the potential impact on system performance and end consumers?

Q35. How could we ensure the impact of minimum technical standards on new small communal networks is proportionate?

Q36. Do you agree that regulated entities should demonstrate they are compliant through an accredited certification scheme?

Q37. What do you consider to be the most appropriate approach to setting the technical standards?

Q38. Are there examples of the roll out of technical standards or the introduction of compliance schemes which you consider particularly relevant from other markets or technologies?

Rights and powers

Q39. Do you agree that a (licensed) heat network entity should be classified as a statutory undertaker?

Q40. Do you agree that the proposed rights and powers should be given to heat network entities which meet the terms of our proposed licensing system?

Q41. Is it reasonable to assume that the proposed rights and powers would only be relevant to district heat networks (not communal networks)? If not, please explain why.

Q42. What impacts will the proposed rights and powers have on the development and extensions of heat networks? And what impacts do you think these rights will have on the operator's ability to maintain and repair heat networks?

Access rights

Q43. Do you agree that licensed heat network entities should be granted statutory access rights?

Q44. Do you agree that the process should be similar to that for electricity and gas companies, in that the licensed heat network entity will have to make an application to the responsible minister for the easement and that any compensation arrangements will be determined by the Tribunal Service?

Q45. Do you agree that these access rights would primarily be used to install and maintain pipework, or do you anticipate that they would be used for other purposes?

Street works

Q46. Would you consider the ability to apply for a street work permit a considerable benefit compared to a Section 50 Street Works licence? If so, in what way?

Q47. Do you have any experience of applying for a Section 50 Street Works licence? Did you find this delayed either construction or repair and maintenance work required?

Rights to lay pipes under the roadway

Q48. Do you agree that heat networks should be given equivalent powers to other utilities to install and keep heat network pipes underneath roadways? Are you aware of any potential unintended consequences?

Permitted development

Q49. Do you agree that licensed heat network developers should be granted permitted development powers similar to other statutory undertakers? Are you aware of any potential unintended consequences?

Q50. In addition to permitted development rights specified (install or replace pipes or electricity cabling; erect small temporary structures and small ancillary buildings, machinery or apparatus), are there any other activities to which a permitted development right should apply?

Consultation rights

Q51. Do you agree that the administrative burdens of being statutory consultees would be disproportionate for heat networks?

Q52. Beyond improving the guidance on non-statutory consultees, do you think that there are any other areas of government guidance that could be improved to ensure that heat networks are more routinely consulted on relevant development in their areas?

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This consultation is available from: www.gov.uk/government/consultations/heat-networks-building-a-market-framework

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.