

# **Analysis of Responses to a Public Consultation on the Draft Heat Networks Delivery Plan**

**March 2022**



**Scottish Government**  
Riaghaltas na h-Alba  
gov.scot

# **Analysis of Responses to a Public Consultation on the Draft Heat Networks Delivery Plan**

**A University of Edinburgh  
and Ramboll UK Report  
Commissioned by the  
Scottish Government**

**March 2022**



THE UNIVERSITY  
*of* EDINBURGH

Conducted for



Scottish Government  
Riaghaltas na h-Alba  
gov.scot

## **Table of Contents**

1	EXECUTIVE SUMMARY	1
	Summary of key findings	1
2	BACKGROUND	3
3	METHODS	3
4	FINDINGS	5
	Profile of respondents	5
	Cross-cutting themes	5
	Responses to the consultation questions	7
5	APPENDICES	34

## Executive Summary

- 1.1 The Heat Networks (Scotland) Act 2021 commits the Scottish Government to publishing a Heat Networks Delivery Plan (HNDP) by 1 April 2022, and to consulting with necessary persons before doing so. Scotland has committed to the wider deployment of heat networks via the inclusion of statutory targets.<sup>1</sup> This Executive Summary sets out the key findings from a qualitative analysis of consultation responses that were submitted about the Draft HNDP.<sup>2</sup>
- 1.2 A total of 48 responses were received, of which 45 were from groups or organisations and 3 were from individual members of the public. Some responded across all questions while others focused on specific issues.

### Summary of key findings

- 1.3 Scottish Ministers are required to set a new 2035 target for heat network delivery. This prospect was met with a mix of views, but some degree of uncertainty. Some respondents thought the existing target should be the focus while others thought more time was needed to decide what a sensible target for 2035 would be.
- 1.4 Alleviating fuel poverty whilst moving to heat networks, and low carbon heating more generally, was typically identified as a substantial challenge. Some respondents were keen to point out that fuel poverty is a complex issue with multiple causes, and that low carbon heating technologies are not the only means of addressing it. A small number of respondents did, however, frame the heat transition as an opportunity to address fuel poverty.
- 1.5 Energy efficiency retrofit of the existing building stock was routinely raised by respondents across questions as essential to reducing heat demand and addressing fuel poverty. Respondents also noted the significance of energy efficiency for deploying more efficient lower temperature networks.
- 1.6 The costs associated with heat networks were raised in many responses across questions. This included points on high development and upfront capital investment costs, with respect to both decarbonising existing networks and installing new low carbon networks. Concern about costs also included the impact heat networks (and their associated regulation and licensing) could have on customers' energy bills. There were mixed views about whether heat networks would result in higher or lower energy bills. The link between upfront costs and energy charges (standing charges and tariffs) required to cover investment was also made.
- 1.7 Respondents were generally supportive of the idea of a Building Hierarchy and there were some calls for residential buildings (particularly large blocks) to receive greater priority. Concerning demand assurance, respondents often

---

<sup>1</sup> These include 2.6 Terawatt hours (TWh) (3% of current heat demand) by 2027, and 6 TWh (8% of current heat demand) by 2030.

<sup>2</sup> The consultation took place at the end of 2021. The draft consultation document can be found here [Heat networks delivery plan - draft: consultation](#).

highlighted that mandatory connections could encounter opposition, but that this could be ameliorated by some form of financial incentive.

- 1.8 A pre-capital support unit providing the expertise needed for project development was viewed favourably by many respondents, and a service that was considered underdeveloped at present. Particular roles the support unit should provide are detailed on p16.
- 1.9 The principle of common technical standards for heat networks was overwhelmingly supported. Some respondents however, pointed out that they would welcome more detail on potential specific standards before making judgement.
- 1.10 There was some question about whether energy from waste (EfW) would be classified as low carbon in the long term and whether access to available waste heat sources could be secured.
- 1.11 Greater data collection and availability was broadly supported and viewed as important for use in public sector strategies and the Scotland Heat Map. Further incorporation of data about the commercial sector was particularly welcomed. The potential benefits from better data included making the case for new networks, identification of opportunities for integrating networks and overall network resilience. Many respondents also pointed out, however, that data gathering should be appropriate and proportionate, and cognisant of the eventual burden that it could place on network operators.
- 1.12 There was a very high level of support for non-public, non-domestic buildings to produce building assessment reports (BAR). This approach was thought to enable better identification of both the buildings suitable for network connection, but also potential energy efficiency improvements. It was also suggested as valuable to supporting the Local Heat and Energy Efficiency Strategies (LHEES) zoning process.
- 1.13 A regulated market was largely supported. Respondents however, highlighted the importance of effective regulation which 'had teeth'.
- 1.14 A proportional approach to the forthcoming licensing regime was seen as important. Single customer or self-supply networks were typically viewed as requiring less licensing attention than those serving multiple customers. There were also calls for community or not-for-profit schemes to be treated differently to commercial network operators, for example, by being exempt from licensing fees. Suggestions for exemptions also included networks that already had planning permission. There were however several respondents that believed that no project should be fully exempt from the consenting process.
- 1.15 The principle of allocating permits to allow exclusive development of a heat network in a particular area received largely implicit support. Objections, when raised, related to a belief that permitting would engender complacency in the permit holder. Permit durations varied, but typically overlapped with the proposed 25-40 years.

## Background

- 2.1 The Scottish Government has an important role to play in developing a heat networks market in Scotland that meets targets set by the Heat Networks (Scotland) Act 2021 (the 2021 Act).<sup>3</sup> The statutory 2030 and 2045 targets for economy-wide decarbonisation, and the heat network specific targets contained within the 2021 Act, demand urgent transformative action in the sector.
- 2.2 Scottish Ministers are committed to publishing a Heat Networks Delivery Plan (HNDP) by 1 April 2022. The HNDP should outline how the provisions of the 2021 Act, and supporting policies, will contribute to increasing the use of heat networks in Scotland. In developing the HNDP, members of the public and heat network stakeholders have been invited to provide views on the draft proposals through a public consultation. This feedback has a vital role in informing the HNDP. Analysis of the views gathered through the public consultation process are reported in this document.
- 2.3 Consultation on the Draft HNDP ran from 15 November to 13 December 2021.<sup>4</sup> The consultation contained two sections with seven chapters. The contents of the consultation outlined: the Scottish Government's plans for meeting the heat network targets; set out details of how heat network zones will be designated; how a new regulatory regime will function; interactions with the wider policy framework; details on funding and delivery; and information on monitoring and reporting. Respondents were asked to provide feedback on 22 individual questions that were posed about these proposals.
- 2.4 A total of 48 responses were received. An online stakeholder workshop also took place on 30 November 2021.<sup>5</sup> At this event the main topics for consideration were: the regulatory regime; decarbonising existing heat networks; building assessment reports; the Building Hierarchy; pre-capital support; and fuel poverty. The consultation responses and the views gathered at the stakeholder workshop were analysed and the findings are presented in this report to inform the Scottish Government about the potential implications of different policy measures under consideration for further development.

## Methods

- 3.1 Qualitative analysis of consultation responses was undertaken by the University of Edinburgh and Ramboll UK with the purpose of assisting the Scottish Government in making effective and equitable policy. The aim of the analysis was to provide an impartial and comprehensive synthesis of consultation responses. This intends to help to ensure the development of policy has considered a wide selection of relevant views and that decisions are thoroughly

---

<sup>3</sup> The Heat Networks (Scotland) Act 2021 sets targets for the amount of heat to be supplied by heat networks, requiring the combined supply of thermal energy by heat networks to reach 2.6 TWh (terawatt hours) of output by 2027 and 6 TWh of output by 2030.

<sup>4</sup> For more information and the consultation document see [Heat networks delivery plan - draft: consultation - gov.scot \(www.gov.scot\)](#).

<sup>5</sup> The meeting agenda and organisations represented at the consultation event are found in **Annex A**.

evidence-based. The consultation analysis should also provide assurance to the public and relevant stakeholders about the transparency of the Scottish Government's policy-making process.

- 3.2 The analysis reported in this document is a qualitative analysis of the 48 consultation responses and the information collected at the online stakeholder workshop. A public consultation is self-selecting, meaning that anyone is invited to submit their views. However, this self-selection means the views represented in this document may not represent the views of the Scottish population. The analysis is thus not a nationally representative survey of public opinion, nor does it express the views of the analysts or their employers. The content of this analysis only contains the views of those who responded to the consultation (respondent breakdowns are presented in Section 4) and participated in the workshop.
- 3.3 In total 22 open ended questions were posed within the consultation, of which three had closed questions associated with them. Respondents were free to answer as many or few questions as they wished. Some respondents provided additional evidence in support of their responses. These have not been reviewed in full, but references and links have been included as footnotes. A full breakdown of the number of respondents to each question is provided in Section 5.
- 3.4 The qualitative analysis provides a thematic overview of key cross-cutting issues raised in the consultation responses and draws out the full range of views submitted by respondents. Text-based analysis of the submitted responses was conducted and summary notes from the consultation events were reviewed. This analysis method enabled two main outcomes. First, establishing of patterns across the dataset on the presence of overarching cross-cutting themes. Second, exploring individual responses in detail.
- 3.5 Qualitative analysis is not designed to permit the quantification of results. We do however use specific terms ('some', 'several' and 'many') throughout the report to signify the weight of a particular view. This provides a broad indication of how many respondents represented any one perspective being reported. In the reporting of the findings, 'some' is used when referring to the views of three-six respondents; 'several' is used when referring to seven-nine respondents; and 'many' is used when referring to 10 or more respondents.
- 3.6 Findings are reported in Section 4 as follows. A profile of the respondents is provided in Table 4.1, detailing the types of respondents. This is followed by a summary of the main cross-cutting themes which were identified from across the full set of responses to the 22 individual questions. Analysis of responses to each individual question then follows. The type of respondent expressing a particular view is identified where it was deemed informative. Section 5 contains data on the number of respondents to each question.

## Findings

### Profile of respondents

- 4.1 A total of 48 respondents submitted a consultation response. Table 4.1 provides a breakdown of respondent categories. Local Authorities (LAs) provided the most responses of any single group (11), followed by Energy Generation, Supply or Distribution organisations (9). There were no responses from either the Consultancy, Training, Assessment or Accreditation group, or from individual Housing Associations. Almost half of respondents (21 or 44%) were Heat Network Operators (HN Operators).

**Table 4.1. Breakdown of the different respondent groups to the consultation**

Respondent Categories <sup>1</sup>	HN Operator	Total
Academic Group or Research Centre	-	2
Community Council, Trust or Group <sup>2</sup>	1	2
Consultancy, Training, Assessment or Accreditation	-	-
Consumer Advice, Advocacy or Campaigning	-	1
Energy Generation, Supply or Distribution	6	9
Housing Association	-	-
Individual <sup>3</sup> or Tenant Group	1	3
Local Authority	8	11
Product Manufacturer, Supplier or Installer	1	2
Professional or Representative Body (Energy)	-	2
Professional or Representative Body (Other)	-	4
Public Body <sup>4</sup>	2	7
Third Sector <sup>5</sup> or Non-Governmental Organisation	2	5
Total	21 (44%)	48

Table notes

<sup>1</sup> Categories are taken from the *Heat in Buildings Strategy: Analysis of responses to the consultation*.

<sup>2</sup> Organisation is either Community Council or Trust or is another type of community organisation / group (but not Third Sector definitions).

<sup>3</sup> Includes two local authority officer responses who stipulated they were responding in an individual capacity.

<sup>4</sup> Includes two university estates. Responses related (primarily) to estate management and were not responses directly based on academic research.

<sup>5</sup> Charities (that is, typically considered Third Sector) and community benefit society or similar (meaning a regulated organisation) typically defined as Third Sector.

### Cross-cutting themes

- 4.2 **The value of a fabric first approach.** The importance of energy efficiency improvements in the existing building stock was a major theme emerging across responses to consultation questions. Advocacy of a fabric first approach was made with respect to heat networks, but also with reference to low carbon heating more generally. It was identified with reference to keeping heating bills as low as possible, and, therefore, linked to addressing fuel poverty. It also concerned the importance of building fabric and insulation improvements to installing new lower temperature heat networks, as well as decarbonising



existing networks with 'waste' heat sources and heat pumps. Fabric first was also linked to the understanding of current and potential heat demand in heat network zones. Respondents identified that heat demand could be lower if fabric improvements were made, and hence energy efficiency has the potential to mitigate some investment costs in heat networks.

- 4.3 **Balancing heat network market growth and customer protection.**<sup>6</sup> The need to consider different priorities regarding supporting network development and protecting end users was a recurring theme identified in responses to multiple areas of the consultation. At its broadest, this theme is about understanding the final impacts of the proposals, in their entirety, on the customer – both positive and negative. Respondents identified the potential positive benefits to customers from government support, whether in relation to an enhanced protection regime (especially the potential for monopoly supply), improved technical standards, the potential for lower bills, or a route to clean heat. However, respondents also highlighted the potential negative impacts of increasing the burden on heat network operators. This included expectations about the impact on increasing customer bills, and disincentivising heat network development. Here, the overarching point made by respondents was around who bears the brunt of the burden of regulation, licensing and any other costs in a given system (ultimately, the customer), and the need to consider the proposals from that perspective.
- 4.4 **Heat networks in urban and rural settings.** The suitability of heat networks to urban and rural settlements was a more subtle theme emerging across responses. One of the more general points made was that heat networks tend to be considered primarily as an urban technology. This was often interpreted as the Scottish Government's perspective, as expressed in the proposals under consultation. As a result, it was suggested that rural areas could be overlooked. For example, this was raised in relation to the Building Hierarchy and its relevance to rural areas. However, it was emphasised that heat networks can be relevant in rural areas, and this aspect should not be ignored in the final HNBP. The potential negative impact on rural areas was also raised with respect to the focus on highest heat demand in the policy proposals. Other respondents accepted the view that heat networks were less relevant to rural areas, and thus, wanted to highlight that too great a focus on heat networks would result in rural areas being ignored. To capture benefits for rural communities (including in relation to fuel poverty), this theme in the responses suggested a need for local flexibility (or rural adaptation) in zoning, building prioritisation, and the role of heat demand metrics.

---

<sup>6</sup> Regulation of consumer protection is reserved to the UK Government.

## Responses to the consultation questions

### **Q1: In your opinion, could any of the proposals set out in this plan unfairly discriminate against any person in Scotland due to a protected characteristic?**

- 4.5 Protected characteristics are age, disability, sex, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion, or belief.

**Table 4.2 Q1: In your opinion, could any of the proposals set out in this plan unfairly discriminate against any person in Scotland due to a protected characteristic?**

Single response question	Count	Percentage
Yes	2	6%
No	19	58%
Don't know	12	36%
Question response rate	33/48	100%

Percentages are rounded and correspond to the question response rate.

- 4.6 Notable risks were associated with groups expected to be particularly impacted by fuel poverty, specifically: the elderly, disabled, women, those with long-term health conditions and families with specific needs (the example of children with autism was given). It was highlighted that these groups generally spend more time at home and are more likely to experience fuel poverty. As a result, responses emphasised the risk these households and consumer groups face from the impact of upward pressure on energy bills and the disruptive impact of household retrofit work. The elderly and those with learning difficulties were also identified as needing additional support to operate new heating systems.
- 4.7 One response (Research – Joint Response) emphasized that with respect to women, alignment of fuel poverty and child poverty was needed to avoid discrimination against women, citing women as more likely than men to be single parents.<sup>7</sup>
- 4.8 Other more general points emphasized that an inclusive approach is needed to support groups more in need; that regulation should enable a just and inclusive delivery of heat networks; that by integrating multiple users, heat networks have potential to be highly inclusive – but, that small rural communities may be limited by geographic factors. There was also some questioning as to why fuel poverty was not a protected characteristic itself.

### **Q2: In your opinion, could any of the proposals set out in this plan have an adverse impact on children's rights and wellbeing?**

- 4.9 The overwhelming focus in responses was on children's wellbeing (opposed to children's rights). Both positive and negative impacts on children's wellbeing were identified from multiple respondent types.

---

<sup>7</sup> Melone, H.A., 2019. Gender-based perspectives of fuel poverty in Scotland. MSc dissertation, Glasgow School of Business and Society, Glasgow Caledonian University.

**Table 4.3 Q2: In your opinion could any of the proposals set out in this plan have an adverse impact on children’s rights and wellbeing?**

Single response question	Count	Percentage
Yes	4	13%
No	17	53%
Don’t know	11	34%
Question response rate	32/48	100%

Percentages are rounded and correspond to the question response rate.

- 4.10 Positive impacts on children’s wellbeing cited that the HNBP should assist to deliver warm homes and lower fuel bills. Both were thought to improve wellbeing, with reference to educational attainment and health outcomes given by multiple respondents. One Local Authority respondent emphasised that energy efficiency updates alongside heat network development would help to reduce energy costs. Another Public Body respondent cited the 2021 Act, stating between 17% and 30% reduction in consumer energy bills was considered possible in optimal heat networks. Dependencies to achieve this were noted by this respondent as:

“regulatory action, combined with good site selection, robust consenting and permit regimens, allied to investment in skills, can help design out such risks or provide tools to mitigate negative impacts. Therefore, assuming the consenting process works as intended, the risk of negative impacts on children’s wellbeing should be greatly reduced and, it should be hoped, reduced to negligible levels or eliminated altogether.”

- 4.11 The impact of the HNBP was also framed in terms of climate change by one Public Body respondent. This was related to intergenerational impacts and children’s wellbeing over the long term (that is, the life chances and opportunities of current and future generations of children in society).
- 4.12 Negative impacts on children’s wellbeing mainly surrounded issues of compounding (or minimally failing to alleviate) fuel poverty and access to affordable heat. The relationship between fuel poverty and child poverty was reiterated by multiple respondents (see Question 1). The impact on families with child illnesses and learning differences (autism was cited) in considerable home retrofit activities was also raised by one respondent (Research – joint response). Another Local Authority respondent added that negative impacts from installing new infrastructure could impact children more broadly. No specific examples were given, but it could relate to temporary decanting and more generally disturbance, noise, disruption, and general uncertainty.
- 4.13 Again, affordability of bills and energy rationing (or other forms of rationing such as heat or eat) were linked to poor child outcomes (for example impact on homework study, and negative health impacts). Fuel poverty subsidies and a local authority role in ownership/operation of district heating were both identified (by an Energy Generation, Supply or Distribution respondent) as options that could help mitigate rising fuel costs. One Professional or Representative Body (Other) respondent added that any rent increases resulting from insufficient landlord retrofitting and heat networks funding packages could impact rent poverty and lead to negative impacts on children’s wellbeing.

**Q3: In your view, what should be considered in setting the 2035 heat network supply target?**

- 4.14 Responses to this question often reflected as much on the existing heat network targets for 2027 and 2030 as on the potential 2035 target. Several respondents suggested that progress toward the 2027 target (in 2023) would be a very useful benchmark for determining the 2035 target. As would progress on energy efficiency improvements in the existing buildings stock. Two respondents thought that the existing targets were not ambitious enough. Slightly more respondents either thought the existing targets were challenging enough and should be the focus, or that it was too early to think about a target for 2035. Some highlighted that heat network targets should align with wider heat decarbonisation targets, and with the often more ambitious targets of local authorities. One respondent (Third Sector or Non- Governmental Organisation) thought targets should be set in more communicable metrics such as the number of homes.
- 4.15 Challenges for the 2035 target included that much of the best opportunities for networks will have been taken (low-hanging fruit) and that inevitable technological developments could mean that the available options are quite different in the future. In setting a 2035 target, one respondent (Energy Generation Supply and Distribution, HN Operator) suggested that a low carbon requirement for heat networks could inhibit overall deployment and hybrid solutions could achieve large carbon savings while leaving the door open to the inclusion of other energy sources in the future.
- 4.16 Overall, the most common response for this question was that the planned National Assessment and LHEES roll-out should provide a good basis for determining the 2035 target. The most recent UK-wide National Comprehensive Assessment of heat network opportunities was also highlighted.
- 4.17 Supply chain capacity was highlighted as a factor by several respondents although not as a concern for some. One respondent (Professional or Representative Body (Energy)) suggested, however, that target setting would help to build the industry. Another (Product Manufacturer, Supplier or Installer) suggested that the focus should be on the supply side before ambitious demand targets are set. A better understanding of the potential of waste heat sources was cited as necessary by some respondents. More generally, better access to data was highlighted by some respondents as being particularly necessary for supporting LA action and decision-making.
- 4.18 Finally, two respondents thought it was important to raise that network development commonly takes several years. While two other respondents highlighted the importance of early schemes being deployed efficiently, being cost-effective and avoiding bad publicity.

**Q4: Are there particular approaches or measures that could be taken through our proposals in this plan to reduce the depth and rate of fuel poverty? This could for example consider the approach of the heat network licensing authority or measures through our funding programmes?**

- 4.19 By far the most common response (a majority of respondents) to this question was that energy efficiency improvements to the existing building stock, or a ‘fabric first’ approach, was a critical means of addressing fuel poverty, whilst also helping to address decarbonisation.
- 4.20 Some respondents believed that the deployment of heat networks (alongside energy efficiency improvements) could help address fuel poverty. A slightly greater number expressed a view that it would be challenging for heat networks to reduce costs and address fuel poverty. Related to this, several respondents stated heat provided by heat networks should not be more expensive than the existing system (although this view was often made with respect to low carbon heat more generally). A social tariff for certain priority social groups was suggested by some respondents. Two Local Authority respondents suggested that to lower energy bills policy costs<sup>8</sup> should be taken off electricity bills. One respondent (Energy Generation, Supplier or Distributor) however, pointed out this could increase the price of gas, and thus exacerbate fuel poverty in the short term.
- 4.21 Some respondents argued that the cost of heating, and thus the heat technology, was only one factor causing fuel poverty. The argument made was that there are various other ways to address fuel poverty and the heating technology itself should not be the focus, especially due to low carbon heat potentially having a higher cost.
- “There are, therefore, limits as to the extent to which heat networks, or indeed any other low carbon heating solution, can entirely avoid adversely impacting fuel poverty. In such cases, given the centrality of eliminating harmful emissions from buildings to meeting the Scottish Government’s legally binding emissions reduction targets, fuel poverty will also need to be addressed by policy that reduces the other drivers of fuel poverty.” Public Body respondent
- 4.22 It was also highlighted that rural fuel poverty could be overlooked by a focus on heat networks in heat dense areas / in urban areas.

**Q5: Do you agree or disagree with the order of the three stages identified for setting up the regulatory regime?**

- 4.23 Most respondents to the question (25 of 33 responses) agreed with the three identified stages (building assessment and zoning; licensing, consenting and permitting; and, transfer schemes). One respondent (Energy Generation, Supply or Distribution, HN Operator) used this question as an opportunity to articulate support for a unified regulatory regime covering the whole of the UK.

---

<sup>8</sup> This is not currently within the devolved competency of the Scottish Government.

- 4.24 However, many of these respondents, and those who answered, ‘don’t know’ (15) or did not answer the quantitative element of this question, raised queries and requests for further clarification. For example, queries were raised about:
- the relationship between the stages, including on timing and on the extent stages were being considered collectively (as opposed to independent non-interacting stages). There was some suggestion that to avoid delays the three stages could be staggered to run somewhat concurrently, rather than sequentially. Some respondents specifically identified that work on transfer schemes should not be delayed;
  - some respondents asked for more information on the relationship between licence holders and the zoning process;
  - some respondents asked about how the regulatory regime proposals impacted on existing networks;
  - one Academic Group or Research Centre respondent noted a need for clarity on the interactions between regulatory regime for heat networks, and subsurface regulation and planning for geothermal energy sources;
  - one Public Body respondent reported that they thought all three elements would need to be in place to provide investor confidence.
- 4.25 The range of points raised for additional information generally implies that further development of this area of the consultation would be welcomed and could help in eliciting more detailed feedback from respondents.

**Table 4.4 Q5: Do you agree or disagree with the order of the three stages identified for setting up the regulatory regime?**

Single response question	Count	Percentage
Agree	25	76%
Disagree	2	6%
Don't know	6	18%
Question response rate	33/48	100%

Percentages are rounded and correspond to the question response rate.

- 4.26 Two respondents disagreed with the order of the stages. One of these (Energy Generation, Supply or Distribution respondent) thought it would not be possible to provide the kind of certainty being suggested in the consultation text via the stages approach. The other (Research – Joint Response respondent) pointed to the Danish Heat Supply Act which they perceived provided a more suitable alternative to the stages proposed.

**Q6: In your view what are the key challenges faced when decarbonising existing heat networks (please tackle both improving the efficiency and switching to low and zero emission heat sources)? Please state if your answer relates specifically to one or more heat networks in Scotland.**

- 4.27 A large majority of respondents referred in some way to cost being the key challenge facing the decarbonisation or efficiency improvement of existing networks. Responses related to the upfront costs of conversion, to the resultant operational costs, and to the costs of improving the energy performance of

buildings to accommodate new systems (although many respondents highlighted all three).

- 4.28 Respondents raising upfront costs as a concern highlighted that these could be passed to customers and therefore impact on operational costs. More specific upfront cost concerns included the potential misalignment between investment and return where it takes time for connections to be made to a network. Regularly cited as a means of addressing the potential for high operational costs was energy efficiency improvements in connected buildings. This was again linked to ameliorating fuel poverty in homes connected to heat networks. Energy efficiency improvements were also seen as necessary for the efficient operation of lower temperature heat networks. Very commonly cited challenges were the costs and potential disruption of installing energy efficiency, and potential changes to heat distribution systems (larger radiators).
- 4.29 Another commonly cited economic concern was the potential loss of electricity retail revenue for networks that currently use gas-fired Combined Heat and Power (CHP). Two respondents (both Product, Manufacturer, Supplier or Installers, one HN Operator) suggested that CHP heat should continue, but with the use of a low carbon fuel. This was cited as a means of preserving this revenue stream and helping to cover operational costs.
- 4.30 More technical challenges included that some low carbon heat sources are untested in Scotland for example, replacements to gas-CHP, and that electricity grid upgrades may be required for large heat pumps. There was also some concern about potential energy centre space requirements to accommodate, for example, large heat pumps. Some respondents were concerned there was a lack of clarity as to whether energy from waste (EfW) would be classified as low carbon in the long term. Access to sources of waste heat was also raised, with one (Energy Generation Supply or Distribution, HN Operator) respondent suggesting that waste heat sources should be mandated to connect to networks.
- 4.31 A lack of demand assurance and mandated connections was seen as another potential challenge (also see Q8 and Q9 on demand assurance and mandating). Finally, a lack of maturity in the supply chain and a lack of technical knowledge in the industry were seen by some respondents as barriers. One respondent (Research – Joint Response) suggested there is also a lack of technical awareness in the policy making community (politicians, civil service, and associate public bodies) about how to deliver heat networks.

**Q7: What support is required to help existing networks improve their efficiency and switch to low or zero emission heat generation?**

- 4.32 For efficiency improvements, switching to low or zero carbon heat or becoming 'low carbon heat ready' the most common response was that public funding support would be needed. Many respondents highlighted the role of government funding in creating 'market conditions' conducive to heat network proliferation. More specific funding calls related to upfront investment, included: specific funding for pilot projects (Local Authority, HN Operator; and Professional or Representative Body (Energy)); that the needs of community

networks were greater as they lacked venture capital (Consumer Advice Advocacy and Campaigning); and, that funding for efficiency improvements should precede regulation (Energy Generation Supply or Distribution, HN Operator). There were concerns that changes to zero carbon could impact operational costs. A view expressed here was that there should be targeted funding for the fuel poor customers that may be impacted. Additional clarity was requested by one Local Authority respondent (HN Operator) on the replacement for the non-domestic Renewable Heat Incentive (RHI) in Scotland. The relationship between non-domestic RHI and operational costs was raised further in Q11.

- 4.33 Another very common response to this question was that there should be support that enabled the sharing of best practice. Low carbon network pilot studies or data from the best performing existing heat networks were cited as valuable. There was a general belief that knowledge sharing should occur, including views that a formalised knowledge sharing framework should exist, and that knowledge sharing should be a component of heat network decarbonisation plans (this was raised further in Q10).
- 4.34 Various aspects of technical support were suggested as being required. This included engineering support involved with low carbon systems (two Local Authority respondents), improving the efficiency of existing systems, as well as expertise to feed into overall energy system master-planning (Public Body respondent). Two Local Authority respondents (both HN Operators) also highlighted that support was needed for complex investment decision making and the operation of Energy Service Companies. Two respondents (Research – Joint Response and Energy Generation Supply or Distribution, HN Operator) highlighted that existing heat networks in Scotland are of varying quality. A nationwide review was suggested as one way to identify the ‘best’ and ‘worst’ performing systems. One respondent (Energy Generation Supply and Distribution, HN Operator) thought that a new policy regime could allow poor performing networks to be sold to firms that were prepared to invest and improve them. Another thought that some of the poor performing networks may have to be abandoned (Research – Joint Response respondent).
- 4.35 The non-domestic rates relief was welcomed by some respondents with some suggesting the policy should be extended into the 2030s or indefinitely. Other policy suggestions included the mandatory connection of large anchor load properties, as well as obliging waste heat sources to provide heat if a local heat network is available. Two respondents (Professional or Representative Body and Energy Generation Supply and Distribution, HN Operator) cited the Heat Network Efficiency Scheme (HNES) in England and Wales as an example of the kind of policy needed in this area. Regulating minimum operational standards was cited a couple of times as being a good potential driver of more efficient systems.
- 4.36 Government support for building retrofit was another common response. It was cited as a means of keeping bills down and allowing more efficient networks to operate. One respondent (Professional or Representative Body (Energy)) argued that the costs of retrofit support should not be the responsibility of the network operator.



**Q8: What are your views on the Building Hierarchy proposed and its use to prioritise delivery on the ground and use in developing heat networks policy and regulation? (Please also include if you have any evidence relating to the inclusion of multi-owner/multi-tenancy buildings and historic buildings.)**

4.37 Respondents were generally supportive of the four priority groups of buildings identified in the Building Hierarchy. There was support for the use of thresholds, with preference given for a measure of heat demand, opposed to a threshold measure of size based on floor space. One Local Authority respondent suggested thresholds should be locally informed or assessed, whilst another (Energy Generation, Supply or Distribution) respondent suggested gas meter data would serve as a suitable proxy measure for setting thresholds based on heat demand (as existing data, this was presented as a strong rationale for this suggestion). There was also support for the public sector leadership within the Building Hierarchy. However, some noted that many public buildings have already been targeted with improving energy performance and energy upgrading. Related comments here suggested that commercial buildings need targeting.

4.38 Several additional points, modifications and alternatives to the Building Hierarchy were provided:

- Priority buildings: One respondent thought that the *Heat in Buildings Strategy* targets for 1 million homes to be improved by 2030 suggested residential properties needed to shift up in priority.
- Anchor loads: There were calls for inclusion of high heat demand residential, such as high-rise blocks and sheltered housing to be included in the Building Hierarchy given their significance to existing heat network development. Further to this was a suggestion for consideration of non-building heat demand in the Hierarchy. Urban agricultural heat demand was given as a potential anchor load example.
- Fuel poverty: It was noted that fuel poverty was absent from the Building Hierarchy. One Individual LA Officer suggested a prioritisation matrix (opposed to single hierarchy) to include fuel poverty.
- An open question was raised by one respondent about whether the concept of Heat Network Zones and the Building Hierarchy were compatible. Another noted a potential incompatibility between heat density (within zoning) and size of anchor loads (within the Building Hierarchy).
- Local flexibility: One Local Authority respondent questioned how flexibly the Building Hierarchy would be applied in practice. They argued that a single Scotland-wide approach would reduce the valuable input of local knowledge. Another respondent added that local assessment would be valuable in defining heat demand thresholds within the Building Hierarchy.
- Starting points: An alternative perspective to the consultation proposal drew from the development of heat networks in Denmark. This respondent (Research – Joint Response) suggested the Danish approach was to start with sources of heat rather than heat demand. By taking sources of heat to sites of demand, the respondent argued this changes the underlying concept on how to

devise a heat network zone. In their view the network would grow organically from sources of heat to sites of demand (which they interpreted as opposite to the current proposals).

- 4.39 Respondents (mostly Local Authority) also identified issues in implementing the Building Hierarchy. This included for example, a question about how to connect buildings identified within the Hierarchy that already have an existing long-term supply contract in place and/or are operated under PFI contracts. Another issue identified was how factors such as planned future public building demolition/re-build programmes would be incorporated into implementation of the Hierarchy. One Local Authority respondent noted their schools' estate is due to undergo major re-build and it would be inappropriate to require those buildings planned for demolition, to connect as per the Hierarchy, until they are re-built.
- 4.40 Multi-owner/multi-tenancy buildings: support was given to prioritise residential multi-occupancy buildings, but also multi-occupancy commercial buildings. There was not however, support for mandatory connection for privately owned homes in multi-occupancy buildings. Incentives for connecting to heat networks was seen as valuable. It was also suggested that incentives for alternative heat decarbonisation technologies should not be available to residential properties within a heat network zone. It was highlighted that securing success with residential connections would generally help to build confidence with heat network systems. The Scottish Parliamentary Working Group on Tenement Maintenance was referenced as a relevant group to engage on residential multi-occupancy buildings.
- 4.41 Historic buildings: there was support for inclusion of historic buildings. One respondent cited the Historic Environment Policy for Scotland (HEPS).<sup>9</sup>

**Q9: What in your view is the right approach to ensuring there is sufficient demand assurance?**

- 4.42 Some respondents expressed the view that mandatory approaches can be interpreted as a problem in a democratic society and that striking the balance between 'carrots and sticks' (incentives and obligations) was critical. Financial incentives were suggested as one way to mitigating potential negative impacts from mandating and obligating connections to secure demand assurance. One respondent suggested a financial incentive could be delivered via a guarantee that energy bills would be a set percentage below the alternative. Clear planning policy was also cited as crucial, as was strong engagement with relevant interested parties including developers, building owners, Registered Social Landlords (RSLs), and local people.

---

<sup>9</sup> This respondent cited HEPS4 as: 'Changes to specific assets and their context should be managed in a way that protects the historic environment. Opportunities for enhancement should be identified where appropriate. If detrimental impact on the historic environment is unavoidable, it should be minimised. Steps should be taken to demonstrate that alternatives have been explored, and mitigation measures should be put in place.'

- 4.43 There was support for mandatory connections from large and publicly owned buildings to provide demand assurance for heat network development. There were more mixed views on mandatory connections for the residential sector. Some support was evidenced for larger residential buildings/groups of buildings (sheltered housing was used as an example) with existing communal heating or undergoing renovation to be required to connect. There was not however, strong support for mandating private homeowners to connect (as noted in Q8). There was also a call to ensure that any exemptions had a built-in requirement to revisit the case for exemption.
- 4.44 Respondents identified some perceived multiple benefits of mandating connections and providing demand assurance. It was noted from multiple respondents that demand assurance de-risks network investment, and hence supports the creation of a viable heat network business case. One respondent thought that mandating connections from large and publicly owned buildings made it easier for smaller buildings to connect. Another Professional or Representative Body (Other) respondent made a particular point about providing heat from EfW. They suggested that a guaranteed minimum level heat demand would support the case for investing in heat from EfW.

**Q10: What role should the Heat Network Pre-Capital Support Unit play in supporting project development?**

- 4.45 Overall respondents were in high agreement on the need for a Support Unit. Funding, expertise, and advice needs were identified (by a range of respondents). These broadly map onto the pre-capital phases of project development (feasibility studies, options appraisals, business case, financial, technical, legal, project management and procurement), and the associated skills and expertise that are required to support those stages. These skills and expertise were identified as currently underdeveloped, as was funding to support project development. One Professional or Representative Body (Other) respondent gave survey evidence in support of this.<sup>10</sup> Another respondent (Third Sector, HN Operator) focused on community owned schemes, arguing that project development finance and support had been essential for community owned schemes. The Scottish Government's Community and Renewable Energy Scheme (CARES) and other financial incentives were cited as critical to existing schemes.<sup>11</sup>
- 4.46 Responses were supportive of creating enhanced support to that already available, notably:
- clear visibility and market updates on the project pipeline spanning new networks, existing network expansion and/or decarbonisation, as well as collecting data to feed into the proposed Heat Network Investment

---

<sup>10</sup> This respondent noted that: "Our previous survey of members, which focused on the challenges of delivering EESSH2, found that almost three-quarters of respondents felt they would need external support to deliver the required improvements. The most common type of support needed was 'funding application support'..."

<sup>11</sup> SFT publications were noted as a useful resource on further evidence for this (specific publications were not cited).

Prospectus, and for monitoring investment in and performance of heat networks in Scotland;

- specialist advice and technical services across multiple areas: funding application support; procurement; regulation; the implications of becoming a heat supplier; different government policy areas relating to heat networks; network expansion, renewal and decarbonisation for existing networks; energy masterplanning;
- supporting collaboration on projects among different groups, including: public sector organisations, local people/communities, industry and industrial processing, including waste heat potential;
- strong engagement with the private sector across multiple dimensions (project sponsor, heat provider, user/customer etc.);
- matchmaking services with potential project partners (as project sponsor, heat provider, funder, user/customer etc.) with industry, finance, potential project partners such as neighbouring buildings/local authorities/heat providers;
- knowledge dissemination<sup>12</sup> across a range of dimensions, including: specialist guides; best practice; exemplar case studies; evaluations of previous retrofits; standard project documentation; and international expertise.<sup>13</sup>

4.47 There were calls for delivering these dimensions of pre-capital support as a 'joined-up support' via a centralised or single point of entry service. One respondent (Public Body) added that the Unit needed mandated activities to give their role legitimacy. Comments suggested that a joined up pre-capital support service encompassing the above would be valuable for a number of reasons. These included: demonstrating commercial / private sector opportunities with (built-in/backed) government support, increasing the pace of sector growth (including new engagement from potential project sponsors),<sup>14</sup> maximising the use of available funding opportunities, facilitating shared learning, avoiding duplication, building credibility in the market, improving the overall quality of schemes (including local authority 'no regrets' decisions) and support scaling up of projects. Overall these dimensions were suggested as improving the success rate of projects and helping to de-risk investment.

4.48 Two respondents raised points about the value of a 'whole systems' approach to project development and support services. One Public Body - University estates respondent (HN Operator) suggested that because of the scale of investment required, a whole systems approach that integrates climate

---

<sup>12</sup> One respondent (Representative body (Other)) cited that the Retrofit Scotland website ([Architecture and Design Scotland - Retrofit Scotland](#)) as a useful example, but suggested it is no longer actively managed.

<sup>13</sup> Denmark was referenced by multiple respondents.

<sup>14</sup> This point made by this respondent (Third Sector) was specifically referencing local authority sponsors and suggesting that not all local authorities currently pursue heat network opportunities to the same degree.

adaptation and electrification of transport in development is critical. The other respondent, a Community Council, Trust or Group, added that a whole systems approach promotes developing 'optimal solutions'. They perceived this counterbalanced focus on a specific technology solution simply because of the availability of development support.

- 4.49 Other specific comments from Local Authority respondents included the need for advice on the relationship to LHEES, and on technical support for installing and operating systems.

**Q11: What types of capital support would help to support the development of low and zero carbon heat networks and attract private sector finance? Please explain your views and provide evidence if possible.**

- 4.50 Respondents identified that multiple types of capital support would be valuable. This included grants, interest free or low interest loans, soft loans, unsecured loans, guarantees, and equity, as appropriate to projects. Government underwriting to de-risk investment was seen as valuable to individual projects. Government participation was also identified as a route to attract long-term investors (examples given were pension funds and institutional investors divesting from fossil fuels).
- 4.51 It was suggested by a Public Body respondent that a 'toolbox' approach that brought together multiple types of finance would be an effective model. Additional respondent comments here supported the need for tailoring to the project rather than a single blanket approach.
- 4.52 Points were made about the value of open funding rounds, particularly (but not exclusively) from Local Authority respondents.<sup>15</sup> Here emphasis was made in relation to understanding the difficulty of matching project development timelines to fixed funding deadlines, as well as organisational capacity to respond to fixed rounds/calls. Successor LCITP (Low Carbon Infrastructure Transition Programme) funding was welcomed,<sup>16</sup> and respondents emphasised the value of learning from existing phases.
- 4.53 Several different target projects were suggested as suitable to receive capital support. One respondent (Energy Generation, Supply or Distribution, HN Operator) suggested that securing the first connections to projects should be supported because this enables networks to grow. Drawing on a perspective about a long-term view on subsidy reduction, this respondent suggested capital support was key to market growth. Another suggested those economically viable projects which deliver socio-economic benefits (measured as carbon reduction and heat cost to customers) should be prioritised. This respondent gave evidence about a Danish competitive funding programme which uses

<sup>15</sup> For example, funding was cited as “the greatest challenge” by one Professional or Representative Body (Other) covering housing providers. Providing evidence from a survey of their member organisations, this respondent noted that “almost 80% of respondents to our recent survey on EESSH2 found sourcing funding and the capital investment for measures either ‘very challenging’ or ‘extremely challenging’”.

<sup>16</sup> Note that this consultation closed prior to the announcement of new funding for heat networks (that is successor LCITP funding): [£300m boost for climate friendly heating - gov.scot](#) ([www.gov.scot](http://www.gov.scot)).

these metrics to award low-cost financing to projects. Other respondents suggested projects with expansion potential should be prioritised. One Local Authority respondent suggested heat demand, BAR eligibility criteria, and permitting as relevant to consider here. Other comments supported funding for decarbonising existing networks.

- 4.54 Some respondents also highlighted that support for specific capital project costs would be beneficial. Network infrastructure costs were cited as a specific point here. One respondent (Professional or Representative Body (Other)) elaborated with respect to EfW and other heat supplier sites. This respondent suggested there would be a case for investment at facilities in heat offtake but not in the network infrastructure. The Midlothian EfW scheme was cited as an example of this. Other comments were in support of capital support for network connections,<sup>17</sup> as well as upgrades required to connect buildings or properties, particularly where they enabled lower temperature heat networks. One respondent (Energy Generation, Supply or Distribution, HN Operator) made the case for funding the difference in capital costs between gas-fired CHP with gas boiler back-up systems, and hydrogen ready CHP with heat pump back-up systems. Other comments were in support of funding existing, mature technologies, thermal storage costs, and geothermal heat and thermal storage borehole drilling costs.
- 4.55 In response to capital support, respondents identified that enhanced capital support would reduce uncertainties, signal long-term committed government policy and trajectory to the sector and de-risk private sector investment.
- 4.56 Some respondents also commented that non-domestic Renewable Heat Incentive (RHI) closure (a reserved policy decision) increased the need for grant funding. Respondents explained this was because RHI payments have been a significant source of income for making capital costs repayments.
- 4.57 Some respondents also thought that the counterfactuals used for alternative heating solutions could have a negative impact on heat networks (this was mostly raised with reference to gas). It was suggested that under some calculation methods this results in the cost of heat delivered by heat networks being higher than other carbon-based alternatives.<sup>18</sup>

**Q12: What are your views on the proposal to gather data and wider information about heat networks in Scotland? Please also state if you think there is anything missing from the proposed list for data collection.**

- 4.58 Responses provided feedback on the suitability of the proposals and on additional data sources. There was general support for data collection and use. Views expressed that data collection should feed into building the Scottish heat networks market (improving the Scotland Heat Map was also welcomed), as well as made available for use in (public sector) climate change strategies and

---

<sup>17</sup> One respondent (Public Body) suggested this should include interest free loans to property owners. They suggested this would equalize support already available for standalone systems. They proposed Home Energy Scotland and Energy Efficiency Business Support Service act as fund managers.

<sup>18</sup> The authors acknowledge that comparisons might not include costs such as servicing, repairs and replacement of gas boilers.

reporting requirements (including progress against targets). One respondent (Public Body - University Estates, HN Operator) also suggested data should be available to local communities (discussed further in Q18).

- 4.59 It was highlighted by two respondents (Energy Generation, Supply or Distribution, HN Operator; Local Authority, HN Operator), that data could be used to identify opportunities for integrating networks. Economies of scale, improving viability of new networks, network resilience were all cited as potential benefits from this. One of these respondents (Local Authority, HN Operator) expressed a view that it could become helpful in future to consider operating heat networks in a similar way to electricity grids (generators, transmitters, distributors and operators).
- 4.60 Notable issues that were raised related to specific points of data collection, but also to the overall concept of a data collection process itself. It was highlighted by one respondent (Professional or Representative Body (Energy)) that data in the sector is poor, relative to other utilities. One respondent (Public Body, HN Operator) expressed a view that improving data standards and data availability would require significant support. Two respondents (Local Authority, HN Operator; Public Body, HN Operator) added that financial and resourcing support (including training for local data providers and users) would be needed to support new and improved data collection processes.
- 4.61 A general view expressed in many responses focused on appropriate and proportionate data collection. In particular, the burden of data collection was raised by multiple types of respondent. Views were that data collection requirements needed to be cognisant of the eventual impact that additional burdens on operators would likely have on end users/customers. It was argued that the goal should be to avoid creating increased costs to customers.
- 4.62 One respondent (Professional or Representative Body (Other)) suggested that the largest heat networks should be the first group required to provide data. However, another respondent (Public Body) expressed the view that collecting data from all networks was essential to understanding the development of heat networks across Scotland. Integration into existing data collection practices was identified as a route to reducing the burden on operators by one respondent (Public Body, HN Operator). Automated data collection processes were also suggested as valuable (Public Body respondent). Another respondent (Third Sector, HN Operator) added that automation would specifically reduce the impact on smaller not-for-profit schemes.
- 4.63 It was suggested from multiple respondents (Energy Generation, Supply or Distribution; Third Sector, HN Operator; Local Authority, HN Operator) that learning from other countries with a more developed heat networks market would be effective and beneficial to data gathering proposals. Denmark was the specific example given in all instances.
- 4.64 Support for better use of EfW data (Professional or Representative Body (Other); Energy Generation, Supply or Distribution) was noted, with reference made to a new Heat Prospectus being published by the Environmental Services Association (ESA). This will contain new publicly available data

available on the ESA website.<sup>19</sup> It was suggested however, that further regulatory reporting from EfW plants would conflict with commercial sensitivity.

- 4.65 The 2-year review timeframe for reporting on progress against targets was interpreted as too short to have a meaningful impact between review cycles by one respondent (Third Sector, HN Operator), but conversely it was supported by another respondent (Public Body). This respondent suggested the review timeframe represented 'a reasonable balance between data gathering, review and reporting' given the 2021 Act s.92 supply targets for 2027 and 2030.
- 4.66 Respondents identified data missing from the proposed list which fell into the following four categories:
- Project data, including capital investment and cost of capital; the carbon intensity of heat (£/Kg CO<sub>2</sub>), operation and maintenance data including heat losses, efficiencies, back-up operation time and fuel costs, cooling supply, standardised costs and benchmarking data to assist project development, plot connection charges, and information about contractual arrangements where networks serve third parties.
  - End user/customer data, including pricing structures (fixed charges, unit rates, tariffs),<sup>20</sup> customer debt, fuel poverty rates, thermal comfort, and user satisfaction. One respondent also suggested that collecting data on the tenure of buildings connected would help understand more about private homeowner connections.
  - Energy data, including heat demand data at building level and energy demand and supply data. It was specifically noted that the Scotland Heat Map would be improved with data from non-domestic building owners.
  - Other data, including information on land ownership to inform planning of network routes, and number of jobs, apprenticeships and equality, diversity and inclusion statistics.

**Q13: What are your views on other owners (or persons with interest) of non-domestic buildings - beyond Scottish public bodies - being required to produce a building assessment report for their buildings?**

- 4.67 Overall there was an extremely high level of support in responses to this question for the proposal that non-public non-domestic buildings produce a building assessment report (BAR).
- 4.68 Some respondents expressed views either on whether all non-public non-domestic should be included, or whether all non-public buildings should be

---

<sup>19</sup> Environmental Services Association. A net-zero greenhouse gas emissions strategy for the UK recycling and waste sector: Executive Summary. Available here: [ESA Net Zero Exec Summary](#). The full report and technical appendices which the respondent identified included proposals for decarbonising the EfW sector is available here: [ESA Net Zero Full Report](#).

<sup>20</sup> Some respondents specifically noted that tariffs should be in the public domain by mandatory requirement. One suggested that a mandatory requirement on all operators would also remove objections made on commercial sensitivity grounds. Multiple respondents cited the Danish Energy Agency's publishing of tariff data as an example of good governance on transparency.



included. There was a point made by one respondent (Professional or Representative Body (Other)) on the value of including large residential buildings where there is existing communal heating and/or the building is undergoing refurbishment (as with responses to Q8, these buildings were noted as significant potential anchor loads). With respect to non-public non-domestic buildings, one respondent (Local Authority, HN Operator) made the point that there are already significant gaps between public and non-public data that currently informs heat network development. It was argued as essential to avoid any further data gaps between these two groups. Therefore, it was proposed to include all non-public non-domestic buildings. The value of comprehensive data across public and non-public buildings was reinforced by multiple other respondents (Local Authority respondents in this group also made specific links to LHEES).

- 4.69 Regarding data, one respondent (Research - Joint Response), suggested using half-hourly metered energy data in BARs. This was suggested as one of the most useful 'real' (as opposed to modelled) data sources that could support heat network deployment. Three respondents (Local Authority, HN Operator; Consumer Advice; and, Professional or Representative Body (Energy)) suggested expanding or modifying Energy Performance Certificates (EPCs) to avoid additional burden in the requirement to produce new reports. The suggestion for integrating into LHEES assessments was also made by one Consumer Advice respondent.
- 4.70 It was proposed that BARs would provide multiple benefits. These included: identifying suitable buildings to connect to existing or future heat networks, and thus supporting demand assurance (discussed in response to Q9); identifying those buildings unsuitable to connect; providing better information about energy efficiency improvements required to make buildings ready to connect; supporting the LHEES zoning process; and facilitating change within the non-public, non-domestic sector. However, respondents expressed a need for elaboration on BARs and their criteria. More information was also requested on who would have access to the data. This point was made in terms of understanding more about how the reports are intended to inform heat network zoning and heat network developments.
- 4.71 The theme of mandating action was again raised in responses to this question and views here were mixed. One respondent (Individual LA Officer) suggested producing the reports would need to be a legislative requirement placed on building owners. However, another respondent (Professional or Representative Body (Other)) expressed concern about requiring smaller buildings to participate in producing reports. The role of exemptions to participate was raised more generally by one respondent (Public Body). There were also differing opinions about the outcome of BARs. One respondent (Local Authority, HN Operator) said the reports should not require a building to connect to a heat network. Conversely another respondent (Energy Generation, Supply or Distribution, HN Operator), suggested reports should require buildings to connect, with the provision of a suitable connection period and clear exemption criteria being in place. Another respondent (Third Sector) instead suggested it should be a local authority decision about whether to require BARs to be conducted. This respondent also suggested that heat

network developers be canvassed to establish more about whether the BARs would support project development. To increase support for BARs, one respondent (Energy Generation, Supply or Distribution, HN Operator) proposed linking the reports to business rates, as they thought this would help to increase business support for decarbonisation.

**Q14: What are your views on whether there should be prioritisation of building assessment reports based on certain building attributes in order to expedite data on potential anchor loads?**

4.72 There were mixed views on prioritising BARs based on building attributes. Those in favour of using building attributes made comments including the following:

- Several respondents provided support for using building by size, use and type as criteria for focusing attention. The basis given was that these provided good indicators of energy use and hence potential anchor loads. One commented that priority buildings could be selected on the basis of “high, consistent heat demand and/or in close proximity to a low carbon heat source” (Professional or Representative Body (Other) respondent). Some respondents added that smaller buildings or those with low heat use could initially be exempt;
- The age of the existing boiler plant was suggested as a relevant building attribute, because it informs which owners/occupiers are most likely to invest in new infrastructure in the short, medium and long term (Public Body respondent);
- Prioritising buildings with heat storage options was also suggested;
- A case was also made about the importance of local knowledge in building prioritisation. It was suggested that when a zone has been identified, local knowledge can help to identify which buildings should be prioritised for completing BARs (Local Authority, HN Operator respondent);
- a more general comment suggested that prioritisation would provide an opportunity for learning within a phased approach (Public Body respondent).

4.73 Respondents who were against using building attributes, or raised caution with the suggestion, made comments including the following:

- An expanded focus on non-domestic buildings (as per proposals relevant to Q13) was perceived to be sufficient, and a focus on certain building attributes was therefore unnecessary (Professional or Representative Body (Energy) respondent);
- The possibility that some suitable buildings could unintentionally be missed out through a focus on building attributes was raised (Third Sector respondent). Another added that focus on building attributes might discount building owners wanting to connect to a heat network (Local Authority, HN Operator). Given the lack of data for non-domestic commercial buildings, it was also suggested that further attributes which could exclude this group would be undesirable (Local Authority respondent);
- That using further building attributes could in fact slow down the process (Energy Generation, Supply or Distribution, HN Operator);

- That consideration of all buildings was needed for heat network zoning and therefore further attributes were inappropriate (Local Authority, HN Operator);
- Heat network sizing was identified as sensitive to ultimate loads rather than anchor loads per se. An overfocus on anchor loads could therefore lead to under sizing (Energy Generation, Supply or Distribution respondent).

**Q15: How can we ensure proportionality in a licensing system, in particular in the application and determination processes, licence conditions and fees? Please be as specific as possible.**

- 4.74 Respondents to this question were overwhelmingly supportive of common technical standards and universal consumer protection irrespective of scheme size or ownership. One respondent (Public Body) emphasized the fundamentals of good regulation and cited National Audit Office regulation as a source of further evidence and information.<sup>21</sup>
- 4.75 The importance of ensuring proportionality was a key point raised in many responses. Some comments focused on the customer base, suggesting that the burden imposed by the licensing regime should account for the number of customers. Distinctions were drawn between single-customer and self-supply networks, who were thought to require less licensing, and networks serving multiple residential and/or commercial customers. Here, suggestions focused on linking licensing fees to the number of customers or proportionate to number of schemes. On this latter point, Ofgem's levy process was cited here as a relevant example. Another suggestion was to use a combination of the size of heat network, market share, and size of customer base (overall, not connected to any one individual scheme) to determine how to apply licensing. One respondent (Community Council, Trust or Group, HN Operator) however, was keen to point out that licensing exemptions should be avoided if customer protection were reduced as a result.
- 4.76 Heat network ownership and operation was also raised as relevant to consider by some respondents (Third Sector, HN Operator; Energy Generation, Supply or Distribution). Here it was suggested that community ownership structures and not-for-profit networks should be exempt from paying licensing fees (irrespective of customer size). However, one respondent (Energy Generation, Supply or Distribution) challenged the notion of licensing fees entirely, suggesting it would act to disincentivise heat network developers, and potentially create additional costs for customers.
- 4.77 It was also suggested by one respondent (Local Authority, HN Operator) that only larger organisations were likely to have the resources required to secure licenses, even though smaller organisations might be better placed to run local schemes. At present it was unclear how the licensing regime would address this.
- 4.78 Further comments were made by one respondent (Public Body - University estates, HN operator) concerning the requirement for license holders to capture waste heat where it is possible. Another respondent (Local Authority, HN

---

<sup>21</sup> National Audit Office. [Principles of effective regulation: Good practice guidance](#).

Operator) suggested a need to further consider how licensing could contribute to ensuring the possibility of future interconnection of networks.

- 4.79 With reference to awarding licenses, it was suggested by one respondent (Energy Generation, Supply or Distribution, HN Operator) that the application process should capture information on the relevant experience of the applicant, and the operational efficiency and safety of the network. There were also calls by another respondent (Energy Generation, Supply or Distribution, HN Operator) for the process to include an independent route of appeal, and more information about ‘any enforcement action likely to be taken should operators fail to secure a license within the timeframes prescribed by law’.
- 4.80 Several respondents raised queries around how licensing would impact on existing operators. This included calls for clear ‘transitional arrangements’ for existing heat network operators to comply, with support and a feasible timescale required. One respondent (Energy Generation, Supply or Distribution, HN Operator) raised points with respect to “the potential economic impacts of refusing a license to existing operators ([meaning] the risk of stranded assets and the attendant risk to jobs”. They also suggested there should be a compensation scheme for existing operators refused a license. Two respondents made explicit points about the need to engage with existing heat network operators to understand more about how to introduce a licensing regime.
- 4.81 Note however, some respondents highlighted that they needed further details on the proposals to provide detailed responses. This implies that eliciting more detailed responses could be supported via further development of this area of the consultation.

**Q16: Which heat network projects should be exempt from the requirement to hold heat network consent? Please provide evidence alongside your answer.**

- 4.82 Various projects were identified as potentially suited for an exemption from heat network consenting. The exemption proposal with widest reach came from an Energy Generation, Supply or Distribution (HN Operator) respondent, who suggested that all existing networks where planning permission had already been awarded should be given ‘deemed consent’. This was justified on the basis these networks had already gone through a system of approval.
- 4.83 Most attention was given to single customer and ‘self-supply’ networks. This was provided by a number of different Local Authority, Third Sector and Public Body respondents. Examples suitable for exemption in this group included university campuses, hospitals, and communal heating in a single building/unit (the example of sheltered housing was given). A number of these respondents identified that a consenting process should, however, be triggered if/when these types of networks extended beyond their organisational boundary or self-supply arrangement.
- 4.84 Small networks were also identified by respondents from multiple categories as candidates for exemption. One respondent (Energy Generation, Supply or Distribution, HN Operator) specified this should apply to small privately funded

networks. Another respondent (Local Authority, HN Operator) elaborated that they thought small existing networks might struggle with potential upgrading costs required to meet consenting requirements and should be exempt. Another respondent (Professional or Representative Body (Energy)) added that they did not believe that retrospectively consenting small networks was a good use of resources.

- 4.85 One respondent (Local Authority, HN Operator) added that networks in social housing that were LA- or social housing provider-led would be suitable for exemption. Another Local Authority (HN Operator) respondent proposed that communal heating projects should be exempt, but suggested guidance be provided on how these schemes could align with the consenting regime.
- 4.86 Two respondents (Third Sector and Local Authority, both HN Operators) suggested community owned and not-for-profit networks were also suitable for exemption.
- 4.87 However, several respondents put forward the case that no heat network project should be fully exempt. There was some support for reduced consent (which is addressed in Q17), but more generally the points being made related to supporting policy objectives, especially around heat decarbonisation, supporting interconnection and expansion, and monitoring the sector. One Public Body respondent suggested that Sections 44 and 45 of the 2021 Act at least partially mitigated the potential burden of consenting. Another Third Sector (HN Operator) respondent put forward the view that supply to customer(s) was a strong enough rationale for consent to apply to some degree in all instances. Another Consumer Advice respondent highlighted the importance of learning from the failure of gas and electricity suppliers. They provided the following evidence in support of their view:

“A recent report from Citizens Advice found that Ofgem’s failure to ensure new market entrants were financially secure and able to offer good consumer service has caused 28 supplier failures this year, costing consumers £2.6 billion. Heat networks that qualify for a less onerous consent process should still be subject to checks that ensure they are resilient, financially sound, and are able to offer good customer services.”

**Q17: Are there particular types of heat network for which only limited information should be required in the consent application? If so, please set out your views on what types of heat network and why?**

- 4.88 In general, there was support for some form of tiered consenting regime, with many respondents suggesting a reduced consenting process for some heat networks. There was recognition that principles of good regulatory practice should be in place to support individual heat network projects and the wider heat networks market. Across many responses it was identified that requirements should be proportionate and commensurate.
- 4.89 Some respondents identified a distinction between existing network, network extensions and new networks and the level of information required in the

consent application. For existing networks, views included that performance information could be provided and the application should therefore be lighter touch.

- 4.90 Beyond these distinctions, many respondents cited their responses to Q16, making reference to the types of networks they had identified for exemption in response. (That is, single customer and 'self-supply' networks, smaller networks, communal heating networks, local authority or social housing provider-led networks, community owned networks, and not-for-profit networks).
- 4.91 A couple of respondents highlighted other types of networks where fewer requirements in the application could be appropriate. This included zero carbon heat networks (though it was noted that a 'fair' process was required for existing carbon based systems), and new developments where the planning process was already requiring renewable and low carbon systems.
- 4.92 Some respondents requested further detailed information about the consenting process. This included two specific requests about how the consenting process would interact with planning requirements and processes.

**Q18: The Heat Networks (Scotland) Act 2021 makes provision for community engagement and we intend to publish guidance in relation to this. What, in your view, would constitute effective and meaningful community engagement?**

- 4.93 In responses to this question, the variety of views portrayed typically went beyond concepts of 'community engagement', to include education, public awareness, and customer information.
- 4.94 Concerning education, energy and climate literacy was brought up as key to helping people understand the benefits of heat networks and heat decarbonisation more broadly. Some respondents thought that the public were familiar with heat networks. Both formal education and educational campaigns were noted as valuable to increasing knowledge and awareness. Additionally, there was suggestion from some respondents that national media campaigns would be valuable, and that 'myth busting' public campaigns could help remove barriers to uptake of low carbon heating. A specific point was raised with reference to improving awareness about EfW.
- 4.95 Trusted intermediaries were identified as critical to local, public and community engagements. At local scale, local authorities were identified as trusted intermediaries.<sup>22</sup> Furthermore, building on local authority knowledge and contacts was referenced as important to local engagement. In addition, grassroots bodies were suggested as a key group to engage.<sup>23</sup> Here the example of churches was given by one respondent, with suggestion that these

---

<sup>22</sup> Statutory guidance and adequate resourcing were both thought to be necessary for productive engagement. One respondent also noted the Keep Scotland Beautiful Carbon Literacy training as a helpful resource for frontline staff.

<sup>23</sup> Scandinavia and Germany were cited as examples of established grassroots engagement and activism, but no further detail was provided.

and other grassroots organisations have a strong appetite to contribute to net zero goals targets that could, and should, be harnessed.

- 4.96 For potential new customers of heat networks, providing clear key information was identified as particularly significant. This included key statistics and information relating to the heat network in question. Several respondents noted that communicating clear and accurate information was an essential part of necessary pre-connection/sign-up engagement processes.
- 4.97 One respondent asked about links with Scottish Government's Local Energy Policy Statement, where 'People & Places' is identified as priority; another respondent noted links to LHEES and locally led place-based engagement.
- 4.98 It was also suggested by two respondents that engagement should include seeking demographically representative feedback from local people. Another respondent identified social housing providers and their residents as key groups to engage.<sup>24</sup>
- 4.99 Effective models of community engagement were routinely described in terms of 'co-creation' and early engagement, rather than after the fact 'dissemination'.<sup>25</sup> This included explaining the benefits of heat networks and changes in the local area to provide district heating. Several models for different forms and types of community engagement were provided in responses:
- Several respondents thought it was valuable to pursue community ownership, shared ownership models, and financial benefit from heat networks (a comparison with onshore wind was made);
  - Some respondents identified formal planning processes as a potential model to adopt, including the statutory consultation process for major planning applications. Minimum engagement periods were suggested by one respondent as nine weeks for gathering community feedback, with local authorities distributing information through community council networks and local tradespeople, as well as holding public meetings.
  - Citizen Jury and Citizen Assembly models were also identified by one respondent. An example given was a Social Housing Tenants' Climate Jury in the North of England which brought together a group of tenants to discuss how to locally tackle climate change;
  - Support services provided through CARES were cited as helpful resources for community led projects and activity by two respondents;

---

<sup>24</sup> A recommended source of case study evidence of engagement in the social housing sector was: [Scottish Federation of Housing Associations releases new fuel poverty briefing](#). Organisations such as Changeworks and Warmworks were also cited as experienced in supporting community engagement.

<sup>25</sup> Sources of evidence recommended were: Citizens Advice Scotland. 2020. [Engaging Hearts and Minds: A study into conducting successful engagement to deliver positive outcomes for communities and organisations](#); Scottish Government. 2019; [Scottish Government Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments](#). Edinburgh; Scottish Futures Trust. 2021. [Public Engagement in Infrastructure](#). Edinburgh.

- The Local Energy Plan toolkit developed by Energy Saving Trust was cited by one respondent as relevant for developing guidance on community engagement<sup>26</sup>;
- A Climate Solutions Audit was suggested by one respondent as a model for community engagement on a 'whole local systems' basis for all communities in Scotland. Community Council boundary levels were considered an appropriate level to develop such an initiative. Community and shared ownership models of local initiatives were considered one outcome where appropriate and desired. It was suggested such a 'bottom up' approach would build out from Local Energy Scotland, CARES and Keep Scotland Beautiful initiatives to identify heat, power, transport, active travel and climate resilience opportunities with a high level of community buy-in and commitment. This respondent perceived that just transition principles were likely to be secured via a model such as this.

**Q19: What key factors should determine the duration of the heat network zone permit?**

- 4.100 Whilst some respondents quantified the potential range of time that a permit should last, it was more common for responses to consider the factors that they thought should affect this decision.
- 4.101 Possible permit durations reported ranged from 20-50 years, with a roughly even distribution between those times. Overall, almost all respondents overlapped to some degree with the suggested 25-40 years. A few respondents argued that there should be a periodic review of performance after the allocation of a permit. Two respondents (Individual LA Officer and Community Council Trust or Group) suggested this should be every 5 years and in line with possible LHEES review cycles.
- 4.102 Respondents provided a wide variety of factors to consider when determining permit duration. There was little consistency between respondents, but overall comments related to the heat sources and technologies used; the type of permit holder; and finance. Comments on network technology included whether the network permitted is low carbon, the type of technologies being used (a point here discussed permit holders' adoption of lower temperature 4th or 5th generation networks), and the availability of waste heat. Two respondents suggested that the experience or track record of the provider should play a role in determining the duration of the permit. The business case and the ability of the permit holder to leverage finance was also raised by two respondents as a factor which should shape the duration of a permit.
- 4.103 Some respondents pointed out that a sufficiently long permit would act to lower the cost of investment by reducing the cost of capital. A similar number of respondents meanwhile worried that overly long permit duration would engender complacency in the holder. Although most responses involved a tacit support for the use of permits and exclusive access zones (by, for example, expressing an opinion on the setting of permit duration), there were a few responses which explicitly opposed the idea of permitting (based on monopolistic control and complacency – in terms of delivering the most cost-

---

<sup>26</sup> [Local Energy Scotland – Community-led local energy plan toolkit](#)



effective service possible). Some respondents identified risks from permit duration that were too short. They suggested shorter permit terms would disincentivise / detract long term, strategic investors. A potential impact raised was that at the end of a permit assets may not have fully depreciated, and compensation would be required. One respondent (Local Authority) was concerned that only large companies would have the resources to secure permits, and thus there should be some mechanism for local representation.

- 4.104 Two local government respondents suggested that due to the length of permits they should consider how they align with plans for local developments.
- 4.105 Finally, one respondent (Product Manufacturer, Supplier or Installer) highlighted that there is a need to consider what happens if the permit holder were to fail or become bankrupt.

**Q20: How can the interests of both the customer and the network operator best be balanced in heat network zones with heat network zone permits?**

- 4.106 Some respondents argued that the best way to balance the interests of customers and network operators was via a regulator for the sector. This point was often backed up by the view that a regulator in and of itself is not sufficient, but that it needs to be fit for purpose and capable of addressing poorly performing networks.
- 4.107 Several respondents were in favour of some form of price regulation. Here some suggested that the costs of heat from a heat network should not be higher than the current counterfactual; typically cited as an individual gas boiler.
- 4.108 Two respondents (Public Body and Energy Generation, Supply and Distribution) suggested that any proposals on pricing and regulation should align with (UK Government BEIS') plans for a Heat Networks Market Framework.

**Q21: What measures, if any, should regulatory or support systems take to encourage inter-seasonal thermal storage to achieve wider societal benefits?**

- 4.109 Most responses to this question were either strongly or generally supportive of the view that policy should be used to encourage inter-seasonal thermal storage (ISTS). There was, however, frequent ambiguity as to whether ISTS was being referred to, or whether general (non-seasonal) thermal energy storage (TES) was the focus.
- 4.110 Most responses were technology agnostic, referring to storage without relating it to specific types of storage. Some, however, made reference to specific options, including (in no particular order): heat batteries, old coal mines, aquifer-TES, borehole-TES and pit-TES. Some respondents also cited the heat sources they felt were most relevant to ISTS. This included waste heat, energy from waste and grid electricity.
- 4.111 Two responses (Research – Joint Response and Energy Generation Supply and Distribution, HN Operator) were very supportive of ISTS options but

believed that it would only develop once the (Scottish) heat networks market was more developed.

- 4.112 With respect to focused policy recommendations, some responses were in favour of policy supporting pilot projects of ISTS. This was because it is currently a novel technology option in Scotland. There was support for policy to encourage heat network developers to consider ISTS or TES as part of feasibility assessments for new heat networks. Two responses (Professional or Representative Body (Energy) and Energy Generation, Supply and Distribution) showed some support for the idea that heat network developers should be required to carry out feasibility assessments for TES or ISTS (potentially as part of wide heat network feasibility assessments). However, a mandatory regulatory approach was expressly not supported by one local government respondent.
- 4.113 It was suggested by one respondent (Academic Group or Research Centre) that the existing regulatory guidance from the Scottish Environmental Protection Agency may need to be updated. The reason for this was that guidance has been developed for heat abstraction rather than heat cycling (storage and discharge).
- 4.114 There was reference to the difficult economics of ISTS. Comments noted that specific market mechanisms are needed to enable developers to capture value and thus facilitate the wider system benefits. Two responses (Professional or Representative Body (Energy) and Energy Generation, Supply and Distribution) highlighted that ISTS may not currently make economic sense but could in the future (with low cost heat sources), and thus installation or preparation should be encouraged now.

**Q22: Do you have views you would like to express relating to parts of this consultation which do not have a specific question?**

- 4.115 The section provides a summary of the main points respondents added at the end of the main consultation questions.<sup>27</sup> Many respondents took this opportunity to reiterate points already made to specific questions in their consultation response, which are not repeated in detail here, but to provide an illustration. A selection of these points covered the following topics;
- funding, finance and revenue streams, including: 1) the importance of grants and government backed loans,<sup>28</sup> 2) the perceived negative impact of the UK-wide removal of RHI on project development, and 3) recognition that many heat networks have tended to rely on electricity sales from gas-fired CHP;
  - cognisance about the impact of the proposals on existing networks, including the importance of providing appropriate support and timelines for aligning with any new requirements;

---

<sup>27</sup> Respondent categories are not included in this question.

<sup>28</sup> The UK Government (BEIS) Heat Networks Efficiency Scheme was cited as an example of funding to support optimisation of existing schemes that would be valuable in Scotland.

- identifying the appropriate level and balance of regulation, including a perception that growth in the sector could be hampered by over-focus on licensing and permitting;
- enhanced support for customer complaints procedures and consumer protection, including extending existing responsibilities for gas and electricity markets between Ofgem, Citizens Advice and the Ombudsman service to cover heat networks;
- a transitional role for hybrid heat network solutions (including a role for natural gas for peak demand). This was perceived as a route to support more rapid heat network roll out than fully decarbonised solutions, at least initially.
- the importance of a people-centred and place-based approach as part of the necessary foundations for success, including roles for community ownership, as well as buy-in and active involvement in local solutions;
- and, reiterating the relationship between heat networks and fuel poverty in rural areas.

4.116 There were also a few requests for further detail on elements of the proposals. This included, for example, more detailed proposals on standardisation and regulatory requirements,<sup>29</sup> the relationship with local development plans, and how the Scottish Government would consult with the relevant local authority on heat network consenting in their area<sup>30</sup>. One respondent requested ‘interim support measures’ to accelerate the project pipeline whilst the wider policy framework was still under development. In addition, this respondent asked for policy development milestones to be included in the final HNBP, including key timelines on the introduction of specific elements (such as issuing of permits, LCITP successor funding) and related policies such as the National Planning Framework. One respondent asked the Scottish Government to provide clarity on an extension to the non-domestic rate relief beyond 2025.<sup>31</sup> One respondent asked for clarity on the potential roles of hydrogen in heat networks. Another respondent also asked how the proposals would support smaller networks (with varied ownership structures) feeding in larger (city-wide) heat networks. To support further policy development, one respondent suggested detailed development workshops on topics covered in the consultation.

4.117 Two notable topics raised that went beyond earlier questions, concerned 5<sup>th</sup> generation heating and cooling networks, and skills and supply chain.

4.118 **5<sup>th</sup> generation heating and cooling networks:** there was a perception from one respondent that 5<sup>th</sup> generation heat pump, ambient temperature and

---

<sup>29</sup> In particular, the Scottish Government’s ‘Principles for the development of Scotland’s gas and electricity networks’ (published March 2021), was cited as a relevant example of standardising and regulating network requirements for “managing energy demands and future expansion potential”. It was proposed that this could be helpful to consider for heat networks, including with reference to setting 2035 and later targets.

<sup>30</sup> Another respondent asked how long the Energy Consents Unit would remain the consenting authority. Relatedly, another respondent suggested issuing of permits could be managed by the proposed National Public Energy Agency.

<sup>31</sup> It was suggested this had been confirmed by UK Government for England and that consistency between UK and Scottish governments would be of value to the heat networks market.

shared ground loop networks could be more fully integrated in the draft proposals. In relation to 5<sup>th</sup> generation networks, three respondents also provided sources of evidence. These were: the latest Chartered Institute of Building Services Engineers (CIBSE) Heat Networks Code of Practice<sup>32</sup>; Scottish Enterprise commissioned research on the potential for Scotland to be a leader in 5<sup>th</sup> generation heating and cooling networks<sup>33</sup>; and further information about networked heat pumps using an exemplar area of Glasgow.<sup>34</sup> Another respondent noted however, that 5<sup>th</sup> generation systems can involve more complex operation and maintenance compared to gas-fired CHP systems. This respondent also queried the extent to which these systems were able to address fuel poverty goals in practice.

- 4.119 **Skills and supply chain:** there was some concern that requirements for skills and supply chain needed more rapid policy development than at present. One respondent acknowledged the consultation identified that the Scottish Government had committed to publishing a Heat in Buildings Supply Chain Delivery Plan by Summer 2022, but nonetheless raised concerns. It was noted that a 'central Heat Networks Accelerator delivery team' could be established to support the scoping and development of heat networks at a local level.

---

<sup>32</sup> [CIBSE - Codes of Practice](#)

<sup>33</sup> Ramboll, 2021. [Analysis of potential for Scotland to be leader in 5th Generation Heating and Cooling Networks](#). Scottish Enterprise: Edinburgh.

<sup>34</sup> [Green Street - A zero-carbon urban energy vision delivered by Kensa \(welcometogreenstreet.com\)](#)

## 5. Appendices

**Appendix A – Tables providing count and percentages of respondent categories responding to each consultation question.**

**Table 5.1 Q1: In your opinion, could any of the proposals set out in this plan unfairly discriminate against any person in Scotland due to a protected characteristic?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	6%	-
Community Council, Trust or Group	2	12%	1
Consumer Advice, Advocacy or Campaigning	1	6%	-
Energy Generation, Supply or Distribution	3	18%	2
Local Authority	6	35%	5
Public Body	3	18%	2
Third Sector or Non-Governmental Organisation	1	6%	-
Question response rate	17/48	100%	10/17

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.2 Q2: In your opinion could any of the proposals set out in this plan have an adverse impact on children's rights and wellbeing?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	6%	-
Consumer Advice, Advocacy or Campaigning	1	6%	-
Energy Generation, Supply or Distribution	4	22%	4
Local Authority	8	44%	6
Professional or Representative Body (Other)	1	6%	-
Public Body	2	11%	1
Third Sector or Non-Governmental Organisation	1	6%	-
Question response rate	18/48	100%	11/18

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.3 Q3: In your view, what should be considered in setting the 2035 heat network supply target?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	2%	-
Community Council, Trust or Group	1	2%	-
Energy Generation, Supply or Distribution	9	22%	6
Individual or Tenant Group	2	5%	1
Local Authority	11	27%	8
Product Manufacturer, Supplier or Installer	2	5%	1
Professional or Representative Body (Energy)	2	5%	-
Professional or Representative Body (Other)	3	7%	-
Public Body	5	12%	2
Third Sector or Non-Governmental Organisation	5	12%	2
Question response rate	41/48	100%	20/41

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.4 Q4: Are there particular approaches or measures that could be taken through our proposals in this plan to reduce the depth and rate of fuel poverty?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	2	5%	-
Community Council, Trust or Group	2	5%	1
Consumer Advice, Advocacy or Campaigning	1	2%	-
Energy Generation, Supply or Distribution	8	20%	6
Individual or Tenant Group	2	5%	1
Local Authority	10	24%	8
Product Manufacturer, Supplier or Installer	2	5%	1
Professional or Representative Body (Energy)	2	5%	-
Professional or Representative Body (Other)	3	5%	-
Public Body	5	12%	2
Third Sector or Non-Governmental Organisation	5	12%	2
Question response rate	41/48	100%	21/41

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.5 Q5: Do you agree or disagree with the order of the three stages identified for setting up the regulatory regime? Please explain.**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	2	6%	-
Consumer Advice, Advocacy or Campaigning	1	3%	-
Energy Generation, Supply or Distribution	9	28%	6
Individual or Tenant Group	2	6%	1
Local Authority	6	19%	4
Professional or Representative Body (Energy)	2	6%	-
Professional or Representative Body (Other)	2	6%	-
Public Body	4	13%	1
Third Sector or Non-Governmental Organisation	4	13%	2
Question response rate	32/48	100%	14/32

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.6 Q6: In your view what are the key challenges faced when decarbonising existing heat networks (please tackle both improving the efficiency and switching to low and zero emission heat sources)?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	1	3%	-
Consumer Advice, Advocacy or Campaigning	1	3%	-
Energy Generation, Supply or Distribution	9	23%	6
Individual or Tenant Group	2	5%	1
Local Authority	10	25%	8
Product Manufacturer, Supplier or Installer	2	5%	1
Professional or Representative Body (Energy)	2	5%	-
Professional or Representative Body (Other)	3	8%	-
Public Body	5	13%	2
Third Sector or Non-Governmental Organisation	4	10%	1
Question response rate	40/48	100%	19/40

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.7 Q7: What support is required to help existing networks improve their efficiency and switch to low or zero emission heat generation?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	2	5%	1
Consumer Advice, Advocacy or Campaigning	1	3%	-
Energy Generation, Supply or Distribution	9	23%	6
Individual or Tenant Group	1	3%	1
Local Authority	10	25%	8
Product Manufacturer, Supplier or Installer	2	5%	1
Professional or Representative Body (Energy)	2	5%	-
Professional or Representative Body (Other)	3	8%	-
Public Body	5	13%	2
Third Sector or Non-Governmental Organisation	4	10%	1
Question response rate	40/48	100%	20/40

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.8 Q8: What are your views on the Building Hierarchy proposed and its use to prioritise delivery on the ground and use in developing heat networks policy and regulation?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	2%	-
Community Council, Trust or Group	1	2%	-
Consumer Advice, Advocacy or Campaigning	1	2%	-
Energy Generation, Supply or Distribution	9	21%	6
Individual or Tenant Group	3	7%	1
Local Authority	9	21%	7
Product Manufacturer, Supplier or Installer	2	5%	1
Professional or Representative Body (Energy)	2	5%	-
Professional or Representative Body (Other)	3	7%	-
Public Body	6	14%	2
Third Sector or Non-Governmental Organisation	5	12%	2
Question response rate	42/48	100%	19/42

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*



**Table 5.9 Q9: What in your view is the right approach to ensuring there is sufficient demand assurance?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	1	3%	-
Energy Generation, Supply or Distribution	9	24%	6
Individual or Tenant Group	2	5%	1
Local Authority	9	24%	7
Product Manufacturer, Supplier or Installer	2	5%	1
Professional or Representative Body (Energy)	2	5%	-
Professional or Representative Body (Other)	3	8%	-
Public Body	5	13%	2
Third Sector or Non-Governmental Organisation	4	11%	2
Question response rate	38/48	100%	19/38

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.10 Q10: What role should the Heat Network Pre-Capital Support Unit play in supporting project development?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	1	3%	1
Energy Generation, Supply or Distribution	8	23%	6
Individual or Tenant Group	1	3%	-
Local Authority	11	31%	8
Product Manufacturer, Supplier or Installer	1	3%	1
Professional or Representative Body (Energy)	2	6%	-
Professional or Representative Body (Other)	2	6%	-
Public Body	5	14%	2
Third Sector or Non-Governmental Organisation	3	9%	1
Question response rate	35/48	100%	19/35

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.11 Q11: What types of capital support would help to support the development of low and zero carbon heat networks and attract private sector finance?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	2	5%	-
Energy Generation, Supply or Distribution	9	24%	6
Individual or Tenant Group	2	5%	1
Local Authority	9	24%	7
Product Manufacturer, Supplier or Installer	2	5%	1
Professional or Representative Body (Energy)	2	5%	-
Professional or Representative Body (Other)	3	8%	-
Public Body	5	13%	2
Third Sector or Non-Governmental Organisation	4	11%	1
Question response rate	38/48	100%	18/38

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.12 Q12: What are your views on the proposal to gather data and wider information about heat networks in Scotland?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	2	5%	-
Community Council, Trust or Group	2	5%	1
Consumer Advice, Advocacy or Campaigning	1	2%	-
Energy Generation, Supply or Distribution	8	19%	6
Individual or Tenant Group	3	7%	1
Local Authority	10	23%	7
Product Manufacturer, Supplier or Installer	2	5%	1
Professional or Representative Body (Energy)	2	5%	-
Professional or Representative Body (Other)	3	7%	-
Public Body	7	16%	2
Third Sector or Non-Governmental Organisation	3	7%	1
Question response rate	43/48	100%	19/43

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.13 Q13: What are your views on other owners (or persons with interest) of non-domestic buildings - beyond Scottish public bodies - being required to produce a building assessment report for their buildings?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	1	3%	-
Consumer Advice, Advocacy or Campaigning	1	3%	-
Energy Generation, Supply or Distribution	8	23%	6
Individual or Tenant Group	2	6%	1
Local Authority	9	26%	6
Product Manufacturer, Supplier or Installer	2	6%	1
Professional or Representative Body (Energy)	2	6%	-
Professional or Representative Body (Other)	2	6%	-
Public Body	4	11%	1
Third Sector or Non-Governmental Organisation	3	9%	1
Question response rate	35/48	100%	16/35

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.14 Q14: What are your views on whether there should be prioritisation of building assessment reports based on certain building attributes in order to expedite data on potential anchor loads?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	1	3%	-
Energy Generation, Supply or Distribution	8	24%	6
Individual or Tenant Group	1	3%	1
Local Authority	9	27%	7
Product Manufacturer, Supplier or Installer	2	6%	1
Professional or Representative Body (Energy)	2	6%	-
Professional or Representative Body (Other)	2	6%	-
Public Body	5	15%	2
Third Sector or Non-Governmental Organisation	2	6%	1
Question response rate	33/48	100%	18/33

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.15 Q15: How can we ensure proportionality in a licensing system, in particular in the application and determination processes, licence conditions and fees?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	4%	-
Community Council, Trust or Group	1	4%	1
Consumer Advice, Advocacy or Campaigning	1	4%	-
Energy Generation, Supply or Distribution	7	28%	5
Local Authority	6	24%	6
Professional or Representative Body (Energy)	2	8%	-
Professional or Representative Body (Other)	1	4%	-
Public Body	4	16%	2
Third Sector or Non-Governmental Organisation	2	8%	1
Question response rate	25/48	100%	15/25

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.16 Q16: Which heat network projects should be exempt from the requirement to hold heat network consent?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	4%	-
Community Council, Trust or Group	1	4%	1
Consumer Advice, Advocacy or Campaigning	1	4%	-
Energy Generation, Supply or Distribution	6	24%	5
Local Authority	8	32%	7
Professional or Representative Body (Energy)	2	8%	-
Professional or Representative Body (Other)	1	4%	-
Public Body	3	12%	1
Third Sector or Non-Governmental Organisation	2	8%	1
Question response rate	25/48	100%	15/25

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.17 Q17: Are there particular types of heat network for which only limited information should be required in the consent application? If so, please set out your views on what types of heat network and why?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	4%	-
Consumer Advice, Advocacy or Campaigning	1	4%	-
Energy Generation, Supply or Distribution	6	25%	5
Local Authority	6	25%	6
Product Manufacturer, Supplier or Installer	2	8%	1
Professional or Representative Body (Energy)	2	8%	-
Professional or Representative Body (Other)	1	4%	-
Public Body	3	13%	1
Third Sector or Non-Governmental Organisation	2	8%	1
Question response rate	24/48	100%	14/24

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.18 Q18: The Heat Networks (Scotland) Act 2021 makes provision for community engagement and we intend to publish guidance in relation to this. What, in your view, would constitute effective and meaningful community engagement?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	2	5%	1
Consumer Advice, Advocacy or Campaigning	1	3%	-
Energy Generation, Supply or Distribution	9	23%	6
Individual or Tenant Group	3	8%	1
Local Authority	10	26%	7
Product Manufacturer, Supplier or Installer	1	3%	-
Professional or Representative Body (Energy)	1	3%	-
Professional or Representative Body (Other)	3	8%	-
Public Body	5	13%	1
Third Sector or Non-Governmental Organisation	3	8%	1
Question response rate	39/48	100%	17/39

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.19 Q19: What key factors should determine the duration of the heat network zone permit?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	1	3%	1
Consumer Advice, Advocacy or Campaigning	1	3%	-
Energy Generation, Supply or Distribution	9	27%	6
Individual or Tenant Group	2	6%	1
Local Authority	9	27%	8
Product Manufacturer, Supplier or Installer	1	3%	-
Professional or Representative Body (Energy)	2	6%	-
Professional or Representative Body (Other)	1	3%	-
Public Body	3	9%	1
Third Sector or Non-Governmental Organisation	3	9%	1
Question response rate	33/48	100%	18/33

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.20 Q20: How can the interests of both the customer and the network operator best be balanced in heat network zones with heat network zone permits?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	1	3%	-
Consumer Advice, Advocacy or Campaigning	1	3%	-
Energy Generation, Supply or Distribution	9	26%	6
Individual or Tenant Group	2	6%	1
Local Authority	8	24%	7
Product Manufacturer, Supplier or Installer	1	3%	-
Professional or Representative Body (Energy)	2	6%	-
Professional or Representative Body (Other)	3	9%	-
Public Body	4	12%	1
Third Sector or Non-Governmental Organisation	2	6%	1
Question response rate	34/48	100%	16/34

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.21 Q21: What measures, if any, should regulatory or support systems take to encourage inter-seasonal thermal storage to achieve wider societal benefits?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	2	8%	-
Community Council, Trust or Group	1	4%	-
Energy Generation, Supply or Distribution	7	27%	5
Local Authority	6	23%	5
Product Manufacturer, Supplier or Installer	1	4%	-
Professional or Representative Body (Energy)	2	8%	-
Professional or Representative Body (Other)	2	8%	-
Public Body	3	12%	-
Third Sector or Non-Governmental Organisation	2	8%	1
Question response rate	26/48	100%	11/26

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.22 Q22: Do you have views you would like to express relating to parts of this consultation which do not have a specific question?**

<b>Respondent category</b>	<b>Count</b>	<b>Percentage</b>	<b>Count that are HN Operators</b>
Academic Group or Research Centre	1	3%	-
Community Council, Trust or Group	2	7%	1
Energy Generation, Supply or Distribution	4	13%	3
Individual or Tenant Group	2	7%	-
Local Authority	7	23%	5
Product Manufacturer, Supplier or Installer	1	3%	1
Professional or Representative Body (Energy)	1	3%	-
Professional or Representative Body (Other)	3	10%	-
Public Body	5	17%	1
Third Sector or Non-Governmental Organisation	4	13%	1
Question response rate	30/48	100%	12/30

*Notes: The full list of respondent categories is found in Table 4.1.*

*Percentages are rounded and correspond to the question response rate.*

**Table 5.23 List of respondents who agreed for their response to be public.**

<b>Respondent Category</b>	<b>Organisation</b>
Academic Group or Research Centre	British Geological Survey
Academic Group or Research Centre	Joint response - The Energy Poverty Research initiative; Common Weal; The Built Environment Asset Management Centre, Glasgow Caledonian University
Community Council, Trust or Group	Fintry Development Trust
Consumer Advice, Advocacy or Campaigning	Energy Consumers Commission
Energy Generation, Supply or Distribution	Agile Energy Recovery (Inverurie) Ltd
Energy Generation, Supply or Distribution	Association for Decentralised Energy
Energy Generation, Supply or Distribution	EQUANS
Energy Generation, Supply or Distribution	Vattenfall Heat UK
Energy Generation, Supply or Distribution	Viridor
Local Authority	Dundee City Council
Local Authority	The City of Edinburgh Council
Product Manufacturer, Supplier or Installer	SAV Systems
Product Manufacturer, Supplier or Installer	The Kensa Group
Professional or Representative Body (Energy)	E.ON UK
Professional or Representative Body (Energy)	Scottish Renewables
Professional or Representative Body (Other)	Scottish Environmental Services Association
Public Body	Scottish Enterprise
Public Body	Scottish Futures Trust
Public Body	University of Strathclyde (Sustainable Strathclyde)
Third Sector or Non-Governmental Organisation	Energy Saving Trust
Third Sector or Non-Governmental Organisation	Inverurie Community Energy Society Ltd
Third Sector or Non-Governmental Organisation	Sustainable Cupar
Third Sector or Non-Governmental Organisation	WWF Scotland



## **Appendix B – Summary of Stakeholder Workshop**

30 November 2021, 11:00-13:00

### **Organisations in attendance**

- Brodies
- Citizens Advice Scotland
- Energy Saving Trust
- Glasgow Caledonian University
- Heat Trust
- Levenseat Renewable Energy
- Natural Power
- Ombudsman service
- Scottish Federation of Housing Associations
- SAV Systems
- Scottish Futures Trust
- Shetland Heat Energy and Power
- SSE Energy Solutions
- Transition Edinburgh
- University of Strathclyde
- Vattenfall
- Vital Energi
- ZeGen Energy
- Zero Waste Scotland

### **Agenda**

#### **Introduction**

#### **Overview of Draft HNBP**

Plus questions

#### **Group Discussions – Session 1** (breakout rooms and feedback)

1. Do you agree or disagree with the order of the three stages identified above for setting up the regulatory regime? Please explain.
2. In your view, what are the key challenges faced when decarbonising existing heat networks (please tackle both improving the efficiency and switching to low and zero emission heat sources)?
3. What are your views on other owners (or persons with interest) of non-domestic buildings - beyond Scottish public bodies - being required to produce a building assessment report for their buildings?
4. What are your views on whether there should be prioritisation of building assessment reports based on certain building attributes in order to expedite data on potential anchor loads?

#### **Group Discussions – Session 2** (breakout rooms and feedback)

1. What are your views on the Building Hierarchy proposed and its use to prioritise delivery on the ground and use in developing heat networks policy and regulation?
2. What role should the Heat Network Pre-Capital Support Unit play in supporting project development?
3. Are there particular approaches or measures that could be taken through our proposals in this plan to reduce the depth and rate of fuel poverty?

### **Summary & Next steps**

Including other consultations to also be aware of & Close



© Crown copyright 2022



This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit [nationalarchives.gov.uk/doc/open-government-licence/version/3](https://nationalarchives.gov.uk/doc/open-government-licence/version/3) or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email: [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk).

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available at [www.gov.scot](http://www.gov.scot)

Any enquiries regarding this publication should be sent to us at

The Scottish Government  
St Andrew's House  
Edinburgh  
EH1 3DG

ISBN: 978-1-80435-191-8 (web only)

Published by The Scottish Government, March 2022

Produced for The Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA  
PPDAS1038230 (03/22)

W W W . g o v . s c o t