Heat Networks Delivery Plan: Review Report 2024

March 2024

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Riaghaltas na h-Alba

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Content

Ministerial Foreword

Scotland's pathway to becoming a net-zero country by 2045 will mean moving away from polluting heating systems to clean heating systems. Heat networks are one of these clean heating systems and they will become a significant part of this transition.

We recognised the need for a credible plan to enable heat networks to flourish and, in March 2022, we published the first Heat Networks Delivery Plan. The Plan outlined the steps that the Scottish Government would take to accelerate the development of heat networks across Scotland.

Since its publication we have made good progress and have now completed the first review of the Heat Networks Delivery Plan - this Review Report - setting out our progress towards meeting the actions set out in the 2022 Delivery Plan.

We have set a new statutory heat networks target of 7 Terrawatt hours by 2035, signalling to the developing heat networks sector that this – and future – governments of Scotland are committed to its growth and providing greater confidence and certainty for those looking to invest in these schemes.

Growing the heat network sector to meet our targets is challenging and we understand the importance of providing support in these early years. Since launching Scotland's Heat Network Fund in 2022, over £10 million of grant funding has been awarded. This builds on the momentum created by its predecessor, the Low Carbon Infrastructure Transition Programme, with the total value of the current project pipeline across these two funds being over £65 million.

In Autumn 2022, we established the Heat Network Support Unit, which supports the growth of heat networks by addressing key challenges in the pre-capital stages of heat network development and building capacity across the public sector to deliver successful projects.

Local authorities are making good progress with their Local Heat and Energy Efficiency Strategies (LHEES). These strategies are starting to set out the potential for heat networks across the country. The Scottish Government continues to support local authorities in this work, providing £2.4 million per annum until 2027/28.

We are working to align our delivery programmes with the emerging LHEES Delivery Plans. For example, our Heat Network Support Unit is working with local authorities to take the indicative heat network zones identified through LHEES and develop them into projects through feasibility and business case support.

A consumer protection framework is vital if we are to grow the heat network sector in Scotland and working collaboratively with the UK Government, Ofgem have been appointed as both the regulator for the GB wide heat network consumer protection regime and the heat network licencing authority for Scotland.

The first review of progress highlights the progress that has been made as we transition to clean, more affordable heating. But, as this Review Report shows, we have not yet met our first statutory target so do not underestimate the size of the challenge. This document reiterates our commitment to achieving a transition, where heat networks will become a key sector in heating our homes and buildings, and the actions we are taking to ensure this.

Patrick Harvie

1 Introduction and Summary

1.1 Why we support the development of heat networks

1.1.1 Heat networks are an established technology and are common in Northern Europe, particularly in Nordic countries. In Scotland they are currently less common but they will play a vital role in decarbonising heat in buildings, particularly in dense urban areas where they are uniquely placed to deliver clean heating in areas where other solutions may be more challenging to install. They are therefore a key strategic part of supporting the wider energy transition, securing a greater energy independence through place-based, low emission heat sources. They can also reduce costs through the provision of efficient, affordable heating and so can be a means to support achievement of our fuel poverty targets.

1.1.2 Heat Networks are not only suitable in dense urban areas, they can also be an efficient solution in some suburban and remote & rural settings. For example, heat networks based on shared ground loop arrays can be a very successful approach in remote and rural settings.

1.1.3 The Climate Change Committee advises that heat networks could deliver about 20% of total heat United Kingdom (UK)-wide by 2050[1]. They currently provide just under 2% of non-electrical heat consumption in Scotland[2]. We therefore expect the sector to grow rapidly in the coming years and decades. The Heat Networks (Scotland) Act 2021 (the 2021 Act) – the first legislation of its kind in the UK – includes stretching targets for heat networks for:

- 2.6 TWh of heat to be supplied by heat networks by 2027;
- 6 TWh by 2030; and
- 7 TWh by 2035, as recently added.

1.1.4 Section 2 provides more detail about these targets but we are committed to achieving the growth these targets require. This Report will set out our progress on developing the heat network sector in Scotland to help meet our targets.

[1] The CCC's recommended Balanced Net Zero Pathway in its Sixth Carbon Budget Report sets out that by 2050, around a fifth of heat is distributed through heat networks, from 2025 all new heat networks are low carbon and existing networks decarbonise by 2040.
[2] As non-electrical heat consumption changes over time so does this percentage. Using the 2022 provisional figure for non-electrical heat consumption (see footnote 5) the percentage is 1.9%.

1.2 The Heat Networks Delivery Plan and this Review Report

1.2.1 On 31 March 2022, following a full public consultation, we published the Heat Networks Delivery Plan (HNDP), as required by the 2021 Act. The 2021 Act also requires that the HNDP is reviewed every two years, and that Scottish Ministers prepare a report of our progress towards meeting the provisions of the Act and other supporting policies[3]. This document fulfils the requirement to review and report on the HNDP.

1.2.2 The HNDP sits in the context of wider heat decarbonisation policy, in particular, the Heat in Buildings Strategy, which highlights that over the coming years the Scottish Government proposes a focus on the no and low-regrets strategic technologies to decarbonise our homes and buildings, of which heat networks are one. Detail on the other technologies that will play a role in the transition and the approach to those can be found in the Strategy and subsequent consultations. For example, Delivering Net Zero for Scotland's Buildings is a recent consultation on proposals to make new laws around the energy efficiency of our homes and buildings and the way we heat those buildings.

1.2.3 Section 3 sets out our best estimates on the supply of heat with the limitations of existing data currently available to us. Estimated heat supply via heat networks has increased from an estimated 1.15 TWh in 2018 to an estimated 1.35 TWh in 2022. We will be working to improve data through the regulatory regime so that we can more accurately report in future.

1.2.4 In Sections 4 to 6 we set out the progress that has been made on implementing the Act (Section 4), our significant delivery programmes (Section 5) and wider policies (Section 6). We are only in the early years of implementing the HNDP – some regulations are yet to be made, and others in place for less than a year. Attributing increases in use of heat networks specifically to the Act, or our wider policy, would be potentially costly and unreliable. It is also too early to attempt at this stage of implementation. At appropriate points we instead set out how we expect the actions taken to support our aims.

1.2.5 This document provides a broad indication of progress following changes to the wider policy and regulatory landscape in Scotland and Great Britain, the developing views of industry, the coming into force of the Act in 2021 and the HNDP, published in March 2022 (the 2022 HNDP). It does not report on every single action in the 2022 HNDP.

[3] The report laid before parliament must consider: (a) how the 2021 Act and associated policies have contributed to an increase in the use of heat networks in Scotland in the reporting period, (b) what progress has been made in the aggregate heat output of all heat networks in Scotland in the reporting period and, in particular, in meeting the targets specified in the 2021 Act (section 92(1)), (c) how the deployment of heat networks in Scotland has contributed to meeting emissions reduction targets set in the Climate Change (Scotland) Act 2009 during the reporting period.

1.2.6 Despite the changing landscape we have been able to make good progress in a number of areas including:

- Setting a statutory heat networks target of 7 TWh by 2035, signalling to the developing heat networks sector that this – and future – governments of Scotland are committed to its growth. This provides greater confidence and certainty for those looking to invest in these schemes (see Section 2.2).

- Introducing new legislation that requires Scottish public bodies to produce building assessment reports which will provide vital data about non-domestic buildings for heat network zoning and initiate consideration for connection to a heat network (see Section 4.2).

- Publishing guidance in October 2022 that sets out what is required to fulfil the Local Heat and Energy Efficiency Strategies (LHEES) Order 2022, which placed a duty on local authorities to publish Strategies and Delivery Plans by the end of 2023 and update them every five years. Funding and support has been provided to local authorities and 13 councils have published LHEES to date, many of which identify significant opportunities for heat networks (see Section 6.1).

- Developing legislation and guidance for local authorities to review and decide whether to designate heat network zones. Designating zones can both attract investment from heat network developers and inform building owners and heat users in the area of the potential for a heat network in the area (see Section 4.2).

- Working with the UK Government during development of the Energy Bill and afterwards on the new consumer and technical standards it will provide. Through the Energy Act 2023, Ofgem has been appointed as both the regulator for the GB wide heat network consumer protection regime and the heat network licencing authority for Scotland. This is key to allowing these regimes to be interoperable, keeping them as simple as possible while meeting the overall aims for Scottish heat network operators and consumers (see Sections 4.1 and 4.6).

- Developing proposals on consenting and licensing which we will consult on during the next reporting period. These aspects of the regime will result in scrutiny of proposed projects so that they are in line with local and national objectives, support community engagement in the process and will make available new rights to heat network operators such as wayleave, compulsory purchase, roadwork and surveying rights (see Section 4.3 and 4.4).

- Developing proposals to reduce demand risk for heat network development, including our consultation on a proposed Heat in Buildings Bill, which seeks views on proposals to make new laws around energy efficiency of our homes and buildings and the way we heat them and how these apply in heat network zones (see Section 6.2).

- Establishing the Heat Network Support Unit (HNSU) in Autumn 2022, which supports the growth of heat networks by addressing key challenges in the pre-capital stages of heat network development and building capacity across the public sector to deliver successful projects. The HNSU has supported 28 pre-capital projects[4] so far and at the end of 2023 enhanced its offering to local authorities to also include Strategic Heat Network Support (see Sections 5.1 and 5.2).

- To support central and local government to support development at scale and pace while achieving our wider objectives, the Heat Network Support Unit has recently published a report reviewing existing and new delivery models for heat networks (see Section 5.3).

- Since launching Scotland's Heat Network Fund in 2022 over £10 million of grant funding has been awarded. This builds on the momentum created by its predecessor, the Low Carbon Infrastructure Transition Programme, with the total value of the current project pipeline across these two funds being over £65 million (see Section 5.4).

1.2.7 Unless otherwise stated in this report, we continue to take forward the actions and policies in the HNDP. For example, we will be:

- Working with the Improvement Service on the development of an online platform to make it easier for people to submit and retrieve (BAR) information and encouraging, including through of our funding programmes, the submission of BAR.

- Consulting during the next reporting period, prior to developing regulations under the Heat Networks (Scotland) Act 2021, on:
    - the consenting process, which will provide a project specific approval process to scrutinise how new heat networks, as well as expansions to existing networks meet local and national objectives, how they carry out community engagement and meet decarbonisation requirements. Consenting will also cover existing networks' requirement to develop and implement decarbonisation plans; and
    - A regulatory licensing process which adds to, rather than duplicating, the proposed UK authorisation system whereby licensees are able to gain the additional powers they require for things like roadworks and wayleaves, whilst consumer protection and technical standards will be handled by the UK regulator regime, providing common standards across Great Britain.

- Continuing to build the pipeline of strategic and important projects through the Heat Networks Support Unit and supporting the delivery of heat networks with long-term support from the £300 million Scotland's Heat Network Fund (SHNF).

[4] Our quarterly Heat Network Projects report lists all supported projects.

2 Ambition & targets

2.1 Providing more detail on our ambition

2.1.1 Our broad ambition is for a heat networks sector that:

- delivers affordable clean heat, supporting delivery of emissions reduction, fuel poverty targets and competitive businesses;
- develops local supply chains and attracts new public and private investment; and
- contributes to the development, and operation, of an integrated and resilient energy system.

2.1.2 The work being carried out by local authorities through their LHEES is starting to provide a clearer picture of where heat networks are likely to develop. In particular, in the long term, we envisage that the heat networks industry will develop energy efficient, zero emissions, large-scale district heat networks across major urban areas. We will use our regulatory powers, policy and funding to support this and encourage private investment. The gas-fuelled communal heating schemes in these areas may connect to these large-scale district heating schemes, and those that do not will find alternative ways of getting to zero emissions.

2.1.3 Large urban district heating schemes can more effectively deliver our ambition. They can be more cost effective[5] and can utilise low cost recovered heat that would otherwise go to waste. This heat can be delivered to large numbers of consumers, potentially lowering costs to customers. Storage systems can also be used to increase reliability and to reducing the cost of heat to consumers and also of the wider energy transition.

2.1.4 There will also be opportunities for heat networks outside of major urban areas – whether this is in industrial clusters, smaller towns or more remote settings. Some of these opportunities will be for low temperature heat networks such as low temperature communal heating or networked heat pumps with shared ground loops.

2.1.5 We have proposed in the Heat in Buildings Bill that buildings within designated heat network zones may have different regulations applied to them. As such we need to ensure heat network zones are robust and incorporate cost effectiveness. We intend to build on the foundations created by local authorities through their LHEES, which set out which areas are particularly suitable for heat networks, by carrying out further analysis to ensure that heat networks are the most cost effective solution compared to other forms of clean heating, for example, installing individual heat pumps. This will be done in partnership with Local Government to ensure continued alignment with local priorities.

[5] Recent research (Cost Analysis of a Typical 4th and 5th Generation Heat Network) commissioned by Scottish Enterprise has highlighted the economies of scale that can be obtained when developing heating networks. The report identified this as particularly significant for thermal storage and air source heat pumps. The £/kW installed capacity decreases according to installed capacity, making larger energy centres / substations more cost-effective.

2.2 Targets to 2027, 2030 and 2035

2.2.1 The 2021 Act sets targets for the amount of heating and cooling to be supplied by heat networks, requiring this reaches 2.6 Terawatt hours (TWh) by 2027 and 6 TWh by 2030. These figures represent 3.6% and 8.4%, respectively, of current non-electrical heat consumption in Scotland[6].

2.2.2 In addition to the 2027 and 2030 targets, the 2021 Act requires Scottish Ministers to set a target for 2035. We undertook a public consultation until March 2023, which considered three evidenced based options[7] for the target in 2035. These options were informed by the First National Assessment of Potential Heat Network Zones, and considered wider advice such as from the Climate Change Committee.

2.2.3 The Heat Networks (Supply Targets) (Scotland) Regulations 2023 came into force on 24 November 2023. This means the combined supply of thermal energy (heating and cooling) supplied by heat networks in Scotland must reach at least 7 TWh by 2035 (7 TWh is equivalent to just under 10% of Scotland's current non-electrical heat consumption[8]).

2.2.4 Taking into account some of the responses[9] received and given the limited data available to us when setting the 2035 target, we set out in our government response to our Heat networks target 2035 consultation that we will review the 2035 and, if appropriate, other heat network targets once more evidence – such as LHEES and what heat network zones are designated by local authorities – is available. The 2021 Act allows Ministers to modify these targets, if appropriate.

2.2.5 To give an approximation of the emissions reduction from achieving the 2035 7 TWh target, we have made some broad assumptions about the rate of deployment of heat networks and the adoption of clean heating technologies providing the heat for them. If 5.7 TWh of the heat supplied was from clean heating technologies and it replaced gas heating technologies, this would equate to greenhouse gas emissions savings of 1.14 MtC02e per year by 2035.

2.2.6 The following chapters set out progress on a number of the actions set out in the 2022 HNDP to meet these targets.

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[6] As non-electrical heat consumption changes over time so do these percentages. Energy consumption figures for Scotland are derived from subnational consumption figures produced by the Department for Energy Security and Net Zero. To calculate total non-electrical heat consumption, we combined updated gas consumption figures for 2022 and residual fuel consumption (oil, coal, bioenergy) from 2021, producing a provisional figure of 71.3 TWh for 2022. This figure is provisional because the residuals fuel consumption figures will be confirmed in September of 2024. These percentages use the provisional 2022 figure for non-electrical heat consumption.

[7] We modelled a number of scenarios providing a range of connections of non-domestic buildings and home. These can be viewed in Consultation on a 2035 heat networks target (see previous footnote).

[8] As non-electrical heat consumption changes over time so does this percentage. Using the 2022 provisional figure for non-electrical heat consumption (see footnote 2) this percentage is 9.8%.

[9] Heat networks - thermal energy target 2035: Analysis of responses to the consultation

3 Progress against our targets

3.1.1 Whilst the data we currently have about heat networks has significant limitations[10], we previously estimated that in 2018, 1.15 TWh of heat was supplied via heat networks in Scotland. Our current best estimate for 2022 is 1.35 TWh of heating and cooling supplied via heat networks[11]. This equates to just under 2% of non-electrical heat consumption in Scotland[12].

3.1.2 Noting the limitations of the data, caution should be applied in using this data for wider purposes. However, we think there is value in providing a broad overview of the current state of the heat networks sector in Scotland.

3.1.3 There are over 1,090 known heat networks supplying heating and cooling to domestic and non-domestic properties and industry in Scotland. Across these networks:

- 66% (720) were communal heating schemes and 30% (332) were district heating networks (4% unknown).
- 33% (454 GWh) of the heat supplied was via communal heating, and 66% (898 GWh) supplied by district heating.
- over 30,000 homes and 3,000 non-domestic properties are connected to heat networks.
- the data suggest that heat networks in Scotland generate 1.7 TWh of heat and supply around of 1.35 TWh of heat.
- 45% of heat networks supplied 10 or fewer customers (both domestic and non-domestic). Where bulk sale occurs, which can involve one customer, such as a council, buying heat and then selling it on to individual households, such as social housing tenants, these figures may underrepresent the total number of final customers.
- 4% of heat networks supplied 100 or more customers (both domestic and non-domestic).

3.1.4 More accurate data is expected to be collected about heat networks via the UK consumer protection and authorisation scheme as well as via the Technical Standards. We continue to work with the UK Government and Ofgem so that

[10] The Heat Networks Metering an Billing Regulations (HNMBR) 2014 require heat networks to notify and provide certain data to the regulator. Our best estimate of heat supplied via heat networks for 2022 is based on HNMBR notification data spanning from 2014-2022, aiming to provide an estimate on the whole known heat network sector in Scotland, including known networks that have not notified in the latest data cycle (2018-2022). Our estimate relies on limited data with concerns about its quality. This includes: poor data coverage in key areas which required modelling to fill in the gaps, lack of information around decommissioning of networks, and issues surrounding enforcement of notifications. All of the above factors limit our ability to estimate the true size of the heat networks sector in Scotland or the total amount of heat supplied.

[11] Experimental statistics recently published by UK Government estimate heating supplied via heat networks in Scotland at 0.575 TWh. However, only the most recent HNMBR notification data spanning 2018-2022 has been used to develop this estimate, which we know excludes some large networks in existence.

[12] As non-electrical heat consumption changes over time so does this percentage. Using the 2022 provisional figure for non-electrical heat consumption (see footnote 5) the percentage is 1.9%.

Scottish Ministers have access to such data for statutory reporting purposes and to support evidence based policy making. In doing so, we aim to reduce the risk of operators being asked for the same data via different processes and of data being required by two sets of regulations (under the Energy Act 2023, and the 2021 Act). Chapter 7 of the 2022 HNDP sets out detail on the information about heat networks and the sector as a whole that we think will be valuable for Scottish Ministers to be aware of to support regulatory and policy development to achieve our ambition and developing vision.

3.1.5 Future data gathering and reporting should allow us to produce a better estimate of how the deployment of heat networks in Scotland has contributed to meeting emissions reduction targets.

3.1.6 During the reporting period, we estimate an increase in supply of 0.2 TWh. This is based on the data available to us with its significant limitations.

3.1.7 One of the limitations of the data is that it doesn't allow an estimate of the emissions reductions associated with existing district heat networks that provide heat to newly connected buildings during the reporting period. Additionally, we expect significant emissions reductions from existing networks, the majority of which use natural gas, will come from their decarbonisation. (This will be tackled as part of the consenting and licencing regime, see Section 4). As such, our emissions reductions during this reporting period are broadly estimated to be low to negligible.

3.1.8 However, it is also worth reporting that through our funding programmes we know that low emissions heat networks are being deployed and whilst at this stage it is difficult to align these with the data, it is worth documenting them to demonstrate the growth that is taking place. The following schemes, part-funded by Scottish Government, have all become operational since January 2019:

- Glenrothes Energy Network - utilises steam produced from the RWE combined heat and power biomass plant to provide heat to a range of customers. The project demonstrates the potential of unused existing infrastructure, with heat from the RWE Markinch Biomass plant recovered and used for district heating.
- Stirling Renewable Heat Demonstration Project - combines a fuel cell, heat recovery system from Stirling Wastewater Treatment Plant (WWTP) and heat pump to supply heat for the new district heat network.
- Queen's Quay – its energy centre housing two 2.65 MW water source heat pumps which extract heat from the adjacent River Clyde basin. The project provides socioeconomic benefits for more than a thousand new and existing homes (social and private housing) and local businesses.
- NG Homes - an air source heat pump system installed in six high rise blocks in Springburn with each building comprising its own heat generation plant.
- AMIDS District Energy Network - Renfrewshire Council is developing a state-of-the-art, low carbon district heat network at the Advanced Manufacturing Innovation District Scotland (AMIDS). The first of its kind in Scotland, the fifth-generation renewable energy network works by directing treated water into a new energy centre and heat pumps are used at each building to upgrade the heat.

4 Progress in developing regulations to support heat network development

4.1 Driving growth through the Heat Networks (Scotland) Act 2021

4.1.1 The 2021 Act – the first of its kind in the UK – aims to accelerate the deployment of heat networks in Scotland through the introduction of a regulatory system that boosts confidence in the sector and provides greater certainty for investors.

4.1.2 We committed in the 2022 HNDP to working with the heat networks sector and local government in developing detailed regulations to put in place a functioning regulatory system. We are bringing forward regulation in four packages. The first package on building assessment reports and heat network zoning has been completed (see Section 4.2). The other packages to establish this regime have been impacted by changes in the wider context, including the Energy Act 2023 and regulations being developed to implement it.

4.1.3 The UK Energy Bill was introduced in the UK Parliament in July 2022 and received royal assent in October 2023. The Energy Act 2023 lays the foundations for the heat network market framework by introducing powers to:

- Regulate the market, including consumer protections for consumers in Scotland, which will be underpinned by an authorisation regime[13].
- Appoint a regulator – Ofgem – for the GB-wide authorisation scheme.
- Introduce step-in arrangements in the event of heat network insolvency, ensuring consumers continue to receive supply of heat.
- In England and Wales introduce powers to create rights and powers for licensed heat network developers – the 2021 Act does this in Scotland.

4.1.4 Both the Scottish and UK governments have agreed that alignment between the two regulatory systems is desirable. Our aim is for GB-wide protections for heat network consumers and the authorisation regime that underpins these to work seamlessly with the Scottish regulatory system.

4.1.5 We have worked closely with the UK Government to ensure consumer protection (see Section 4.6) and licensing can both be dealt with by Ofgem in Scotland. The UK Government included powers in the Energy Act 2023 for Ofgem to be appointed as the Scottish licencing authority.

4.1.6 In order to achieve a seamless experience for both heat network operators and consumers, we have amended the timetable for the development of Scottish regulations to more closely align with UK regulations. In sections 4.2 – 4.5 we set out progress on the regulatory packages under the 2021 Act and, where possible, timetable adjustments for the remaining packages.

[13] Greenhouse gas emissions and technical standards are addressed in Scotland under the 2021 Act.

4.2 Building assessment & zoning

4.2.1 To be efficient, economically viable and deliver value for money, heat networks need to be well located. For district heat networks with a central heating source (such as fourth generation networks), this means being in areas with sufficient heat demand and density to enable optimal performance. It also means securing appropriate connections to "anchor" the network and provide a degree of demand certainty.

4.2.2 In order to identify appropriate anchor buildings (see Glossary) and inform heat network zoning, Part 5 of the 2021 Act places a requirement on relevant persons owning or having an interest in a non-domestic building to prepare a building assessment report (BAR), to consider the viability of connecting the building to a heat network and then assess the period for which any system providing thermal energy to the non-domestic building is expected to continue to operate effectively and efficiently.

4.2.3 In 2023, we introduced regulations[14] further defining the duty on the public sector[15]. From 30 May 2023, owners of non-domestic public sector buildings are required to produce[16] a BAR as soon as reasonably practicable for each of their buildings, to check if they are suitable to connect to a heat network. The templates and guidance[17] that we published to support these assessments limit the questions to be answered if the annual heat demand of the building is known to be less than 73 MWh per year.

4.2.4 We continue to encourage the Scottish public sector[18] to complete their BARs. To date[19] 144 BARs have been submitted. We are exploring with the Improvement Service development of an online platform to make it easier to submit BAR information, and for local authorities and the Scottish Government to analyse it.

4.2.5 The 2021 Act provides powers to extend the requirement to undertake a BAR to other relevant persons, such as those with an interest in commercial buildings as well as the public sector. Given commercial premises comprise the majority of non-domestic buildings, it is important that we do this.

4.2.6 Receiving more BARs from the public sector will allow us to learn more about the potential for heat networks to connect and the time required to complete the BAR in practice. We will consult on extending these requirements to businesses during

[14] The Heat Networks (Heat Network Zones and Building Assessment Reports) (Scotland) Regulations 2023 (legislation.gov.uk)
[15] Section 67(a) of the 2021 Act defines public sector as "a Scottish public authority within the meaning of section 3(1)(a) of the Freedom of Information (Scotland) Act 2002".
[16] Completed BARs must be submitted to both the relevant local authority and Scottish Ministers.
[17] Supporting documents - Heat networks: Building Assessment Report (BAR) guidance - gov.scot (www.gov.scot)
[18] We engaged with different public sector organisations both before and after these duties came into place. This included writing to all of the Scottish public sector regarding the BAR duty, attending multiple events that highlighted the duty or covered BAR and HNZ in detail
[19] (14 February 2024) We are aware a number of public sector organisations are waiting for the online platform to be complete before submitting their BAR.

the next reporting period. In doing so we will also consider the approach to third sector buildings, some of which have significant heat demands.

4.2.7 The regulations we introduced in 2023 further define the duty on local authorities to:

- review for heat network zones;
- consult on the review (where appropriate) and undertake wider stakeholder engagement; and
- make a decision whether to designate the area under review as a heat network zone.

4.2.8 In order to simplify the requirements on local authorities, the LHEES guidance[20] enables them to undertake the heat network zoning review stage through their LHEES (see Section 6 for more on LHEES), and the heat network zoning proforma provides local authorities with a flow-through process from this stage onwards. The proforma covers the receipt and consideration of building assessment reports, assessment of whether an area is "particularly suitable", consultation with area-specific statutory consultees and the final decision of whether or not to designate.

4.2.9 As set out in Section 6.2 we are looking at proposing regulatory measures that may be applied within heat network zones. As part of this work, we will also need to consider if the heat network zone process alone is enough to apply these proposed regulations or if additional considerations will be needed prior to use of these proposed powers by local authorities or Scottish Ministers.

4.3 Licensing and powers of licence holders

4.3.1 The proposed heat network licensing regime is intended to ensure licensees are solvent, competent, fit and proper and provide their service in line with the conditions set by the licensing authority (Ofgem). There is clear overlap behind this intention and the aims of the proposed authorisations regime under the UK Energy Act.

4.3.2 It is our intention to develop a regulatory process which adds to, rather than duplicates the proposed UK authorisation system. To this end, we are developing proposals, which we will consult on during the next reporting period, to ensure that licensees are able to gain the additional powers they require for supporting works like roadworks and wayleaves.

4.3.3 The technical standards that heat network developers and operators will need to be meet will be handled by the UK regime, and so will be common across Great Britain. This will provide a simpler regulatory system for both heat network developers and operators to deal with, and for the regulator – Ofgem - which is

[20] We updated the optional technical methodology for developing LHEES to ensure it includes relevant requirements of the 2021 Act for reviewing areas that may be particularly suitable for heat network development and operation and shared this with local authorities in 2022.

ultimately responsible for licensing the technical standards body. This should reduce the regulatory burden and ultimately the cost to consumers.

4.4 Consenting, key heat network assets and transfer scheme

4.4.1 Heat network consents are a project specific approval process to scrutinise how new heat networks, as well as expansions to existing networks, meet local and national objectives. The consent application and determination process will allow the consents authority the opportunity to consider how the proposal will impact on the environment both generally as well as in particular on greenhouse gas emissions, and how it will contribute to meeting fuel poverty targets. In this way, it may be the tool which provides powers to ensure that the heat networks sector decarbonises in the way it must if we are to reach net-zero.

4.4.2 Given the Act specifically discusses greenhouse gas emissions, the intention is for consent only to be given to new networks which are low/zero emission (see Chapter 3 of the 2022 HNDP) and that existing networks will be required to develop and implement decarbonisation plans as part of their consent.

4.4.3 The consents process will also introduce a requirement for effective community engagement to ensure that members of a community, where a heat network is proposed, are kept informed about the proposals and what it means for them as well as providing a clear route for them to make suggestions and comment.

4.4.4 The Act also allows for the grant of Deemed Planning Permission to minimise the burden placed on heat network developers. We intend to consult on these proposals during the next reporting period.

4.4.5 Market-led step-in provisions being developed by the UK Government (see Consumer Protection section below) will apply in Scotland insofar as they relate to protecting consumers from a loss of supply of heat caused by insolvency, authorisation revocation, or technical failures. We are working with the UK Government to map the overlaps of these provisions and transfer of assets provisions in the 2021 Act.

4.5 Permitting

4.5.1 The proposed permitting regime could award a permit via competition to a single, winning bidder thereby providing exclusivity for a specified number of years. Stakeholder engagement carried out in 2023 has shown that the position of both local authorities and private developers on permitting has evolved since the passage of the 2021 Act. Concerns raised by these stakeholders include:

- fears of permitting under delivering, particularly until legislation is in place to provide greater demand assurance policy,
- concerns that the concession-style model that may accompany permitting would reduce competition and innovation in the market, and

- concerns around monitoring and maintenance, particularly in relation to heat network zone review, revocation and legal contract amendments.

4.5.2 Taking this into account we will be focusing on delivery of other parts of the regulatory regime, such as consenting and licensing, particularly until there is more clarity on the demand assurance measures being developed, including analysis of the responses to consultation on our Heat in Buildings Bill proposal (see Section 6.2).

4.6 Consumer protection

4.6.1 Robust consumer protection is needed to ensure that Scottish consumers experience an equitable energy system in which all consumers have clear access to redress. Regulation of consumer protection is reserved to the UK Government.

4.6.2 The UK Government and Ofgem jointly consulted in Autumn 2023 on regulations to protect heat network consumers under the Energy Act 2023 (see para 4.1.3). These proposals aim to provide domestic consumers with access to information about their heat network, a good quality of service, fair and transparently priced heat and a redress option should things go wrong. The UK Government has also agreed and is working with us to introduce GB-wide protections for microbusinesses and SMEs (small and medium sized enterprises) supplied by heat networks.

4.6.3 Following the Scottish Government's recommendation to the UK Government, Consumer Scotland has been appointed to lead on consumer advocacy for heat networks in Scotland. Officials continue to work with the UK Government and Ofgem to develop the heat network consumer advocacy role as part of the heat network regulatory system in Scotland.

4.6.4 The UK Government has set out that the Energy Ombudsman should take the role of the independent ombudsman service across GB with responsibilities including investigating complaints, making judgements, requiring redress where necessary and reporting systemic issues to Ofgem.

4.6.5 In the meantime, we will continue to use our capital funding programmes to increase the number of heat networks in Scotland, and require as a condition of grant funding[21] that schemes, where possible and appropriate, are registered under the Heat Trust - a stakeholder-led customer protection scheme.

4.6.6 We also worked with UK Government to ensure that the Heat network consumer and operator survey (2022), published in August 2023, for the first time includes the concerns and experiences of Scottish consumer and operators, as well as those of England and Wales.

[21] Projects will be required to submit as part of their application that they will meet the expected level of service and quality alongside information on the complaints process.

5 Our delivery programmes support for heat networks

5.1 Developing the district heating project pipeline in Scotland

5.1.1 In order to accelerate the growth of heat networks in Scotland, investing in the development of a project pipeline is essential. Having a stronger pipeline and better understanding of that pipeline will provide the market and wider stakeholders greater confidence in its delivery and, along with regulatory and policy development, will encourage the industry to invest in further skills and supply chain development.

Pre-capital support

5.1.2 The Heat Network Support Unit (HNSU)[22] was established in Autumn 2022 to address key challenges in the pre-capital stages of heat network development and to build capacity across the public sector to deliver successful projects. It is sponsored and managed by the Scottish Government, with partners Scottish Futures Trust and Zero Waste Scotland providing a range of support services.

Case Study: Granton Waterfront receives development support

The Granton Waterfront development, in the north of Edinburgh, will be served by a cost competitive, low carbon heat network. The proposed project will capture waste heat from the local sewer system and could serve up to 3000 homes, non-domestic space and local facilities that include a primary school and medical centre. The network will adopt a future proofed design, allowing for potential expansion to the North West of Edinburgh.

The Heat Network Support Unit has been providing detailed project development and commercialisation support to this project since 2022. Expert advice has also been provided by the Scottish Futures Trust, who are the financial, legal and commercial experts within the HNSU.

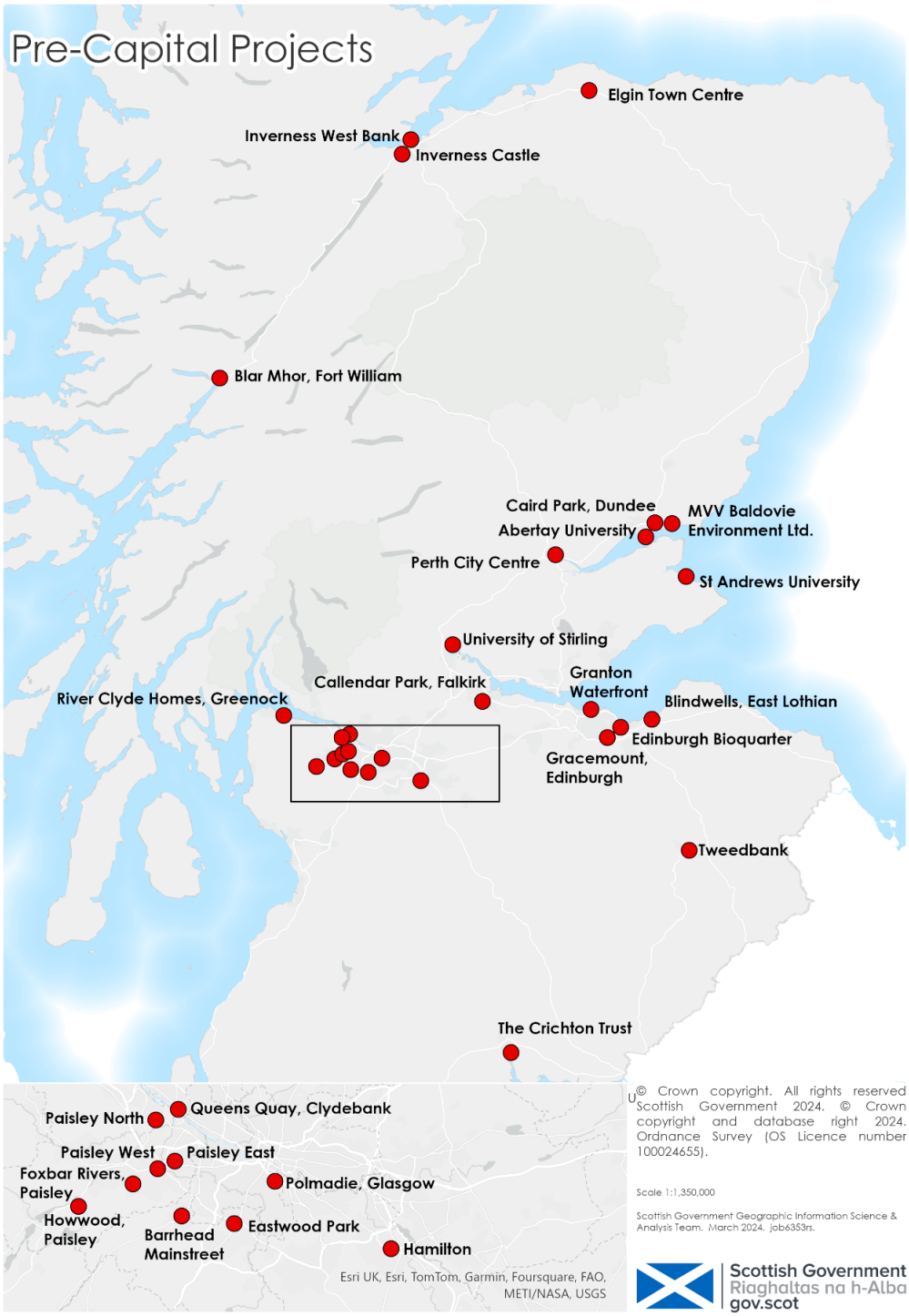
In 2023, the project progressed to the commercialisation stage. Utilising continuous project support, the City of Edinburgh Council commenced a two-stage procurement exercise to appoint a concessionaire to deliver and operate the heat network and subsequently conduct a package of pre-development activities. This exercise is the first of its kind on two fronts, being the first local authority led concession contract for a heat network and the first two-stage procurement process in Scotland.

The first of this two-stage procurement process is now complete, with Vattenfall Heat UK being proposed as the preferred bidder for pre-development work to refine and finalise the design of the heat network solution. The HNSU will continue to provide support throughout the pre-development period to financial close, when the concession agreement will be signed.

[22] For more information on the HNSU project and strategic support described in this Section, interested parties can get in touch with the HNSU (heatnetworksupport@gov.scot).

5.1.3 The HNSU support includes expert advice, project steering and funding for the pre-capital stages of heat network development, such as detailed feasibility studies, business case building and commercialisation. Support is available for new district heating schemes or extensions to existing district heating schemes.

Map 1 – Pre-capital support projects



Case Study: Perth City centre receives feasibility support

Perth & Kinross Council has received £36,000 of funding from the HNSU to conduct a feasibility study with the purpose of informing the council of the opportunity for a low carbon heat network in the Perth City centre area. The proposed heat network could supply heat to various buildings within the city centre, which include council offices, a theatre, hotel and various residential areas.

Commencing in November 2022, this project has been supported by Zero Waste Scotland, who are the technical experts within the HNSU. Working with appointed consultants and the HNSU, the project developed a robust feasibility study through activities such as stakeholder engagement, assessing heat loads and potential heat sources, considering energy infrastructure and undertaking technical and financial assessments.

The feasibility study was completed in March 2023 and identified a range of viable low carbon heat sources, which include river and ground source heat pumps. Following publication of their LHEES in late 2023, Perth City Council are actively engaging with the HNSU to develop next steps.

5.1.4 Since 2022, the HNSU has formally supported 28 pre-capital projects in 17 local authority areas through advice, guidance and funding, with the Scottish Government providing over £730,000 of financial support (see Map 1). Our quarterly Heat Network Projects report lists all supported projects, and the case studies in this section show some of the variety of the support given.

5.2 Supporting local authorities towards a stronger strategic approach for district heating

5.2.1 The projects that to date have received pre-capital support vary in size. To build on LHEES (see Section 6) and to support local authorities in developing a strategic approach to deploying large-scale heat networks at scale and pace in their areas, the Scottish Government enhanced its offering to local authorities through the HNSU by launching the Strategic Heat Network Support[23] in November 2023.

5.2.2 This support of up to 90% of the costs (capped at £150,000) can be utilised by local authorities only to fund the delivery of strategic heat network activities, for example those identified within their LHEES delivery plans. This may include:

- Additional technical work, such as characterisation and sequencing heat network zones, heat source evaluation etc.
- Commercial and financial analysis of heat network opportunities
- Assessment of overall district heating investment opportunity within a local authority area
- Exploration and identification of preferred delivery models
- Building the business case for long term district heating delivery.

[23] Strategic Heat Network Support - Heat Network Support Unit

5.3 Delivery models - potential to accelerate scale and pace of deployment

5.3.1 Delivery of large scale heat networks in Scotland has been led traditionally by the public sector, partially because they can bring demand assurance via their own estate, and have relationships with other public and private sector stakeholders within their areas. However, there are a number of existing and potential delivery models that a public sector organisation, in particular local authorities, may consider in trying to support the deployment of strategically important heat networks in their areas, for example by forming partnerships with other regional partners or the private sector.

5.3.2 To support central and local government in this process, the HNSU conducted a review of existing and new delivery models for heat networks in 2023. The report, published February 2024[24], details the characteristics of a range of delivery models - such as Regional ESCo, local authority joint venture, and concession models - and assesses their pros and cons against a number of key criteria. It makes recommendations for further activity regarding delivery models but also the wider heat network programme. We will continue to progress development of a number of the models highlighted.

5.3.3 From December 2023 to March 2024, the HNSU organised a series of in-person workshops for local authorities, the wider public sector and social housing providers to disseminate findings and stimulate thinking about ways to unlock the local potential in district heating.

5.4 Capital support

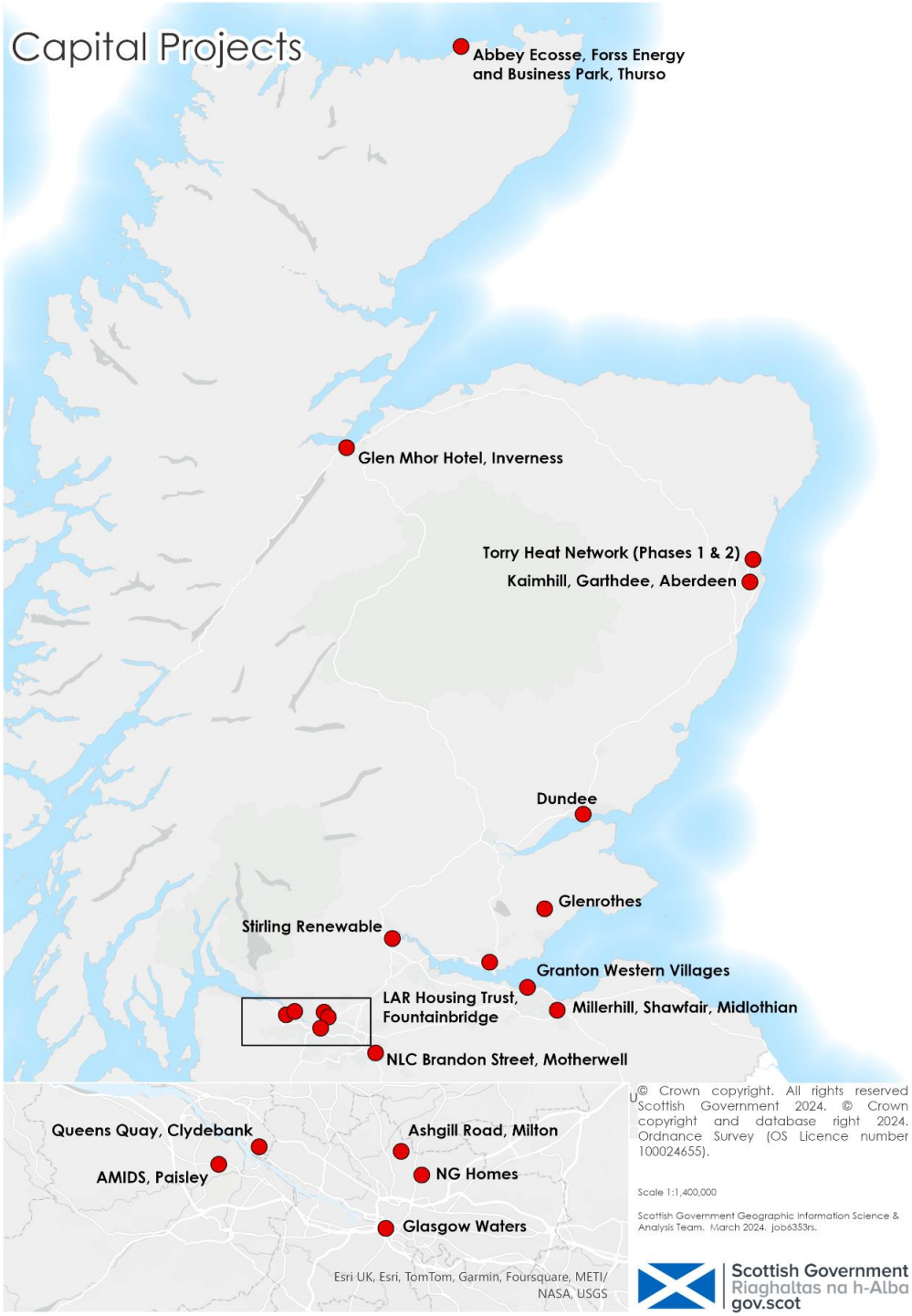
5.4.1 We continue to offer long-term support to enable the delivery of heat networks[25] with the £300 million Scotland's Heat Network Fund (SHNF), launched in February 2022.

5.4.2 In order to drive value for money and financial sustainability and encourage private investment, SHNF offers a variety of financing mechanisms – including capital grants, repayable assistance and loans - to provide tailored support - to public and private sector organisations. Projects are required to demonstrate that their heat network can provide heat at an affordable cost to consumers and can support the eradication of fuel poverty.

5.4.3 SHNF remains open to applications throughout the year and over the course of this parliamentary session, with funding awarded on a competitive basis against the Funds' mandatory criteria and until the total fund value has been reached. The SHNF website provides details including objectives, eligibility criteria, conditions of funding and the application process.

[24] Heat Network Delivery Models Report published by The Scottish Government, February 2024.
[25] Scotland's Heat Network Fund provides funding for: new zero emission heat networks, including communal heating systems; expansion of existing heat networks, with requirements to install additional zero emission generation; and decarbonisation of existing fossil fuelled heat networks.

Map 2 – Capital support projects



5.4.4 Since it was launched, SHNF has awarded £10.1 million of grant funding to four projects. This includes funding for the extension to Aberdeen City Council's Torry Heat Network, which is decarbonising homes using recovered waste heat from a new Energy from Waste facility. The Torry Heat Network is demonstrating how waste heat can be used to retrofit the heating systems of hard-to-treat granite tenements and tackle high levels of fuel poverty.

5.4.5 SHNF has also provided support for low temperature – also known as fifth generation - heat networks, which can also be an efficient and cost effective way to install clean heating. Projects in Motherwell, Glasgow and Aberdeen have received support for the installation of ground source heat pumps in homes where the heat collecting pipework in the ground is shared between homes (also known as a shared ground array or networked heat pumps). Although ground source heat pumps have low running costs due to their high efficiency, the installation of ground loops or boreholes can make the upfront cost high. By spreading this cost across multiple homes and with support from SHNF, this enables the installation of highly efficient heat networks that align with net zero and deliver savings for residents.

5.4.6 SHNF continues the momentum created by its predecessor, the Low Carbon Infrastructure Transition Programme (LCITP). Although now closed to applications, the LCITP is supporting several projects currently under construction. The Social Housing Net Zero Fund (SHNZHF) has also funded district and communal heating projects. The total value of the current project pipeline across LCITP, SHNF and SHNZHF is over £69 million.

5.4.7 The projects receiving pre-capital and capital support via the HNSU and the Scotland's Heat Network Fund are included in our quarterly reports to give potential investors, the supply chain and building owners considering connecting to a heat network a clear view on the pipeline of projects the Scottish Government is supporting.

5.5 Building Level Support

5.5.1 The offer of financial support from our schemes such as the Home Energy Scotland Grant and Loan Scheme, Energy Efficiency Business Support Service and Community, Renewable Energy Scheme and Social Housing Net Zero Heat Fund (SHNZHF) continues to include support for buildings to connect to nearby district heating networks. For example, Clydebank Housing Association is using funding from SHNZHF to contribute to the cost of the extension of the Queens' Quay District Heat network, connect to the network, install heat interface units and carry out internal works. A small number of homes were also supported last year to connect to district heating networks through Area Based Schemes.

5.5.2 While take up of such support is currently very limited, as networks extend and new ones are developed, this support become more important.

5.5.3 We will also review our delivery programmes – starting with the Scottish Green Public Sector Estate Decarbonisation scheme - to ask whether a Building Assessment Report (see Section 4) has been carried out[26] before funding for energy efficiency and clean heating systems is provided (and request updated BAR is submitted after any works have been carried out with such funding). This is most important for non-domestic buildings, and any buildings with existing or planned communal heating systems.

[26] We will be asking applicants to submit BAR information on the online platform (see Section 4).

6 Progress on wider policies to support heat networks

6.1 Guiding Development

6.1.1 As set out in the 2022 HNDP, heat networks are not a suitable solution for all areas. Work being carried out by local authorities on LHEES[27] is significantly contributing to the development of this picture.

Identifying areas suitable for heat networks

6.1.2 Local authorities have made good progress producing their LHEES. The Scottish Government is providing multi-year funding of £75,000 per local authority, per year, to resource the development of their LHEES, which has been agreed in partnership with COSLA and began in 2022/23. The Scottish Government has committed to providing this funding up to 2027/28.

6.1.3 Thirteen local authorities have published LHEES (seen Annex B), many of which identify significant opportunities for district heating. For example:

- Glasgow City Council's LHEES shows that the city has the potential for between approximately 20% and 70%[28] of the city's heat demand to be supplied by heat networks. The upper bound applies to almost 50,000 domestic and non-domestic properties, around 47% of the Glasgow population and, geographically, includes almost 40% of Glasgow is potentially within range of a viable heat network.

- Fife Council's LHEES identifies a number of potential heat network zones including sizable zones in Rosyth Waterfront, Glenrothes (North), Dunfermline and Kirkcaldy with these potential zones (after their level 2 analysis) covering a heat demand of around 300 GWh/year.

- Highland Council's LHEES identifies several existing heat networks, several projects being developed or at feasibility stage (including in Inverness and Fort William), 7 potential heat network zones in Invergordon, Inverness, Fort William and Dingwall. It also notes over 1,550 green spaces in the off-gas areas were identified that show a high potential to be used for small-scale heat networks, such as shared ground arrays with individual heat pumps for the nearby properties, and over 760 for the on-gas areas. Some of the areas are Thurso, Wick, Skye, Beauly and Muir of Ord.

[27] The Local Heat and Energy Efficiency Strategies (Scotland) Order 2022, came into force in May 2022, placing a duty on local authorities to produce Local Heat and Energy Efficiency Strategies and Delivery Plans by the end of 2023. LHEES guidance was published in October 2022. The guidance sets out what local authorities are required to do to meet the LHEES duty. The optional LHEES methodology consists of practitioner guidance, tools and templates to support local authorities to produce their LHEES.

[28] Calculation based on the potential identified for between 1.31 to 4.47 TWh of heat per year to be supplied by heat networks and an estimated heat demand for Glasgow - using the Scotland Heat Map - of 6.27 TWh/yr.

6.1.4 Once local authorities have published their LHEES we will move into an evaluation phase. We have procured a contractor to summarise and collate the data outputs of the 32 LHEES during 2024, which will include an overview of the heat network opportunities across Scotland.

6.1.5 We are working to align our delivery programmes with the emerging LHEES Delivery Plans. For example, our Heat Networks Support Unit (HNSU) is working with local authorities to take the indicative heat network zones identified through LHEES and develop them into projects through feasibility and business case support. Additionally in November 2023, the HNSU introduced its Strategic Heat Network Support to help local authorities to develop strategic plans for district heating deployment and identify ways to attract private investment, for example by exploring and identifying a suitable and long-term heat network delivery model for their area (see Sections 5.1-5.2).

National Planning Framework 4

6.1.6 The Fourth National Planning Framework (NPF4), published in February 2023, supports the development of heat networks. Specifically it sets out that Local Development Plans (LDPs) should take into account the area's LHEES. The spatial strategy should take into account areas of heat network potential and any designated heat network zones.

6.1.7 NPF4 policy 19 a) and c) [29], states that development proposals within or adjacent to a heat network zone identified in a LDP will only be supported where they are designed and constructed to connect to the existing heat network. It also states that where a heat network is planned but not yet in place, development proposals will only be supported where they are designed and constructed to allow for cost-effective connection at a later date.

6.2 Demand Assurance

6.2.1 One of the key barriers to heat network development is not having assurance in heat demand. Developers and investors need a long-term, secure customer base to confidently invest. Reducing this risk, reduces overall costs.

6.2.2 Our approach to demand assurance policies involves two broad branches:

- moving buildings away from polluting heating systems, such as gas, and onto clean heating systems, of which a connection to a heat network is one, and
- investigating incentives and requirements for certain types of building to connect to a district heating system, if they are located in a heat network zone.

6.2.3 The first of these approaches was set out in our consultation Delivering Net Zero for Scotland's Buildings – A consultation on proposals for a Heat in Buildings Bill, published in November 2023. This proposed to make new laws around the

[29] Policy 19 can be viewed in Part 2 – National Planning Policy of the NPF4.

energy efficiency of our homes and buildings and the way we heat those buildings. These proposals include a number of points at which building owners will need to end the use of polluting heating systems.

6.2.4 For buildings within heat network zones, we included a proposal that includes the end of a notice period which begins with a notice from a local authority to a building owner. The consultation closed on 8 March and we are analysing responses to help us determine the way forward with this, and other, proposals in the consultation.

6.2.5 The consultation also seeks views on the proposal to provide powers to local authorities or the Scottish Ministers that require developers to connect new buildings within heat network zones to a heat network.

6.2.6 This is in addition to the new build heat standard which requires new buildings constructed under a building warrant applied for from 1 April 2024 to use clean heating systems: polluting (or direct emissions) heating systems, like gas and oil boilers are not allowed[30].

Public sector buildings

6.2.7 In the consultation we also propose that the Heat in Buildings Bill should require all buildings owned by a Scottish public authority to use clean heating systems by the end of 2038. We are also considering whether other powers in the Heat in Buildings Bill can support the public sector to plan for this transition to help ensure that it is conducted in the most efficient way. These potential duties are set out in Chapter 6 of the consultation.

6.2.8 Additional to these proposals we are updating our guidance to public bodies (see para 6.2.9).

Social housing

6.2.9 We recently consulted on a new social housing net zero standard (SHNZS). This proposed that:

- the SHNZS sets a requirement for heat network connections to be mandatory under certain circumstances. For instance, where housing stock not already using a clean heating system is offered a connection at a reasonable cost, and where there is sufficient capacity in the network to accommodate the housing. What is considered a 'reasonable cost' would be subject to further analysis and engagement, but would include comparison with alternative clean heating systems.

[30] The introduction of these regulations build upon the recent uplift in energy standards in Scotland and complement the incoming Passivhaus equivalent standard which will ensure new buildings have the highest level of energy efficiency – reducing the overall heat demand in new homes and removing poor energy efficiency as a driver of fuel poverty.

- If the relevant building(s) are within a designated heat network zone, and have been notified of this, then they will be exempt if they commit to meet the SHNZS by connecting to a network by 2045. This will preserve the business case for a new heat network development by ensuring that buildings which are likely to connect are not forced to adopt another system before time. In this scenario, the fabric efficiency rating of the SHNZS will still need to be met. Additionally, the time limit to this exemption ensures that the transition to clean heating still occurs by 2045 should a heat network not be developed in time to meet the 2045 clean heating standard.

Further demand assurance measures

6.2.10 We remain committed to further consulting on proposals, as far as possible within our legal competence to introduce mandatory connections. Our initial focus is on large publicly owned non-domestic buildings.

6.3 Wider policy framework

Guidance to public bodies

6.3.1 The non-statutory Built Environment supplement and the new Statutory Guidance for public bodies is due to be published March 2025. This guidance supports public bodies to implement their climate change duties. The current draft of the Built Environment supplement has a more detailed and comprehensive section on the expectations of the public sector with regard to heat networks, particularly district heating. The draft, which has received feedback, sets out actions for public bodies including:

- urgently complete their building assessment reports, if not already done,
- prioritise connection to district heat networks when decarbonising the heating of their buildings; including engaging with other organisations early enough in the process to ensure option appraisal, planning and procurement processes can be completed to timescales,
- work with other public bodies and the local authority to investigate and maximise the potential for district heat network development;
- where already available, engage with local district heat network operator(s) to identify their interest in and capacity to supply heat and at what potential costs, and
- engage with and seek funding from our delivery programmes (detailed in Section 5).

Recoverable and Waste Heat

6.3.2 Maximizing the use of recoverable or waste heat, which at present goes unused, remains a priority. Recovering waste heat is an underused resource, which has the potential to increase the reach of viable heat networks across Scotland, potentially reducing the costs charged to consumers and reducing running costs of the heat source provider.

6.3.3 The full extent of the potential for waste heat is unknown, however, research has identified a waste heat potential of about 1,677 GWh across around 930 sites in Scotland. In April 2023, we provided data on potential sources of recoverable heat sites[31] to local authorities to support the identification of heat network zones and the development of LHEES[32].

6.3.4 We are taking forward a number of actions to promote the use of recoverable heat and make sure that it is considered when designating heat network zones. To support this aim we are exploring, as part of our consultation on proposals for a Heat in Buildings Bill, whether we will require occupiers of non-domestic properties to provide information about unused heat on their premises (on request and in confidence); and potentially require buildings with unused heat to provide this to a local heat network (where cost-effective).

6.3.5 Working in partnership with Scottish Enterprise, we have commissioned the development of a guidance document for non-technical specialists to help them to engage with manufacturing and industrial companies based in Scotland on recoverable and waste heat opportunities for heat networks. This engagement will ascertain if companies currently have any initial 'high level' interest in supplying heat, and signpost interested organisations to further expert advice. The guidance will also include descriptions for each of the different kinds of heat sources and the heat technologies that can be used to recover and supply heat. The guidance will be published in April 2024.

Skills and supply chain

6.3.6 Section 3 shows that to achieve our ambitious heat networks targets, we will require a substantial growth across the heat network supply chains.

6.3.7 Supporting Scotland's current and future workforce to develop the skills needed for the net zero transition is a priority for this government. Our Heat in Buildings Supply Chains Delivery Plan was published in November 2022 and sets out practical steps that we will take to support the growth of the green heat sector. We continue to work in partnership with the sector to ensure that the appropriate support and training provision are aligned at a local level with business needs and future local demands.

6.3.8 Data and evidence are crucial to effective skills planning and policy making which is why we have asked the Scottish Funding Council and Skills Development Scotland to progress critical green skills pathfinders which aim to provide a better understanding of the skills requirements in the transition to net zero focusing on investment, demand, and provision across the sectors relevant to the net zero transition. The second work stream of these projects focuses on the decarbonisation

[31] Data source was Potential sources of waste heat for heat networks in Scotland, published by ClimateXChange in 2020. Ten types of potential heat sources were considered in this study: distilleries, breweries, bakeries, paper and pulp, laundry, supermarkets, data centres, substations, waste water treatment plants and landfill.
[32] The data will also be incorporated into future updates to the Scotland Heat Map.

of heat in buildings and has taken a regional focus, investigating both the Glasgow City region and Shetland region. The workstream has concluded the evidence gathering phase and is currently testing project co-design opportunities with local training providers, employers and the Scottish Government.

6.3.9 In the meantime, our significant investment in heat networks (see Section 5) will help kick start the supply chain in Scotland, creating high quality and green jobs.

Non-domestic rates

6.3.10 We carried out a review of rates relief for district heat networks[33] during 2023. From April 2024, we will introduce a 90% rates relief for all district heat networks on the valuation roll, where at least 80% of the thermal energy generated by that network in any given year is derived from renewable generation. This relief will remain in place until March 2027 at which time we will review it This is in addition to the existing 50% relief that is in place for all heat networks, which is guaranteed to continue until 2032.

6.3.11 These reliefs help to support the business case for new networks and support the business case for existing networks to decarbonise by reducing their operational costs.

[33] The Non-Domestic Rates (District Heating Relief and Renewable Energy Generation Relief) (Scotland) Amendment Regulations 2021 introduced a 90% relief from non-domestic rates for new networks run from renewable sources until 31 March 2024.

Annex A: Glossary of Terms and Acronyms

Anchor Building - Buildings with a large, reliable and long-term demand for heat, often with a stable and constant use profile, can act as anchors for a developing district heating network. These anchor loads allow district heat networks to operate efficiently and provide the potential to extend the network to smaller existing heat users in the area.

BAR – building assessment report

CoSLA – Convention of Scottish Local Authorities

ESCO – energy service company

GB – Great Britian

GW – **Gigawatt** – A unit of power equal to 1,000,000,000 watts

GWh – **Gigawatt hour** – A unit of energy equal to 1,000,000,000 watt hours

Heat network – Heat networks, as defined under the 2021 Act, include both district and communal heating:

- a **district heat network** is defined as a network by which thermal energy is distributed from one or more sources of production to more than one building.
- a **communal heating system** is a system by which thermal energy is distributed from one or more sources of production to one building comprising more than one building unit.

Heat networks can provide heating, cooling, or steam for industrial processes.

HNDP – Heat Networks Delivery Plan

HNSU – Heat Network Support Unit

The Heat Trust – is a stakeholder-led customer protection scheme which sets a common standard in the quality and level of customer service expected from heat suppliers. It provides an independent process for settling complaints between customers and their heat supplier through the Energy Ombudsman. The standards of service have been designed to be comparable to those required by electricity and gas suppliers.

HNZ – heat network zone – area designated by a local authority that is particularly suitable for heat network development and operation

LCITP – Low Carbon Infrastructure Transition Programme

LHEES – Local Heat and Energy Efficiency Strategies – These are long term plans for an entire local authority area to decarbonise heat and improve energy efficiency. A Scottish Statutory Instrument (SSI) was passed by Scottish Parliament requiring local authorities to have strategies and delivery plans in place by the end of 2023 and then update them every five years.

MWh – Megawatt-hour – A unit of energy equal to 1,000,000 watt hours

Ofgem – The Office of Gas and Electricity Markets – a non-ministerial department of the UK Government, which acts as the independent regulator of the UK energy market.

SHNF – Scotland Heat Network Fund

SHNZHF – Social Housing Net Zero Heat Fund

SME – Small and medium-sized enterprises

TW – **Terawatt** – A unit of power equal to 1,000,000,000,000 watts

TWh – **Terawatt hour** – A unit of energy equal to 1,000,000,000,000 watt hours

UK – The United Kingdom

Watt hour (Wh) – A unit of energy (or work) equal to the energy of one watt operating for one hour, equivalent to 3600 joules

Watt (W) – An international standard unit of power, defined as one joule per second. Being a small unit, it is usually used as a multiple such as kilowatts, megawatts, gigawatts or terawatts

Annex B: Useful resources

Heat Networks Delivery Plan, published in March 2022, sets out how provisions of the Heat Networks Scotland Act 2021 and wider policy will contribute to increasing heat networks in Scotland.

Delivering net zero for Scotland's buildings - Heat in Buildings Bill: consultation, published in November 2023. A consultation on proposals to make new laws around the energy efficiency of our homes and buildings and the way we heat those buildings.

First National Assessment (FNA) of Potential Heat Network Zones, published in April 2022, provides a high level initial assessment at a national level, identifying potential heat network zones (where heat networks are a potential long-term solution) based on linear heat demand and key anchor loads. It followed the early stages of the LHEES methodology – with outputs provided to local authorities - but it does not incorporate local authority held data or local insight that impact on potential zones identified which are included in a local authority's LHEES.

Heat network consumer and operator survey (2022) provides an understanding of consumer concerns and operator experiences. We worked with UK Government in the development of this so that for the first time this covered Scotland as well as England and Wales.

Published LHEES include:

- City of Edinburgh LHEES
- Comhairle nan Eilean Siar LHEES
- Dumfries and Galloway LHEES
- East Lothian LHEES
- Falkirk LHEES
- Fife LHEES
- Glasgow City LHEES
- Highland LHEES
- North Lanarkshire LHEES
- Renfrewshire LHEES
- Stirling and Clackmannanshire Regional Energy Masterplan; and
- West Lothian LHEES

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