



# Local Heat and Energy Efficiency Strategy

Shetland Islands Council  
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# Table of contents

<b>EXECUTIVE SUMMARY</b>	<b>4</b>
<b>1. Background</b>	<b>6</b>
1.1. LHEES Purpose	6
1.2. LHEES Priorities	6
1.3. LHEES Stages	6
1.4. LHEES Considerations and Categories	7
<b>2. Relevant Local and National Policies/Strategies</b>	<b>9</b>
<b>3. Governance Arrangements &amp; Stakeholder engagement</b>	<b>10</b>
3.1. Stakeholder Engagement	10
<b>4. Priority A: Alleviating Fuel Poverty</b>	<b>10</b>
4.1. Background	10
4.2. Challenges	11
4.3. Ongoing Work and Opportunities	11
<b>5. Priority B: Improving domestic energy efficiency</b>	<b>13</b>
5.1. Background	13
5.2. Challenges	14
5.3. Ongoing Work and Opportunities	15
<b>6. Priority C: Developing the local retrofit supply chain</b>	<b>17</b>
6.1. Background	17
6.2. Challenges	18
6.3. Ongoing Work and Opportunities	19
<b>7. Priority D: Decarbonising Heating</b>	<b>20</b>
7.1. Background	20
7.2. Heat Networks	20

7.3.	Challenges	21
7.4.	Ongoing Work and Opportunities	23
<b>8.</b>	<b>Priority E: Community and Non-Domestic</b>	<b>25</b>
8.1.	Background	25
8.2.	Challenges	25
8.3.	Ongoing Work and Opportunities	26
<b>9.</b>	<b>Conclusion</b>	<b>28</b>

## **Appendices**

**Appendix 1 – Delivery Plan**

**Appendix 2 – Strategies and Policies**

**Appendix 3 - Analysis**

**Appendix 4 – Datasets and LHEES Methodology**

**Appendix 5 - Glossary**

# Executive Summary

The Local Heat and Energy Efficiency Strategy (LHEES) is a tool for long term planning of heat decarbonisation and energy efficiency works in Scotland's local authority areas. There is a focus on locally led planning to ensure that the decarbonisation of heat in buildings is delivered in a way that is relevant to local contexts and tailored to the specific needs of communities around Scotland.

A recent built environment stakeholder event held by the Council noted the 'lack of co-ordinated energy efficiency Strategy or plan' as a current issue.

Shetland's key priorities for this Strategy have been informed by the energy efficiency related LHEES considerations, local policy context, stakeholder engagement and analysis where available for the building stock in Shetland.

There are 5 priorities outlined in the strategy. These are interlinked, however, to highlight some of the non-technical areas or priority specific issues, priorities are presented in individual sections.

Much of the work in developing actions to inform the delivery plan has been carried out through the Net Zero Routemap, Climate Change and Energy Strategy works and therefore, LHEES links closely to these strategies and actions.

The strategy outlines the issues with the methodology, and looks into the ongoing works that will help develop areas of the methodology to give a more targeted approach. The national datasets used in the methodology don't necessarily match with local information and certainly some of the data produced appear inaccurate, or the opportunities are over simplified e.g. heat pump ready properties.

The Managing Agent (MA) will be in place for the 2025/26 financial year and in the time leading up to this the SIC will use the information in the LHEES, along with the MA's experience gained through ongoing delivery programmes in other areas to improve efficiency of delivery in Shetland in parallel with actions to improve data quality.

There is concern over the targets set within the various national policies and strategies, such as the UK's Heat and Buildings Strategy and the Net Zero Strategy, which aim to decarbonize homes and improve energy efficiency. These ambitious targets, pose significant challenges for all housing sectors. Meeting these targets will require substantial investment and resource capacity.

Hjaltland contracted Changeworks to conduct independent analysis on the impact of various fabric efficiency and ZDEH upgrades to five of their properties.<sup>1</sup> In terms of

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<sup>1</sup> [Microsoft Word - HHA\\_DeepRetrofitFinalReport\\_Jun24\\_FINAL](#)

informing LHEES this is a very important piece of work. One of the main takeaways from the report is that the current EPC reform and introduction of a fabric energy rating is key as none of the interventions would enable domestic properties to meet current EESSH2 (EPC Band B) however all properties would meet the requirements of the new SHNZS. The properties were all timber frame, the most common build type in Shetland making up circa 47% of domestic properties.

The cost of interventions is high with the implications being a choice between fabric improvement and ASHP in properties that already have electric (therefore ZDEH) installed. The savings achieved through fabric first are more clearly defined compared to heat pump technologies (when factoring in change of tariff and life cycle costs). However, Shetland is currently benefitting from installers moving to installation of heat pumps with associated higher average rate of install than mainland UK.

Having noted all the above the LHEES is an important step in trying to focus the elements of the built environment targets of the various strategies, and as a minimum increase the pace of energy efficiency interventions whilst in parallel improve data to better target these interventions.

In December 2024, Shetland Islands Council approved “A Fair Share for Shetland” a report published by the Energy Transition Taskforce. This expands on the community wealth building aspect of the ‘Shetland Energy Development Principles’ which were approved by the Council in December 2022.<sup>2</sup>

Through the Islands Growth Deal, Shetland is currently preparing a Full Business Case for £5 million towards the Islands Centre for Net Zero (ICNZ) Shetland, part of the wider ICNZ a pan island group to address the need for fundamental change in how we approach the energy transition across Orkney, Shetland and the Outer Hebrides.

According to the Shetland Climate Conversation Survey in 2021, almost 1 in 5 respondents (19.5%) installed an alternate heating system to reduce their impact on climate change. This is a promising figure that indicated awareness and action are high in Shetland. Continuing this trend will be important to meet net zero targets. Advice from trusted sources, such as members of the public who have already installed these systems, installers and Scottish Government-backed advice services, will help to build consumer confidence.

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<sup>2</sup> Shetland Islands Council (2022) [Shetland Energy Development Principles](#)

# 1. Background

## 1.1. LHEES Purpose

The way we heat our homes, workplaces and other buildings is the third-largest cause of carbon emissions in Scotland. To meet the net zero target, both domestic and non-domestic buildings in Scotland must significantly reduce their carbon emissions.

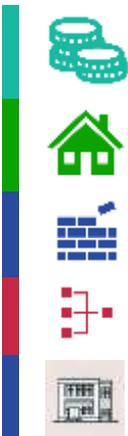
Scottish local authorities had a statutory duty to develop a LHEES by 31<sup>st</sup> December 2023. This duty is described in the LHEES (Scotland) Order 2022.<sup>3</sup>

Shetland's LHEES will support the delivery of the Council's goals of improving energy efficiency through fabric improvements and zero direct emission heating systems, reducing fuel poverty, developing heat networks and decreasing carbon emissions.

Shetland's LHEES was developed in partnership with Changeworks following the standard methodology published by Scottish Government (see Appendix 4 for the methodology and deviations from the methodology).

## 1.2. LHEES Priorities

The Council has identified five priorities for this first LHEES Strategy:

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-  **Priority A: Alleviating fuel poverty**
  -  **Priority B: Improving domestic energy efficiency**
  -  **Priority C: Developing the retrofit supply chain**
  -  **Priority D: Decarbonising Heating**
  -  **Priority E: Community and Non-Domestic**

The priorities are outlined in the forthcoming sections.

## 1.3. LHEES Stages

This LHEES has been developed over eight Stages, as outlined in figure 1 below. The completion of Stages 1-6 provided the data analysis and evidence base which forms the foundation for Shetland's LHEES Strategy (Stage 7) and Delivery Plan (Stage 8).

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<sup>3</sup> Legislation.gov.uk (2022) [The Local Heat and Energy Efficiency Strategies \(Scotland\) Order 2022](#)

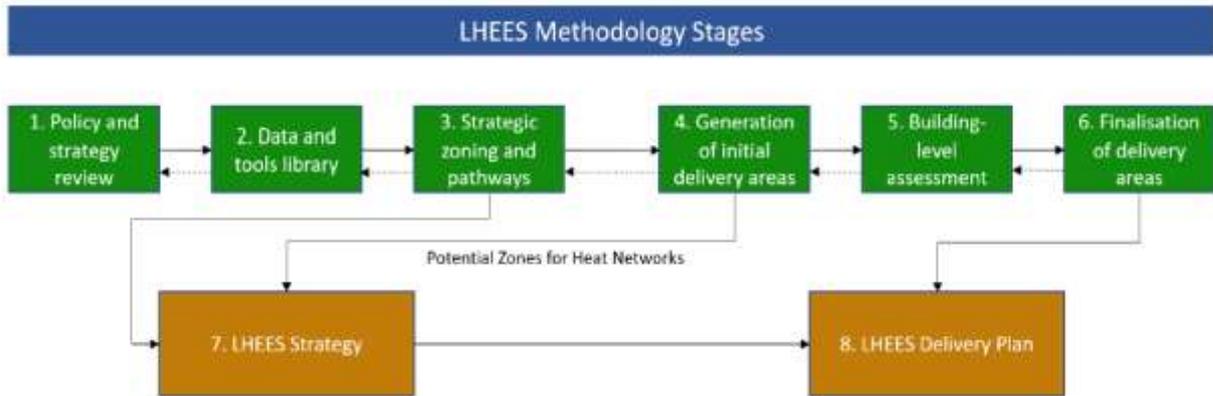


Figure 1: Summary of LHEES Stages

LHEES has a two-part structure, consisting of a Strategy and a Delivery Plan:

- The **LHEES Strategy** is a long-term strategic framework over the next 15-20 years for decarbonising heat in buildings and improving energy efficiency across Shetland, framed around the six considerations outlined in Table 1 below.
- The **LHEES Delivery Plan** lists the actions the Council and others will take over the next five years. It enables the Council to work towards the goals identified in the Strategy and clarifies the role and responsibilities of stakeholders.

The Delivery Plan (see Appendix 1), will be reviewed and updated periodically, to reflect new technologies, funding, and any new and amended actions. The Strategy will be reviewed as required or every 5 years at the latest.

#### 1.4. LHEES Considerations and Categories

The national LHEES guidance frames the Strategy around six considerations relating to heat decarbonisation and energy efficiency. These are used to identify and target interventions in different parts of the building stock. The six considerations are outlined in table 1. Shetland has no gas grid, so consideration 2 does not form part of this LHEES.

	No.	LHEES Considerations	Description
Heat decarbonisation	1	Off-gas grid buildings	Transitioning from heating oil and LPG in off-gas areas to zero direct emissions heating systems
	2	On-gas grid	On-gas grid heat decarbonisation to zero direct emissions heating (ZDEH) systems
	3	Heat networks	Decarbonisation with heat networks

Energy efficiency and other outcomes	4	Poor building energy efficiency	Focussing on wall insulation, glazing, and loft insulation measures
	5	Poor building energy efficiency as a driver for fuel poverty	Investigates the relationship between poor energy efficiency and areas of high fuel poverty probability
	6	Mixed-tenure, mixed-use and historic buildings	Highlights areas of hard-to-treat properties

**Table 1: Summary of the LHEES considerations**

## Building Categories

The off-gas analysis in Stage 3 separates buildings into four categories, which are primarily based on their suitability for a heat pump retrofit. The categories are defined in the Scottish Government’s LHEES guidance and are based on indicators from the Energy Savings Trust Home Analytics Dataset (HAD). Table 2 below provides a brief description of each category and the process for categorising all domestic properties. This analysis is for building-level heating system upgrades. Heat networks are considered separately as outlined in section 7.

Building category	Description	Indicators
Category 0	Currently have a low or zero direct emissions heating system, or heat network connection.	Properties with a heat pump (off-gas only) or district heating/communal heating as the main heating system
Category 1	“Heat pump ready” buildings that are well-suited to heat pump retrofit with minimal other changes.	<ul style="list-style-type: none"> <li>Cannot be a category 0 property</li> <li>Not listed or in a conservation area</li> <li>Properties with insulated walls and double or triple glazed windows</li> <li>If the property has a loft, it must have at least 100mm of loft insulation</li> <li>Properties which are likely to have a wet heating system (i.e. LPG, Oil or Biomass/solid fuels)</li> </ul>
Category 2	Secondary potential for heat pump retrofit. Require some fabric and/or heat distribution systems upgrades.	<ul style="list-style-type: none"> <li>Cannot be a category 0 or 1 property</li> <li>Properties that are cavity construction (either insulated or uninsulated), or any other construction type, with insulated walls</li> </ul>

		<p>There must be no risk of the property having a narrow uninsulated cavity</p> <p>Properties can be listed or in a conservation area</p>
Category 3	<p>Significant upgrades required to be heat pump ready, or properties that are not suitable for a heat pump</p>	<p>The subcategory indicates the most viable decarbonisation technology. Heat pumps are the priority solution. The suitability of storage or direct electric heating, and biomass are indicated by the characteristics listed below:</p> <p>Category 3 – Heat pump</p> <ul style="list-style-type: none"> <li>• If the property is currently heated via an oil or LPG system</li> </ul> <p>Category 3 – Electricity (storage or direct)</p> <ul style="list-style-type: none"> <li>• Properties already using electricity as the main fuel type</li> <li>• Flats</li> <li>• Properties with double or triple glazed windows</li> <li>• Properties in urban areas (1, 2 or 3 in the 8-fold classification<sup>4</sup>)</li> </ul> <p>Category 3 – Biomass</p> <ul style="list-style-type: none"> <li>• Properties already using biomass as the main fuel type</li> <li>• Detached and semi-detached properties</li> <li>• Properties of a solid brick or stone construction type</li> </ul>

*Table 2: Summary of LHEES Building Categories*

## 2. Relevant Local and National Policies/Strategies

Appendix 2 outlines the relevant local and national policies and strategies which are related to the work of the LHEES along with a summary of relevant areas contained within.

Shetland’s LHEES is closely aligned to the work of the Climate Change Strategy (CCS), specifically the built environment, and therefore a large number of the actions provided in the Delivery Plan were developed through the CCS. Therefore, the LHEES does not seek to repeat work that has already been undertaken but instead include and add to the list of actions already in place.

The timescales associated with LHEES align with Net Zero and Climate Change targets.

<sup>4</sup> Scottish Government (2020) [Urban Rural Classification 2020](#)

### 3. Governance Arrangements & Stakeholder engagement

#### 3.1. Stakeholder Engagement

##### Internal stakeholder workshop

This was held in January 2024 with invitations sent to all relevant stakeholders within the Council. Separate stakeholder engagement sessions were held with Social Housing Landlords and SHEAP Ltd. representatives, facilitated by Changeworks.

##### Shetland Climate Change Strategy – Built Environment Workshop

A series of workshops were organised by the CCS team the purpose of which was to gather information across different sectors (including the built environment) for individual strategies to take into account when developing implementation plans. The built environment workshop led to the production of an Interactive Logic Model contained at Appendix 6. This group was further consulted on the draft LHEES before finalisation of the document.

### 4. Priority A: Alleviating Fuel Poverty

#### 4.1. Background

Whilst the LHEES is related to the built environment, it is important to bring out fuel poverty as a priority of its own:

- Given the non-energy efficiency, technical areas of short-term work that are urgently required
- The development of better tools to target fuel poor households given the disparate nature of the housing stock in Shetland
- The conflicting nature of the priority areas i.e. decarbonisation of heating to electric given the high cost of electricity as a heating type.

Shetland has very high rates of fuel poverty and the factors contributing to this are well documented.<sup>5</sup>

Data helps the Council and other actors make informed decisions. However, measuring the scale of fuel poverty in Shetland is difficult due to a lack of comprehensive data. There is no one data source that provides a definitive measure of fuel poverty in

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<sup>5</sup> [A-Perfect-Storm-Fuel-Poverty-in-Rural-Scotland.pdf](#)

Shetland instead, data sources and local knowledge should be used together to provide a fuller picture of the scale and spread of the issue. The fuel poverty methodology is shown in Appendix 4.

## 4.2. Challenges

### Electricity meter upgrades/Tariffs

There are currently circa 4951 properties in Shetland where switching of tariffs (between peak and off-peak) is currently controlled by the Radio Teleswitch Service (RTS) which also manages load on the electricity distribution grid in Shetland. However, RTS is being phased out with final switch off currently programmed for the 30<sup>th</sup> of June 2025.

Smart meters can provide the services currently provided by RTS. However, due to lack of smart meter WAN signal coverage along with the complexity of transitioning meters in Shetland there have been delays to smart meters being available to customers.

*“Total Heat Total Control (THTC) dial meters are not compatible with PV installations. The inaccurate readings made it difficult to determine the impact and caused concern for tenants”.*

Generally at this time there is a lack of both suitable meters and also trained local installers.<sup>6</sup>

### Fuel Poverty Data

The issues with the SIMD method is shown in Appendix 3. It is not a fuel poverty specific factor. It does not go to individual house level, and instead presents information on geographical areas as being more or less deprived than others. This does not represent the known pockets of fuel poverty that exist in all communities in Shetland.

## 4.3. Ongoing Work and Opportunities

### IslesAI - Innovate UK-funded project

The IslesAI project delivers an innovative approach to addressing fuel poverty and advancing the just transition to net zero across Scotland's islands, where communities face distinct energy challenges.

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<sup>6</sup> [Microsoft Word - HHA\\_DeepRetrofitFinalReport\\_Jun24\\_FINAL](#)

Led by ReFLEX Orkney/Aquatera and UrbanTide in partnership with EMEC, North Ronaldsay Trust, and Rousay, Egilsay & Wyre Development Trust, the project combines extensive expertise in island energy systems, stakeholder engagement, and AI data science. By combining advanced AI technology with smart meter system data and building fabric analysis, it creates detailed insights for targeted intervention, helps identify optimal retrofit opportunities, and supports the adoption of low-carbon technologies at a community and household level. Moving forward, the project will:

- Support local authorities in developing and implementing their Local Heat and Energy Efficiency Strategies (LHEES) by providing detailed building-level data and community-wide energy insights that can inform strategic decision-making
- Enable more precise targeting of support to vulnerable households at risk of fuel poverty through data-driven insights and ethical AI technology
- Continue developing targeted intervention strategies that bridge the gap between individual action and blanket approaches across island communities, ensuring the benefits of energy transition are accessible to all income levels.

### **Electricity meter upgrades**

HHA and SIC are currently working with Ofgem and other relevant stakeholders to share knowledge on the rollout of smart meters and the transition away from RTS and other types of metering. This has particular relevance to decarbonising heating (see section 7) and smart metering opens up opportunities for customers to opt for tariffs that suit the technology installed for example heat pump and electric vehicle charging along with property occupation patterns.

### **Minimum Income Standard (MIS)**

The Council has been tasked on behalf of the region's Local Authorities, to take forward a request to look at the potential of revisiting the 2013 Minimum Income Standard study for Remote Rural Scotland (with a policy and budget update in 2016). An options paper is being developed and this will look at how MIS works, what it has and is delivering, its potential applications and limitations, and what other data sources there are which could go some way to addressing issues associated with cost-of-living challenges in different parts of our region.

### **Advice Services**

Shetland Islands Citizens Advice Bureau offers support and advice on money/debt and benefits, and has specialist energy advisers to help clients with high energy costs.

## 5. Priority B: Improving domestic energy efficiency

### 5.1. Background

Poor energy efficiency of domestic buildings is one of a number of contributors to the high levels of fuel poverty across Shetland. The LHEES guidance includes three considerations for energy efficiency:

- Poor building energy efficiency
- Poor building energy efficiency as a driver for fuel poverty
- Mixed-tenure, mixed-use and historic buildings

The LHEES will seek to support and expand both funding and delivery to meet the Council's objectives. The main grant funding programmes for retrofit adopt a fabric-first approach. This prioritises making the building envelope (walls, lofts, floors) thermally efficient and is beneficial to the roll out of ZDEH, which meets whole house retrofit principles to effectively reducing fuel poverty levels.

#### **Energy Performance Certificate**

To date, Scotland's energy efficiency targets have been based on Energy Performance Certificate (EPC) ratings however, limitations of this approach have been highlighted.<sup>7</sup> The EPC as it stands is effectively a cost efficiency rating, where the cost of using the heating system is the major factor, making the rating less useful for setting targets for reducing the energy demand of buildings.

An example of this is that over half of the social housing properties in Shetland have an energy efficiency rating of EPC band D or below. Due to the high proportion of properties with electric heating, which tend to have lower EPC ratings, Shetland reflects badly against local authorities with lower cost fuels using this metric.

The flip side of this is that electric heating is a ZDEH measure so a large proportion of the local housing and non-domestic stock already meet ZDEH requirements. However, without good fabric efficiency this will be at great expense and without reasonable levels of fabric efficiency makes it very expensive to upgrade fabric and switch to efficient ZDEH technologies such as heat pumps.

The exposed climate means measures such as doors and windows have a much greater impact in Shetland than in other parts of the UK, because they reduce draughts. However, these measures are not reflected properly in the recommended measures on EPCs, and therefore the measures are often not eligible for funding.

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<sup>7</sup> Climate Change Committee (2023) [Reform of domestic EPC rating metrics to support Net Zero](#)

## 5.2. Challenges

### Lack of Accredited Installers

Many UK and Scottish Government schemes require that installers have certain accreditations, such as PAS2035 or MCS certification. This has led to a lack of accredited insulation installers locally (please see section 6)

### Funding Issues

The Energy Redress Scheme is funding provided by Energy Saving Trust on behalf of Ofgem. However, the bureaucracy of the funding process puts the SIC and HHA at a disadvantage because of limited staffing resources.

Other funding options, like the Scottish Government Social Housing Net Zero Heat Fund (SHNZHF) is allocated on a competitive basis rather than strategically. A competitive model puts Shetland projects at a disadvantage because of the added expense of project delivery in Shetland.

Additionally, up until recently net zero, decarbonisation, and retrofit funding required that projects replace heating systems with ZDEH options. HHA's housing stock already meets the Scottish Government definition for ZDEH disqualifying HHA from applying. Only after Council lobbying did the Scottish Government agree to provide an alternative fabric improvement funding option for homes that already have decarbonised heating systems.

Funding timelines for implementing projects are generally very restrictive, which makes project delivery within the required timescale difficult to achieve at best.

### Cost of materials and labour

The cost of materials and labour are significantly higher in Shetland than mainland Scotland and there are few opportunities for economies of scale due to differing build types therefore, no significant scale uniformity in buildings making retrofitting more expensive. Also, methods of install differ and the high prevalence of timber framed construction is more suited to the strip back method of insulation for internal wall and room in roof. Due to increased materials required and time to install, costs are significantly higher.<sup>8</sup>

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<sup>8</sup> [Microsoft Word - HHA\\_DeepRetrofitFinalReport\\_Jun24\\_FINAL](#)

## **Owner occupied properties - Legislation**

In Shetland, 73% of properties are owner-occupied. Of these, 16% are in EPC bands A-C, potentially meeting the proposed 2033 requirements for energy efficiency.<sup>9</sup> The remaining 57% will require improvements to the buildings fabric and/or heating system within the next 10 years. In the longer term, owner-occupied properties that are currently using fossil fuel-based heating systems will need to install a new heating system by 2045 at the latest. However, this standard is yet to be finalised as the way compliance is measured is likely to be different from the current EPC metric.

Since both deadlines are into the future, owner-occupiers may not be motivated to take action sooner.

## **Private rented sector - Legislation**

The percentage of privately rented properties in Shetland is currently 4% of the building stock. The majority of these are in EPC Bands D or below. Under proposed legislation, privately rented properties will be required to meet a minimum energy efficiency standard of EPC Band C by 2028. Funding exists to support landlords to improve the energy efficiency of their properties, however limited funding is available for heating system upgrades.

The 'split incentive' associated with privately rented properties is a barrier to improving the energy efficiency of these buildings. This describes the issue faced by a private landlord who is responsible for paying for the cost of energy efficiency upgrades to their property but does not gain from the financial benefits associated with cheaper energy bills. There is a risk that landlords will increase rent to cover the cost of retrofit works.

Imposing ever-evolving legislation on landlords to meet various standards, combined with recent changes to restrict rent increases or instigate a rent cap and give tenants greater tenure security, is leading many landlords to leave the sector. If rent caps or other restrictions continue, landlords' ability to raise revenue for investment is seriously restricted.

## **5.3. Ongoing Work and Opportunities**

### **Social Housing**

In Shetland, 23% of properties are social housing split 67% SIC and 33% HHA.

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<sup>9</sup> Scottish Government (2023) [Delivering net zero for Scotland's buildings - Heat in Buildings Bill: consultation](#)

The new Social Housing Net Zero Standard (SHNZS) is being introduced from 2025, it is currently on hold while the Standard is reviewed to ensure alignment with the 2045 net zero target.

The SIC is continuing to focus on a fabric-first approach until the SHNZS is published. Once SHNZS is implemented the SIC will ensure that existing data on building stock can support a new Strategy and set up a programme of works to achieve the new Standard in the required timescale. Delivering the improvements will require assurance of long-term and adequate funding available to support social landlords to avoid rent increases. Similarly, HHA will proceed with planning works to upgrade their housing stock once information about the standard is finalised.

## **EPC Reform**

The Scottish Government launched a consultation on EPC reform.<sup>10</sup> It proposes to introduce a range of new metrics, including a fabric rating, which will specifically focus on the fabric performance. This is important, as it will be more reflective of the overall energy efficiency in terms of energy use compared to the current cost based factor and will therefore better highlight potential areas of improvement.

## **Managing Agent for Grant Schemes**

Energy Efficient Scotland: Area-Based Scheme (EES:ABS) funding<sup>11</sup> is provided to Councils by Scottish Government to deliver energy efficiency and decarbonisation retrofits in private and private rented homes.

By employing a Managing Agent the aim is to improve the efficiency of the process with the MA taking on the contracting with local installers and in addition, in conjunction with HES, provide the relevant information to the general public on the following schemes:

- **Warmer Homes Scotland.** This is administered by Warm Works. Our in-house Assessors, who carry out surveys under ABS also complete surveys under Warmer Homes. The Warmer Homes programme is in place until March 2030.
- **Home Energy Scotland (HES).** The Home Energy Scotland Grant and Loan scheme offers grant and interest-free loan funding. Home Energy Scotland also offers free advice on energy saving and reducing bills, keeping warm at home, renewable energy, greener travel, cutting water waste and more.
- **ECO4 - Flex.** The ECO4 scheme is a UK Government programme that requires energy companies to provide funding to retrofit low income and vulnerable households. ECO4 is intended to run from 2022-2026. It is expected that the UK

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<sup>10</sup> Scottish Government (2023) [Energy Performance Certificate \(EPC\) reform: consultation](#)

<sup>11</sup> Scottish Government (2016) [Area-Based Schemes](#)

Government will replace the scheme with new eligibility and funding requirements in 2026.

This should also assist in providing clearer lines of enquiry for the public looking for information on grant and loan assistance.

## 6. Priority C: Developing the local retrofit supply chain

### 6.1. Background

To take advantage of the opportunities noted in section 5 requires development of the supply chain to make large-scale energy efficiency and heat decarbonisation upgrades and achieve specific goals set out in the LHEES.

#### Accreditation

Most domestic grant and loan funding streams require that:

- Those overseeing and administering works are working to PAS 2035
- Installers are accredited to PAS 2030: 2019
- Installers are certified under the Microgeneration Certification Scheme (MCS)

The MCS quality insurance scheme certifies low-carbon energy technologies and installations used to produce electricity and heat from renewable sources. This includes heat pumps, solar panels, battery storage, biomass and wind.

Being an MCS certified installer demonstrates to customers that installers deliver to the industry-expected level of quality. In Shetland, there are eight MCS approved installers on the Energy Saving Trust 'Find an Installer' tool at time of writing (April 2024):

Measure	Number of MCS-certified installers
Air source heat pump	6
Ground/water source heat pump	2
Solar PV	2
Battery storage	1

Table 3: Number of MCS-certified installer.<sup>12</sup>

There are also 17 local approved plumbers on SHEAP Ltd's contact list for internal district heating connection works.

<sup>12</sup> Energy Saving Trust (2024) [Renewables Installer Finder](#), Accessed 9 April, 2024.

## 6.2. Challenges

### Supply Chain

In terms of ZDEH and solar PV there is strong interest from local installers. In 2024 just over 8% of Shetland's households have a heat pump installed which is above the Scotland average.<sup>13</sup> However, this expansion needs to continue and bring with it the number of accredited insulation contractors. There are various local and national factors that impact on both.

There is a major shortage in the retrofit and decarbonisation industry in the specific trades and professions such as plumbers, HVAC (Heating, Ventilation, and Air Conditioning) specialists, surveyors and Retrofit Coordinators<sup>14</sup>. Investment is needed to encourage existing installers to upskill and train workers to enter the retrofit and decarbonisation workforce. This is a particular challenge in Shetland where training and upskilling opportunities are limited with people often needing to travel to the mainland to get training which is expensive and time consuming.

The supply chain for heat decarbonisation will need to be developed to meet future demand. A 2020 research report found that heat pump manufacturers were confident in their ability to scale up operations as demand increases.<sup>15</sup> However, Shetland faces challenges due to its distance from mainland Scotland.

### Methods of Install

The construction types in Shetland suit the strip back method of insulation. Due to the different mainland UK construction types external contractors are likely to predominantly use the overboarding method and are not likely to be accredited to carry out strip back. Therefore, there would be difficulty attracting external contractors to carry out works locally.

### Funding timelines

Scottish Government funding for energy efficiency schemes tend to only award annual funding. This does not offer continuity for landlords or for installers, particularly for attracting additional installers or skills into a remote market.

### Local housing stock

18% of domestic properties in Shetland have transitioned to ZDEH systems. There are currently just over 4,000 properties that are on oil or other NZDEH systems. What is less understood is how many of these properties will require fabric upgrades to allow consideration of heat pumps as a ZDEH option where properties are stated to be heat

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<sup>13</sup> The MCS Data Dashboard (2024) [Installation insights](#). Accessed 10 April, 2024

<sup>14</sup> ClimateXChange (2022) [Clean Heat and Energy Efficiency Workforce Assessment](#)

<sup>15</sup> Eunomia (2020) [Heat pump manufacturing supply chain research project](#)

pump ready. It is likely that in Shetland's exposed climate that insulation standards for efficient operation of heat pumps will be higher. Also, this does not include properties that have expensive to run ZDEH systems such as older storage heating.

In Lerwick there are currently circa 260 properties that are still on oil and 2,033 on electric storage heating.

### **Weather conditions**

Shetland's average annual maximum temperature is nearly three degrees colder than the UK<sup>16</sup> and with higher average windspeeds results in challenging construction conditions throughout much of the year.

## **6.3. Ongoing Work and Opportunities**

SIC and partners are committed to helping the supply chain to overcome these barriers, as demonstrated by the recent future housing event held and facilitated by the Council.<sup>17</sup>

### **Heat pump training**

There are now opportunities for heat pump training in Shetland. In May 2024, the mobile heat pump training centre from Scottish Government and Energy Saving Trust came to Shetland. Nine employees from the Council and one local contractor attended a weeklong training on heat pumps.<sup>18</sup> Further visits have been made and is co-ordinated by the Shetland Construction Training Group (SCTG).

### **Managing Agent**

As noted in section 5 a Managing Agent will be in place in 2025/26 to provide a range of services including contracting with local installers to undertake fabric efficiency and ZDEH measures as well as solar PV. A more streamlined approach covering the various grant and loan schemes will be beneficial in securing more interest from the private sector particularly for fabric measures.

### **Scottish Government Green Jobs Fund**

The Just Transition Commission has stated that the market will not drive the change required, and systemic change must be driven by legislation and regulation from Scottish Government.<sup>19</sup> Similarly, reforming public procurement mechanisms can

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<sup>16</sup> Shetland Islands Council (2023) [Shetland-forward](#)

<sup>17</sup> Scottish Housing News (2024) [Shetland Islands Council hails successful 'Future Housing' event | Scottish Housing News](#)

<sup>18</sup> Shetland Islands Council (2024) ["Heat pump training unit arrives in the isles"](#)

<sup>19</sup> Just Transition Commission (2023) [Scotland's Retrofit Workforce: A Briefing on the Built Environment and Construction](#)

create demand and support growth of local workforces. The Scottish Government has committed to a £100m Green Jobs Fund over the next five years, which will be used to support the development of sustainable and low-carbon products and services.

### **Empowering Shetland**

This is an inclusive growth strand of the Shetland partnership including Empowering skills which will amalgamate green skills with all skills.

## **7. Priority D: Decarbonising Heating**

### **7.1. Background**

To meet Scottish Government net zero targets, homes across Shetland will be required to transition away from fossil-fuel based heating systems. The upcoming Heat in Buildings Standard from the SG will provide more clarity on requirements and timelines.

From table 4 below there are approximately 4,000 properties that are heated using boilers (the majority of which are oil).

The table also shows the number of properties that are currently on storage heating and a large proportion of these will be older storage heating. Under the definition, these are ZDEH systems, however these systems are difficult to control and expensive to run. Therefore, including these systems for upgrade dramatically increases the scale of the challenge ahead.

<b>Main fuel type</b>	<b>Number of properties in Shetland</b>
LPG	68
No fuel	89
Oil	3709
Solid	330
Storage heating	5355

*Table 4: Domestic Properties in Shetland, by Main Fuel Type.*

### **7.2. Heat Networks**

Heat networks, as defined in the Heat Networks Scotland Act 2021, include both district and communal heating:

- A district heat network is a network which distributes thermal energy from one or more sources to more than one building
- A communal heating system is a system which distributes thermal energy from one or more sources to one building comprising more than one unit (e.g. a block of flats)

Lerwick benefits from a District Heating System, operated by Shetland Heat Energy and Power (SHEAP Ltd.), which currently heats almost 1,300 customers split 1140 domestic and 141 non-domestic.<sup>20</sup> The district heating system provides a significantly lower-cost energy source to its customers than electricity<sup>21</sup> and is currently comparable with heating oil but does not fluctuate in price.

Heat networks provide under 2% of Scotland's heating<sup>22</sup> but in Shetland, the Lerwick network already provides almost 10% of heating to domestic properties (based on total number of domestic properties in Shetland). Currently it supplies heating to about 30% of the town. This number will grow in the coming years. There are significant opportunities to expand the scheme and according to SHEAP Ltd, up to 60% of properties in Lerwick may be able to connect to district heating over the next 10 years.

The Heat Networks Act requires local authorities to identify and potentially designate Heat Network Zones. Zoning provides market signals to attract private investment from heat network developers. Analysis was undertaken to identify the areas where heat networks present a decarbonisation pathway that could be of strategic importance for Shetland. The areas of greatest potential were identified based on heat density, the identification of anchor loads, and existing and potential projects (see Appendix 4 for full methodology).

## 7.3. Challenges

### Disruption

Householders can face significant disruptions when retrofitting their homes with ZDEH systems. Whilst the extent of this disruption will be less for houses currently on a wet heating system changing to district heating, it will be significantly greater for all other upgrades. This has been highlighted in research on early adopters of heat pumps.<sup>23</sup>

### New and Expansion of existing heat networks

Expansion of existing heat networks will require cooperation between the heat network operator (e.g. SHEAP Ltd.) and any prospective customers. The challenges associated

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<sup>20</sup> Shetland Heat Energy & Power (SHEAP) [How it Works](#)

<sup>21</sup> Shetland Islands Council (2023) [Climate Change Strategy](#)

<sup>22</sup> Scottish Government (2024) [Renewable and low carbon energy](#)

<sup>23</sup> ClimateXChange (2023) [Experiences of early adopters of zero emissions heating](#)

with network expansion include redesigning energy centres, laying new connecting pipework and developing new contractual arrangements.

Heat networks require a significant amount of upfront investment for the development of both the heat generator (e.g. heat from waste facility) and the underground network of pipework and are only viable where there is enough heat demand available to ensure efficient and economic stability of the project. Assurances need to be made prior to development that there is enough heat demand in the area to ensure financial returns on investment but heat networks will be competing with fuel prices for other ZDEH systems and the fabric efficiency of the potential connected buildings i.e. how much energy do they use.

### **Connections to Existing Networks**

There is currently a waiting list of customers looking for a connection and the current connection rate is around 30 new customers a year.

### **Price of electricity**

The unit cost of electricity in Shetland remains high, added to higher average consumption due to the local climate. This is a major barrier for installing ZDEH outside of Lerwick (not on the district heating network) for properties on oil. The efficiency of any heating system is linked to the fabric efficiency of the property. This is especially the case with heat pumps which require a minimum standard to allow them to operate effectively. Therefore, householders are faced with very high upgrade costs to ensure that ongoing running costs are kept as low as possible.

### **Shetland's electricity grid**

The 443MW Viking Energy Project will see the Shetland grid shift away from diesel powered generation to a grid powered by onshore wind energy with energy storage. Taken together the onshore wind projects already in operation and those underway will far exceed the electricity demand in Shetland with the excess exported via interconnector to the UK mainland. The interconnector will allow for Shetland to “export renewable electricity generation to the grid, as well as ensure security of electricity supply for Shetland.”<sup>24</sup> SSEN Transmission intend to develop a second HVDC subsea cable to increase Shetland's ability to export electricity and provide a more secure electricity supply.<sup>25</sup>

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<sup>24</sup> SSEN (2022) [Major milestone reached as first subsea cable installation begins on Shetland HVDC Link](#)

<sup>25</sup> SSEN (2024) [SSEN Transmission selects Sumitomo Electric Van Oord Consortium as Preferred Bidder for Shetland 2 HVDC link](#)

Once the Shetland Distribution grid is connected to the Transmission network through the GSP some of the restrictions which have been in place will be lifted. In particular the raising of the grid connection limit from 3.6kW to 50kW.

Whilst Shetland will be able to send more energy to the national grid, the capabilities of the distribution grid within Shetland will be very similar. This means that there will still be significant challenges both in terms of targets for increasing electric ZDEH and renewable solutions particularly where there are competing targets such as electric vehicles.

SSEN Distribution plan to reinforce areas of the network to allow for more electricity demand, which is predicted in the Distribution Future Energy Scenarios.<sup>26</sup> The distribution grid will be upgraded in line with these expected increases. The demand currently peaks around 45MW. SSEN expects the demand to rise to around 70MW by 2050.

## **7.4. Ongoing Work and Opportunities**

### **Lerwick heat network expansion**

SHEAP Ltd will be expanding the Lerwick scheme to heat 300 social housing properties in the new Staney Hill development by Hjalmland Housing Association.<sup>27</sup>

SHEAP Ltd. has a waiting list of buildings looking for connections. It has recently conducted training to upskill more installers to make connections and are anticipating an increase in the rate of connections soon. The potential to connect up existing households that are currently on oil heating means significant opportunity remains to remove fossil fuel combustion plant from sites in Lerwick.

A component of the LHEES process is identifying places where additional heat networks may be technically viable.<sup>28</sup> This highlighted Lerwick North and Lerwick South within the Lerwick district heating scheme.

### **Excess energy from renewable energy projects**

The increase in renewable energy projects in Shetland provides a promising opportunity for expanding the district heating scheme in Lerwick. SHEAP Ltd. is exploring options for how to use excess energy from new projects to provide more energy to the heat network.

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<sup>26</sup> SSEN (2023) [Distribution Future Energy Scenarios 2022](#)

<sup>27</sup> Shetland News (2024) [District heating for new Staney Hill development](#)

<sup>28</sup> Details of the LHEES methodology followed can be found in Appendix 4.

## **Brae Heat Network Feasibility Study**

The Council has awarded a contract for the preparation of a RIBA Stage 2 district heating scheme feasibility study and outline business case (concept design) for Brae. These services are required to understand the technical and economic viability, costs, opportunities and options for next steps and decision making in progressing a heat network in Brae. This is part of the Brae Rural Energy Hub project noted at section 8.3. Importantly, this study will also inform the potential of further rural district heating schemes in Shetland.

## **Scalloway Community Development Company (SCDC)**

SCDC is keen to address net zero issues in the community and amongst other projects is investigating the potential of a district heating system in Scalloway in conjunction with the UHI Shetland campus in Scalloway and their need to meet net zero targets and replace old oil fired boilers. Initial discussions with UHI suggest there is scope for synergy between what UHI are seeking and the community as a whole. SCDC is hoping to commission a feasibility study during 2025.

## **Consumer trust in heat networks**

Heat networks are uncommon in Scotland and therefore are an unfamiliar concept for most energy consumers. However, Lerwick has had a heat network for several decades giving householders in Shetland more confidence in the technology.

## **Economic benefits of developing heat networks**

Developing and maintaining heat networks can provide several economic benefits for residents. The Lerwick scheme supports £500,000 in local employment every year through network expansion and individual connections. Additionally, circa £3 million/year stays in the local economy that would have otherwise been spent on electricity or oil for heating.<sup>29</sup>

## **LENZA planning tool**

SSEN are developing a geospatial planning platform to provide data to local authorities for strategic energy planning. When complete, the platform will include tools that support data-driven decision making on electricity network capacity, building stock, and energy consumption.

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<sup>29</sup> Welsh Government (2019) [Case Study 06: Lerwick District Heating](#)

## 8. Priority E: Community and Non-Domestic

### 8.1. Background

There is very little data on non-domestic buildings, the information contained within the EST non-domestic datasets is limited therefore, energy efficiency upgrade information is not currently well-reported. This is an issue across Scotland, and not just in Shetland.<sup>30</sup>

However, public buildings are relatively well known as energy related activities have been ongoing within the SIC buildings for a number of years underpinned by the Climate Change (Scotland) Act 2009.

Also, SHEAP Ltd's current figure for the number of non-domestic connections to the Lerwick district heating system is 141 which represents circa 8% of the total number of non-domestic buildings in Shetland.

Whilst there is a cross-over with domestic buildings, it is important to highlight the community based work ongoing because of the link to non-Council non-domestic sites.

### 8.2. Challenges

#### Data on non-domestic buildings.

There is a lack of central data on non-domestic buildings. The EST data may be improved going forward but an action is required around how we can improve upon the data available in this area.

#### General

The challenges facing the non-domestic sector largely mirror the domestic sector in that the installer market is limited and also finance is tight in the face of high energy costs and other cost pressures. In 2022 there were 1,655 private businesses registered in Shetland, of which 95% were small businesses (0-49 employees)

However, non-domestic properties do not face the same challenges with respect to grant/loan funding stipulations i.e. installers do not need the same accreditations to carry out works in non-domestic buildings.

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<sup>30</sup> ClimateXChange (2022) [An evidence review of data associated with non-domestic buildings](#)

## **8.3. Ongoing Work and Opportunities**

### **Funding**

Following the combined decisions of the Scottish and U.K. governments to invest £100m into the Islands Growth Deal with the intention of targeting areas including energy and skills.

The Scotland Recycling Fund, as part of the Scottish Public Sector Loan Scheme, is a ring-fenced fund held by the eligible public sector body. The scheme aims to increase investment in energy efficient technologies across the public sector.

There are various grants/loans and other assistance on offer to communities and businesses with assistance provided by SIC Grants Unit, based within Community Planning and Development, Economic Development and Highlands and Islands Enterprise (HIE).

The Grants Unit and Community Work team are also able to support community groups with a range of tasks including signposting, project planning, governance and completing grant applications.

### **Community Groups**

Local community groups are involved in projects relating to energy efficiency and decarbonisation. North Yell Development Council (NYDC) is one such group which is currently looking at cross sector projects including:

- Demonstrator project at Sellafirth testing heat pump technologies in a non-domestic building
- Working in partnership with Home Energy Scotland and Community Energy Scotland looking at a trial of air to air heat pumps in domestic properties

### **Council Building Assessments**

The Council will continue to review its build stock as part of the requirements under the Heat in Buildings regulations and a defined list of actions is contained within the Delivery Plan. This includes a technical and economic review of buildings heated by oil boilers to highlight the work required to bring the building to suitable standard to allow installation of the ZDEH system.

### **Shetland Rural Energy Hub Project**

The Rural Energy Hubs project is demonstrating a place-based approach to overcoming non-technical barriers to accelerate decarbonisation in remote and rural communities across Orkney and Shetland. It will establish locally led Hubs that will provide services to support individuals, businesses and local authorities that can be replicated across the UK. A pilot Hub is being created in Brae to test this concept to be known as the “Brae Rural Energy Hub”.

### **Community wealth building**

Community Wealth Building (CWB) is an alternative approach to traditional economic development, which seeks to develop resilient, inclusive local economies, with more local employment and a larger and more diverse business base. It aims to reorganise local economies to be fairer and aims to reduce wealth flowing out of our communities, towns and cities by helping local investments and assets to generate more and better jobs for local residents and businesses.

Community wealth building is a priority for the potential Brae heat network. The upcoming Brae Districts Heating Feasibility Study will explore community wealth building and opportunity to improve social equity as a key outcome. The study will explore community interest business models and regulatory change. It will explore the use of waste or curtailed energy as a method of making rural heat networks economically sustainable.

### **Community benefit agreements from large capital energy projects**

In Shetland, the Shetland Community Benefit Fund has agreed the largest community benefit agreement amount for any onshore wind development project in the UK. They will receive £400,000 a year while Viking Energy Wind Farm is under construction and nearly £2.2 million once the wind farm is operational.<sup>31</sup> Taking advantage of community benefits to support the transition to net zero is a priority for Shetland.<sup>32</sup> Community benefit agreements for wind farms and other large capital energy projects provide a source of funding for achieving LHEES priorities.

### **Integrated Energy Systems (IES)**

Integrated energy systems (IES) combine energy sources to collectively supply electricity, transport, heating, and cooling demands of an area. The idea is that by looking across all areas of demand, and thinking about the local service needs that determine energy use, a more effective and efficient system can be created to help reduce waste and lower carbon emissions. There is one central control platform to automate decision making and operate the grid accordingly. Orkney has trialled an

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<sup>31</sup> Shetland Community Benefit Fund (2024) [Home](#)

<sup>32</sup> UHI Shetland (2023) [Energy KE Challenge Fund – Project Report](#)

Integrated Energy System, called ReFLEX Orkney.<sup>33</sup> This demonstrates that Integrated Energy Systems are viable in island communities.

## 9. Conclusion

This Strategy informs, and should be read alongside, the LHEES Delivery Plan.

Shetland's LHEES sets out where we are at in terms of the data for building greenhouse gas emissions and also domestic fuel poverty. The methodology has been followed and the LHEES critically assesses the information produced using the available national datasets. It highlights that these datasets, particularly in a rural island setting are not fit for purpose and indicates work ongoing that could serve to provide more accurate data. Critically this does not impact on the work ongoing across Shetland.

It will support the delivery of the Council's goals of improving energy efficiency, installing ZDEH systems, reducing fuel poverty, and decreasing carbon emissions. More specifically, it looks to:

- Deliver the built environment goals set out in the Climate Change Strategy

The LHEES will support the Council and its community planning partners to scale-up and align existing programmes, and to increase the scale and pace of retrofit and developing of heat networks that is needed to meet the national target of net zero by 2045.

The Strategy outlines several challenges which need to be overcome in order to decarbonise Shetland's buildings but also highlights the opportunities that currently exist.

There is a statutory duty on the Council to update the LHEES every five years. Due to the urgency particularly the rapidly evolving policy landscape, the Strategy and Delivery Plan will both have a review and update as and when required. They will be treated as live documents and will be updated where the introduction of new standards, regulation, and delivery programmes impact on the LHEES, as well as future opportunities within Shetland.

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<sup>33</sup> ReFLEX Orkney (2024) [What is ReFLEX?](#)

