

Agenda Item	6.
Report No	CCC/21/23

The Highland Council

Committee: Climate Change

Date: 5 December 2023

Report Title: Local Heat and Energy Efficiency Strategy (LHEES) and Delivery Plan

Report By: Interim Depute Chief Executive

1. Purpose/Executive Summary

- 1.1 This report accompanies the Local Heat and Energy Efficiency Strategy (LHEES) and Delivery Plan for consideration by the Climate Change Committee to ensure that Council meets its statutory requirement to prepare an authority wide LHEES by the end of December 2023. Please refer to **Appendix 1**.

2. Recommendation

- 2.1 Members are asked to agree to recommend to Full Council **approval** of the Local Heat and Energy Efficiency Strategy and Delivery Plan.

3. Implications

- 3.1 **Resource** – The current LHEES activity is funded by the Scottish Government. Changeworks have been commissioned to support the Council with the Stage 1-8 development.

The delivery of the Strategy will have resource implications for the Council in terms of staff time, access to expert consultancy, and the cost of physical works related to specific projects. However, the extent will depend on the pace and scale of delivery, the availability of external funding and degree to which works are delivered by or in partnership with others. All of these factors will become clearer through the development of the Detailed Delivery Plan, as set out in Section 8 of the Strategy.

The LHEES Working Group has been set up to review the Stage 1-4 results that feeds into the Strategy. The group is chaired by the Council's Climate Change Coordinator for LHEES and consists of Property Management, Housing, Development Planning and Climate Change and Energy colleagues.

Further engagement and input from internal colleagues is expected to support the creation of engagement plan for the external stakeholders that need to be involved in the finalisation of Delivery Zones and Areas.

- 3.2 **Legal** - The Local Heat and Energy Efficiency Strategies (Order) 2022 places a legal duty on all local authorities across Scotland to prepare an LHEES by December 2023.
- 3.3 **Community (Equality, Poverty, Rural and Island)** - The LHEES will set out the long-term plan for decarbonising heat in both domestic and non-domestic buildings and improve energy efficiency across an entire local authority area. A wide range of Impact Assessments have been undertaken.
- 3.4 **Climate Change / Carbon Clever** - The development and implementation of LHEES will establish a framework for heat decarbonisation in both public and private buildings, reduce energy demand, tackle fuel poverty, and contribute to Net Zero targets. It provides a platform for local community engagement in the heat transition, creating the opportunity for communities to help shape heat transition and improve energy efficiency of buildings in their locality.
- 3.5 **Risk** - Failure to deliver LHEES may have legal implications and detrimental impact on Council's reputation.
- 3.6 **Health and Safety (risks arising from changes to plant, equipment, process, or people)** - One of the main priorities for the LHEES is to alleviate fuel poverty. The LHEES helps understand levels of fuel poverty within the Council area and therefore the extent of interventions required to support domestic building stakeholders and to support compliance with existing regulation.

Funding for various energy efficiency and heat decarbonisation measures has been identified in this Strategy. It provides the evidence, and supports prioritisation of delivery areas and potential projects, where an existing funding such as the Energy Efficiency Scotland: Area Based Schemes (EES:ABS) and Energy Company Obligation (ECO) programmes can be directed within the first iteration of LHEES to contribute to warmer and healthier environment for people to live in.

- 3.7 **Gaelic** - There are no Gaelic implications arising from this report.

4. Background

- 4.1 The Highland Council has a statutory requirement to prepare the LHEES under the Local Heat and Energy Efficiency Strategies (Scotland) Order 2022. [The Local Heat and Energy Efficiency Strategies \(Scotland\) Order 2022 \(legislation.gov.uk\)](https://www.legislation.gov.uk)
- 4.2 The LHEES sits below Scotland's national [Heat in Buildings Strategy](#) which sets out a national vision that by 2045 our homes and buildings will be cleaner, greener and easier to heat whilst no longer contributing to climate change. The completion of Strategy and Delivery Plan by each local authority will support the Scottish Government achieve national targets that set out in the Heat in Buildings Strategy and shape the delivery of heat decarbonisation.
- 4.3 The scope of the Council LHEES is to:
- focus on energy efficiency and heat decarbonisation to identify opportunities for the domestic and non-domestic stock and set out how each segment of the buildings needs to change to meet local and national objectives including Net Zero and energy efficiency to reducing fuel poverty
 - identify potential heat decarbonisation zones

- identify key areas for the first iteration of LHEES to deliver against local and national priorities
- act as a prospectus for where government funding and private investment for heat decarbonisation and energy efficiency should be targeted.

4.3 An updated LHEES and Delivery Plan is to be published at intervals of no more than 5 years after the date of publication of the previous Strategy and Delivery Plan.

5. The Local Heat and Energy Efficiency Strategy

5.1 The Strategy is a long-term plan for decarbonising heat and improving energy efficiency for all buildings across an entire local authority area. It identifies area-based solutions and actions setting out how these works could be coordinated and undertaken to help achieve our own targets, priorities and Scotland's legally binding Net Zero commitments.

5.2 For the Highland Council, the development and implementation of the Strategy will help influence a regional approach for heat decarbonisation in both public and private buildings.

5.3 Strategy Layout

Background Information introduces LHEES, its structure, function, local priorities, approach Council took to develop its first LHEES and local formalities.

Structure: As established in the Local Heat and Energy Efficiency Strategies (Scotland) Order 2022, LHEES has a two-part structure: Strategy and Delivery Plan.

Function: The LHEES sets out the long-term plan for decarbonising heat in buildings and improving the energy efficiency of buildings across the Highland Council area, framed around the LHEES Considerations, and taking local priorities into account. The LHEES Considerations are off-gas grid buildings, on-gas grid buildings, heat networks, poor building energy efficiency, poor building energy efficiency as a driver for fuel poverty, mixed-tenure, mixed-use and historic buildings.

Local priorities: The Council has been working with internal and external stakeholders to identify local priorities and drivers. The Council-wide LHEES takes the LHEES Considerations into account and ensures that they are set out against our own local priorities and drivers listed below:

- Decarbonisation
- Building repairs
- Energy efficiency, mixed-use, mixed-use, and historic buildings
- Supply chain
- Local development
- Community wealth building
- Resilience and adaptation
- Skills development and upskilling
- Skills retention
- Fuel poverty
- Net Zero Strategy, EESSH2 and local energy policies

Approach:

- Pilot programme to gain a better understanding of what and LHEES involves and test methods for creating a LHEES.

- Stage 1-4¹ analysis to produce outputs that feed into the Strategy.
- Workshops with internal colleagues.
- A LHEES Working Group has been established to assist in the development of the Strategy and Delivery Plan.
- Engagement and Consultation - key stakeholder engagement activities included:
 - Internal engagement with Housing, Property, Planning, Climate Change and Energy Colleagues to determine the scope of the LHEES prior to the pilot programme.
 - Ongoing engagement with strategic partners such as Zero Waste Scotland (ZWS), Scottish Futures Trust (SFT), Heat Network Support Unit (HNSU), Scottish Government and Hub North Scotland Limited.
 - Ongoing engagement with other local authorities through the Local Authority Forum and LHEES Governance & Oversight Group.
 - Engagement with social landlords and other relevant parties.
 - Ongoing engagement with the Highland Council area's public and private stakeholders such as Changeworks, Highlands and Islands Community Hub, NHS Scotland, Fire and Rescue Services, Highlands and Islands Enterprise, Community Trusts, Highlands and Islands University through consultation on the LHEES and Delivery Plan.

Local Authority Formalities: The Council has considered several impact assessments such as Strategic Environmental Assessment (SEA) to support the development of the LHEES Strategy and Delivery Plan.

Local Authority Progress presents national context and progress towards heat decarbonisation, energy efficiency, fuel poverty (with focus on energy efficiency as a driver), heat networks, technologies and measures including renewable energy technologies (heat pumps, biomass), hydrogen, and insulation.

National Context: summarises the LHEES Considerations, the Heat in Buildings Strategy, Heat Networks (Scotland) Act 2021, and Fuel Poverty (Scotland) Act 2019.

Local Authority Progress: summarises the Highland Council's progress towards heat decarbonisation, energy efficiency, fuel poverty (with focus on energy efficiency as a driver), heat networks, technologies and measures including renewable energy technologies, support for energy efficiency, and heating upgrades for the community.

Financial Support for Energy Efficiency and Heating Upgrades: summarises financial support available in the local authority area to help with energy efficiency improvements and heat decarbonisation.

Summary of Ongoing Work by Local Authority: provides a summary of ongoing projects within the Local Authority and partners.

Case studies: includes several case studies to provide detailed examples of ongoing work within the Council area.

Policy and Strategy Context sets out national, regional, and local heat and energy efficiency policy landscape, including a review of Scottish, UK and local policies and drivers relevant to LHEES.

Baselining provides an overview of how the Highland Council baseline is performing including building characteristics, energy efficiency performance, fuel type, tenure,

¹ i. Stage 1 – Policy and strategy review
 ii. Stage 2 – Data and tools library
 iii. Stage 3 – Strategic zoning and pathways
 iv. Stage 4 – Generation of initial delivery areas

historic buildings, floor area, property age, urban rural 8-fold, space heating and hot water. Both domestic and non-domestic sectors have been taken into account.

Domestic baselining examples:

- There are 127,066 domestic properties on the Energy Saving Trust's Home Analytics in the Highlands.
- Most of the domestic properties were built in pre-1919 (18%), between 1950-1983 (38%), and post-2002 (18%), compared to 19%, 39% and 15% in Scotland retrospectively.
- The region has a higher proportion of detached properties (38%) and semi-detached properties (21%).
- 33% of properties are in an Energy Performance Certificate (EPC) band E-G, compared to 13% of households with EPC E-G in Scotland.
- Around 19% of solid walls, 10% of cavity, 3% of system built and 10% of timber framed walls are uninsulated.
- Around 47% of properties have 250+mm of loft insulation and 9% between 0-99mm of loft insulation.
- 77,648 (61%) of domestic properties are in an off-gas grid area. Heating for off-gas areas mainly relies on fossil fuels such as oil (28%) and LPG (3%).
- 92% of domestic properties are already double or triple glazed.
- The majority of properties in the Council area are owner-occupied (59%), 19% privately rented, 16% owned by a LA and 4% by housing associations.
- 98% of buildings in the Highlands are not listed.
- Scottish Government figures indicate that 33% of households in the region are experiencing fuel poverty, compared to the national average of 24%. In addition, 22% of all households in the Highlands are facing extreme fuel poverty, which is nearly double the national average of 12%.
- Analysis of domestic properties off the gas grid identified 19,001 and on the gas grid 24,338 properties highly suited for heat pump retrofit because they have good levels of insulation and often heating distribution system.

Non-domestic baselining examples:

- There are 16,904 non-domestic buildings on the Energy Saving Trust's Non-Domestic Analysis tool.
- These buildings account for the total heat demand of 947,753 (MWh/yr).
- Electricity is the main fuel type across the non-domestic stock. 65% (11,021) of buildings are heated by electricity, followed by oil (2,950 / 17%), mains gas (1,379 / 8%) and other fuels (1,554 / 9%).
- 6,697 (40%) of non-domestic buildings were built post-1983, 6,722 (40%) pre-1919 and 2,955 (18%) between 1949-1983. Only 490 (3%) of buildings were built between 1919-1949.
- 54% (9,191) of non-domestic buildings have a floor area between 100-500m², 28% (4,701) between 0-100m², 9% (1,510) between 500-1000m² and 9% (1,502) 1000+m².
- The non-domestic stock in the Highland Council areas classed as very remote rural (7,613 / 45%), other urban areas (2,902 / 17%), remote rural (2,351 / 14%), very remote small town (1,760 / 10%), accessible rural (1,078 / 6%) and remote small town (1,200 / 7%).

Generation of Strategic Zones & Pathways, including Potential Zones² for Heat Networks presents the Council Strategic Zones for the LHEES Considerations and sets out what needs to be done to change buildings and relevant local infrastructure

² Note: The analysis carried out for strategic zoning and pathways for the heat networks. Consideration is to identify potential zones.

over the next 15-20 years to fulfil the Scottish Government’s objectives and local priorities relating to heat and energy efficiency in buildings.

Heat Networks

The first iteration of LHEES identifies indicative Heat Network Zones to understand the scale of potential and initial areas of focus. The outputs of LHEES can be used to start work on the consideration of heat networks through follow-up work for Heat Network Zoning³, as required by the [Heat Networks \(Scotland\) Act 2021](#).

7 potential Heat Network Zones have been identified as Indicative Heat Network Zones. Existing infrastructure and constraints within Indicative Zones have been analysed, with strategic consideration given to how these Zones could be further developed, considering heat source opportunities and proximity to existing networks. The Indicative Zones present theoretical and technical potential only at a strategic level, prior to any site level feasibility study alongside funding availability to progress them. Some examples are presented below.

Figure 1. Potential Heat Network Zone – Invergordon cluster

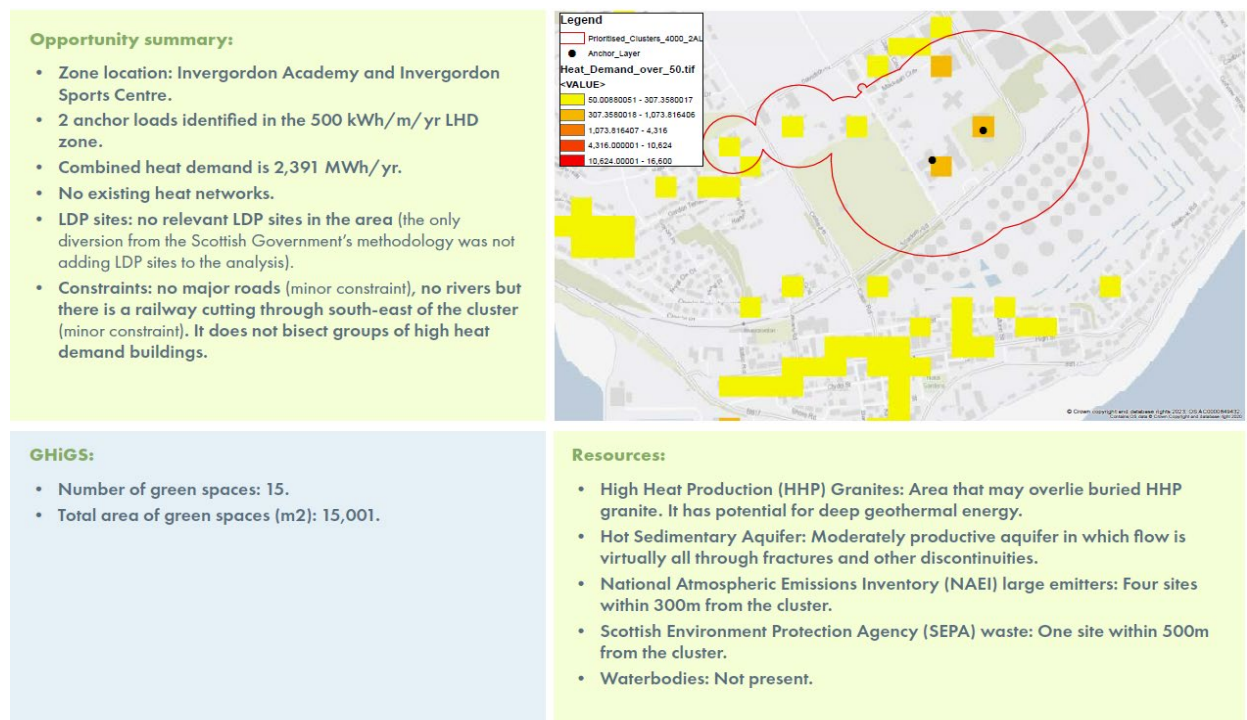


Figure 2. Potential Heat Network Zone – Dingwall cluster 1

³ Note: Heat Network Zoning involves assessing the combined heating needs of all the buildings in the area, identifying what sources of heat generation are available, and then identifying the subset of the demands.

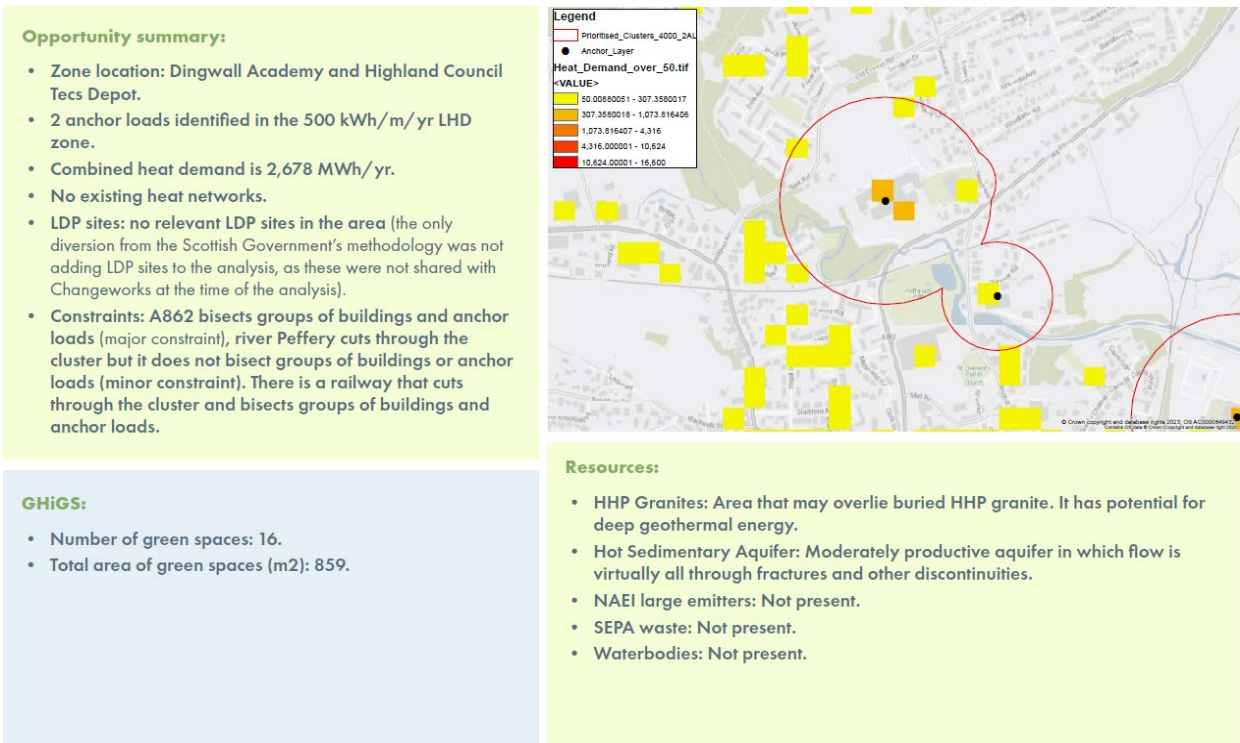
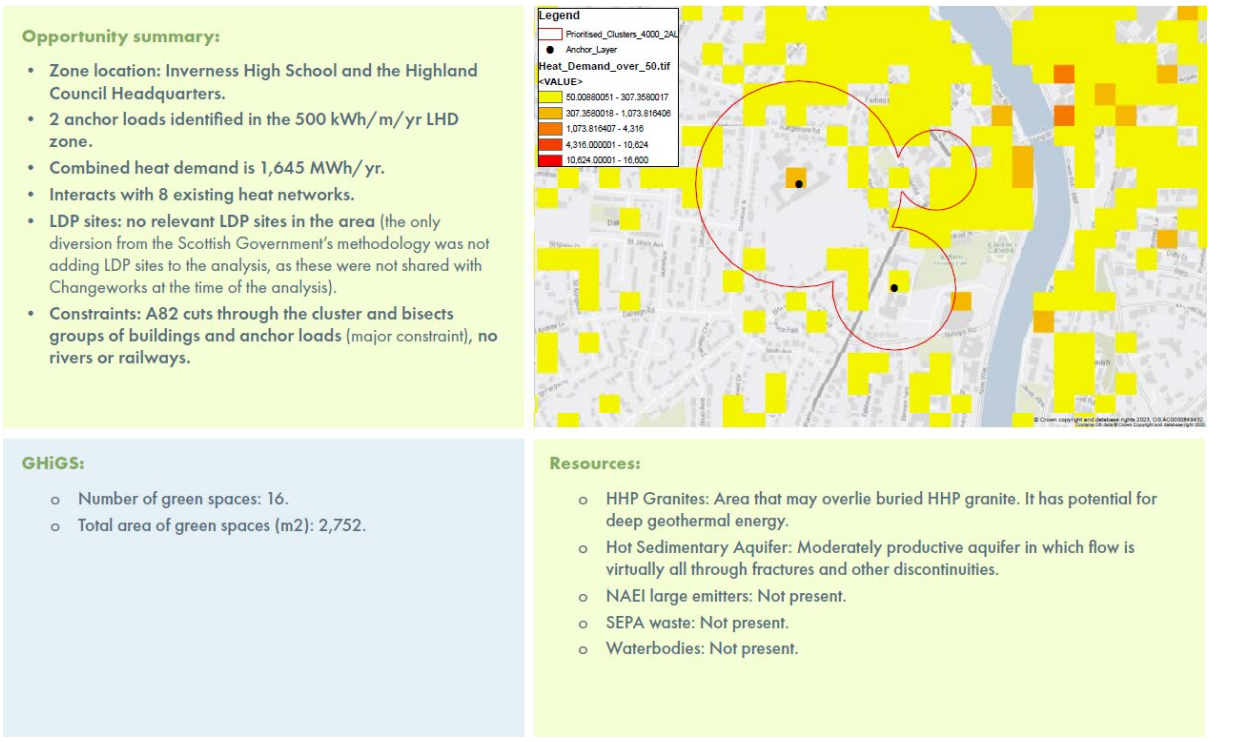


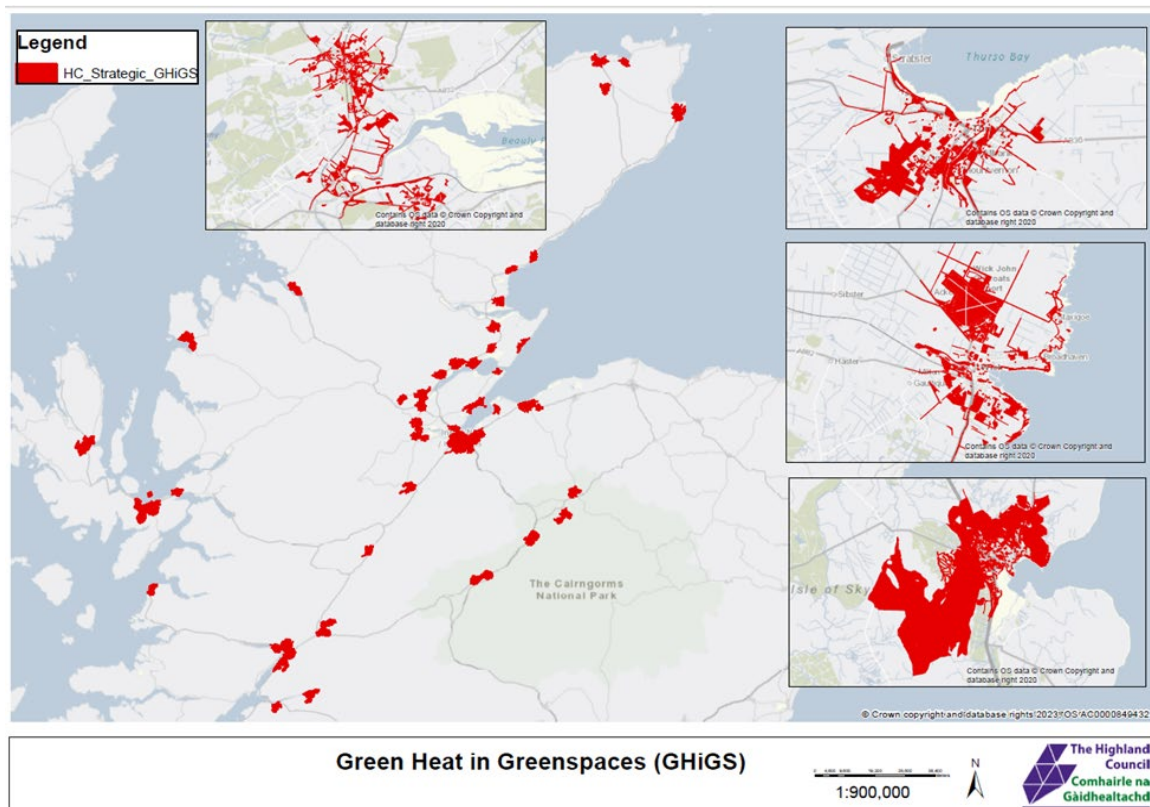
Figure 3. Potential Heat Network Zone – Inverness cluster 1



When analysing the 'heat pump ready' property clusters in both the on and off-gas areas, over 1,550 green spaces in the off-gas areas are identified that show a high potential to be used for small-scale heat networks such as shared GSHPs for the nearby properties, and over 760 for the on-gas areas⁴. Some of the areas are Thurso, Wick, Skye, Beaully and Muir of Ord.

⁴ Note: This is a desktop-based analysis using data from the Green Heat in Green Spaces dataset and requires research beyond this analysis for feasibility and matters such as the landownership.

Figure 1 - Green Heat in Greenspaces Opportunities for smaller scale heat networks



Building-Level Heat Decarbonisation

The section helps to understand the scale of potential and initial areas of focus to support a strategic starting point to inform Delivery Areas and follow-on engagement.

Domestic stock example: The low-regret decarbonisation through heat pump deployment in off-gas areas presents a good opportunity for decarbonisation. At the local level, there are 77,648 properties in off-gas grid areas, with 6,428 already heated by a low or zero carbon heat (Category 0) and 29,219 (23%) with tertiary potential for heat pump retrofit. This means that a significant amount of fabric upgrades are required to the properties to be heat pump ready or those less suited to heat pump be electrified with storage or direct electric heaters or biomass. Summary of domestic properties in whole Local Authority area, off-gas grid by Category⁵ are presented in **Table 1**.

Table 1 – Summary of domestic properties in whole Local Authority, off-gas grid

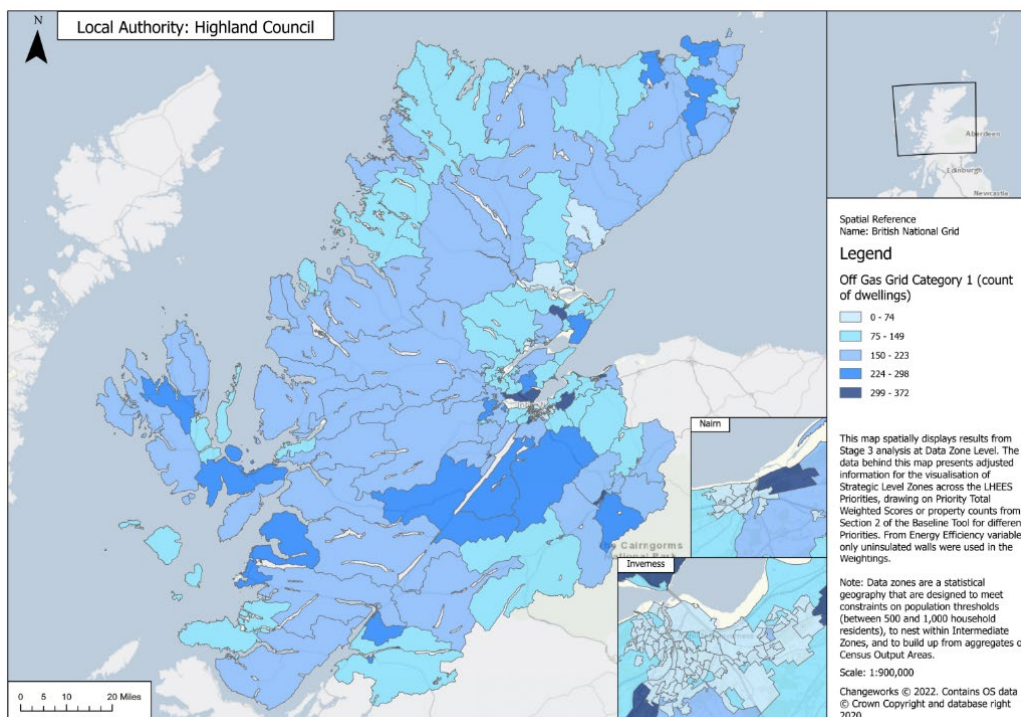
⁵ Category 0 - identifies properties that currently have a low or zero emissions heating system.

Category 1 – identifies properties highly suited for heat pump retrofit with good levels of insulation and a wet heating system, excluding any consideration of electricity network impacts or costs of any network upgrades.

Category 2 – identifies buildings with secondary potential for heat pump retrofit. They are properties in need of moderate fabric upgrades and/or wet distribution system to be heat pump ready.

Category 3 – identifies properties that have potential for heat pump retrofit but significant fabric improvements are required.

	Count in Category	HA	LA	Owner occupied	Privately rented
Number of domestic properties in Category 1	19,001	187	2,319	13,793	1,495
Percentage of LA domestic properties	15%	0%	2%	11%	1%
Number of domestic properties in Category 2	27,333	1,820	6,091	13,624	2,340
Percentage of LA domestic properties	22%	1%	5%	11%	2%
Number of domestic properties in Category 3 ⁷³	29,219	377	1,278	20,075	4,101
Percentage of LA domestic properties	23%	0%	1%	16%	3%



Map 1– Off-gas grid (domestic) Category 1 map displays results from Stage 3 analysis at Data Zone Level

Non-Domestic stock example: The Highland Council area has 16,904 non-domestic buildings with the total heat demand of 947,753 (MWh/yr). Many non-domestic buildings are heated by electricity, oil and mains gas which could provide low regret opportunities for heat decarbonisation.

Figure 5 - The non-domestic stock breakdown by heating system fuel type

Main Typology	By heating system fuel type			
	Electricity	Mains Gas	Other	Oil
General sports & leisure	195	23	50	25
Clubs and community centres	428	47	41	87
Museums, art galleries, libraries, law courts	75	13	9	9
Large entertainment sites (e.g. theatres, cinemas, conference centres)	7	6	2	2
Places of worship	266	31	28	45
Education	209	25	27	39
Emergency services	85	7	9	22
Health	170	41	19	24
Hotels	509	131	144	228
Cafes, pubs, restaurants and takeaways	376	87	68	90
Light manufacturing / industry / workshop	392	68	50	161
Heavy manufacturing / industry	109	1	15	42
Offices	1,026	252	82	301
Retail	2,450	301	140	513
Storage/distribution	87	22	3	102
Residential	4,232	310	801	1,162
Military & prison	0	0	0	1
Other	280	8	48	69
Screened out	125	6	18	28
Total count	11,021	1,379	1,554	2,950

Energy Efficiency and Other Outcomes

It provides an opportunity to understand the scale of potential for various energy efficiency improvements and solar photovoltaic (PV) to support a strategic starting point to inform Delivery Areas and follow-on engagement.

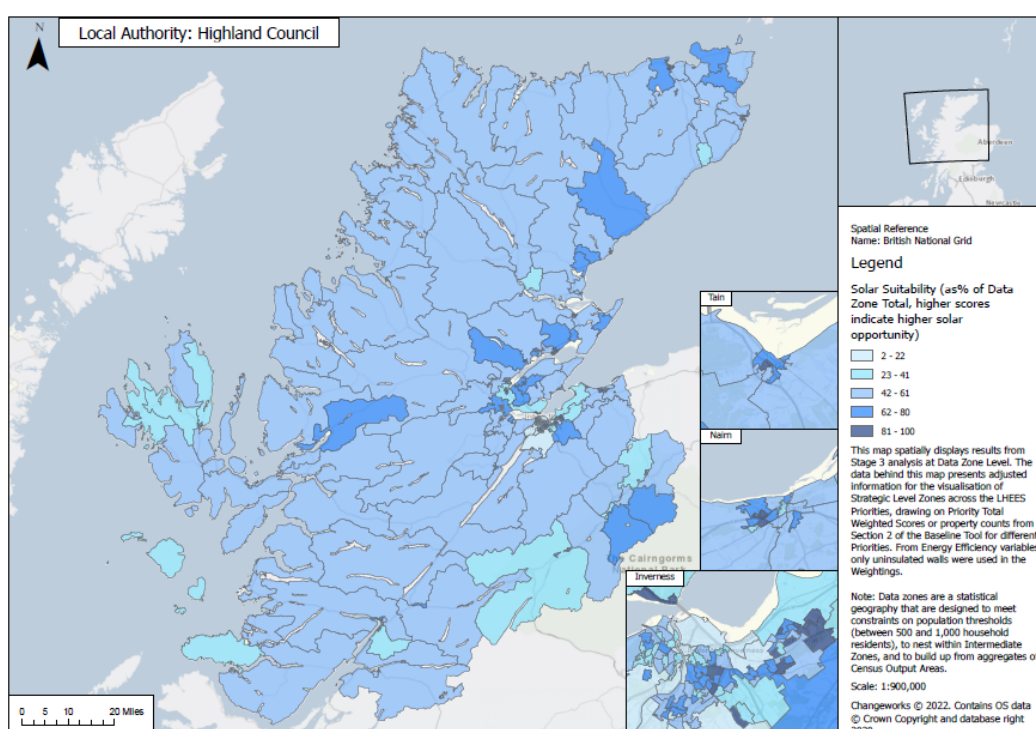
Table 2 – Summary of whole Local Authority, poor energy efficiency as a driver for fuel poverty

	Key indicators					Uninsulated walls – construction type			Uninsulated walls – tenure types		
	Loft insulation 0-99mm	Single glazed windows	Uninsulated walls	Solid Brick or Stone	Timber Frame	Cavity Construction	System Built	HA	LA	Owner Occupied	Private Rented
Number of properties within specified fuel poverty rate % ⁶	887	666	5,678	1,857	1,720	1,551	550	216	361	4,234	368

⁶ Note: Local Authority specified fuel poverty rate is 10%.

As a % of properties within specified fuel poverty rate	7%	5%	45%	15%	14%	12%	4%	2%	3%	33%	3%
As a % of all properties in LA	1%	1%	4%	1%	1%	1%	0%	0%	0%	3%	0%

Although domestic renewables were not part of the LHEES methodology, given the relatively high proportion of houses compared to flats (76% vs 64% nationally), there is potential for solar thermal and solar PV installations in the Council area.



Map 2 – Solar suitability from Stage 3 analysis at Data Zone Level

For Stage 5 (Building-level pathway assessment) completion, the Portfolio Energy Analysis (PEAT) was undertaken to establish in more detail intervention(s) required to decarbonise buildings from a heating and energy efficiency perspective (Table 3). No Stage 4 GIS results are included in this table. These will be taken into consideration during completion of Stage 6 (Finalisation of delivery-level areas).

Table 3 – PEAT analysis outputs

Measures	Number of measures
Solar panels (PV)	55,400
UPVC windows	101,447
Air source heat pump	43,981

Ground source heat pump	14,188
Uninsulated walls	54,043
Uninsulated floor	89,482
Loft top up	32,082
Cavity wall insulation	12,150
Internal wall insulation	18,246
External wall insulation	15,728
Total number of measures	436,747
Total number of properties	116,610

Figure 6 presents an overview if all measures were to be adopted.

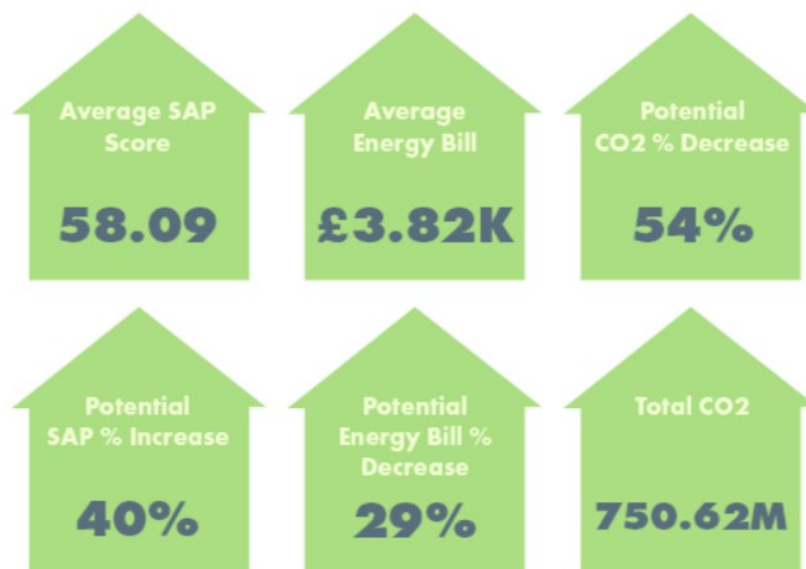


Figure 6 – PEAT assessment outputs

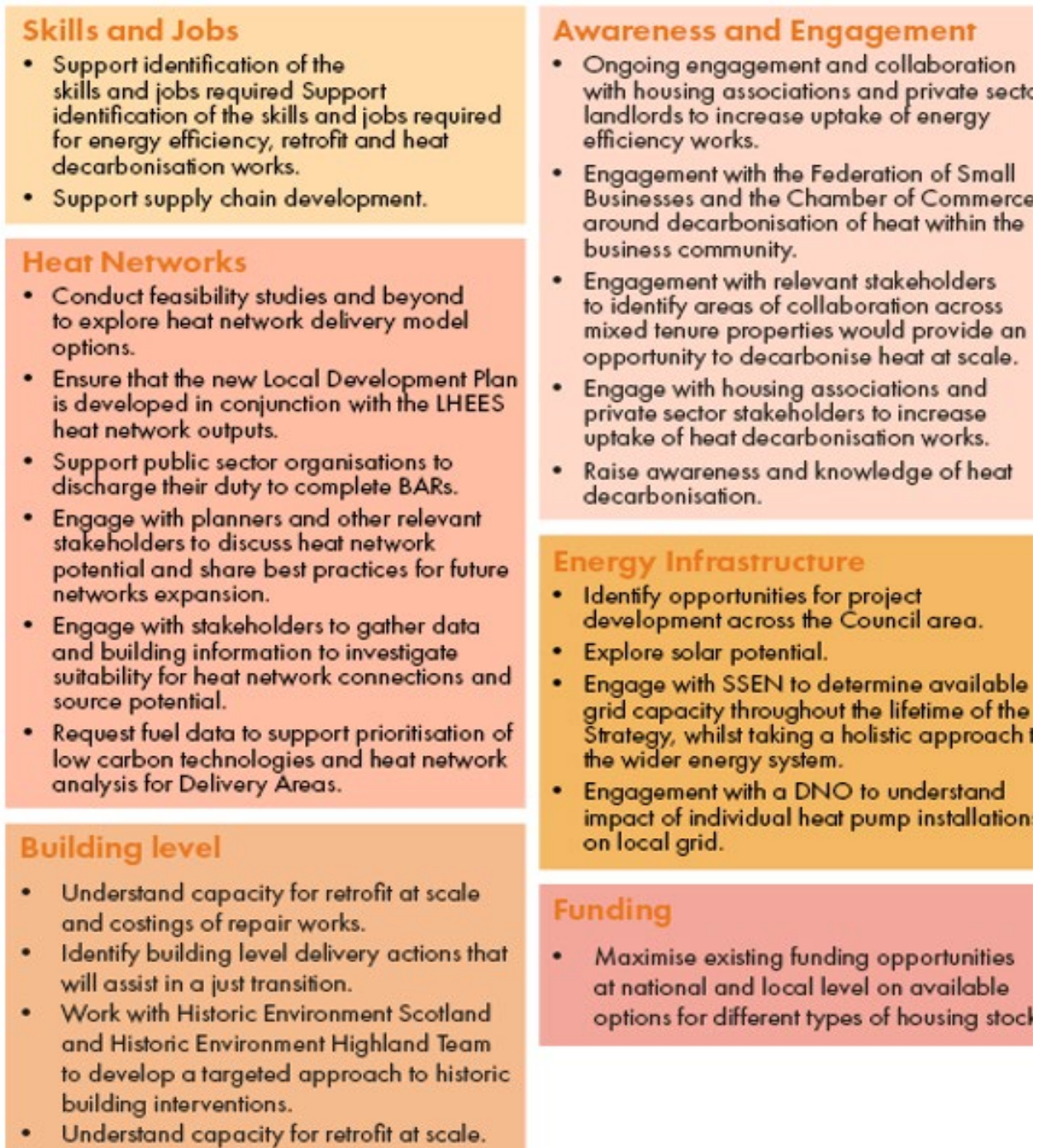
Summary of Strategy Findings and Next Steps includes the main findings set out in the Strategy and requirements from the Scottish Government.

6. Delivery Plan

- 6.1 The Delivery Plan includes a summary of high-level actions to take forward in the first LHEES Delivery Plan. This is intended as a near-term delivery of actions, based on local priorities, LHEES Considerations and stakeholder engagement.
- 6.2 The high-level Delivery Plan is a living document and is subject to change when the Council and partner organisations start delivering the LHEES project. It is important to acknowledge that the list of high-level actions will be delivered within the 5 years Delivery Plan. The LHEES officer is currently working towards the detailed Delivery Plan and **Appendix 2** includes a matrix that could be followed. Additional columns can be added to track the Council's progress.

A summary of high-level actions can be found in **Figure 7** below.

6.3 **Figure 7** – Summary of Actions



6.4 The Monitoring and Evaluation Plan covers progress related to Delivery Plan Actions. It will be developed with the detailed Delivery Plan.

Designation: Interim Depute Chief Executive

Date: 23 November 2023

Author: Ruta Burbaite, Climate Change Coordinator (LHEES)

Background Papers:

[Heat Networks \(Scotland\) Act 2021](#)

[Heat Network Delivery Plan](#)

[Heat in Buildings Strategy](#)

[Local heat and energy efficiency strategies and delivery plans: guidance](#)

[Energy Efficiency Standard for Social Housing post 2020 \(EESH2\) review: interim guidance for social landlords](#)

[Fuel Poverty Scotland Bill](#)

[Decarbonising heat: policy statement](#)

[Housing to 2040](#)

[Draft Energy Strategy and Just Transition Plan](#)

Appendices:

Appendix 1 – Local Heat and Energy Efficiency Strategy

Appendix 2 – Delivery Plan Matrix.

Appendix 2 – Delivery Plan Matrix

Skills and Jobs

Action	Lead	Stakeholders	Funding	Journey	Timescales	Progress	Benefits expected
Support identification of the skills and jobs required for energy efficiency, retrofit and heat decarbonisation works.							
Support supply chain development.							

Awareness and Engagement

Action	Lead	Stakeholders	Funding	Journey	Timescales	Progress	Benefits expected
Ongoing engagement and collaboration with housing associations and private sector landlords to increase uptake of energy efficiency works.							
Engagement with the Federation of Small Businesses and the Chamber of Commerce around decarbonisation of							

heat within the business community.							
Engagement with relevant stakeholders to identify areas of collaboration across mixed tenure properties would provide an opportunity to decarbonise heat at scale.							
Engage with housing associations and private sector stakeholders to increase uptake of heat decarbonisation works.							
Raise awareness and knowledge of heat decarbonisation.							

Heat Networks

Action	Lead	Stakeholders	Funding	Journey	Timescales	Progress	Benefits expected
Conduct feasibility studies and beyond to explore heat network delivery model options.							
Ensure that the new Local Development Plan is developed in conjunction with the LHEES heat network outputs.							
Support public sector organisations to discharge their duty to complete BARs.							
Engage with planners and other relevant stakeholders to discuss heat network potential and share best practices for future networks expansion.							
Engage with stakeholders to gather data and building information to investigate suitability for heat network connections and source potential.							
Request fuel data to support prioritisation of low carbon technologies							

and heat network analysis for Delivery Areas.							
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Energy Infrastructure

Action	Lead	Stakeholders	Funding	Journey	Timescales	Progress	Benefits expected
Identify opportunities for project development across the Council area.							
Explore solar potential.							
Engage with SSEN to determine available grid capacity throughout the lifetime of the Strategy, whilst taking a holistic approach to the wider energy system.							
Engagement with a DNO to understand impact of individual heat pump installations on local grid.							

Funding

Action	Lead	Stakeholders	Funding	Journey	Timescales	Progress	Benefits expected
Maximise existing funding opportunities at national and local level on available options for different types of housing stock.							

Building Level

Action	Lead	Stakeholders	Funding	Journey	Timescales	Progress	Benefits expected
Understand capacity for retrofit at scale and costings of repair works.							
Identify building level delivery actions that will assist in a just transition.							
Work with Historic Environment Scotland and Historic Environment Highland Team to develop a targeted approach to historic building interventions.							
Understand capacity for retrofit at scale.							

