

EAST RENFREWSHIRE COUNCILCABINET15 August 2024Report by Director of EnvironmentPUBLICATION OF LOCAL HEAT & ENERGY EFFICIENCY STRATEGY**PURPOSE OF REPORT**

1. The purpose of this report is to seek approval to publish the Local Heat & Energy Efficiency Strategy for East Renfrewshire.

RECOMMENDATIONS

2. Cabinet is recommended to approve the publication of the Local Heat & Energy Efficiency Strategy and Delivery Plan.

BACKGROUND

3. The Local Heat and Energy Efficiency Strategies (Scotland) Order 2022 requires each local authority to produce LHEES and accompanying Delivery Plans every five years.

4. Local Heat and Energy Efficiency Strategies (LHEES) are long term plans for an entire local authority area to improve energy efficiency and transition away from burning fossil fuels for heating i.e. removal of natural gas boilers. As such, successful implementation of the LHEES can directly contribute to fulfilling the Council's climate change duties.

5. The LHEES follows an area-wide approach, meaning it addresses all buildings (domestic and non-domestic) in East Renfrewshire, not just the Council's own building stock. It covers all homes (whether owned by owner-occupiers, social landlords, or private landlords) and all non-domestic buildings, whether owned by the Council, other public bodies, businesses, or the third sector.

6. Therefore, the LHEES is published by the Council, but is representative of action that will be required by a wide group of stakeholders across the area.

7. A draft Local Heat & Energy Efficiency Strategy (LHEES) was agreed by Cabinet on 22nd February 2024 and has been subject to a 6-week public consultation.

REPORT

8. The LHEES ambition is for every property in East Renfrewshire to have access to affordable, reliable and clean heat. For homes, this would help reduce the risk of fuel poverty, and bring social, economic and public health benefits. However, significant funding and investment will be required if this ambition is to be realised.

9. The scale of the challenge is enormous – nearly all properties both domestic and non-domestic require some improvement in energy efficiency or to remove natural gas boilers in

the next 20 years. The cost to private property owners across the Glasgow City Region to meet the energy efficiency and zero-emission heating standards has been estimated at £10.7 billion.

10. The availability of skilled tradespeople and the capacity of supply-chains to provide the necessary equipment are also noted as key challenges in the delivery of the energy and heat transition identified in the LHEES. This is not addressed specifically in the LHEES but provides the context for delivery of the strategy.

11. The strategy and the associated delivery plan will aim to achieve four main outcomes:
Outcome 1: Homes and buildings in East Renfrewshire are as energy efficient as possible
Outcome 2: Heat solutions are delivered to meet the 2045 net zero target and tackle fuel poverty
Outcome 3: Investment and grant funding is secured to deliver net-zero projects
Outcome 4: East Renfrewshire Council supports property owners to find improved heating solutions

12. The LHEES has identified six priority workstreams to help develop our Delivery Plan and achieve our four outcomes. The priorities below are not ranked, they are numbered for ease of reference only:

Priority 1 - Analyse potential heat network zones

Priority 2 - Deliver ground source heat pumps for socially rented properties

Priority 3 - Increase levels of cavity wall insulation in the private sector

Priority 4 - Improve uptake of wall insulation EES:ABS programmes

Priority 5 - Deliver improvements for non-domestic council owned properties

Priority 6 - Determine most appropriate solar thermal and solar PV installations

13. The draft LHEES was subject to public consultation. The key points raised through the public consultation are summarised below:

- **Clarity of funding and information provision:** It was suggested that residents would find it *“difficult to afford measures to help improve energy efficiency and utilise clean heat”*. That there should be a *“minimum cost to owners to ensure uptake”* of energy efficiency measures and adoption of clean heat systems. Greater assistance was requested from the government on both funding and relevant information. Greater clarity was sought on *“what existing funding is available for individuals, and also how the council will fund implementation”*. There was general uncertainty around which measures to adopt across varying housing types
- **Green skills confidence:** A lack of confidence in the expertise of subcontractors was expressed. Concerns were raised around appropriate delivery and the impact of energy efficiency measures such as cavity wall insulation causing dampness, and external wall insulation possibly resulting in planning issues due to close proximity of many homes. One respondent suggested that *“education of the net zero problem and recommended solution should be a necessary part of any contract offered by the council”*. Another respondent was concerned that there may not be enough experienced personnel amongst council staff *“to effectively and speedily manage the strategy and logistics”*.

14. The final LHEES has seen moderate changes from the draft shared with Cabinet in February, reflecting the views expressed during the consultation. The key changes are noted below:

- Appendices have been added to address the comments on the draft LHEES by consultants appointed by the Scottish Government. This includes appendices

outlining the methodology for potential heat network areas in more detail; outlining the public and stakeholder consultation that has taken place; and

- An appendix has been added to show the latest progress with the potential heat networks in Eastwood and Barrhead.

15. The final LHEES now includes a Delivery Plan. The Delivery Plan sets out short/medium-term actions, i.e. up to five years. At this stage, the actions are mainly attributed to the Council. However, it is expected that other key stakeholders will become increasingly involved in delivery of actions. The Delivery Plan will be updated regularly, in recognition of the changing policy landscape in relation to climate change and heat in buildings.

FINANCE AND EFFICIENCY

16. There are no immediate budget or staff impacts resulting from this report.

17. The LHEES is the first step in a process that will radically change how all types of building tenures across the local authority area are heated, maintained and managed over the next 20 years. Future costs for the Council to make the necessary changes to its own buildings has previously been estimated to be at least £250m. Additional funding and specialist skills will be required to take forward the actions outlined in the LHEES.

18. Future funding requirements for LHEES actions will be considered and progressed through the budget strategy and capital planning processes, and external funding will be pursued. It is recognised that funding is the major constraint in progressing the actions in the delivery plan but all opportunities for aligning the delivery plan with Council work programmes will be considered.

CONSULTATION AND PARTNERSHIP WORKING

19. The draft LHEES was subject to a 6-week consultation, hosted on the Council's Common Place web-based system. 72 responses were received.

20. The Scottish Government appointed consultants to review all Council LHEES to help build consistency in the approach being taken by local authorities. The feedback from the consultants has been considered in preparing the final draft.

21. A LHEES working group has been established with officers from across the Environment Department. The LHEES officer has engaged with other local authorities through networks organised by Scottish Government, the Improvement Service and Sustainable Scotland Network. This has been important in sharing and learning good practice as all local authorities are working towards delivery of their LHEES. Findings from these groups has informed how the LHEES was prepared and the priorities set out within the strategy.

IMPLICATIONS OF THE PROPOSALS

22. There are no immediate impacts on staffing, property, health & safety, IT and subsidy-control relating to this report.

23. A Climate Change and Equalities, Fairness & Rights Impact Assessment has been completed. The assessment found that whilst there are some risks to socio-economic groups being disadvantaged, as a result of transitioning to clean heating for properties (i.e. potential investment and increased running costs), the LHEES and the related national policies have

expressed a clear ambition to alleviate fuel poverty. When detailed proposals are being proposed, mitigating steps will be taken to avoid negative impacts on groups who are disadvantaged socio-economically.

24. A Climate Change Impact Assessment was completed and no immediate impacts were identified. The strategy will lead to further actions being taken which will be subject to a climate change impact assessment. In the fullness of time, it is expected that LHEES will have a very significant positive impact on reducing emissions in both Council operations and the wider community.

CONCLUSIONS

25. LHEES are long-term plans for an entire local authority area to improve energy efficiency and transition away from burning fossil fuels i.e. removal of natural gas boilers.

26. Following consultation with key stakeholder and the public, a final LHEES, including a Delivery Plan, is ready for publication.

27. Priorities for action consider the development of heat networks, supporting private homeowners to install insulation, new heating systems and solar panels, and assessing and improving the Council's own estate. The scale of the challenge is enormous – all properties in the area, totalling over 42,000 domestic and non-domestic buildings, are likely to require some improvement action.

RECOMMENDATIONS

28. Cabinet is recommended to approve the publication of the Local Heat & Energy Efficiency Strategy and Delivery Plan.

Director of Environment

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July 2024

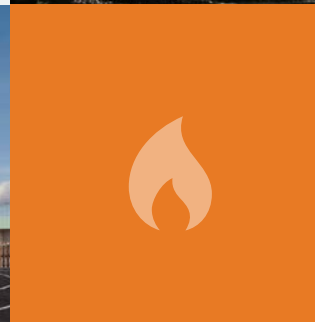
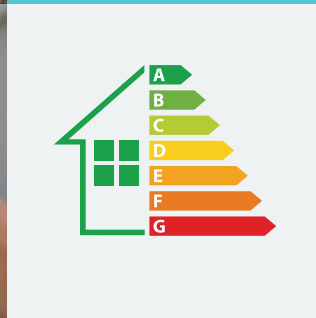
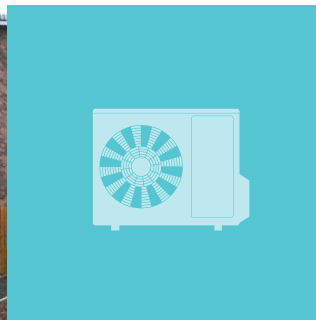
APPENDICES

1. Local Heat & Energy Efficiency Strategy: 2024-2029



Local Heat and Energy Efficiency Strategy

August 2024



Glossary of Terms

Anchor Load: A building with a large, dependable, and long-term demand for heat which can help make a heat network commercially viable.

Biomass: Biomass is organic material from plants and animals. This can be used as a source of energy. Typical examples are forestry products or fuel crops.

Building Assessment Reports (BAR): Statutory guidance to support the owners of non-domestic buildings to discharge their duty in relation to assessing their building's potential to connect to a heat network. They should be read alongside the HNZ and Building Assessment Reports (Scotland) Regulations 2023.

Delivery Area: Spatial zones setting out clusters of buildings that identify potential solutions, a starting point for identifying projects and actions.

Delivery Plan: The LHEES Delivery Plan is a document setting out how a local authority proposes to support implementation of its local heat and energy efficiency strategy.

ECO4: The Energy Company Obligation (ECO4) is a government energy-efficiency scheme in Great Britain, designed to tackle fuel poverty and help reduce carbon emissions. ECO is an obligation placed on energy companies to deliver energy efficiency measures to domestic premises.

EES:ABS: Energy Efficiency Scotland: Area Based Scheme is funded by Scottish Government and co-ordinated by local authorities. The funding targets fuel-poor areas to provide energy efficiency measures to a large number of Scottish homes while delivering emission savings and helping reduce fuel poverty.

Energy efficiency: The amount of energy required to heat a building (given its size) and the building's ability to retain that heat. The most common way to measure energy efficiency is through an Energy Performance Certificate (EPC), which provides a simple rating of energy efficiency of the building.

Energy Performance Certificate (EPC): An Energy Performance Certificate (EPC) gives information on how energy efficient a building is and how it could be improved. You need an EPC when: applying for a completion certificate for a new building; selling a building; or renting a building to a new tenant.

Fuel poverty: A household spending more than 10% of its income on fuel costs where the remaining household income is insufficient to maintain an adequate standard of living.

GIS: Geographic Information System

Greenhouse Gas (GHG): Greenhouse gases are gases that trap heat in the earth's atmosphere, a process called the greenhouse effect. These gases occur naturally but are also produced by human activity.

Heat decarbonisation: The process of removing emissions from heating buildings. Typically, this is achieved using a combination of improvements to the heating demand in a property (e.g. from improving insulation and reducing drafts) and changing to a zero-emission heating system for heating and hot water.

Heat networks: A network of pipes by which hot water is distributed from one or more sources of production to more than one building. They are a tried and tested technology used extensively across Europe. They are a key strategic technology for reducing emissions from heating homes and non-domestic buildings.

Heat pump: Usually air source or ground source – are modern, low carbon heating systems that are much more energy efficient than boilers and traditional electric heating. They work by taking warmth from the surrounding air, ground or water and heating this using a refrigerant gas. Typically this then heats hot water to provide heating and hot water to properties, but can also provide hot air, which is similar to an air-conditioning system.

Home Analytics: The Energy Saving Trust's service which pulls together data on residential properties across Great Britain. It combines energy efficiency metrics with the full range of property attributes, geographical factors, such as region or rurality, and socio-demographic information, such as tenure and fuel poverty.

Just Transition: An approach to meeting environmental targets which addresses potential sources of unfairness and to provide better outcomes for different groups of people.

Strategic Zone: Visualisation of the potential pathways to decarbonise the building stock at a local authority level.

TWh: Terrawatt hours abbreviated as TWh is a unit of energy representing one trillion watt hours. A kilowatt hour is equivalent to a steady power of one kilowatt running for one hour.

Zero-emission heating: A heating system for properties that does not use polluting fuels (e.g. gas/oil/LPG), but instead is using heat pump, electric storage, or heat networks that are derived from clean sources. Hydrogen gas may also be considered zero-emission if the hydrogen gas was derived from renewable sources.

Executive Summary

East Renfrewshire Council has joined many local authorities in Scotland in declaring a climate emergency. Each local authority will publish a Local Heat and Energy Efficiency Strategy (LHEES), as a requirement of legislation. LHEES is a long-term plan to decarbonise heat and improve energy efficiency. This new strategy is at the heart of the Scottish Government's heat transition, with the aim of removing natural gas or oil as the main means of heating homes and buildings. As such, successful implementation of a LHEES will directly contribute to fulfilling the Council's climate change duties and will help reduce community emissions too.

Local Heat and Energy Efficiency Strategies aim to facilitate a joined up, long-term strategic approach to:

- **The improvement of the energy efficiency of buildings in the local authority's area; and**
- **The reduction of greenhouse gas emissions resulting from the heating of buildings.**

In 2019, only 11% of homes in Scotland had low-emission heating systems. To meet the national target of net zero greenhouse gas emissions by 2045, a rapid acceleration of homes converting to zero-emission heating is needed. From the current rate of 0.1% of homes making the conversion per year it will be necessary for 5-10% of homes per year to achieve this target.

Zero-emission heating will involve converting properties to electrical heating (e.g. heat pumps). This can be done at individual property level (by use of air-source heat pumps or ground-source heat pumps), or communally via heat networks.

For each local authority area, the Scottish Government's methodology advises that a LHEES should:

- Show how each segment of the building stock needs to change to meet national and local objectives, including achieving zero greenhouse gas emissions and the removal of poor energy efficiency as a driver of fuel poverty;
- Identify strategic heat decarbonisation zones and set out the principal measures for reducing buildings' emissions within each zone; and
- Prioritise areas for delivery, against national and local priorities.

The LHEES is required to include a 5-year Delivery Plan. This was developed in partnership with key stakeholders and provides a strong basis for action for local communities, government, investors, developers and wider stakeholders; pinpointing areas for targeted intervention and early, 'quick-win', measures. The East Renfrewshire Local Heat and Energy Efficiency Delivery Plan (LHEEDP) provides a number of actions to help increase the number of homes in the area converting to zero-emission heating systems.

Net zero emissions by 2045

By 2030 buildings' emissions will fall by 68%

against 2020 levels, this includes:

- All homes to be Energy Performance Certificate (EPC) C or equivalent by 2033 (1.2m homes);
- Vast majority off-gas homes switching to zero emissions heat (>170k homes);
- 1m on-gas homes switching to zero emissions heat;
- Non-domestic buildings switching to zero emissions; and
- By 2040 no more than 5% of households are in fuel poverty and no more than 1% in extreme fuel poverty.

2.6 TWh of thermal energy to be supplied by heat networks by 2027 and 6 TWh by 2040.

By 2045 our homes and buildings no longer contribute to climate change

An LHEES covers both domestic and non-domestic buildings.

In East Renfrewshire the LHEES will cover

42,365 properties.

This means:

40,650

properties in the domestic sector

1,715

properties in the non-domestic sector

This includes:

35,453

private sector domestic properties

1,515

private sector non-domestic properties

5,197

public sector (i.e. social housing) domestic properties

200

non-domestic council-owned properties

9%

of the domestic properties are off gas.

32%

of the private non-domestic properties are off gas.

36%

of the domestic properties (15, 570) have an EPC band A, B or C.

10%

of the non-domestic properties (170) have an EPC band A, B or C.

The LHEES ambition is for every property in East Renfrewshire to have access to affordable and reliable net zero heating solutions. For homes, this would help reduce the risk of fuel poverty, and bring social, economic and public health benefits. However, significant funding and investment will be required if the ambition is to be realised.

This strategy and the associated delivery plan will aim to achieve four main outcomes:

| | |
|------------------|-----------------------------------------------------------------------------------|
| Outcome 1 | Homes and buildings in East Renfrewshire are as energy efficient as possible |
| Outcome 2 | Heat solutions are delivered to meet 2045 net zero target and tackle fuel poverty |
| Outcome 3 | Investment and grant funding is secured to deliver Net Zero projects |
| Outcome 4 | East Renfrewshire Council supports property owners to improve heating solutions |



East Renfrewshire Council has set a target for net zero carbon emissions by 2045



Contents

| | |
|------------------------------------------------------------------------------------|----|
| Glossary of Terms | 2 |
| Executive Summary | 4 |
| 1. Introduction | 8 |
| 2. Policy Context | 11 |
| 2.1 National Policy Context | 11 |
| 2.2 Local Policy Context | 13 |
| 3. Structure of the LHEES | 14 |
| 4. Progress to date | 17 |
| 5. Findings from baseline data | 18 |
| 5.1 Domestic stock in East Renfrewshire | 18 |
| Tenure | 19 |
| Property types and age | 19 |
| Energy efficiency | 20 |
| Fuel types | 20 |
| Wall insulation | 21 |
| 5.2 Non-domestic property types | 24 |
| 6. Key findings from baseline data | 26 |
| 6.1 Domestic stock | 26 |
| 6.2 Non-domestic stock | 26 |
| 7. Prioritised areas for delivery | 27 |
| 8. Priorities for action | 28 |
| 8.1 Priority 1 - Analyse potential Heat Network zones | 30 |
| 8.2 Priority 2 - Deliver Ground Source Heat Pumps for socially rented properties | 34 |
| 8.3 Priority 3 - Increase levels of cavity wall insulation in the private sector | 35 |
| 8.4 Priority 4 - Improve uptake of wall insulation EES:ABS programmes | 36 |
| 8.5 Priority 5 - Deliver improvements for non-domestic council-owned properties | 37 |
| 8.6 Priority 6 - Determine most appropriate solar thermal & solar PV installations | 39 |
| 9. Summary and Next Steps | 40 |
| 10. Delivery Plan | 42 |
| Appendices | 46 |
| Appendix 1 - Funding and Investment | 46 |
| Appendix 2 - Priority geographical areas for each LHEES consideration | 47 |
| Appendix 3 - Summary of Heat Network Feasibility Studies | 48 |
| Appendix 4 - Information on all 7 potential Heat Network zones | 49 |
| Appendix 5 - Methodology | 57 |
| Appendix 6 - Summary of Engagement | 73 |
| Appendix 7 - Audit Scotland recommendations | 76 |
| Appendix 8 - Scottish and UK Government Collaboration | 78 |

1. Introduction

In response to global climate change, the Scottish Government introduced the Climate Change (Emissions Reduction Targets) Act 2019. This introduces a legally binding target for Scotland to achieve net zero greenhouse gas emissions by 2045. Scotland's Climate Change Plan sets out the ambition to reduce emissions, particularly from heating buildings, which accounts for around 20% of Scotland's greenhouse gas emissions.

Decarbonisation is the process of reducing the amount of carbon dioxide and other greenhouse gas emissions by introducing new low carbon alternatives and technologies. Much of the decarbonisation strategy is based on switching carbon energy usage (e.g. petrol and diesel for transport, and natural gas and oil for heating) to electricity, and then using renewable generation to provide zero carbon electricity.

In 2019, only 11% of homes in Scotland had low-emission heating systems. To meet the national target of net zero greenhouse gas emissions by 2045, a rapid acceleration of homes converting to zero-emission heating is needed. From the current rate of 0.1% of homes making the conversion per year it will be necessary for 5-10% of homes per year to achieve this target.

Glasgow City Region (GCR) outlined in 2021 that bringing homes across the region to Energy Performance Certificate (EPC) level C and above is estimated to cost in the region of £10.7 billion, with up to £600 million investment per annum required for a 15-year period. There are approximately 428,000 properties across the GCR region below EPC C.

Whilst owner-occupiers comprise 71% of properties across GCR, East Renfrewshire has 75% owner-occupiers. Overcoming the range of barriers to upscaling retrofit with owner-occupiers will require a comprehensive framework of incentives and/or regulations being in place. The Scottish Government has stated that it is looking at regulation for owner-occupiers, but this is unlikely to be in place until after 2025.

Continuing to burn natural gas for heating is not consistent with zero-emission ambitions. Zero-emission heating will involve converting properties to electrical heating. Heat decarbonisation can be done at individual property level (by use of air-source heat pumps or ground-source heat pumps), or communally via heat networks that are relatively large (i.e. district heating) or via smaller networks, such as shared ground-source heat pumps.

In November 2022, East Renfrewshire Council set a target for net zero carbon emissions by 2045. A Local Heat and Energy Efficiency Strategy (LHEES), which is a legislative requirement, is identified in the Council's Get to Zero Action Plan as a key action.

The legislation for LHEES sets out that each strategy should:

- Show how each segment of the building stock needs to change to meet national and local objectives, including achieving zero greenhouse gas emissions in the building sector, and the removal of poor energy efficiency as a driver of fuel poverty;
- Identify strategic heat decarbonisation zones, and set out the principal measures for reducing buildings emissions within each zone; and
- Prioritise areas for delivery, against national and local priorities.

The LHEES will also support the Scottish Government targets for fuel poverty: by 2040, as far as reasonably possible, no household in Scotland is in fuel poverty.

Accompanying the LHEES is a Delivery Plan. The Delivery Plan was developed in partnership with key stakeholders and provides a strong basis for action for local communities, government, investors, developers and wider stakeholders, pinpointing areas for targeted intervention and early, low-regrets measures.

The LHEES, and the associated Delivery Plan, will support the Council and the community to reduce emissions from homes, businesses and public buildings. It will set out the long-term plan for decarbonising heat in buildings and improving their energy efficiency across an entire local authority area.

We aim to deliver on 4 main outcomes:

Table 1: East Renfrewshire's four LHEES Outcomes

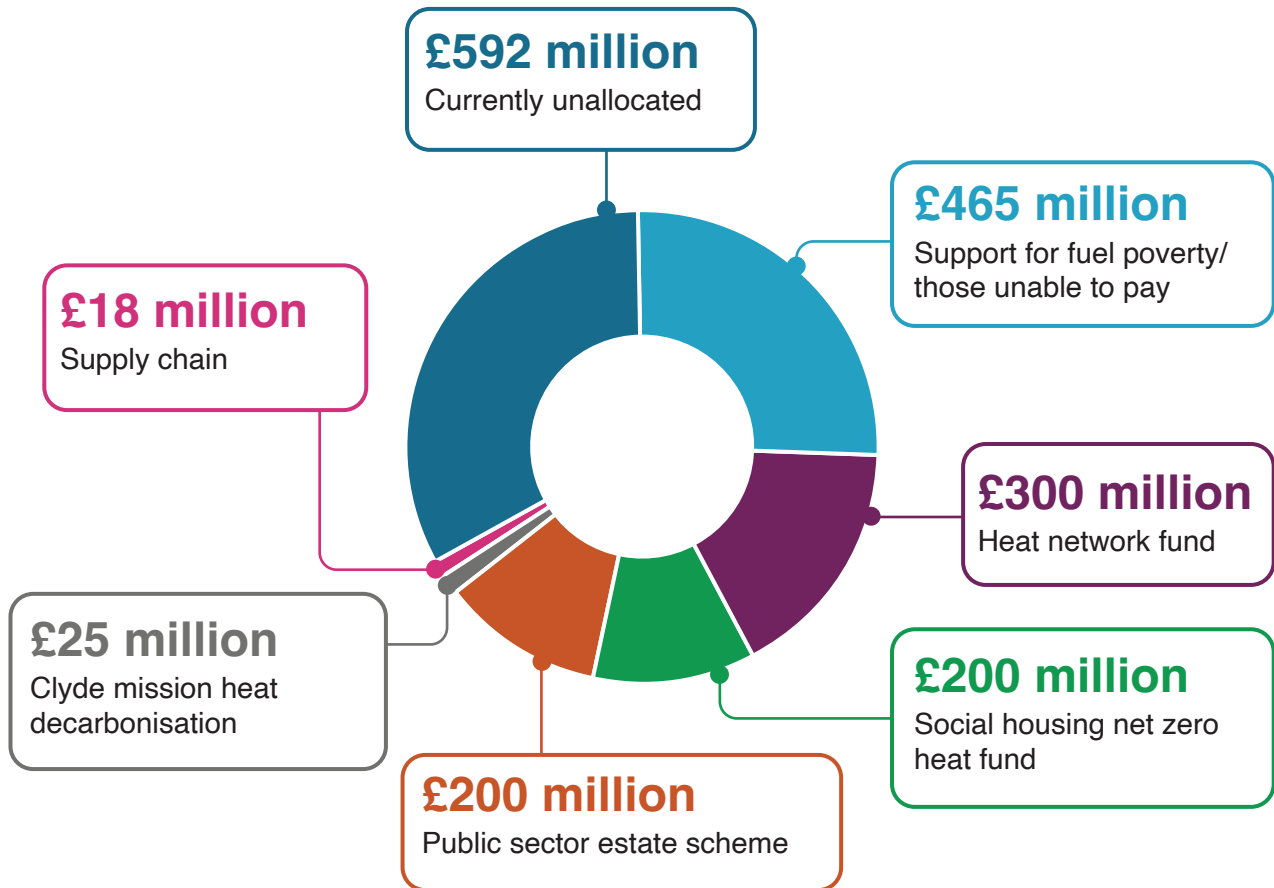
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| Outcome 1 | Homes and buildings in East Renfrewshire are as energy efficient as possible |
| Outcome 2 | Heat solutions are delivered to meet 2045 net zero target and tackle fuel poverty |
| Outcome 3 | Investment and grant funding is secured to deliver Net Zero projects |
| Outcome 4 | East Renfrewshire Council supports property owners to find improved heating solutions |

The LHEES ambition is for every property in East Renfrewshire to have access to affordable and reliable net zero heating solutions. The immediate priority is to ensure that all domestic and non-domestic properties are as energy efficient as possible. For homes, this would help reduce the risk of fuel poverty, and bring social, economic and public health benefits. However significant funding and investment will be required if the ambition is to be realised.

The scope of LHEES is focused on energy efficiency and heat decarbonisation. It does not extend to wider local area energy planning, e.g. evaluating future energy demand and grid capacity/connections. However, the production of a LHEES does not preclude local authorities undertaking wider local area energy planning.

Indeed, LHEES will be an important building block for local area energy planning. East Renfrewshire Council will work with distribution network operators (DNO) to understand where grid constraints may restrict the ability to install heat pumps. DNOs will also be able to use the outputs of LHEES to plan where they need to strengthen the grid in the future to support heat decarbonisation. Some local authorities are building on the analysis done as part of their LHEES to consider the wider energy system by producing a Local Area Energy Plan. We will give this due consideration alongside the development of Local Development Plan 3.

Significant funding and investment will be required if the ambitions outlined in this document are to be realised. The Scottish Government's Heat in Buildings Strategy (HiBS) aims to achieve net zero emissions in Scotland's buildings and £1.8billion has been committed to the HiBS programme over the current parliamentary term. Some of the current funding and delivery programmes that could be utilised to support actions in the Delivery Plan are stated below with additional information on available funding to be found at appendix 1.



Source: Scottish Government

2. Policy Context

The 'Heat in Buildings Strategy – achieving net zero emissions in Scotland's buildings' was released in October 2021. This sets the Scottish Government's vision for the future of heat in buildings. It sets out actions the government is undertaking in the building sector to deliver its climate change commitments, while at the same time maximising economic opportunities and ensuring a 'just transition', including helping to address fuel poverty.

A provisional target for renewable heat indicates that at least 22% of heat in buildings should be directly supplied from renewable sources by 2030. A summary of the national and local heat and energy efficiency policy landscape can be found below:

2.1 National Policy Context

- **Climate Change Plan Update (2020)** - Outlines the Scottish Government's pathway to achieving the targets set by the Climate Change Act 2019 and is a key strategic document for delivering a green recovery from COVID-19.
- **Heat in Buildings Strategy (2021)** - As above, this sets Scotland's vision for the future of heat in buildings, and the actions to be taken in the buildings sector. Key nationwide target dates and outcomes include:
 - Net zero emissions by 2045, this includes:
 - By 2030 emissions fall by 68% against 2020 levels, this includes:
 - All homes EPC C or equivalent by 2033 (1.2m homes)
 - Off-gas homes switching to zero emissions heat (>170k homes)
 - On-gas homes switching to zero emission heating
 - Non-domestic buildings switching to zero emission heating.
 - By 2045 our homes and buildings no longer contribute to climate change.
 - By 2040 no more than 5% of households are in fuel poverty and no more than 1% in extreme fuel poverty.
 - 2.6 TWh of thermal energy to be supplied by heat networks by 2027 and 6 TWh by 2040.
- **Heat in Buildings Bill (upcoming)** - The upcoming Heat in Buildings Bill will build upon the Heat in Buildings Strategy. The Scottish Government sought the views on the proposals for:
 - All privately rented homes to meet a minimum energy efficiency standard by the end of 2028;
 - All other privately owned homes to meet a minimum energy efficiency standard by the end of 2033; and
 - The use of polluting heating systems to be prohibited by the end of 2045.

- **Heat Networks Act (2021)** - Places a duty on local authorities to carry out a review to consider whether one or more areas in its authority is likely to be particularly suitable for the construction and operation of a heat network.
- **Energy Efficiency Standard for Social Housing (ESSH)** - The Energy Efficiency Standard for Social Housing (ESSH) aims to improve energy efficiency of social housing in Scotland. It is set to be replaced with a new Social Housing Net Zero Standard. The Scottish Government consultation on this new standard sought the views on a standard that will require social landlords to:
 - Improve fabric efficiency by 2033; and
 - Install clean heating, across their stock, by 2045 where it is technically feasible and cost-effective to do so.
- **Scottish Energy Strategy & Just Transition Plan (2023)** - Sets out how Scotland will use energy more efficiently and decarbonise by meeting the challenge of reducing demand within main energy-using sectors such as heat in buildings, transport, industry and agriculture.
- **National Planning Framework 4 (NPF4)** - NPF4 sets out the national spatial strategy for Scotland (up to 2045) and sets out where development and infrastructure are needed. It will guide spatial development, set out national planning policies, designate national developments and highlight regional spatial priorities that will guide the preparation of Regional Spatial Strategies.
- **New Build Heat Standard** - From the 1st of April 2024, new buildings in Scotland applying for a building warrant will be required to use zero direct emissions heating systems (ZDEH) to meet their space and hot water heating and cooling demands.
- **Hydrogen Policy Statement (2020)** - Sets out the vision for Scotland to become a leading hydrogen nation in the production of reliable, competitive, sustainable hydrogen.
- **Review of Electricity Market Arrangements (REMA) (UK Government)** - Proposals under the scope of REMA include the exploration of fundamental changes to the electricity market to disable volatile gas prices from setting the wholesale cost of electricity, allowing consumers to benefit from lower cost renewable energy.

2.2 Local Policy Context

- **Community Plan** - East Renfrewshire Community Planning Partnership's Community Plan sets out how local services will work together to create stronger and fairer communities together with the people of East Renfrewshire. This plan includes 'Fairer East Ren'.
- **Local Outcome Improvement Plan (LOIP)** - 'Fairer East Ren' is the LOIP for East Renfrewshire Community Planning Partnership. It identifies how partners will work together to reduce socio-economic inequality and this is set out in a number of themed delivery plans.
- **Outcome Delivery Plan (ODP)** - The Council's Outcome Delivery Plan outlines the key contributions that council departments will make to the delivery of the Community Plan and Fairer East Ren. It presents the planned key activities in partnership with the Health and Social Care Partnership (HSCP), East Renfrewshire Culture and Leisure Trust (ERCLT) and local partners including Voluntary Action East Renfrewshire, to help deliver our strategic outcomes.
- **Get to Zero Action Plan (GTZAP)** - The Council's GTZAP provides a framework for East Renfrewshire to combat climate change and deliver net zero carbon emissions by 2045. It covers a wider range of topics than the LHEES, such as waste and transport. The LHEES will complement the work delivered through the GTZAP.
- **Local Development Plan 2 (LDP2)** - LDP2 supports our economy to grow and take the necessary steps to tackle climate change and its impacts. It provides the Council with a development strategy that will guide the future sustainable growth of East Renfrewshire up to 2031 and beyond. The key objectives on future land use within East Renfrewshire relevant to LHEES are:
 1. Creating sustainable places and communities;
 2. Promoting sustainable and inclusive economic growth; and
 3. Promoting a net zero carbon place.

New developments are required to demonstrate efficiency and sustainability, encompassing energy-efficient designs and effective carbon reduction measures. The emerging LDP Low and Zero Carbon Delivery Supplementary Guidance will emphasise the importance of heat networks, including dedicated measures such as the potential to safeguard land for energy centre utilisation and ensuring that new proposals are designed to seamlessly connect to nearby heat networks.
- **Local Housing Strategy (LHS)** - The recently published LHS will ensure that our commitment to tackling climate change extends to our council house building programme which will see tenants move into more environmentally friendly, lower carbon homes.
- **Property Asset Management Plan (PAMP)** - The PAMP sets out the Council's plan for the management of its built non-domestic property assets including actions towards zero emissions targets.

3. Structure of the LHEES

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

- A Local Heat and Energy Efficiency Strategy - a long-term strategic framework for the improvement of the energy efficiency of buildings in the local authority's area; and the reduction of greenhouse gas emissions resulting from the heating of such buildings.
- A LHEES Delivery Plan – A 5-year plan setting out how a local authority proposes to support implementation of its LHEES.

LHEES are framed around six considerations prescribed by the Scottish Government, as listed in Table 2 below. The LHEES will eventually cover all tenures and all sectors, including the non-domestic sector. However, the current guidance provided by the Scottish Government acknowledges that the first iterations of LHEES will have a large emphasis on the domestic sector.

Table 2: Summary of LHEES Considerations

| | No. | LHEES Consideration | Description |
|-----------------------------------------|-----|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Low regrets* heat decarbonisation | 1 | Heat networks | Decarbonisation with heat networks |
| | 2 | Off-gas grid buildings | Transitioning mainly from heating oil and LPG in off-gas areas |
| Secondary outcomes | 3 | Poor building energy efficiency | Poor building energy efficiency |
| | 4 | Poor building energy efficiency as a driver for fuel poverty | Poor building energy efficiency as a driver for fuel poverty |
| | 5 | Mixed-tenure, mixed-use and historic buildings | Covering mixed-tenure and mixed-use buildings, listed buildings and buildings in conservation areas |
| Heat decarbonisation | 6 | On-gas grid buildings | On-gas grid heat decarbonisation |

*Low regrets are heat decarbonisation actions that are relatively low cost and provide relatively large benefits when it comes to heat decarbonisation. In the LHEES context they refer to heat networks and off-gas grid heat pumps.

Local authorities are not required to address all LHEES considerations and the emphasis on any consideration should be informed by the profile and priorities of the local authority area. It may also be more suitable to combine analysis for multiple considerations at a time.

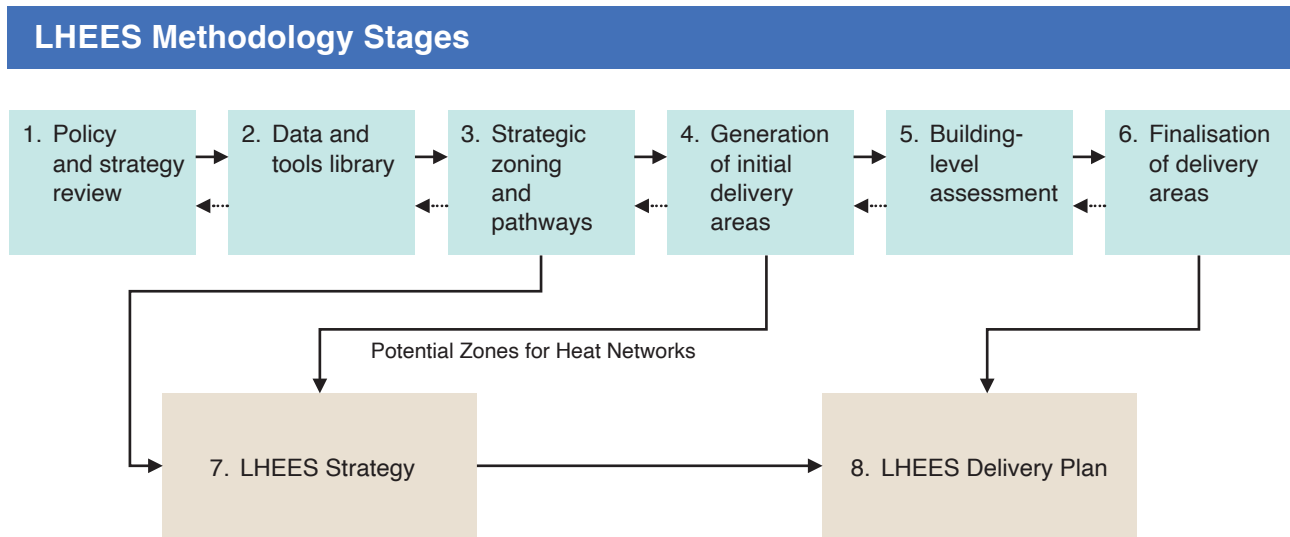
These considerations are explained further below.

1. **Heat decarbonisation: Heat networks** - The analysis highlights heat dense areas within the local authority where heat networks present a likely decarbonisation option. Different opportunities and constraints relating to development potential were considered to inform decisions, and the prioritisation of the different heat network zones.
2. **Heat decarbonisation: Off-gas grid** - The analysis identified off-gas heat decarbonisation pathways and considered opportunities for domestic properties at both the strategic and delivery level.
3. **Secondary outcome: Poor building energy efficiency** - The analysis identified locations where poor building energy efficiency (such as low levels of wall or loft insulation, the absence of double glazing, or a combination of these) exists across the local authority.
4. **Secondary outcome: Poor building energy efficiency as a driver for fuel poverty** - The analysis also identified locations where poor building energy efficiency (such as low levels of wall or loft insulation, the absence of double glazing, or a combination of these) may act as a driver for fuel poverty.
5. **Secondary outcome: Mixed-tenure, mixed-use and historic buildings** - The analysis identified where there are buildings of mixed-use or mixed-tenure and where there are historic buildings (covering listed buildings and conservation areas). This LHEES consideration area was not analysed in isolation.
6. **Heat decarbonisation: On-Gas Grid** - The analysis identified possible low regrets on-gas decarbonisation pathways for domestic properties and opportunities at a strategic and delivery level. At this stage, analysis explored only building readiness for heat pump retrofit.



The Scottish Government provided an LHEES Methodology to local authorities. This is a detailed, step by step approach, including models, tools and templates, and represents best practice in how to produce an LHEES. The LHEES Methodology structure and stages are detailed in figure 2.

Figure 2: LHEES Methodology structure and stages



From 2020 to 2022 East Renfrewshire Council worked with environmental consultants Changeworks to initiate our Local Heat & Energy Efficiency Strategy. Using the Scottish Government’s LHEES methodology, Changeworks analysed local and national datasets and addressed the 6 LHEES considerations and produced a report which suggested recommendations for how East Renfrewshire could maximise heat decarbonisation and energy efficiency measures across its building stock.

The council created a LHEES working group with the remit to take forward the recommendations from Changeworks and consider how they can align with current policies and planned works (e.g., EES:ABS and capital works) to help deliver East Renfrewshire’s first LHEES and Delivery Plan, and ultimately realise our four main outcomes. To this aim the working group agreed on 6 priority workstreams:

| | |
|-------------------|---------------------------------------------------------------------|
| Priority 1 | Analyse potential Heat Network zones |
| Priority 2 | Deliver Ground Source Heat Pumps for socially rented properties |
| Priority 3 | Increase levels of cavity wall insulation in private sector housing |
| Priority 4 | Improve uptake of wall insulation EES:ABS programmes |
| Priority 5 | Deliver improvements for non-domestic council owned properties |
| Priority 6 | Determine most appropriate solar thermal and solar PV installations |

4. Progress to date

Heat networks

In June 2023, the Council applied for funding to progress the heat network assessment requirement of the LHEES. The Scottish Government's Heat Network Support Unit confirmed funding of circa £70k for two detailed feasibility studies on sites earmarked as possible heat networks: Eastwood Park and Barrhead Main Street. The studies were completed in December 2023 and the results and recommendations are under assessment.

Private tenure homes

The current pace of retrofitting homes has been slow. Grant funding is provided via the Energy Efficient Scotland: Area Based Scheme (EES:ABS) for private tenure homes, but this has not been well-utilised to date due to poor take up by homeowners due to the level of private funding contributions required in order to draw down the grant support. The challenges of maximising the EES:ABS funding is well understood and the Council have created and filled a new Energy Efficiency Officer post. The Energy Efficiency Officer will work with a contractor to ensure energy efficiency grants available to owners across ERC areas are maximised.

Social housing

99.67% of council housing stock of around 3,000 properties is already achieving EPC C, which is the statutory target by 2025 for Energy Efficiency Standard for Social Housing (ESSH). The ESSH requirement by 2032 is for all Council houses to be EPC B. However, ESSH is set to be replaced with the Social Housing Net Zero Standard. Housing Services are assessing properties, researching options and piloting new approaches to inform the next investment strategy to achieve the proposed new Social Housing Net Zero Standard.

Local Development Plan

The requirement to move towards net zero has been given greater emphasis in Local Development Plan 2. LDP2 sets out a range of policies which contribute to tackling climate change. It provides a strong framework in developing place-based solutions to a zero-carbon future and contains strong policies on climate change adaptation and mitigation.

Council property

Maintaining, adapting, and constructing new property assets accounts for a considerable proportion of the Council's capital expenditure, and therefore the development of a property asset management plan is crucial to enable effective deployment of capital which can demonstrate clear alignment to the Council's strategic goals. The new Property Asset Management Plan which covers 2024-2026 acknowledges the net zero challenge and focuses on foundations to inform a longer-term strategic plan thereafter.

Council decision-making

A comprehensive Climate Change Impact Assessment (CCIA) for all new council policies, plans and operations is now in place. The findings from any assessment will be incorporated in the Council's corporate report format in order to give climate change implications due consideration.

5. Findings from baseline data

The Council, supported by Changeworks consultants, completed a review of domestic housing stock, including property type and age, energy efficiency and insulation status and fuel types used. Home Analytics data was supplemented by data provided by the Council regarding tenure and property characteristics and reviewed to provide the overview of the domestic housing stock.

EPC data was provided for the non-domestic stock throughout East Renfrewshire; however, this does not account for all non-domestic properties and it is unknown how representative the data is.

5.1 Domestic stock in East Renfrewshire

- East Renfrewshire has a larger proportion of owner-occupied properties (75%) compared to the rest of Scotland (65%).
- East Renfrewshire holds a relatively large proportion of houses (72%) compared to the rest of Scotland (63%).
- The average energy efficiency of the domestic properties (D-63) is two Standard Assessment Procedure (SAP) points below the national average (D-65).
- Across property types, pre-1919 houses are the least energy efficient.
- Across tenure types, privately rented and owner-occupied properties are the least energy efficient.
- The proportion of properties using mains gas as their main heating fuel (88%) is higher than the national level (81%).
- The proportion of properties using electricity as their main heating fuel (9%) is slightly lower than the national level (10%).
- The insulation levels of cavity wall properties in the LHEES area (59%) are much lower than national levels (73%).
- Loft insulation rates are higher than national levels (51% vs 46%).

This analysis covers the entire housing stock in the area, for which data for 40,506 properties was available from Home Analytics. From the 40,506 Home Analytics entries, 70 properties were excluded as no useful data was provided. Data on the remaining 40,436 properties has formed the basis for the current analysis.

Tenure

Proportionally, there are more owner-occupied properties (75% of domestic properties) than the national proportion of 65%. Consequently, there are fewer social rented properties (10% of the stock), compared to the rest of Scotland (25%). The private rented sector in East Renfrewshire accounts for 10% of the stock, which is on par with Scotland overall. For 5% of the stock, the tenure is unknown. This is due to conflicts of tenure across datasets.

Table 3: Tenure for flats and houses

| Housing type | Social rented | Owner-occupied | Privately rented | Unknown | Totals |
|--------------|---------------|----------------|------------------|--------------|---------------|
| Flats total | 2,725 | 5,055 | 1,889 | 1,610 | 11,279 |
| Houses total | 1,379 | 25,193 | 2,030 | 555 | 29,157 |
| Total | 4,104 | 30,248 | 3,919 | 2,165 | 40,436 |

As for property types, the majority of rented properties (both privately and social rented) are flats (58%). This is on par with the national figures where 58% of privately and social rented properties are flats. However, when focussing on differences between the private and social rental sector, East Renfrewshire has more houses rented out privately compared to the national average, and less socially rented homes.

Property types and age

Across all stock, 72% of the properties are houses, and more than one-quarter are flats (28%), indicating the area has more houses than the national average (63% houses, 37% flats).

The predominant age band is 1950-1983 (43%), which is similar to the national average (42%) built during the same period. There are more properties built between 1919-1949 (26%) compared to 11% in the rest of Scotland. Less properties were built after 1983 (24%) than in Scotland overall (27%). For pre-1919, the proportion is significantly lower (7%) than the Scottish average (19%).

Table 4: Property types and age-bands of the domestic properties

| Property type | Pre-1919 | 1919-1949 | 1950-1983 | 1984-1991 | 1992-2002 | Post-2002 | Totals |
|-----------------------|-----------|------------|------------|-----------|------------|-----------|------------|
| Flats (total) | 3% | 4% | 12% | 4% | 3% | 3% | 28% |
| Houses (total) | 5% | 22% | 31% | 5% | 7% | 3% | 72% |
| Detached house | 1% | 9% | 10% | 2% | 4% | 2% | 28% |
| Semi-detached house | 1% | 9% | 13% | 1% | 2% | <1% | 27% |
| End-terraced house | <1% | 2% | 4% | 1% | <1% | <1% | 7% |
| Mid-terraced house | 1% | 3% | 5% | 1% | 1% | <1% | 10% |
| Totals | 7% | 26% | 43% | 9% | 10% | 5% | |

Energy efficiency

A home's energy performance is calculated using the Standard Assessment Procedure (SAP) methodology, which underpins the Energy Performance Certificate (EPC). The average Energy Efficiency rating (EE rating) across East Renfrewshire is 63 points, which is 2 SAP points below the national average of 65 points (e.g. less energy efficient). Overall, post-2002 built flats have the highest average EE rating, with an average EE rating of 81 points, equivalent to an EPC B-band. Pre-1919 buildings have the lowest EE ratings, with pre-1919 houses scoring an average 54 points, equivalent to an E-band, whereas pre-1919 flats score an average 61 points, equivalent to a D-band.

Table 5: Energy Efficiency rating/ band per housing type

| Housing type | | Pre-1919 | 1919-1949 | 1950-1983 | 1984-1991 | 1992-2002 | Post-2002 | Average |
|-------------------------|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Flats | EE rating/band | 61 (D) | 66 (D) | 68 (D) | 69 (C) | 73 (C) | 81 (B) | 69 (C) |
| Houses | EE rating/band | 54 (E) | 57 (D) | 62 (D) | 66 (D) | 69 (C) | 78 (C) | 61 (D) |
| Overall averages | EE rating/band | 56 (D) | 58 (D) | 63 (D) | 67 (D) | 70 (C) | 79 (C) | 63 (D) |

Looking at the Energy Efficiency bands, Table 5 above shows that proportionally there are more flats in the higher bands (A-C), whilst most houses are in the lower banding (D-E).

When compared to the national pattern, a higher proportion of flats and lower proportion of houses in East Renfrewshire are in the A-C banding, whilst a lower proportion of flats and higher proportion of houses are in the D-E banding. A slightly higher proportion of flats and slightly lower proportion of houses are in the lowest banding (F-G), when compared to national figures.

Fuel types

Mains gas is the main fuel type for 88% of the households in the overall council area (Table 6), which is higher than the national average of 81%. Electricity as the main off-gas fuel (9%) is slightly lower than the national proportion of 10%. Other fuels account for 3% of the properties, lower than the national proportion where fuels other than mains gas and electricity account for 9%.

Table 6: Main fuel type per property type

| Housing type | Mains gas | Electricity | LPG | Oil | Biomass/Solid | Communal |
|---------------|------------|-------------|---------------|-----------|---------------|-----------|
| Flats | 21% | 6% | <1% | <1% | <1% | 1% |
| Houses | 67% | 3% | <1% | 1% | <1% | <1% |
| Total | 88% | 9% | <1% | 1% | <1% | 1% |



Wall insulation

Under three-quarters of properties have a cavity wall construction (72%). The insulation levels of the cavity wall properties are lower than the national average (59% in East Renfrewshire, 73% in Scotland). Social rented properties in East Renfrewshire with cavity walls are most likely to be insulated (91%).

Most solid stone or brick properties have uninsulated walls (77%), which is lower than the national average (81%). Modern timber frame properties are assumed to have insulated walls from when they were built, however 25% are recorded as being uninsulated. It is worth noting that it is common for non-traditional timber houses to be recorded as timber frame (e.g., Swedish timber, Weir timber) when these should be recorded as 'system-built'. Over half of the system-built properties in Scotland have received external wall insulation (55%).

Table 7: Wall construction and insulation status of tenures

| Tenure type | Cavity Construction | Solid Brick or Stone | System Built | Timber Frame |
|------------------------------|---------------------|----------------------|--------------|--------------|
| Privately rented | 2,695 | 673 | 80 | 471 |
| Uninsulated walls | 1,443 | 553 | 29 | 149 |
| Uninsulated walls (%) | 54% | 82% | 36% | 32% |
| Social rented | 3,053 | 427 | 114 | 510 |
| Uninsulated walls | 275 | 230 | 4 | 57 |
| Uninsulated walls (%) | 9% | 54% | 4% | 11% |
| Owner Occupied | 22,465 | 4,592 | 324 | 2,867 |
| Uninsulated walls | 9,932 | 3,605 | 204 | 955 |
| Uninsulated walls (%) | 44% | 79% | 63% | 33% |
| Unknown | 748 | 229 | 31 | 1,157 |
| Uninsulated walls | 254 | 172 | 8 | 70 |
| Uninsulated walls (%) | 34% | 75% | 26% | 6% |
| Totals | 28,961 | 5,921 | 549 | 5,005 |
| Uninsulated walls | 11,904 | 4,560 | 245 | 1,231 |
| Uninsulated walls (%) | 41% | 77% | 45% | 25% |

Loft insulation

There are normally no lofts in properties such as ground and mid-floor flats, and in East Renfrewshire this covers 18% of the stock. Over half of the properties with lofts have loft insulation over 250mm (51%), which exceeds the national average of 46%. As for tenure, privately rented properties have the lowest loft insulation rates.

Table 8: Loft insulation status of domestic properties and of tenures

| Tenure type | 0-99mm | 100-249mm | 250mm+ | No loft | Total lofts |
|----------------------------------|----------------------|-----------------------|-----------------------|---------------------------------|----------------------------------|
| Privately rented (%) of lofts | 372 14% | 1,224 46% | 1,069 40% | 1,254 | 2,665 |
| Social rented (%) of lofts | 165 7% | 973 40% | 1,303 53% | 1,663 | 2,441 |
| Owner Occupied (%) of lofts | 3,562 13% | 10,012 37% | 13,492 50% | 3,182 | 27,066 |
| Unknown (%) of lofts | 78 9% | 355 40% | 444 51% | 1,288 | 877 |
| All (%) of lofts | 4,099 13% | 12,209 38% | 15,864 49% | 7,387 (18% of stock) | 33,049 (82% of stock) |

Potential fabric upgrades for domestic stock

Loft and wall insulation opportunities were identified for 59% of the properties in East Renfrewshire (23,870 properties), with the majority of measures being top-ups of loft insulation (Table 9). Consequently, for 16,566 of the domestic properties, no wall or loft insulation measures were identified.

Wall insulation measures are suitable for over one-third of domestic properties (37%), with cavity wall insulation being the predominant measure (25% of domestic stock). Internal wall insulation is suitable for 11% of the domestic stock and a very small proportion (1%) would benefit from external wall insulation.

Table 9: Potential fabric upgrades

| Measure | Number of suitable properties | % of domestic housing stock |
|---------------------------------------------------------------------|-------------------------------|-----------------------------|
| Loft insulation virgin | 4,177 | 10% |
| Loft insulation top-up | 12,564 | 31% |
| Cavity wall insulation | 10,149 | 25% |
| External wall insulation | 242 | 1% |
| Internal wall insulation | 4,466 | 11% |
| Households requiring at least one fabric upgrade measure | 23,870 | 59% |
| Households requiring both a loft and wall insulation measure | 7,728 | 19% |

Potential low carbon heating upgrades for domestic stock

Air-source heat pumps are believed to be most viable in off-gas-grid properties. A small number (758 or 2%) of such properties exist. However, when considering properties connected to the gas grid that are suitable for air-source heat pumps this increases to 39%. Biomass is suitable for 2% of the stock. In addition, 4% of the housing stock is potentially appropriate for high heat retention storage heaters. High Heat Retention storage heaters result in up to 40% lower running costs than electric radiators and up to 20% lower running costs than standard storage heaters.

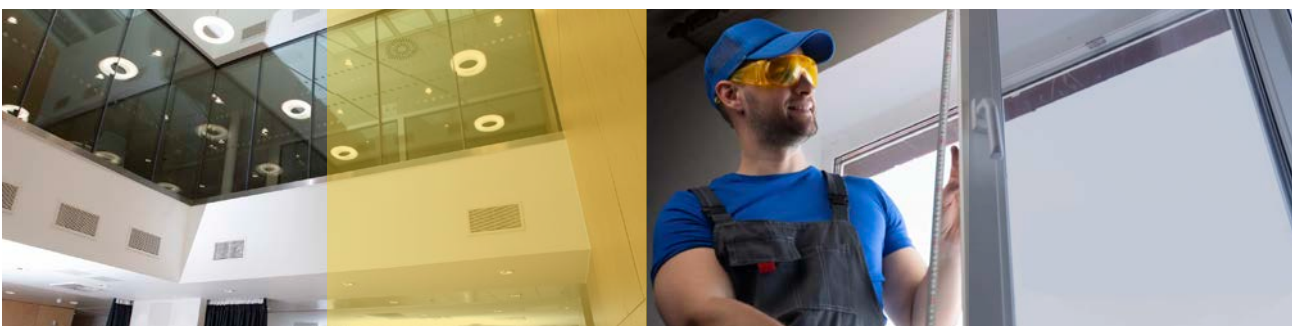
Table 10: Potential domestic low carbon heating upgrades

| Measure | Number of suitable properties | % of domestic housing stock |
|------------------------------------------------------------------------------|-------------------------------|-----------------------------|
| Air source heat pump | 758 | 2% |
| Biomass | 699 | 2% |
| High heat retention heaters | 1,776 | 4% |
| Solar thermal | 22,554 | 56% |
| Households requiring at least one low carbon heating measure | 24,594 | 61% |
| Households requiring both low carbon space heating and solar measures | 1,193 | 3% |

Carbon savings

If all measures from Table 9 and Table 10 were installed, 29 kilotonnes of CO₂ per year could be saved given the current carbon intensity of the fuels used for heating, based on estimations from the Energy Saving Trust. This equates to 0.9 tonnes per household. Although air-source heat pumps have high install costs and long payback period, they are estimated to save up to just over 10 tonnes of CO₂ per household per year.

It should be noted that the carbon savings per measure will decrease in the future if heat itself becomes less carbon intense due to the use of renewables in electricity generation.





5.2 Non-domestic property types

Table 11 below lists energy performance and use by property type. It shows that the most energy efficient buildings are those used for education, which have an average band D/D+.

Table 11: Energy performance and use by property type

| Property type | No. | % EPCs | Average EE band | Average Annual Global Performance (kWh/yr) | Median Annual Global Performance (kWh/yr) |
|-----------------------------|------------|--------|-----------------|--------------------------------------------|-------------------------------------------|
| Community/Day Centre | 21 | 5% | G | 47,867 | 30,574 |
| Education | 41 | 10% | D/D+ | 119,022 | 63,070 |
| General Assembly/Leisure | 12 | 3% | G | 162,941 | 54,635 |
| General Industrial | 10 | 3% | G | 93,796 | 22,692 |
| Hospitals/Care Home | 13 | 3% | F/F+ | 150,883 | 120,291 |
| Hotel | 3 | 1% | G | 350,021 | 190,091 |
| Library/Museum/Gallery | 5 | 1% | F/F+ | 50,329 | 50,134 |
| Office/Workshop | 49 | 12% | F/F+ | 44,491 | 25,150 |
| Primary Healthcare Building | 9 | 2% | F/F+ | 32,761 | 14,384 |
| Residential space | 1 | <1% | D/D+ | 11,520 | 11,520 |
| Restaurant/Cafés/takeaway | 40 | 10% | G | 50,054 | 41,503 |
| Retail/Financial | 184 | 46% | G | 34,270 | 19,482 |
| Stand-alone utility block | 1 | <1% | G | 53,569 | 53,569 |
| Storage/Distribution | 10 | 3% | E/E+ | 82,133 | 54,877 |
| Totals/ average | 399 | | G | 59,425 | 24,951 |

Based on EPC records there are at least 399 non-domestic properties in East Renfrewshire. From these properties, 346 (87%) EPC records contain recommendations for fabric and/or heating upgrades.

Most recommendations across all EPC certificates in East Renfrewshire concerned upgrading the lights to more energy efficient options (75%). Measures associated with air tightness and ventilation accounted for 54% of the properties. Likewise, many of the EPC certificates included control upgrades to the existing heating system (48%).

Fabric upgrades

The most common recommendation for all fabric upgrades was double glazing, and/or secondary glazing (Table 12). Wall insulation measures were recommended to over one-third of the buildings (36%), with the most common being cavity wall insulation (25%). Loft and roof measures were recommended to 29% of the buildings.

Table 12: Recommended fabric measures from the non-domestic EPC records (East Renfrewshire)

| Measure | No. | % EPCs |
|--------------------------|-----|--------|
| Loft insulation | 49 | 12% |
| Roof insulation | 68 | 17% |
| Floor insulation | 18 | 5% |
| Cavity wall insulation | 100 | 25% |
| Internal wall insulation | 42 | 11% |
| External wall insulation | 2 | 1% |
| Glazing | 181 | 45% |

Low carbon heating measures

Under half of the buildings (45%) have been recommended heat pumps (either air source or ground source) and 38% of the non-domestic properties have been recommended solar thermal.

Table 13: Recommended low carbon heating measures from the non-domestic EPC records (East Renfrewshire)

| Measure | No. | % EPCs |
|-------------------------|-----|--------|
| Air source heat pump | 119 | 30% |
| Ground source heat pump | 60 | 15% |
| Biomass | 10 | 3% |
| Solar thermal | 153 | 38% |

If the EPC records are a representative sample of the non-domestic properties in the LHEES area, there is a substantial potential to improve the non-domestic stock through promoting glazing upgrades, cavity wall insulation, heat pumps (particularly ASHP) and solar thermal installs.

- Under half of buildings with an EPC have the lowest band of G (47%).
- A small proportion have an EPC band C or greater (14%).
- More than half of non-domestic properties with an EPC are heated by electricity (51%), compared to 9% of domestic properties.
- The most common use of buildings across all EPCs is for retail/financial (46%).
- Buildings used for education or residential space are the most efficient.

6. Key findings from baseline data

6.1 Domestic stock

- East Renfrewshire LHEES analysis covers 40,437 domestic properties.
- 37% of the domestic properties are suitable for wall insulation measures, with the majority being cavity wall insulation (25% of stock) and internal wall insulation (11% of the stock).
- Loft and wall insulation opportunities were identified for 59% of the properties.
- Given that many properties have mains gas as their main fuel type, a small proportion of the stock was considered suitable for air source heat pumps (2%). This increases substantially (up to 39%) when loosening this criteria to include properties heated by mains gas for heat pump suitability.
- For 20% of the properties, no suitable measures were identified. From the 7,968 properties with currently no suggested fabric or heating improvement, 1,675 properties (21%) have an EE band D or worse.
- Installing all the measures is estimated to save 39 kilotonnes of CO₂ per year, which equates to 0.9 tonnes per household.

6.2 Non-domestic stock

- EPC data was available for 399 non-domestic properties.
- Recommendations were provided for 87% of these properties.
- The most common recommendation for all fabric measures was double glazing, and/or secondary glazing.
- Wall insulation was recommended to 36% of the properties, with cavity wall insulation being the predominant.
- Heat pumps were recommended to 45% of the properties (either air source or ground source).

6.3 5 key findings

- Seven potential areas for heat network zones were identified, with Eastwood Park and Barrhead Main Street deemed the most prominent zones to research further. The other potential heat network zones include Crookfur, Newton Mearns, Clarkston, Neilston and Giffnock.
- Since East Renfrewshire does not contain many off-gas properties, the low-regret options for individual heat pump installations are limited. In contrast, for the on-gas areas there are ample opportunities for 'heat pump ready' properties due to the relatively large amount of post-1992 properties.
- Regarding energy efficiency measures, the area has wall insulation rates lower than the rest of the country, particularly cavity wall insulation, suggesting this as the main target for domestic energy efficiency works.
- Although not part of the LHEES methodology, there are many opportunities for domestic solar measures throughout the area, which can be combined with the decarbonisation of heat.
- Data on the non-domestic sector is very limited, and recommendations for energy efficiency measures would require detailed surveys of council-owned properties.

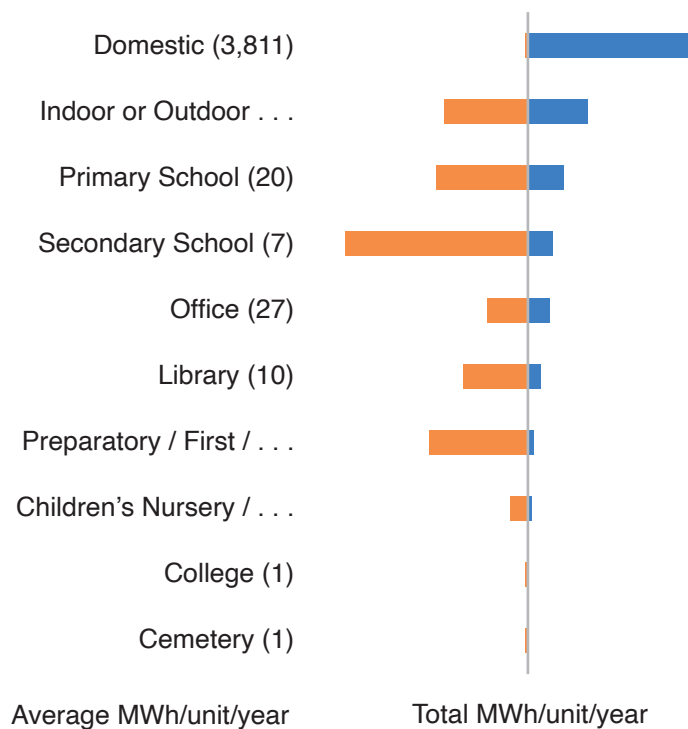
7. Prioritised areas for delivery

Data analysis identified high energy sectors where the most significant carbon savings can be made, but crucially also determined the level of council influence across sectors with specific relation to energy efficiency and heat decarbonisation. From this, key actions can be used to create a clearer roadmap for the LHEES, showing where the Council can clearly progress unhindered and where perhaps the only recourse is to signposting to and supporting recognised and available national solutions.

Identifying high energy sectors where the most significant carbon savings can be made, while considering the level of council influence across sectors with specific relation to energy efficiency and heat decarbonisation, provides the Council with a direction for planning the delivery stages of the LHEES.

Of the council-controlled sectors, domestic properties make up the largest proportion of total heat demand and secondary schools have the highest average heat demand per building, as shown in Figure 3 below.

Figure 3: Average and total demand per Council controlled sectors



Both the average heat demand per unit and the total heat demand per sector are of importance for prioritising actions. Average heat demand indicates which sectors may be simpler to decarbonise, even if there are relatively few properties (i.e., leisure/sporting centres). Total heat demand is important because of the high aggregated heat demand across a large number of buildings (i.e., domestic sectors).

Three of the four domestic sectors (owner-occupied, private rented and Council owned) together have the greatest total heat demands of all sectors; and council-owned leisure centres and schools offer the best opportunities for 'quick-win' heat decarbonisation.

8. Priorities for action

The Scottish Government has committed to achieving a just transition to clean heating systems and reducing fuel poverty. The transition to decarbonised heating must not negatively impact vulnerable individuals or result in more households living in fuel poverty, however it would currently cost more on average to install and run a clean heating system compared to a fossil fuel boiler. The cost of installing and running a clean heating system is expected to decrease over time as the technology becomes more widely used.

The 6 priorities for East Renfrewshire's LHEES shown in table 14 below are numbered for ease of reference only. The priorities are not ranked; they were selected as most suitable to help develop our Delivery Plan and achieve our 4 outcomes, based on the background analysis and the following criteria:

- i. Improving energy efficiency and introducing zero emissions heating to buildings;
- ii. Aligning areas of largest heat demand with buildings which the Council has the greatest influence over; and determining the most suitable form of zero-emission heating and/or energy efficiency measures; and
- iii. Consideration of all other measures which would reduce emissions created by heating, and improve energy efficiency across all buildings.

Table 14: East Renfrewshire's six LHEES Priorities

| | |
|-------------------|---------------------------------------------------------------------|
| Priority 1 | Analyse potential Heat Network zones |
| Priority 2 | Deliver Ground Source Heat Pumps for socially rented properties |
| Priority 3 | Increase levels of cavity wall insulation in private sector housing |
| Priority 4 | Improve uptake of wall insulation EES:ABS programmes |
| Priority 5 | Deliver improvements for non-domestic council owned properties |
| Priority 6 | Determine most appropriate solar thermal & solar PV installations |

Local Heat and Energy Efficiency Strategies aim to facilitate a joined up, long-term strategic approach to:

- The improvement of the energy efficiency of buildings in the local authority's area; and
- The reduction of greenhouse gas emissions resulting from the heating of buildings.

Our priorities will help us address the two cornerstones of LHEES: energy efficiency and heat decarbonisation.

Energy efficiency

The analysis identified locations where poor building energy efficiency (such as low levels of wall or loft insulation, the absence of double glazing, or a combination of these) exists across the local authority, as well as an analysis for areas where this may act as a driver for fuel poverty.

The energy efficiency of the domestic stock in the area is lower than the average for Scotland, with 60% of the properties being an EPC-band of D or lower, compared to 49% nationally. The proportion of uninsulated walls is similar to the national average (43% vs 41% nationally), whereas the proportion of loft insulation is six percentage points lower (89% vs 95% nationally). Priorities 3 and 4 in table 14 above directly address energy efficiency.

Priorities 5 and 6 shown in Table 14 do not directly address the LHEES cornerstones of energy efficiency or heat decarbonisation, but the analysis profile of the local authority area suggested their usefulness in ultimately delivering on the fundamental aims of the LHEES.

Heat decarbonisation

Heat decarbonisation can be done at individual property level (by use of air source heat pumps or ground source heat pumps), or communally via Heat Networks that are relatively large (i.e. district heating) or via smaller networks, such as shared ground source heat pumps. Priorities 1 and 2 in Table 14 above directly address heat decarbonisation.

The analysis highlighted heat dense areas within the local authority where heat networks present a likely decarbonisation option. Different opportunities and constraints relating to development potential were considered to inform decisions, and the prioritisation of the different heat network zones.

Our six LHEES priorities shown in Table 14 on page 28 are discussed more fully on the following pages.



8.1 Priority 1 - Analyse potential Heat Network zones

Section 47 of the Heat Networks (Scotland) Act places a duty on local authorities to carry out a review to consider whether one or more zones in its area is likely to be particularly suitable for the construction and operation of a heat network.

To assess the possibility of heat decarbonisation via heat networks, seven potential heat network zones have been identified in the East Renfrewshire Council area to explore further (details of all potential heat network zones can be found at appendix 4). Initial feasibility reports on two of the identified zones, Eastwood Park and Barrhead Main Street, suggested potential in terms of anchor loads and heat demand from nearby properties. Anchor loads are high heat demand buildings and key connections on a heat network that make the operation of a heat network economically viable.

For the Eastwood Park Potential Heat Network Zone shown in figure 4 below, four potential public anchor loads were identified, including Woodfarm High School, Our Lady of The Missions Primary School, St. Ninian's High School and Eastwood Leisure Centre. Moreover, there is a relatively high demand coming from Woodfarm Sports Pavillion and Hall, Our Lady Of the Missions Primary School, Council Offices Headquarters, Eastwood House and Glenwood Nursery School.

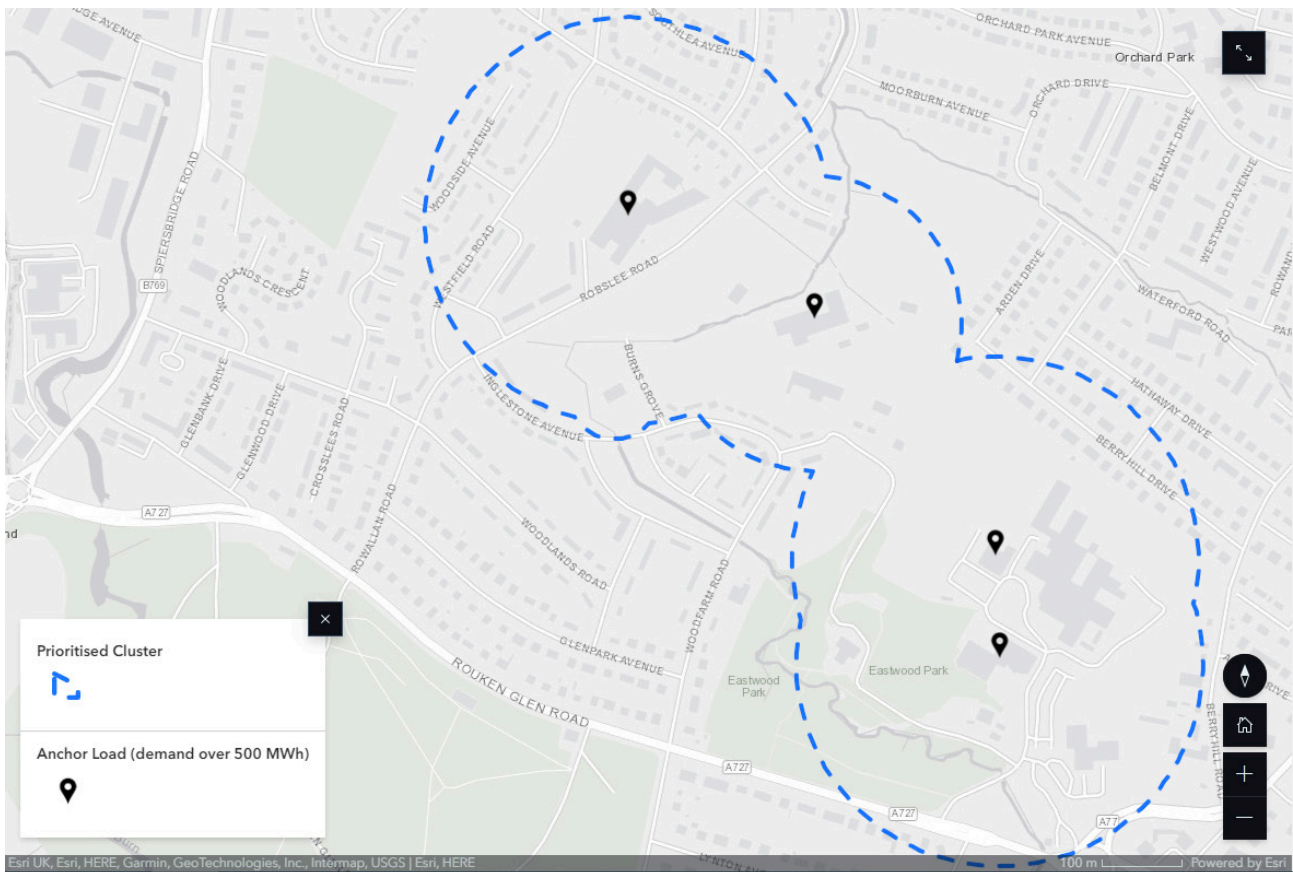


Figure 4: Eastwood Park Heat Network Zone

The majority of buildings are council-owned giving high influence over the decision to connect buildings to a heat network, and the recommended low-carbon heating technology was air-source heat pumps and back-up gas boilers. The feasibility report recommended progressing this study to the business case stage, but only after the Eastwood Park Masterplan has been published (estimated timescale is Autumn 2024), and building level surveys undertaken.

For the Barrhead Main Street potential heat network zone, five potential anchor loads were identified, including the leisure centre and library, Council offices, the Barrhead Health and Care Centre and Carlibar Primary School.

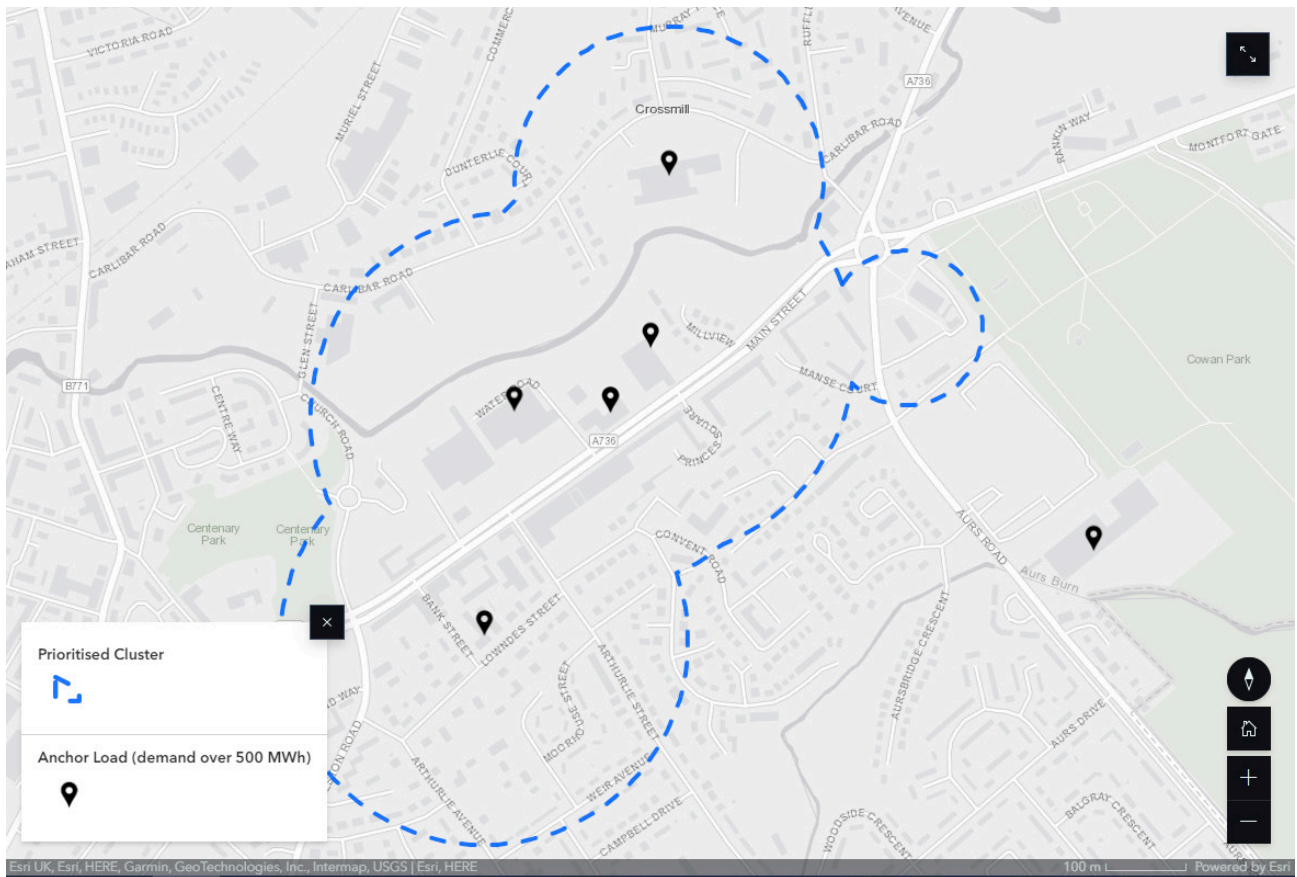


Figure 5: Barrhead Main Street Heat Network Zone

The draft feasibility report for Barrhead Main Street suggested that there is a potential opportunity for a heat network in Barrhead utilising wastewater and a water source heat pump with back-up gas boilers as the low-carbon heating technology. However, the final report suggests that alternative building-level low carbon heating solutions may be a lower cost route to heat decarbonisation than the heat network opportunity considered. For a heat network opportunity to be viable in Barrhead, there would need to be significant grant funding, and the overall lifetime costs incurred may be lower for a building level heating solution approach such as installing individual ASHPs on each building.

East Renfrewshire Council will align with the heat network development stages and associated partner guidance as recommended by the Scottish Government’s Heat Network Support Unit and detailed in figure 6 below.

Heat Network Project Development Stages

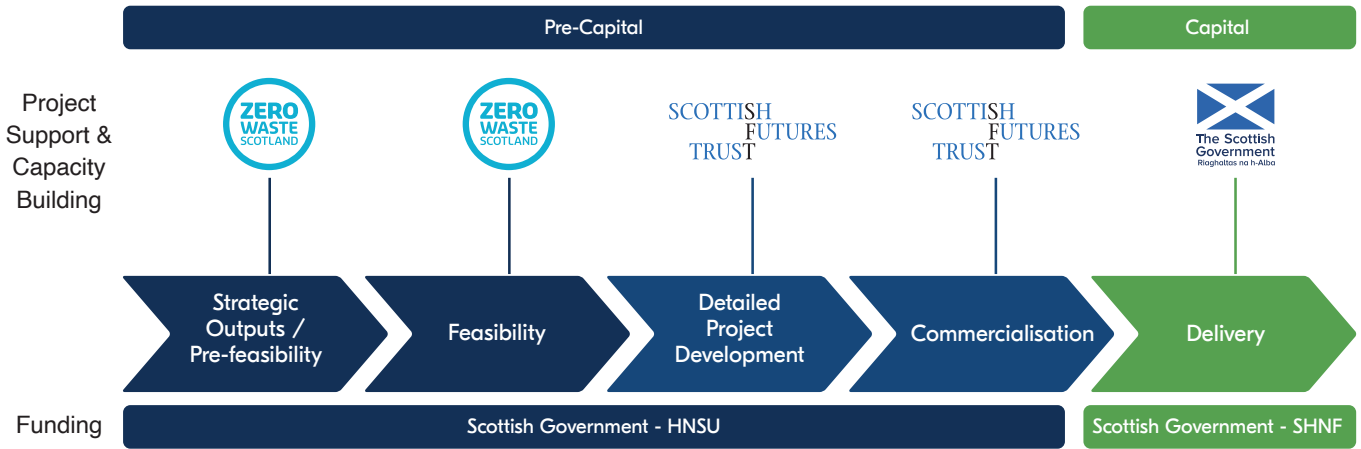
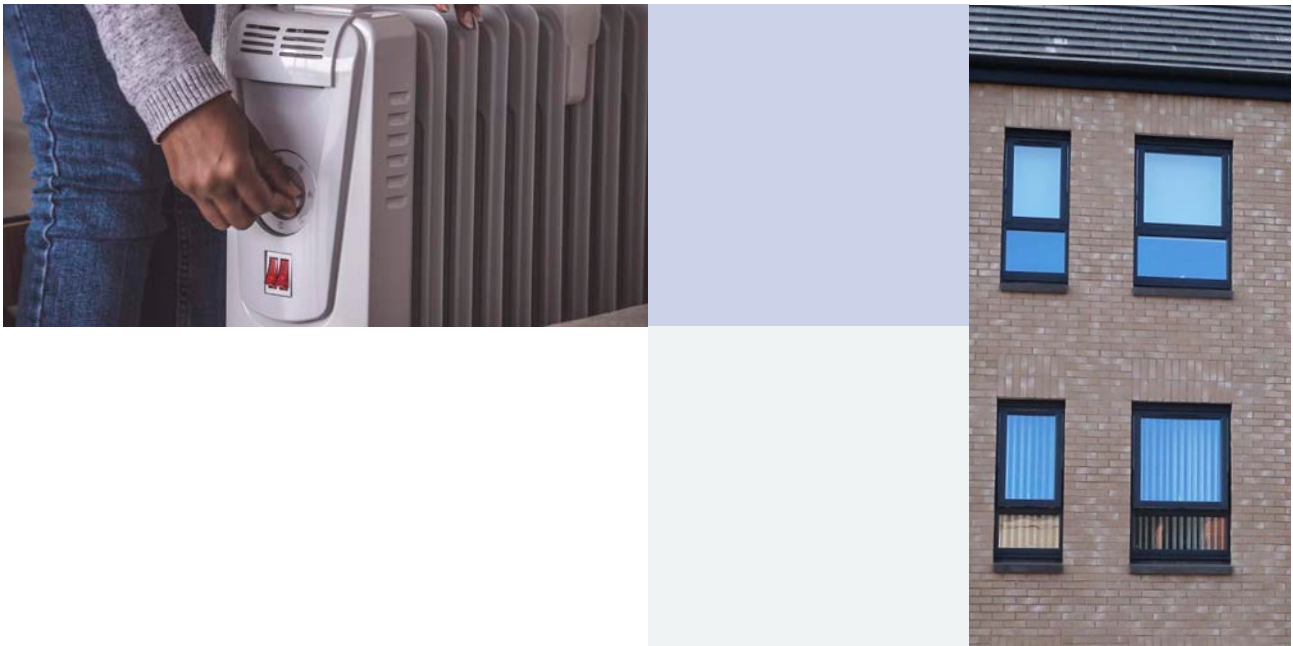


Figure 6: Heat Network Project Development Stages

Future development of any proposed heat network will depend on recommendations from partners and stakeholders following discussion on the feasibility reports; and building a strong economic case that addresses all technical, financial and network limitations. Indeed grid capacity is a consideration for any proposed decarbonisation measure and continued engagement with Scottish Power Energy Networks will be required.

However, the identification and consideration of heat networks in Eastwood Park and Barrhead Main Street does not oblige the Council to commit to delivering the proposed heat networks.



Individual Heat Pump readiness

While the suitability and location of heat networks will be analysed, decarbonisation of heat for the majority of homes in East Renfrewshire is more likely to be delivered by utilising individual Air Source Heat Pumps (ASHP). However, the low-regret options for ASHP installations are limited as 92% of the domestic properties in the area are on gas, which is more than the average for Scotland (83%).

Installing heat pumps in properties that are gas-heated is currently not considered a low-regret option. However, for the on-gas areas there are ample opportunities for ‘heat pump ready’ properties due to the relatively large amount of post-1992 properties with high energy efficiency levels. The areas of Crookfur and Fruin; Mearnskirck and South Kirkhill; and West Arthurlie and North Neilston are particularly suitable. Areas with buildings that are on the national gas grid network and which could easily convert to heat pumps are shown in Figure 7 below.

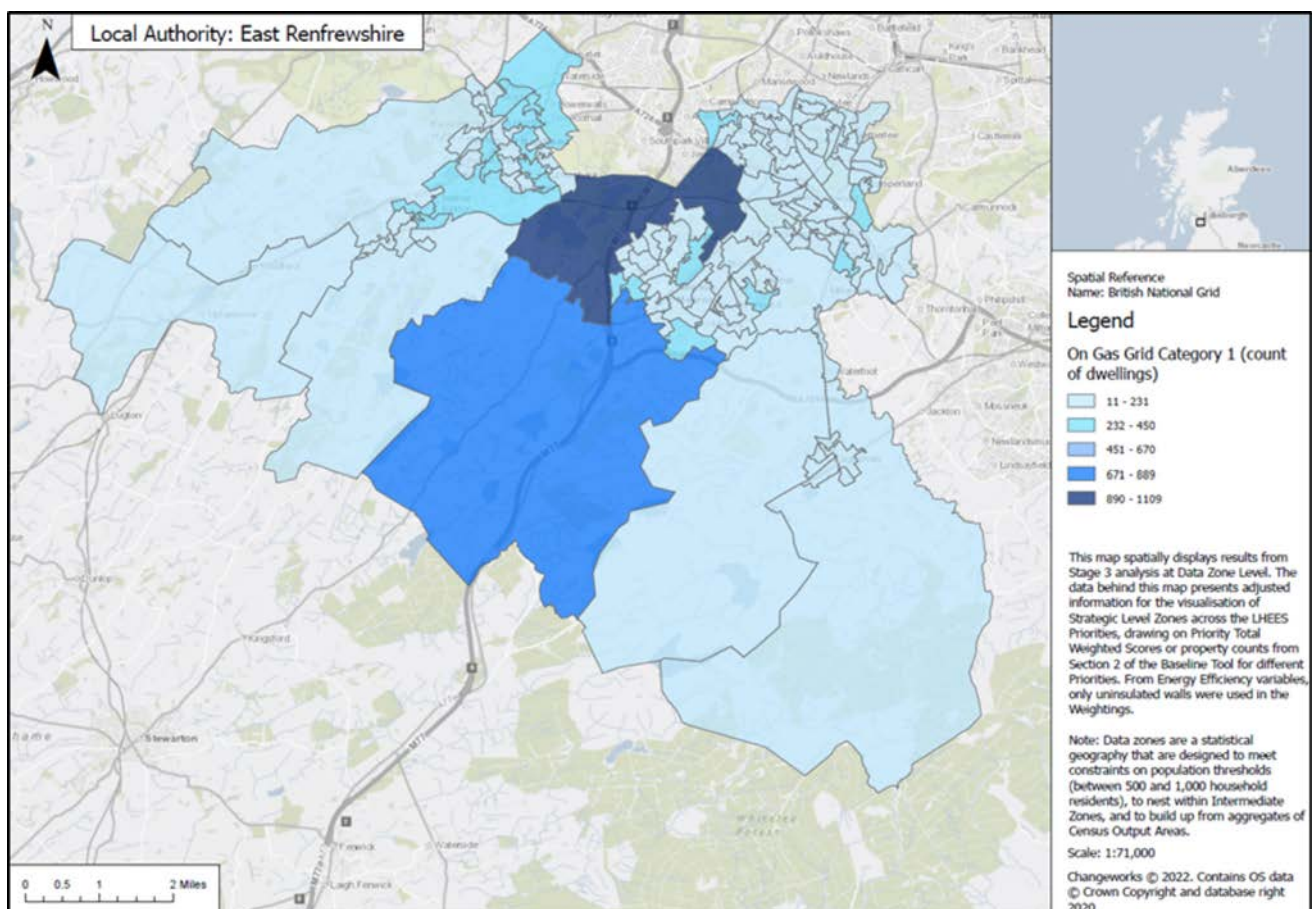


Figure 7: Heat pump ready properties in on gas areas

On gas buildings with secondary technical potential for heat pump retrofit: i.e. those in need of moderate fabric / heat distribution system upgrade are shown in Figure 8 below.

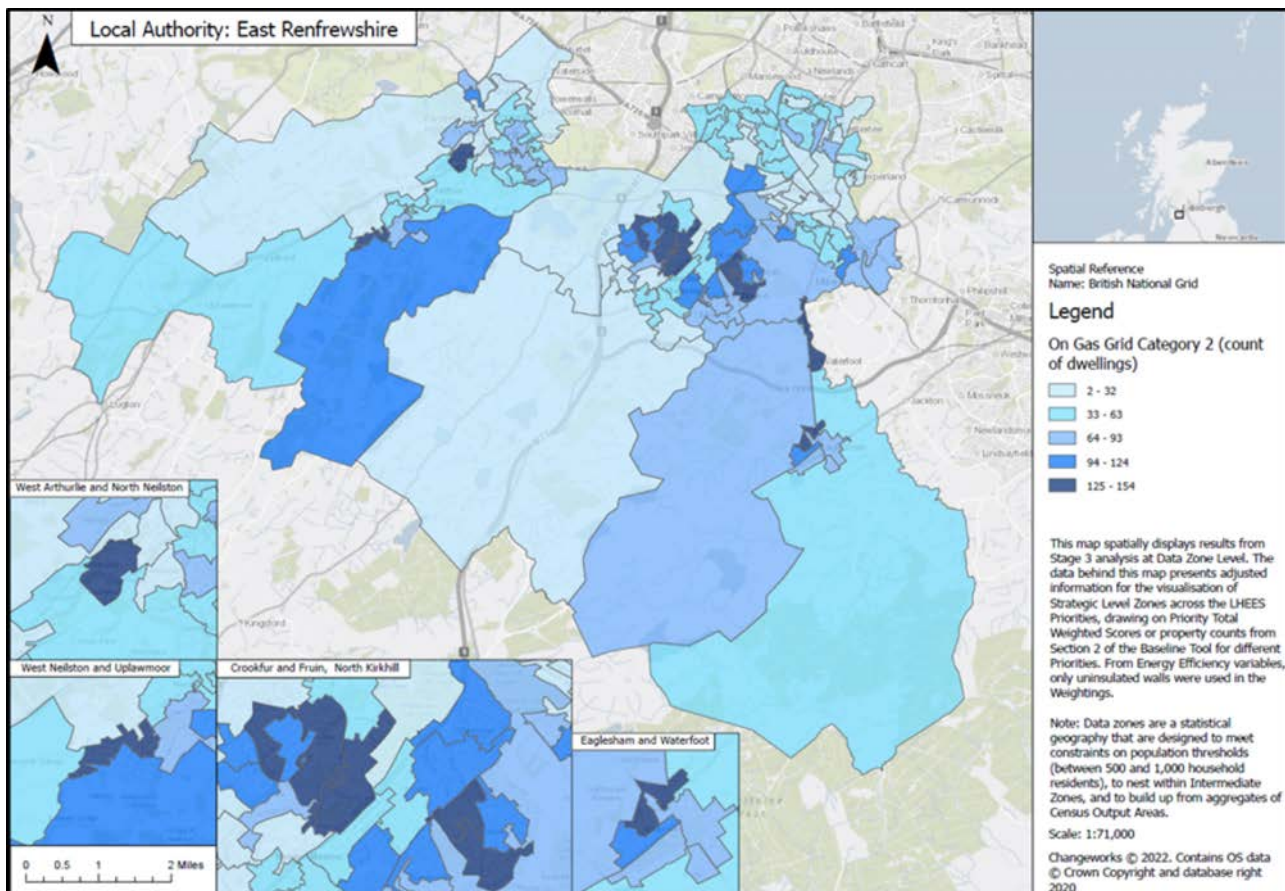


Figure 8: On gas buildings with secondary technical potential for heat pump retrofit

The Council will signpost the owner-occupier sector to any available grant funding or assistance. This will typically be via the Home Energy Scotland service but will include working with partners to run local awareness campaigns, and planning activities to encourage households to invest in insulation, heat pump and solar panel installations.

The Council will take a role to signpost householders to any available grant funding or assistance. Within identified areas of fuel poverty, or where there are low income and vulnerable households, specific funding will be targeted. This will include EES:ABS and ECO4 schemes.

8.2 Priority 2 - Deliver Ground Source Heat Pumps for socially rented properties

Analysis of 'heat pump ready' property clusters (i.e. those which are well insulated with a wet heating system) in both the on-gas and off-gas areas, provided the following:

- 27 green spaces in the off-gas areas were identified which show a high potential for small-scale heat networks such as shared GSHPs for the nearby properties;
- 85 green spaces for the on-gas areas were identified which show a high potential for small-scale heat networks such as shared GSHPs for the nearby properties.

Greenspaces provide areas for the installation of GSHPs which utilise the relatively stable temperature of the ground to extract/deposit heat.

Following discussion on the feasibility reports for the two proposed heat networks at Barrhead Main Street and Eastwood Park, the Council will explore the potential for these smaller scale heat networks further, particularly for the socially rented properties with immediate potential for heat pump retrofit.

8.3 Priority 3 - Increase levels of cavity wall insulation in the private sector

Analysis identified locations where poor building energy efficiency exists. This is typically low levels of wall or loft insulation, the absence of double glazing, or a combination of both these measures. The energy efficiency of the domestic stock in the Council area is lower than the average for Scotland, with 60% of the properties being an EPC-band of D or lower, compared to 49% nationally. The proportion of uninsulated walls is similar to the national average (43% vs 41% nationally), whereas the proportion of loft insulation is six percentage points lower (89% vs 95% nationally).

East Renfrewshire has substantially low levels of insulation for properties with cavity walls (40% uninsulated cavity walls vs 27% nationally), with uninsulated cavity wall properties representing more than a quarter of the properties in the area (>11k).

Figure 9 below shows the areas with higher levels of uninsulated cavity walls. Areas with the least amount of cavity wall insulation are North Kirkhill, Whitecraigs and Broom, North Giffnock and North Thornliebank. However cavity wall insulation potential is spread throughout the local authority area.

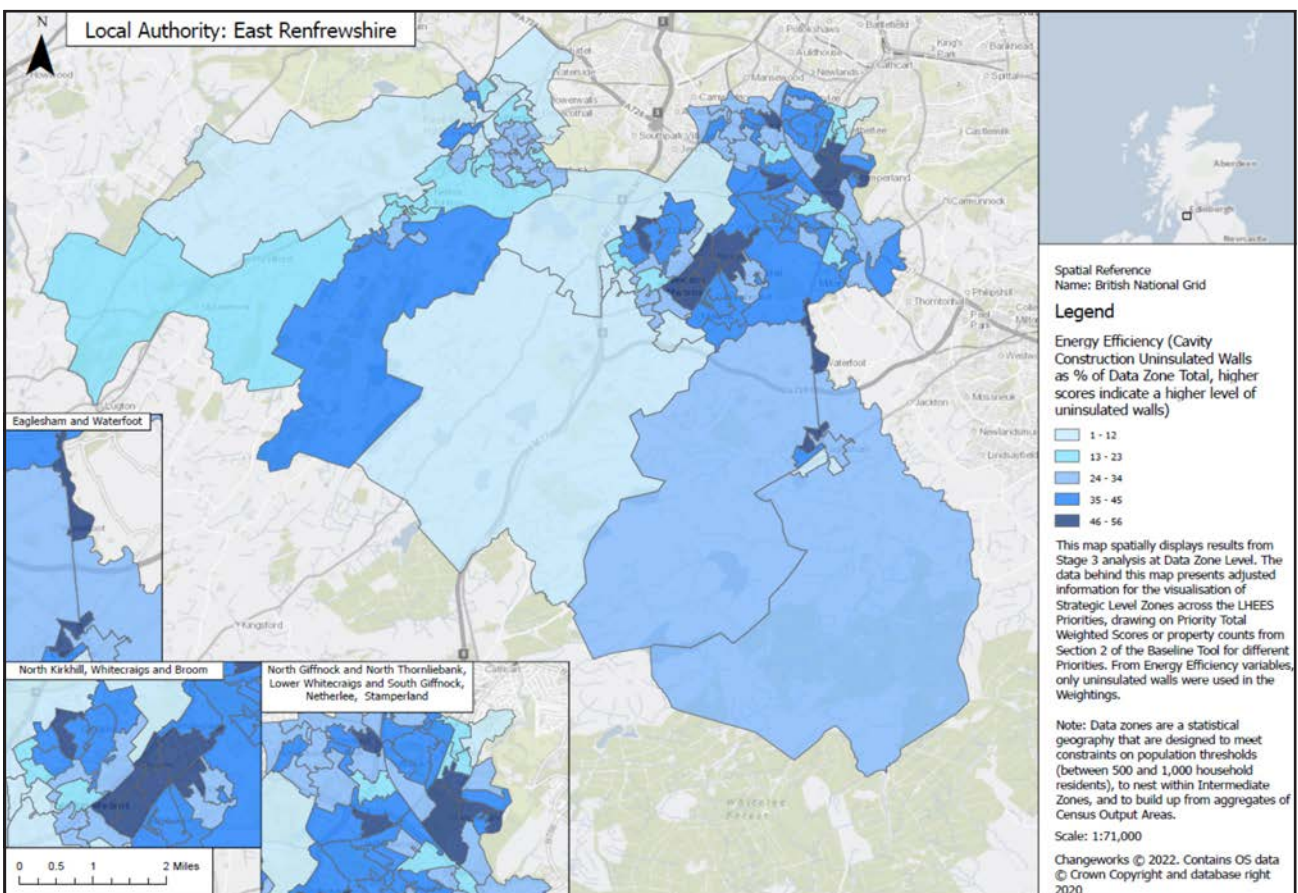


Figure 9: Percentage of Cavity Wall Insulation in domestic properties

Since cavity walls are a lot cheaper to insulate than other wall types, increasing the insulation levels of cavity walls in the private sector offers a good opportunity for ‘quick-win’ energy efficiency improvement measures.

Uninsulated cavity walls are much lower for socially rented properties across East Renfrewshire than the national average (14% vs 26% nationally). The Council is assessing the remaining uninsulated cavity walls in the social rented stock as part of our ongoing asset management improvement strategy.

The Council will signpost the owner-occupier sector to any available grant funding or assistance. This will typically be via the Home Energy Scotland service, but will include working with partners to run local awareness campaigns, and planning activities to encourage households to invest in energy efficiency and decarbonisation.

8.4 Priority 4 - Improve uptake of wall insulation EES:ABS programmes

East Renfrewshire has wall insulation rates lower than the rest of the country but relatively few properties require solid wall insulation (4,370 properties requiring internal wall insulation and just under 250 properties needing external wall insulation). Figure 10 below shows the areas most affected.

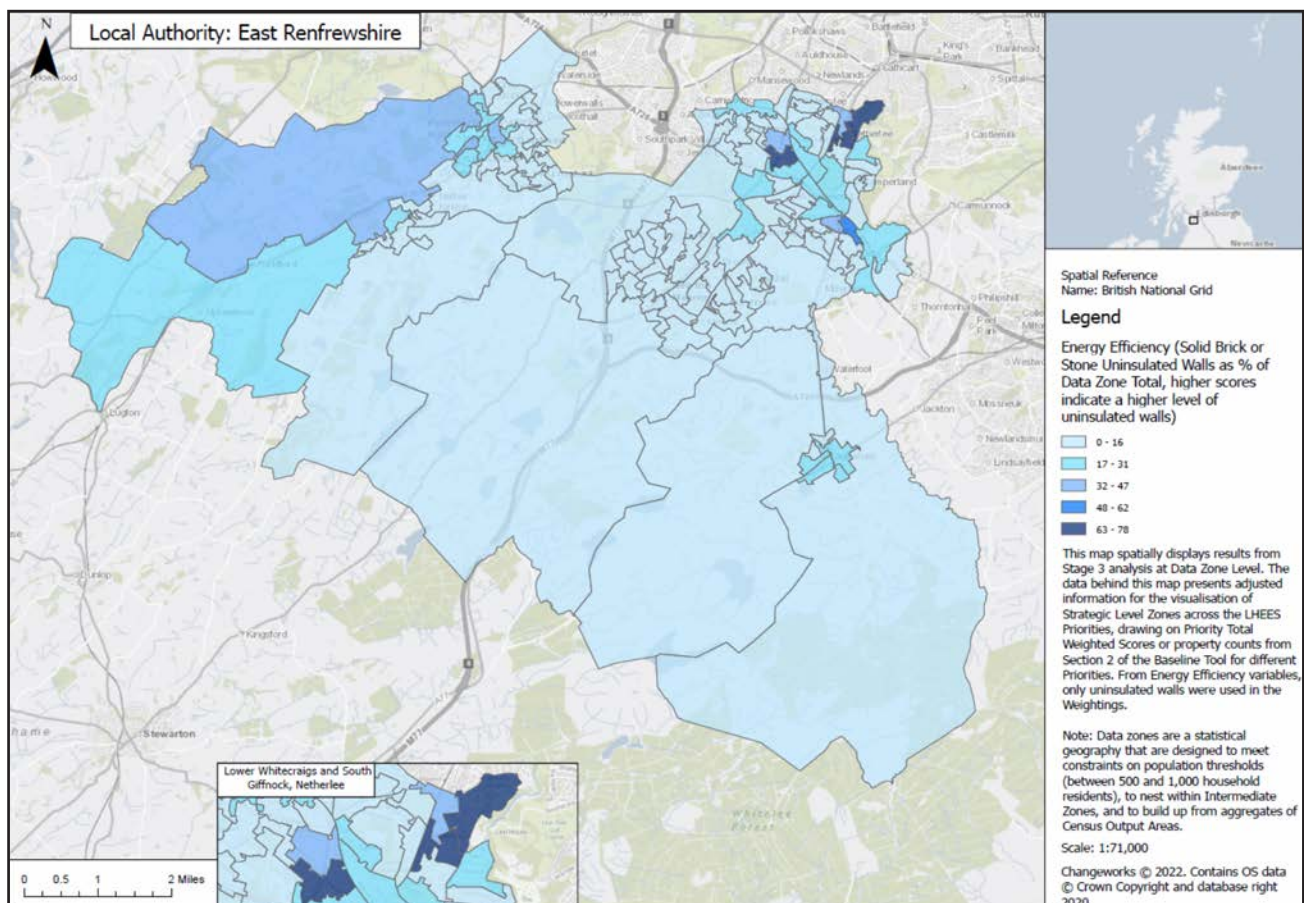


Figure 10: Solid brick or stone uninsulated walls

In areas that score high for fuel poverty, the importance in delivering wall insulation projects through Energy Efficient Scotland: Area Based Scheme (EES:ABS) cannot be underestimated. This is a Scottish Government funded scheme, administered by the Council. Areas with low levels of energy efficiency, particularly wall insulation, but high levels of estimated fuel poverty are: Dunterlie, East Arthurlie and Dovecothall; North Giffnock and North Thornliebank; Cross Stobbs; Neilston and Uplawmoor.

The Council has recently taken steps to improve the uptake of EES:ABS funding to owner-occupiers by funding a new Energy Efficiency Officer post. The Energy Efficiency Officer will work with a contractor to ensure energy efficiency grants available to owners across ERC areas are maximised. This will continue to be a focus over the term of the LHEES. Not only will this improve energy efficiency but could also be a key measure in preventing fuel poverty.

Areas that score high for fuel poverty will also be targeted for support from the Energy Company Obligation (ECO4) scheme, funded by energy companies and aimed at supporting low income and vulnerable households. The Council has an administrative role within the ECO4 scheme. The Council will also signpost householders to any available relevant grant funding or assistance.

8.5 Priority 5 – Deliver improvements for non-domestic council-owned properties

The available non-domestic dataset identified 1,635 properties in the Council area, with 200 of the properties being in ownership of the Council (this number reduces to 106 operational properties when storage units and leased properties are discounted).

The Council does not have direct influence over stock it does not own but wishes to lead by example and deliver on its net zero targets. Data on the non-domestic sector in general is very limited, and recommendations for energy efficiency measures for council-owned, non-domestic stock requires further analysis.

The Council is updating its Property Asset Management Plan to outline how the assessment and identification of improvement actions for council buildings will be undertaken, and this will consider the suitability and need for buildings. The most suitable energy efficiency improvements, and a pathway to install zero-emission heating will be established for those buildings that are to be retained. However significant funding and investment will be required if the LHEES ambitions are to be realised.

Unlike the domestic sector, where only 7% of properties are heated by electricity and 91% by gas, most of the non-domestic properties are electrically heated (59% vs 36% gas), with many using plug-in heaters. The energy efficiency of the non-domestic properties is generally low, although it should be noted that many non-domestic properties, such as storage warehouses, churches or restaurants, are not constantly occupied. Hotels, restaurants and cafes and retail properties have low energy efficiencies compared to the average, whereas workshops and offices have a higher-than-average energy level of A-C EPC bands.

Overall, only 10% of the non-domestic properties have an EPC band C or higher, although for the council-owned properties this is more (26%).

Table 15: Non-domestic EPC band distribution of different property use categories

| EPC Band Property use | A-C | D | E | F-G |
|---------------------------------------------|------------|------------|------------|------------|
| General Assembly (Churches, sports clubs) | 9% | 8% | 12% | 71% |
| General Industrial, Storage or Distribution | 6% | 1% | 0% | 93% |
| Hotels | 0% | 13% | 0% | 88% |
| Non-residential Institutions | 30% | 12% | 18% | 40% |
| Offices and Workshops | 17% | 12% | 29% | 42% |
| Residential Institutions and Spaces | 6% | 28% | 17% | 50% |
| Restaurants and Cafes | 0% | 1% | 3% | 97% |
| Retail and Financial Services | 2% | 6% | 18% | 74% |
| Overall | 10% | 8% | 19% | 63% |
| All ERC owned | 26% | 11% | 17% | 46% |

To understand how the remaining council-owned properties can increase in energy efficiency with specific measures, more detailed surveys of these properties is needed as the available dataset does not provide enough information.



8.6 Priority 6 - Determine most appropriate solar thermal & solar PV installations

Though not considered a primary or secondary consideration in the prescribed LHEES considerations, domestic renewables provide an opportunity towards the decarbonisation of heat in the short term when combined with storage and electric heating.

Given the relatively high proportion of houses in the area (72% vs 64% nationally), there is ample potential for solar thermal and solar PV installations. Figure 11 below shows solar opportunities across the area.

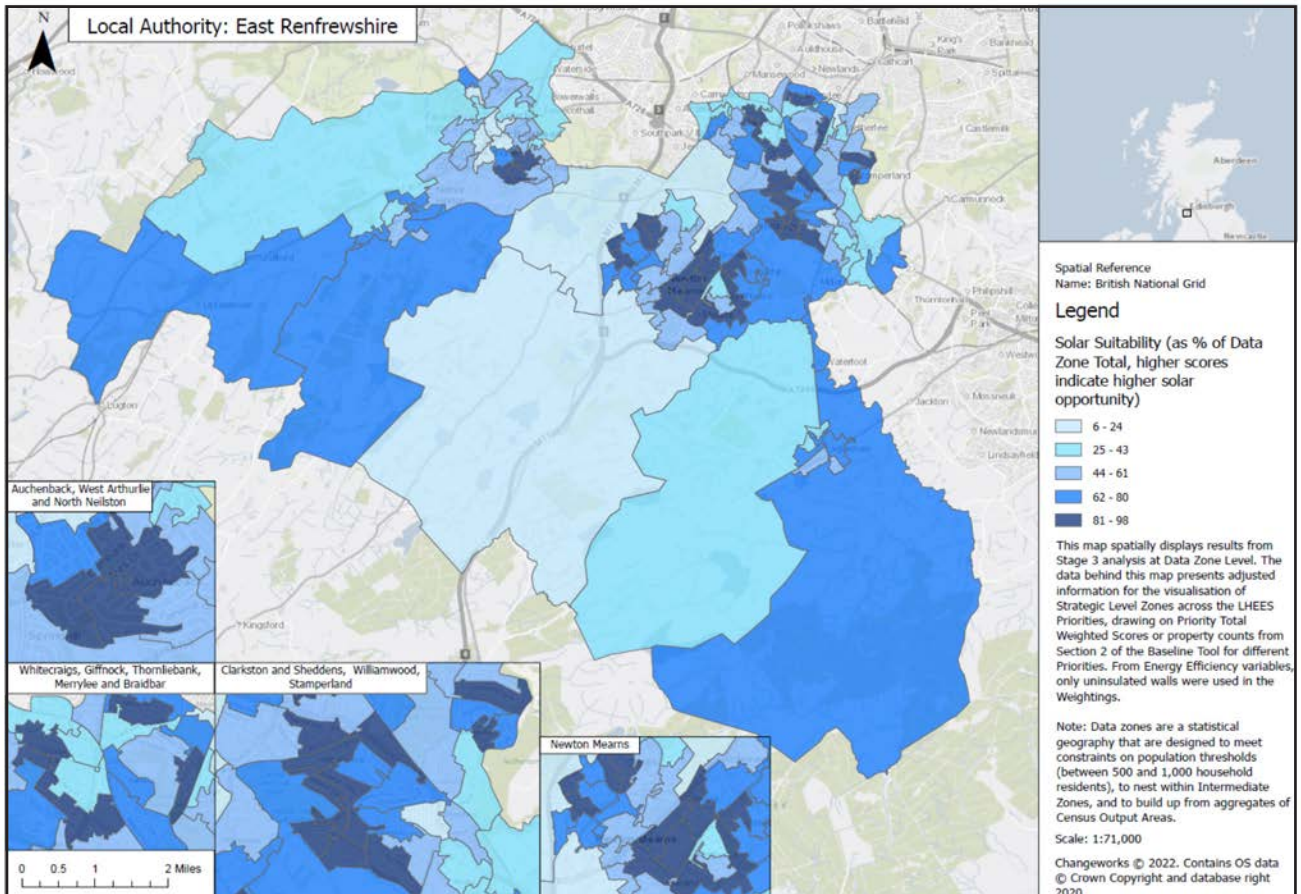


Figure 11: Percentage of properties with suitability for Solar PV

Consideration of solar applications when evaluating future energy demand will also extend to the consideration of solar farms and the greater scale of electricity generation they bring.

The Council will take a role to signpost householders to any available grant funding or assistance and discuss delivery in social housing stock through the Scottish Government's Social Housing Net Zero Heat Fund. Consideration will also be given on how to incorporate such installations through special projects in the EES:ABS schemes and as part of our ongoing asset management improvement strategy.

9. Summary and Next Steps

Local Heat and Energy Efficiency Strategies aim to facilitate a joined up, long-term strategic approach to:

- The improvement of the energy efficiency of buildings in the local authority's area; and
- The reduction of greenhouse gas emissions resulting from the heating of buildings.

The combined outputs of every local authority's LHEES will provide an evidence base for further policy-making and for implementation of delivery programmes, helping the Scottish Government to target appropriate nationwide action.

For instance, in supporting actions to improve energy efficiency and decarbonise heat, LHEES provide appropriate analysis to tackle fuel poverty. By improving the fabric of buildings with poor energy efficiency, we can reduce the energy households are using as well as reducing greenhouse gas emissions.

LHEES also provides analysis which can be built upon in scoping out the potential for building heat networks.

More broadly, LHEES also have an important role in supporting local energy planning. Local authorities will work with distribution network operators to understand where grid constraints may restrict the ability to install zero-emission heating. Distribution network operators will also be able to use the outputs of LHEES to plan where they need to strengthen the grid in the future to support heat decarbonisation.

The ambition is for every property in East Renfrewshire to have access to affordable and reliable net zero heating solutions. For homes, this would help reduce the risk of fuel poverty, and bring social, economic and public health benefits. However significant funding and investment will be required if the ambitions are to be realised.

Analysis provided 5 key findings:

- Seven potential areas for heat network zones were identified, with Eastwood Park and Barrhead Main Street deemed the most promising areas requiring further research. The other potential heat network zones are Crookfur, Newton Mearns, Clarkston, Neilston and Giffnock.
- Since East Renfrewshire does not contain many off-gas properties, the low-regret options for individual heat pump installations are limited. In contrast, for the on-gas areas there are ample opportunities for 'heat pump ready' properties due to the relatively large amount of post-1992 properties.
- Regarding energy efficiency measures, the area has wall insulation rates lower than the rest of the country, particularly cavity wall insulation, suggesting this as the main target for domestic energy efficiency works.

- Although not part of the LHEES methodology, there are many opportunities for domestic solar measures throughout the area, which can be combined with the decarbonisation of heat.
- Data on the non-domestic sector is very limited, and recommendations for energy efficiency measures would require the Council-owned properties to be surveyed.

This strategy and the associated delivery plan will focus on achieving four main outcomes:

Table 16: East Renfrewshire's four LHEES Outcomes

| | |
|------------------|---------------------------------------------------------------------------------------|
| Outcome 1 | Homes and buildings in East Renfrewshire are as energy efficient as possible |
| Outcome 2 | Heat solutions are delivered to meet 2045 net zero target and tackle fuel poverty |
| Outcome 3 | Investment and grant funding is secured to deliver Net Zero projects |
| Outcome 4 | East Renfrewshire Council supports property owners to find improved heating solutions |

The priorities to help us achieve our outcomes for East Renfrewshire's LHEES were selected based on the background analysis and the following criteria:

- i. Improving energy efficiency and introducing zero emissions heating to buildings.
- ii. Aligning areas of largest heat demand with buildings which the Council has the greatest influence over; and determining the most suitable form of zero-emission heating and/or energy efficiency measures.
- iii. Consideration of all other measures which would reduce emissions created by heating, and improve energy efficiency across all buildings.

Table 17: East Renfrewshire's six LHEES Priorities

| | |
|-------------------|-------------------------------------------------------------------------|
| Priority 1 | Analyse potential Heat Network zones |
| Priority 2 | Deliver Ground Source Heat Pumps for socially rented properties |
| Priority 3 | Increase levels of cavity wall insulation in the private sector housing |
| Priority 4 | Improve uptake of wall insulation EES:ABS programmes |
| Priority 5 | Deliver improvements for non-domestic council owned properties |
| Priority 6 | Determine most appropriate solar thermal & solar PV installations |

The priorities we have identified are the most suitable for East Renfrewshire in terms of how we improve energy efficiency and decarbonise heat in our homes and buildings, while ensuring a flexible, fair and just transition to net zero; and were fundamental in shaping our Delivery Plan.

10. Delivery Plan

An LHEES Delivery Plan sets out how the Council proposes to support implementation of its LHEES. This inaugural Delivery Plan covers the period 2024 to 2028 in line with the statutory timescales set out in The Local Heat and Energy Efficiency Strategies (Scotland) Order 2022 and incorporates actions with a near-term focus. It has been informed by the existing policy and funding landscape but is designed to be flexible and will adapt to future policy or legislative changes. The Delivery Plan will therefore be reviewed and updated regularly.

It remains important to stress that significant funding and investment is fundamental to achieving the ambitions of the strategy. The dedicated Scottish Government funding of £75k per annum for 5 years to assist Local Authorities with delivery of LHEES has been used to fund an LHEES Officer post. East Renfrewshire Council has also established a new Energy Efficiency Officer post within our Housing service which will help to deliver our priority to improve uptake of wall insulation EES:ABS programme funding. There are limited capital funds currently available to support the delivery of LHEES infrastructure. However, we aim to ensure that we are in an appropriate and advantageous position to apply for any available funding to help us achieve our outcomes.

We have developed a number of actions to address relevant, interrelated and far-reaching issues including increasing interaction with external stakeholders; designating heat network zones; and assessing changing demands on the electricity grid. Actions which more specifically address each of our six priorities have also been developed. All actions will help us address the priorities we consider to be the most suitable for East Renfrewshire, in terms of how we improve energy efficiency and decarbonise heat in our homes and buildings; and ultimately help us achieve our four outcomes.

One of our earliest actions will be to identify lead officers, key performance indicators, and realistic timescales for each action. To enable this, we must develop appropriate governance structures for the delivery, monitoring, and evaluation of the LHEES and Delivery Plan. This will enable us to firm up our Delivery Plan into near-term and longer-term actions setting out a portfolio of projects to take forward, and track progress of ongoing projects related to the LHEES.

Our Delivery Plan actions are at Table 18 below. It is important to note that a watching brief will be maintained and responded to appropriately on various relevant issues including:

- Green Heat Finance Taskforce recommendations
- A ban on replacement gas boilers
- Electricity pricing regime in view of the UK Government pledge to rebalance gas and electricity costs
- H100 pilot in Fife to provide Hydrogen-based heating to 300 homes
- New Scottish Government policy on Hydrogen
- Proposals for mandatory connections to heat networks
- Social Housing Net Zero Standard
- Heat in Buildings Bill (Scottish Government)

Table 18: Action Plan

| Action | LHEES Governance | Lead Council service | Timescale |
|--------|------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|
| 1 | Identify and agree lead officers, KPIs, and timescales for each action. | Get to Zero (GTZ) Team | 2024 |
| 2 | Develop appropriate governance structures for the delivery, monitoring, and evaluation of the LHEES and Delivery Plan. | GTZ Team | 2024 |
| 3 | Ensure dissemination of the ERC LHEES and Delivery Plan to all key internal and external stakeholders. | GTZ Team | 2024 |

| Action | Engagement | Lead Council service | Timescale |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|
| 4 | Develop a LHEES Communication Plan to increase awareness and understanding of the strategy, promoting key messages about future heat and energy requirements within East Renfrewshire. | GTZ Team | 2024 |
| 5 | Develop a Stakeholder Engagement Plan to promote the LHEES and secure strategic support from key partners to assist with achieving the 4 main outcomes. | GTZ Team | 2024 |
| 6 | Engage with Registered Social Landlords (RSLs) to enable their plans and progress to be incorporated in future updates of the LHEES and Delivery Plan. | GTZ Team | 2024 |
| 7 | Work with Scottish Government and other partners to identify the long-term investment required for energy efficiency and heat decarbonisation interventions. | GTZ Team | 2024 |

| Action | Digital | Lead Council service | Timescale |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------|
| 8 | Develop a digital storymap for the LHEES as part of the Communications and Stakeholder Plans. | GTZ Team/ Business Intelligence | 2024 |
| 9 | Integrate data from the ER LHEES with other Council datasets to assist future planning around energy efficiency and heat decarbonisation. | GTZ Team/ Business Intelligence | 2024 |

| Action | Priority 1 - Analyse potential Heat Network zones | Lead Council service | Timescale |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------|
| 10 | Assess initial Heat Network (HN) feasibility studies internally and with external stakeholders. | GTZ Team/ Property & Technical Services | 2024 |
| 11 | Continue to work on and further develop HN feasibility studies for all highlighted potential heat network areas. | GTZ Team/ Property & Technical Services | ongoing |
| 12 | Promote the integration of HN suitability analysis with all new construction and development proposals. | GTZ Team/ Property & Technical Services | 2024 |
| 13 | Through participation in the Danish-Scottish District Heat Mentoring programme ensure that best practice can be shared from experiences in Denmark and with colleagues in other Local Authorities. | GTZ Team | ongoing |
| 14 | Through continued engagement with Scottish Power Energy Networks (SPEN), assess grid constraints and the scale of upgrades required on capacity to inform the viability of projects. | GTZ Team/ Property & Technical Services / Planning | 2025 |
| 15 | Engage with neighbouring local authorities around the scope for cross-boundary Heat Network Zones. | GTZ Team/ Property & Technical Services | 2024 |
| 16 | Develop the scope for heat pump retrofit pilot projects on Council and RSL housing stock. | GTZ Team/ Property & Technical Services / Housing | 2025 |

| Action | Priority 2 - Deliver Ground Source Heat Pumps for socially rented properties | Lead Council service | Timescale |
|--------|------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|
| 17 | Explore the potential for ground source heat pump (GSHP) retrofit of socially rented properties. | GTZ Team | 2025 |
| 18 | Apply for funding to complete the first stage of review of GSHP for socially rented properties. | GTZ Team | 2025 |
| 19 | Engage with RSLs to determine areas of mutual benefit and collaboration including funding and technology to support GSHP delivery. | GTZ Team | 2024 |
| 20 | Work in partnership and produce property data for an agreed area to enable a report showing an example GSHP network. | GTZ Team | 2024 |

| Action | Priority 3 - Increase levels of cavity wall insulation in private sector housing | Lead Council service | Timescale |
|--------|------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|
| 21 | Develop a campaign to promote cavity wall insulation and target areas with highest levels of uninsulated cavity walls. | GTZ Team/ Housing | 2024 |
| 22 | Signpost available HES (Home Energy Scotland) assistance and funding. | GTZ Team/ Housing | 2024 |
| 23 | Support landlords of privately rented properties to understand and meet their obligations. | Housing/ GTZ Team | 2025 |

| Action | Priority 4 - Improve uptake of wall insulation EES:ABS programmes | Lead Council service | Timescale |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|
| 24 | Work with ERC's Energy Efficiency Officer to maximise support for private housing in fuel poverty areas, ensuring a joined up approach that supports LHEES delivery. | Housing | ongoing |
| 25 | Target capital investment for Council led energy efficiency programmes (including EES:ABS and ECO4 funding) in housing areas at risk of fuel poverty. | Housing | ongoing |

| Action | Priority 5 - Deliver improvements for non-domestic council owned properties | Lead Council service | Timescale |
|--------|-----------------------------------------------------------------------------|--------------------------------------------|-----------|
| 26 | Prepare Building Assessment Reports for Council buildings. | Property & Technical Services/ GTZ Team | 2025 |
| 27 | Support data requirement for decarbonisation of council buildings. | Property & Technical Services/ GTZ Team | 2024 |

| Action | Priority 6 - Determine most appropriate solar thermal & solar PV installations | Lead Council service | Timescale |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-----------|
| 28 | Identify opportunities and feasibility to increase solar installations across the Council property portfolio including housing. | Property & Technical Services /GTZ Team/ Housing | 2025 |
| 29 | Promote and increase take up of available HES assistance and funding for solar installation on private homes to improve energy efficiency. | GTZ Team/ Housing | 2024 |

| Action | LHEES Review | Lead Council service | Timescale |
|--------|----------------------------------------------------------------------------------------|----------------------|-----------|
| 30 | Review and update the Delivery Plan and Strategy as required. | GTZ Team | 2025 |
| 31 | Publish a second iteration of the ER LHEES by the statutory deadline of December 2028. | GTZ Team | 2028 |

Appendix I - Funding and Investment

Significant funding and investment will be required if the ambitions outlined in this document are to be realised. Some of the current funding and delivery programmes that could be utilised to support LHEES Delivery actions are stated below.

| Scheme Name | Details |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Energy Efficient Scotland: Area Based Scheme (ABS) | Funded by Scottish Government. Targets energy efficiency measures for owner-occupiers and private landlords owning 3 or less properties. This ongoing scheme is delivered by East Renfrewshire Council and prioritises fuel poor areas (usually Council Tax Band A-C) |
| Heat Network Support Unit | Funded by Scottish Government to support and develop heat networks. Can offer 100% funding for feasibility studies and up to 50% of Outline Business Cases. |
| Heat Network Fund | Funded by Scottish Government with a total of £300m available before April 2026. Heat network projects must be of a large scale and demonstrate a positive social and economic benefit. |
| Public Sector Heat Decarbonisation Fund | Funded by Scottish Government via Salix. Total of £20m to help public sector decarbonise their heating systems by replacing them with zero direct emissions systems, as well as for retrofit energy efficiency measures to support the overall decarbonisation of heat in buildings |
| Social Housing Net Zero Heat Fund | Funded by Scottish Government and also open to other social landlords. Total of £200m by 2026 with two themes: 1 – zero direct emissions heating systems 2 – “fabric first” energy efficiency only projects |
| ECO4 Flex | Focuses on supporting low-income and vulnerable and fuel poor households through installation of insulation and heating measures, the “ECO4” scheme, covers the period July 2022 to 31 March 2026. |

Funding for social landlords

The main opportunity for social landlords is the Social Housing Net Zero Heat Fund, as mentioned above. For properties within a Heat Network Zone, confirmation of heat network plans will enable applications. These should be linked with further energy efficiency measures and getting ‘heat network ready’. The fund could potentially contribute towards the capital cost of network connection.

Funding for private landlords

The Private Rented Sector Landlord Loan is a Scottish Government funded loan that helps landlords improve the energy efficiency of their properties and meet minimum standards. This is administered by the Energy Savings Trust.

Up to £15,000 can be borrowed per property for insulation measures and £17,500 for up to two home renewable systems per property plus an energy storage system up to a maximum of £6,000. Landlords with five properties or fewer can borrow up to £100,000 and those with six or more can borrow up to £250,000 with the loan repayable over eight years.

Funding for homeowners

Advice on the range of grant and loan funding that is currently available to support owner occupiers with energy efficiency improvements and net zero heating solutions is available via Home Energy Scotland.

Appendix 2 – Priority geographical areas for each LHEES consideration

Table 12: Summary table of most important areas for each LHEES consideration

| LHEES Priority | Description | Main geographical areas to prioritise | Data Zone codes |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Heat networks | Decarbonisation with heat networks | Seven clusters were identified, of which the ones in Eastwood Park and Barrhead show the most potential in terms of anchor loads and potential extensions to existing heat networks and local development sites. | No specific Data Zones, clusters as per output file |
| 2. Off-gas grid buildings | Transitioning mainly from heating oil and LPG in off-gas areas | Areas and properties to prioritise mostly involve flats that currently have storage heaters. ¹ They are located in the following areas: Mearnskirk and South Kirkhill; Crookfur and Fruin; North Giffnock and North Thornliebank; Merrylee and Braidbar; Clarkston and Sheddens. | S01008347, S01008328, S01008410, S01008396, S01008378 |
| 3. Poor building energy efficiency | Poor building energy efficiency | Areas with a lack of cavity wall insulation are North Kirkhill; Whitecraigs and Broom; North Giffnock and North Thornliebank. ² Areas which lack solid wall insulation are Netherlee; Lower Whitecraigs and South Giffnock. | S01008363, S01008345, S01008407, S01008392, S01008405, S01008394 |
| 4. Poor building energy efficiency as a driver for fuel poverty | Poor building energy efficiency as a driver for fuel poverty | Areas with a high level of estimated fuel poverty and low levels of energy efficiency (particularly wall insulation) are; Dunterlie, East Arthurlie and Dovecothall; North Giffnock and North Thornliebank; Cross Stobbs; Neilston and Uplawmoor. | S01008309, S01008406, S01008304, S01008299, S01008314 |
| 5. Mixed-tenure, mixed-use and historic buildings | Covering mixed-tenure and mixed-use buildings, listed buildings and buildings in conservation areas | The areas with highest levels of mixed use and/or mixed tenure are in Mearnskirk and South Kirkhill; Crookfur and Fruin; Dunterlie, East Arthurlie and Dovecothall; and North Giffnock and North Thornliebank. The areas with most properties in conservation areas or listed buildings are Lower Whitecraigs and South Giffnock; Eaglesham and Waterfoot; and Mearnskirk and South Kirkhill. | S01008354, S01008328, S01008309, S01008406, S01008315, S01008355, S01008356, S01008349, S01008402, S01008405 |
| 6. On-gas grid buildings | On-gas grid heat decarbonisation | Areas for this priority mostly involve a high level of recently built properties (i.e. post-1992) with high energy efficiency levels. Particularly the areas of Crookfur and Fruin; Mearnskirk and South Kirkhill; and West Arthurlie and North Neilston. | S01008328, S01008354, S01008318 |

¹ For flatted properties currently with storage heaters, small heat networks or high heat retention (HHR) storage heaters should be considered as well.

² Note that cavity wall insulation potential is spread throughout the local authority area with no Data Zones standing out particularly.

Appendix 3 - Summary of Heat Network Feasibility Studies

Eastwood Park

The study suggests that there is a potential opportunity for a heat network in Eastwood Park. The majority of the buildings in the Eastwood Park study area are Council-owned, giving the Council high influence over the decision to connect buildings to a heat network, if funding allows.

It is recommended to progress this study to the business case stage with an Outline Business Case, but only after the Eastwood Park Masterplan has been published (est. Sept. 2024), and building level surveys undertaken.

Key next steps:

1. This heat network study should inform Eastwood Park Masterplan discussions.
2. Building-level condition surveys should be undertaken to assess the condition of the buildings, and to determine the efficiency of existing heating systems and opportunities for improvement.
3. Following the building-level survey, and following discussions on the final Eastwood Park Masterplan, consider progressing the heat network assessment to Outline Business Case.

Key risks to mitigate for heat network project development include:

- Eastwood Park Masterplan: A heat network has been identified as the lowest cost decarbonisation option for Eastwood Park, and development of the Eastwood Park Masterplan is an opportunity to initiate the progression of a heat network on the campus. The development of the leisure centre and the heat network should collaborate to attempt to align their designs; this avoids the leisure centre adopting alternative low-carbon heating technology.
- Noise pollution from air-source heat pump (ASHP) units: Unit selection requires consideration to incorporate noise attenuation measures at a more detailed design stage, to ensure the introduction of this technology is not disruptive to neighbouring buildings.

Barrhead Main Street

The study suggests that alternative building-level low carbon heating solutions may be a lower cost route to heat decarbonisation than the heat network opportunity considered. For a heat network opportunity to be viable in Barrhead, there would need to be significant grant funding, and the overall lifetime costs incurred may be lower for a building level heating solution approach such as installing individual ASHPs on each building.

Key next steps:

1. Building-level condition surveys should be undertaken to assess the condition of the buildings, and to determine the efficiency of existing heating systems and opportunities for improvement.
2. Investigate building-level low carbon heating solutions

Appendix 4 – Information on all 7 potential Heat Network zones

Figure 11 displays the geographical location of all seven potential heat network zones suggested through initial scoping. The seven potential zones are in Eastwood Park, Barrhead Main Street, Crookfur, Newton Mearns, Clarkston, Neilston and Giffnock. Further consideration of all potential zones will initiate as part of the actions within our Delivery Plan and following discussion on the feasibility reports for Eastwood Park and Barrhead Main Street.

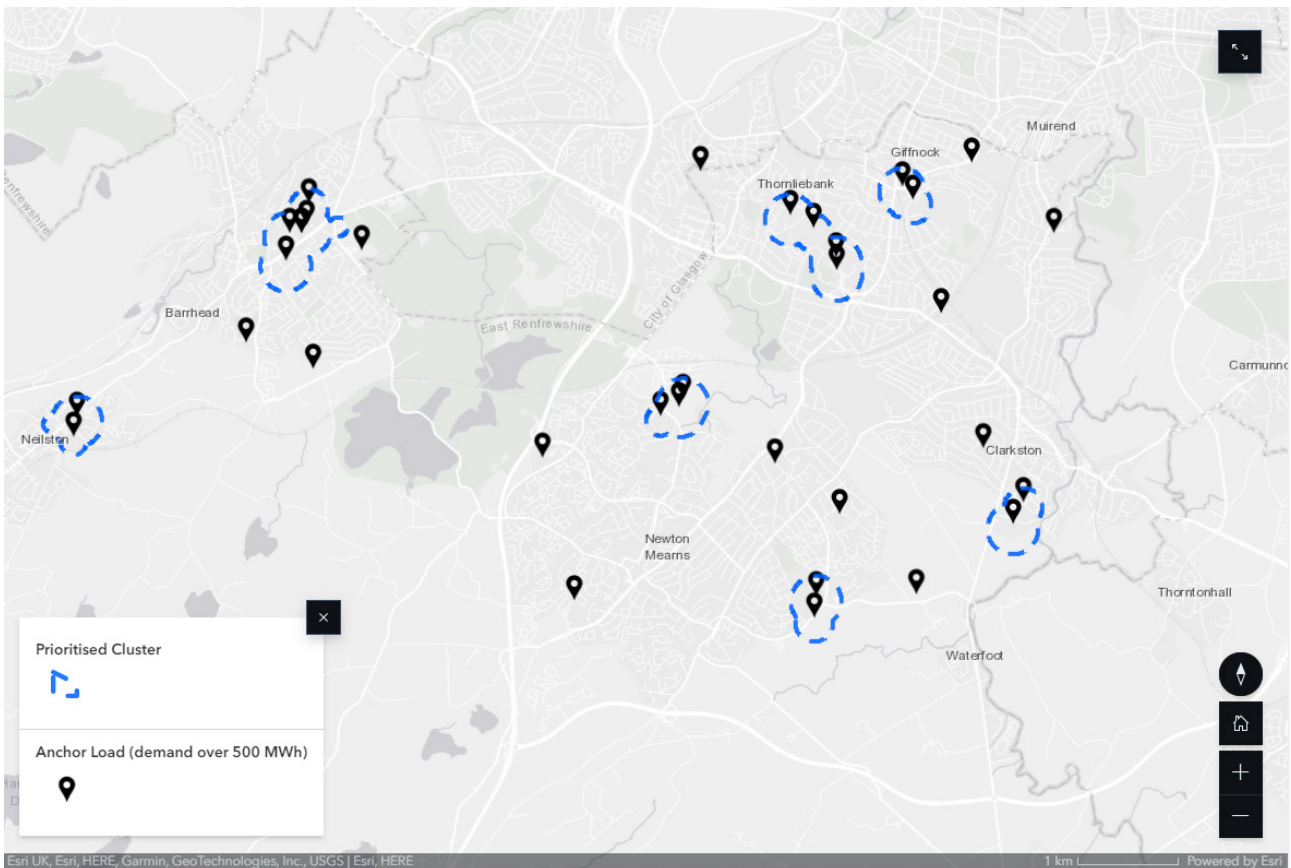

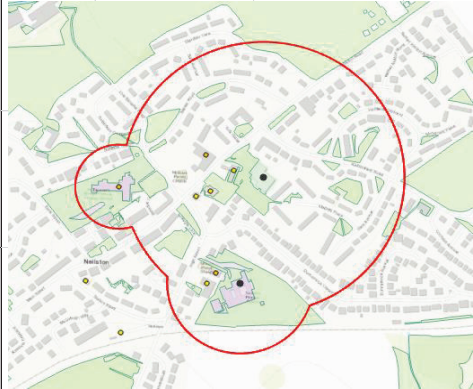


Figure 11: Seven proposed heat network zones in East Renfrewshire

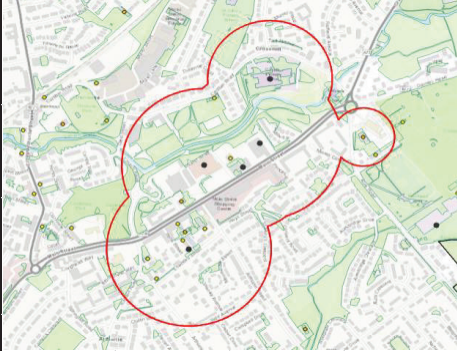
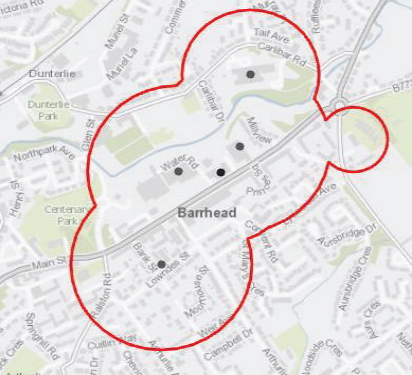
Future development of any proposed heat network will depend on recommendations from partners and stakeholders following discussion on the feasibility reports; and building a strong economic case that addresses all technical, financial and network limitations. Indeed, grid capacity is a consideration for any proposed decarbonisation measure and continued engagement with Scottish Power Energy Networks will be required.

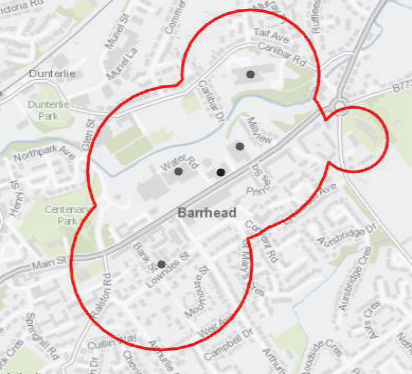
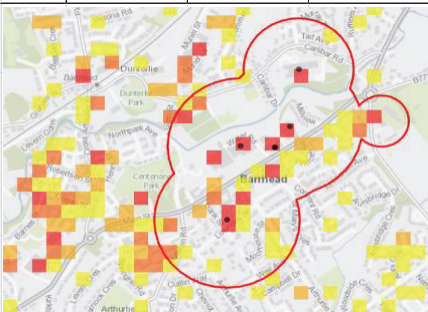
Circumstances have changed for the Neilston site, which was based on anchor loads including the leisure centre and schools. With the development of the new Neilston Learning Campus and Neilston leisure centre and library this site may no longer be viable. Further investigation will be required.

Neilston



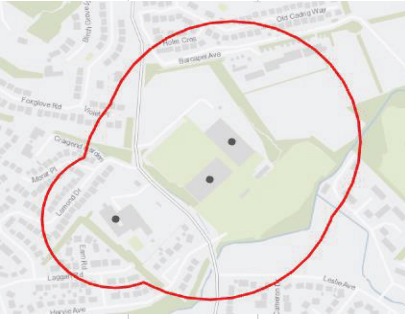
| Priority Cluster | Number of anchor loads | Anchor load names | Anchor load Heatdemand (MWh/yr) | Existing Heat Networks and Local Development sites | | | Constraints | | | Resources | | GHIGS item | | | |
|------------------|------------------------|-------------------------|---------------------------------|----------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------|---------------------------------|
| | | | | Name | Proximity | Description | Type | Impact | Description | Type | Description | Number of green spaces | GSHP annual potential (assumed 40% of the total area) MWh/yr | GSHP peak potential (assumed 40% of the total area) MW | Total Area of green spaces (m2) |
| 1 | Two | Neilston Primary School | 519 | Heat Networks | | | Roads | Minor constraint | No major roads | HHP_Granites | Layer empty | 23 | 19,249 | 8.02 | 285,173 |
| | | Neilston Leisure Centre | 1,663 | No existing heat networks in the area. | | | Rivers | No constraint | No rivers | Hot_Sed_Aquifer | Low productivity aquafer in which flow is virtually all through fractures and other discontinuities | | | | |
| | | | | Local Development Sites | | | Railways | Minor constraint | Railway cutting through the southern edge of the cluster. It doesn't bisect groups of buildings. | NAEI large emitters | Not present | | | | |
| | | | | Neilston Primary School, Neilston | Within the cluster | New Joint campus: Learning & Leisure in Neilston (Madras Family Centre, Neilston Primary, and St Thomas Primary) |  | | | SEPA waste | Not present |  | | | |
| | | | | Neilston Village Centre | Within the cluster | Community Hub - Redevelopment of Library and Leisure Centre, improvements to health facilities and commercial development | | | | Waterbodies | Not present | | | | |
| | | | | Neilston Neighbourhood Centre | Within the cluster | Neighbourhood Centre Enhancements | | | | | | | | | |
| | | | | Housing Sites | | SG1.20 North Kirkton Road, Neilston SG1.19 Neilston Road, Neilston SG1.18 Holehouse Brae, Neilston | | | | | | | | | |
| | | | | Safeguarding Business and Employment Areas | | SG5.7 Crofthead Mill, Neilston | | | | | | | | | |

Barrhead

| Priority Cluster | Number of anchor loads | Anchor load names | Anchor load Heatdemand (MWh/yr) | Existing Heat Networks and Local Development sites | | | Constraints | | | Resources | | GHIGS item | | | |
|------------------|------------------------|------------------------------------------------|---------------------------------|----------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------|---------------------------------|
| | | | | Name | Proximity | Description | Type | Impact | Description | Type | | Number of green spaces | GSHP annual potential (assumed 40% of the total area) MWh/yr | GSHP peak potential (assumed 40% of the total area) MW | Total Area of green spaces (m2) |
| 2 | Five | Municipal Buildings | 1,106 | Heat Networks | | | Roads | Major constraint | A736 bisects groups of buildings and anchor loads. | HHP_Granites | Layer empty | 48 | 64,490 | 26.87 | 955,402 |
| | | Barrhead Foundry Leisure Centre & Library Etc. | 2,366 | Westbourne Centre Barrhead | Intersects the west edge of the cluster | Heat generation: 18,728 kWh Fuel: electricity | Rivers | Minor constraint | Levern Water cuts through the cluster. It bisects groups of buildings and anchor loads. | Hot_Sed_Aquifer | Moderately productive aquifer in which flow is virtually all through fractures and other discontinuities |  | | | |
| | | Council Offices | 830 | 25 and 27 Henry Street | Intersects the north-west edge of the cluster | Heat generation: 122,357 kWh Fuel: natural gas Technology: Boiler | Railways | No constraint | No railways | NAEI large emitters | Not present | | | | |
| | | Barrhead Health And Care Centre | 2,161 | (042) / St Mary's Gardens | Within the cluster | Heat generation: no info Fuel: natural gas Technology: Boiler |  | | | SEPA waste | Barrhead Household Waste Recycling Centre less than 200m away from the cluster. Operational | | | | |
| | | Carlibar Primary School | 757 | Local Development Sites | | | | | | Waterbodies | Not present | | | | |
| | | | | SG11.1 Barrhead Town Centre | Within the cluster | Preparation of Town Centre Strategy and Action Programme | | | | | | | | | |
| | | | | Business Improvement Districts | Buffer intersects the cluster | SG12.1 Barrhead Town Centre | | | | | | | | | |
| | | | | Safeguarded business and employment areas | Partly within the cluster | SG5.4 Muriel Street, Barrhead | | | | | | | | | |
| | | | | | Within the cluster | SG1.4 Glen Street/Walton Street Barrhead | | | | | | | | | |
| | | | | Housing Sites | Buffer intersects with the cluster | SG1.11 N Darnley Road, Barrhead | | | | | | | | | |
| | | | | | Buffer intersects with the cluster | SG1.10 Shanks Park, Barrhead | | | | | | | | | |



Crookfur

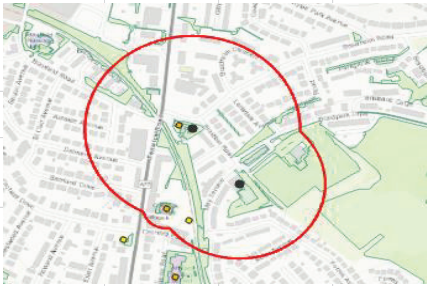

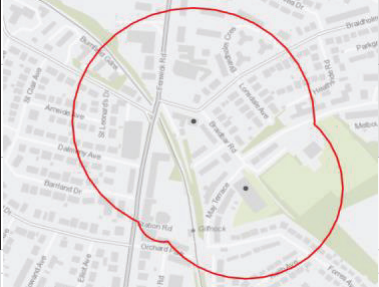
| Priority Cluster | Number of anchor loads | Anchor load names | Anchor load Heatdemand (MWh/yr) | Existing Heat Networks and Local Development sites | | | Constraints | | | Resources | | GHIGS item | | | |
|----------------------------------------------------------------------------------|------------------------|---------------------------------------|---------------------------------|----------------------------------------------------|-----------|------------------------------------------------------------------------------------|-------------|----------------------|--------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------|---------------------------------|
| | | | | Name | Proximity | Description | Type | Impact | Description | Type | | Number of green spaces | GSHP annual potential (assumed 40% of the total area) MWh/yr | GSHP peak potential (assumed 40% of the total area) MW | Total Area of green spaces (m2) |
| 3 | Three | Crookfur Primary School | 570 | Heat Networks | | | Roads | Potential constraint | Capelrig Road bisects groups of buildings and anchor loads | HHP_Granites | Layer empty | 12 | 4,626 | 1.93 | 68,535 |
| | | Eastwood High School Sports Centre | 1,531 | No existing heat networks in the area. | | | Rivers | No constraints | Auldhouse Burn cuts through the south edge of the cluster. It doesn't bisect groups of buildings | Hot_Sed_Aquifer | Low productivity aquafer in which flow is virtually all through fractures and other discontinuities |  | | | |
| | | Eastwood High School | 3,471 | Local Development Sites | | | Railways | No constraints | No railways present | NAEI large emitters | Not present | | | | |
|  | | Crookfur Primary School, Newton Meams | | Within the cluster | Extension |  | | | SEPA waste | Not present | | | | | |
| | | | | | | | | | Waterbodies | Not present | | | | | |

Eastwood Park

| Priority Cluster | Number of anchor loads | Anchor load names | Anchor load Heatdemand (MWh/yr) | Existing Heat Networks and Local Development sites | | | Constraints | | | Resources | | GHIGS item | | | |
|------------------|------------------------|-----------------------------------------|---------------------------------|----------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------|-------------|------------------|------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------|--------------------------------------------------------|---------------------------------|
| | | | | Name | Proximity | Description | Type | Impact | Description | Type | | Number of green spaces | GSHP annual potential (assumed 40% of the total area) MWh/yr | GSHP peak potential (assumed 40% of the total area) MW | Total Area of green spaces (m2) |
| 4 | Four | Woodfarm High School | 2,066 | Heat Networks | | | Roads | Minor constraint | A727 cuts the southern edges of the cluster. It does not bisect groups of buildings and anchor loads | HHP_Granites | Layer empty | 14 | 79 | 0.05 | 1,164 |
| | | Our Lady Of The Missions Primary School | 724 | 7 Eastwood Crescent, Thornliebank, | Intersects the north-west edge of the cluster | Heat generation: 382,635 kWh Fuel: natural gas Technology: boiler | Rivers | No constraints | Auldhouse Burn bisects the anchor loads | Hot_Sed_Aquifer | Moderately productive aquaifer in which flow is virtually all through fractures and other discontinuities | | | | |
| | | St Ninian's High School | 2,267 | Local Development Sites | | | Railways | No constraints | No railways | NAEI large emitters | Not present | | | | |
| | | Eastwood Leisure Centre | 4,701 | Housing Sites | Buffer borders with the cluster | SG1.15 Robslee Drive Giffnock | | | | SEPA waste | Not present | | | | |
| | | | | Community Facilities | Within the cluster | Master plan to inform the following uses: Improved leisure centre and facilities | | | | Waterbodies | Not present | | | | |

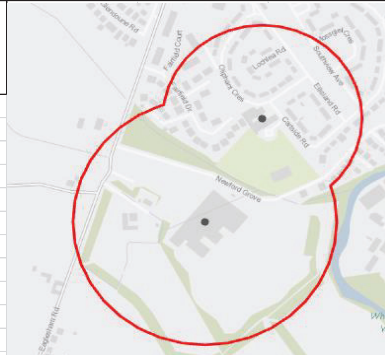
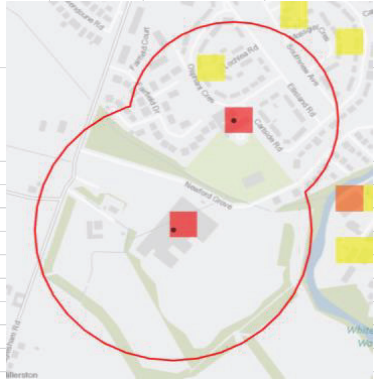


Giffnock

| Priority Cluster | Number of anchor loads | Anchor load names | Anchor load Heatdemand (MWh/yr) | Existing Heat Networks and Local Development sites | | | Constraints | | | Resources | | GHIGS item | | | |
|----------------------------------------------------------------------------------|------------------------|-------------------------------------------|---------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------|-------------|-------------|------------------|--------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------|---------------------------------|
| | | | | Name | Proximity | Description | Type | Impact | Description | Type | | Number of green spaces | GSHP annual potential (assumed 40% of the total area) MWh/yr | GSHP peak potential (assumed 40% of the total area) MW | Total Area of green spaces (m2) |
| 5 | Two | Walton Community Centre | 731 | Heat Networks | | | Roads | Major constraint | A77 cuts through the cluster and bisects groups of buildings | HHP_Granites | Layer empty | 14 | 24,053 | 10.02 | 356,343 |
| | | Giffnock Police Station | 914 | No existing heat networks in the area. | | | Rivers | No constraints | No rivers | Hot_Sed_Aquifer | Moderately productive aquifer in which flow is virtually all through fractures and other discontinuities | | | | |
| | | | | Local Development Sites | | | Railways | No constraints | No railways | NAEI large emitters | Not present |  | | | |
|  | | Business Improvement Districts | Within the cluster | SG12.3 Giffnock Town Centre |  | | SEPA waste | Not present | | | | | | | |
| | | Safeguarded Business and Employment Areas | Buffer borders with the cluster | SG5.6 Burnfield Road, Giffnock | | | Waterbodies | Not present | | | | | | | |
| | | Town and Neighbourhood Centre Proposals | Within the cluster | SG11.7 Giffnock Town Centre | | | | | | | | | | | |

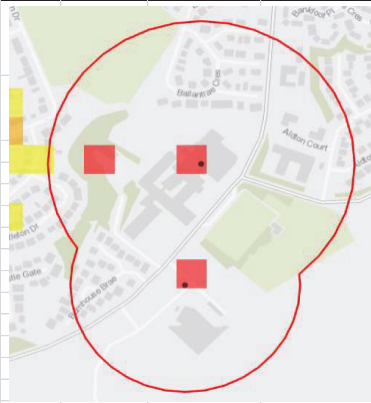
Clarkston

| Priority Cluster | Number of anchor loads | Anchor load names | Anchor load Heatdemand (MWh/yr) | Existing Heat Networks and Local Development sites | | | Constraints | | | Resources | | GHIS item | | | |
|------------------|------------------------|-------------------------|---------------------------------|----------------------------------------------------|------------------------------------|-------------------------|-------------|------------------|------------------------------|---------------------|------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------|--------------------------------------------------------|---------------------------------|
| | | | | Name | Proximity | Description | Type | Impact | Description | Type | | Number of green spaces | GSHP annual potential (assumed 40% of the total area) MWh/yr | GSHP peak potential (assumed 40% of the total area) MW | Total Area of green spaces (m2) |
| 6 | Two | Bonnyton House | 756 | Heat Networks | | | Roads | Minor constraint | No major roads | HHP_Granites | Layer empty | 11 | 1,958 | 0.82 | 29,008 |
| | | Williamwood High School | 2,163 | No existing heat networks in the area. | | | Rivers | No constraints | No rivers within the cluster | Hot_Sed_Aquifer | Low productivity aquaifer in which flow is virtually all through fractures and other discontinuities | | | | |
| | | | | Local Development Sites | | | Railways | No constraints | No railways | NAEI large emitters | Not present | | | | |
| | | | | Safeguarded Business and Employment Areas | Buffer intersects with the cluster | SG5.5 Field Road, Busby | | | | SEPA waste | Not present | | | | |
| | | | | | | | | | Waterbodies | Not present | | | | | |



Newton Mearns

| Priority Cluster | Number of anchor loads | Anchor load names | Anchor load Heatdemand (MWh/yr) | Existing Heat Networks and Local Development sites | | | Constraints | | | Resources | | GHIGS Item | | | |
|------------------|------------------------|----------------------------|---------------------------------|----------------------------------------------------|---------------------------|-----------------------------------------------------|-------------|----------------------|------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------|--------------------------------------------------------|---------------------------------|
| | | | | Name | Proximity | Description | Type | Impact | Description | Type | | Number of green spaces | GSHP annual potential (assumed 40% of the total area) MWh/yr | GSHP peak potential (assumed 40% of the total area) MW | Total Area of green spaces (m2) |
| 7 | Two | Mearns Castle High School | 2,562 | Heat Networks | | | Roads | Potential constraint | Broom Rd East cuts through the cluster and bisects groups of buildings and anchor loads. | HHP_Granites | Layer empty | 10 | 3,630 | 1.51 | 53,775 |
| | | Faith Schools Joint Campus | 749 | No existing heat networks in the area. | | | Rivers | No constraints | No rivers | Hot_Sed_Aquifer | Low productivity aquaifer in which flow is virtually all through fractures and other discontinuities | | | | |
| | | | | Local Development Sites | | | Railways | No constraints | No railways | NAEI large emitters | Not present | | | | |
| | | | | Housing Sites | Partly within the cluster | SG1.22 Broom Road East / Waterfoot Rd Newton Mearns | | | | SEPA waste | Not present | | | | |
| | | | | | | | | | Waterbodies | Not present | | | | | |



Appendix 5 – Methodology

This section presents an analysis of Stage 1 to 4 of the LHEES methodology that was applied by Changeworks on data provided by East Renfrewshire Council. The current methodology and guidance are framed around what can be delivered now, given the existing and known policy landscape, alongside experiences of local authorities in delivering relevant programmes of works.

Given the Strategic and Delivery aspects of the LHEES, the LHEES methodology works towards producing two types of spatial zones to visualise potential pathways: one to decarbonise the building stock at a local authority level (Strategic Zones) and the other at a more granular level (Delivery Areas).

Within this methodology, Strategic Zones have been set at ‘Intermediate Zone’ scale in the provided LHEES tools, with the option to adjust to ‘Data Zone’ scale if required.³ The classification of Strategic Zones helps to gain insights into the baseline performance of the Council’s stock, the scale of potential as well as initial focus areas, which can then be used to develop Delivery Areas. They can guide policy levers, such as advice, funding programmes and regulation, which will give further direction and clarity to delivery routes and timescales. Delivery Areas have a much higher granularity than Strategic Zones and their aim is to identify areas for targeted intervention and early, low-regrets measures.

Scope and Function of LHEES

Table 1: Summary of the LHEES Considerations

| | No. | LHEES Consideration | Description |
|-----------------------------------------|-----|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Low regrets* heat decarbonisation | 1 | Heat networks | Decarbonisation with heat networks |
| | 2 | Off-gas grid buildings | Transitioning mainly from heating oil and LPG in off-gas areas |
| Secondary outcomes | 3 | Poor building energy efficiency | Poor building energy efficiency |
| | 4 | Poor building energy efficiency as a driver for fuel poverty | Poor building energy efficiency as a driver for fuel poverty |
| | 5 | Mixed-tenure, mixed-use and historic buildings | Covering mixed-tenure and mixed-use buildings, listed buildings and buildings in conservation areas |
| Heat decarbonisation | 6 | On-gas grid buildings | On-gas grid heat decarbonisation |

*Low regrets are heat decarbonisation actions that are relatively low cost and provide relatively large benefits when it comes to heat decarbonisation. In the LHEES context they refer to heat networks and off-gas grid heat pumps.

³ Intermediate zones contain 2,500-6,000 household residents, whereas Data Zones contain between 500 and 1,000. There are 1,279 Intermediate Zones and 6,976 Data Zones that cover Scotland.

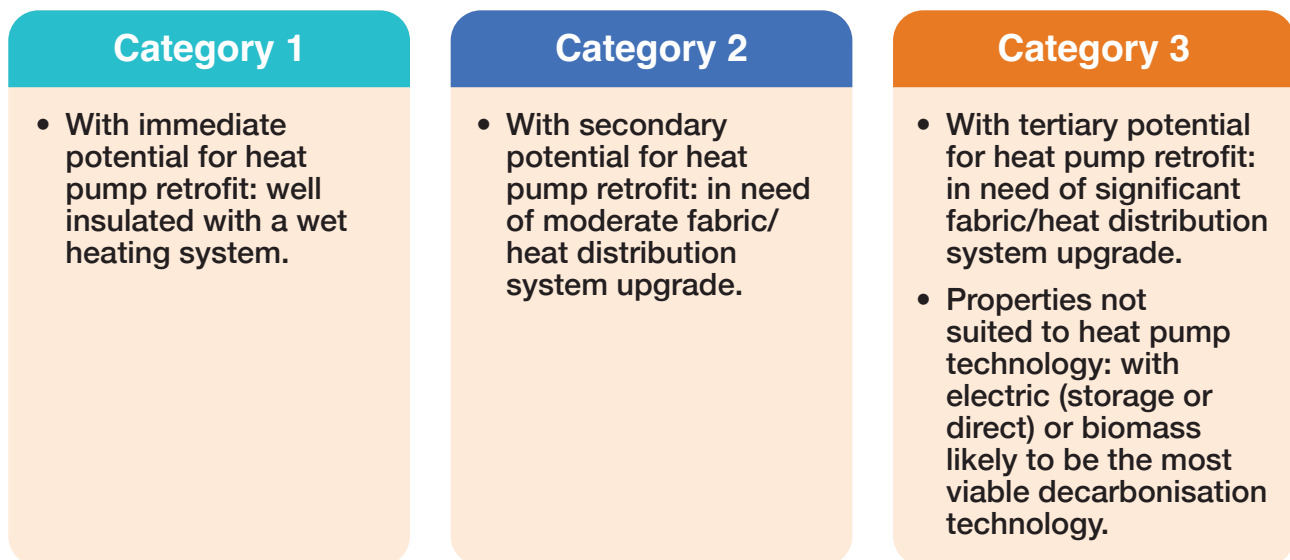
LHEES is framed around Six Considerations, as listed in Table 1, and set out in more detail below. The LHEES should eventually cover all tenures and all sectors, including the non-domestic sector. However, the current guidance provided by the Scottish Government acknowledges that this first round of the LHEES will have a large emphasis on the domestic sector.

1. Low regrets: heat decarbonisation: Heat Networks

The analysis should highlight heat dense areas within a local authority where heat networks present a likely decarbonisation option. Different opportunities and constraints relating to development potential can be considered to inform decisions, or the prioritisation of the different heat network zones.

2. Low regrets: heat decarbonisation: Off-gas grid

This analysis should identify low regrets off-gas heat decarbonisation pathways and opportunities for domestic properties at both the strategic and delivery level. It groups the domestic properties into three principal categories:



An additional Category 0 was used to identify properties that already have a low or zero emissions heating system, which is currently limited to heat pumps and those that are connected to a heat network.

3 & 4. Secondary outcomes: poor building energy efficiency and poor building energy efficiency as a driver for fuel poverty

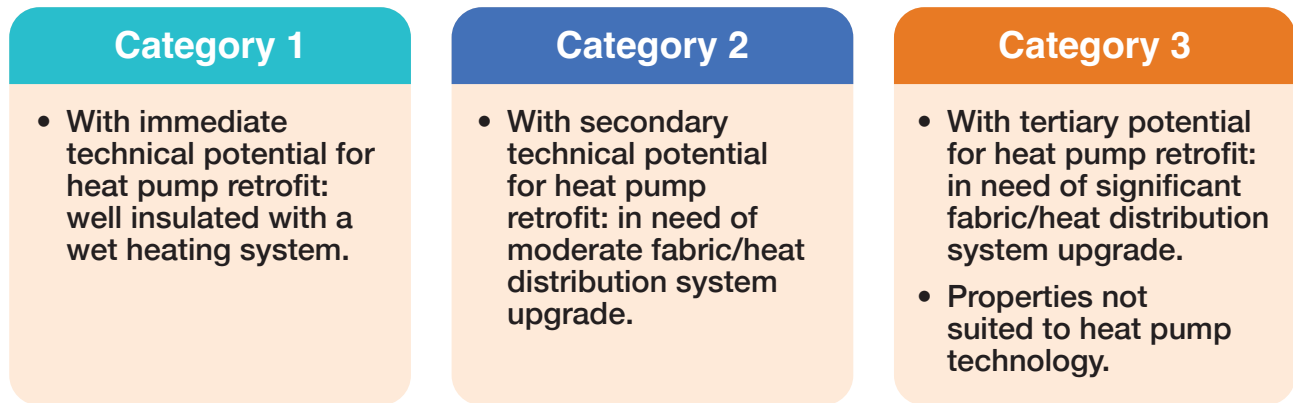
This analysis should identify possible locations where poor building energy efficiency (such as low levels of wall or loft insulation, the absence of double glazing, or a combination of these) exists across the local authority, as well as an analysis for areas where this acts as a driver for fuel poverty.

5. Secondary outcomes: mixed-tenure, mixed-use and historic buildings

This analysis identifies where there are buildings of mixed-use or mixed-tenure and where there are historic buildings (covering listed buildings and conservation areas). This priority area is mostly meant to be combined with other results to specify the Delivery Areas in Stage 6.

6. Heat decarbonisation: On-gas grid

This analysis identifies possible low regrets on-gas decarbonisation pathways for domestic properties and opportunities at a strategic and delivery level. At this stage, analysis explores only building readiness for heat pump retrofit. This involves grouping of properties into three principal categories:



An additional Category 0 is used to identify properties that are connected to a heat network.

2.1. LHEES Stages

The production of an LHEES has eight stages, which are presented in Figure 2. Description of each stage is provided below.

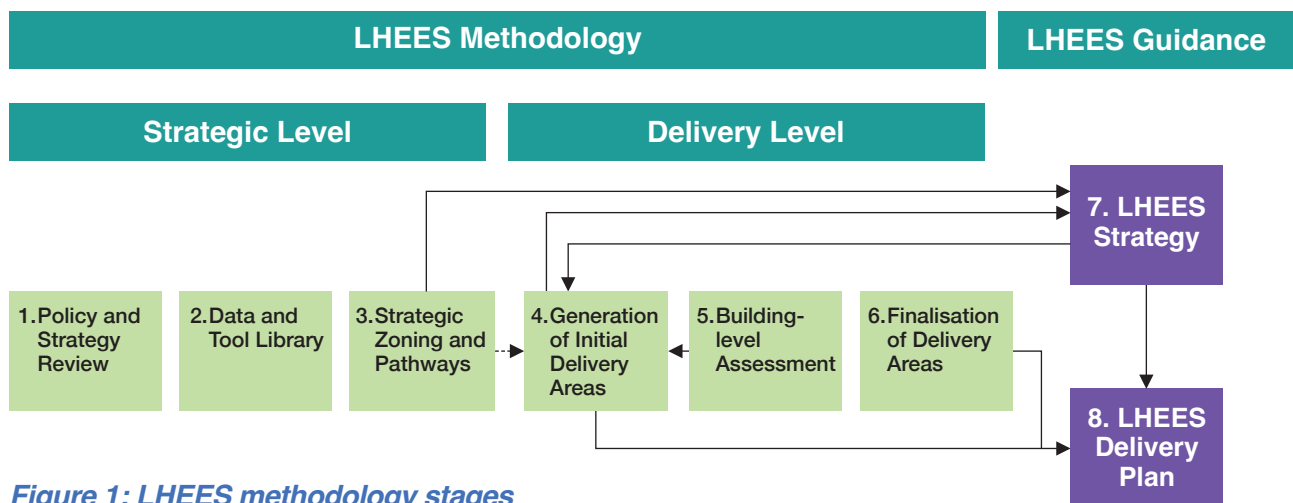


Figure 1: LHEES methodology stages

Stage 1: Policy and strategy review – sets out the national and local policies relevant to LHEES, providing an opportunity to consider how the national policy landscape can be linked to local drivers. For each priority it sets out indicators and weightings that underpin analysis across the other stages. It enables the mapping of key internal and external stakeholders, as well as funding resources that support Delivery Plan actions.

Stage 2: Data and tools library – identifies the most appropriate data and information needed to support analysis in subsequent stages. The library captures data requirements for the priorities, acting as a record of data sets used and capturing associated detail on ownership, data sharing, key contacts etc.

Stage 3: Baseline strategic zoning and pathways – understanding the current energy efficiency and heat decarbonisation performance of the building stock at a local authority wide level. This performance will be based on assessing the building stock against the indicators from Stages 1- 2.

Stage 4: Generation of initial delivery-level areas – uses GIS techniques to generate initial delivery-level areas for each of the priorities. Heat network zoning uses a linear heat density technique to generate the zones. Other priorities generate the zones using indicators and weightings from Stage 3.

Stage 5: Building-level pathway assessment – selects and analyses domestic buildings for assessment using a tool that enables the evaluation of energy efficiency and heat decarbonisation retrofit options in terms of costs and CO2 abatement. The buildings to be evaluated can be selected and taken from the analysis in Stage 3 or Stage 4.

Stage 6: Finalisation of delivery-level areas – opportunity to review outputs of the previous stages, engaging with stakeholders accordingly, to finalise any delivery-level areas and building-level pathways. These areas and pathways can then provide necessary evidence to support actions set out in the LHEES Delivery Plan.

Stage 7: LHEES Strategy – identifies what needs to be done to change buildings and local infrastructure over the next 20 years to fulfil the Scottish Government’s objectives and local priorities relating to heat in buildings using the outputs from Stages 1-3, in addition to the Heat Network zoning outputs in Stage 4.

Stage 8: LHEES Delivery Plan – an action plan that enables a local authority and other stakeholders to work towards delivery of the changes identified in the LHEES Strategy. Actions will contribute to achieving Scotland’s statutory targets on Net Zero greenhouse gas emissions and fuel poverty, as well as enabling the delivery of changes to buildings and local infrastructure needed to fulfil the Scottish Government’s objectives relating to heat and energy efficiency in buildings.

The LHEES Methodology V0.3 included guidance on how to complete each stage of the LHEES, although local authorities have the flexibility to use other approaches.

The methodology as developed by Scottish Government will be set out for each stage, with details included on Changeworks’ experience working to said method.

Stage 1: Policy and strategy review

The aim of Stage 1 is to support the local authority with setting out the national and local policies that are linked to, impact or could be impacted by LHEES and to give an opportunity to consider how these national policies, targets and strategies can be linked to the local drivers. Additionally, this stage sets out default indicators, criteria, and associated weightings and also enables the local authority to capture and map key internal and external stakeholders that could support LHEES.

The analysis is guided by the Policy and Strategy Review template. Some sections of the template have been partially completed based on development activity, testing, and best practice to date.

To complete the list of Local Level policies, the Council website was reviewed to look for policies that could be potentially relevant for LHEES. Any policies that were out of date were left out, unless particularly relevant. Our search terms included heat networks, off-gas, energy efficiency, fuel poverty, decarbonisation, carbon, renewables, net zero, amongst others. Next, the relevant policies were added to the template and appropriate fields within the table were populated. Overall, 16 local policies and strategy documents were included.

Stage 2: Data and tools library

Stage 2 consists of collection and collation of all the data used in Stage 3 and Stage 4. The tool provided for Stage 2 helps those working on LHEES keep track of the details for obtaining the data and tools, such as the contact data for the people and parties responsible for the datasets.

There are three types of data in the overall methodology: Core, Alternative and Supplementary data sets, as presented in the Figure 3 below. For an extensive description of these three data types see Box 1.

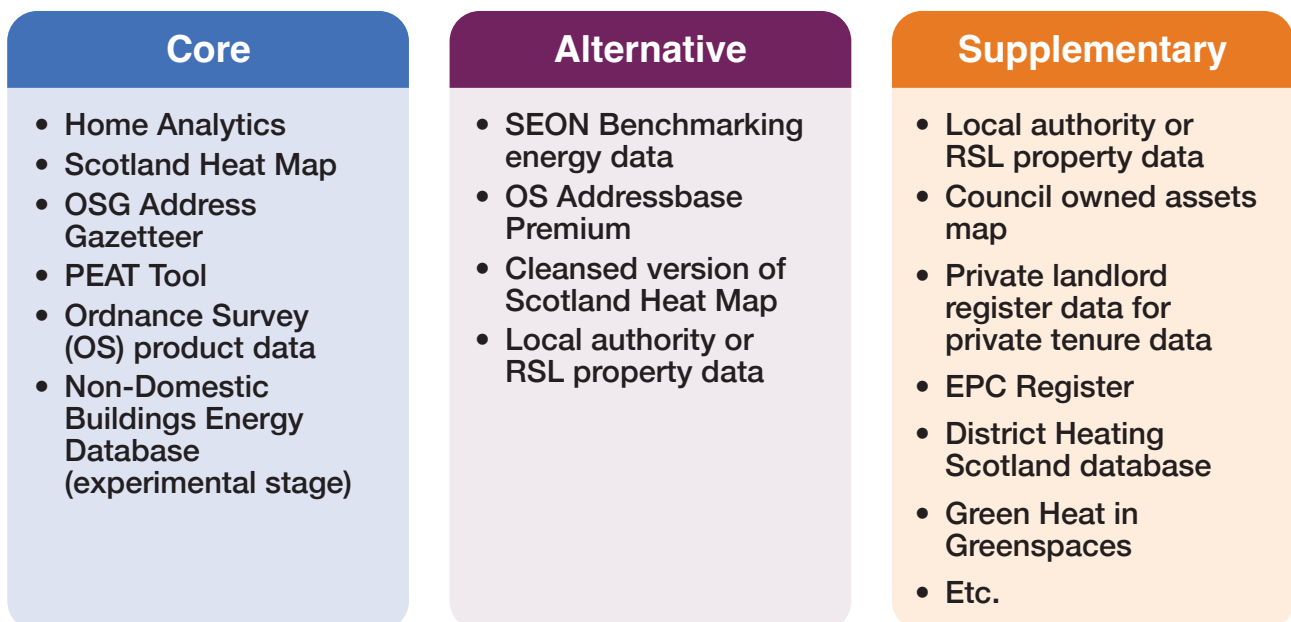


Figure 2: Types of data used in the methodology

Core data

The Core datasets are considered essential for Stage 3 and 4, and the most important datasets here are the Scotland Heat Map and Home Analytics, as they contain data on the overall heat demand and housing stock energy efficiency status, respectively.

Additional Core datasets include mapping background files from the Ordnance Survey, the Portfolio Energy Analysis Tool (PEAT) as used in Stage 5 (not included in this project) and data from the One Scotland Gazetteer (OSG). The latter is used to identify mixed-use buildings in the local authority area.

Alternative and Supplementary data

Alternative datasets can be used instead of some of the Core datasets. For example, it is preferable to utilise the OS Address base Premium dataset instead of the OSG Address Gazetteer where local authorities have already updated the Scotland Heat Map with heat demand data from their own buildings.

Data that the Council owns on their RSL stock or from housing associations in their local authority area can be used to overwrite (i.e., use as alternative data) or to supplement data in Home Analytics. For this data to function well as an Alternative dataset, it is essential that the accuracy of this data is guaranteed.

There is no limit to the datasets that can be included as Supplementary data, so the list in the Stage 2 data and tool library should not be considered exhaustive. Some supplementary data listed in the library, such as spatial data on the sewer networks and maps from the Coal Authority with abandoned coal mines become of more interest after the first analysis of the heat demand in Stage 4. One Supplementary dataset that Changeworks has used in this project was the Green Heat in Greenspaces dataset.

Box 1: Types of data used in the analysis

Collecting and collating the data

The Council was sent the necessary documents to enable initial data sharing with Changeworks following an inception meeting, including the Public Sector Geospatial Agreement (PSGA) from the Ordnance Survey. Data sharing was facilitated through OneDrive where large files were not suitable for email.

The data gathering took a few weeks because several people at the Council were involved in gaining access. It is difficult to suggest direct improvements that the Council can control, apart from the knowledge and awareness about LHEES increasing throughout the different departments. Since some of the Core LHEES datasets contain OS data for which contractor licencing will be necessary (i.e. the Scotland Heat Map, OSG Scotland Gazetteer data), it might not be possible to simplify those steps easily.

The supplementary Council housing stock data that was shared with Changeworks consisted of two files. The first one listed approximately 2,500 Council-owned properties. This file did not include One Scotland Gazetteer Unique Property Reference Numbers (OSG UPRN) as property IDs, which made data collation with Home Analytics a bit more complex. Unique address variables had to be created and matched instead. The other file listed nearly 3,000 properties and their fabric information. This file also did not include OSG UPRNs, which would have made the data collation process smoother. Similarly, unique address variables had to be created to match the data with Home Analytics.

This data weakness did not prevent analysis from taking place, however, it made the analysis more time-consuming and slowed down the development of the LHEES. This suggests that the Council could benefit from minor data improvements, like including OSG UPRN numbers as property ID, so that data can be easily used for analysis (for both EESSH2 and LHEES purposes). Properties that were not matched with the Council's own data were kept as in Home Analytics. The Council did not provide data on private tenure from the Scottish Landlord Registration database, which could have strengthened the analysis.

The final output of this stage consisted of collated and processed/cleaned datasets for use within Stage 3, as well as a file in the Data and Tools Library template.

Non-domestic data

The data and tools library from Stage 2 mentions the experimental Non-Domestic Buildings Energy Database from the Energy Saving Trust.⁴ This dataset is based on non-domestic EPCs and includes information on energy efficiency scores, heat and energy demand estimates, property dimensions, and property ages. Fabric data such as wall construction type is notably lacking, but this can be explained by this data not being explicitly present on non-domestic EPCs either.

Although the data was made available for this project by the Council and is named in the Data and Tools library, there are no analysis tools or guidance made available for this data in Stage 3 and Stage 4. Stage 3 and Stage 4 mostly focus on domestic data, with the exception of the heat demand analysis in the Heat Network Zoning part of Stage 4.

The lack of LHEES guidance for analysing non-domestic data is not only a consequence for the missing fabric data. Stage 3 and Stage 4 aim to analyse data so that geographical areas at high and more granular levels can be prioritised for planning things like delivering area-based schemes (e.g., EES:ABS). Non-domestic properties, particularly when focussing on Council-owned properties alone, are present in a much lower density than domestic properties. For East Renfrewshire, we analysed over 40,000 domestic properties, whereas EST's non-domestic dataset consisted of 1,647 properties of which 200 belong to the Council. This means that due to the inherently lower densities of these properties particular areas or neighbourhoods would not stand out on a map for this sector and tenure combination. In other words, prioritising certain geographical areas in the LHEES Strategy and Delivery Plans is less relevant for non-domestic properties than for domestic ones. This does not mean Councils should not plan for this sector and tenure, but that for the *zoning* of this sector and tenure the whole Council area is the priority zone, rather than specific Data Zones. Prioritising the non-domestic sector properties will therefore depend more on the use of the buildings and the *influence* the Council has on the owners of the buildings rather than their location or density.

⁴ *Energy Savings Trust (2021) Non-Domestic Analytics (NDA) Scotland. Note that this data is experimental and still in development. This non-domestic dataset is similar to Home Analytic in the sense that properties without EPC entries will have their variables estimated by applying statistical models on the basic assessor data.*

Finally, the data from the non-domestic was used to summarise the current energy efficiency status of the non-domestic sector and to help with the influence mapping (described in Section 3). Scottish Energy Officer Network (SEON) benchmarking energy data provided by the Council was used to improve Heat Map data for the Stage 4 analyses.

Stage 3: Strategic zoning and pathways

The aim of Stage 3 is to understand the current energy efficiency and heat decarbonisation performance of the building stock across the entire local authority. The output of this stage highlights the areas where action needs to be taken to change buildings and local infrastructure by 2045 to fulfil objectives related to heat and energy efficiency in buildings. The analysis, together with the next stage outputs, support progression towards prioritisation of delivery programmes and projects in the Delivery Plan. The main results of this stage are presented in Section 4.

To perform Stage 3 analysis, the Scottish Government guidance as set out in the LHEES methodology was followed, with added extra steps, in response to feedback from the Council and recommendations from Changeworks. This is explained below and drawn in Figure 4.

The Stage 3 analysis focuses on domestic data only because non-domestic property characteristics were not available as part of the analysis. In short, there are no Stage 3 outputs that involves the non-domestic sector.

Before adding any of the core datasets (i.e., the One Scotland Gazetteer dataset and Home Analytics) to the Baseline Tool that was provided by ZWS, the address-level data from Home Analytics was updated with more up-to-date information from the alternative datasets, including property tenure, fabric information, and the on/off gas grid status.



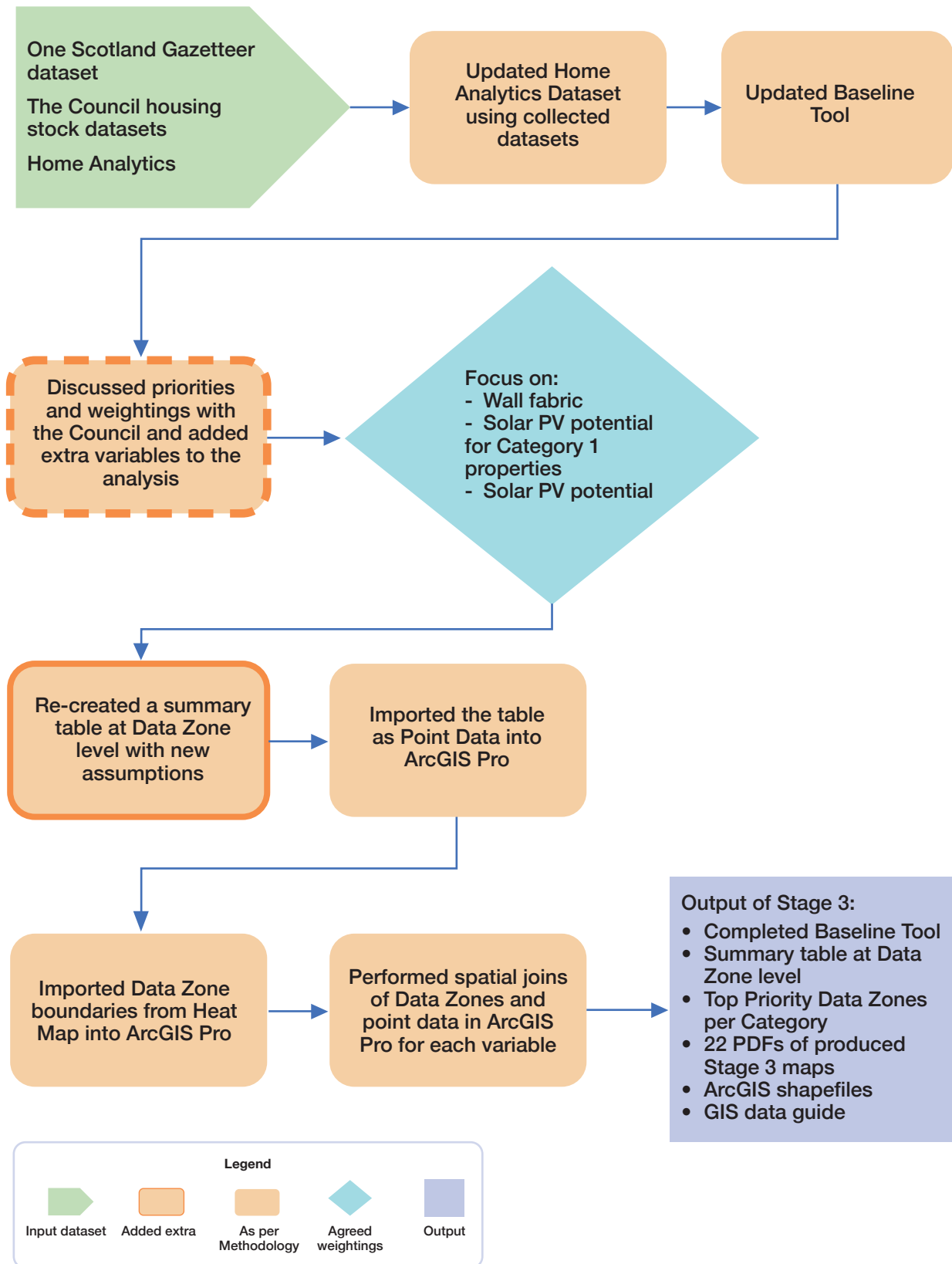


Figure 4: Stage 3 - overview of the process

We subsequently discussed LHEES priorities from Table 1 with the Council, which influenced the weightings used in Stage 3 and 4. As a result, we added extra variables in the analysis to make the results more relevant for the Council, including:

- More focus on the wall fabric status in the Energy Efficiency weighting and additional Energy Efficiency maps for separate wall construction types were created (Solid or Brick, Timber Frame, Cavity Construction, or System Build).
- Solar PV suitability for Category 1 buildings in the decarbonisation analysis (i.e. those ready for a heat pump, both on and off gas) was added.
- General Solar PV opportunities with Energy Efficiency were added.

To provide insights at a finer granularity than the standard methodology (which provides results at Intermediate Zone level), we reproduced calculations of the Baseline tool at Data Zone level. This level of aggregation allows the Council to make a more informed decision on the prioritisation of zones in the LHEES Strategy (Stage 7) and the delivery programmes and projects in the Delivery Plan (Stage 8).

Finally, we prepared 22 maps to visualise both the standard and the extra variables at Data Zone level. The full process is summarised in Figure 4. The full output of this stage, which has been shared with the Council, includes a completed Baseline Tool, summary table at Data Zone level, table with Top Priority Data Zones per Category along with PDF maps at Data Zone level, ArcGIS shapefiles and a GIS data guide.

Stage 4: Generation of initial Delivery Areas

The Heat Network Zoning analysis of Stage 4 is discussed separately because of a difference in the method as compared to other parts of this stage.

Heat Network Zoning

The steps of this stage of the methodology are summarised in Figure 5.

The heat demand points layer was first extracted from the Scotland Heat Map, and the non-domestic property file from EST was shared by the Council. The two files were compared against each other, and their data methodologies were assessed. Additionally, the SEON benchmarking energy data was shared by the Council, which included actual heat demands for non-domestic properties. After comparing the heat demands and energy uses from all three files, it was agreed with the Council that Heat Map data was to be used for the analysis alongside the Council's actual data.

To make the analysis more detailed than the standard methodology, we filtered the non-domestic properties in the heat demand dataset to only include semi-public and public buildings. These were filtered using OSG BLPUs classes identified as semi-public or public by the Green Heat in Greenspaces project.⁵ A full list of codes used for public buildings from the Scotland Heat Map is listed in Appendix A. Additionally, a sense check of building names was carried out to identify if there is any indication of a building being Council or local authority owned. If that was the case, they were added to the analysis. This approach was chosen so that only non-domestic buildings that the Council has full or partial control over are treated as potential anchor loads in the heat network zoning.

⁵ *Green Heat in Greenspaces (2021)*, [ParkPower Methodology Report](#)

The non-domestic property data shared by the Council was subsequently used to correct the heat demand from 71 properties and correct their property names. Furthermore, 12 additional properties from the Council's dataset were added to the Heat Data Points, as the Council has ownership over those properties which makes taking action on them easier. This dataset was also used to check if any of the properties selected for the Heat Network zoning had been demolished since the publication of the Scotland Heat Map.

Anchor loads are high heat demand buildings and key connections on a heat network that drive project economics. They are normally non-domestic buildings but can include clustered domestic properties.

Box 2: Anchor load description

The All Buildings template, as provided by ZWS, was completed, and used to perform GIS analysis using the radii-buffering approach as set out in the methodology.

The radii-buffering method identifies clusters of buildings where potential anchor loads for heat networks are in proximity indicating a project opportunity. Subsequently, anchor loads were identified by selecting buildings with a heat demand greater than 500 MWh/yr. Next, a criterion on anchor load count was applied to filter the clustered outputs with two or more anchor loads for further consideration as potential Heat Network Priority Zones.

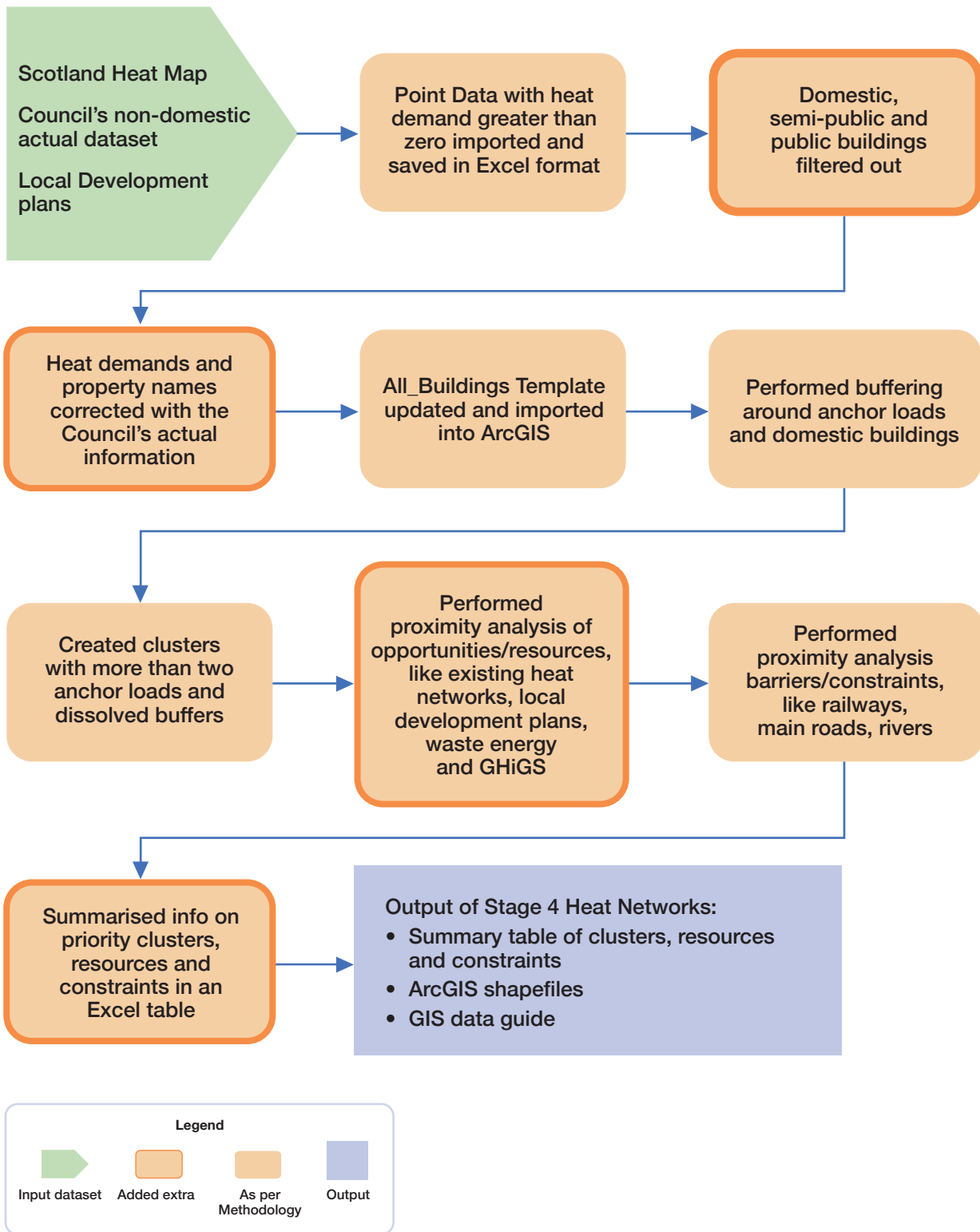


Figure 5: Stage 4 Heat Networks - overview of the process

To provide further context of the general heat demand, a gridded heat density layer was added to the identified priority clusters. Raster units with a heat demand of 50 kWh/yr/m² were selected as a minimum threshold, so only those exceeding that were visible.

The next step added existing heat networks (large and smaller) as found in the Scotland Heat Map dataset, to the identified priority clusters. A proximity analysis was undertaken to determine if the buffered heat network points were within 500m from the priority clusters. In addition, Local Development Plan (LDP) sites were added to check if those sites, when developed in the future, could form part of a wider network. A buffer of 250m was added around these sites and their proximity to priority clusters was checked. Next, waste heat and hydrogeology and geology layers were added to the layer with potential clusters, and a visual inspection of those constraints was performed.

Finally, we added the GHIGS layer in addition to the standard methodology. A proximity analysis was done with this layer to explore if any nearby green spaces could support potential low carbon heat solutions such as a ground or water source heat pumps for the identified priority clusters. Information on the proximity of all constraints and resources to the priority clusters was summarised in an Excel based table that has been handed over to the Council.

Priority Area Zoning

The aim of the remaining steps of Stage 4 analysis was to identify initial Delivery Areas for LHEES priorities 2 to 6 from Table 1. In other words, this analysis included identifying priority areas for domestic decarbonisation in on- and off-gas areas (priority 2 and 6), highlighting areas ready for transition to heat pumps, areas with poor energy efficiency (priority 3) and high fuel poverty (priority 4), and areas with mixed tenures/historic buildings (priority 5).

As mentioned in the Stage 2 methodology, no non-domestic data was used in these analyses as this kind of zoning is less applicable for the non-domestic property stock and because data on the fabric details are also lacking. The Main Results section, however, does contain a short overview of the current energy efficiency status of the non-domestic sector and the public buildings. For this summary, the EST non-domestic dataset was used, in which the Council had earmarked what properties were Council owned, in combination with the SEON benchmarking energy use data.

The steps undertaken in the identification of each priority follow a similar methodological approach, which are summarised in Figure 6 below. Results of these stages are not defined Delivery Areas, but considered as Opportunity Sites that should be decided on in Stage 6. Local knowledge and input from different teams at the Council is required to assess those potential sites for decarbonisation work suitability.

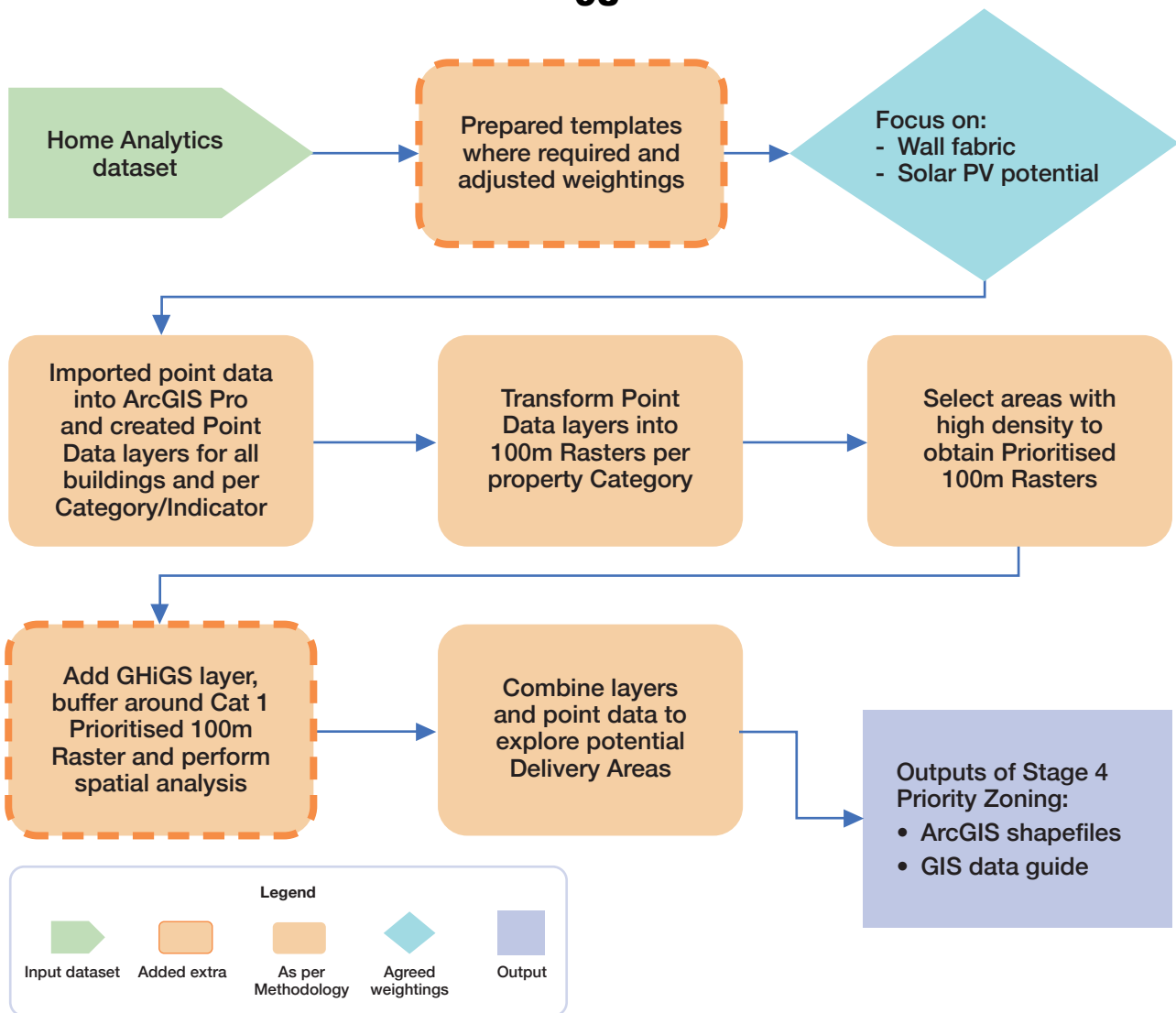


Figure 6: Stage 4 Priority Zoning - overview of the process

To add value to the analysis and not to replicate the results of the National Assessment,⁶ we adjusted certain steps to contain information more relevant for the Council:

- 1) We altered required parameters for Category 1 properties to remove glazing, loft insulation and 'replacing a wet system' from the calculation, so that the calculation focuses on wall insulation being present alone. That is because wall insulation is the main fabric upgrade needed to prepare a property for a heat pump install.
- 2) Following the same reasoning, we also adjusted weightings for Category 2 to put more focus on wall insulation. The weight was set to 0.6, the other weights were reduced to 0.1. The methodology suggested 0.2 for each parameter.
- 3) We added the GHIGS layer to the Off-Gas and On-Gas heat pump analysis. Buffers were added around Priority Areas for Category 1 properties followed by an analysis of those buffers intersecting with the strategically valuable spaces of the GHIGS dataset. This allowed us to filter out areas that are the most viable for a communal ground source heat pumps using the green space.
- 4) Solar PV Suitability rasters were created and added to the Energy Efficiency maps to highlight potential areas where Solar PV could be installed.

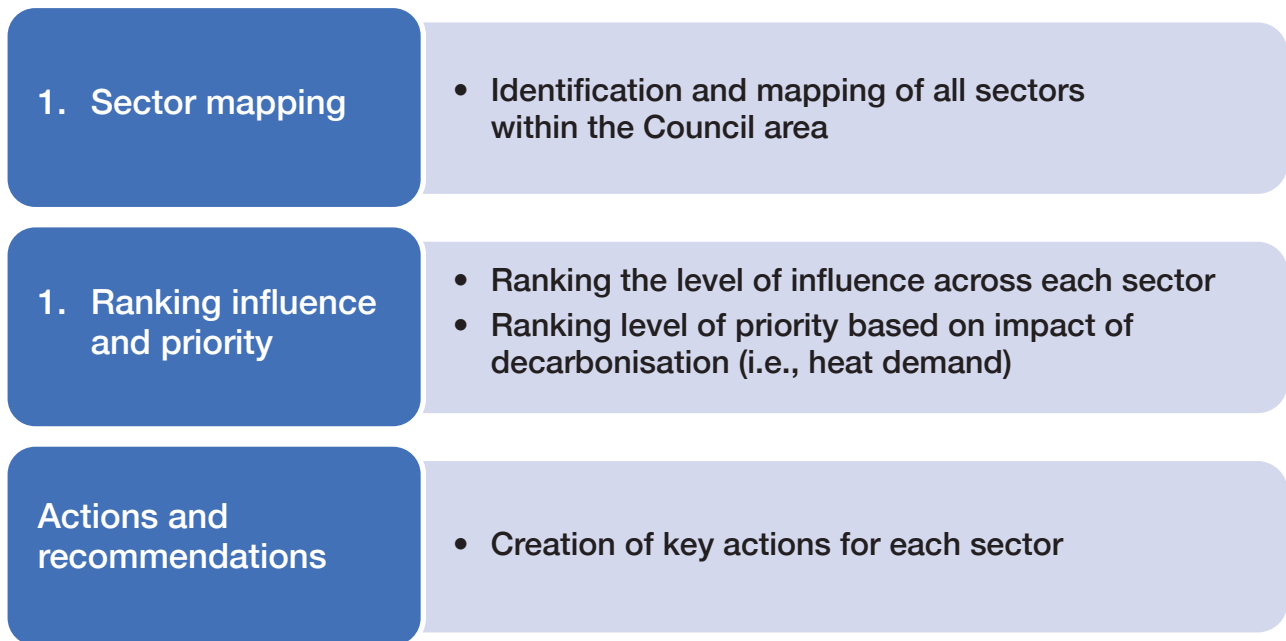
⁶ A National Assessment of the developed LHEES methodology was conducted by Arup late 2021. Only Core datasets were used. The results of this National Assessment have been made available for each local authority.

Influence Mapping

‘Influence mapping’ is an exercise which has been developed as part of East Renfrewshire Council’s LHEES for the purposes of prioritising decarbonisation efforts within the Council.

Through influence mapping, we can identify high energy sectors where the most significant carbon savings can be made, and subsequently rank the level of Council influence across each sector with specific relation to energy efficiency and heat decarbonisation. From this, key actions can be used to create a clearer roadmap for Stages 5 – 8 of the LHEES, showing priority and secondary actions based on whether the Council are able to provide direct (high influence) or indirect (low influence) support.

Influence mapping is comprised of three phases:



Sector mapping

Data gathered on non-domestic properties as part of Stages 1 – 4 of the LHEES was used to map out all sectors within the Council area. The sectors were based on the Basic Land and Property Unit (BLPU) class codes, as used in the OSG Scotland Gazetteer data. Sectors with larger total heat demands, including ‘Domestic’, ‘Retail’, ‘Industry’ and ‘Community services’, were broken down into their tertiary classification to provide further detail.

Ranking influence and priority

Each sector was categorised based on how much influence/control the Council has with regards to decarbonisation efforts (Figure 6). This was determined initially by Changeworks with subsequent sense checking from the Council.

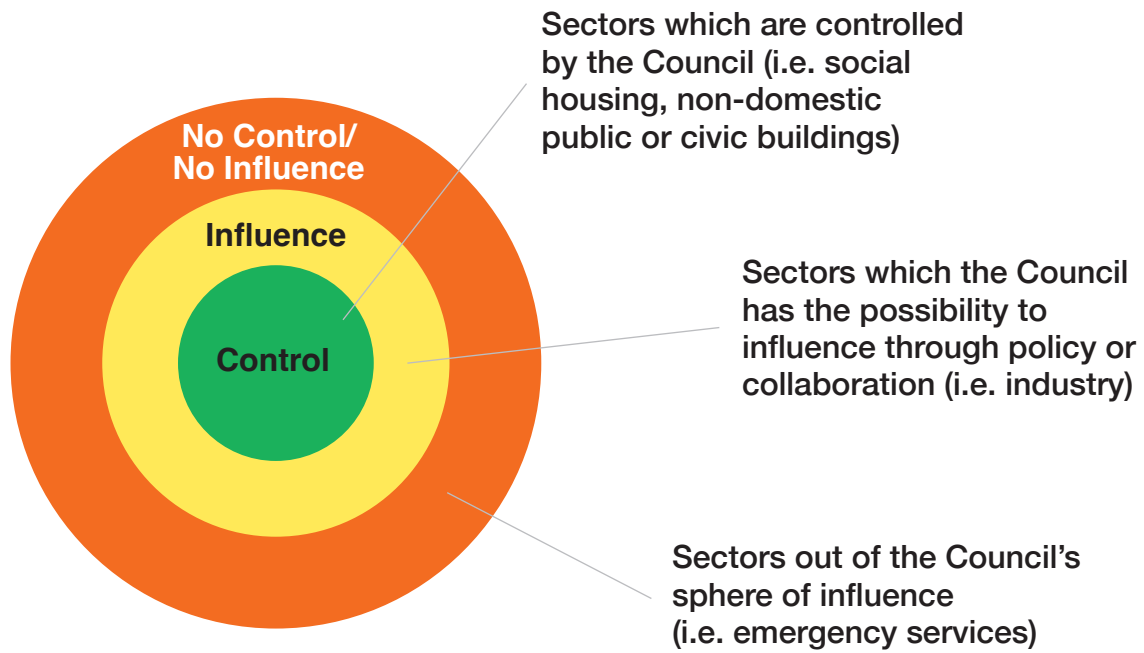


Figure 6: Influence categories

A secondary prioritisation exercise determined the impact of decarbonisation within each sector with regards to the total heat demand. Figures for total heat demand were collated from Scottish Heat Map data. Sectors were split into the following energy demand categories:

- High (>10,000 MWh)
- Medium (1000 – 10,000 MWh), and
- Low (<1000 MWh)

These were subsequently plotted against the number of buildings to determine a value for the average heat demand per building. This mapping of heat demand, level of influence and abundance of buildings can be used to determine what sectors to prioritise or focus on in the LHEES development.

Appendix 6 – Summary of Engagement

East Renfrewshire Council worked with environmental consultants Changeworks to initiate our Local Heat & Energy Efficiency Strategy.

In March 2023, the Council formed an internal LHEES working group with the remit to take forward the recommendations from Changeworks and consider how they can align with current policies and planned works to help deliver East Renfrewshire's first LHEES and Delivery Plan. The working group brings together staff from various departments recommended in the Scottish Government's guidance for internal stakeholders, including Corporate Landlord Manager; Senior Environment Officer; Strategy & Partnership Manager; Economic Development & Inclusive Growth Manager; Get to Zero Manager; Principal Building Standards Surveyor; Planning & Building Standards Manager; and Senior Officer (LHS). The working group has raised awareness of the LHEES within the Council, shares information on projects between key staff, agrees on future direction and plans, and discusses recent and relevant developments.

On the 25th of May, the Council LHEES working group met with Scottish Government officers to discuss the East Renfrewshire LHEES. During the meeting we discussed certain challenges associated with development and delivery of the LHEES, the lack of agreed funding beyond 2026/27; the evolving policy and regulatory context; and uncertainty around the regulatory provisions for heat networks. Also, regular engagement with organisations such as Scottish Futures Trust, Heat Network Support Unit, Zero Waste Scotland, Scottish Power Energy Networks, SGN, Scottish Water and other partners ensures pertinent knowledge, funding availability, and policy updates are disseminated appropriately to ensure that LHEES actions are suitably informed and discussed.

The East Renfrewshire draft LHEES consultation took place on Commonplace and was open for 6 weeks from 26th of February. It sought public views on the draft outcomes and priorities for action with the intention of helping to shape the first East Renfrewshire LHEES and accompanying 5-year Delivery Plan (2024-2029).

The draft strategy was made available for review and respondents were asked a few simple questions based on whether they agreed with our proposed outcomes, priorities, and proposed actions. 72 respondents completed the consultation exercise. The proposed outcomes and the priorities for action to achieve the outcomes were received positively.

Respondents were given the opportunity to express their views through free text and this showed a variance of views. Several responses highlighted the positive effect available from community input on funding for heat decarbonisation and energy efficiency measures. It was suggested that *“community councils should be directly involved in discussions as they can bring a wealth of local knowledge and opinion and help to identify opportunities in their communities to facilitate the strategy”*. This bodes well for wider engagement with the LHEES, which will be essential in delivering on current LHEES ambitions, as well as helping to shape the strategy going forward.

While those responding to the East Renfrewshire draft LHEES consultation may not necessarily reflect the wider views of all residents of East Renfrewshire, a few common themes came through the responses.

Clarity of funding and information provision

It was suggested that residents would find it *“difficult to afford measures to help improve energy efficiency and utilise clean heat”*. That there should be a “minimum cost to owners to ensure uptake” of energy efficiency measures and adoption of clean heat systems. Whereas one respondent commented that a greater proportion of funding should be provided to tackle retrofitting measures in older buildings; another considered that means testing would be detrimental to ensuring measures are installed at the pace and scale required to meet targets.

Greater assistance was requested from the government on both funding and relevant information. Greater clarity was sought on *“what existing funding is available for individuals, and also how the council will fund implementation”*. Uncertainty around which measures to adopt across varying housing types came through and one respondent suggested *“it is important that the Council has local case-studies available which other homeowners can get inspiration from on how to retrofit different building types”*.

Green Skills Confidence

Whether apocryphal or from previous experience, a lack of confidence in the expertise of subcontractors was expressed. Concerns were raised around appropriate delivery and the impact of energy efficiency measures such as cavity wall insulation causing dampness, and external wall insulation possibly resulting in planning issues due to close proximity of many homes. One respondent suggested that *“education of the net zero problem and recommended solution should be a necessary part of any contract offered by the council”*. Another respondent was concerned that there may not be enough experienced personnel amongst council staff *“to effectively and speedily manage the strategy and logistics”*.

At the close of the public consultation period (5th April), external stakeholders were contacted again and asked to provide comment on the draft Delivery Plan by the end of April. The LHEES Delivery Plan contains actions which have been informed by the consultation responses, and a number of actions which express the desire to engage more fully and extensively with stakeholders, communities, businesses as well as householders, tenants and landlords. As an area-wide plan, wider communication activities around the LHEES will be developed, with the aim that future iterations will benefit from improved engagement and cross-stakeholder buy-in.

Scottish Government Heat transition: public engagement strategic framework

The Scottish Government understand that public engagement and buy-in is essential in delivering on their net zero and heat decarbonisation ambitions. In December 2023, the Scottish Government published their ‘Heat transition: public engagement strategic framework’. This is a guide to how the Scottish Government will work with others to deliver a programme of public awareness raising, education and participation around clean heat and energy efficiency. The Summary of Actions and Delivery Pillars of the strategic framework are below:

Summary of Actions

- Establish a new Strategic Public Engagement Delivery Partnership to provide leadership and coordination across public engagement for heat and energy efficiency. This new partnership designed with stakeholders and partners will be set up during 2024.
- Work collaboratively with key partners and trusted messengers to design, develop and implement actions to strengthen and expand public engagement.

- Design and deliver engagement activities that consider, and are tailored to, the needs of different audiences and will enable people to share and learn from each other's experiences.
- Ensure messaging and engagement activities are relevant to local contexts and circumstances – as informed by LHEES and Delivery Plans.

Delivery Pillar - Understand

- Inform the public on required changes, why they are important, and the potential benefits.
- Increase public awareness of progress being made in Scotland towards clean heat targets.
- Help the public understand what they need to do as part of the heat transition.
- Ensure people are familiar with the technological options available and the choices available.
- Promote access to appropriate resources, impartial advice and support to help the public transition their properties to clean heating and improved energy efficiency.

Delivery Pillar - Participate

- Support opportunities for the public to inform and help shape policy and delivery decision making as the heat transition progresses.
- Encourage and support ongoing public dialogue on key issues of concern relating to the heat transition.
- Increase transparency in the operation of the Heat in Buildings programme.

Delivery Pillar - Act

- Improve the existing consumer journey to support an increase in the rate of transition to clean heat and improved energy efficiency standards.

East Renfrewshire Council believe that the Scottish Government's 'Heat transition: public engagement strategic framework' will be of fundamental importance in ensuring that the relevant ambitions within our LHEES are realised. The council will utilise the principles of the public engagement strategic framework to assist us to deliver on our own engagement and communication actions.

Appendix 7 – Audit Scotland recommendations

In February 2024 Audit Scotland published a report in which it analyses the Scottish Government's approach to delivering on its long-standing commitment to decarbonising heat in homes.

The report stated that success hinges on many pillars including raising public awareness, providing appropriate advice and financial support to homeowners, securing public and private finance, growing supply chain capacity and appropriate collaboration between the Scottish Government and the UK Government.

It is acknowledged that much of this work is at an early stage and needs to be advanced before legislation on how we heat our homes, which the Scottish Government is currently consulting on, is passed by the Scottish Parliament.

Audit Scotland stated a number of recommendations for the Scottish Government:

- finalise governance arrangements for the Heat in Buildings Strategy programme as soon as possible and keep these under review to ensure they remain fit for purpose.
- produce a delivery plan for its Heat in Buildings Strategy by the end of 2024, which includes:
 - clear actions that are aligned with the ambitions, targets, budget and regulations for a just transition to decarbonised heating in homes
 - timescales for delivery
 - clarity on the roles of the Scottish Government and its partners
 - the anticipated impact of these actions
- identify the staff numbers and skills needed to deliver the Heat in Buildings Strategy programme in the medium term, taking into account the resource requirements of the delivery plan.
- clarify how it will use public money in the short and long term to support the delivery of its Heat in Buildings Strategy objectives, while achieving value for money.
- respond to the recommendations from the Green Heat Finance Taskforce stage two report in autumn 2024, and work with the private sector to help create the conditions to roll out funding and finance mechanisms to help homeowners comply with new regulations on heating their homes.

East Renfrewshire Council concurs with these recommendations and believes that by addressing them the Scottish Government will provide robust assistance to help to realise the ambitions across all local authority LHEES.

Overleaf Audit Scotland elaborate on their recommendations to prescribe the pathway to success by stating the main pillars and stakeholders required to achieve the decarbonisation of heating in homes.

Pillar 1: Regulation

- Provides clarity on the changes **people** need to make to how they heat their homes
- Stimulates demand for clean heating systems and energy efficiency measures, creating the need for **investment, infrastructure** development and **supply chain** growth. Without these pillars, **people** will not be able to comply with regulations
- **Scottish Government** and **UK Government** legislation will influence heat decarbonisation in Scotland.

Pillar 3: Investment

- Investment is needed from the **Scottish Government** and **private sector**
- Investment is required to provide **people** with funding and finance to make the necessary changes to their homes
- Investment is required to support **infrastructure** development
- The **supply chain** requires investment to grow and meet the demand that should be generated by **regulations**.

Pillar 5: Supply chain

- **Industry** must scale up to ensure the workforce and materials are available to design, manufacture, install and maintain clean heating systems and energy efficiency measures for **people**, and to improve energy **infrastructure**
- The **Scottish Government** and **UK Government** have a role to play in supporting **industry** to scale up.

Pillar 2: People

- The **Scottish Government** and its **delivery partners** must support people to understand, accept and comply with regulations
- People will rely on **investment** from the **Scottish Government** and **private sector** to provide the funding and finance options needed to comply with **regulations**
- People will rely on **infrastructure** development, such as increased electricity grid capacity, to support the changes to how they heat their homes
- People will rely on **supply chain** growth so that **industry** can provide the materials and workers needed to design, manufacture, install and maintain clean heating systems and energy efficiency measures.

Pillar 4: Infrastructure

- **Industry** cannot deliver clean heating systems for **people** without the necessary infrastructure improvements
- The capacity of the electricity grid needs to increase to meet rising demand from **people** to power their clean heating systems
- The **UK Government** has a key role in infrastructure development.

Stakeholders: Scottish Government, UK Government, Scottish Government's delivery partners, private sector investors, industry

Pillars

Stakeholders

Source: Audit Scotland

Figure 7: the main pillars and stakeholders required to achieve the decarbonisation of heating in homes

Appendix 8 – Scottish and UK Government Collaboration

The Scottish Government and UK Government will need to collaborate to overcome shared challenges with energy infrastructure and pricing and deliver their ambitions to decarbonise heating in homes.

Most clean heating systems are powered by electricity. The demands on the energy grid will increase if clean heating system installations happen at the pace and scale required to meet the Scottish Government's emissions reduction targets. Overall capacity of the grid needs to be improved to remove blockages. These include long wait times for households to be connected to an energy distribution network operator, which is one of the biggest barriers faced by clean heating system installers.

Electricity prices per unit are currently higher than gas prices per unit. This could act as a significant barrier to consumer uptake of electricity-powered heating technologies. Energy prices also have implications for the financial support the Scottish Government will need to provide to ensure the move to clean heating systems does not result in more households living in fuel poverty.

Many of the powers to address the challenges with energy grid capacity and energy pricing, along with other powers relevant to decarbonising heat, are reserved to the UK Government. A simplified picture of the relevant powers devolved to the Scottish and those reserved to the UK Government is shown overleaf. The Scottish Government and UK Government both intend to phase out fossil fuel heating systems, but the Scottish Government aims to do so sooner.

The differences in timescales present a risk to how quickly the Scottish Government can implement changes, as clean heating technology and supply chains are likely to develop in line with UK Government timeframes. The UK Internal Markets Act 2020 stipulates that goods for sale in one part of the UK must be available for sale in all other parts of the UK. The Scottish Government may be limited in how quickly it can shape the market to aid transition to cleaner heating technologies in Scotland.

Significantly reducing emissions from heating homes is complex and success hinges on many pillars. The consultation on proposals for a Heat in Buildings Bill sets out the new laws the Scottish Government wants to introduce to help meet the ambitions in its HIBS. However, it is not yet clear what new regulations will look like once they are passed by the Scottish Parliament.

Key devolved and reserved powers relevant to decarbonising heat in homes:

| Key devolved powers (Scottish Government) | Key reserved powers (UK Government) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div data-bbox="193 342 277 423"></div> <p data-bbox="193 445 293 479">Energy</p> <ul data-bbox="193 497 580 577" style="list-style-type: none"> • Heat • Regulation of heat networks <div data-bbox="193 638 335 703"></div> <p data-bbox="193 725 325 759">Buildings</p> <ul data-bbox="193 777 456 1055" style="list-style-type: none"> • New buildings • Building standards • Planning • Housing • Social housing • Energy efficiency <div data-bbox="193 1095 290 1189"></div> <p data-bbox="193 1211 376 1245">Environment</p> <ul data-bbox="193 1263 748 1344" style="list-style-type: none"> • Greenhouse gas emissions and air quality • Pollution control | <div data-bbox="853 342 938 423"></div> <p data-bbox="853 445 954 479">Energy</p> <ul data-bbox="853 497 1235 761" style="list-style-type: none"> • Oil, gas, electricity, coal and nuclear energy • Pricing gas/electricity • Energy companies • Grid capacity • Electricity infrastructure <div data-bbox="853 808 960 916"></div> <p data-bbox="853 938 973 972">Industry</p> <ul data-bbox="853 990 1272 1317" style="list-style-type: none"> • Supply chain • Restriction of fossil fuel boilers • Finance providers regulations • Installer accreditations • Competition • Product standards • Consumer protection <div data-bbox="853 1375 944 1458"></div> <p data-bbox="853 1480 906 1514">Tax</p> <ul data-bbox="853 1532 935 1565" style="list-style-type: none"> • VAT |

Note: This is intended to provide a simplified picture of the split of devolved and reserved powers, but in many cases there will be some detailed aspects of powers that fall between both governments.

Source: Audit Scotland



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