

South Ayrshire Council

**Report by Director of Housing, Operations and Development
to South Ayrshire Council (Special)
of 19 August 2024**

Subject: South Ayrshire Council Local Heat and Energy Efficiency Strategy (LHEES) 2024 - 2029

1. Purpose

- 1.1 The purpose of this report is to seek Council approval for the publication of a Local Heat and Energy Efficiency Strategy (LHEES) 2024 – 2029, including Delivery Plan objectives, and Coordination group Terms of Reference.

2. Recommendation

2.1 It is recommended that the Council:

2.1.1 approves the publication of the South Ayrshire Council LHEES Strategy ([Appendix 1](#)); and

2.1.2 approves the LHEES Coordination group Heads of Terms ([Appendix 2](#)) to support delivery plan actions.

3. Background

- 3.1 The Local Heat and Energy Efficiency Strategies (Scotland) Order 2022 places a duty on local authorities to prepare and update a Local Heat and Energy Efficiency Strategy (LHEES) and Delivery Plan. Asset Management have prepared documents to fulfil SACs duty under the Order. This Strategy has been developed in line with Scottish Government's (SG) methodology and sets out a long-term plan for decarbonising heat in buildings in the South Ayrshire area and improving energy efficiency.

- 3.2 Further background information is provided in [Appendix 3](#).

4. Proposals

- 4.1 It is recommended that, in order to meet the Local Heat and Energy Efficiency Strategies (Scotland) Order 2022, the Council agrees and publishes a final draft of the LHEES strategy and delivery plan.

- 4.2 It is proposed that the South Ayrshire Council Local Heat and Energy Efficiency Strategy 2024-2029 ([Appendix 1](#)) is agreed and published as the final draft of to fulfil the LHEES order. The LHEES draft strategy and delivery plan agreed at Cabinet on 16 January 2024 were made public for consultation, responses were considered, and feedback implemented into the Strategy as appropriate, as noted in Background sections 3.7 to 3.8.2.

- 4.3 The Delivery Plan, shown on p68, section 14, identifies short to medium term actions and will be updated annually to reflect changes in the policy landscape, funding opportunities, and technological innovation. It is anticipated that the Delivery Plan will evolve and develop over the 5-year lifespan of the LHEES.
- 4.4 In order to manage the development of the Delivery Plan it was agreed at Cabinet on 16 January 2024 that a member/ officer working group would be developed to manage the attribution and coordination of actions. Terms of reference for this group are outlined in [Appendix 2](#). It is proposed that this group is made up of Council and Community Planning Partner representatives, with other relevant members such as technical experts, wider CCP members, or community organisations included as required. The Terms of Reference include monitoring of Delivery Plan actions through Pentana where appropriate and annual reporting on implementation progress.
- 4.5 Considering the nature of the strategy, continued public engagement is required as only a small proportion of buildings in question are under local authority control. As a result, a summary document has been prepared to ensure content is accessible. This can be seen in [Background paper 2](#).

5. Legal and Procurement Implications

- 5.1 There are no direct legal implications arising from this report. Any legal implications arising from the Delivery Plan actions will be considered and addressed as appropriate through their development.
- 5.2 There are no procurement implications arising from this report.

6. Financial Implications

- 6.1 There are no financial implications directly arising from this report, as the identified actions will be undertaken using existing resources or delivery will be subject to securing external funding. As the action planning and delivery/ governance process continues, an assessment of available and required resources and financial implications will be undertaken and subject to agreement.

7. Human Resources Implications

- 7.1 Not applicable.

8. Risk

8.1 *Risk Implications of Adopting the Recommendations*

- 8.1.1 LHEES and their Delivery Plans are inherently ambitious documents. As such there is a risk that ambition outstrips available financial and other resources. Expectations will need to be managed accordingly.

8.2 **Risk Implications of Rejecting the Recommendations**

- 8.2.1 Rejecting the recommendations may result in a delay or failure to publish the LHEES and Delivery Plan in contravention of Local Heat and Energy Efficiency Strategies (Scotland) Order 2022. Rejecting the proposals may reduce South Ayrshire Council's ability to access relevant funding streams and opportunities. Further, rejecting the proposals may impair the Council's ability to develop other strategic areas of work e.g. the LDP in relation to heat networks.

9. **Equalities**

- 9.1 The proposals in this report allow scrutiny of performance. The report does not involve proposals for policies, strategies, procedures, processes, financial decisions and activities (including service delivery), both new and at review, that affect the Council's communities and employees, therefore an equality impact assessment is not required.

10. **Sustainable Development Implications**

- 10.1 **Considering Strategic Environmental Assessment (SEA)** - This report was subject to a screening report through the appropriate consultation authorities. From this it was determined that a full SEA is not required.

11. **Options Appraisal**

- 11.1 An options appraisal has not been carried out in relation to the subject matter of this report

12. **Link to Council Plan**

- 12.1 The matters referred to in this report contribute to Priority One: Spaces and Places.

13. **Results of Consultation**

- 13.1 There has been public consultation on the contents of this report.
- 13.2 Consultation has taken place with Councillor Martin Kilbride, Portfolio Holder for Buildings, Housing and Environment, and the contents of this report reflect any feedback provided.
- 13.3 Consultation took place with Portfolio Holder ahead of the draft presentation to Cabinet in January 2024.

14. **Next Steps for Decision Tracking Purposes**

- 14.1 If the recommendations above are approved by Members, the Director of Housing, Operations and Development will ensure that all necessary steps are taken to ensure full implementation of the decision within the following timescales, with the completion status reported to the Cabinet in the 'Council and Cabinet Decision Log' at each of its meetings until such time as the decision is fully implemented:

<i>Implementation</i>	<i>Due date</i>	<i>Managed by</i>
Initial meeting of LHEES Coordination group	September 2024	Assistant Director Planning, Development and Regulation
Ongoing review to Cabinet	Annually	Assistant Director Planning, Development and Regulation

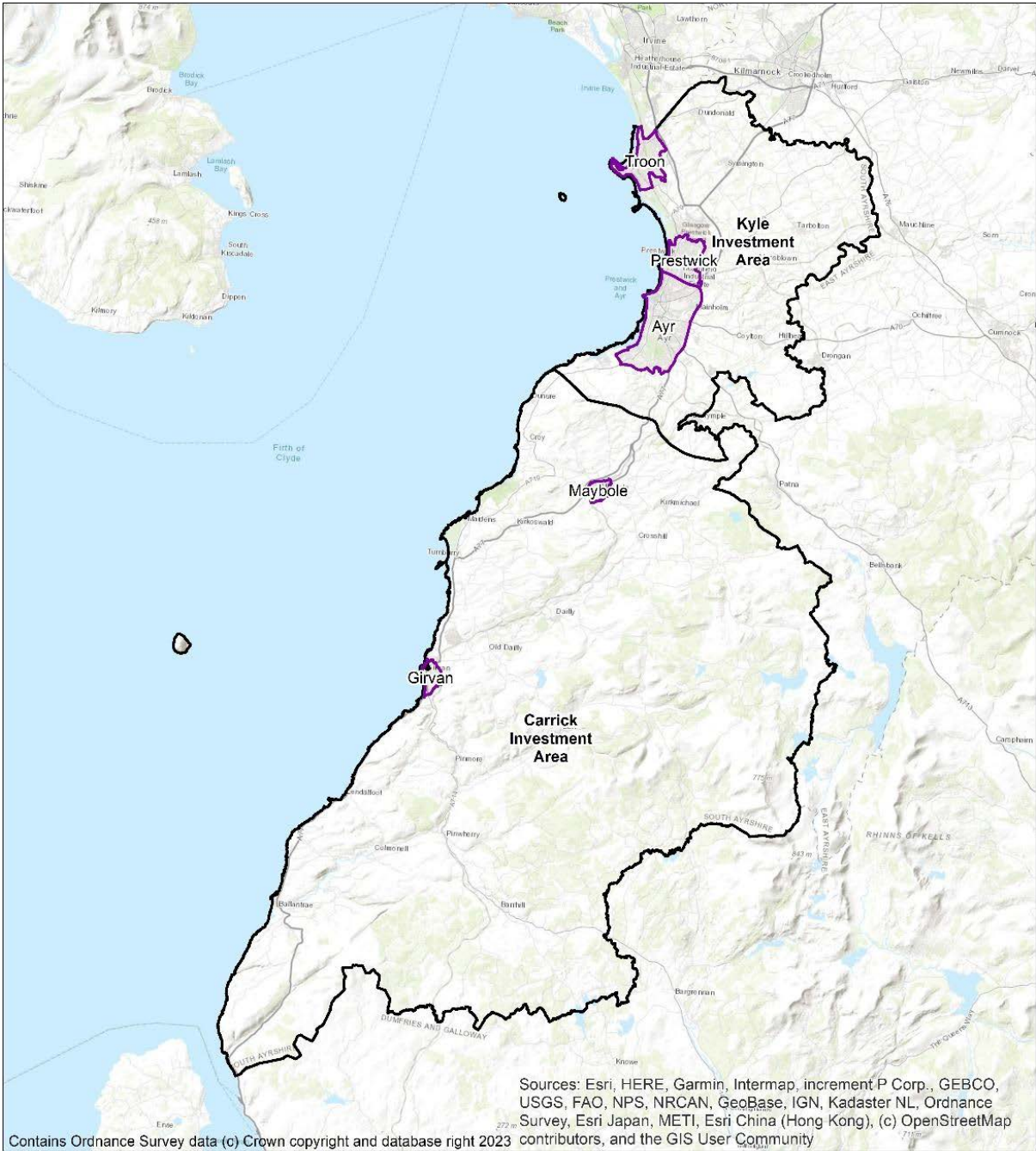
Background Papers [Local Heat and Energy Efficiency Strategy Full Technical Report](#)

[Local Heat and Energy Efficiency Strategy Summary](#)

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Date: 9 August 2024

**APPENDIX 1 – SOUTH AYRSHIRE COUNCIL LOCAL HEAT AND ENERGY
EFFICIENCY STRATEGY 2024 - 2029**



South Ayrshire Council

Local Heat and Energy Efficiency Strategy

2024 - 2029

Foreword

As the Portfolio holder for Buildings, Housing, and the Environment in South Ayrshire, it is with great pride that I introduce the Local Heat and Energy Efficiency Strategy (LHEES) for our council area. This strategy marks a pivotal step in our commitment to a sustainable and resilient future, aligning with our aspirations to achieve Net Zero by 2045.

Local authorities across Scotland bear a responsibility for the energy we consume and the emissions this creates, and South Ayrshire is no exception. Through this strategy, we embark on a journey to not only address our local climate challenges but also to contribute meaningfully to the global imperative of mitigating the impacts of the climate emergency.

Our priorities in South Ayrshire focus on our communities, ensuring people can thrive within a flourishing economy, with good quality, energy efficient housing, and an open and transparent, inclusive democracy. This strategy lays out our forthcoming initiatives, including the investigation into zero emissions heating systems and heat network potential, reinforcement of our dedication to providing affordable warmth to our most vulnerable citizens, and commitment to partnership working.

In our pursuit of Net Zero, a just transition is paramount. Communities across South Ayrshire are already feeling the effects of climate change, and our commitment is to ensure that they not only endure but prosper throughout this transition. We recognise the importance of co-creating solutions with our communities, placing them at the heart of our endeavours.

Building on our past achievements, including notable reductions in carbon emissions, we acknowledge that resting on our laurels is not an option. This LHEES document will work in tandem with our Ayrshire Energy Masterplan. This pan-Ayrshire initiative is designed to support investment and economic development across the three authorities, in conjunction with the Ayrshire Growth Deal. By collaborating with our diverse stakeholders, we will turn these strategies into tangible progress, pushing closer to our vision of a Net Zero Carbon South Ayrshire.

This strategy represents a live document, an evolving piece of work that will adapt in line with wider changes in legislation, research, and technology and innovation. I extend an invitation to all residents, businesses, and stakeholders in South Ayrshire to stay engaged with this work and help to shape the future of our region towards one of sustainability and resilience.



Martin Kilbride

Councillor Martin Kilbride, Portfolio holder for Buildings, Housing, and the Environment

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1. Overview

1.1 What is an LHEES?

The Local Heat and Energy Efficiency Strategy (LHEES) is a long-term strategic framework designed to support energy efficiency and sustainable heat delivery across all buildings in South Ayrshire. This includes council and privately owned buildings and spans domestic and non-domestic sectors. It serves as a roadmap towards achieving our commitment to Net Zero Carbon, eliminating fuel poverty, and working towards a more environmentally conscious and resilient community.

1.2 Why are we doing this?

As part of the Scottish Governments push for net zero by 2045, it is vital that our homes and buildings no longer contribute to climate change, while tackling fuel poverty within our communities.

Our LHEES will support the objectives within the South Ayrshire Council Plan, Scottish Government targets and objectives, and builds towards Scotland's place in the world.

1.3 What is the focus of this work?

In LHEES, we are looking at area wide approaches, which means focussing on equity, inclusion, and co-creation. Initial work on LHEES will look to build connections with stakeholders from council services and community planning partners, communities and residents, businesses, and the 3rd sector. We are working to build connections with areas of best practice, develop and connect existing areas of work, and further develop this long-term plan of how we reach our future targets.

In terms of tangible action, this means improving insulation and energy efficiency of all buildings, planning for where area-wide approaches are suitable for heat networks, and identifying what heat provisions are required to meet targets. Throughout this strategy you will find focus sections, these draw out information that will form the basis of delivery plan actions.

1.4 How can you get involved?

Active community engagement is crucial to the success of the LHEES. All stakeholders are encouraged to participate by providing feedback and insights.

We need to take an inclusive approach that ensures this strategy is not only well-informed, but reflective of the diverse needs and perspectives within South Ayrshire. Initial consultation included public consultations, community workshops, and other outreach initiatives, and our aim is to continue community engagement over the course of this strategy.

In order to make the LHEES accessible for all readers, two additional versions are available online.

For a brief look at the Strategy, there is the **Summary report**, and for a more comprehensive overview, the **full technical report** can be found online.

2. Introduction

2.1 Overview of LHEES

The Local Heat and Energy Efficiency Strategies (Scotland) Order 2022¹ places a duty on local authorities to prepare and update a Local Heat and Energy Efficiency Strategy (LHEES) and Delivery Plan. This document is prepared by South Ayrshire Council (SAC) to fulfil its duty under that Order.

This Strategy sets out the long-term plan for decarbonising heat in buildings in the SAC area and improving their energy efficiency.

LHEESs are primarily driven by Scotland's statutory targets for greenhouse gas (GHG) emissions reduction and fuel poverty²:

- Net zero emissions by 2045 and 75% reduction by 2030; and
- In 2040, as far as reasonably possible, no household in Scotland is in fuel poverty.

The Strategy should:

- Set out 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.

Accompanying this Strategy is a Delivery Plan. This has been developed in partnership with key partners 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 strategy will be reviewed and updated on a five-year basis, delivery plans will be an active record of projects and will be updated annually.

For strategy scope and limitations, please see appendix A.

¹ [The Local Heat and Energy Efficiency Strategies \(Scotland\) Order 2022 \(legislation.gov.uk\)](https://www.legislation.gov.uk)

² [Local heat and energy efficiency strategies and delivery plans: guidance - gov.scot \(www.gov.scot\)](https://www.gov.scot)

3. South Ayrshire Priorities

Priority One Community and Sustainability

Supporting those most vulnerable within our communities is a cornerstone of South Ayrshire Council priorities, from our Council Plan to our Local Housing Strategy. Our LHEES will prioritise reduction of fuel poverty and associated health inequalities, enhancement of our natural environment, and the delivery of an equitable, just transition.



Priority Two Education and Skills

Supporting an energy transition is a cross-generation task, so we must look to support the skills available to deliver this now and in the future. We must look at fostering education and innovation in schools, further education, higher education, and within industry apprenticeships. Our LHEES will work to establish links across all age ranges, supporting a skills workforce to put South Ayrshire at the forefront of the move to Net Zero.



Priority Three Economy and Opportunity

Delivering energy efficiency and developing low carbon technologies have the potential to support economic development, job creation, and foster closer engagement between stakeholders across South Ayrshire. Our LHEES will support the Ayrshire Energy Masterplan in delivering the benefits of a just transition to all of South Ayrshire.



Throughout this document you will find challenge and focus sections, intended to highlight the key considerations, and build to form delivery plan actions. These will reference these priorities.

The connecting priority between these is to ensure open and transparent communication between stakeholders, partners, and communities.

4. Background Information

4.1 LHEES Structure

As established in the Local Heat and Energy Efficiency Strategies (Scotland) Order 2022, LHEES should have a two-part structure. This document sets out the long-term aims and the accompanying Delivery Plan sets out actions to support implementation of this Strategy.

4.2 LHEES Considerations

The LHEES guidance sets out the key considerations for this Strategy, shown in Table 1. These help to categorise building stock into groups that require similar interventions.

Table 1: LHEES Considerations

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

This LHEES has been developed in line with the Scottish Government methodology, with some adjustments to suit the specific context of the authority. For detail on the LHEES approach and methodology, please refer to [Appendix A](#).

In this iteration of LHEES, South Ayrshire is focussing on:

- Improving energy efficiency and reducing fuel poverty,
 - o Including assessment of energy efficiency as a driver for ill-health and health inequalities
- Transitioning off gas buildings to low carbon heating,
- Buildings feasibility for heat networks where appropriate.

4.3 Interventions

There are a range of potential interventions, from energy efficiency measures to low and zero carbon heating systems, which will play a role in South Ayrshire's LHEES. Table 2 summarises these technologies and developed routes. Key technologies are developed further in Section 8.

The Scottish Governments Heat in Buildings Strategy³ (HIBS) states that for the period to 2030, focus must be on accelerating the deployment of tried and tested measures where they are known to be no or low regrets.

³ [Heat in Buildings Strategy - achieving net zero emissions in Scotland's buildings - gov.scot \(www.gov.scot\)](#)

As noted, South Ayrshire’s focus with regard to technologies for this initial LHEES will look at improving energy efficiency for fuel poverty and health, transitioning off gas buildings to low carbon heating, and building feasibility for heat networks.

Table 2: Heat decarbonisation routes

Intervention	Heat decarbonisation	Effect on fuel poverty	Suitability
Energy efficiency	Measures such as double glazing, draught proofing and insulation reduce energy demand which in turn increases the viability for switching to low carbon heat sources	Improved energy efficiency leads to reduced energy costs, which reduces fuel poverty. Grants and loans are available for lower income households.	Where feasible and cost-effective, the Scottish Government aims for all homes to have the at least the equivalent of EPC band C by 2033
Heat pumps	Heat pumps use electricity to extract heat from the air, ground, water or wastewater. Grid electricity is continuing a trend of decarbonisation through renewable energy.	Appropriately designed and well-running heat pumps can reduce costs, particularly compared to electric heating. Savings are dependent upon the relative price of electricity compared to the fuel displaced as well as the coefficient of performance (COP) of the installation. Replacing electric heating with a heat pump can reduce energy consumption and reduce fuel poverty.	Heat pumps are commonly used in cold climate, such as Scandinavia and research has found that all UK house types are suitable for heat pumps ⁴ . Where necessary, upgrades to heat emitters or hot water storage can present practical challenges in some properties. The electricity network will need to accommodate increase in electricity demand from heat pumps, direct electrical heating, and other energy sources such as Electric Vehicles. Hot water production is usually provided through a hot water cylinder, which requires space in a property.
Heat networks	Heat networks, which use waste heat, heat pumps or bioenergy as their energy source	The Competition and Markets Authority found that up to 90 % of heat network customers enjoy similar, or lower, bills than those with standard gas boilers and heat networks can cut both emissions and bills.	Heat networks are suitable for all building types but only in areas with a sufficient density of heat demand
Electric heating	Electricity to extract heat from the air or ground. Grid electricity is continuing a trend of decarbonisation through renewable energy	While direct electric heating is more efficient than combustion boilers, including gas, the high cost of electricity must be considered for households at risk of entering fuel poverty. Storage heaters can be used to harness cheaper electricity at night but can emit and waste heat when not required	Electric heating is suitable for all properties with a suitable electricity connection. Hot water production is usually provided through a hot water cylinder, which requires space in a property.

⁴ An Energy System Catapult electrification of heat project in the UK finds [all housing types are suitable for heat pumps](#).

Intervention	Heat decarbonisation	Effect on fuel poverty	Suitability
Bioenergy	Sustainably sourced, bioenergy (i.e., solid biomass, biogas or biomethane) is regarded as carbon neutral	There is uncertainty surrounding the future supply of bioenergy and biomass boilers tend to have more maintenance requirements than gas boilers	HIBS indicates that bioenergy is likely to have a limited role in the decarbonisation of the building stock. There may be some buildings for which bioenergy can play a role, for example in hard to treat off-gas properties where heat pumps are unsuitable. However, the UK's Green Gas Support Scheme aims to increase the proportion of biomethane in the gas grid. A bioenergy Action Plan is due to be published in late 2023. Air quality concerns need to be considered in urban settings as well as the health impacts of indoor air pollution.
Hydrogen	Green hydrogen is produced by splitting water using renewable electricity while blue hydrogen is produced from fossil fuels plus carbon capture. Therefore, both production routes are deemed as low carbon in UK and Scottish legislation. Increased availability of hydrogen for heat will have positive implications for the suitability of hybrid heat pump systems, which may be cost-effective solutions	Currently hydrogen is an underdeveloped fuel and is associated with high costs. The future of hydrogen prices is uncertain but may become competitive with other energy sources in the coming decades. However, without Government incentives prices for green hydrogen are unlikely to be lower cost than using direct electrical heating or heat pumps as hydrogen system efficiency is lower than using electrified heating.	Hydrogen is not currently available for supply of heat to domestic properties and is not seen as an immediate solution ⁵ .

4.4 Consultation

Consultation on the development of this LHEES was sought through our community planning partners, registered social landlords, economic development groups, third sector organisations, community groups and members of the public.

Responses were thematically assessed, and key principles were integrated into this version of the LHEES. Analysis can be seen in Appendix D.

⁵ [Delivering Net Zero for Scotland's Buildings - A Consultation on proposals for a Heat in Buildings Bill \(www.gov.scot\)](https://www.gov.scot/publications/delivering-net-zero-for-scotland-s-buildings-consultation-proposals-for-a-heat-in-buildings-bill/pages/100/index.html)

5. Policy and Strategy Context

5.1 National Strategic Context

On a UK level, there exists legally binding legislation to reach net zero emissions by 2050. The Net Zero Strategy: Build Back Greener⁶ report denotes that one third of emissions are a result of heating for homes and workplaces. The UK Government is responsible for regulation of the electricity and gas networks and markets. Other targets are set, such as reaching 600,000 heat pump installations nationwide by 2028⁷.

The Scottish Government has more ambitious targets than the UK, with net zero by 2045 and interim targets of 75 % by 2030 and 90 % by 2040. There are certain powers which are devolved to the Scottish Government such as promoting renewable energy and energy efficiency, while many aspects of energy policy are reserved by the UK Government. Chapter 10 of the Heat in Buildings Strategy⁸ (HIBS) discusses the need for the UK and Scottish Government to work alongside each other to facilitate the decarbonisation of heat.

The Tackling Fuel Poverty in Scotland: A Strategic Approach⁹ sets the target to maximise the number of fuel poor households attaining EPC B by 2040. At the time of writing, the Scottish Government are consulting on an EPC reform, which likely will have an impact on the grading of the building stock and the effect of measures¹⁰. The Fuel Poverty Act sets an overarching target that in the year 2040, as far as reasonably practicable, no household in Scotland is in fuel poverty and, in any event, no more than 5 % of households are fuel poor, no more than 1 % are in extreme fuel poverty and the fuel poverty gap is no more than £250 (in 2015 prices).

The Scottish Government will require that all residential properties in Scotland achieve EPC C by 2033, where technically and legally feasible and cost-effective. For the social rented sector, no housing should be let after 2025 if the EPC rating is lower than EPC D. For the owner occupier sector, new energy efficiency regulations will be introduced between 2023 to 2025.

These policies feed into the LHEES Considerations of:

- 4) Poor building energy efficiency;
- 5) Poor building energy efficiency as a driver of fuel poverty; and
- 6) Mixed-tenure, mixed-use and historic buildings.

A detailed outline of this and other Scottish policy drivers and contexts can be seen in [Appendix B](#).

5.2 Local Policy and Strategy Context

LHEES is not a strategy on its own. Policies and strategies across the council are designed to be interoperable, supporting and developing the principles within the Council Plan. In this way, table 3 shows a sample of the links to and from LHEES within other council strategies, plans and policies.

Priorities from these strategies have been considered in the LHEES development and within the ongoing governance of delivery. The governance group includes representative from each strategy service area, and a key aspect of this group is the ongoing interoperation of policy and strategy links. More detail can be found in section 13.

⁶ [Net Zero Strategy: Build Back Greener - GOV.UK \(www.gov.uk\)](#)

⁷ [Heat Pump Investment Roadmap \(publishing.service.gov.uk\)](#)

⁸ [Heat in Buildings Strategy - achieving net zero emissions in Scotland's buildings - gov.scot \(www.gov.scot\)](#)

⁹ [Tackling fuel poverty in Scotland: a strategic approach - gov.scot \(www.gov.scot\)](#)

¹⁰ [Energy Performance Certificates - Energy efficiency - gov.scot \(www.gov.scot\)](#)

Table 3: Local Policies and Strategies

Strategy, Policy, Plan	Description	Linkages
<p>Statutory Development Plan</p>	<p>The statutory development plan comprises both Scottish Governments National Planning Framework (NPF4) and South Ayrshire Council's Local Development Plan (LDP2).</p> <p>The LDP2 is a spatial land use document which guides the future use of land in our cities, towns, and rural areas. It considers and addresses land use issues arising from the implications of economic, social, and environmental change. In doing so, this document provides an overall, joined up approach to managing development that can set out ambitious but realistic long-term visions the South Ayrshire Council area.</p> <p>This plan forms the prime consideration in the determination of planning applications.</p>	<p>LDP Linkages:</p> <p>Core themes C - Our Environmental Responsibilities</p> <p>How we will be mindful of our responsibilities for the protection of our natural, built, and cultural heritage resources.</p> <p>Core Principles: C1 – We will promote the sustainable use of natural, built, and cultural heritage resources.</p> <p>Strategic Policy 1: Sustainable Development - We will support the principles of sustainable development by making sure that development meets the following standards:</p> <ul style="list-style-type: none"> ○ Designed to maximise energy efficiency through building siting, orientation, and materials, ○ Helps mitigate and adapt to the effects of climate change. ○ Includes the use of micro-renewables, wherever appropriate ○ Wherever possible, Incorporates or facilitates the development of District heating / heat networks. <p>For reference:</p> <p>Low and zero-carbon buildings (pg. 82)</p> <p>LDP policy: renewable energy (pg. 82)</p> <p>LDP policy: heat networks (pg. 84)</p>
<p>Local Housing Strategy</p>	<p>The LHS is a 5-year plan to support people of South Ayrshire to find good quality housing, develop a sense of identity and belonging, reduce homelessness, and support all residents in their ability to live in a warm, dry, energy efficient home that meets their needs.</p>	<p>Cross-cutting themes</p> <p>– Sustainability, climate change and biodiversity</p> <p>Agreed Principle: Healthy Homes and Fuel Poverty</p> <p>Outcomes: HH1, HH2, HH3, HH5</p>
<p>Strategic Housing Investment Plan 2023/24 – 2027/28</p>	<p>The Strategic Housing Investment Plan (SHIP) 2023/24 – 2027/28 sets out the strategic investment priorities for affordable housing over the next five years that will achieve</p>	<p>Strategic priority – Sustainable Communities and Sustainable Developments</p> <p>All projects proposed in the SHIP will help to tackle fuel poverty and ensure that heat is affordable for residents by increasing energy efficiency and reducing the amount of energy required to heat the home.</p>

Strategy, Policy, Plan	Description	Linkages
	outcomes set out in the Local Housing Strategy and HNDA.	
Sustainable Development and Climate Change Strategy 2019 – 24	<p>This strategy sets out a coherent framework for the council projects, policies and initiatives which promote sustainable development, mitigate climate changing emissions, and adapt to the impacts of climate change.</p> <p>It focuses on the themes of sustainable council, environment, and community with broad outcomes and actions for each.</p>	<p>Outcome 1 - reducing emissions from energy use, improving economic development opportunities, and embedding mitigation, adaptation, and partnership working.</p> <p>Outcome 3 - links through energy activities within local communities.</p>

6. Challenges and Opportunities

The scale of the change involved in decarbonising heat in South Ayrshire should not be understated. Energy transitions present huge challenges economically and socially; however, they do present opportunities as well.

Opportunities

6.1 Just Energy Transition

The concept of Just Transition originated in the 1980's and has gained traction in terms of sustainable development and energy transition. The International Labour Organisation (ILO) defines it as "Greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind."

This is a principle we seek to embed in the LHEES, improving equity and reducing inequality.

Every Scottish Local Authority must undertake an LHEES, and each will assess the level of interventions required to work towards heat decarbonisation. Combined with legislative drivers this transition to decarbonise heat in buildings has significant implications for supply chain development, reskilling and upskilling, and knowledge transfer.

Recent research has shown that improved energy efficiency was responsible for almost 25% of all GDP growth in the UK since the 1970's¹¹, and that early planning and embedding of social equality can significantly improve outcomes¹². In this way, ensuring a just energy transition in South Ayrshire not only supports the local economy to be at the forefront of this national change, but ensures that we are delivering on our commitment to protect those most vulnerable in our communities.

South Ayrshire Council is committed to embedding the principles of social equity and just transition in our decarbonisation journey and will work with key partners like Sustainable Scotland Network to develop deliverable actions towards this goal.

6.2 Ayrshire Energy Masterplan

The Ayrshire Energy Masterplan represents a cross-authority approach to develop a strategic energy vision for the Ayrshire region. This will include socio- and techno-economic modelling to identify investment opportunities, areas of business growth, and skills and supply chain development areas. Strategic outcomes will link with LHEES through local energy and heat generation, decarbonisation, investment in local carbon technologies, and a just and inclusive energy transition.

The strategy is due to be released in 2024 and will link closely with the LHEES delivery planning.

6.3 Engagement & Development

Although LHEES is developed by South Ayrshire Council, this strategy is relevant to all stakeholders in South Ayrshire. To deliver on our commitments, we will need to build and develop engagement routes across services, sectors, and communities.

Consultation on this document was sought through our community planning partners, registered social landlords, economic development groups, third sector organisations, community groups and members of the public. Responses were thematically assessed, and key principles were integrated into this version of the LHEES. Analysis can be seen in Appendix D.

Implementing LHEES and associated actions will require continuation and extension of partnerships such as Ayrshire and Arran NHS Trust, Energy Agency, and Home Energy Scotland through the LHEES coordination group and Local Area Outcome Planning (LOIP) forums. The ongoing work of these organisations and other

¹¹ <https://ukerc.ac.uk/news/energy-efficiency-contributed-25-of-uk-economic-growth-since-1971/>

¹² <https://www.gov.scot/publications/transitions-comparative-perspective/pages/5/>

local partners highlight areas of best practice, show links between housing and health, and ensure that external funding for advice and measures is delivered effectively and at speed.

Public and community engagement will continue beyond the consultation period through LOIP forums and community councils. With the scale of the required transition, public communication is vital and arguably work beyond the scale of local authority intervention is required. Further internal development on engagement can be seen in Section 13: Governance, however a public engagement strategy will be required as part of the delivery plan actions.

6.4 Community Wealth Building

Community wealth building is a people-centred approach to local economic development, which redirects wealth back into the local economy and the surrounding community. It can deliver more business growth, community owned assets, and improved resilience while building social and environmental justice. This can be done through local anchor organisations such as local councils, community groups, housing associations, or education facilities.

In the Wallacetown Community Energy Project Proposal, the local community association is working in partnership with South Ayrshire Council, seeking to install community owned PV panels onto the roofs of three school buildings in the Wallacetown neighbourhood of Ayr. The Council will purchase the power generated by the panels for use in the school buildings, with the surplus sold to the National Grid. The income earned, after costs, will go to create a new 'Wallacetown Benefit Fund' managed by the community, that will fund future education and wellbeing projects.

This project not only supports community ownership and wealth building in one of Scotland's most deprived areas, but builds connections between local residents, community groups, Strathclyde University, and council teams.

The association has a wider vision to make Wallacetown a NetZero Sustainable Village, drawing on partnership experience to support decarbonisation. An example of this was the MSc Group Project on an Urban District Heating feasibility study linking directly to Wallacetown and SACs LHEES strategy. Going forward the Council and the university will engage with the joint Energy Working Group to identify sustainability projects that will help jointly achieve the vision of making Wallacetown a NetZero Village, a model of good practice that can be shared.

Focus

- **Priority 1:** Embed the principles of Just Transition into LHEES development and delivery,
- **Priority 1 & 3:** Support the development of the Wallacetown Community Energy Project & Net Zero Village,
- **Priority 3:** Support the Ayrshire Energy Masterplan project to broaden commercial engagement,
- **Priority 3:** Establish LHEES within existing consultation routes, and develop new routes where possible

Challenges

The challenge of decarbonising heat on an area-wide basis is a massive challenge, which this iteration of LHEES seeks to take the first steps towards.

One of the main challenges in decarbonising heat in South Ayrshire is the age and energy efficiency of buildings across the authority. All LHEES work across Scotland is based on the Home Analytics (HA) and Non-domestic Analytics (NDA) datasets, which is managed by Home Energy Scotland on behalf of the Scottish Government. This data set gives property level information about property type, age of construction, EPC, and energy efficiency measures installed.

6.5 Domestic Buildings

For South Ayrshire records show:

- 57,949 domestic properties in South Ayrshire,
- 8,567 owned by South Ayrshire Council (14%),
- 2,330 owned by housing associations (4%),
- 6,697 owned by private landlords (11%),
- and 39,713 being owner-occupied (68%).

Note: 642 addresses lacked detail and were removed from analysis

With the majority of homes owner occupied, this present significant challenge in direct Council-led intervention. Development of stakeholder engagement through partner organisations such as the Energy Agency and Home Energy Scotland can support homeowners with advice and funding where available.

The majority of the domestic building stock in South Ayrshire was constructed after 1950 (Figure 2) with 87 % of SAC's stock built before 1983. Housing association stock has a larger proportion of newer builds, reflected in a high percentage of properties reaching an EPC grade of C or better.

There are conservation areas in South Ayrshire and 4,636 domestic properties are situated in those. Listed buildings make up 2 % of the domestic building stock, with South Ayrshire Council owning 26.

As the LHEES seeks to support decarbonisation of not only buildings we own and manage, but domestic and commercial properties as well, engagement is required to inform and support building owners in this journey. Existing engagement routes such as tenant participation, registered social landlords, private landlord communications, economic development teams, and community support groups will be assessed and where appropriate representatives brought in to consult through the Coordination group. A main challenge of this LHEES will be coordination of messages across these groups, linking with their priorities and objectives in order to deliver on actions.

Data challenges are also a consideration, both in quality and variety of data. There is a need to validate both HA and NDA data sets against Council data sets and enrich this through layering of other relevant data, such as substation headroom or health and equality information. The sharing and handling of this data will require a joint working exercise between community planning partners.

Challenges

- Higher than Scottish average owner-occupier (58%) and lower than average socially rented (23%) means less direct action available to SAC,
- Greater levels of heat demand in private rental and owner occupier properties with minimal scope of direct intervention
- Higher than average pre-1919 building stock (18%),
- Data quality and variety

Focus

- **Priority 1:** Exemplify existing best practice work in SAC towards national standard,
- **Priority 1:** Support ongoing energy efficiency programmes
- **Priority 3:** Extend engagement with SAC departments, owner-occupiers, registered social landlords, private rental landlords, and communities through governance group.

Figure 1: Domestic heating energy demand

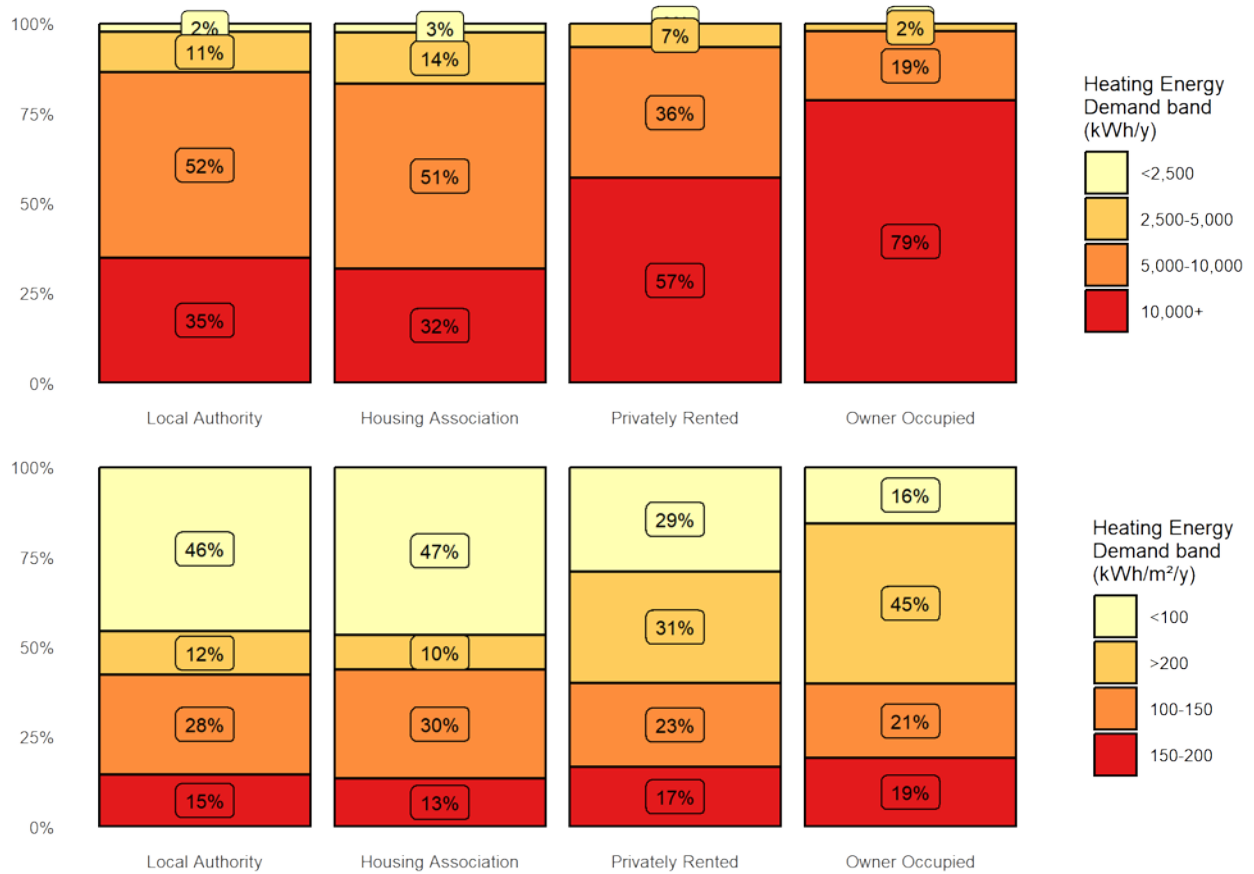
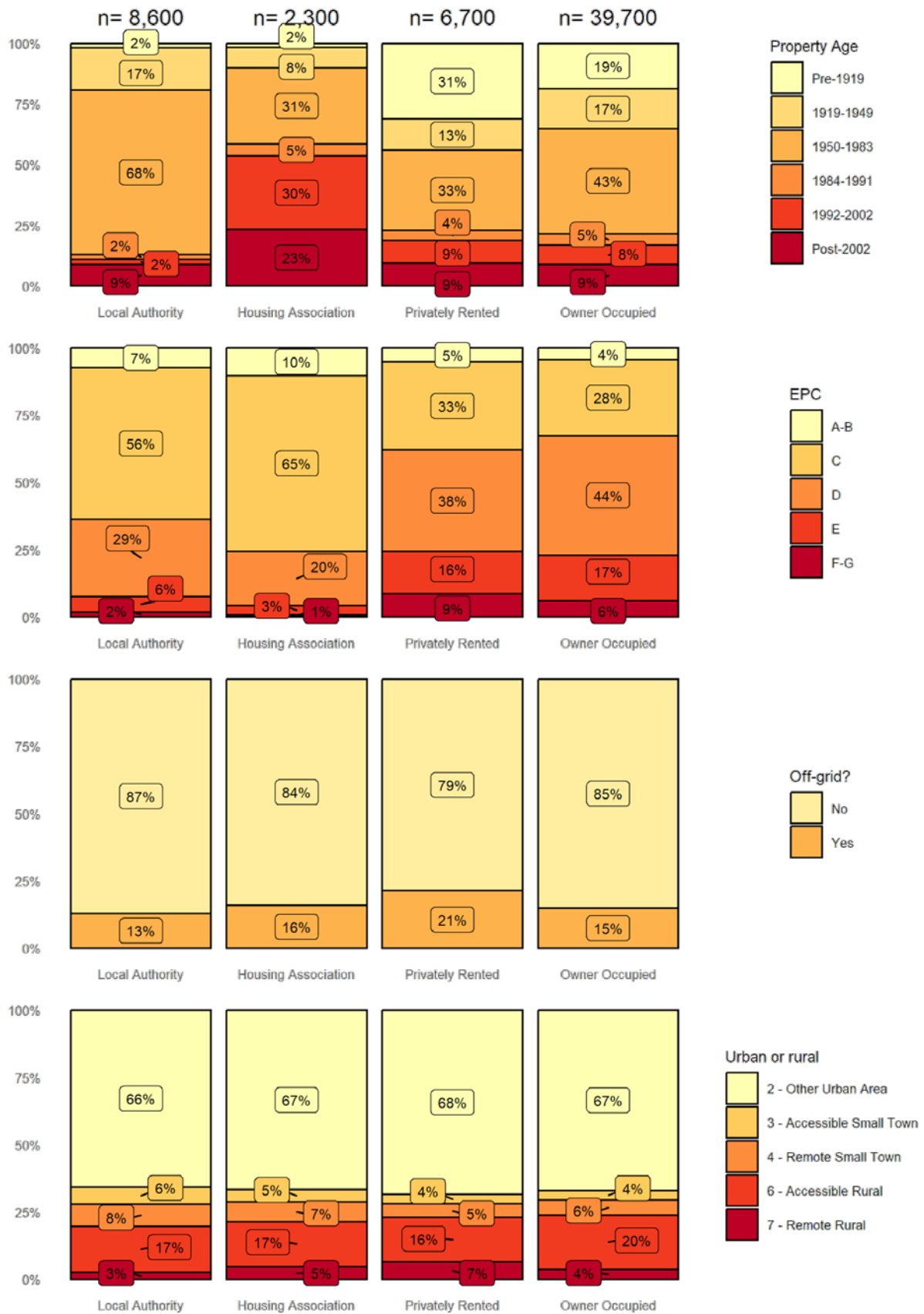


Figure 2: Domestic buildings- Distributions of age, EPC rating and gas grid connectivity by tenure type



Note, for clarity, percentages rounded to nearest integer and counts rounded to nearest hundred

6.6 Non-domestic Buildings

The Non-Domestic Baseline Tool utilises data derived from Non-Domestic Analytics data sets. This analysis is based on the best available data, but there are gaps in reliability and coverage. Nevertheless, the data has been used for the baselining step of the LHEES process to get a flavour of the building stock.

This data will be supported through the Ayrshire Energy Masterplan (AEM); an ongoing project across the three Ayrshire's which looks to identify investment and development opportunities in heat and energy decarbonisation. The introduction of Building Assessment Reports (BAR) from Scottish Government will further develop this picture in the near future.

The Non-Domestic Baseline Tool records 4,135 non-domestic buildings in South Ayrshire. Together, these have an estimated total heat demand of 150,000 MWh/y. An analysis of these properties can be seen in figure 3 below.

Gas is the biggest source of heat but electricity is close behind and, along with oil, they have the largest share of small heat loads. Smaller buildings account for almost half of the total heat demand and supporting those with small oil systems, which would not individually be as expensive, for heat pump or heat network connection could be a priority. It is likely that the small properties utilising electricity are already using heat pumps for heating and cooling.

A large proportion of buildings are pre-1919 with a high heat demand and this group of properties may be a target for energy efficiency measures. The data lists 55 % of these pre-1919 buildings as being retail or financial and 79 % as being in towns, making up most high street retailers.

Generally, non-domestic heating energy demand is dominated by the retail and finance sector (*Figure 3*).

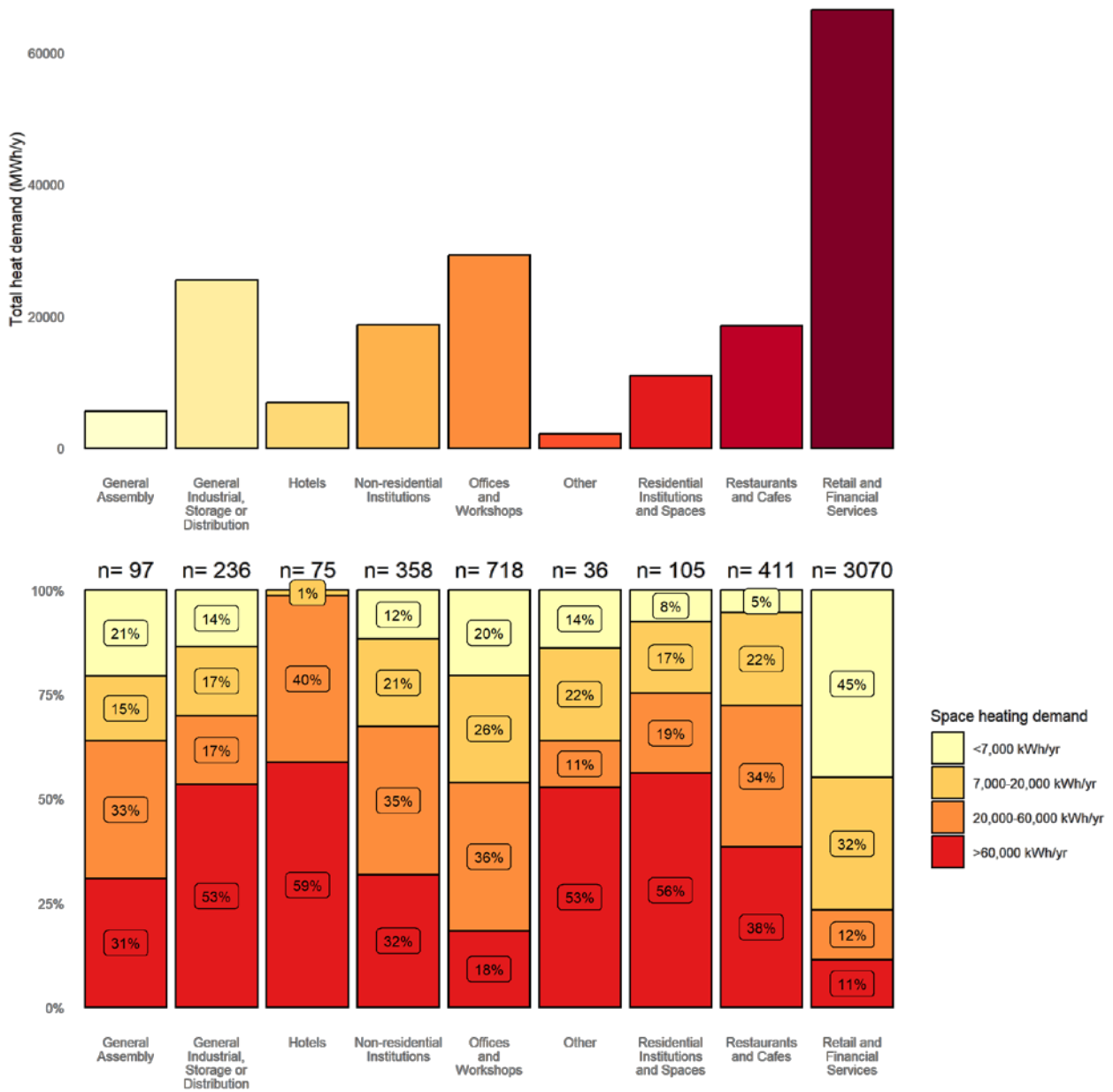
Challenges

- Data availability and reliability,
- Varied challenges with heat demand depending on business type,
- Traditional build high streets with hard-to-treat properties.

Focus

- **Priority 3:** Existing work through AEM to support engagement with non-domestic owners,
- **Priority 3:** Support Building Assessment Report (BAR) process and integrate data,
- **Priority 2 & 3:** Explore co-working opportunities with Economic Development and community planning partners

Figure 3: Non-domestic building type by heat demand



Note, for clarity, percentages rounded to nearest integer and counts rounded to nearest hundred.

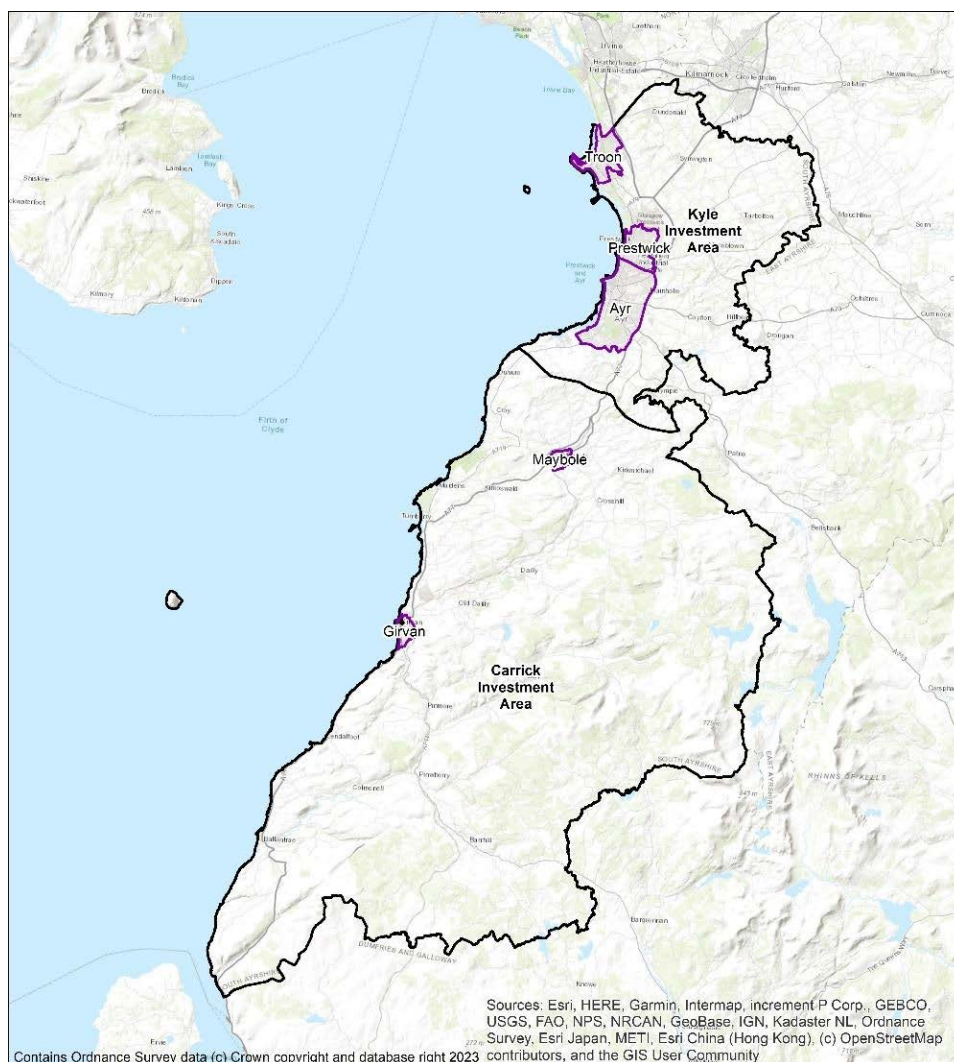
7. Strategic Zones and Baseline

This section illustrates how we have set out Strategic Zones and developed pathways for each. In this section the approach to selecting Strategic Zones is described, as well as the attributes for each which affect the strategic options. Weighted scores are used to assess energy efficiency and factors affecting the development pathways. A higher score is representative of poorer energy efficiency. Full details on the weighting and calculations are available in the **full technical report** in *Appendix C, D and I*.

7.1 Local Development Plan Areas as LHEES Strategic Zones

Through our LHEES work, “intermediate” geographical zones have been generated to show priority areas to target interventions, the analysis and indicators used can be seen in the **full technical report**, *Appendix A, and I*. In addition to this standard methodology, data was mapped against SACs Local Development Planning boundaries, as shown in figure 4.

Figure 4: South Ayrshire’s Strategic Zones



Creating a baseline of information about our building stock in South Ayrshire gives both a starting point to approach the task of decarbonisation, and a reference to measure our progress against in future. Meetings with Locality Planning groups and community councils have been undertaken for Girvan, Maybole and Carrick zones, and will continue with wider zones throughout LHEES delivery.

7.2 Domestic Properties and Tenure

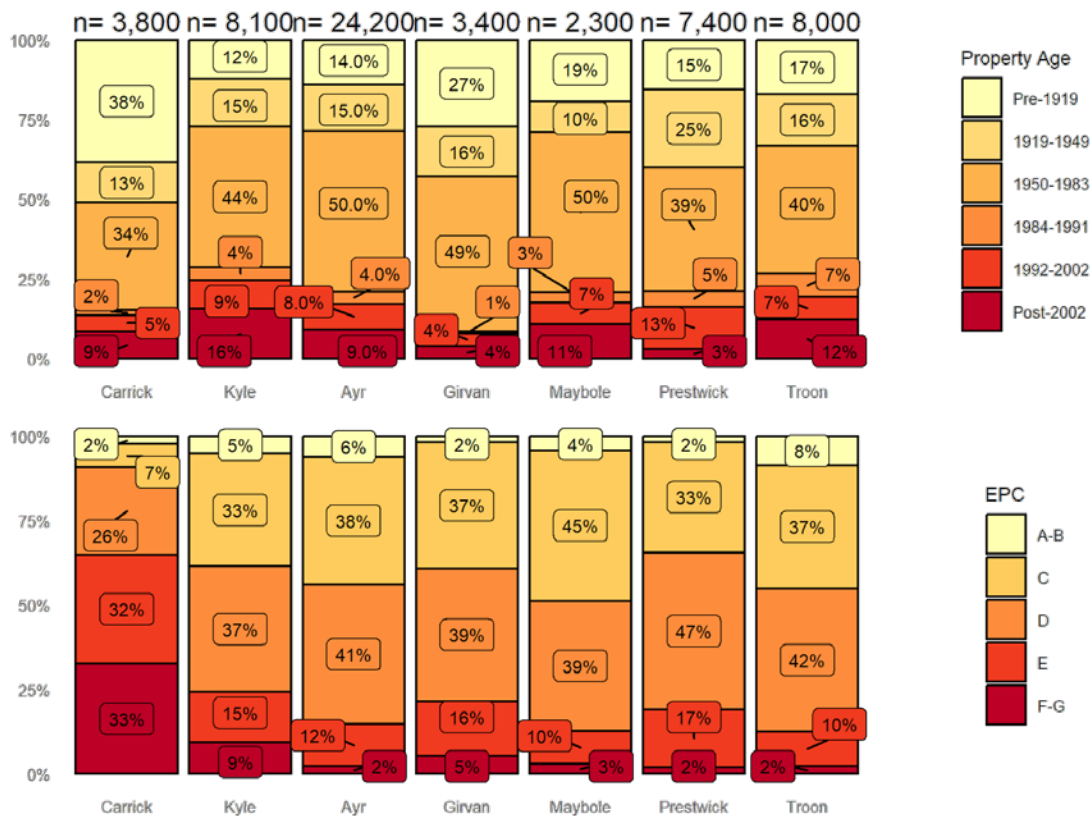
The numbers of domestic properties in the Home Analytics dataset, broken down by Zone and tenure are given in Table 4.

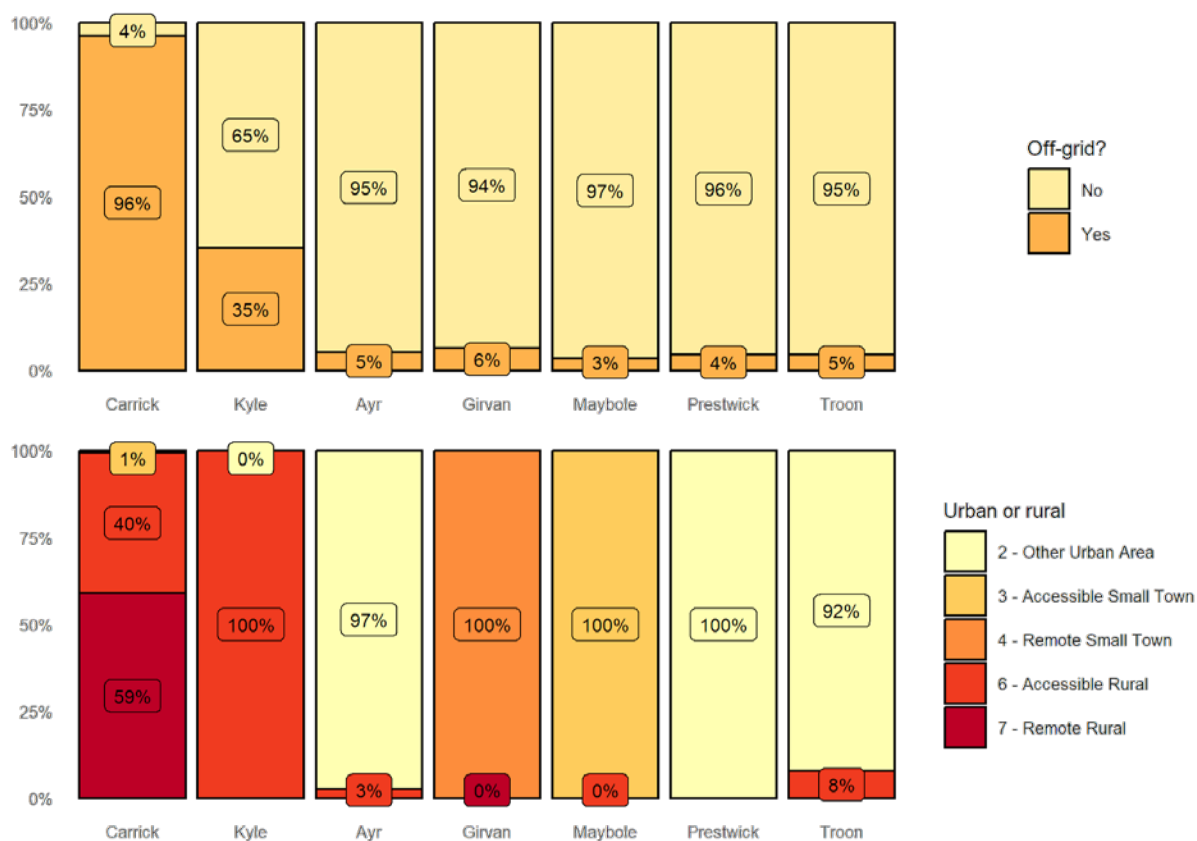
Table 4: Domestic properties in the Strategic Zones

Zone	Total domestic properties	Tenure				Mixed tenure in parent building
		SAC	Housing Association	Private Rental	Owner Occupied	
Carrick	3,800	470	170	660	2,500	214
Kyle	8,100	1,050	320	800	5,930	409
Ayr	24,200	4,210	1,150	2,940	15,900	5,232
Girvan	3,400	700	170	330	2,200	414
Maybole	2,300	520	110	240	1,450	311
Prestwick	7,400	680	210	770	5,740	908
Troon	8,000	930	210	940	5,920	1,647

A baseline assessment of these properties by area, age, EPC, gas grid connection and urban or rural designation is shown in Figure 5.

Figure 5: Baseling of domestic properties in the Strategic Zones





Note, for clarity, percentages rounded to nearest integer and counts rounded to nearest hundred.

7.3 Domestic Energy Efficiency

In order to improve energy efficiency in domestic buildings, a wide range of improvements must be considered. This work is already underway, in line with council priorities and programs such as Home Energy Efficiency Programmes for Scotland: Area Based Schemes (HEEPS:ABS). This LHEES will seek to support and expand both funding and delivery as required to meet objectives.

Table 5 shows interventions required for each strategic zone and their weighted score with mapping shown in figure 6.

Table 5: Domestic energy efficiency weighted scores by strategic zone

Strategic Zone	Number of interventions required				Percentage of housing stock				Total Weighted Score
	Loft Ins.	Glazing Upgrade	Wall Ins.	All	Loft Ins.	Glazing Upgrade	Wall Ins.	All	
Carrick	819	373	2,159	3,351	21 %	10 %	56 %	87 %	29
Kyle	801	375	2,500	3,676	10 %	5 %	31 %	45 %	15
Ayr	2,147	1,488	8,552	12,187	9 %	6 %	35 %	50 %	17
Girvan	497	191	1,418	2,106	14 %	6 %	41 %	61 %	20
Maybole	250	133	954	1,337	11 %	6 %	42 %	58 %	20
Prestwick	955	310	3,278	4,543	13 %	4 %	44 %	61 %	20
Troon	709	290	3,225	4,224	9 %	4 %	40 %	53 %	18
Total	6,178	3,160	22,086	31,424					

The three groups of interventions are broken down by strategic zone and tenure are shown in Figure 6. Much of the Home Analytics data is implied from other observations (e.g. wall construction) where there is no direct observation of a feature (e.g. wall insulation). A target for this LHEES is to improve the quality of the data used for decision-making and this can be done in tandem with the Scottish Government to improve the Home Analytics dataset.

Figure 6: Domestic properties requiring upgrades to glazing, and loft and wall insulation

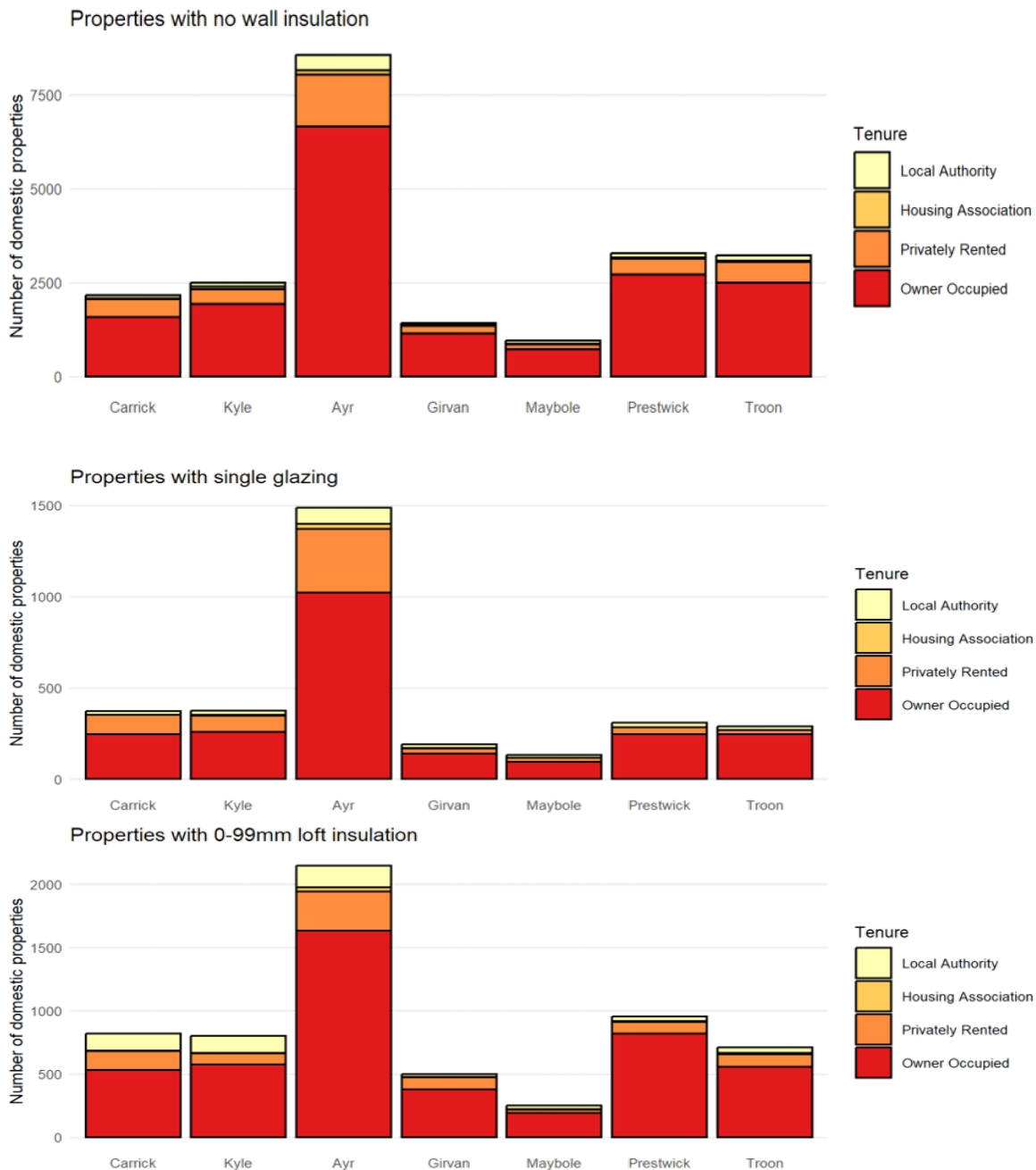
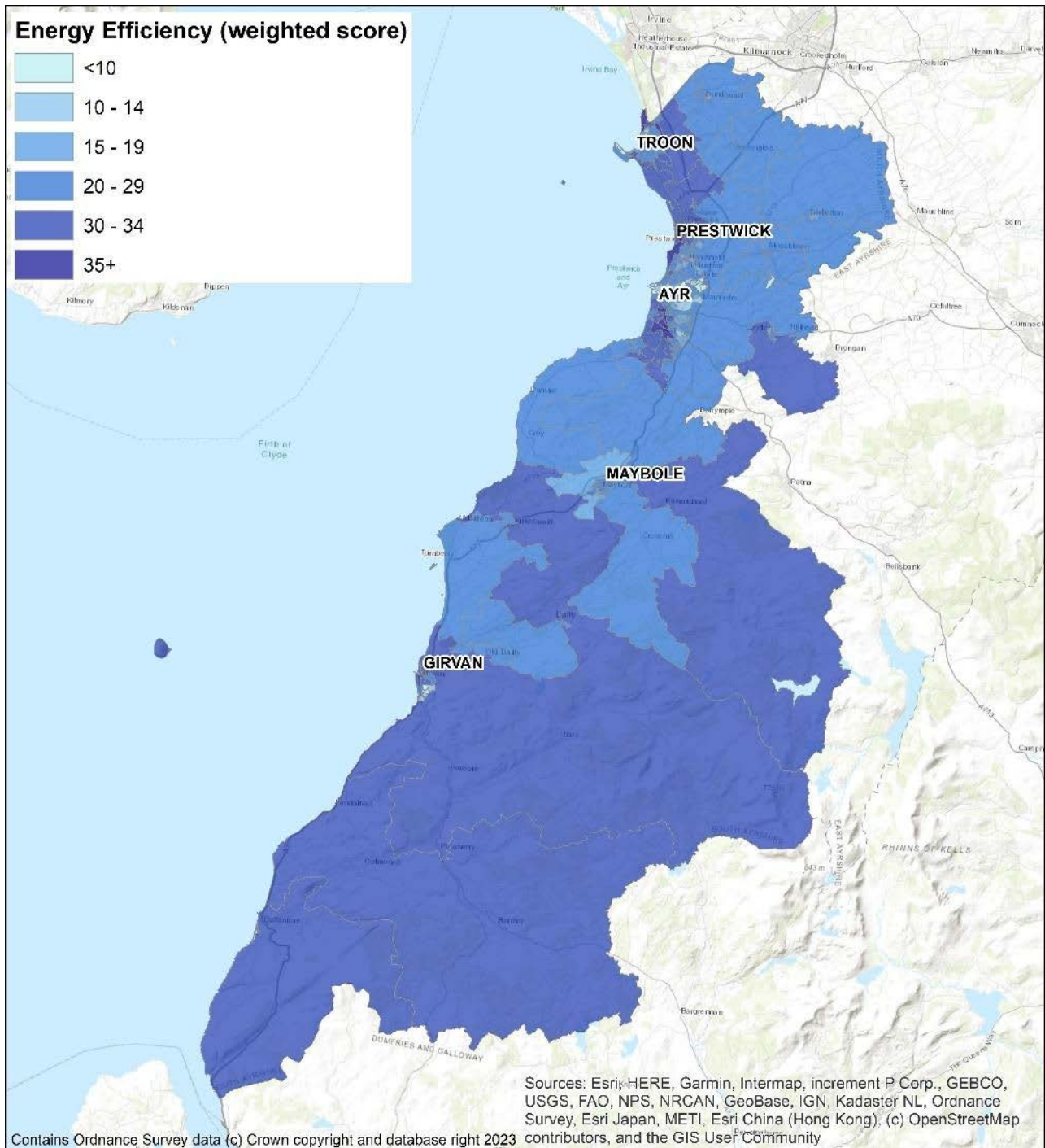


Figure 7: Map of Weighted Energy Efficiency Score – Data Zone Level



The baseline heat demand per year for the domestic buildings in South Ayrshire Council is 835,000,000 kWh. Table 6 shows the potential effect energy efficiency interventions can have on reducing demand across all the South Ayrshire building stock. This helps identify which measures are most cost effective, helping both fuel poverty and heat decarbonisation. Loft insulation upgrades is by far the lowest cost method to reduce heating demands. On the other hand, installing external wall insulation on the outside of buildings that already have cavity or internal wall insulation is deemed as the least cost-effective way to reduce heat demand. However, other factors such as available funding streams or improving the aesthetics of the building with external wall insulation or window upgrades can drive lower efficiency improvements.

Table 6: Summary of energy efficiency interventions across all buildings in South Ayrshire

Measure	Heat Demand Reduction (kWh/y)	Fuel Savings per Investment Cost
Cavity Wall Insulation (CWI)	40,800,000	0.220
Internal Wall Insulation (IWI)	3,400,000	0.113
External Wall Insulation (only wall measure)	37,800,000	0.079
External Wall Insulation (alongside CWI or IWI)	78,400,000	0.023
All wall insulation measures	160,400,000	0.040
Loft insulation upgrade from <100mm	26,300,000	1.003
Loft insulation upgrade from 100-250mm	64,800,000	0.529
Loft insulation upgrade from 250-300mm	90,500,000	0.227
All loft insulation measures	181,700,000	0.430
All Single to Double Glazing upgrade	6,600,000	0.064
Cylinder insulation upgrade from <50mm	14,500,000	0.216
Cylinder insulation upgrade from 50-80mm	2,000,000	0.110
All cylinder insulation measures	16,600,000	0.192
All Combined Measures	365,300,000	0.062

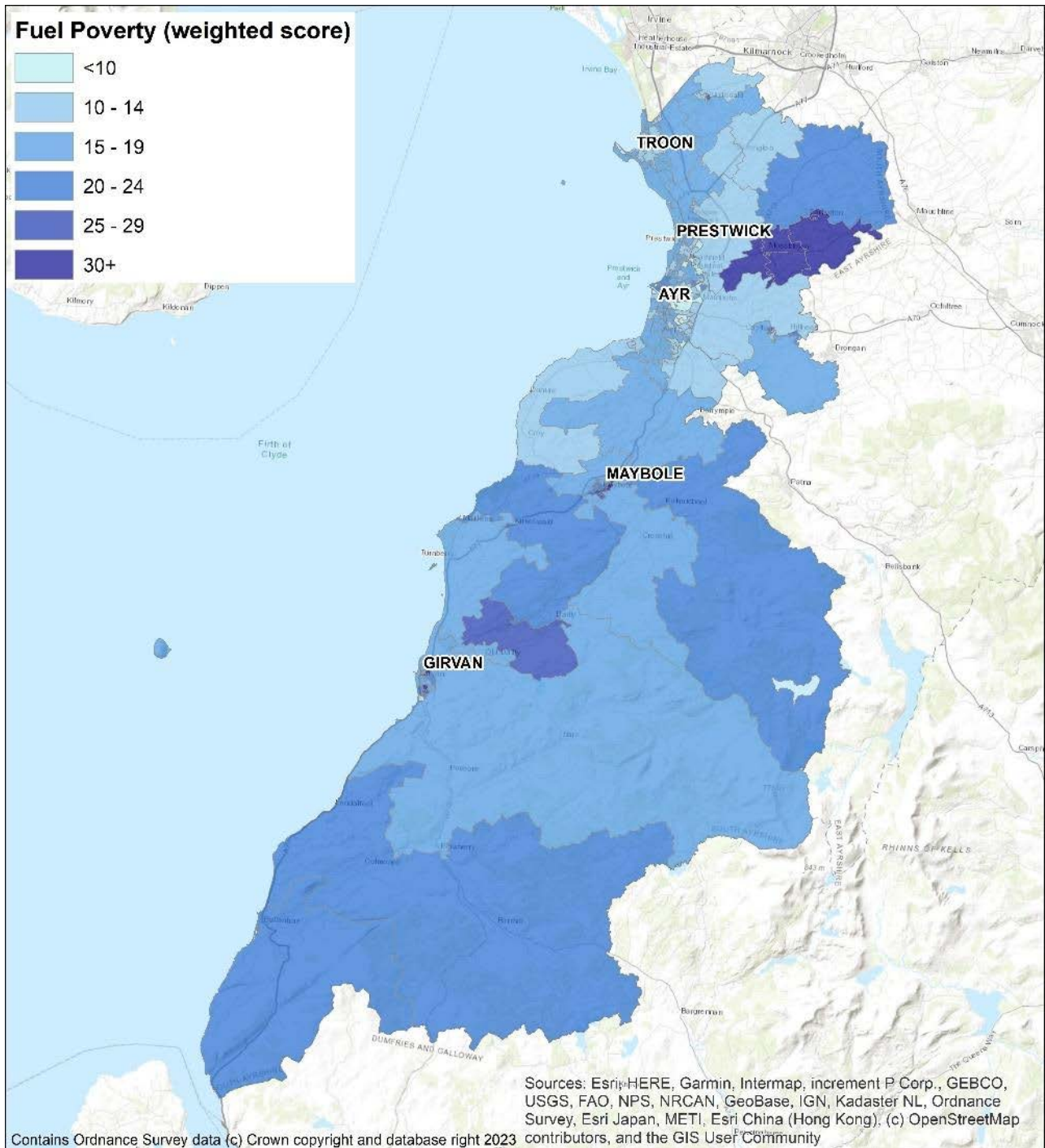
7.4 Domestic Energy Efficiency and Fuel Poverty

The Weighted scores for fuel poverty as a results of poor energy efficiency for the strategic zones, using the default weightings have been calculated for the Strategic Zones (Table 7). These are mapped against the data zone levels in figure 9. Carrick and Girvan stand out above the others and the interventions discussed in 7.4 will reduce the scores.

Table 7: Domestic fuel poverty scores by strategic zone

Strategic Zone	Households with energy bills > 10% of income after housing costs	Households with energy bills > 20% of income after housing costs	Total Weighted Score
Carrick	34 %	23 %	31
Kyle	21 %	7 %	18
Ayr	22 %	9 %	19
Girvan	33 %	21 %	27
Maybole	27 %	15 %	23
Prestwick	18 %	4 %	19
Troon	19 %	4 %	18

Figure 8: Map of Energy Efficiency as a Driver of Fuel Poverty – Data Zone Level



Analysis

This analysis of baseline data gives several considerations for this and future LHEES work:

Loft insulation

There should be limited barriers to installing loft insulation to owner occupied and privately rented homes, since it is both cheap and usually easy to install.

Enhancing Dataset

HA data is comprehensive, however will require to be crosschecked with local knowledge and Council datasets to improve targeting. Layering of data with health information to assess energy efficiency as a driver for health inequalities could provide more contextual targeting of interventions.

Local Authority and Housing Association

Local authority housing stock represents the most easily accessible interventions, generally covered through rolling maintenance programs. As such, Council properties with single glazing and substandard loft insulation will be assessed against Council records as it is likely these are cloned records.

Carrick

Carrick stands out with respect to the weighted scores, with the highest percentage of interventions required in each category.

Wall insulation

Wall insulation is the largest required intervention area with an average of 41% of properties requiring some level of improvement. While there is a proportion of homes with solid walls which are hard to insulate, the most common construction type in every strategic zone is cavity walls which should not hinder improved insulation (Figure 6).

Private Sector

The private sector represents the largest proportion of each intervention area. Additionally, 1,069 homes with single glazing are either listed or sit in conservation areas and, consequently, barriers to interventions may be more than just financial. Partnership working with Energy Agency and Home Energy Scotland will be essential to support intervention in this area.

Challenges

- Data reliability is good for domestic, but there is a need for localised knowledge, engagement, and layering of datasets to deliver successful interventions,
- Scale of intervention required,
- Current funding streams are not adequate to meet scale of challenge.

Focus

- **Priority 1:** Prioritise areas and interventions highlighted through the baseline work,
- **Priority 1 & 2:** Continue Locality Planning and Community Council engagement sessions to build understanding and engagement,
- **Priority 1, 2 & 3:** Assess funding and capacity issues around delivery of measures.

8. Technology

8.1 Options

There is no single solution to decarbonisation of heat, certainly not on the scale that LHEES is working from. Currently the most viable options from Table 2 for low carbon heat sources are:

- Heat pumps
- Heat networks
- Electric heating

Each property owner will make decisions on which route of change and technology is most suitable for them and their property, at this stage of the LHEES work we seek to outline the most suitable technologies for different properties.

8.2 Heat Pumps

All properties have been assessed for suitability for heat pumps as part of the LHEES, with the method and results available in the **full technical report**, section 7.7.3 and Appendix G. This is an overview, and in practice there will be assessments done on a case-by-case basis, however the DESNZ Electrification of Heat Demonstration project¹³ report, conducted by Energy Systems Catapult, concluded:

“The project has not identified any particular type or age of property that cannot have a successful heat pump installation. The suggestion that there are particular home archetypes in Britain that are “unsuitable” for heat pumps is not supported by project experience and data.”¹⁴

As a result, of the 58,000 domestic properties in question, 28,445 could currently be suitable for heat pump installation. This includes individual and communal heating systems.

This level of electrification of heating could place significant pressures on the electricity grid. A key action in the delivery plan is to develop engagement with Scottish Power Energy Networks (SPEN), alongside close working with the Ayrshire Energy Masterplan. Increased coordination with commercial and grid investment planning in the near to medium term will improve longer term area-wide delivery, allowing for early warning of potential grid constraints and reducing risks and barriers to delivery.

Challenges

- Poor installation or incorrect measures risk increasing energy costs and making fuel poverty worse,
- Grid capacity may constrain large scale roll out of heat pumps,
- High installation costs

Focus

- **Priority 1 & 2:** Prioritising no/low regret options
- **Priority 2:** Monitoring energy costs and funding availability
- **Priority 2:** Engagement with Scottish Power Energy Networks in developing area wide approaches.

¹³ [Electrification of Heat Demonstration Project: winning bids, case studies and project data - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/684842/electrification-of-heat-demonstration-project-winning-bids-case-studies-and-project-data.pdf)

¹⁴ [All housing types are suitable for heat pumps, finds Electrification of Heat project - Energy Systems Catapult](https://www.energy.catapult.gov.uk/research-and-development/electrification-of-heat/)

8.3 Electric Heating

Electric heating can include a series of different solutions, the most prominent of which is high-efficiency storage heaters. These store heat generated overnight while electricity is cheaper and release it gradually over the course of the day. These systems require a cheaper off-peak electricity tariff to heat the home. Fuel poverty research by Scottish Government in 2020 cited mixed views with storage heating, varying from no significant issues, to challenges with affordability, tariff and operation confusion, and difficulties with price comparison and switching¹⁵.

High-efficiency systems can offer a more cost-effective solution compared to conventional storage systems or direct radiant panels. Research suggests that of the 1.7m homes in the UK heated with electric storage heaters, 63% of which are over 12 years old, upgrading and correctly specifying system sizes can reduce bills and positively impacts of fuel poverty¹⁶.

8.4 Mixed Tenure, Mixed use and Historic

Listed buildings and conservation areas

Listed buildings can be challenging with respect to energy efficiency improvements, the siting of, for example, air source heat pumps external to the building, and the connection to new district heating pipework.

There are around 1,350 listed domestic properties (data for non-domestic has not been provided). Only 19 % have EPCs rated C or better, with 14 % being F or G.

Like listed buildings, conservation areas represent a particular challenge regarding the introduction of energy efficiency measures and low carbon heat measures. For example, conservation areas are excluded from certain permitted development rights. This can result in properties requiring permission for works that may not have required planning permission in a different area. Conservation areas are more likely to include traditional building types for which energy efficiency measures and low carbon heat sources tend to be more time consuming, challenging or costly to install, if they are possible at all.

There are a little over 4,600 domestic properties in conservation areas (around 8 % of the homes in South Ayrshire), with the vast majority being owner occupied.

Mixed use buildings

Around 1,700 domestic properties (3 %) of total are recorded as flats in mixed use buildings. The potential energy efficiency interventions for these properties are laid out in Figure 16, section 7.8 of the **full technical report**. Almost all of these properties are owner occupied or privately rented. As with the general stock, wall insulation appears to be a big target for this typology.

Challenges

- Limited direct influence on energy efficiency or heat type,
- Unique and challenging building types,
- Increased cost and challenge for interventions,
- Incorrect installation or operation of technologies can exacerbate fuel poverty.

¹⁵ [Lived experience of fuel poverty, Scottish Government, 03/09/2022](#)

¹⁶ [The role of off peak electric heating in reducing fuel poverty, 2017](#)

Focus

- **Priority 1 & 2:** Prioritising no/low regret options,
- **Priority 2 & 3:** Engagement with local and national groups and industry experts to monitor best practice,
- **Priority 2 & 3:** Identify and exemplify existing best practice within South Ayrshire.

9. Heat Networks

Heat networks, often referred to as district heating systems, are area wide approaches to heating, and combined with sustainable heat sources will play a crucial role in decarbonising heat for our homes and businesses. Unlike traditional heating methods that rely on individual property heating, heat networks operate by sending heat from a central source to multiple buildings through a network of insulated pipes. Globally, 9% of final heat demand is met by heat networks, with European leaders such as Denmark, connecting to 65% of domestic properties.

One of the key advantages of heat networks is the option to use different sources of heat, such as large-scale heat pumps using water, ground, or waste as heat sources, geothermal, and waste heat from industrial processes.

Scottish Government has identified heat networks as a key technology in meeting our climate change duty and assigned output targets through the Heat Networks (Scotland) Act 2021, the first of which is in 2027.

9.1 Approach

The principal determining factors for the feasibility of heat networks are the heat density in an area and the presence of one or more “anchor loads” – consumers which are large, stable, and likely to connect.

To assess these factors, the Scottish Heat Map data was supplemented with data from the Council on fuel consumption within their estate. A data validation exercise was carried out to remove any duplicate points, heat demands which were uncertain, dubious heat loads and buildings in sectors less likely to enter into commercial agreements. Where areas were shown to be viable, additional checks were carried out on the anchor heat loads and any loads considered erroneous were removed from the analysis.

Further validation of both the actual heat demands of the buildings and their suitability for connection to heat networks will be assessed before identifying future heat network areas.

The maps presented illustrate the heat demand density of buildings and highlight the possible anchor loads with the addition of other data including local authority-owned properties, potential sources of heat and areas of future development.

The linear heat density method was used – involving drawing a circle around each building the diameter of which is proportional to the heat load of the property. Two measures of heat network viability were used:

- A baseline scenario (purple shades throughout this analysis) using 4,000 kWh/y/m where the circle around each property (in kWh) is divided by 4,000 to give a radius in metres around the property; and
- A stringent scenario (green shades throughout this analysis) using 8,000 kWh/y/m where the radius of the circle is the heat load in kWh divided by 8,000.

The 4,000 kWh/y/m measure highlights more areas as being potentially suitable and the 8,000 kWh/y/m shows fewer areas but are areas with a higher chance of forming a successful heat network.

Finally, the areas were filtered based on whether a continuous area could be formed where the circles around each heat load formed, which enclosed heat loads totalling 15,000 MWh/y or more.

This heat load represents a 3 MW heat source operating for 5,000 full load equivalent hours per year. The purpose is to identify those areas where it is likely that there is sufficient heat load to warrant a new energy centre being constructed. This is intended only as a guide and the exact cost of each energy centre and network would need to be calculated at feasibility stage.

9.2 Overview

An analysis of the potential for heat network zones indicates that there are broadly two areas where heat networks may be viable – within Ayr and an industrial cluster near Girvan.

Within Ayr there are three separate zones identified, however, this strategy considers them in the context of a single heat network strategy for Ayr rather than considering them three discrete opportunities.

9.2.1 Ayr

The analysis shows that there is a cluster of properties in the town centre, South of the river, which could be considered an area for district heating (Figure 9). This area has both sufficient total load to consider constructing a new network and associated infrastructure, as well as a number of anchor loads including Council owned buildings.

North of the river, there is a heat network area which could be connected to the town centre by one of the bridges crossing the river to form a single heat network opportunity. The business strategy areas highlighted in a red outline are also in this zone and the third to the North East.

A cluster of industrial buildings, Ayr_3_4000, differs from the town centre areas as there is a less diverse range of tenures and building types, and therefore close coordination with businesses is going to be important when considering any heat network development.

Working in tandem with the Ayrshire Energy Masterplan will ensure consultation and engagement of businesses, forming a coordinated approach to feasibility and development work.

The Ayr_3_4000 zone is also close to the Prestwick airport site. The Council will coordinate with stakeholders about any future opportunity for heat networks to serve the users of heat on this site.

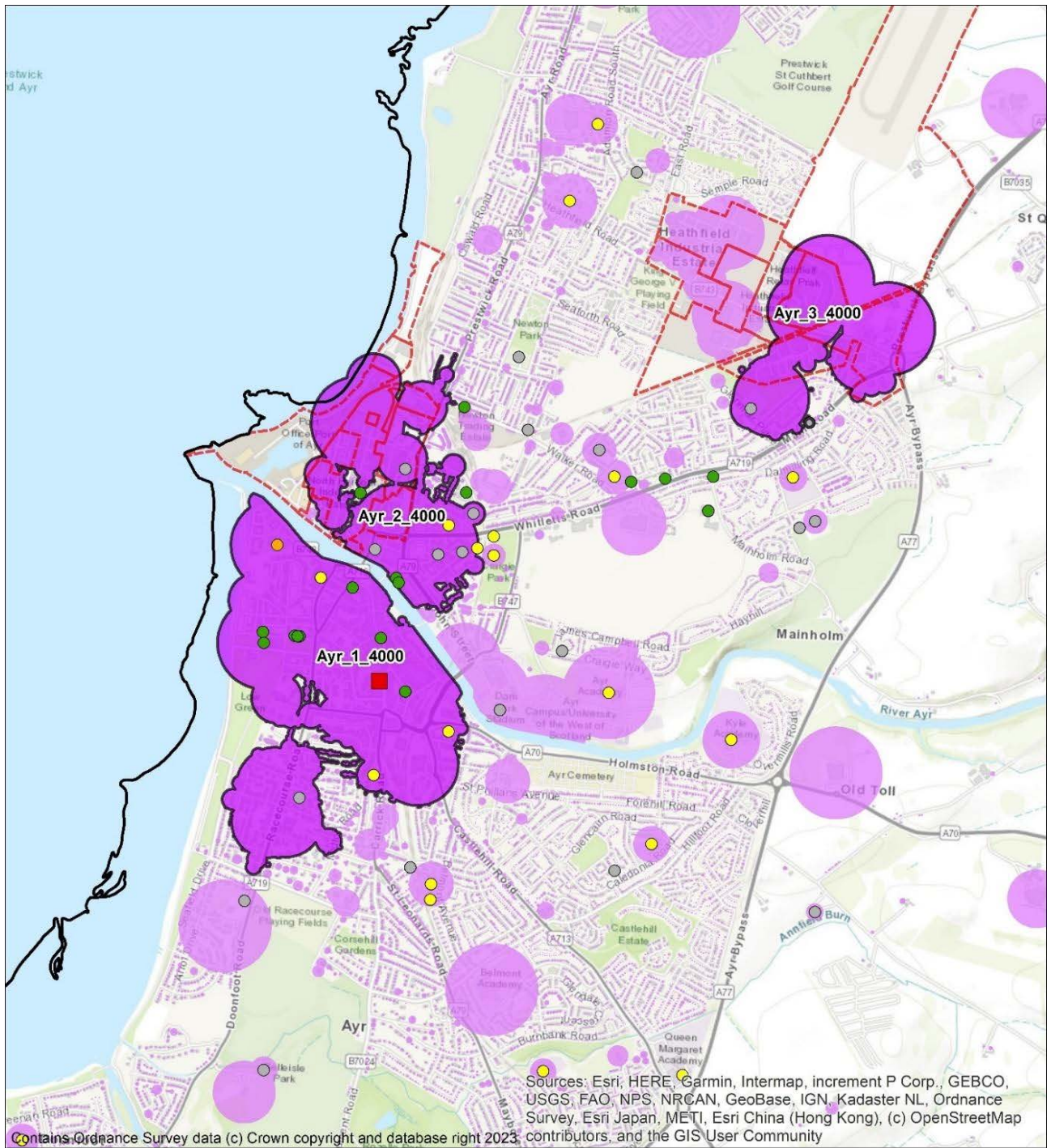
The town centre also contains a large number of listed buildings and a conservation area.

There are additional barriers to decarbonising historic buildings and a heat network could minimise the need for changes to the buildings while ensuring they are decarbonised. Heat networks avoid the need for significant heating plant to be located at each building.

More detailed investigation of each building is important to identify what the opportunities and constraints are for each specific building. Specific attention needs to be paid to:

- whether the existing heating system in the building is likely to be compatible with district heating
- the location of the existing heating plant the route to connect this to the district heating network
- protected attributes of the building and its surroundings

Figure 9: Ayr heat network opportunity – Baseline



Heat Demand (MWh)

- <15,000
- >15,000

Potential heat network area

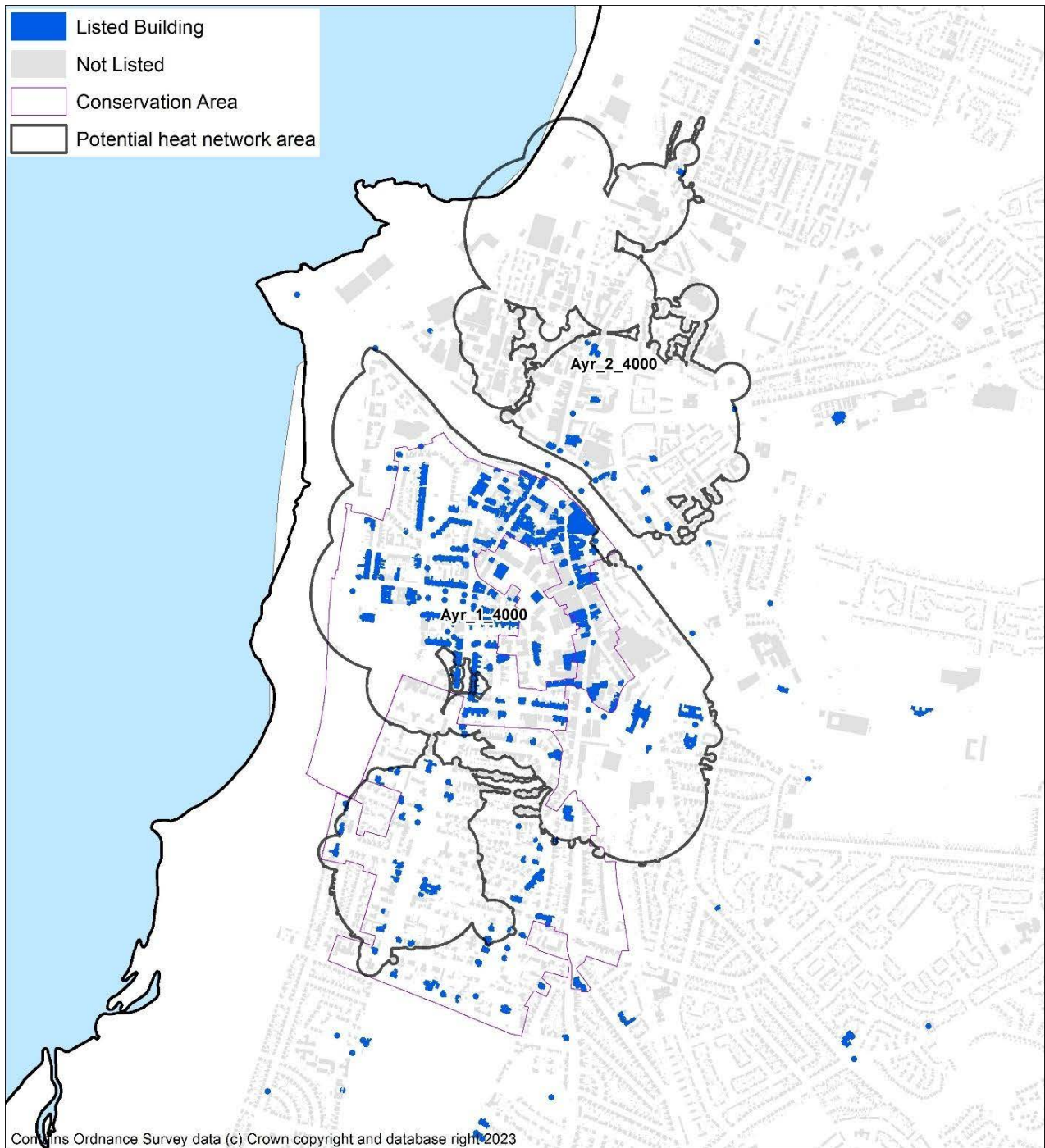
Council Properties

- Office
- School
- Swimming Pool
- Other

Potential Redevelopment Site

Strategy Area

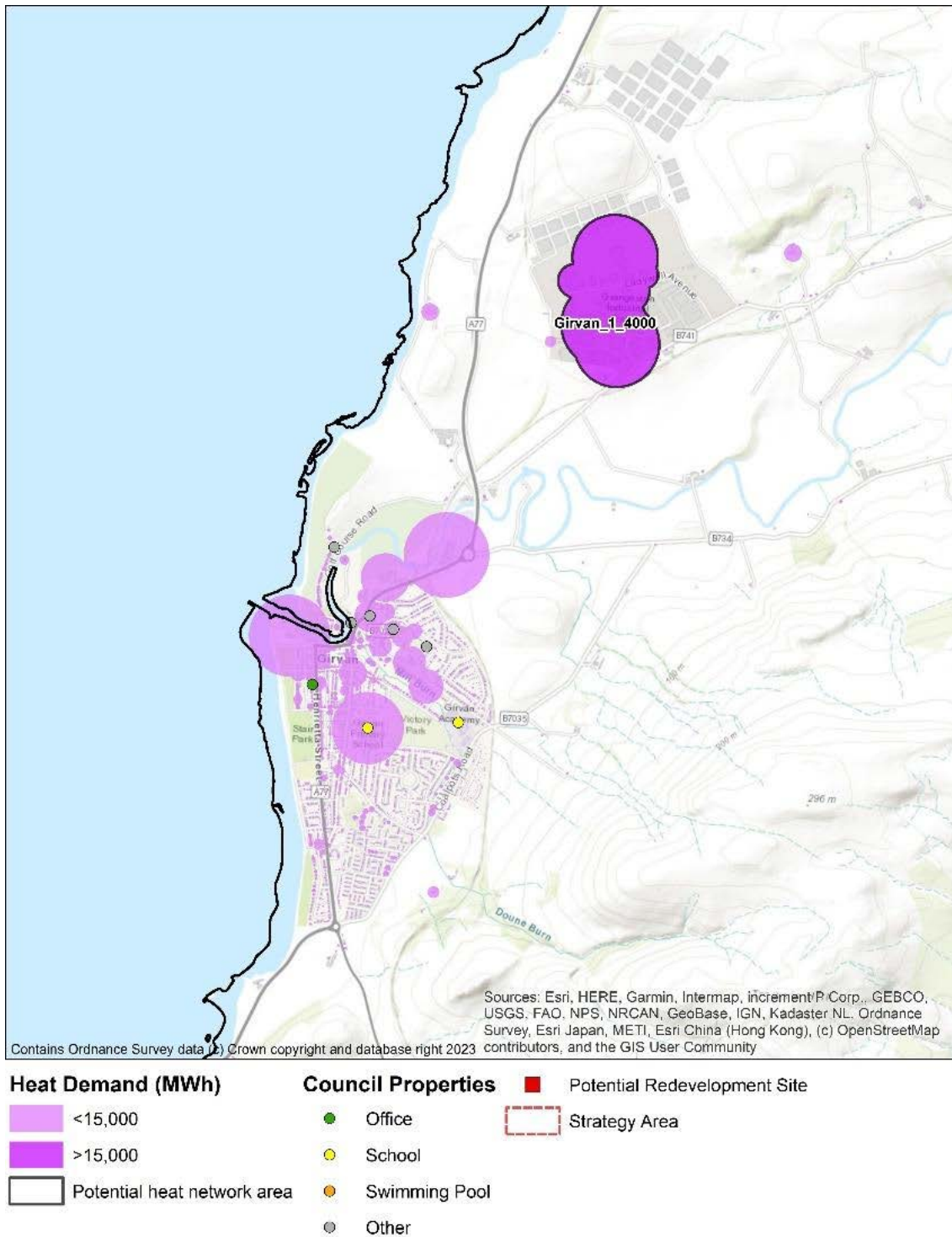
Figure 10: Listed buildings and conservation areas



9.2.2 Girvan industrial cluster

An industrial cluster was identified to the North of Girvan which includes a substantial use of industrial energy including heat. This site has complex energy flows and houses both a Biomass CHP and a substantial anaerobic digestion site and involves a number of industrial businesses. However, a heat network feasibility study determined that there are not currently significant heat demands sufficiently close to the site to allow a district heating scheme to be developed. If significant future developments were to be planned near the site then the opportunity for heat networking could be revisited and local plan zoning may be a lever to influence this. The feasibility study may be revisited in the future.

Figure 11: Girvan industrial heat cluster



There is an existing feasibility study for district heating from the site to Girvan itself, however current markets are not financially viable. The feasibility study will be revisited as the industry develops within Scotland.

It is not within the scope of LHEES to consider other energy vectors, however, the site is in close proximity to the transport corridor containing the A77 connecting the Central Belt of Scotland to the ferry ports of Cairnryan and Larne. As such, there could be a substantial road transport fuel demand in this area and the site, and its energy flows should be considered as part of any future low carbon transport fuels for the area.

Work is continuing on South Ayrshire's latest Local Development Plan (LDP3), guided by the National Planning Framework 4 (NPF4). This iteration will encapsulate South Ayrshire Council's commitment to heat network delivery by:

- coordinating work with LHEES delivery plan actions,
- Requiring new development areas to consider heat network viability,
- Requiring proposals within or adjacent to an existing Heat Network to be designed to connect to the heat network, or allow for future connection to a planned heat network,
- Investigating heat network potential in Southeast Ayr.

Challenges

- Relatively low levels of heat density in South Ayrshire resulting in 3 potential heat network zones,
- Engagement and feasibility are still at an early stage,
- Capital costs and delivery models.

Focus

- **Priority 3:** Coordinate with LDP3 development
- **Priority 3:** Coordination with AEM work to build feasibility studies for identified Heat Network zones,
- **Priority 3:** Redevelopment of Girvan Heat Network feasibility,
- **Priority 2:** Continued skills development in SAC through engagement with other local authorities, industry, and international mentoring programs.

10. Delivery Areas

In this section we set out potential routes to approach interventions, looking at how we identify and prioritise areas for action.

These approaches will use the data developed from the LHEES methodology to show where interventions can be delivered in a way that creates the most positive impact for the funding available. This is done using weighted scores as discussed in section 7. The **full technical report** gives further detail on the assessment and weightings applied to the Home Analytics data in *Appendix C* for intermediate zones, *Appendix D* for data zones, and *Appendix I* for the weighting and calculations. These have been completed in relation to the relevant LHEES considerations as shown in table 1, 4.2.

Delivery areas have been developed for both a spatial and for technology-led approaches.

10.1 Spatial approach

Through the spatial approach, characteristics of buildings have been considered and compared on an area-wide basis with respect to the LHEES considerations. This has been considered at intermediate and data zone levels, with overviews given at strategic zone levels as shown in section 7.

This type of analysis allows locations to be identified for area-based funding and focuses action to where it could deliver the greatest benefit.

Energy efficiency as a driver of fuel poverty

Weighted scores in this section are distributed unevenly across South Ayrshire, with higher scores indicating a greater risk that families are experiencing fuel poverty as a result of poor energy efficiency. There are a small number of zones with significantly worse scores, suggesting that there is value in addressing energy efficiency measures in specific geographical areas.

Fuel poverty is a hugely complex challenge; one that is intrinsically linked to physical infrastructure. As the primary driver for action, all delivery areas will be considered against, and linked to fuel poverty metrics.

Domestic energy efficiency

Weighted scores for domestic energy efficiency are distributed unevenly across South Ayrshire with higher scores indicating poorer energy efficiency and a greater potential for demand reduction. There are a small number of zones with significantly worse scores, showing value in addressing measures in specific geographical areas.

Areas with the highest scores are considered within the priority listings, however this data must be considered against wider factors to be most effective as discussed in 10.2.2.

Amongst the top scorers most homes are in the private sector. This points to a need to address the problems both by spatial zoning and by targeting properties by tenure and technical intervention; for example, a lack of wall insulation is the biggest contributing factor to the weighted score in each top delivery area.

Mixed tenure, mixed use, and conservation areas

Mixed-tenure and mixed-use properties have unique challenges for the implementation of interventions as they have multiple stakeholders to engage that may have conflicting interests. Mixed-tenure buildings are those which have multiple properties of the same use but differing ownership type, whereas mixed-use buildings will have multiple properties in the same buildings that have different use profiles and are not all residential, such as a shop with a flat above it.

Due to the large number of stakeholders and challenges in this area, a dedicated working group is seen as the best course of action for delivery in mixed use and tenure areas.

Relatively few data zones have homes within conservation areas. The top three zones in Ayr South Harbour and Town Centre are amongst the worst performing zones according to energy efficiency scores and so some conservation areas will be priorities in this stage of LHEES. Additional strategic assessment is required early in the LHEES delivery period to work towards decarbonisation in this area, prioritising where fuel poverty can be positively impacted.

The top data zones for listed domestic properties are Ayr South Harbour and town centre, Troon and Carrick north. These are also some of the poorer performers from the point of view of energy efficiency. Consequently, as in the conservation areas, further strategic assessment for this building type will be developed early in the LHEES delivery phase.

Challenges

- Mixed tenure, mixed use, conservation areas and listed buildings present significant challenges in area-wide decarbonisation,
- Traditional high street buildings present increased challenge.

Focus

- **Priority 1:** Ensure that all LHEES delivery area prioritisation considers fuel poverty metrics,
- **Priority 2:** Creation of working group to ensure mixed use and tenure buildings are considered within area wide approaches,
- **Priority 2 & 3:** Monitor nation landscape and connect and build on current internal capacity for further strategic assessment of conservation and listed building

10.2 Fuel Poverty

The fuel poverty indicator analysis used in the baseline tool was supplemented with additional analysis based on the heat demands and fuel type presented in the Home Analytics dataset and the subsequent cost to the heat each property based on the utility prices given in Table. This building-level analysis was aggregated to intermediate zone and is intended to provide an indication of how affordable it is to heat houses in each area and is not a detailed prediction.

Table 8: Fuel prices used in fuel poverty analysis

Fuel	Autumn 2023 Price Cap
Electricity Rate	£0.270
Mains Gas	£0.070
Oil	£0.116
LPG	£0.119
Biomass/Solid	£0.068
Standing Charges	
Mains Gas	£0.45
Electricity	£0.27

The number of homes in each income decile are given in Table; 60 % of homes are in decile Five or lower. The 10 least affordable Intermediate Geography Zones, those with the fewest percentage of homes which could be affordably heated by households in income decile Five or lower, are listed in in Table.

Table 9: Number of homes by SIMD income decile

SIMD Income	Number of homes	Percentage of homes by income decile
One	5,920	10%
Two	4,960	9%
Three	4,080	7%
Four	9,980	17%
Five	9,790	17%
Six	2,840	5%
Seven	4,430	8%
Eight	4,230	7%
Nine	7,250	13%
Ten	3,840	7%

Table 10: Percentage of homes which could be affordably heated by households in income decile five or lower

Strategic Zone	Percentage of homes which could be heated by households in income decile five or lower without being in fuel poverty
Carrick	18 %
Kyle	60 %
Girvan	73 %
Ayr	74 %
Prestwick	74 %
Troon	78 %
Maybole	84 %

10.2.1 Social Impact of Multiple Deprivation

The Local Heat and Energy Efficiency Strategy and Delivery plan consider fuel poverty where it can be reduced through energy efficiency measures. Understanding which locations have higher rates of overall deprivation as well as specifically income deprivation, can inform decisions on areas of focus.

Figure 12: Map of overall SIMD rank

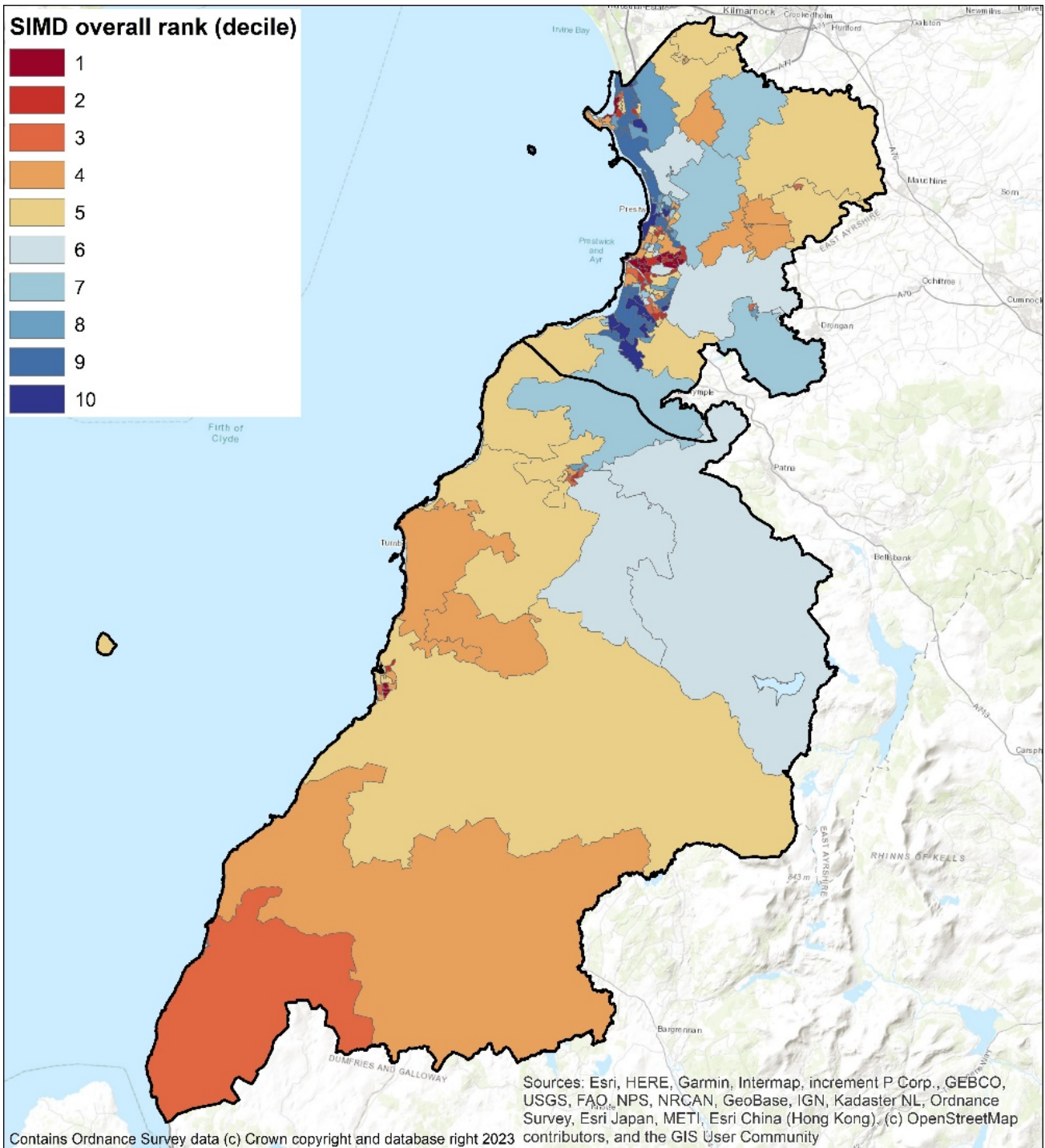
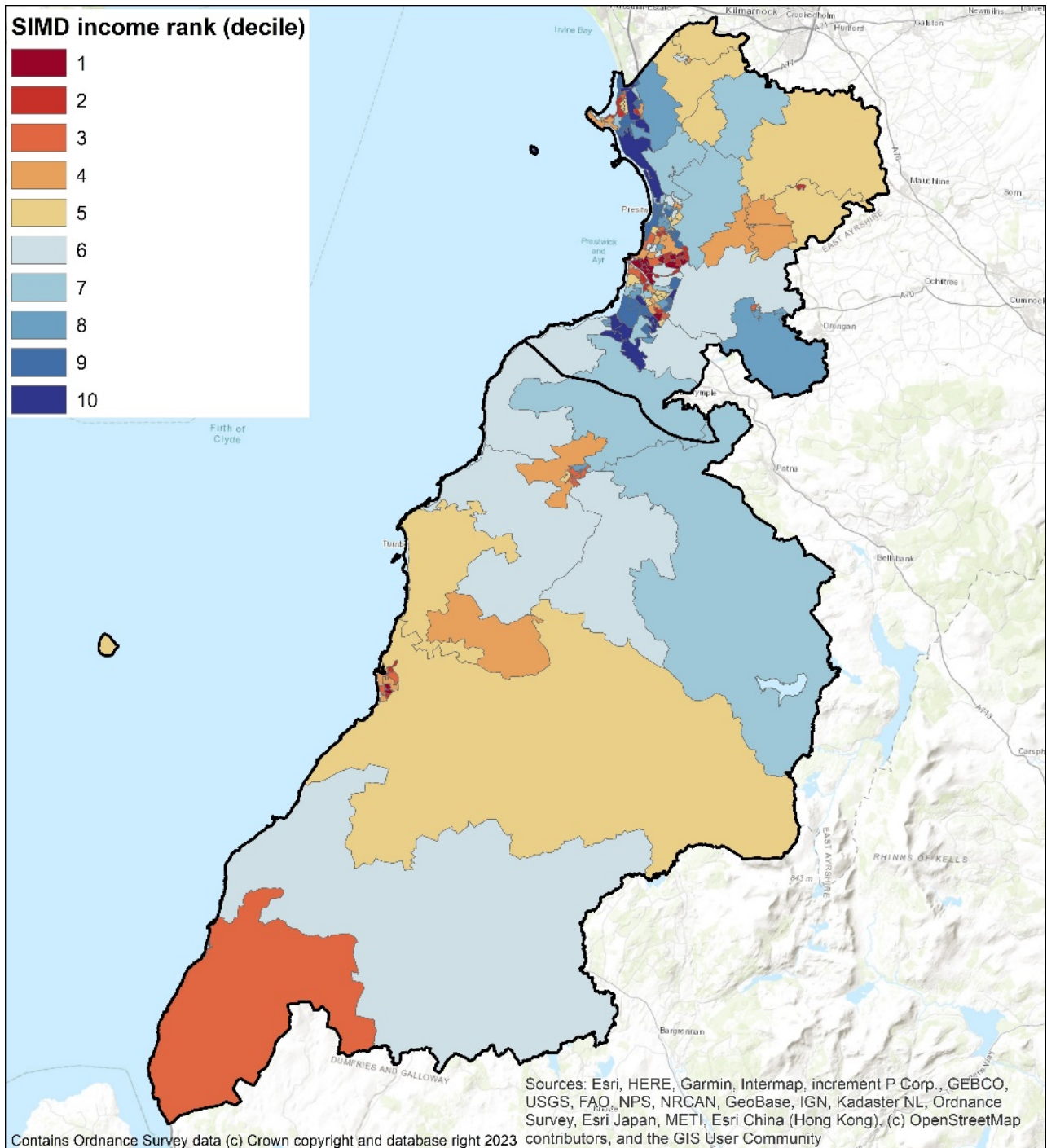


Figure 13: Map of income SIMD rank



10.2.2 Overlaying Multiple Considerations

The analysis has generated various rankings for the purpose of determining where to start with interventions. The Weighted Energy Efficiency Score and Fuel Poverty rankings are, thanks to the latter being based on the former, very highly correlated and can be used interchangeably with similar outcomes. However, SIMD and income ranks are not correlated with the Weighted Energy Efficiency Score. Data zones with the worst energy performance are found to be ones which are relatively affluent, so addressing funding towards fuel consumption reductions would not address the issue of real-world fuel poverty. However, since there are likely to be income poor households in areas which are more affluent on average, the poor energy efficiency of those properties or the relative lack of energy efficient properties does still warrant targeted investigation and intervention. This will be developed within the time frame of this iteration of LHEES.

Health Inequalities

The impacts of fuel poverty are not only financial but have significant consequences for health and wellbeing. Poor property repair, dampness, and low temperatures all impact physical and mental health, leading to increases in respiratory illness, increased risk of heart disease, worsening conditions like arthritis, and increased levels of anxiety and depression. In 2023 it was estimated that the NHS spends £1.4 billion annually treating illness associated with living in cold or damp housing¹⁷.

Partnership working between NHS A&A and SAC will look at assess the viability of identifying households at risk of health effects from cold homes, allowing more granular assessment for delivery of interventions. Combining this with characteristics such as single parents or pensioners, or pre-payment meters, could further refine areas of focus where available.

Challenges

- 60% of homes in decile 5 and lower
- SIMD and income ranks are not correlated with the Weighted Energy Efficiency Score
- Multiple factor assessment required

Focus

- **Priority 1:** Integration of SIMD ratings in intervention targeting,
- **Priority 1:** Investigation into further overlaid datasets and considerations,
- **Priority 2:** Cross departmental and partnership working to ensure LHEES actions connect to other strategy, policy and projects.

10.3 Technology-Led Approach

As an alternative to the spatial approach, this approach groups interventions by tenure and fuel type, which would affect the viability and benefit of key technology interventions. This allows alternative means of targeting properties for interventions, either in our own properties or to assist other stakeholders in identifying changes they can make.

10.3.1 Technology Groupings

In addition to considering the data on buildings from the view of a weighted score by data zone, analysis was carried out to assess interventions based on fuel type and tenure. The LHEES is a strategy for the whole of South Ayrshire Council area, therefore it is important to consider not only what measure can be implemented but who the decision maker is for these measures. This cost benefit comparison will be a vital element of engaging with stakeholders and the wider public.

The Council can play a different role in encouraging the installation of energy efficiency, and the adoption of low carbon heat sources, so this analysis is intended to inform decisions throughout the next 5 years.

Energy efficiency measures are considered key interventions to help both reduction of fuel poverty and decarbonisation by reducing heat demands leading to lower carbon emissions. In addition, the implementation of energy efficiency measures improves the operational effectiveness and the sizing requirement of heat pumps.

¹⁷ [Health Inequalities: cold or damp homes – UK Government, 2023](#)

There are two heating technologies which have the most potential to improve both energy efficiency, contribute to decarbonisation and potentially reduce fuel poverty. District heat networks (section 9) are a key technology in areas with higher heat density makes them viable and in some new build estates. The second option, which is the main route forward for buildings across South Ayrshire, is installation of heat pumps either for a specific dwelling or a communal system serving a number of dwellings, such as a block of flats.

There are a range of technologies which could be considered for properties less suitable to heat networks or conventional air-to-water heat pump technologies. These include biomass, direct electric heating, air-to-air heat pumps, and high-temperature or 3-phase air-to-water heat pumps.

The data on each individual property has been assessed and the measures that each property is suitable for has been estimated. They are grouped according to LHEES consideration and tenure.

It should be noted that these represent a list of all potential interventions, rather than specific projects or commitments. This can be seen in the **full technical report**, table 14, section 8.2.3.

10.3.2 Heat Pump Suitability

This section highlights where there are a significant proportion of properties where there is a greater challenge with implementing a heat pump solution, even after reasonable energy efficiency measures are considered.

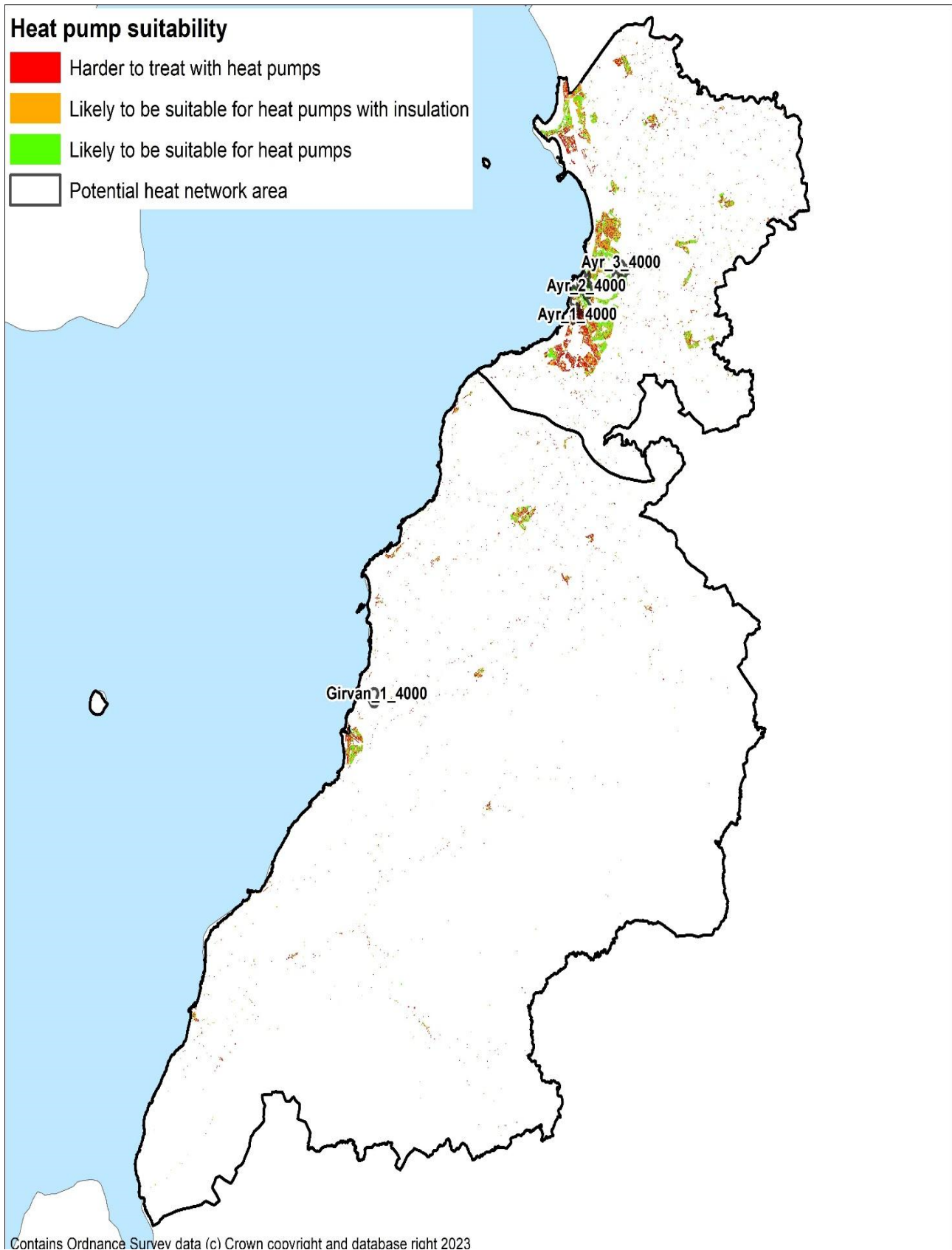
Low temperature solutions may be possible by solving challenges for a specific building type. Other technologies such as air-to-air heat pumps or exhaust air heat pumps may have specific applications such as small flats with few rooms.

There are a range of possible solutions depending upon the building type, however when combining the heat network analysis with the potential for heat pumps this shows where there are clusters of properties which are likely to be hard to treat.

Further analysis of these clusters could be considered to identify which solution is most appropriate for that specific area. While it may be that an ideal solution is then found, it may be that none of the possible solutions are ideal. In this case, engaging with stakeholders and understanding the specific needs of building owners and households is going to be particularly important. Detailed maps are provided in Appendix C, and a mapped overview of heat pump suitability is shown below in Figure 14.

The metrics used give an overview of physical heat pump suitability only. This metric does not consider factors such as unheated homes discussed in 11.2. As such, any delivery work relating to these metrics would consider wider factors alongside.

Figure 14: Heat pump suitability and potential heat network areas



10.4 Initial Focus Areas

From the initial data outputs from the baseline toolkit, the highest ranked zones where poor energy efficiency is a driver for fuel poverty are shown in table 11. The **Full Technical Report** examines this to data zones level in Appendix B.

The weighted scores combine energy efficiency measures and fuel poverty metrics, with a higher score showing greater need for intervention. The properties in table 11 represent over 50% of South Ayrshire’s total, so data zone level analysis will be used to assess the highest ranking areas within each strategic zone against SIMD rankings.

A work stream is being assessed to integrate health inequality data to ensure greater granularity of approach. This will be reviewed over the next 18 months to assess viability.

Delivery plan actions have been formed to assess the top third of SAC owned properties in each of the most affected areas.

Table 11: Domestic fuel poverty resulting from poor energy efficiency – highest ranked zones (default weightings)

Zones with highest total weighted score	Total weighted score	Number of properties in zone
Carrick South	33	2,813
Girvan Ailsa	31	1,811
Ayr South Harbour and Town Centre	27	3,376
Ayr North Harbour, Wallacetown and Newton South	24	3,211
Maybole	23	2,355
Prestwick West	23	2,060
Girvan Glendoune	22	1,618
Troon	21	2,983
Lochside, Braehead and Whitletts	20	2,121
Annbank, Mossblown and Tarbolton - the Coalfields	20	2,738
Prestwick East	20	2,594
Dalmilling	19	1,249

11. Pathways for all of South Ayrshire

11.1 Decarbonisation of Heat Pathway

The journey to the decarbonisation of each domestic property in South Ayrshire is shown in Figure 15.

The first column shows the proportions of properties which begin with each fuel source.

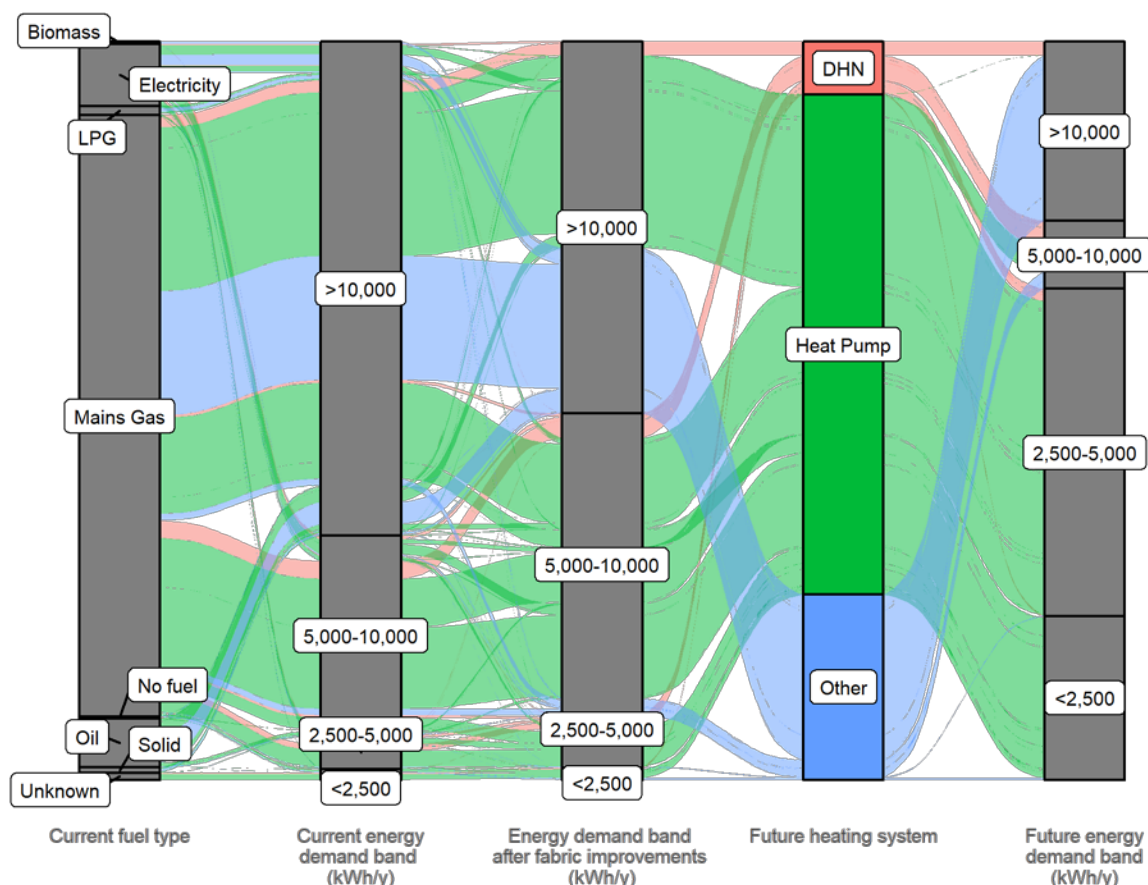
The second groups the properties by their current total heat demand in kWh/year.

The third column show changes to heat demand once reasonable energy efficiency measures have been applied.

The fourth column shows how suitable each property is for each of the low carbon heat measures. This assumes all listed heat network zones are developed but doesn't consider further expansion.

Finally, the column on the right shows the final future heat demand.

Figure 15: Decarbonisation and energy efficiency pathway



The shifting of individual properties down from one energy demand band to the next is visualised in Figure 16, where the comparison of heat pumps to direct electric heating shows how effective heat pumps will be in reducing the risk of fuel poverty.

At a local authority level, Figure 17 shows how interventions and shifting demand could reduce the total heat energy consumption. It is also shows that heat pumps on their own make a bigger difference to energy demand than fabric improvements but fabric improvements have a vital role in both demand reduction and in making homes suitable for heat pumps.

Figure 16: Shifting energy demand by fabric improvement and heat pump installation

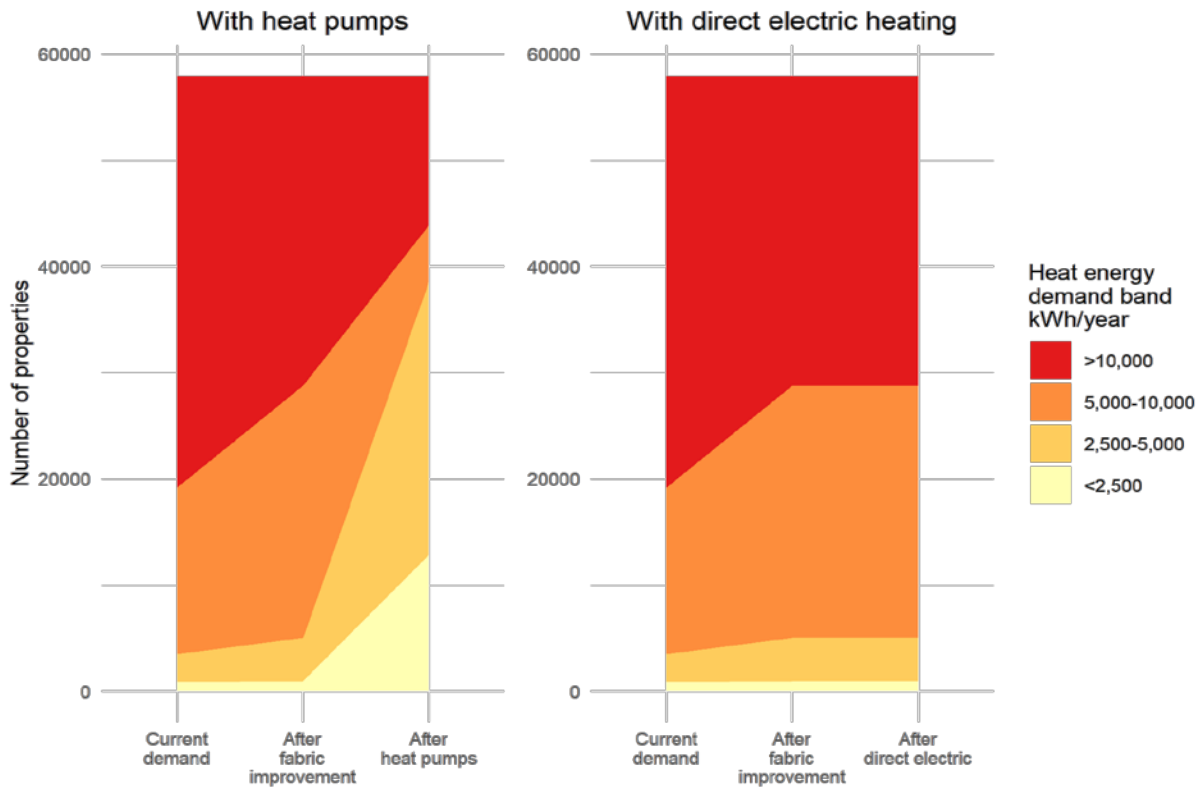
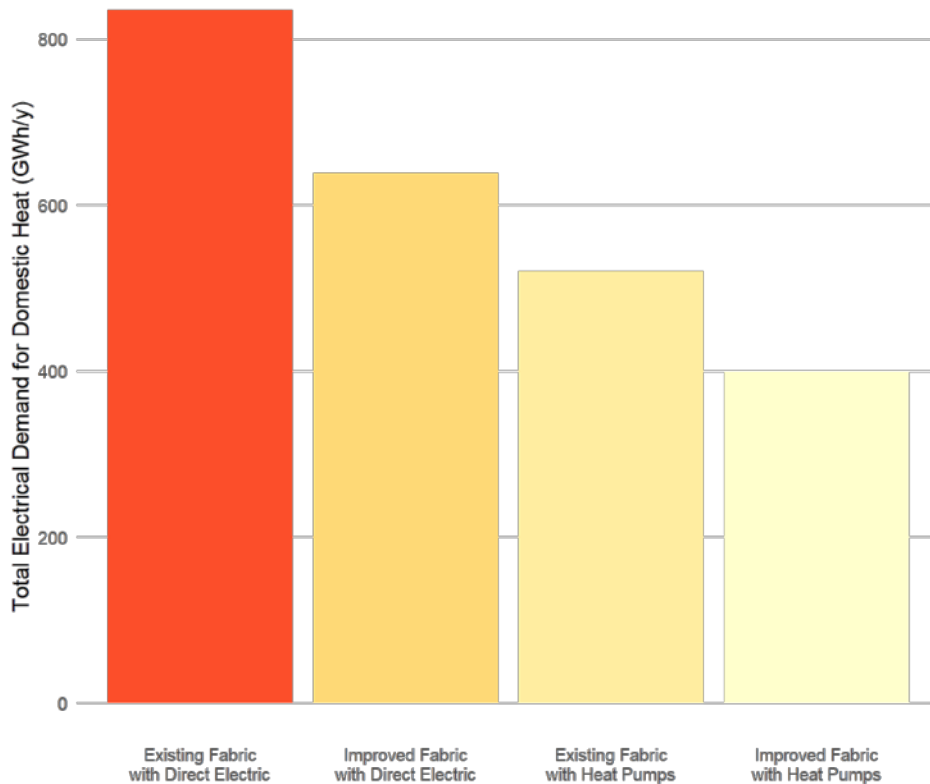


Figure 17: Total electricity demand reduction after energy efficiency measures and/ or heating system upgrade



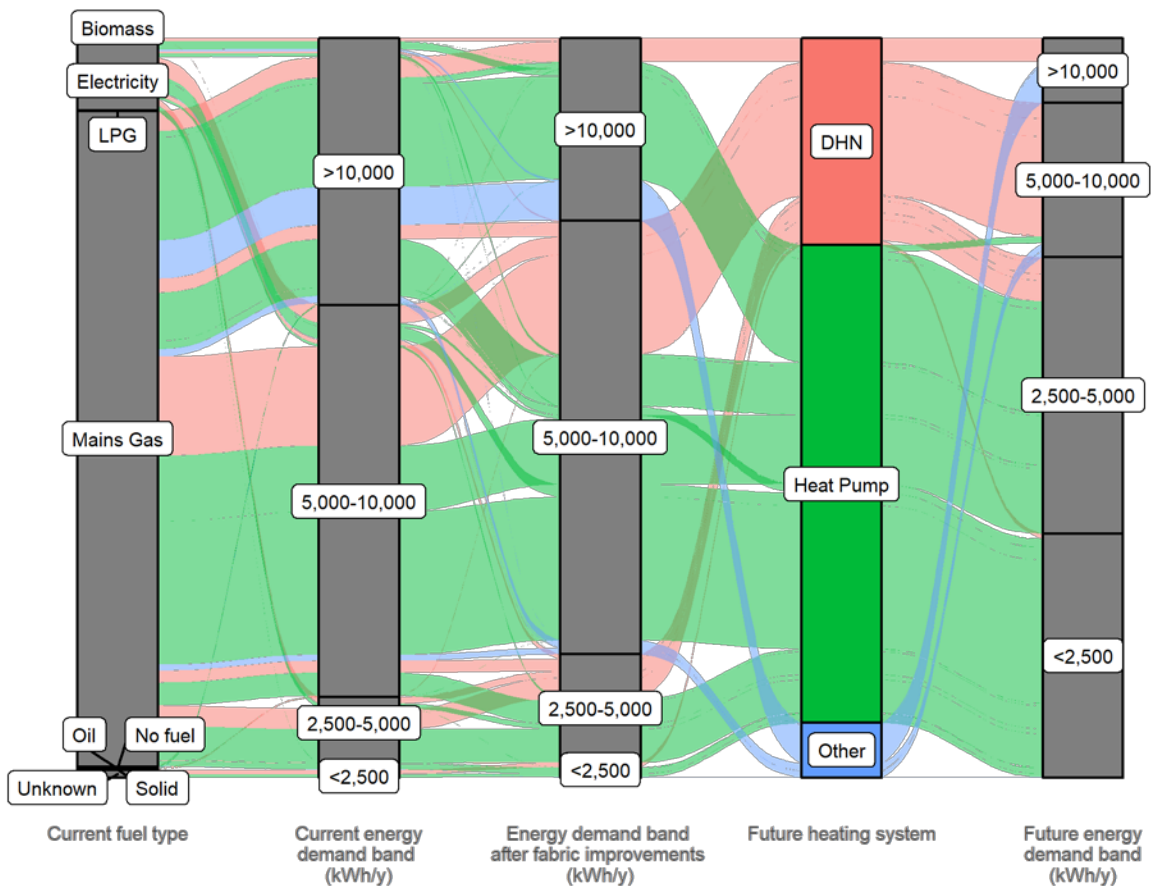
11.2 Fuel Poverty

Reducing the heat demand of the buildings through installing energy efficiency measures is clearly important as it can both reduce the amount of heat to be decarbonised and the cost of heating. This

section examines the properties in the areas with the lowest SIMD score to illustrate the combined effect of energy efficiency and low carbon heating on the amount of energy that the household would have to pay for, to fully heat their home and, consequently, on their risk of fuel poverty.

Figure 18 shows the decarbonisation journeys for properties which have a SIMD score of 1, the most deprived areas. This shows the main heating fuel they use at present, the proportion of properties in each energy demand band (kWh/year) and then the numbers in each band after energy efficiency measures and low carbon heating technologies are installed.

Figure 18: Effect of actions in all properties in SIMD 1 areas – energy efficiency and heat pumps



Installing energy efficiency measures significantly reduces the number of properties with heat demands of over 10,000 kWh/year and is the priority approach to tackling fuel poverty. Utilising heat pumps reduces this further to a very small proportion but also results in one quarter of homes being in the lowest band, with an annual demand of <2,500 kWh/y. For the purposes of this Strategy, heat pumps would be considered the preferred solution to minimise fuel poverty, in properties where low-cost district heating is not an option.

Other factors

There are several factors which affect fuel poverty and outlining the effect of energy efficiency measures in improving fuel poverty is complex. Household income after housing costs has a significant effect but is out of scope of this Strategy.

Unheated homes

The Scottish Housing Condition Survey 2019¹⁸ states:

¹⁸ [5 Energy Perceptions - Scottish house condition survey: 2019 key findings - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/energy-perceptions-2019/pages/10-12-2019-key-findings.aspx)

23 % of fuel poor and 28 % of extreme fuel poor say that their heating keeps them warm enough in winter "only sometimes" or "never",

For these households, reducing the heat demand through insulation both reduces how much it would cost them to heat their home, should they be able to do so, and limits the temperature to which the property will fall in any periods when they do not or are unable to heat it. For those at highest risk of not heating their homes the decision as to whether to focus capital spend on additional insulation measures or lower cost heating systems is therefore complex.

With insulation measures, there are a range of measures which have different costs and energy reductions and there is no single approach suitable for all buildings or situations.

11.3 Heat Networks

Heat networks have a role to play in the future of heat in South Ayrshire. Heat networks can be either district heating schemes, which are strategic scale developments where multiple buildings are connected, smaller heat networks, within a single campus, or communal heating systems in a specific building. Within this Strategy, the phrase "heat networks" refers to district heating schemes where multiple buildings are connected by underground pipework.

The suitability of the buildings for connection to heat networks is not known. Further work such as Building Assessment Reports (BARs)¹⁹ and engagement with stakeholders is important to inform future decisions on these sites.

Even in the zones where heat networks are an option, there are differences between the domestic properties which are most likely to be suitable, such as blocks of flats, and properties which are less likely to be suitable, such as detached houses²⁰.

Therefore, due to both the limited proportion of properties in areas where heat networks are likely to be viable and there being properties unlikely to be suitable for connection, it is essential that we consider all other low carbon heat sources in parallel.

This does not preclude heat networks being developed to their full potential and it may be that a phased approach to heat networks and district heating could see smaller networks initially focus on the most viable properties with further expansion at a later date.

11.4 Individual and Communal Heat Pumps

Of the technologies currently available to supply low carbon heat, heat pumps have been assessed to be currently suitable for the majority of buildings. Heat pump deployment, and the role they play in decarbonising buildings, **has to lead to a cost of heat that is comparable to natural gas boilers and the user experience of operating the systems has to be positive.** There are examples of people having bad experiences living with heat pumps and while there are equally many good experiences, it is essential to understand what is required for heat pumps to meet the needs of residents. In order to ensure that the heat pump systems installed are of good quality and perform as expected, the sharing of good practice and case studies is emphasised.

South Ayrshire Council will work with internal stakeholders to consider the most appropriate low carbon heating system for properties that it owns as well as working closely with social landlords to share the latest information on issues such as: good practice; communication with tenants prior to installation; sharing information with tenants on how to operate systems which have been installed; peer to peer support within the community; the role of the advice services in supporting tenants.

¹⁹ [Heat networks: Building Assessment Report \(BAR\) guidance - gov.scot \(www.gov.scot\)](https://www.gov.scot/resources/documents/2022/04/Heat-networks-Building-Assessment-Report-BAR-guidance-2022-04.pdf)

²⁰ Detached houses may be considered to be less suitable to connect due to the individual sections of pipework that are required to connect the buildings to the network, on a linear heat density approach, the longer the connecting pipework, the "harder" the pipework has to work to satisfy loads.

It is essential that there is a supply chain which is capable of installing the technologies set out above. We will consider what actions the Council could take to encourage a local supply chain of low carbon heating installers.

While it is for each property owner to make their own decision on the heating system they prefer, there is a role for the Council in ensuring that accurate and up-to date information is available to households, tenants, landlords and owner occupiers to support decision making. This is likely to include signposting to national advice schemes operated by Scottish Government or UK Government.

Finally, for any new technology ensuring quality of installation is important to ensure that it meets the needs of households, tenants and property owners. The Council will work with stakeholders to identify any role that South Ayrshire Council can play in ensuring the quality of installations as well as referring to national schemes such as the Microgeneration Certification Scheme.

Challenges

- Pathways represent long term ambitions and commitment,
- Skills and supply chain shortfalls are a national challenge,
- Poor quality or inappropriate interventions can make fuel poverty worse.

Focus

- **Priority 1:** Ensure multi-level assessment on interventions to prevent adverse effects on fuel poverty,
- **Priority 2:** Engagement with further and higher education organisations on potential industry and skills development
- **Priority 2:** Undertake local skills assessment and identify shortfalls,
- **Priority 3:** Maintain engagement with UK and Scottish Government's industry regulation on heat network development.

12. Pathways for Strategic Zones

The figures below show pathways for all domestic properties within the South Ayrshire Council areas, from the left:

- the heating fuel each uses today,
- the energy demand of the property per unit of floor area,
- the energy demand after the application of reasonable energy efficiency measures, and,
- finally, the most suitable heating technology for each property at present.

These are detailed further in the **full technical report**, Section 10.

Figure 19: Decarbonisation pathway for domestic properties in Ayr

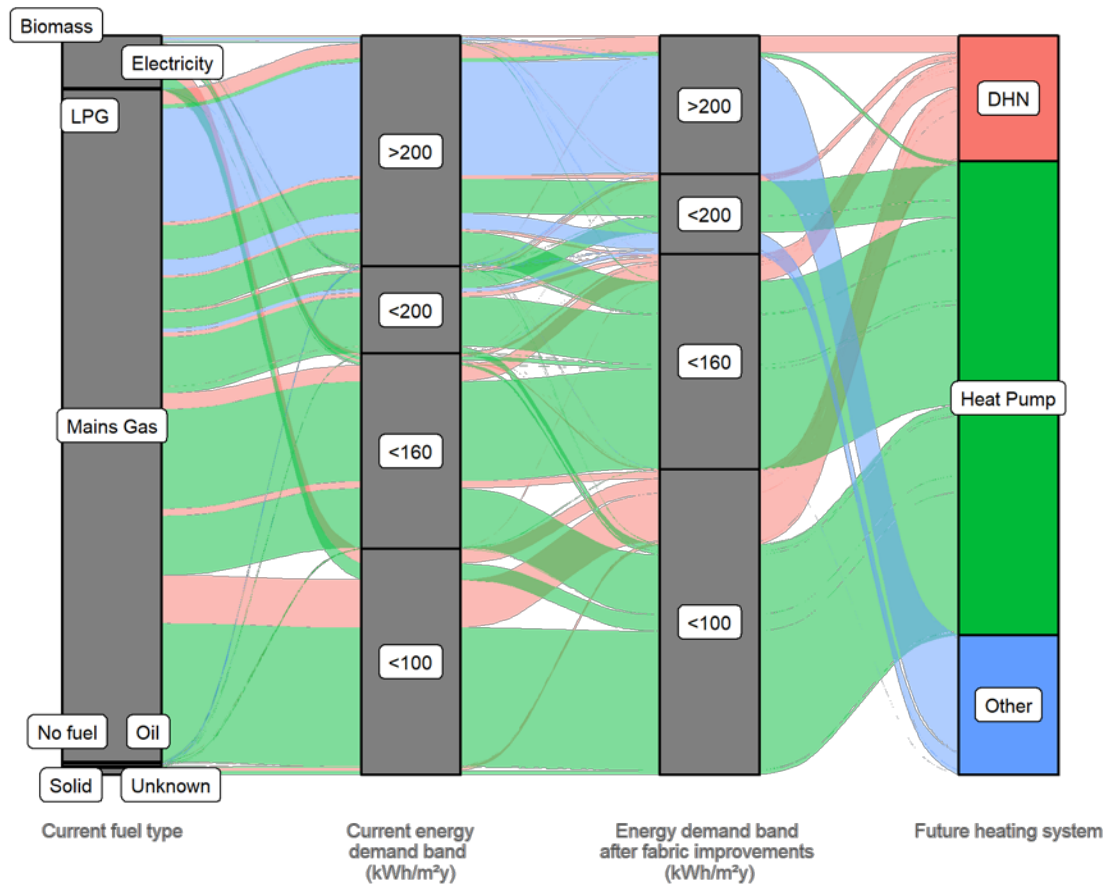


Figure 20: Heat decarbonisation pathway for Carrick

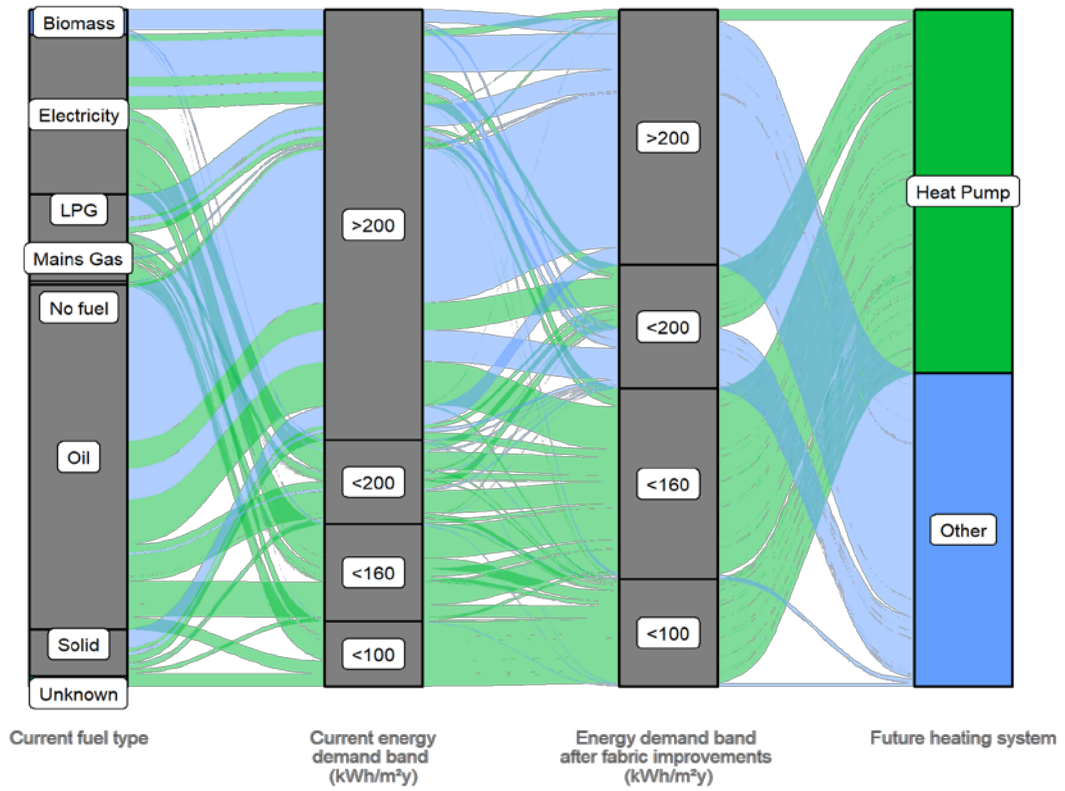


Figure 21: Heat decarbonisation pathway for Girvan

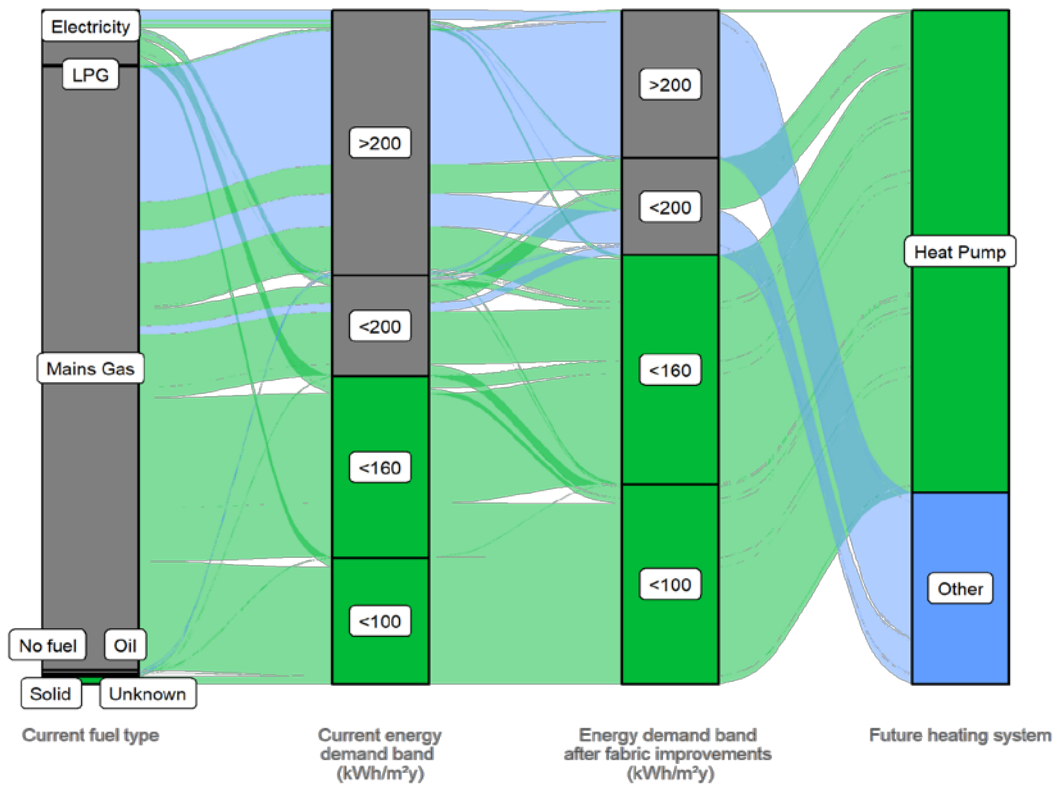


Figure 22: Heat decarbonisation pathway for Kyle

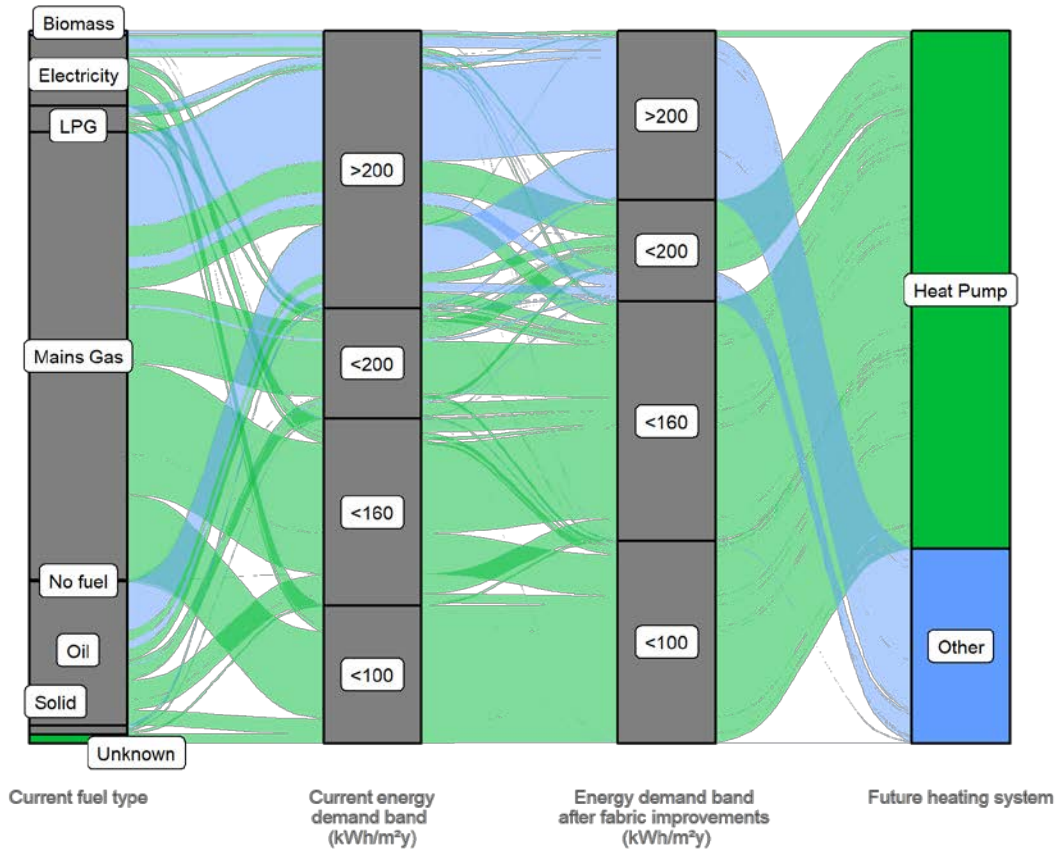


Figure 23: Heat decarbonisation pathway for Maybole

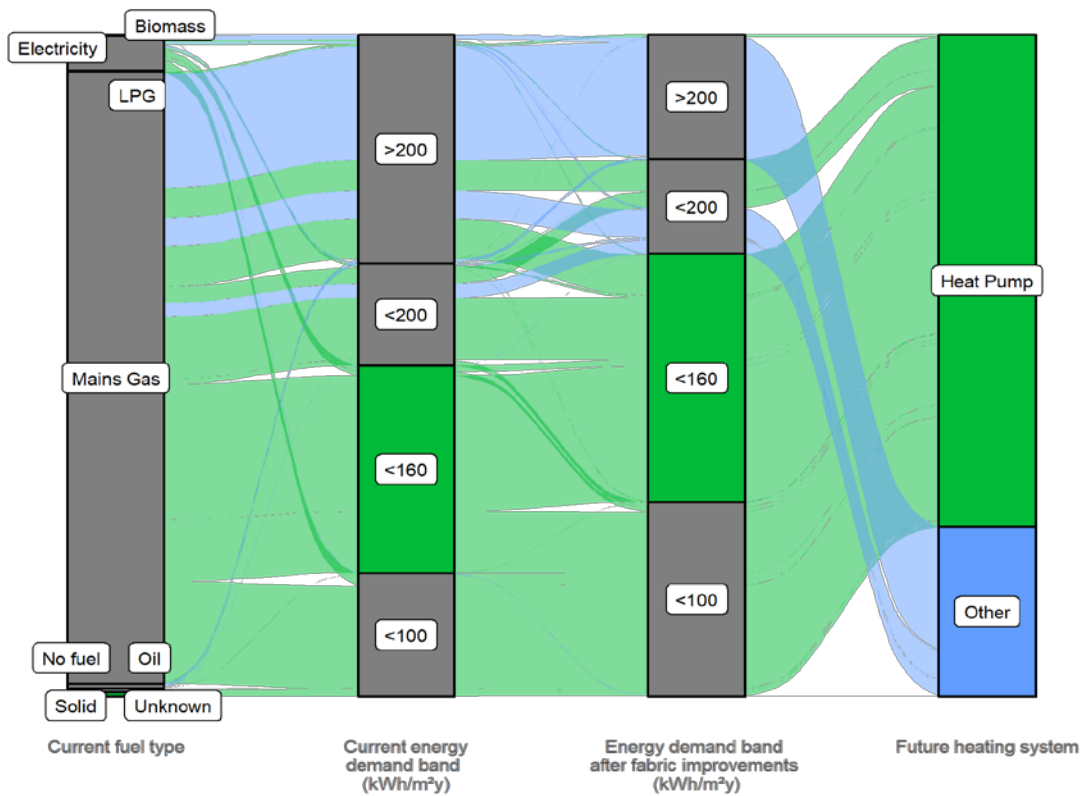


Figure 24: Heat decarbonisation pathway for Prestwick

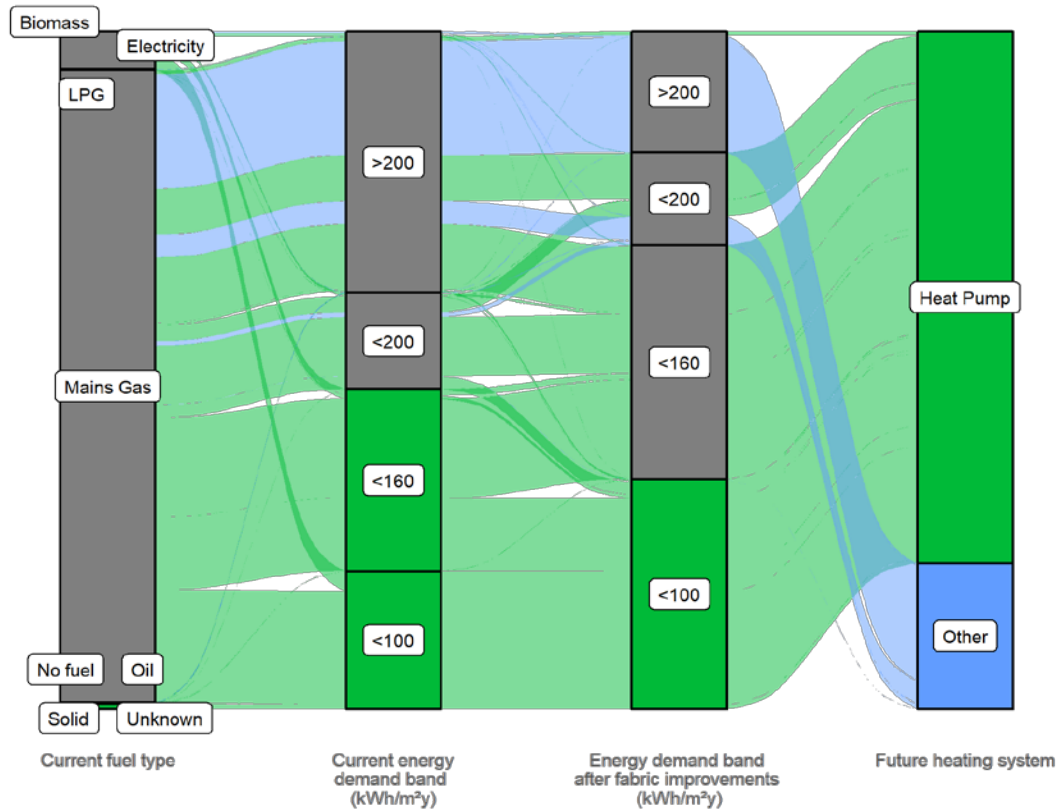
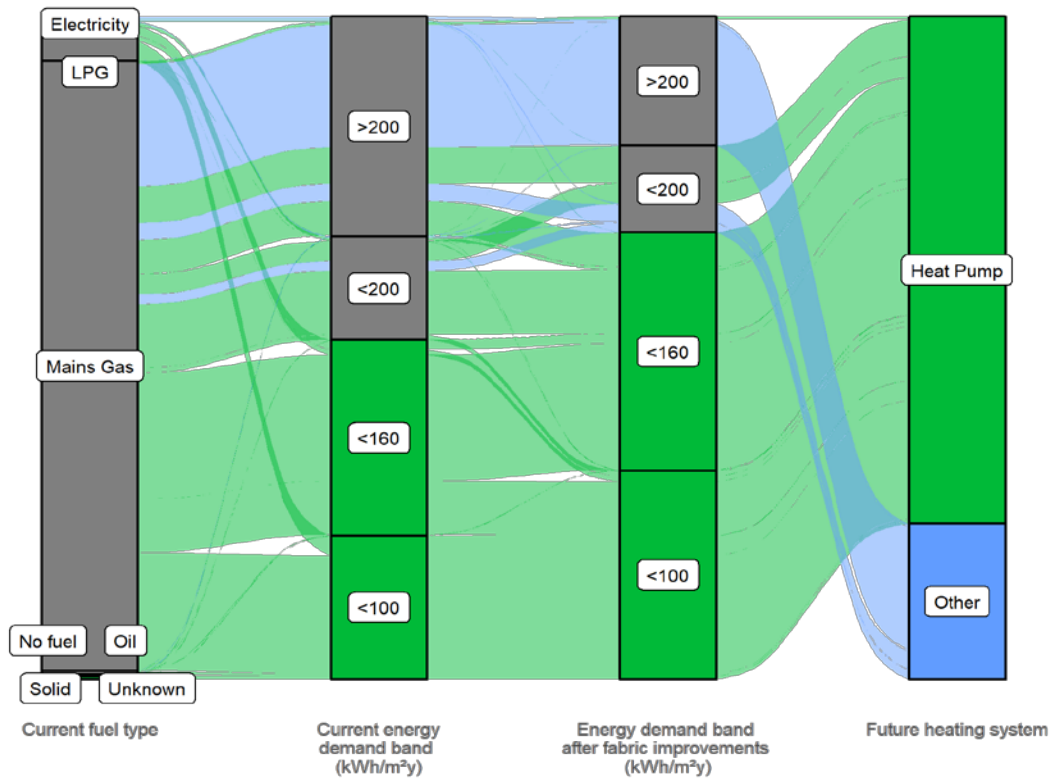


Figure 25: Heat decarbonisation pathway for Troon



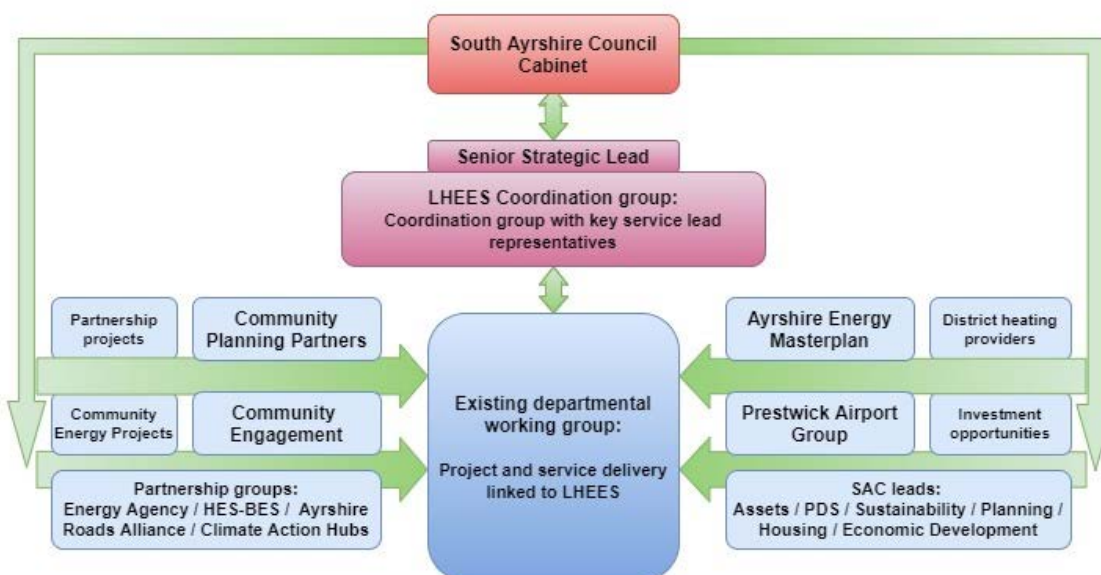
13. Governance

This LHEES provides a first step towards decarbonising heat and reducing fuel poverty in South Ayrshire. In improving energy efficiency and prioritising low carbon solutions in areas where they can have the greatest impact, this strategy can support council and commercial investment, community engagement and wealth building, and an equitable energy transition. The delivery plan proposals are built from the data from the LHEES methodology and provide a series of potential projects from the challenges identified.

These challenges cannot be delivered in isolation by a single department, or by the Council alone. As such it is vital that a governance structure be put in place to ensure collaboration between internal and external stakeholders.

Figure 26 provides a structural overview for governance in this area.

Figure 26: Outline LHEES Governance model



The LHEES Coordination group will provide strategic oversight and guidance for the development and implementation of the Council's LHEES strategy and delivery plan. Each member of the group will provide insight from their area of expertise to support existing delivery plan actions and refine new and existing areas of intervention, with support from the LHEES officer. They will also ensure decisions made by the group are adhered to by services.

The group will provide information and scrutiny on:

- Development and attribution of LHEES delivery plan actions,
- Development of heat network projects,
- Risk and issue identification,
- Wider stakeholder identification and engagement,
- Dissemination of information,
- Benefits realisation and reporting.

Group responsibilities

Each group member would be responsible for service level identification of:

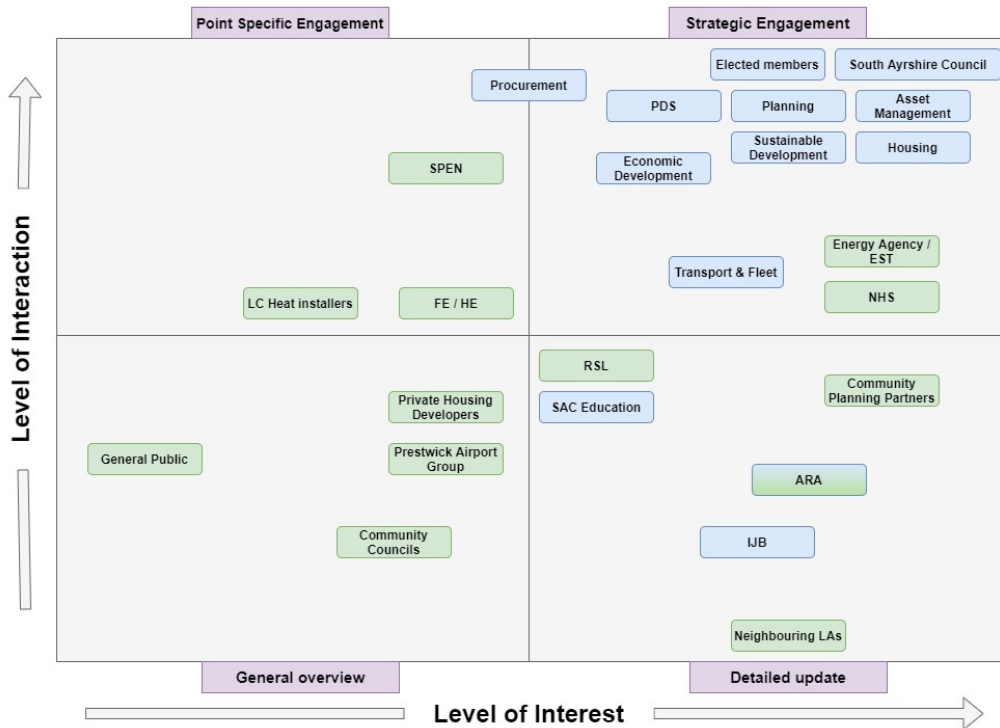
- Existing or potential projects relevant to LHEES,

- Co-working opportunities,
- Relevant legislative changes and consultations,
- Alignment of service level projects with strategic priorities,
- Attribution and implementation of service specific delivery plan actions.

Membership

The LHEES Coordination group membership is identified below as those with high levels of interaction and interest in the strategy and delivery plan.

Figure 27: LHEES engagement matrix



From this, we derive 4 levels of interaction with associated groups:

- **Strategic engagement** – membership of the governance group.
- **Point specific engagement** – engaged with on specific projects rather than the strategy as a whole.
- **Detailed updates** – detailed information on strategy and project progress shared regularly to assess synergies.
- **General overview** – general information about overall progress shared periodically.

As such, the following departments and officers have been identified to participate in the governance group.

Tracking and Reporting

The group will track and report progress through a series of routes:

Feedback to Portfolio Holder: Buildings, Housing and Environment by Service Lead Asset Management. Where appropriate membership officers will report actions back through in-service routes to respective portfolio holders to expand engagement.

Local Outcome Improvement Planning – As Energy is one of the four identified Community Planning Partnership areas, relevant six-monthly/quarterly progress reports will be provided to the board.

Annual Cabinet report & Members Briefing – with the annual review of the delivery plan actions, progress on existing actions and proposed actions for the year ahead will be delivered to cabinet annually, with an accompanying members brief on progress and intent for the year ahead.

Focus

- **Priority 1, 2, & 3:** Convene quarterly meetings of the LHEES Coordination group, ensuring actions are tracked through the Council's performance monitoring systems, and where appropriate partner organisations own development routes.

Initial meetings will review and assign delivery plan objectives to services and other responsible attendees.

14. Delivery Plan Proposals

As part of the LHEES process, a delivery plan has been prepared to support and direct actions. This is a live document, updated regularly to reflect changes in national and local circumstance. As such, the proposals below are an initial overview of potential actions, that are likely to evolve over the course of the next year.

The delivery plan actions will be attributed to services through the LHEES Coordination group and monitored on an annual basis.

Table 12: Delivery Plan Actions

Action No.	Action	Timescale
1	Ensure sufficient dissemination of SAC LHEES delivery plan to all key internal and external stakeholders.	2024
2	Set up the working groups highlighted for: <ul style="list-style-type: none"> - LHEES Coordination group, - Specific issue areas such as mixed use/tenure and historic buildings 	2024-25
3	Establish governance structure and agree meeting schedules	2024
4	Engage with other LA's, Universities, NHS trusts and other large public sector organisations to learn from their experience of decarbonisation and LHEES considerations on large estates.	2024-25
5	Engage with the public using educational material on energy efficiency, technologies, funding opportunities, methods to reduce heating bills, and suitable tariffs to encourage early adopters of heat pumps.	2024-29
6	Engage with the public on heat network potentials and technologies	2025-29
7	Create a shared forum for lessons learnt from early adopters on heat pump operational best practices.	2025
8	Create ongoing case studies of SAC decarbonisation and fuel poverty reduction implementations, and learn from other case studies, to create a live up to date lessons learnt document. Including contacting MCS/Ofgem/Scottish Government/UK Government about current heat pump performance and how to make sure high COP and a good experience is achieved.	2024-25
9	Continue engagement with SPEN to monitor network constraints to coordinate transition work.	2024-25
10	Engage with other local authorities, local colleges, and local installers to assess skills gaps in heat pump delivery.	2024-26
11	Assess potential routes for the long-term investment required for the interventions.	2025-29
12	Engage with supply chains to allow the visibility of secure pipeline of work for several years to come, to encourage growth of local skills and reduce the risk of local skill shortage.	2025-29
13	Complete pre-feasibility studies on proposed heat network zones.	2025-27
14	Coordinate with Planning on LDP3 on Heat Network zone development and routes to support development	2024-26
15	Annual monitoring/report of gas prices compared to typical cost of heat from heat networks to ensure potential heat networks do not worsen fuel poverty.	Ongoing
16	Commence development of business cases in all heat networks deemed feasible.	2027-29

Action No.	Action	Timescale
17	Assess loft insulation upgrades in the top third of LHEES data zones for SAC owned dwellings.	2025-26
18	Assess cavity wall insulations interventions in the top third of data LHEES zones for SAC owned dwellings, record ongoing progress.	2025-26
19	Assess hot water cylinder insulation upgrades in the top third of LHEES data zones for SAC owned dwellings.	2025-26
20	Assess internal or external wall insulation upgrades in the top third of LHEES data zones for SAC owned dwellings.	2026-27
21	Assess single to double glazing window upgrades in the top third of LHEES data zones for SAC owned dwellings.	2027-28
22	Assess with partner organisations and national groups any pilot studies / demonstration projects / field trials on heat pump deployment and operational best practises.	Ongoing
23	Assess heat pumps potential on case-by-case basis in properties that are currently using LPG/Oil/Solid fuels. Focus on the top third of data zones that are SAC owned.	2025-29
24	Assess heat pumps potential in properties that are currently using direct electric heating. Focus on the top third of data zones that are SAC owned, where they can be made suitable for heat pumps	2025-29
25	Coordinate with Scottish Government and collect improved datasets for 5 yearly LHEES update.	Ongoing
26	5 yearly update of LHEES.	2029

Challenges

- Wide range of potential actions and areas, cross-cutting multiple council departments, organisations, groups,
- Technology and legislation will develop over the course of this action plan.

Focus

- Maintain focus on identified LHEES priorities,
- Development and service level attribution of actions through LHEES Coordination group.

Appendix A: LHEES Scope, Limitations and Approach

Strategy Scope and Limitations

The scope is focused on heat decarbonisation, energy efficiency and fuel poverty and does not include wider energy system planning directly, but the LHEES can be used as a building block for wider LA energy planning.

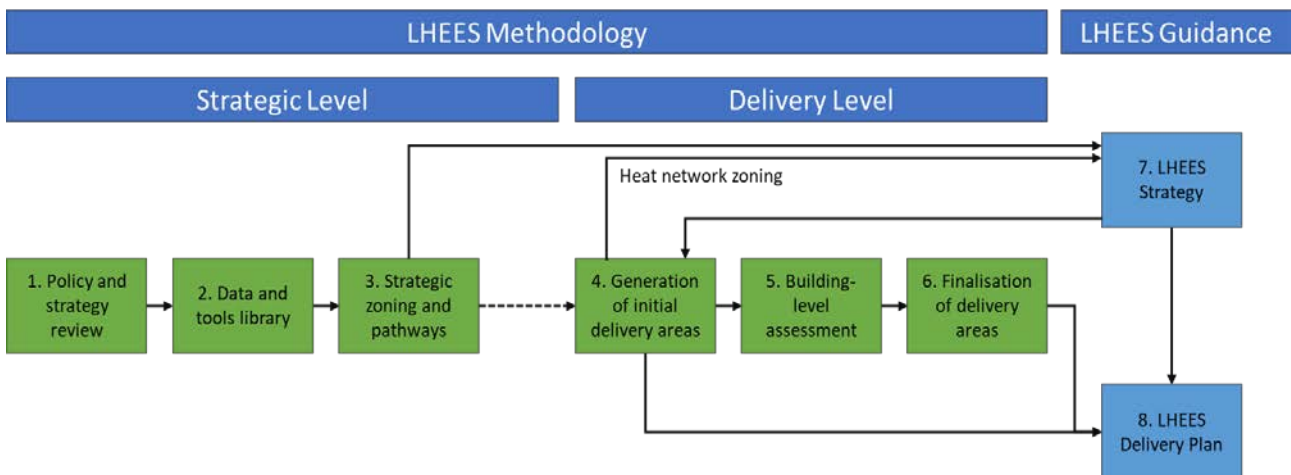
While there are some limitations with the domestic building dataset, which is primarily based on Home Analytics, it is of sufficient quality and reliability to allow detailed analysis and conclusions. However, the non-domestic data, which is primarily based on Non-Domestic Analytics, is less reliable overall due to a dataset that has significantly more gaps in it, and a greater variety of heat uses. For this reason, there are limitations to the level of detail in the outputs from non-domestic buildings.

LHEES Approach

A suggested LHEES methodology is supplied by the Scottish Government as shown in figure 27. Although the approach used is based on the proposed methodology shown below, the details have been adjusted to suit the specific context of South Ayrshire. The methodology is broken down into eight stages that align with the work set out in the LHEES Guidance.

The completion of these stages provides South Ayrshire Council with the data analysis and evidence base to enable development of this Strategy and the accompanying Delivery Plan document. The completion of work carried out in stages 1-4 feeds into the Strategy plan, and the completion of stages 4-6 alongside the Strategy feeds into the Delivery Plan.

Figure 26: Summary of LHEES Approach and Stages



Appendix B: Legislation Relating to LHEES

Table 13: Summary of policy and legislation

UK-Wide
<p>The Climate Change Act 2008 (2050 Target Amendment) Order 2019: Net Zero GHG Emissions by 2050</p>
National – General
<p>Heat in Buildings Strategy (2021) Sets out a pathway to zero emissions buildings by 2045 and includes the New Renewable Heat Target for 2030</p>
<p>The Heat Networks (Scotland) Act 2021, which was followed by the Heat Network Delivery Plan, has targeted for 2.6 TWh to be supplied by heat networked by 2027 and 6 TWh by 2030. By October 2023, Scottish Ministers are required to set a target for 2035. The Act places a duty on local authorities to conduct a review of areas likely to be particularly suitable for heat networks within its area.</p>
<p>The Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 which both defines fuel poverty and sets targets for fuel poverty eradication by 2040 with interim targets for 2030 and 2035. Following this, the Tackling Fuel Poverty in Scotland: A Strategic Approach was published in late 2021, which contains a strong focus on energy efficiency as a driver for fuel poverty.</p>
<p>Climate Change (Scotland) Act 2009: Public bodies have a duty to contribute to Scotland’s national emission reduction target</p>
<p>Climate Change (Emissions Reduction Targets) (Scotland) Act 2019: 75 % emissions reduction by 2030, 90 % emission reduction by 2040, and net zero GHG emissions by 2045</p>
<p>Update to the Climate Change Plan (2018-2032)</p> <ul style="list-style-type: none"> • By 2030 at least 50 % Scotland’s building stock heated using zero emission systems; • Retrofit buildings and achieve ultra-high levels of fabric efficiency in new builds; and • Reduce car kilometres by 20 % by 2030.
<p>Scottish Government Climate Change Plan Update – Securing a Green Recovery on a Path to Net Zero (2020): Focus on green recovery to deliver net zero ambitions following the Covid-19 pandemic. Emphasis on green jobs, adaptation, and tackling fuel poverty.</p> <ul style="list-style-type: none"> • “By 2040, no more than 5 % of households in fuel poverty, and no more than 1 % in extreme fuel poverty”
<p>Scottish Government Hydrogen Action Plan (2022): Ambition of 5GW of hydrogen production capacity by 2030 and 25GW by 2045.</p>
<p>Climate Emergency Skills Action Plan (Skills Development Scotland / Scottish Government) (2020): Local authorities are lead partners on Priority Area 1: Supporting a green labour market recovery from Covid-19, and Priority Area 5: Ensuring fairness and inclusion in the skills system as part of a just transition to net zero.</p>
<p>Scotland’s fourth National Planning Framework (NPF4)</p> <ul style="list-style-type: none"> • Encourage the reuse of brownfield, vacant and derelict land for new developments. <p>Draft Energy Strategy and Just Transition Plan (2023): “More than 20GW of additional renewable electricity on-and offshore by 2030”</p>
National – Public Sector Specific
<p>The Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Amendment Order 2020: Public bodies must report in their Public Bodies Climate Change Duties (PBCCD) Annual Reports:</p>

- where applicable, “targets for reducing indirect emissions of greenhouse gases” Indirect emissions include supply chain emissions, and
- how they align their spending plans and use of resources to contribute to reducing emissions and delivering emissions reduction targets and report on this from March 2022.

[Scottish Government and Scottish Green Party: draft shared policy programme \(2021\):](#)

- “All publicly owned buildings to meet zero emission heating requirements, with a backstop of 2038.” This implies that most buildings would be decarbonised well before that. The programme commits to “a series of phased targets” for decarbonisation of public sector buildings starting in 2024. This will be driven through building standards/Heat in Buildings Regulations.
- “All new buildings where a building warrant is applied for from 2024 must use zero emissions heating as the primary heating source and meet significantly higher energy efficiency standards”.

[Public Sector Leadership on the Global Climate Emergency \(2021\):](#)

- “Decarbonise estate by 2038 at the latest, with zero carbon direct emissions from all buildings”.
- “Any fugitive emissions that can be reduced to absolute zero must be, however some areas of fugitive emissions may not be able to be reduced to absolute zero by 2045”.
- Public sector bodies must set emissions reduction targets for indirect emissions (such as business travel).

Appendix C: Heat Pump Suitability Maps

The maps in this appendix highlight, using the methodology described in 7.7.3, which homes are ready for heat pumps today (green), will be ready with modest energy efficiency interventions (orange) and may be more difficult to convert (red).

Figure 27: Heat pump suitability map - Ayr

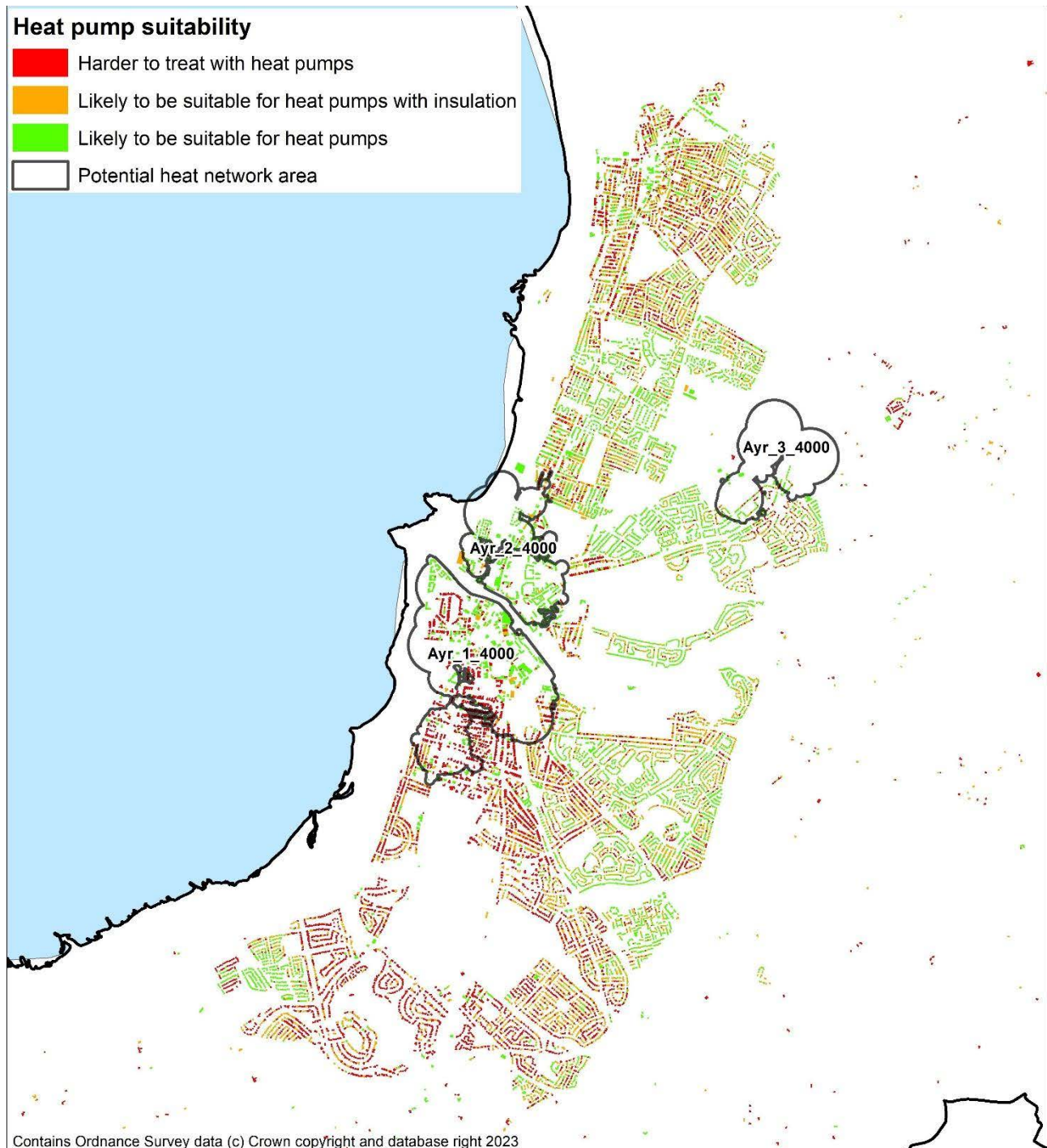


Figure 28: Heat pump suitability map - Girvan

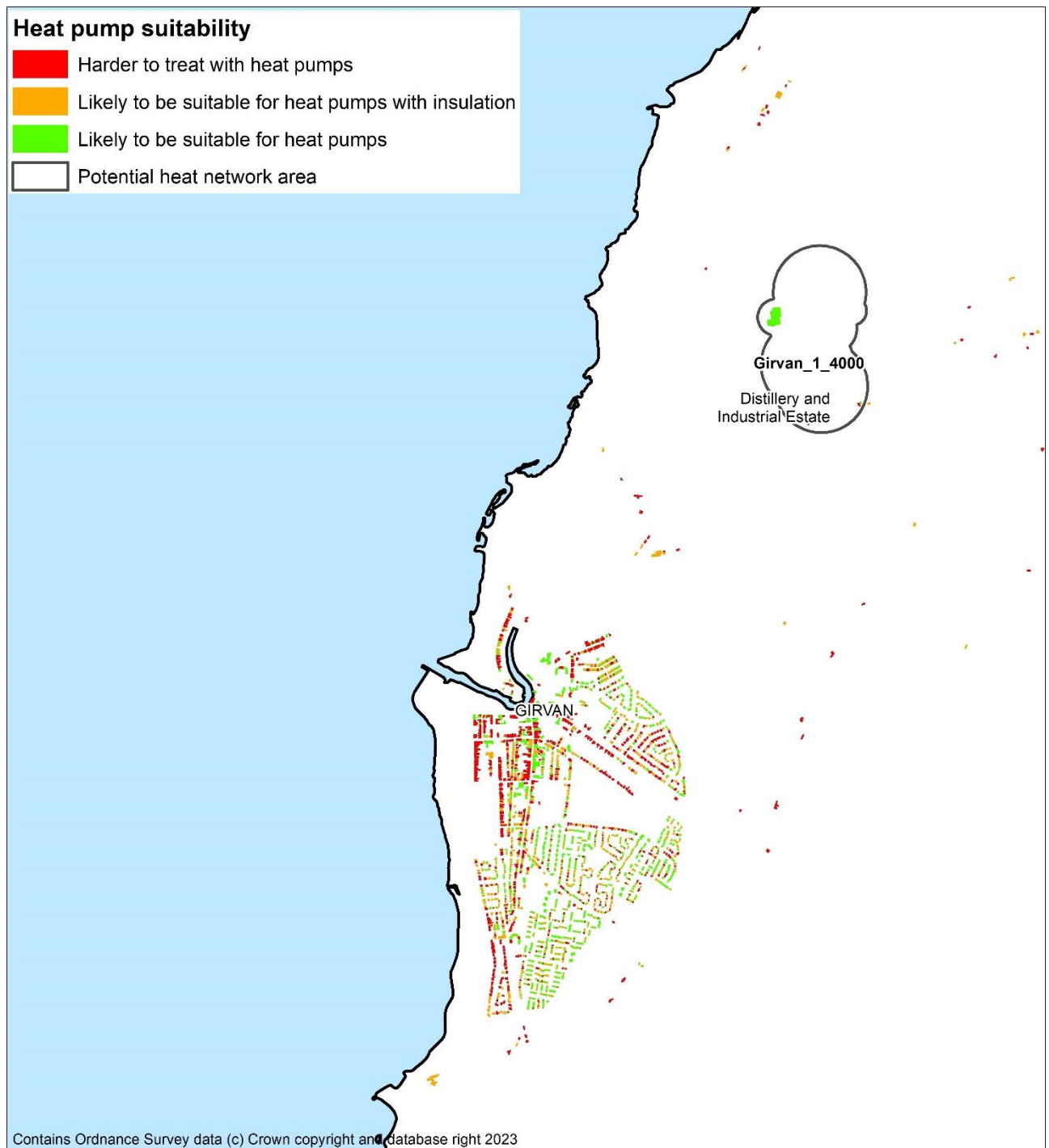


Figure 29: Heat pump suitability map - Troon

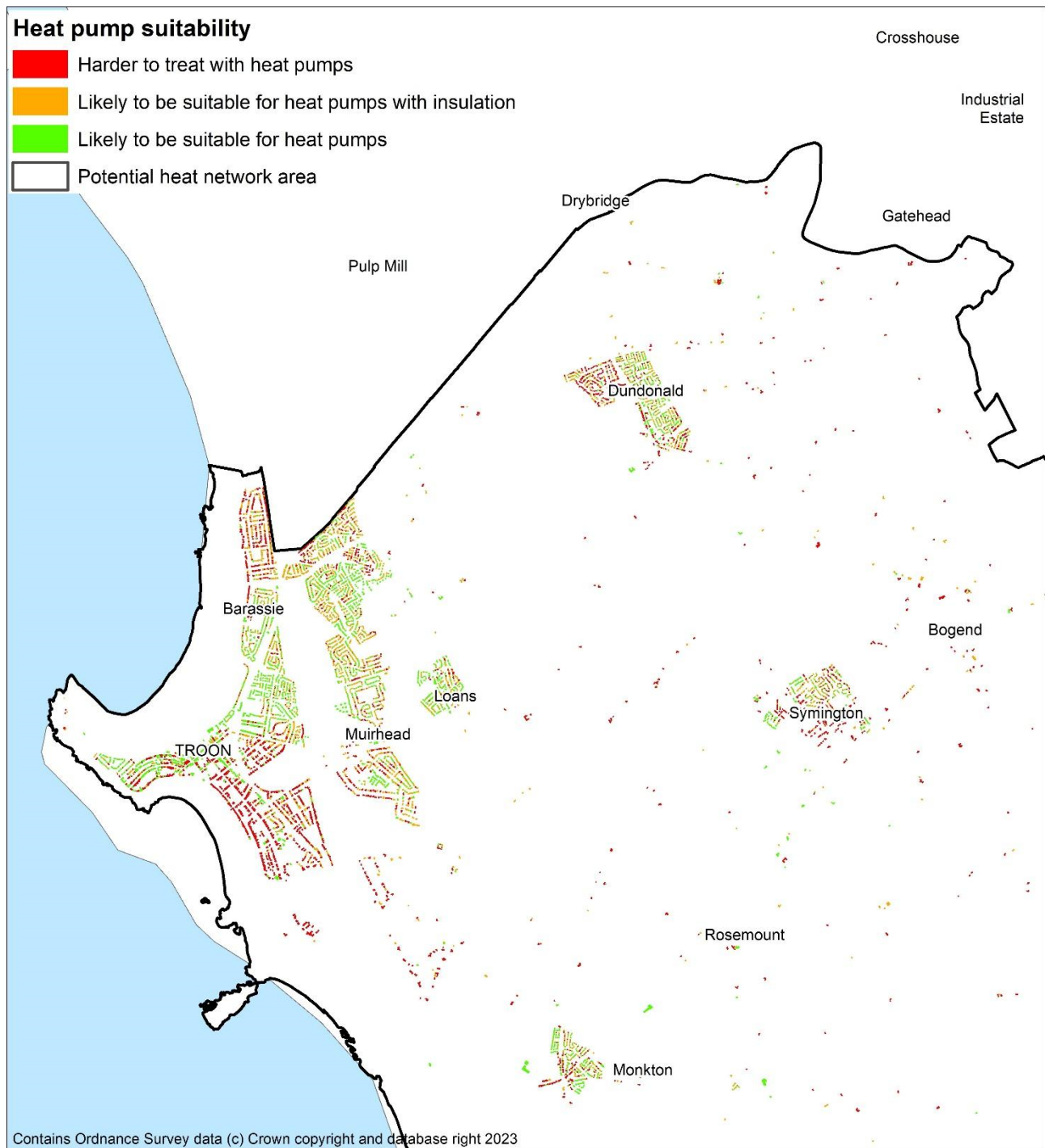


Figure 30: Heat pump suitability map - Maybole



Figure 31: Heat pump suitability map - Ballantrae

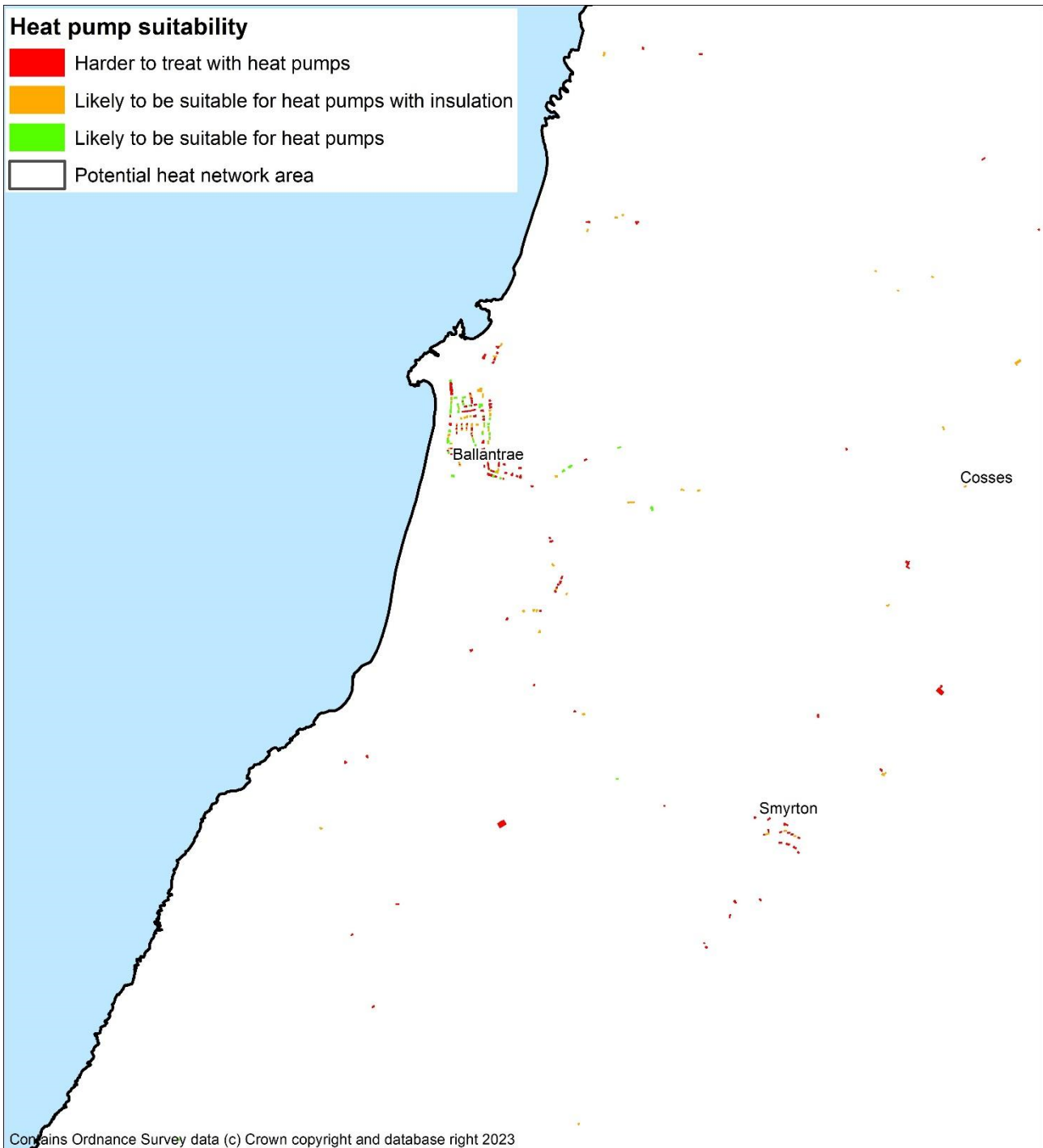


Figure 32: Heat pump suitability map - Dailly



Appendix D: Consultation Thematic Summary

Question 1: Priorities

Strengths: Public interest and a just transition are acknowledged. Alignment with fuel poverty reduction, economic development, and skills development is supported.

Feedback: 69% Pos / 23% Neg / 8% Neut. Concerns about ensuring a just transition for all households, particularly the most vulnerable. A need for clarification on “most vulnerable” and inclusion of health inequalities. Further information on how fuel poverty will be tackled via this strategy.

Question 2: Considerations

Strengths: The strategy considers a variety of property ownerships, heritage buildings, as well as local and national policies.

Feedback: 54% Pos / 23% Neg / 23% Neut. More emphasis required on public and private sector collaboration and stakeholder engagement, particularly in education. Expand stakeholder engagement strategy. Consideration of health impacts related to poor energy efficiency.

Question 3: Challenges and Opportunities

Strengths: The need for improved energy efficiency and decarbonization is recognized, particularly in off-gas areas.

Feedback: 69% Pos / 23% Neg / 8% Neut. Concerns about data accuracy, ensuring affordability for all (including renters), and the need for stronger public engagement. Expand data management to include cross references with internal data sources, health equalities data, and other relevant datasets that could increase accuracy of targeted measures.

Question 4: Strategic Zones and Baseline

Strengths: Using Area Based Schemes and targeting support based on existing data is supported.

Feedback: 62% Pos / 08% Neg / 31% Neut. Concerns about ensuring interventions reach those most at risk, potential data errors, and the need to integrate health considerations. Refine targeting and summarise area wide approach. Include good practice examples.

Question 5: Technology

Strengths: Broad agreement with the areas of focus on technology.

Feedback: 62% Pos / 15% Neg / 23% Neut. Need to expand on other technologies in question, including risks of internal air quality and ventilation.

Question 6: Heat Networks

Strengths: The identification of potential heat network locations and the focus on anchor loads are supported.

Feedback: 46% Pos / 15% Neg / 38% Neut. Higher level of uncertainty about concepts outlined indicating a need for expanded public engagement. Concerns about the feasibility and cost of large-scale infrastructure projects. National policy developments required.

Question 7: Delivery Areas

Strengths: Broad agreement with the identified focus areas.

Feedback: 69% Pos / 15% Neg / 15% Neut. Concerns about reaching the most at-risk households. Strengthen the focus on targeting interventions using a combination of factors such as SIMD ratings, health data, household type, prepayment meter usage, rural location, and being off the gas grid. Explore collaborating with health services and third sector organizations to identify at-risk households.

Question 8: Pathways for all South Ayrshire

Strengths: Broad agreement with the focus areas.

Feedback: 69% Pos / 15% Neg / 15% Neut. Lack of emphasis on public and private sector engagement, and the building sector/architectural industry. Need to look at area-wide energy generation alongside decarbonisation.

Question 9: Governance

Strengths: Broad agreement with the outlined governance structure.

Feedback: Ensure representation from all relevant stakeholders, including social landlords, private domestic sector, and community groups. The need for a clear timeframe for reviewing the governance structure. Formal outline for governance structure required.

Question 10: Delivery Plan Proposals

Strengths: Broad agreement with the proposed delivery plan.

Feedback: Clarity on responsibility for the actions is required, and more information on signposting property owners to funding and support on energy efficiency improvements to both public and private sector.

Scottish Government Response

Strengths:

- Clearly outlined priorities and references throughout the document
- Strong overview of challenges faced by domestic and non-domestic buildings
- Delivery plan with actions across various timescales

Feedback:

- Better clarity on stakeholder engagement paths and outputs
- Improve detail on current and future stakeholder engagement plans
- Opportunity for more comparisons to national statistics, particularly for non-domestic buildings
- Potential for improved data breakdowns by building type (e.g., listed buildings)
- Room for improved presentation clarity in some sections

APPENDIX 2 – GOVERNANCE – LHEES COORDINATION GROUP TERMS OF REFERENCE

LHEES Coordination Group Terms of Reference

Background

South Ayrshire Council's Local Heat and Energy Efficiency Strategy (LHEES) is a data driven analysis of building stock across the authority that identifies strategic routes towards decarbonisation of heat. The strategy is driven by Scottish Government 2045 Net Zero and the 2040 fuel poverty targets and ambitions.

A delivery plan of 26 high-level actions and ambitions were set out in the LHEES shown in appendix 1, covering the strategy duration. This work is supported by the LHEES officer post, which is funded by Scottish Government for 5 years.



Role and remit

The LHEES Coordination group will provide strategic oversight and guidance for the development and implementation of the Council's LHEES strategy and delivery plan. Each member of the group will provide insight from their area of expertise to support existing delivery plan actions and refine new and existing areas of intervention, with support from the LHEES officer. They will also ensure decisions made by the group are adhered to by services.

The group will provide information and scrutiny on:

- Development and attribution of LHEES delivery plan actions,
- Development of heat network projects,
- Risk and issue identification,
- Wider stakeholder identification and engagement,
- Dissemination of information,
- Benefits realisation and reporting.

Strategic lead

As LHEES is considered a key deliverable of Scotland's move to Net Zero, a strategic lead is required to ensure development and delivery of actions are agreed at a senior/cabinet/director level. It is recommended that the strategic lead is an appropriate assistant director.

The strategic lead would be responsible for:

- Chairing meetings
- Guiding delivery plan development,
- Ensuring service level buy-in,
- Supporting risk management and benefits dissemination.

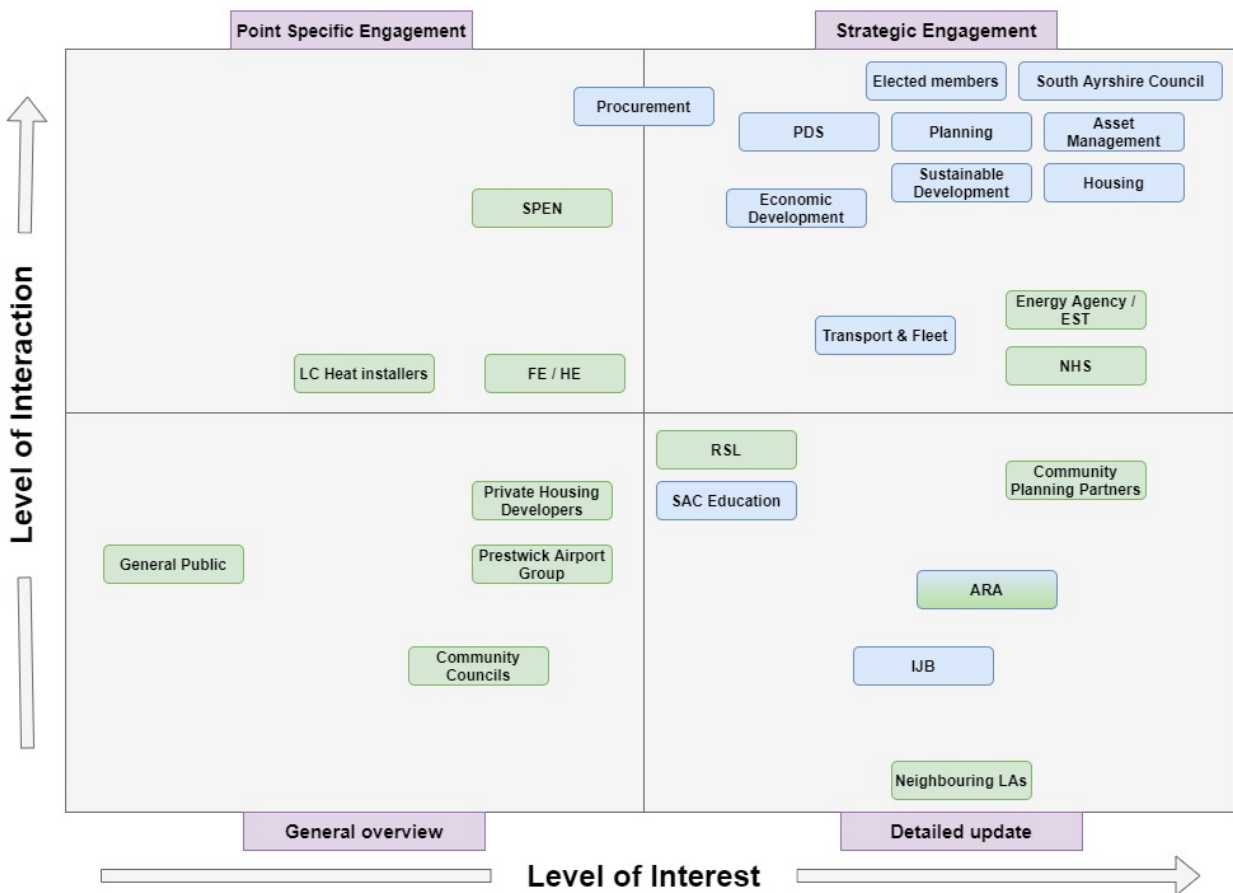
Group responsibilities

Each group member would be responsible for service level identification of:

- Existing or potential projects relevant to LHEES,
- Co-working opportunities,
- Relevant legislative changes and consultations,
- Alignment of service level projects with strategic priorities,
- Attribution and implementation of service specific delivery plan actions,
- Feedback for reporting schedules.

Membership

The LHEES Coordination group membership is identified below as those with high levels of interaction and interest in the strategy and delivery plan.



From this, we derive 4 levels of interaction with associated groups:

Strategic engagement – membership of the governance group.

Point specific engagement – engaged with on specific projects rather than the strategy as a whole.

Detailed updates – detailed information on strategy and project progress shared regularly to assess synergies.

General overview – general information about overall progress shared periodically.

As such, the following departments and officers have been identified to participate in the governance group.

Tracking and Reporting

The group will track and report progress through a series of routes:

Pentana – attributed service level actions relevant to the delivery plan will be tracked through Pentana where appropriate.

Feedback to Portfolio Holder: Buildings, Housing and Environment by Service Lead Asset Management. Where appropriate membership officers will report actions back through in-service routes to respective portfolio holders to expand engagement.

Local Outcome Improvement Planning – As energy is one of the four identified Community Planning Partnership areas, relevant six-monthly/quarterly progress reports will be provided to the board.

Annual Cabinet report & Members Briefing – with the annual review of the delivery plan actions, progress on existing actions and proposed actions for the year ahead will be delivered to cabinet annually, with an accompanying members brief on progress and intent for the year ahead.

LHEES Coordination Group - Membership

<p>Officers</p>	<p>Strategic Lead / Chair</p> <ul style="list-style-type: none"> • Chris Cox, Assistant Director – Planning and Development <p>Attendees</p> <ul style="list-style-type: none"> • Callum Robertson, LHEES officer • Neil Grant, Senior Officer (Energy) • Robin Jamieson, Coordinator (Asset Management) • Tom Burns, Service Lead – Asset Management and Community Asset Transfer • Pauline Bradley, Service Lead – Professional Design Services • Paul Cassidy, Sustainable Design Officer • Lorna Jarvie, Co-ordinator – (Sustainability) • John Hodge, Co-ordinator – Housing Asset Management • Chris Carroll, Co-ordinator – (Housing Policy and Strategy) • James Hall, Co-ordinator – (Planning Strategy) • Calum McPhail, Co-ordinator – (Economic Development) <p>External partners</p> <ul style="list-style-type: none"> • NHS • Community Planning Partnership organisations <p>Case specific attendees</p> <ul style="list-style-type: none"> • Finance • Procurement • Transport & Fleet
<p>Operating arrangements</p>	<ul style="list-style-type: none"> • Meets quarterly • Actions noted and tracked • Standardised agenda • Papers to be sent out 5 working days in advance • Forward plan in place to inform future agendas • Decision making will be by consensus

1. LHEESs are primarily driven by Scotland's statutory targets for greenhouse gas (GHG) emissions reduction and fuel poverty:
 - 1.1 Net zero emissions by 2045 and 75% reduction by 2030; and
 - 1.2 In 2040, as far as reasonably possible, no household in Scotland is in fuel poverty.
2. The LHEES Strategy 2024 – 2029 is based on a full technical analysis of domestic and non-domestic building stock and develops routes to reduce fuel poverty and decarbonise heat in the South Ayrshire Council area. The strategy sets out the priorities, background, challenges and opportunities in this area, and develops strategic zones, pathways, and delivery plan objectives to begin this transition.
3. The LHEES gives an overview of heat demand in South Ayrshire's building stock, encompassing domestic and non-domestic properties, and is derived from the LHEES Full Technical Report ([Background paper 1](#)). It provides a profile of these properties, considering fuel poverty levels against energy efficiency. From this, it identifies possible interventions based on key technologies, and pathways through which the South Ayrshire Council area can reduce fuel poverty and move decisively towards NetZero in line with local and national objectives. The LHEES includes the following provisions:
 - 3.1 Sets out how different types of building stock can change to meet national and local objectives, including the removal of poor energy efficiency as a driver of fuel poverty, and achieving zero greenhouse gas emissions in the building sector. The LHEES includes maps of all property types in South Ayrshire, providing this information at a strategic zone level.
 - 3.2 The primary interventions identified in the strategy are increased insulation measures. These are generally no-regret measures that provide tangible benefits to both domestic and non-domestic building users. This fabric first approach reduces energy demand, improving elements of fuel poverty, and, considering the scale of interventions required, potentially generating economic benefit to South Ayrshire. The LHEES links to, and supports delivery of, the SAC Local Housing Strategy in this approach.
 - 3.3 In order to achieve decarbonisation objectives (for example, net zero/greater fuel poverty alleviation) the most effective way is through connection to a heat network (also known as district heating). However, heat networks are only an effective option where there is sufficient heat demand and a suitable location for an 'energy centre' (a central heat source which may be ground, air or water heat pumps, but could also be an industrial plant which produces excess heat, former mineworking etc.). Identified options in the LHEES are limited to parts of Ayr Town Centre, Heathfield and Girvan. The LHEES links with SAC's Local Development Plan consultation and the National Planning Framework 4 in supporting the development of heat networks in areas of new development.
 - 3.4 Where connection to heat networks is not a feasible option, then other options may be suitable, such as heat pumps and electric heating solutions. The LHEES identifies strategic geographical zones based upon

areas with i) building types – for each building type assumptions can be made on how energy efficient the property is and energy efficiency options that might most effective for that type of property. This is data driven and based on the ‘Home Analytics’ data set which covers the whole of Scotland and contains data on: the physical characteristics (wall type, levels of insulation and glazing); heat and energy demand; renewable technology suitability; probability of fuel poverty; and EPC ratings. ii) energy connection profiles for areas based upon data identifying if properties are on or off the gas grid. iii) From information derived in i) and ii) the LHEES sets out optional measures for reducing emissions within each zone; The LHEES will be reviewed on a five-year basis.

4. Accompanying the LHEES Strategy is the LHEES Full Technical report ([Background paper 1](#)). The LHEES Full Technical report sets out the technical analysis behind the delivery routes and outlines the methodology taken to establish baseline figures, intervention routes, potential costs, and all other metrics used in the creation of the LHEES Strategy. The LHEES Full Technical report was agreed by Cabinet on 16 January 2024. Minor amendments have been made to the report as a result of feedback from SG, however the substantive report outcomes remain the same.
5. Annual funding of £75,000 was allocated by SG for LHEES work until 2027/28. An officer was recruited in October to lead LHEES work, and consultancy support through Ricardo Plc was used to develop the Full Technical Report using the SG methodology.
6. The SG publication requirements were that public consultation should be undertaken on draft Strategies and Delivery Plans before they are adopted and published. As such the consultation was open for consultation from 14/02/2024 to 17/04/2024. Consultation was delivered through the public portal with accompanying social media campaigns. Consultation was also undertaken with internal departments, private and registered social landlords, the SAC 1000, community planning partners, HSCP, NHS, and community groups across South Ayrshire.
7. Formal consultation responses were received through the public platform. Further feedback was received from SG’s appointed review consultant, Zero Waste Scotland, departmental responses from Planning and Housing, and part responses from focus group sessions and meetings. The outline of public and internal responses can be seen below.
 - 7.1 Overall response rate was positive with an average of 63% of respondents partly or fully agreeing with developed concepts, 18% neutral, and 18% negative out of 13 respondents. SG, ZWS, and part responses were not assessed in this as they did not conform to the set questions. SG confirmed 5 of 8 sections of the report were complete according to the methodology, with partial completion on the remaining 3. All feedback has been considered and included where possible.
 - 7.2 Thematic analysis was carried out on the consultation responses and key concepts have been integrated into the LHEES strategy (Appendix D) including; greater focus and clarity on fuel poverty, greater levels of public engagement, focus on skills and skills development, extending work with NHS and community planning partners

Table 1: consultation responses

	QU.1	QU.2	QU.3	QU.4	QU.5	QU.6	QU.7	QU.8	QU.9	QU.10	AVERAGE
POSITIVE	69%	54%	69%	62%	62%	46%	69%	69%	69%	62%	63%
NEGATIVE	23%	23%	23%	8%	15%	15%	15%	15%	23%	23%	18%
NEUTRAL	8%	23%	8%	31%	23%	38%	15%	15%	8%	15%	18%

CONSULTATION RESPONSES

Consultation Responses

Public, Partner & Internal Responses

REF	QUESTION 1 - Do you think the priorities identified are in the best interest of the people of South Ayrshire?
1	Yes - but I would like to see more emphasis put on creating incentives for the public (and private sector) to collaborate on implementation of the LHEES particularly in improving energy efficiency, making the switch to greater use of sustainable energy sources, buildings insulation etc..
2	Yes. Transitioning to renewable sources of energy is an important step in slowing climate change, but it means nothing if the existing infrastructure in people's homes means the demand is still high.
3	<p>Please note that my response is as Chair, Fort Seafield and Wallacetown Community Association and Project Lead, (Wallacetown Community Energy Project).</p> <p>In relation to the priorities I would suggest a swap of priorities 2 and 3. The reasons for this proposed change is as follows:</p> <p>It will be important to communicate the impacts on economic development and the opportunities that will bring, hence these priorities are not sequential. However to fulfil priority 2 we need to a coherent strategy to engage all educational sectors. In relation to skills we need to establish via all stakeholders a skills needs analysis to allow the appropriate educational/training programmes to be developed, identified with timeframes to be in position to deliver the identifiable outputs from the plan.</p>
4	The design of the form doesn't allow me to review numbered sections so I can't answer these next questions
5	People , business are struggling with the cost of living. Speaking to people...they 're not interested in heat pumps, you pay for what you use...electricity will remain costly. This is methodical, ideologies presented by bias govt and groups.who is paying for this!!!we 're skint!
6	Yes, but more information needed on how this will tackle fuel poverty
7	<p>NHSAA welcomes the opportunity to review and comment on the South Ayrshire Council Local Heat and Energy Efficiency Strategy. The main principles outlined are designed with the aim to serve the interests of those within South Ayrshire.</p> <p>We welcome the emphasis on tackling climate change through improving energy efficiency given the multiple negative impacts of climate change on the health of our communities. Cold housing and fuel poverty also has a range of direct and indirect health impacts – for instance, by exacerbating cardiovascular and respiratory conditions and negatively affecting mental health, and by negatively affecting household financial security and childhood educational attainment (see link for more information). There is evidence that efforts to improve energy efficiency of homes and reduce fuel poverty can help improve people's health, reduce health inequalities, and reduce people's need for healthcare. The 'Communities and sustainability' priority makes reference to the most vulnerable but it is not clear who this applies to. The existing fuel poverty definition is purely based on financial measures and does not take into account the health effects of living in a cold home on those at greatest risk. We would therefore recommend clarification of who is meant by 'the most vulnerable' and the inclusion of health inequalities associated with fuel poverty and energy inefficiency in the priorities – otherwise this represents an important missed opportunity. This would also help ensure the strategy is consistent with the wider South Ayrshire CPP priorities of 'place and wellbeing' and therefore support buy-in from CPP partners.</p>
8	Yes, I agree with the priorities focusing on reducing fuel poverty and the effects the transition may have on those on a lower income.

	<p>It would be great if jobs were created locally in the form of manufacturing of materials required, and workforce to install the infrastructure.</p> <p>It's a great idea to tie in education so that the knowledge, expertise is in place for future projects. It might help with community engagement knowing there is a potential career path there for future generations, as well as being able to take ownership in a way, if that makes sense.</p>
9	No.
10	yes
11	No - Priority 1 will leave those on lower incomes but not sufficient to be eligible for any relief the worst off. The richer people will just move to England. The race to net zero will penalise the very people you are trying to support, additionally, regardless of what the people of South Ayrshire it will be over-ridden and ignored by national Government.
12	The establishment and long-term operation of heat networks can create an opportunity to retain benefits within local communities. This could support community wealth building, provide local jobs and also tackle significant factors in fuel poverty. Poor energy efficiency can lead to high energy costs which can result in households in fuel poverty and present unnecessary financial burdens for businesses and the public sector. The LHEES will seek to prioritise a reduction of in fuel poverty for the most vulnerable within South Ayrshire with the delivery of energy efficient and low carbon technologies. The transition and the development of the new technologies could assist with assisting the delivery of new skills and innovation within schools, colleges and businesses. Furthermore, the LHEES will support the delivering of benefits of the Ayrshire Energy Masterplan which is a combined investment strategy with the three Ayrshire Councils to help the private and public sector meet energy and carbon reduction targets.
13	Yes, however, the challenge of supporting and enabling all households (particularly those most vulnerable and in existing poverty) in our communities to make a just transition to the decarbonisation of heat in their homes should be fully recognised for the gigantic financial and logistical task it truly is.

REF	QUESTION 2 - Do you think the considerations in focus from “LHEES Considerations” are appropriate and connect with the overall LHEES priorities?
1	
2	Yes. Identifying and mitigating the challenge of rural areas - listed here as off-gas grid, I think - will be a large part of the puzzle given how many rural areas there are in South Ayrshire.
3	With reference to Table 1 page 8 I would suggest putting Energy efficiency (4,5 and 6) 1, 2 and 3. for example address in poor building efficiencies through improved insulation, and window replacement so improving the U values and EPC rating is a quick cost-effective route to decarbonise and more importantly address fuel poverty. The timescales for this will be much shorter than some of the heat decarbonising considerations.
4	See above, should have kept pertinent reference material available/pinned
5	Told to get gas boilers and diesel cars..no longer acceptable. Now heat pmps...really. Decisions are made before consultancy with the public. Methodology is not pure science or accurate. Who is paying, cost is ignored . Build more homes for people!!
6	yes
7	<p>The phased approach methodology proposed clearly sets out a route-map to delivering the long terms aims of the strategy. Heat Decarbonisation and Energy Efficiency are key considerations within the LHEES and the Board will continue to have an interest in the progress made.</p> <p>We have a number of specific comments on the detail of this section:</p> <p>Should “poor energy efficiency as driver for ill-health and health inequalities” also be included as a consideration?</p> <p>Agree with prioritising poor energy efficiency, fuel poverty and decarbonisation especially off-gas areas.</p> <p>It would be helpful to see more on the rationale for focusing on listed buildings and those in conservation areas: although we recognise these categories of housing stock present specific challenges, the residents may be more likely to affluent so targeting these households may risk exacerbating inequalities.</p> <p>4.3 mentions solid biomass – we agree that air quality is an important consideration especially in urban settings given growing evidence of contribution to poor air quality and therefore potential negative health impacts. It is essential to consider negative health impacts via indoor as well as outdoor air pollution, especially for households containing those at greater risk (e.g. infants/children; older people; those with existing cardiorespiratory conditions).</p>
8	Yes, it makes sense to focus on energy efficiency, fuel poverty and changing off gas building to low carbon heating and I think these do line up with the LHEES priorities.
9	No.
10	yes
11	They connect with Government priorities not necessarily the peoples priorities. Trying to install heat pumps without a massive reduction in price and at the same time improving the technology to ensure they do actually work effectively, will penalise all but the richest. Going back in time to install water cylinders when we were told they were wasteful but now their the answer doesnt make sense. Does the infrastructure have enough capacity to cope with the increased electricity demand or will more burden be placed on utility bills and making the cost of power prohibitive. The additional burden is already stretching most peoples affordability.
12	It is noted that the LHEES is looking at the transition from off grid and on grid gas to low carbon heating whilst seeking to reduce fuel poverty and increase energy efficiency. The

	<p>LHEES considers a variety of property ownerships, not just Council-owned as well as a number of uses of properties. The LHEES also considers heritage buildings and this is an important consideration given the unique quality of the historic environment within South Ayrshire in order to deliver energy efficiency within both residential and non-residential buildings. National policy, including the National Planning Framework (NPF4) is supportive of renewable and low carbon energy development, in order to support a Just Transition to the low carbon economy. NPF4 (National Planning Framework 4) will be one of the key documents that will inform the next LDP, in particular setting our future housing requirements, and with an increased focus upon climate change, improving health and wellbeing, and securing positive effects for biodiversity and nature recovery. NPF4 requires Local Development Plans (LDPs) to consider the area's LHEES. The spatial strategy of the LDP should also consider areas of heat network potential and any designated Heat Network Zones. NPF4 Policy 19 - Heat and Cooling, encourages LDPs to promote and facilitate development that supports decarbonised solutions to heat and cooling demand and ensure adaptation to more extreme temperatures. We are at the start of preparing a new Local Development Plan (LDP3) for the South Ayrshire Council area. This will have an impact upon many people's lives within South Ayrshire. It will be the principle document that guides where development should and should not take place, and will promote and facilitate developments that support and enhance the communities, economy and environment of South Ayrshire.</p>
13	<p>The stated LHEES considerations could be enhanced by more comprehensively encompassing all three of the strategic priorities (Community and Sustainability, Economy and Opportunity, Education and Skills). The present considerations focus solely on heat decarbonisation and Energy Efficiency outcomes, actions which are predominantly aimed at buildings. Considerations at this early stage of the strategy are required around how to effectively begin the process of engaging all local citizens (who live in and own the buildings) and stakeholders to educate and enable them to understand the decarbonisation agenda, opportunities, and future challenges, if any form of 'just transition' is to be realised</p>

REF	QUESTION 3 - Do you agree with the challenges and opportunities outlined in the "Challenges and Opportunities" section?
1	Partly Agree
2	Agree
3	Agree
4	Neither agree nor Disagree
5	Disagree
6	Agree
7	Agree
8	Agree
9	Disagree
10	Agree
11	Disagree
12	Agree
13	Partly Agree

REF	QUESTION 3A - Do the areas of focus in this section reflect a suitable first step for domestic and non-domestic decarbonisation?
1	Without much greater levels of public engagement, I think it will be extremely hard to achieve progress. So I would like to see a clearer and stronger emphasis on public engagement throughout the LHEES.
2	I believe so. Aiming for increased community development and infrastructure will be beneficial for the overall community health of South Ayrshire.
3	The priority 2..... extend engagement section is as important as important. you may want to consider leaving out the priority references and just bullet point each as the focus .
4	See above
5	No , just stop the private jets, volcanoes, wars...we have little impact.
6	Good first step, but more to do
7	<p>The Organisation agrees that the challenges and opportunities outlined and note alignment and the commitment to reduce emissions through de-carbonisation across the wider public sector.</p> <p>We have a number of specific comments on the detail of this section, including some important challenges which are not currently mentioned in this section:</p> <p>It is also important to highlight challenge of private rented sector where energy demand also high and opportunities for direct action less available: this is an omission from the challenges as currently described.</p> <p>Another challenge is ensuring adequate indoor air quality and ventilation when improving energy efficiency – this has important implications for health via exposure to pollutants and excess heat, so we would welcome consideration of this in order to avoid unintended consequences.</p> <p>A third and final challenge is that of identifying households at greatest risk from cold homes due to health conditions - this could be a priority for joint working between LA and NHS (e.g. through the HSCP and CPP).</p> <p>- Do the areas of focus in Section 6 reflect a suitable first step for domestic and non-domestic decarbonisation?</p> <p>It is not clear at present how areas of focus outlined under domestic buildings will ensure action is targeted to those at greatest risk of fuel poverty (and ideally to those at greatest risk of health risks of cold homes). Could greater connections be made with other work that seeks to tackle financial insecurity and promote financial inclusion and with community planning partners most likely to encounter and support those most at risk?</p>
8	Yes, as mentioned, it sounds like a massive undertaking but the focus points seem realistic and achievable as a first step. Really like the sound of the Wallacetown Community Energy Project. Positive action.
9	No.
10	yes
11	Coming up with loads of PR speak to pad out your report is crass. The "modern industrial revolution" around the green industry has not appeared and the promised jobs and economic benefit is just talked up to try and justify your decisions. Challenges - <ul style="list-style-type: none"> Higher than Scottish average owner-occupier (58%) and lower than average socially rented (23%) means less direct action available to SAC, all this means is that you will be imposing your will on homeowners but will be offering very little support.
12	The LHEES introduces a way forward for achieving 2045 net zero target. Is the only data available based on the information on the Home Analytics and Non-domestic Analytics dataset?- Is this an accurate picture of South Ayrshire? The need to substantially decarbonise Scotland's heat supply is challenging. Improvement to the energy efficiency

	of the homes and buildings within South Ayrshire has been slow to date, however, the LHEES can be used a driver to increase the uptake of low carbon heating.
13	A huge challenge within this strategy is around how the local authority not only stimulates and enables a migration to decarbonised heating solutions for domestic tenants and residents, but that this physical shift (away from established oil, gas etc) does not in effect then <u>create or exacerbate</u> fuel poverty for the end user – an especially challenging prospect given the heightened electricity kwh costs being presently experienced by all. This issue is particularly important for social landlords, who may be in the position to actively decarbonise a heating system at a point of future modernisation/investment in their tenant’s home, but face the acute problem of the tenant’s ongoing heating costs thereafter significantly rising, unless a more favourable electrical tariff (than exists presently) becomes available which proves to be less or no more than the costs of running their existing carbon fuelled system

REF	QUESTION 4 - Do the identified analysis zones and delivery pathways in the “Strategic Zones and Baseline” section adequately reflect the social and physical landscape of South Ayrshire?
1	
2	I think so. Targeting poorer areas first is a good step. Reducing fuel poverty by improving home insulation will help.
3	In General I would support the zones identified. (good work). As I am responding a Project Lead for the Wallacetown Community Energy Project it is important to note that the developed aims for the project goes beyond the solar project. The core objectives have been developed around strong educational relationship/partnerships as such creating Wallacetown as a NetZero Village is an ambition. The value to this LHEES will be significant in that we collectively would be able to demonstrate the capability delivering the plans ambition to a manageable scale, Which has the potential of demonstrating good practice and viability that could be showcased. This would also build confidence across all stakeholders.
4	See above
5	People specially poorer dont put heating on.
6	Pretty wide, but clear enough
7	<p>The Organisation recognises the landscape of South Ayrshire and appreciate the quantity, age and wide variety of building stock including listed status and the challenges this may present to delivering energy efficiency outcomes/interventions.</p> <p>It would be beneficial to explore in future the integration of health data with housing stock/fuel poverty data to prioritise areas for intervention</p> <p>Is there an error in Table 7 – how can proportion of households with energy bills >20% of income in Carrick be greater than the proportion with energy bills >10%?</p> <p>Please also see our comments at question 7.</p>
8	Yes, very impressed with the level of detail acquired and shown for each measurement. The infographics are very well laid out and are clear and accessible.
9	No.
10	yes
11	Who knows as we only have your figures to go on, assuming they are correct then would appear to be a start.
12	The preparation of baseline information about the building stock within South Ayrshire provides a starting reference point. The use of Area Based Schemes will help support funding and delivery objectives.
13	To my understanding. As noted, the Carrick area (largely rural) experiences the highest weighted scoring in terms of fuel poverty. Carrick has large swathes of off gas properties, and so the LHEES No 1 consideration to ‘Transition from heating oil and LPG in off-gas areas’ must be approached with particular care, to ensure residents already experiencing fuel poverty do not have their situations exacerbated through active decarbonisation of their heat (which may presently be more affordable than an electric solution

REF	QUESTION 5 - Do you agree with the areas of focus identified in the “Technology” section?
1	Partly Agree
2	Agree
3	Partly Agree

4	Neither agree nor Disagree
5	Disagree
6	Partly Agree
7	Neither agree nor Disagree
8	Agree
9	Disagree
10	Agree
11	Disagree
12	Agree – perhaps more details could be provided to explain the technology
13	Partly Agree - I think this section could expand to include more in the way of fabric first energy efficiency improvements, rather than focussing predominantly on electric heating solutions. A critical step in the LHEES will be to maximise the air tightness and thermal capacity of all buildings to ensure they require the minimum amount of energy to heat them – this fabric technology (known and developing) needs to be factored in.

REF	QUESTION 6 - Do you think the areas of focus in the “Heat Network” section are suitable and sufficient for approaching heat network development within South Ayrshire?
1	
2	I'm not familiar with Girvan, but the potential heat networks in Ayr will cover most of the town centre - many of those buildings are old to begin with, so will be in dire need of modernisation and infrastructure improvement.
3	In general happy, recognising that areas of focus may change. I would also take you back to my response to Q4 in relation to Wallacetown.
4	Please redesign this consultation so it's more accessible Im interested but cannot complete as is
5	Heat pumps dont work out winter s are damper cold unlike Scandinavia.
6	Massive possibilities, but needs funding and to be equitable in cost.
7	The Organisation recognises the complex and specialist work completed to date to map out current heat demands which will support more detailed plans moving forward. The areas of focus are viewed as suitable and the Board will continue to have an interest in the progress made.
8	Yes, hopefully the industrial cluster in Girvan will be of use in the future - connecting the network as part of an integrated new build community.
9	No.
10	yes
11	The consultation paper reads like you have already decided this is the way forward. Just because something works in another Country (but how effectively and is the climate/standard of homes the same) doesnt mean it will work in South Ayrshire.
12	The maps with the key provides information in respect of heat demand within Ayr and hence the evidence to identify the location of the potential heat network for three areas within Ayr. It is also noted that there is the potential for a further heat network at Girvan. Anchor loads are high heat demand buildings and key connections on a heat network that make the operation of a heat network economically viable.
13	Don't know. I expect the infrastructure investment to bring such networks about would be colossal, and therefore require hugely public and private sector investment, not to mention then mandating every resident of the zone to use the system (and be prevented from using independent system - I assume). This is difficult to envision at this stage, so cannot answer with any sort of informed opinion.

REF	QUESTION 7 - Do you agree with the focus areas identified in the "Delivery Areas" section?
1	Partly Agree
2	Agree
3	Agree
4	Neither agree nor Disagree
5	Disagree
6	Agree
7	Agree
8	Agree
9	Disagree
10	Agree
11	Neither agree nor Disagree
12	Agree
13	Agree

REF	QUESTION 7A - Are there any other considerations you would like to see used to identify priority areas?
1	
2	Not that haven't already been identified.
3	Again I would refer you to Wallacetown where we commissioned a fuel poverty base line study by The Fraser of Allander Institute, Happy to share if it helps to inform this plan
4	See above
5	We have more serious issues..homeless people. Build more homes.
6	
7	<p>The Organisation recognises the complexity and challenges associated and agree with the multiple considerations.</p> <p>We would question whether the focus areas reflect the emphasis given elsewhere in the document to targeting support to those households most at risk of fuel poverty (or ideally as well, those at risk of the health effects of cold homes). Although one focus area mentions use of SIMD ratings in intervention targeting, we would be keen to see this focus strengthened and expanded – otherwise there is a risk of missing the opportunity to address inequalities and poor health outcomes, or even of exacerbating inequalities by preferential improvements for the most affluent. There are also other means of targeting households at greatest risk of fuel poverty, which could be explored e.g. through connections with financial inclusion and benefits services, third sector organisations etc. Other approaches which may help target efforts towards those at greatest risk of fuel poverty include use of data on characteristics such as household type (e.g. single pensioners and single parents are at high risk); use of pre-payment meters; living in rural areas; being off the gas grid.</p> <p>In the medium term, would be good to explore methods for identifying households at risk of health effects of cold homes e.g. by combining health data and energy efficiency data. This is something that other health boards have worked together with their local authorities to undertake and to which we would be open to discussing.</p> <p>We would however like to draw particular attention to fuel poverty and would like to see greater focus on action relating to this in the strategy. Fuel poverty is complex and the strategy needs to be cognisant of all of the drivers which in combination can create fuel poverty (energy performance, the cost of fuel, how fuel is used within the home and household income).</p>
8	
9	
10	no
11	
12	No
13	no

REF	QUESTION 8 - Do you agree with the focus areas identified in the “Pathways for all South Ayrshire” section?
1	Partly Agree
2	Agree
3	Agree
4	Neither agree nor Disagree
5	Disagree
6	Agree
7	Partly Agree
8	Agree
9	Disagree
10	Agree
11	Neither agree nor Disagree
12	Agree
13	Partly Agree

REF	QUESTION 8A - Are there any other considerations you would like to see to develop delivery pathways?
1	I think the policy would be stronger if it included sections on engaging the public and private sector.
2	N/A
3	You may want to consider the opportunities to generate energy that could fulfil needs and also provide export opportunities. Happy to share information regarding a group MSc project that University of Strathclyde students are currently undertaking.
4	Create better more accessible consultations
5	Can you afford this!!!! landlords cant, people cant, councils cant, business cant...now in the real world this is a policy for the wealthy.
6	Older generations may be in more affluent Area, but equally at risk of fuel poverty. Needs consideration
7	The Organisation recognises the complexity and challenges associated and agree with the focus areas identified as well as potential opportunities to drive greater energy efficiencies throughout the region as progress is made along the decarbonisation journey. Please see our comment at question 7 regarding income.
8	
9	
10	no
11	
12	No
13	Not sure what the engagement with Prestwick Airport specifically is aimed within the Priority 3 focus statement (perhaps it refers to aeronautical engineering industry in Pwk generally). I think appropriate engagement with the building sector/architectural industry is also key to acknowledge and plan in to strategy for affecting best future and retrofit energy efficiency solutions for SA buildings

REF	QUESTION9 - Do you agree with the governance structure outlined in "Governance" section?
1	Partly Agree
2	Agree
3	Agree
4	Neither agree nor Disagree
5	Disagree
6	Agree
7	Agree
8	Agree
9	Disagree
10	Agree
11	Disagree
12	Agree
13	Partly Agree

REF	QUESTION9A
1	A clearer time frame for regular periodic reviews may be helpful - it may help to keep things on track.
2	N/A
3	Ok with Model
4	Note: You don't provide don't know response which is more honest
5	
6	Community groups
7	<p>The Organisation recognises the need for suitable operational and strategic level governance to oversee coordination and progress of deliverables against future key milestones and is satisfied that the outline governance model will aim to deliver on this. Working groups and stakeholder engagement is view as essential component of effective governance and that the organisation should be viewed as one of those partners.</p> <p>Taking into account our comments relating to particular population groups, we recommend that engagement be targeted specifically at these groups, using a range of methods which will support their participation.</p>
8	
9	
10	cant think of any
11	
12	As far as I am able to note that all bases addressed.
13	Yes, all local social landlords should feature along with appropriate representation from the private domestic sector (landlords and owner occupiers) as this cohort make up the vast majority of domestic dwellings in SA

REF	QUESTION10 - Do you agree with the actions identified in the “Delivery Plan Proposals” section?
1	Partly Agree
2	Agree
3	Agree
4	Neither agree nor Disagree
5	Disagree
6	Partly Agree
7	Neither agree nor Disagree
8	Agree
9	Disagree
10	Agree
11	Disagree
12	Agree
13	Agree

REF	QUESTION 10A - Are there other actions that you believe would support LHEES delivery?
1	Inclusion of some incentives (financial, recognition etc..) to assist energy efficiency etc.. would be helpful
2	Not that I'm aware of.
3	A fairly comprehensive delivery plan. The challenge will be establishing and managing the working groups so they are productive in the implementation of the final agreed plan. Roles, responsibilities and proposals from each group will need to be clear concise and achievable in line with the core aims of the plan. You need to be able to demonstrate at each review point that the activity is delivering the plan.
4	Talking to people without acronyms and numbers- name a topic if it's important Why not ask each business for their energy use and plans for efficiency as most will have considered this, advise those who haven't look at schools and admin buildings which are often so overheated energy is wasted by opening windows. Have ventilation with energy capture
5	Councils are skint! If govt pay for these, people will do it, but it won't so landlords Will sell, businesses will collapse and people get angry. People are fed up already with this. We like our cars, our gas boilers, and instant hot water. Old properties are hard to insulate walls, not to mention cost....33,000 upward for mine...are you paying.because I Can t afford this nor will I get into debt for this.reality!
6	
7	The Organisation notes the detailed LHEES process and the 25 individual actions contained within the delivery plan proposal and target timescales. The Board will continue to have an interest in the progress made and planned initiatives evolve in our capacity as an external stakeholder against those target dates. NHSAA welcomes the opportunity to review and comment on the South Ayrshire Council Local Heat and Energy Efficiency Strategy. We have no further comments to make at this stage.
8	
9	Allocate the money to the private sector. The less the public sector is involved the more chance of success.
10	no
11	
12	Perhaps clarify who is responsible for undertaking the actions.
13	More required to elaborate on how to signpost and enable property owners to improve the thermal capacity and decarbonisation options for their homes through active funding opportunities or subsidy/interest free loans

Energy Agency

In order to implement LHEES and associated work the existing and future partnerships with Ayrshire and Arran NHS Trust, Energy Agency and Home Energy Scotland are essential both from their specialized expertise and the direct contact they have with business, communities, and households. The ongoing work of these organisations and other local partners highlight areas of best practice, show links between housing and health, and ensure that external funding for advice and measures is delivered effectively and at speed.

Nethermills Hydro (owned by a local charity) feeds electrical power into Ayrshire College where it provides financial and carbon savings as well as a high-quality teaching resource for students College staff and the community.

Scottish Government Response

Scottish government appointed Turner & Townsend consultancy to review completed LHEES documents. As the review was undertaken on the draft LHEES comment regarding consultation and engagement are resolved within the final draft.

Turner & Townsend Strategy Consultation

Contents Page:

4.07.02 The Council have referenced that engagement has been undertaken but it is unclear within summary or Section 7 (Generation of Strategic Zones and Pathways) how the outputs from these efforts have been applied - the Council may wish to include these to meet this requirement

4.13.04 The documents throughout outline key challenges and barriers interventions are facing (including data, access to funding, limited current stakeholder engagement, limited Council influence etc.) - which has drawn attention to what needs to be undertaken for the Strategy to develop further. The initial proposal for Delivery Plan actions shows the Council is thinking longer term, but these actions will require fleshing out to become actionable.

Section 3 – Priorities

4.09.03 Within the Strategy Consultation document the Council have outlined 3 priorities: 1. Community and Sustainability; 2. Economy and Opportunity, 3. Education and Skills. These illustrate how wide reaching the impact LHEES Strategy/Delivery Plan interventions will be - and the Council have outlined to the intended audience how these are referenced to throughout the document and are welcoming feedback on their choice of priorities. Could also include this within the technical report.

Section 5 – Policy and Strategy context

5.2 - 4.13.02 The report could benefit from a general conclusion section which could include a current progress table to pull out data and findings from the main body of text and link to LHEES Considerations to meet this requirement - this has partly been met within Table 3

Section 6 – Opps & Challenges

6.5 - 4.11.01 In Section 6.5 the Council have listed the opportunity LHEES provides for decarbonisation/energy efficiency measures. They have listed challenges for both domestic and non-domestic buildings and the main challenges identified have been concerned with the age and energy efficiency of buildings across the Council. They have compared their statistics to the national averages, and split out data into ownership/building type etc. to provide a strong summary of the built environment across the Council.

However, the Council could include more comparison to national statistics, particularly for non-domestic. More references could be useful, with more detail included on current engagement with different groups and how this will evolve to address any challenges or opportunities. An additional suggestion could be to break down the statistics more e.g., more listed buildings in Carrick compared to national average.

4.07.03 The Council have repeatedly identified long-term stakeholder engagement as key to decarbonise/implement energy efficiency measures so may wish to include more detail if and when they have created one, e.g., provide examples of how engagement is developing with each group listed and provide information on how this can be built upon in line with LHEES Considerations 4.07.03

Section 7 – Strat Zones & Baseline

4.12.04 (iii) Section 7 shows the recommendations across the Strategic Zones and pathways for each of them - but recommendations/conclusions could be better summarised within this section (perhaps in a table format).

A possible improvement could be to provide a short overview/summary (perhaps in a table format) to make it simple for reader to navigate the information. However, sufficient level of detail to fulfil the LHEES Guidance is already provided.

4.12.02 (ii) Figure 4 clearly shows South Ayrshire's Strategic Zones (Troon, Prestwick, Ayr, Maybole, Girvan). It could be useful to include a key in the map to distinguish the difference between purple and black zones. Figure 15 heat pump suitability map should include a reference

4.12.04 Section 7 table 5 outlines the scale of the opportunity across Ayrshire for a range of energy efficiency retrofit measures (with 31,242 measures). Energy efficiency measures outlined includes wall insulation, loft insulation, glazing upgrades. The private sector have been identified as key to target (but also have specific barriers to implementation, e.g., located within conservation areas). Table 6 also provides the heat demand reduction specific energy efficiency interventions could generate, and the associated fuel savings per investment case (which links back the interventions to the fuel poverty LHEES Consideration). However, it is also unclear why the private sector have been highlighted, which could be clarified within documents.

4.12.03 The Council have outlined that they will coordinate with stakeholders about future opportunities for heat networks to serve users of heat on identified sites - suitability of buildings for connections remains unknown so further work has been identified including undertaking Building Assessment Reports (BARs). p. 37 outlines 3 priority focus areas: coordination with AEM work to build feasibility studies for Heat Network Zones; redevelopment of heat network zones; continued skills development through engagement with other local authorities, industry, international mentoring programmes. Greater clarity could be proposed for the timeline of these events taking place.

Section 14 – Delivery Plan

4.13.03 Section 14 (Delivery Plan Proposals) outlines 25 actions with implementation dates from 2024-2029. This high level table enables stakeholders and the Council to start understanding how to prioritise key programmes and projects to generate a more granular Delivery Plan. This Plan is still in its nascent stages so could benefit from greater detail added into stakeholders involved - a start can be seen in the Technical Report (Appendix I - Intervention Details; Appendix J- Intervention Costs)

4.13.01 The Council have started to outline long term actions within Section 10 (Delivery Areas), Section 11 (Pathways for all of South Ayrshire) and in Section 14 (Delivery Plan Proposals). Table 11 could include more detail to summarise key focus areas.

Appendix B: Legislation Relating to LHEES

4.10.01 Appendix B Table 11 provides a summary of the national legislation/policies and respective targets which are relevant to LHEES which have helped to inform the Council's prioritisation of measures/interventions.

Turner & Townsend Full Technical Consultation

Section 1 – Executive Summary

4.12.03 p.5 of the technical report suggests the Council are considering exploring the development of Dalquharran estate - potential to carry out mine water geothermal project - for further LHEES iterations the Council could explore collaboration with organisations across their territory. p. 36 of the consultation strategy outlines proximities to transport corridors and the respective fuel demand in that area could be considered for low carbon transport fuels interventions in South Ayrshire. It is clear the Council are starting to think longer term but these options are very much in their nascent stages and could benefit from feasibility assessments for further iterations.

4.01.02 p. 6 provides a summary of the potential pathway for domestic properties (Figure ES2: Decarbonisation and energy efficiency pathway) - showing current fuel source, grouping properties by total current heat demand, changes if energy efficiency measures are applied, and potential future heating systems, with the aggregated impact of change also estimated. This assessment has shown how heat pumps will play a large part in decarbonising the Council's domestic properties. Caveats are also included (i.e., that this pathway assumes all areas of proposed heat networks are developed, but does not factor further expansion into calculations). This assessment provides a strong summary into how the Council are aiming to decarbonise their domestic properties. Heat networks have been identified as playing a key part - but due to lower heat density compared to more urban authorities this will be confined to 2 districts within South Ayrshire. Though the figure is useful to illustrate the pathway, it could be clarified to be more evident to readers of the Strategy. Furthermore, it is not clear whether this pathway diagram takes fuel poverty into consideration. The diagram or description could benefit from including a commentary on total heat demand reduction modelled as a result of the fabric measure installed, to allow assessment against other local and national targets.

Section 5 – Policy and Strategy Context

4.08.01 Both the Strategy and technical report outlines how Heat in Buildings Strategy sets out a pathway to zero building emissions by 2045, and outlines the interim targets. Could be useful if the Council can elaborate more on which targets and actions in the HIBS are applicable to the LHEES considerations.

5.6

4.07.01 The Council have stated that stakeholders have been identified and engaged by the Council and from external partners, with feedback being considered during the development of the LHEES - though the Council caveat that further engagement/consultation will be necessary prior to the Strategy's release/implementation. Strategic direction has been coordinated through Net Zero and Sustainable Development & Climate Change working groups (providing project pipelines/consultations). The Council also have a number of Community Planning Partners, of which the Sustainability Partnership work across to influence the Local Outcome Improvement Plan outcomes. To better meet this requirement the Council could consider adding any mapping/matrix exercises they have adopted to identify and engage with stakeholders to make clear who will be responsible/accountable/consulted/informed about key Strategy and Delivery Plans information and actions; including evidence of this engagement and further plan coordination activity

4.08.04 the private landlord/Registered Social Landlord section does not include any description of works - the Council are encouraged to include a summary of work for these tenure types, so the document could benefit from having added details regarding how programmes have been delivered (e.g., HEEPS:ABS), and to provide an example of how this will be built on to increase impact going forwards.

Section 7 – Generation of strategic zone and pathways

4.07.02 The Council have referenced that engagement has been undertaken but it is unclear within summary or Section 7 (Generation of Strategic Zones and Pathways) how the outputs from these efforts have been applied - the Council may wish to include these to meet this requirement

7.6

4.12.03 The Council state that the 40000kWh/y/m measure highlights more areas as being potentially suitable and the 8,000 kWh/y/m shows fewer areas but are areas with a higher chance of forming a successful heat network. The heat load is said to represent 3 MW heat source operating for 5,000 full load equivalent hours per year - with the caveat that these calculations are intended for guidance purposes and the exact cost of each energy centre and network would need to be calculated at feasibility stage. The council have provided quantitative estimates for this requirement and stated

their next steps - further iterations will provide more confidence in the data estimates. The Council could consider including the summary table either in this Strategy or in the future Delivery Plan document.

Section 8 – Delivery Areas

8.1.8

4.12.03 (l) There is no general overview or summary table for the whole Local Authority area - this could be included in line with other LHEES reports.

Appendix D – Analysis of Core Indicators by Data Zones

4.12.04 (v) The Council have identified specific housing types/tenures which will need to be targeted in regards to support/funding - e.g., 4600 domestic properties in conservation areas; 3% of domestic properties being flats in mixed use buildings - limited direct influence, unique and challenging building types, and increase cost/challenge for interventions have all been listed as barriers for these hard-er to retrofit buildings. The Council have provided a good level of data within Section 8.3 of the consultation document and Appendix D of the technical report for this requirement

Appendix I – Intervention Details

4.10.01 Appendix I lists tables for each intervention but these are not all yet completed. Overall there is limited information to be found on targets/indicators - the Council could consider linking these to the 3 Council defined priorities.