Local Heat and Energy Efficiency Strategy (LHEES)

Delivery Plan and Appendices

Fife
COUNCIL

PLAN 4 FIFE

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Glossary

ABS	Area-Based Schemes
ASHP	Air Source Heat Pump
BGS	British Geological Survey
CCZW	Climate Change and Zero Waste Team
DNO	Distribution Network Operator
ECO	Energy Company Obligation
EES:ABS	Energy Efficient Scotland: Area Based Schemes
EESSH	Energy Efficiency Standard for Social Housing
EPC	Energy Performance Certificate
ESP	Energy Skills Partnership
EST	Energy Saving Trust
FVA	Fife Voluntary Action
GIS	Geographic Information System
GSHP	Ground Source Heat Pump
HEEPS:ABS	Home Energy Efficiency Programmes for Scotland: Area Based Schemes
HES	Historic Environment Scotland
HiBS	Heat in Buildings Strategy
HNZ	Heat Network Zones
LA	Local Authority
LAEP	Local Area Energy Plan
LDP	Local Development Plan
LEAR	Local Energy Asset Representation
LHEES	Local Heat and Energy Efficiency Strategy
LPG	Liquefied Petroleum Gas
LTS	Local Transmission System
MoD	Ministry of Defence
NPF4	National Planning Framework 4
OVHA	Ore Valley Housing Association
PEAT	Portfolio Energy Analysis Tool
RIIO-ED (2/3)	Revenue = Incentives + Innovation + Outputs – Electricity Distribution
RSL	Registered Social Landlord
SAP	Standard Assessment Procedure
SDS	Skills Development Scotland
SRUC	Scotland's Rural College
SME	Small, Medium Enterprise
Solar PV	Solar Photovoltaic
STEM	Science, technology, engineering, and mathematics
TAHP	Transitional Affordable Housing Programme
UoSA	University of St Andrews
UPRN	Unique Property Reference Number

1. Delivery Plan

1.1. Introduction

In November 2023 Fife Council published its Local Heat & Energy Efficiency Strategy[1]. A high-level delivery plan (Table 1) was also included.

The strategy noted the council would publish a detailed 5-year delivery plan in early 2025. Work to identify detailed actions for this plan is now complete, alongside delivery partners, timescales, and performance indicators.

Table 1: Summary of Actions

Building level[2]	- Building level studies to understand specific energy efficiency and heat decarbonisation measures requirements. - Planned projects to decarbonise buildings' internal heat sources. - Planned projects improving buildings' energy efficiency.
Heat networks	- Identify opportunities for new heat networks. - Expand and optimise (smart grids/networks) existing heat networks and explore changing to decarbonised heat sources. - Explore heat network delivery model options.
Energy system	- Identify existing electricity grid capacity to meet heat decarbonisation requirements. - Explore potential opportunities for expansion of energy systems to meet heat decarbonisation requirements. - Development of a pilot Dunfermline & Rosyth area energy plan.
Skills & jobs	- Skills and jobs baseline. - Training of existing providers. - National and regional coordination to tackle the skills gap. - Transitioning skills. - Fostering and feeding the skills pipeline. - Supply chain development.
Funding	- Help inform the direction of new funding sources. - Identify and promote existing funding sources. - Explore alternative funding sources to support retrofit/heat decarbonisation. - Maximise existing energy spend to benefit Fife.
Knowledge & awareness raising	- Raise awareness of the Local Heat and Energy Efficiency Strategy. - Improve knowledge on energy efficiency and heat decarbonisation.
Data, modelling & methodology	- Publish detailed delivery plan. - Review methodology to inform future versions. - Data collection to inform future iterations and identify high certainty actions. - Modelling to inform analysis and identify high certainty actions. - Improve insight of smart energy solutions to support the heat transition.

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[1] Actions were in seven categories. Some actions apply to multiple categories which were assigned to the most appropriate category.

[2] To ensure quality of delivery, building level actions have only been included where they are most likely to be possible, minimising potential damage to buildings, rising energy costs, or fuel poverty.

1.1.1. Climate Fife's Big Energy Move

The Climate Fife 2024 Strategy and Action Plan[3] set out Fife Council's plan for the next four years to act on climate change. The council are looking to the future, working to scale-up, going further and faster, and to build on achievements so far. It includes three big moves:

- **Energy** - Making the energy system cleaner, more sustainable and more efficient.
- **Resilience** - Working with partners to adapt and protect communities and nature.
- **Communities** - Supporting local climate action groups to work together and flourish.

It has six Action Programme Themes. Three of these will be directly supported by this delivery plan: **Buildings**; **Low Carbon Energy**; and **Protecting and Supporting our Communities**. It will also support the other themes where relevant to do so: **Transport and Travel**; **Zero Waste**; and **Nature and Land**.

This delivery plan forms a key part of the Big Energy Move, where we will begin to transform Fife's energy system to low carbon. It will be delivered in three phases:

1. Policy position and technical case (2024/25).
2. Economic case and change (2025/26).
3. Delivery and Transformation (2026 onwards).

For Phase 1, this delivery plan will be the basis to bring together different council plans, strategies, and policies with pathfinding projects. This will help establish an "*integrated, place-based approach to Fife's energy system.[4]*"

1.1.2. Changes to the energy system for Fife's places

"*Local Heat & Energy Efficiency Strategies are at the heart of a place-based, locally led, and tailored approach to the heat transition[5].*" They identify transitions needed in our built environment and consider how these relate to each place.

> **What is the Place Principle[6]?**
> The Place Principle details the importance of everyone working and delivering services in a coordinated way around places where people live.
>
> **What are place-based solutions[7]?**
> Almost all services and changes the council make, happen in places (such as local neighbourhoods). The council recognise everyone delivering in a place should work together, which will make sure everything is co-ordinated. It will also ensure the sum of their efforts is greater than their parts.
>
> Place-based solutions start with understanding assets, stakeholders, and relationships in an area. The range of people who can and should contribute to solving social problems and creating great places is broad. Building this community capital is a key purpose of community planning.

Fife Council has a strong focus on solutions focussed on places, and recognises each place has different:

- Energy opportunities, challenges, and priorities.
- Socio-economic priorities - consideration of these in energy planning is essential such as fuel poverty.

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[3] Climate Fife 2024 Strategy and Action Plan
[4] Climate Fife 2024 Strategy and Action Plan
[5] Local heat and energy efficiency strategies and delivery plans: guidance - gov.scot
[6] Place Principle: introduction - gov.scot (www.gov.scot)
[7] Recovery and Renewal (fife.gov.uk)

The energy transition cannot be seen in isolation. As such Fife Council developed the eight Local Heat & Energy Efficiency Strategy priorities. An example of this is the consideration of the heat transition in the context of the wider energy system. Decarbonising heat will increase demand on the grid, and fabric measures will reduce demand. It is therefore crucial to consider grid capacity when identifying actions. Other considerations include generation and storage opportunities, and constraint and resilience risks.

The heat transition also cannot be delivered in a way where some people are left behind. The priorities cover the areas we must think about to enable the heat transition.

This plan is the foundation of solutions for Fife's energy system focussed on place, this will be achieved by:

1. Including actions focussed on place (mainly in the building level, heat networks, and energy system categories).
2. Developing settlement level energy plans and heat network visions, starting with a pilot Dunfermline & Rosyth Energy Plan (chapter 1.2.4.1).
3. Heat network zone designation considering local opportunities, priorities, and challenges.

1.1.2.1. Energy plans and heat network visions

The council recognise district heating is one of the main requirements of the Local Heat & Energy Efficiency Strategy. They also form a key part of the whole energy system because:

- The roll-out of electrified heat will be supported/impacted by wider energy generation, storage, and constraints.
- Heat networks and heat storage could help balance the grid by having a lower demand than other green heating opportunities.

Therefore, the council have placed this strategy and delivery plan, as fundamental building blocks of Climate Fife and the Big Energy Move. The Big Energy Move will provide a coordinated approach to help meeting the requirements of both this strategy and those of the Heat Networks (Scotland) Act 2021 (chapter 1.2.3).

The first stage is a pilot energy plan for Dunfermline & Rosyth (chapter 1.2.4.1) to act as a prospectus and shared vision for a community. The energy plan will:

- Provide guiding principles for heat network creation and expansion.
- Explore and model a large-scale heat network vision for an area.
- Consider the impact of energy generation, storage, and resilience opportunities and constraint risks.
- Explore how to deliver a just energy transition.

For the plan, the heat network would be the anchor project supported by wider energy analysis. There is also significant potential to explore how this approach can align with Great British Energy's Local Power Plan concept[8].

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[8] Great British Energy founding statement - GOV.UK (www.gov.uk)

Opportunities linked to place were identified across Fife's localities to indicate potential priority areas for future energy plans/heat network studies. A RAG (red, amber, green) status was given to criteria:

1. Known heat sources; heat network zones, properties classified as first movers (social housing; public sector buildings; top 100 businesses).
2. Local Development Plan sites.
3. Known energy and heat projects; feasibility studies; and research reports.
4. Other key local priorities and projects.
5. How close each area is to going to market for heat network/wider energy.
6. Opportunity to reduce timescales, add value, and any risks if not delivered in the short term.

1.2. Actions

This section provides information on the identified actions across seven categories.

1.2.1. Actions Summary

This plan has actions on switching green heating and improving energy efficiency of buildings (particularly those within the council's control). This includes actions on installing insulation and glazing through to exploring opportunities for heat pumps and pilot projects to improve understanding.

There are also actions on where heat networks can be successful in Fife. Heat networks offer an important opportunity to decarbonise heat at scale and meet net zero. They also can help meet the other focuses of the Plan for Fife (tackling poverty, growing the economy, and building community wealth).

The other main group of actions are on tackling the challenges identified in the strategy. By doing so, this will provide a strong foundation for future delivery. Actions have been included on:

- Exploring how Fife's wider energy system supports/impacts expansion of green heating.
- Understanding the skills and jobs gap, with specific actions on engaging young people, transitioning skills, and working with the council's Employability Team.
- Identifying and unlocking funding opportunities.
- Engaging Fife's communities via targeted communications and working with partner organisations such as Cosy Kingdom.
- Improving data and models to improve understanding of suitable retrofit/heating actions.

1.2.2. Building level

Building level actions focus on:

- Building level studies to understand measures required.
- Planned projects to decarbonise buildings' internal heat sources.
- Planned projects improving buildings' energy efficiency.

The national guidance[9], states delivery plans should identify areas for:

"Targeted interventions and early, low regrets measures."

Considering the above, the council developed a "live" optioneering model (summarised below) to help identify suitable domestic building level actions. The outline approach from the strategy was adapted and will be updated as new data and information come available. This will ensure it remains robust and improves over time.

What are low regret measures?
The national Heat in Buildings Strategy defines low regret measures as "*technological solutions where cost uncertainty is low, and we already understand (a) the costs of installation and (b) running costs for Consumers.*" The strategy references:
- Installation of cost-effective energy efficiency first improvements.
- Heat pumps.
- Low and zero emissions heat networks in areas deemed suitable.

What is optioneering?
A process to analyse and assess different options to help solve a problem.

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1. **Define retrofit scenarios**:
   a. Fabric only.
   b. Install individual decarbonised heating option (with fabric improvements).
   c. Connect to district heat network (with fabric improvements).

2. **Identify indicators for each of the Local Heat & Energy Efficiency Strategy priorities** - aligned to opportunities and challenges for different stakeholders.

3. **Score indicators** – low, medium, and high scores were assigned to each indicator. Scores were not weighted to ensure stakeholders' priorities are reflected equally.

4. **Review** – to ensure indicators were appropriate, engagement took place with key stakeholders.

5. **Building scoring** – properties were scored using the indicators for each scenario.

6. **Stakeholder engagement** – data was visualised for building clusters/geographic areas. This showed how actions support stakeholder priorities and agree actions for the delivery plan.

7. **Building level actions agreed**.

8. **Monitor and review** – continue to refine the indicators and explore other retrofit scenarios (return to step 1).

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[9] Local heat and energy efficiency strategies and delivery plans: guidance - gov.scot (www.gov.scot)

Table 2: Building level studies and planned projects to decarbonise buildings' internal heat sources and/or improve their energy efficiency.

Code	Action	Delivery partner(s)	Timescale
B.01	Use the optioneering model to identify energy efficiency and heat decarbonisation retrofit opportunities for: • Council houses suitable for fabric measures. 400 cavity walls extracted/refilled and 50-100 loft insulation top-ups per year. • Identify council houses likely to be in a heat network expansion area during the lifecycle of this delivery plan. Build in a suitable retrofit plan with Housing Services. • Areas suitable for area-based schemes and national funding opportunities. 100 private/25-50 Council houses per year.	• Housing Services (Lead) • Planning Services: Climate Change & Zero Waste	Ongoing
B.02	Carry out condition surveys of 15 council trading account properties. These will assess Energy Performance Certificate ratings; understand where stock can be rationalised; or where energy efficiency measures could be implemented.	• Business & Employability	2024-26
B.03	Determine Kirkcaldy town centre properties which are vacant which could be repurposed and/or redeveloped into energy efficient buildings. This will form part of the council's town centre housing approach.	• Business & Employability • Housing Services	By 2028
B.04	Fife Industrial Innovation Investment (i3) programme to deliver new buildings/serviced sites across Mid and South Fife. It will also revise standard specifications for new industrial buildings.	• Business & Employability • Property Services	2024-28
B.05	Subject to available funding, improve the energy efficiency and decarbonise heating of historic buildings. This will include using learnings from the existing work to: 1. Repurpose Silverburn Flax Mill into a multi-purpose space, including ground source heat pump. 2. Repair historic buildings in Buckhaven and improve their energy efficiency - including looking at potential for Air Source Heat Pumps.	• Business & Employability	1. By 2026 2. By 2028
B.06	Subject to available funding, improve existing council non-domestic stock: 1. Apply the vision of *"all Fife Council led construction projects to develop new buildings or refurbish existing properties shall enable our objective to reach Net Zero targets by 2045 at the latest."* 2. Pilot projects on 11 council buildings - installing Air Source Heat Pumps and retaining gas boilers (to help meet peak demand). 3. Invest at least £8.5m in decarbonising around 22 existing buildings. 4. Invest up to £3.1m in energy efficiency works through the Energy Management Revolving Fund over the next four years. This could potentially continue beyond the initial 4 years. 5. Take opportunities to decarbonise heating/improve energy efficiency during major repairs/refurbishments.	• Property Services	1. Ongoing 2. 2025 3. 2025-28 4. 2024-28 5. Ongoing
B.07	Establish all new construction projects to deliver low in use energy consumption and align with net zero objectives.	• Property Services	Ongoing
B.08	Build 200 new affordable houses per year to Silver Plus Standard (by 2027) as part of the Phase 4 Affordable Housing Programme (2024-29), subject to available funding. All houses built to Energy Performance Certificate B band with clean heating systems.	• Housing Services	2024-29
B.09	Increase energy efficiency of 1,500 council houses per year via energy efficiency improvements and external wall insulation schemes.	• Housing Services	2024-27
B.10	Explore opportunities to pilot new heat decarbonisation/energy efficiency technologies/approaches in Fife (for example innovative heat technologies for replacing gas boilers/heating). This will include a study to determine the best decarbonised heating options for council houses (such as infrared/air source heat pumps) and working alongside housing associations.	• Housing Services • Property Services	Ongoing
B.11	Explore funding for a pilot project on small, rural communities. This would focus on promoting/engaging on retrofit measures, exploring retrofit solutions, and opportunities for small heat networks with Net Zero Terraced Streets.	• Planning Services: Climate Change & Zero Waste	Ongoing
B.12	Engage with stakeholders to receive updates on building level studies, heat decarbonisation, and energy efficiency projects. Stakeholders include housing associations, University of St Andrews; NHS Fife; Fife College; Scottish Rural College.	• Planning Services: Climate Change & Zero Waste	Ongoing

1.2.3.   Heat networks

Actions on heat networks focus on:
- Identifying opportunities for new networks.
- Expanding, decarbonising, and optimising (smart grids/networks) existing networks.
- Exploring options for heat network delivery models.

The strategy's initial 35 potential heat network zones informed these actions. Further analysis was completed after publication which will inform requirements under the Heat Networks (Scotland) Act 2021[10]. Sections 47 and 48 of the act place duties on councils to review and designate heat network zones. The following analysis, informed by heat network operators and technical experts, was completed:

1. **Building shells** – calculated total heat demand for all building shells and mapped.

2. **Linear heat density** – calculated linear heat density[11] of 4 MWh/m for all building shells.

3. **Identify new zones** – new zones generated where linear heat density buffers overlapped.

4. **Zones categorised** – by number of anchor loads[12] and buildings to show zone viability.

5. **Building categorisation** – calculated measures of zone stability based on the number and total heat demand of different building types:
   - **Firm connections** – public sector buildings, social housing, large businesses.
   - **First movers** – other private non-domestic buildings.
   - **Other** – owner-occupied and private rented homes.

6. **Heat corridors** – labelled zones close to each other to show where they could potentially merge.

7. **1st assessment** – classified zones as either low, medium, or high certainty using the data captured above.

8. **2nd assessment** – filtered out zones where a heat network is unlikely to occur and add nearby large social housing clusters. These zones will be used to complete the heat network zone designation template provided by Scottish Government.

9. **Monitor and review.**

This analysis identified 153 draft zones (excluding social housing clusters). These will support the council's duties within the act and the Heat Networks (Heat Network Zones and Building Assessment Reports) (Scotland) Regulations 2023[13]. However, it is likely not all zones will be formally designated.

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[10] Heat Networks (Scotland) Act 2021 (legislation.gov.uk)
[11] See section 6.8.2.5. of the strategy.
[12] See section 6.8.2.5. of the strategy.
[13] The Heat Networks (Heat Network Zones and Building Assessment Reports) (Scotland) Regulations 2023 (legislation.gov.uk)

Table 3: Identify new heat networks.

Code	Action	Delivery partner(s)	Timescale
H.01	Meet the requirements of Heat Networks (Scotland) Act 2021 and 2023 regulations: 1. Collate building assessment reports for public-sector non-domestic buildings. 2. Review and designate heat network zones – including a formal consultation.	• Planning Services: Climate Change & Zero Waste	1. Ongoing 2. By 2025
H.02	Investigate opportunities to use and gather data on, new and existing heat sources, including: • Sea and river water. • Mine water heat potential from boreholes and mine water treatment works. • Waste water treatment works and sewer pipes (Scottish Water). • Ground source heat pump arrays. • Business/industrial heat, including Westfield Energy from Waste plant.	• Planning Services: Climate Change & Zero Waste (Lead) • Business & Employability	Ongoing
H.03	Complete feasibility studies and techno-economic modelling for new heat networks. This will be via energy plans focussed on place, including: • Energy centre locations, pipe routes, constraints, sequencing of connections. • Matching heat sources to demand and engage with heat owners. • Engage with anchor loads/stakeholders to determine appetite for heat network connection and gather heat demand data.	• Planning Services: Climate Change & Zero Waste	Ongoing

Table 4: Expand, decarbonise, and optimise (smart grids/networks) existing heat networks.

Code	Action	Delivery partner(s)	Timescale
H.04	Fife Council to continue to support ongoing work on the potential expansion of the University of St Andrews' heat network by sharing data and learnings where appropriate.	• Planning Services: Climate Change & Zero Waste	Ongoing
H.05	Explore the potential expansion of the: Glenrothes Energy Network District Heat Network, and Dunfermline Community Energy Heat Network.	• Property Services (Lead) • Planning Services: Climate Change & Zero Waste	Ongoing

Table 5: Explore heat network delivery model options.

Code	Action	Delivery partner(s)	Timescale
H.06	Complete an options appraisal of heat network (wider energy) delivery models.	• Property Services (Lead) • Planning Services: Climate Change & Zero Waste	2024-25
H.07	Depending upon the outcomes of the options appraisal of heat network (wider energy) delivery models explore funding opportunities to develop a business case to support the design and establishment of a delivery model.	• Main council contact still to be determined	2026-29

1.2.4. Energy system

Actions on the energy system focus on:

- Identifying existing electricity grid capacity.
- Opportunities to expand energy systems to meet heat decarbonisation requirements.

The strategy focuses on a resilient and just transition to decarbonise heat and the need to consider the wider energy system and infrastructure changes. This is especially important when planning heat decarbonisation where electricity grid improvements, renewable generation, storage, and moving away from natural gas are all key considerations. Key partners will be SP Energy Networks, SGN and the Scottish and UK Governments who will each lead on their areas of responsibility. The council will have a role in the transition, which the below actions show.

1.2.4.1. Dunfermline & Rosyth Energy Plan

A pilot Dunfermline & Rosyth Energy Plan is being taken forward in 2023/24-2025/26. This is a fundamental building block of the Big Energy Move (chapter 1.1.1) and has three parts:

1. **Energy prospectus** – focussed on Dunfermline, Rosyth, Inverkeithing, Crossford, and Townhill (including nearby energy opportunities and development sites).

   The aim was to highlight an ambitious scenario for the energy system with the widespread adoption of heat networks which best meets local needs. It is being used as an engagement tool to highlight to stakeholders the potential for a large-scale heat network, and to support next steps.

Table 6: Early findings of Dunfermline & Rosyth Energy Prospectus[14]

⬆	**20%** and **23%** annual **increase** in heat and power demand from new developments.
⚠	**390 GWh** of heat demand met by heat network(s).
⚡	**90% increase** in annual **electricity demand** to meet future power, heat, and transport demands.
🍃	Up to **40%** of electricity demand could be met by **renewables.**
🔋	**190 MWh** of **battery storage needed** to support the optimised energy system.

2. **Stakeholder engagement** – engage and test the approach with the above stakeholders to help to develop a shared plan. It will also help agree an effective approach to deliver Fife's energy transition.

3. **Energy plan & heat network vision** – explore the potential opportunity in more detail:
   - Analyse more than one scenario for heat network expansion.
   - Explore heat sources, including heat offtake potential.
   - Incorporate lessons learned from ongoing stakeholder engagement.
   - Analyse development opportunities for heat network zones. This will include techno-economic modelling.
   - Develop a methodology which can be used for other areas.

   The project area includes: all areas in the City of Dunfermline locality, as well as Rosyth, Inverkeithing, Crossgates, and North Queensferry.

The council will identify the next most appropriate area(s) to develop energy plans for (subject to available resources). It will help take forward a place approach to energy and heat network planning.

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[14] Further discussions indicate these numbers are likely to change, with heat and power demand likely to increase.

Table 7: Identify existing electricity grid capacity and explore potential opportunities for expansion of energy systems to meet heat decarbonisation requirements.

Code	Action	Delivery partner(s)	By when
E.01	Develop energy plans and heat network visions using a place approach: 1. Complete and promote the Dunfermline & Rosyth Energy Plan. This will include linking with the Forth Green Freeport Decarbonisation Strategy. 2. Seek funding/support to complete a second phase of energy planning focussed on place. 3. Complete further energy plans.	• Planning Services: Climate Change & Zero Waste	1. 2025 2. 2025-26 3. 2026-29

E.02	Continued collaboration with SP Energy Networks on:
	• Development and use of the Local Authority Network Insight Tool and Open Data Portal. This will help forward plan heat decarbonisation measures for buildings.
	• Support energy system reviews to ensure they reflect Fife's energy system needs for heat decarbonisation from 2028 onwards. These reviews include:
	  o Distribution Future Energy Scenarios.
	  o Revenue = Incentives + Innovation + Outputs – Electricity Distribution 3 (RIIO-ED3).
	• Green Link 4 development and opportunities including Westfield and Kinghorn/Burntisland.
		• Council services	Ongoing

E.03	Continued collaboration with SGN to explore the heating potential for hydrogen. This will include H100; Local Transmission System Futures Programme; and H2 Caledonia.	• Council services	Ongoing
E.04	Provide support to Fife-wide energy planning. This will help manage competition for resources and future planning. It will include: 1. Exploring private grid connection to renewables. 2. Exploring development of local smart grids/zones/grid scale battery storage. Investment enquiries, planning applications, and weekly circulars will capture this information. 3. Engaging with businesses, and other key sectors, investing in energy generation measures to understand and influence projects. This will help develop sectoral/geographic clusters. 4. Exploring how this strategy can support/benefit from larger energy projects (e.g. bootstrapping).	• Business & Employability • Planning Services: Climate Change & Zero Waste • SP Energy Networks	1. Ongoing 2. 2027-29 3. Ongoing 4. Ongoing
E.05	Consider the Local Heat and Energy Efficiency Strategy when reviewing energy statements in planning applications.	• Planning Services	Ongoing
E.06	Engage with and inform national and regional energy planning, for example: • Ofgem. • National Energy System Operator. • Regional Energy Strategic Plan.	• Main council contact still to be determined	Ongoing

1.2.5. Skills & jobs

Actions on supporting skills and jobs focus on:

- Engaging existing training providers.
- Transitioning the skillset of the workforce to support the green heat transition.
- Supporting those seeking employment.
- Fostering and feeding the skills pipeline to show young people career opportunities in the green heat and energy efficiency sectors.
- Supply chain development.
- Working via city region deals to influence change and improve intelligence on the skills gap.

The strategy highlights the skills gap across Scotland which must be overcome to meet national targets, and the need for a green skills workforce to support Fife's heat transition. It also notes:

- Various challenges on sector understanding and undersubscribed courses.
- The potential to apply skills of workers from fossil fuel orientated industries.
- Key supporting roles such as smart energy and retrofit coordinators.

1.2.5.1. Business & employability support

Actions were developed in partnership with the teams who focus on business and employability:

- **Economic Development**
  Supports local businesses, supply chains, and the Forth Green Freeport. Actions in this plan will provide intelligence to maximise investment in Fife, generating jobs and business.
- **Place Programmes & Policies**
  Supports city deal responsibilities, economic regeneration, and town centre development.
- **Employability Team**
  Helps people with barriers to employment find appropriate jobs, engaging 2,400 people[15] per year and working in partnership with employers to get people trained and into employment. To meet the jobs and skills gap it will be critical to inform and engage with local suppliers via this team.

1.2.5.2. Edinburgh & South East Scotland City Region Deal Net Zero Innovation & Delivery Programme

Fife Council are also undertaking a two-year UK Research and Innovation funded project[16]:

- **Work package 1: energy supply and infrastructure**.
  This looked at improving training and upskilling across the city deal region for construction by examining the training provider landscape and making change recommendations. It also gave consideration on how to foster a more diverse and inclusive workforce. The output was a feasibility study identifying net zero skills shortfalls for domestic retrofit and workforce project model[17].
- **Work package 2: industry and manufacturing**.
  This focuses on the manufacturing sector and regional supply chain for heat and energy. It will help highlight any skill gaps and potential upskilling, reskilling, and new training opportunities. Furthermore, consideration will be given to the region's manufacturing facilities and opportunities to support new technologies. The output will be a feasibility study on how to develop an inclusive and high skilled manufacturing workforce, to meet demands. Analysis of supply chain opportunities from the Forth Green Freeport and Local Heat and Energy Efficiency Strategies will also be undertaken.

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[15] 16+ to retirement age.
[16] Part of the 'Fast Followers' programme and running to June 2025. Innovate UK's Net Zero Living programme - Innovate UK Business Connect
[17] Net Zero Innovation and Delivery — The Edinburgh and South East Scotland City Region Deal. In partnership with HCI Skills Gateway.

Table 8: Engage with existing training providers.

Code	Action	Delivery partner(s)	Timescale
S.01	Seek updates from, and provide insight to, existing training/retrofit providers such as Fife College, Energy Skills Partnership, Verdancy Group, Capital City Partnerships, Skills Development Scotland, Kingdom Works.	• Business & Employability • Planning Services: Climate Change & Zero Waste	Ongoing

Table 9: Transition skills.

Code	Action	Delivery partner(s)	Timescale
S.02	Engage sectors requiring a change in direction due to the heat transition (such as gas and oil), Fife College and Department for Work & Pensions, to understand transferable skills and training requirements.	• Business & Employability	Ongoing
S.03	Development of green jobs and skills at the Forth Green Freeport, as part of the Regional Prosperity: Framework for delivery.	• Business & Employability	Ongoing

Table 10: Support those seeking employment.

Code	Action	Delivery partner(s)	Timescale
S.04	Engage with the Employability Team to promote the Local Heat & Energy Efficiency Strategy priorities to the supply chain.	• Planning Services: Climate Change & Zero Waste	Ongoing

Table 11: Foster and feed the skills pipeline.

Code	Action	Delivery partner(s)	Timescale
S.05	Engage/inform programmes aimed at working with young people to support future entrants to the heat and retrofit sector: • Engage with Developing Young Workforce Fife; Culture of Enterprise programme; and HCI Skills Gateway. • Explore funding opportunities for the Race to Zero app to enhance decarbonised heat content. This was launched in June 2023 with 1,500+ downloads and 47% of players saying they would use the app again. However, there are challenges with funding for updates. Funding options will be explored to continue with app development and updates.	• Business & Employability • Planning Services: Climate Change & Zero Waste	2025-27

Table 12: Develop the supply chain.

Code	Action	Delivery partner(s)	Timescale
S.06	Support/develop the supply chain to assist the heat transition/inclusive growth including helping provide necessary jobs and skills: • Explore the potential to encourage, require, and support development of route maps for new/additional business activity focussing on sustainability, energy, and heat. • Engage Fife's top 100 businesses and wider business network working with Business Gateway Fife to review any specialist business training/employability support on net zero ambitions. • Potential focussed meet the buyer events help support inclusive growth.	• Business & Employability • Planning Services: Climate Change & Zero Waste	Ongoing

Table 13: Support regional approaches to understanding and tackling the skills and jobs gap.

Code	Action	Delivery partner(s)	Timescale
S.07	Support development/delivery of the Edinburgh and South East Scotland City Region Deal Net Zero Innovation & Delivery Programme.	• Planning Services: Climate Change & Zero Waste	Ongoing
S.08	Explore opportunities to influence Regional Skills Assessments on the heat transition.	• Business & Employability	Ongoing
S.09	Engage with the city deals on regional skill proposals, to help close the skills gap: 1. Tay Cities' clean growth community. 2. Edinburgh and South East of Scotland's Integrated Regional Employability & Skills programme.	• Business & Employability	Ongoing

1.2.6. Funding

Actions on funding focus on:

- Identifying and promoting existing and alternative funding sources.
- Maximising existing energy spend to benefit Fife.
- Helping to inform the direction of new funding sources.

The strategy notes the estimated investment needed to retrofit Fife's domestic properties is £3 billion[18]. There is a need to develop alternative energy system models and funding mechanisms. This will help the retrofit of Fife's buildings, the heat transition, and building community wealth.

To support this, we will promote existing funding sources to property owners across Fife. This will be delivered alongside communications actions (chapter 1.2.7). There will also be opportunities to:

- Inform internal and external funding streams, for example the Community Recovery Fund.
- Consider alternative funding models. An example is reinvesting profits to help rollout of decarbonised heating or build community wealth.

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[18] Estimated costs based on Energy Saving Trust, Portfolio Energy Analysis Tool – High Ambition Scenario. Figures exclude recent price rises. Non-domestic cost is unknown.

Table 14: Identify and promote existing and alternative funding sources.

Code	Action	Delivery partner(s)	Timescale
F.01	Review and promote existing energy efficiency and heat decarbonisation funding databases/directories. This will identify any funding gaps and gather information on further opportunities. It will also include a review of alternative funding sources and how they can be best utilised.	• Planning Services: Climate Change & Zero Waste	2025 - Develop 2025-29 - Promote
F.02	Raise awareness of, and encourage applications to, third party funders by businesses. This would be for both retrofit projects and innovation.	• Business & Employability • Planning Services: Climate Change & Zero Waste	Ongoing

Table 15: Maximise existing energy spend to benefit Fife.

Code	Action	Delivery partner(s)	Timescale
F.03	Where feasible to do so, such as heat network expansion, explore opportunities to reinvest profits to support the heat transition. This could directly benefit Fife's communities and businesses.	• Planning Services: Climate Change & Zero Waste (Lead) • Property Services • Business & Employability • Housing Services	Ongoing

Table 16: Help inform the direction of new funding sources.

Code	Action	Delivery partner(s)	Timescale
F.04	Input into internal funding reviews to ensure revenue/capital projects are included, and other projects consider this strategy, examples include: • Fife Council's Capital Plan review. • Housing Revenue Account. • Inform Community Recovery Fund (or similar funds) to tackle fuel poverty and raise awareness/provide advice on energy efficiency and heat decarbonisation. • Forth Green Freeport Non-Domestic Rates.	• Planning Services: Climate Change & Zero Waste • Property Services • Housing Services • Business & Employability	Ongoing
F.05	Explore the opportunity to utilise Area Based Scheme funding to fund connection of buildings to heat networks.	• Housing Services	2027-29
F.06	Engage with external funders to inform potential funding streams to support delivery of heat decarbonisation and energy efficiency actions.	• Planning Services: Climate Change & Zero Waste	Ongoing

1.2.7.   Knowledge and awareness raising

Actions on communications and behaviour change focus on:

- Raising awareness of the strategy.
- Improving knowledge on energy efficiency and heat decarbonisation.

Recognising there is a challenge on how to improve buildings outside the control of the council and partners helped with developing the below actions. The proposed national Heat in Buildings Bill[19] may bring in legislation to encourage home and business owners, and landlords, to improve their houses and buildings. However, this may take several years to be implemented. Therefore, there is a role for the council and partners to educate and inform these groups to allow progress to be made.

Actions in this category have been developed in partnership with Climate Action Fife[20] and Cosy Kingdom[21]. Working with these partners, as well as other local organisations and council services will be critical to the success of this delivery plan.

A key action is to support existing energy advice and related materials. We will do this in collaboration with Cosy Kingdom and Climate Action Fife. This will help inform wider climate communications and be shared across the community. During development of the Local Heat & Energy Efficiency Strategy, a wealth of relevant data, models, and learnings from industry experts has been gathered. It will be important to convert these into easy-to-understand formats to support communications and advice services.

Any campaign would use the Shifting Normal approach[22]. This accounts for low carbon options becoming more common in how people live their lives. The expectation is as this continues more people will live greener lives. This will be because it has been normalised and made easier to do. The Shifting Normal approach helps environmental community groups maximise success. It considers how change happens when planning, delivering, and reviewing their activities.

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[19] Delivering net zero for Scotland's buildings - Heat in Buildings Bill: consultation - gov.scot
[20] Home - Climate Action Fife
[21] Cosy Kingdom – Stay warm, save energy
[22] Shifting normal - designing projects to tackle climate change: full guide - gov.scot (www.gov.scot)

Table 17: Raise awareness of the Local Heat and Energy Efficiency Strategy and improve knowledge on energy efficiency and heat decarbonisation.

Code	Action	Delivery partner(s)	Timescale
K.01	Explore with Climate Action Fife/Cosy Kingdom opportunities to use the learnings from the strategy to inform energy advice and energy efficiency/heating communication campaigns.	• Planning Services: Climate Change & Zero Waste • Climate Action Fife • Cosy Kingdom • Fife Climate Hub	2025 (development) 2026 onwards (delivery)
K.02	Engage partner organisations and experts (such as community groups, businesses, housing associations, council services) to determine the most appropriate methods to engage with different tenures. This includes: • Gather feedback on support and advice delivered to communities and businesses across Fife. • Gather feedback to undertake a gap analysis. This will help understand areas where this strategy can further support partners. • Collaborate to organise local events to promote awareness of heat pumps/networks and energy efficiency measures. • Leverage stakeholders as advocates for heat pump/network and energy efficiency adoption in the local community.	• Planning Services: Climate Change & Zero Waste	Ongoing
K.03	Provide home energy advice to 19,950 people through: • Government and local advice and schemes. • In-depth telephone advice. • Energy advice/measures as part of the Handy Service. This will be a continued annual programme.	• Housing Service (Lead) • Cosy Kingdom	2024-27
K.04	Use the optioneering model (chapter 1.2.2) to identify and prioritise areas for engagement.	• Planning Services: Climate Change & Zero Waste	Ongoing

1.2.8.   Data, modelling & methodology

Actions on data, modelling and methodology focus on:

- Reviewing the methodology to inform future iterations of the strategy.
- Improved data collection and modelling to inform future iterations and identify high certainty actions.

The various challenges identified in the strategy such as insufficient data, uncertainty of measures, and fuel poverty were used to help develop actions in this category. Having actions to start tackling these challenges will provide a strong foundation for future versions of the strategy and support ongoing delivery. To achieve this, the actions below were seen as a priority for the first delivery plan.

A large array of datasets and models underpin this strategy and delivery plan. These have been used to:

- calculate baselines,
- develop maps,
- identify areas of potential opportunities, and
- start identifying projects.

There are opportunities to either improve existing data or develop new analysis and models to help tackle some of the challenges. Furthermore, there is a need for regular data updates to refresh analysis, maps, and models, to keep them relevant.

Data will be collected, and models improved by maintaining a close working relationship with key partners. These include Scottish Government, Improvement Service, utilities, Energy Savings Trust, and Housing Service.

Table 18: Review methodology to inform future versions.

Code	Action	Delivery partner(s)	Timescale
D.01	Review and revise the methodology, delivery plan, and modelling: 1. Maintain a "live" delivery plan and identify new building level actions. 2. A biennial review of the methodology, incorporating lessons learned. 3. Engage with partners/experts to further develop the strategy; and provide advice on policy changes.	• Planning Services: Climate Change & Zero Waste	1. Ongoing 2. Ongoing 3. Ongoing
D.02	Engage with Scottish Government and work collaboratively to maximise and deliver net zero change in Fife.	• Planning Services: Climate Change & Zero Waste	Ongoing
D.03	Engage with and help inform Fife Council's strategies, such as the Fuel Poverty Strategy. This will also include the Employment Land Strategy to support new business development opportunities, including determining potential heat demand and feasibility of connecting to new heat network opportunities.	• Planning Services: Climate Change & Zero Waste	Ongoing

Table 19: Data collection and modelling to inform future iterations and identify high certainty actions.

Code	Action	Delivery partner(s)	Timescale
D.04	Ongoing liaison with stakeholders to collect updated data, including: 1. Building Assessment Reports to verify heat demands and retrofit opportunities. 2. Opportunities to share half-hourly data to inform feasibility studies. 3. Public Sector Carbon Management Plans. 4. Building Energy Management Systems and sub-metering.	• Planning Services: Climate Change & Zero Waste	Ongoing
D.05	Gather improved data from businesses and potential investors in Fife, by: • Exploring funding opportunities for energy audits/energy efficiency improvements for businesses. • Caseload engagement and relationship management. • Look to incorporate findings from the 2023 investor questionnaire and review potential opportunities for future questionnaires. This gathers energy, energy efficiency, and heat decarbonisation data.	• Business & Employability	Ongoing
D.06	Continue to develop the Fuel Poverty Composite Index tool and agree future use cases.	• Communications and Customer Insight • Planning Services: Climate Change & Zero Waste	Ongoing
D.07	Continue to close data gaps and other factors which impact fuel poverty, such as pre-payment meters.	• Communications and Customer Insight • Housing Services • Planning Services: Climate Change & Zero Waste	Ongoing
D.08	Work with projects at the initiation stage to use the Climate Place Tool and Climate Assessment Tool. These assess land suitability and climate impacts of project proposals, respectively. • Explore potential to expand these tools to the council's project management boards.	• Planning Services: Climate Change & Zero Waste	Ongoing
D.09	Develop new data resources and models (and search for funding), including: • Map potential land for heat stores and heat network pipe routes. This will utilise local and expert knowledge. • Collate a public sector asset land layer to enable wider energy planning. • Explore opportunities to improve existing data, for example listed buildings in Fife.	• Planning Services: Climate Change & Zero Waste	Ongoing

1.3. Performance monitoring and reporting framework

The strategy had a range of indicators to measure success which have been reviewed and refined (Table 20). Furthermore, overall progress of the delivery plan will be recorded in a climate portal and reported as part of Climate Fife. More regular reporting on success and progress of the delivery plan will be to the Local Heat & Energy Efficiency Strategy Steering Group and Addressing the Climate Emergency Board. A more formal review will occur in 2026/27 and at the end of the five-year lifespan of the strategy.

Table 20: Fife Indicators

Outcomes	Indicators
1.1 Net zero & climate emergency	• Fife-wide greenhouse gas emission estimates. • Carbon emissions from our public buildings.
1.2 Adaptation	• Number of council projects assessed against climate change impacts.
2.1 Tackling fuel poverty, health, and the just transition	• Average probability of homes being in fuel poverty/extreme fuel poverty. • Number of households supported via retrofit fuel poverty support mechanisms.
3.1 Skills & jobs	• Number of working hours/jobs required to retrofit domestic properties.
3.2 Community wealth building	• To be identified following development of a performance framework/scorecard for community wealth building.
3.3 Finance	• Fife Council capital spend on carbon and energy reduction. • Allocation and final spend of Area Based Scheme support in Fife.
4.1 Awareness & knowledge	• Climate Action Fife/Cosy Kingdom – energy advice indicators and case studies. • Number/type of engagement activities undertaken.
5.1 Ensuring certainty	• Number/type of high certainty building level actions identified/delivered. • Number/type of projects progressed or supported by the Local Heat & Energy Efficiency Strategy officer aiming to increase certainty.
6.1 Energy system opportunities & constraints	• Levels of energy investment in Fife via engagement with SP Energy Networks.
7.1 Domestic **7.2 Social housing** **7.3 Private rented** **7.4 Mixed-use, -tenure & historic**	• Number of homes improved by area-based projects. • Number/type of building level actions delivered. • Number of new buildings built to Silver Plus Standard. • Fife Council capital spend on carbon and energy reduction.
7.5 Non-domestic	• Number/type of new building level actions delivered. • Number of new buildings meeting the Passivhaus standard or exceeding the Scottish Futures Trust's performance metric ($67kWh/m^2/annum$ energy use). • Fife Council capital spend on carbon and energy reduction.
8.1 On-gas **8.2 Off-gas**	• Sub-national gas and electricity consumption data for domestic properties. • Fife Council capital spend on carbon and energy reduction.
8.3 Non-domestic	• Sub-national gas and electricity consumption data for non-domestic properties. • Carbon emissions from our public buildings. • Number of buildings with decarbonised heating and hot water systems. • Fife Council capital spend on carbon and energy reduction. • kWh of renewable energy and heat generated by our own estate.
8.4 Heat networks	• Proportion of known buildings connected to a heat network. • kWh of renewable energy and heat generated by our own estate. • Number of designated heat network zones. • Number of district heat network projects.

2. Appendix 1 – Stakeholders

Table 21: Internal Stakeholders

Fife Council Stakeholders
Councillors
Sustainable Growth & City Deal Board
Enterprise & Environment Board
Addressing the Climate Emergency Board
Housing Services
Business & Employability
Property Services
Planning Service
Communities & Corporate Development
Protective Services
Communications and Customer Insight
Legal Services
Procurement
Financial Services

Table 22: External Stakeholders

National	• Scottish Government • Energy Saving Trust • Coal Authority • Ministry of Defence • Historic Environment Scotland • Scottish Environmental Protection Agency • NatureScot • National Trust for Scotland
Energy/Utility	• SP Energy Networks • SGN • Scottish Water • Vital Energi • Brockwell Energy • RWE • Vattenfall
Housing Associations	• Ore Valley Housing Association • Kingdom Housing Association • Link Housing
Developers	• Homes for Scotland • Scottish Property Federation
Public Sector Partners	• Local Authority Led Forum • Fife Environmental Partnership • NHS Fife • University of St Andrews • Fife College • Scottish Rural College • Perth & Kinross Council • Dundee City Council • The Highland Council
Third Sector Partners	• Fife Communities Climate Action Network • Fife Historic Buildings Trust • Fife Voluntary Action • Greener Kirkcaldy • St Andrews Environmental Network
Skills & Supply Chains	• Concrete Scotland-ExpLearn • Energy Skills Partnership • Kingdom Works • Scottish Enterprise • Tay Cities Deal
Public	• Private Landlord Forum • Sustainable Cupar
Other	• John Gilbert Architects • Star Refrigeration • ZUoS

3. Appendix 2 – Policies

Table 23: Summary of Policies Reviewed

National	• Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 • Climate Change (Scotland) Act 2009 • Securing A Green Recovery on a Path to Net Zero: Climate Change Plan (2018–32) and update (2020) • Programme for Government 2021-22 and 2022-23 • Heat in Buildings Strategy (2021) • Energy Efficient Scotland (2018) • Heat Networks (Scotland) Act 2021 • Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 • Best Start, Bright Futures Tackling Child Poverty Delivery Plan (2022-26) • EESSH1 (2014) and EESSH2 (2019) • Scottish Energy Strategy (2017) and draft Energy Strategy and Just Transition Plan (2023) • National Planning Framework 4 (2023) • Hydrogen Policy Statement (2020) • Hydrogen Action Plan (2022) • Heat Policy Statement (2015) • Scotland's Sustainable Housing Strategy (2013) • Housing to 2040 (2021) • Tenements (Scotland) Act 2004 • Historic Environment Policy Scotland (2019) • The Planning (Listed Building Consent and Conservation Area Consent Procedure) (Scotland) Regulations 2015 • Planning (Scotland) Act 2019 • Scotland's National Strategy for Economic Transformation (2022)
Regional	• Tay Cities Region Economic Strategy 2019-2039 • Edinburgh and South-East Scotland City Regional Deal • Scottish Cities Alliance Transition to Net Zero Carbon Action Plan
Local	• Plan 4 Fife: Local Outcome Improvement Plan (2017-27) and • Recovery and Renewal: Plan 4 Fife 2021-24 Update • FIFEplan (adopted 2017) • Making Fife's Places Supplementary Guidance (2018) • Low Carbon Fife: Supplementary Guidance (2019) • Fife's Economic Strategy (2017-27) • Local Housing Strategy (2022-27) • Strategic Housing Investment Plan (SHIP) (2021/22-2025/26) • Climate Fife: Sustainability and Climate Action Plan (2020-30) (shortened version) • Climate Fife: Sustainable Energy and Climate Action Plan (2020-2030) • Fife Council Carbon Management Plan (2017-50) • Fife's Fuel Poverty Covid-19 Recovery Plan (2021-22) • Fife Development Plan Scheme - 2020 • Strategic Plan for Fife 2019-2022 • Fife College Climate Change Strategy (2022-28) • Fife College Net Zero Action Plan (2022-28) • Kingdom Group Net Zero Strategy (2022-27) • University of St Andrews Environmental Sustainability Strategy • NHS Scotland climate emergency and sustainability strategy (2022-26)

3.1. Key National Policies

Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[23] - In 2019, the Scottish Government introduced an amendment to the **Climate Change (Scotland) Act 2009[24]**. This changed the net zero emissions target year from 2050 to 2045 and set interim targets of: 56% by 2020; 75% by 2030; and 90% by 2040.

Securing A Green Recovery on a Path to Net Zero: Climate Change Plan 2018–2032[25] - Details proposals and policies for meeting greenhouse gas emissions reduction targets up to 2032, and was updated[26] in 2020 for the new 2045 target, and has the following vision for buildings:

"Majority of … homes will have achieved a good energy efficiency rating, meaning that they are better insulated and have lower demand for heat … we will have made significant progress in removing poor energy efficiency as a driver for fuel poverty."

The vision also notes: the accelerated deployment of zero emissions heating; expansion of low carbon heat networks; new buildings from 2024 using zero emissions heating and be highly energy efficient; and green skills and jobs. Reference is also made to Local Heat & Energy Efficiency Strategies being a key enabler of the vision.

Heat in Buildings Strategy[27] - Published in October 2021, presents the pathway Scotland is to take to have zero emissions from buildings by 2045 (focussing on space and water heating), alongside ensuring poor energy performance is removed as a driver for fuel poverty. It details a vision:

"By 2045 our homes and buildings are cleaner, greener and easy to heat, with our homes and buildings no longer contributing to climate change, as part of the wider just transition to net zero."

It notes even though fabric first approaches are critical for the transition by minimising energy demands whilst making buildings warmer, easier to heat, and preparing them for zero emissions technologies, this will not help Scotland achieve net zero targets by itself. A focus on heating system change is also required. The strategy contains several key targets (Table 24). However, these are yet to be put into legislation.

Table 24: Key Heat in Buildings Strategy Targets

2028	2030	2033	2040	2045
• Private rented homes to be energy performance certificate band C.	• Emissions from buildings must be 68% lower than 2020 levels. • Zero emissions heating in the equivalent of 50,000 non-domestic buildings.	• All homes to be energy performance certificate band C. • Zero emissions heating in 170,000 off-gas fossil fuel heated homes, and 1 million on-gas homes.	• All homes in fuel poverty to be energy performance certificate band B.	• Buildings no longer contribute to climate change.

[23] Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 (legislation.gov.uk)
[24] Climate Change (Scotland) Act 2009 (legislation.gov.uk)
[25] Executive Summary - Climate Change Plan: third report on proposals and policies 2018-2032 (RPP3) - gov.scot (www.gov.scot)
[26] Erratum - Securing a green recovery on a path to net zero: climate change plan 2018–2032 - update - gov.scot (www.gov.scot)
[27] Heat in Buildings Strategy - achieving net zero emissions in Scotland's buildings - gov.scot (www.gov.scot)

Energy Efficiency Standard for Social Housing 2 (EESSH2)[28] – Aims to improve the energy efficiency of social housing in Scotland, based on a minimum Energy Performance Certificate rating. Energy Efficiency Standard for Social Housing 2 was confirmed in 2019, and states "*all social housing meets, or can be treated as meeting, Energy Performance Certificate Band B (Energy Efficiency rating), or is as energy efficient as practically possible, by the end of December 2032 and within the limits of cost, technology and necessary consent.*" Energy Efficiency Standard for Social Housing 2 is currently under review by Scottish Government.

Heat Networks (Scotland) Act 2021[29] - Encourages greater use of heat networks and puts in place rules and regulations including applications; exemptions; granting licenses; and setting up heat network zones. The Local Heat & Energy Efficiency Strategy helps Fife Council meet part of its duty within the Act (paragraph 47 (1)) to review heat network zoning by considering areas where it is more likely to be particularly suitable for the construction and operation of a network. Other duties not included in this strategy, are:

- Identify potential non-domestic building connections (Building Assessment Reports).
- Designate areas for heat network zones.
- Set up process for permitting, regulation, and licencing (as regulator and licensee).
- Developing a cost strategy to take on agreed duties.

Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019[30] - In 2019, the Scottish Government introduced an Act of the Scottish Parliament to set targets focussed on eradicating fuel poverty; to define fuel poverty; to require the production of a fuel poverty strategy; and to make provision about reporting on fuel poverty. The act sets the following targets for 2040:

- No more than 5% of households in Scotland are in fuel poverty.
- No more than 1% of households in Scotland are in extreme fuel poverty.
- The median fuel poverty gap of households in Scotland in fuel poverty is no more than £250 adjusted in accordance with section 5(5) to take account of changes in the value of money.

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[28] Energy efficiency in social housing - Home energy and fuel poverty - gov.scot (www.gov.scot)
[29] Heat Networks (Scotland) Act 2021 (legislation.gov.uk)
[30] Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 (legislation.gov.uk)

3.2. National Planning Framework 4

Scotland's national spatial strategy has transformed the way in which planning, and climate change are viewed together, and sets spatial principles, regional priorities, national developments, and national planning policy. Spatial planning priorities have been developed to help guide the preparation of regional spatial strategies and local development plans. Fife is included in the Central Region which has three priorities (Table 25).

Table 25: National Planning Framework 4 Central Region Priorities

Deliver **sustainable places**	Deliver **liveable places**	Deliver **productive places**
Regional Spatial Strategies and Local Development Plans in this area should support net zero energy solutions including extended heat networks and improved energy efficiency, together with urban greening and improved low carbon transport.	Regional Spatial Strategies and Local Development Plans in this area should pioneer low carbon, resilient urban living by rolling out networks of 20-minute neighbourhoods, future proofing city/town centres, accelerating urban greening, investing in net zero homes, and managing development on the edge of settlements.	Regional Spatial Strategies and Local Development Plans in this area should target economic investment and build community wealth to overcome disadvantage and support a greener wellbeing economy.

Across these priorities, there is a need for greater investment in, and development of, net zero homes and places supporting green jobs. Local Development Plans and strategies like Local Heat & Energy Efficiency Strategies will focus on decarbonising heat and energy networks, and moving away from fossil fuels towards greener, low carbon heat generation. Liveable Places reiterates the need for a 68% reduction in emissions by 2030 for all existing domestic properties, and for new properties to be net zero – requiring "*improved energy efficiency and zero emissions heating solutions*".

Below provides a breakdown of the relevant National Planning Framework 4 policies against relevant Local Heat & Energy Efficiency Strategy priorities, and highlights any gaps not covered in National Planning Framework 4.

Table 26: Being Climate Friendly and Ready

Policy 1 - When considering all development proposals significant weight will be given to the global climate and nature crises.	• Outcomes include a focus on zero carbon emissions. • Has a Local Development Plan outcome (could be incorporated into wider strategies) of addressing global climate and nature crises, while reducing emissions and implementing adaptation measures. • Local Heat & Energy Efficiency Strategies adhere to this through decarbonisation of heat, benefitting the climate now and in future.
Policy 2a - Development proposals will be sited and designed to minimise lifecycle greenhouse gas emissions as far as possible.	• Focuses on emissions reduction methods through the siting and design of a building throughout its lifecycle. • Includes the emissions associated with any energy or heating systems as part of the construction, use and decommissioning phases of development. • Compared to other policies and National Planning Framework 3, this is the first strategic document to mention the full lifecycle of emissions associated with new developments and retrofitting existing properties.
Policy 2b - Development proposals will be sited and designed to adapt to current and future risks from climate change.	• All development proposals should support the current climate as well as be able to adapt to the future climate. • Adaption could include installation of low/zero carbon heat technology, appropriate levels of insulation for predicted hotter and cooler temperatures, and double/triple glazing. • Adapting existing properties and preparing new developments supports a just transition, making sure all properties are suitable for continued use as the planet warms.

Table 27: Tackling Fuel Poverty, Health, and the Just Transition

Policy 16 outcome 3 - More energy efficient, net zero emissions homes, supporting a greener, fairer, and more inclusive wellbeing economy and community wealth building, tackling both fuel and child poverty.	• An expected policy outcome under policy 16 Quality Homes and refers to new developments. • Vision is for zero emission homes that in turn support a cleaner, greener future. • Also references reducing inequalities and rates of fuel poverty for a just transition.

Table 28: Supporting an Inclusive Economy, Jobs & Skills

Policy 11c - Development proposals will only be supported where they maximise net economic impact, including local and community socio-economic benefits such as employment, associated business, and supply chain opportunities.	• Policy does not entirely relate to green jobs. • Although it encourages all forms of renewable/low carbon energy generation, transmission, storage etc., it also includes current energy types. • However, it still encourages more employment opportunities in the energy sector as it decarbonises.
Policy 25a - Development proposals which contribute to local or regional community wealth building strategies and are consistent with local economic priorities will be supported.	• Through decarbonising heat, we are supporting community resilience and helping communities reduce their emissions and adapt to the future climate. • Improving the energy efficiency of domestic and commercial buildings increases community resilience and helps reduce fuel poverty, while bringing in local green jobs.
Policy 25b - Development proposals linked to community ownership and management of land will be supported.	• If future iterations of the Local Heat & Energy Efficiency Strategy support creation of Local Place Plans this would further support community wealth building and encourage more community-led proposals around heat and energy efficiency.

Table 29: Decarbonising Heat Sources

Policy 11e - Significant weight will be placed on the contribution of the proposal to renewable energy generation targets and on greenhouse gas emissions reduction targets.	• Does not specifically focus on heat networks. However, it supports proposals for renewable energy generation infrastructure which help meet emissions reduction and renewable energy generation targets. This in turn supports the decarbonisation of the grid and thereby decarbonised heating.
Policy 16 - To encourage, promote and facilitate the delivery of more high quality, affordable and sustainable homes, in the right locations, providing choice across tenures that meet the diverse housing needs of people and communities across Scotland. **Policy 17 - to encourage, promote and facilitate the delivery of more high quality, affordable and sustainable rural homes in the right locations.**	• Transitioning from heating oil and Liquefied Petroleum Gas in off-gas areas, and decarbonising on-gas heat should be identified under Policies 16 and 17. • These address quality homes and rural homes, however there is limited mention of heat generation methods. Each policy mentions sustainable homes but not how to make them sustainable.
Policy 19b - Proposals for retrofitting a connection to a heat network will be supported.	• Assuming the heat source of a heat network is decarbonised, properties could be connected to a network to help transition away from oil and gas to low/zero carbon heating.
Policy 33a - Development proposals that seek to explore, develop, and produce fossil fuels (excluding unconventional oil and gas) will not be supported other than in exceptional circumstances.	• National policy direction will require properties to transition to low/zero carbon heating. • This supports the need for a Local Heat & Energy Efficiency Strategy to support resilience and adaptation of buildings and communities for a just transition to net zero.

Table 30: Improving the Energy Efficiency of Buildings

Policy 2c - Development proposals to retrofit measures to existing developments that reduce emissions or support adaptation to climate change will be supported	• National Planning Framework 4 supports the retrofit of buildings with poor energy efficiency ratings, therefore reducing emissions in turn. • This will also help buildings adapt to the current climate and future temperature predictions.
Policy 7 outcome 1 - the historic environment is valued, protected, and enhanced, supporting the transition to net zero and ensuring assets are resilient to current and future impacts of climate change.	• This supports the need for the Local Heat & Energy Efficiency Strategy to consider historical and traditional buildings.
Policy 7c - Development proposals for the reuse, alteration or extension of a listed building will only be supported where they will preserve its character, special architectural or historic interest and setting. Development proposals affecting the setting of a listed building should preserve its character, and its special architectural or historic interest.	• In the case of enhancing and adapting historic structures, Policy 7c would support proposals for decarbonised heat and retrofitting measures where it does not impact/alter the unique character of the historic building and its surroundings.
Policy 16 outcome 3 - More energy efficient, net zero emissions homes, supporting a greener, fairer, and more inclusive wellbeing economy and community wealth building, tackling both fuel and child poverty.	• This is an expected policy outcome under policy 16 Quality Homes and refers to new developments. • The vision is for zero emission homes that in turn support a cleaner, greener future.
Policy 18 outcome 2 - Existing infrastructure assets are used sustainably, prioritising low-carbon solutions.	• Prioritises the reuse and retrofit of existing structures in a sustainable way. • Supports retrofitting which prioritises emissions reduction through decarbonisation and adapting to the future climate.

3.3. Key Local Policies

Plan4Fife (Local Outcome Improvement Plan) 2017-2027[31] - outlines national and local community planning outcomes based on the requirements of the Community Empowerment (Scotland) Act 2015. It details a vision by 2027 Fife will: *"be a place where all residents live good lives, make informed choices and have a sense of control so that they can reach their full potential, and where all children are safe, happy and healthy … Fife to be a place where we make best use of our assets and facilities, while sustaining them for future generations."* Following a 3-year review and the COVID-19 pandemic, a post-COVID response was produced[32] and includes new recovery and renewal priorities up to 2024:

- Community wealth and wellbeing.
- Leading economic recovery.
- Tackling poverty and preventing crisis.
- Addressing the climate emergency.

FIFEplan[33] **-** Fife's Local Development Plan was published in 2017 and details the policies and proposals for the development and use of land across Fife. The policies in the Plan and supplementary guidance are used to determine planning applications and give guidance to communities and investors on where development can and cannot take place, what type of development is allowed, how it should be laid out and designed and how environmental and cultural assets will be protected. For the Local Heat & Energy Efficiency Strategy there are several relevant policies:

- Policy 2: Homes – Increase the availability of homes of a good quality to meet local needs.
- Policy 3: Infrastructure and Services – Low carbon measures including local energy generation and heat networks must be addressed as part of development proposals.
- Policy 10: Amenity – Places in which people feel their environment offers them a good quality of life.
- Policy 11: Low Carbon Fife – Energy resources are harnessed in appropriate locations and in a manner where the environmental and cumulative impacts are within acceptable limits.

Further policies and priorities are detailed in the **Making Fife's Places**[34] and **Low Carbon Fife**[35] Supplementary Guidance documents. Fife's second local development plan is in development.

Climate Fife: Sustainable Energy and Climate Action Plan[36] - Launched in 2020, Climate Fife details the next phase of a Fife-wide approach to tackling the Climate Emergency, and actions to limit its most harmful impacts. Underpinning the plan are three core principles, that by 2045 Fife will be:

- **Climate Friendly** having transformed the economy, infrastructure, land use and energy system to decarbonise how we live.
- **Climate Ready** with plans and projects to increase the resilience of Fife communities and the economy to help minimise the impacts from unavoidable climate change.
- **Climate Just** ensuring that all Fifers and the environment can benefit from this transition.

Climate Fife states multiple priorities and actions across 8 themes, including:

- **Energy Efficiency** – deliver energy efficiency measures across buildings within Fife.
- **Low Carbon Energy** – decarbonise the heat and power generated and used in Fife.
- **Move, store, and transform energy** – address the challenge of decarbonisation, and the advocation by Scottish Government to use a whole energy system approach including transport and travel.

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[31] A Plan for Fife | Our Fife - Creating a successful, confident, and fairer Fife
[32] Plan for Fife 2021-24 | Our Fife - Creating a successful, confident, and fairer Fife
[33] Local Development Plan (FIFEplan) | Fife Council
[34] Making-Fifes-Places-Supplementary-Guidance-August-2018.pdf
[35] Adopted Low Carbon Fife SG Jan 2019
[36] Microsoft Word - Climate Fife FINAL

Local Housing Strategy 2022-2027[37] - sets out the strategic vision of Fife Housing Partnership for the delivery of housing and housing related services. It lists five priorities of which "A Warm Low Carbon Home" is relevant to the Local Heat & Energy Efficiency Strategy, noting the desired outcomes of ensuring people: do not live in fuel poverty, live in energy efficient homes, and reduce carbon emissions.

Fife's Fuel Poverty Covid-19 Recovery Plan[38] - Fife's Fuel Poverty Strategy was aimed to be published in 2020 alongside the national Strategy but was delayed by the COVID-19 pandemic. In the interim, a plan was published addressing fuel poverty during the pandemic, with five objectives. The Local Heat & Energy Efficiency Strategy supports the objective of considering long term recovery plans contributing to the Strategy.

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[37] Local Housing Strategy | Fife Council
[38] Fifes-Fuel-Poverty-Covid-19-Recovery-Plan-2021-22-Final-1.pdf

4. Appendix 3 – Scottish Climate and Energy Targets

Table 31: Targets

Climate and energy targets (Scotland)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Combined supply of thermal energy by heat networks to reach 2.6 TWh of output.				■																		
Private rented homes to be Energy Performance Certificate band C.					■																	
75% cut in greenhouse gas emissions.							■															
Most buildings achieve a good standard of energy efficiency.							■															
Emissions from buildings must be 68% lower than 2020 levels.							■															
At least 22% of non-electrical heat in buildings to be directly supplied by renewables.							■															
The combined supply of thermal energy by heat networks to reach 6 TWh of output.							■															
All fuel poor households to be Energy Performance Certificate band C.							■															
Zero emissions heating in the equivalent of 50,000 non-domestic buildings.							■															
All social housing to be Energy Performance Certificate band B.								■														
All homes have the equivalent of Energy Performance Certificate band C.									■													
Zero emissions heating in the vast majority of 170,000 off-gas fossil fuel heated homes.									■													
Zero emissions heating in at least one million on-gas homes.									■													
90% cut in greenhouse gas emissions.																	■					
All fuel poor households to be Energy Performance Certificate band B.																	■					
No more than 5% of households in Scotland are in fuel poverty.																	■					
No more than 1% of households in Scotland are in extreme fuel poverty.																	■					
Median fuel poverty gap of households in fuel poverty is no more than £250.																	■					
Buildings no longer contribute to climate change.																						■
Net zero greenhouse gas emissions.																						■

5. Appendix 4 – Potential Heat Network Zones Summary Tables

Table 32: Stringent Zones Summary Table

Zone ID	Zone location	Anchor loads	Total heat demand (MWh/year)	Non-domestic properties with high suitability for heat network connection	Heat demand from non-domestic properties with high suitability for heat network connection (MWh/year)	Houses in fuel poverty	Heat demand from houses in fuel poverty (MWh/year)	Social housing	Heat demand from social housing (MWh/year)
1	Rosyth Waterfront West	11	18,098	8	11,158	0	0	0	0
2	Pitreavie Business Park, Pitreavie	9	13,859	6	5,380	2	37	0	0
3	Dunfermline	15	49,758	18	14,114	374	3,029	38	2,261
4	Kirkcaldy	15	45,067	16	12,525	169	2,043	35	708
5	Whitehill and Southfield Industrial Estates, Glenrothes	11	19,622	8	8,643	1	21	1	14
6	Viewfield Industrial Estate and Fife College, Glenrothes	13	20,409	12	13,419	22	267	0	0
7	North Glenrothes (Queensway Industrial Estate)	7	12,966	5	3,893	11	153	7	112
8	Methil	7	14,501	7	11,538	56	425	8	435
9	St Andrews	22	67,830	24	22,442	497	6,449	63	1,827
10	Mitchelson Industrial Estate	12	26,079	10	11,876	0	0	0	0
11	East Glenrothes (Eastfield Industrial Estate)	10	19,673	2	1,796	4	46	4	34
N/A	**Total**	**132**	**307,861**	**116**	**116,783**	**1,137**	**12,471**	**156**	**5,391**

Table 33: Baseline Zones Summary Table

Zone ID	Zone location	Anchor loads	Total heat demand (MWh/year)	Non-domestic properties with high suitability for heat network connection	Heat demand from non-domestic properties with high suitability for heat network connection (MWh/year)	Houses in fuel poverty	Heat demand from houses in fuel poverty (MWh/year)	Social housing	Heat demand from social housing (MWh/year)
1	Rosyth Waterfront East	5	6,530	3	2,866	0	1	1	9
2	Rosyth Waterfront West	11	19,475	8	11,158	3	56	0	0
3	Rosyth	4	7,508	5	4,060	43	441	25	303
4	Belleknowes Industrial Estate	3	6,892	0	0	2	30	0	0
5	Dalgety Bay Industrial Estate	6	22,858	8	6,824	55	722	42	438
6	Pitreavie	11	28,372	11	7,947	98	1,332	39	471
7	Duloch Schools	4	8,760	6	3,824	17	211	1	9
8	Woodmill High School	3	17,417	3	3,663	371	3,773	436	5,632
9	Dunfermline	16	74,988	20	14,980	772	7,420	115	3,793
10	Halbeath	6	17,338	3	4,705	81	1,074	76	1,162
11	Fife Leisure Park	5	9,807	5	3,645	4	91	2	65
12	Kirkcaldy South	4	16,289	2	986	339	3,190	137	4,318
13	Cowdenbeath Centre	3	14,881	2	734	85	1,019	42	544
14	Beath High School	3	11,448	3	4,596	104	1,412	71	995
15	Kirkcaldy Centre	23	101,412	29	18,269	739	8,953	252	3,421
16	Lochgelly Industrial Park	4	3,042	0	0	0	0	0	0
17	Kirkcaldy North West (Victoria Hospital)	5	53,572	5	44,564	65	830	62	939
18	Fife Central Retail Park	3	9,302	1	1,310	49	420	57	387

Zone ID	Zone location	Anchor loads	Total heat demand (MWh/year)	Non-domestic properties with high suitability for heat network connection	Heat demand from non-domestic properties with high suitability for heat network connection (MWh/year)	Houses in fuel poverty	Heat demand from houses in fuel poverty (MWh/year)	Social housing	Heat demand from social housing (MWh/year)
19	Lochgelly High School	3	5,208	2	2,192	19	276	16	455
20	Westwood Park Industrial Estate	4	4,242	3	3,017	5	62	1	4
21	Glenrothes South West	34	70,192	27	30,004	30	388	1	14
22	Glenrothes North	18	43,743	22	14,169	202	2,095	102	2,583
23	Methil – Links Drive	7	16,929	7	11,538	129	1,074	34	1,083
24	Levenmouth Campus	4	10,212	4	7,743	37	465	57	640
25	Methil	3	12,957	2	2,577	258	2,589	229	3,512
26	Innerleven	4	15,250	2	1,516	102	1,428	52	931
27	Leven	3	21,325	5	3,894	191	2,124	102	1,643
28	South Markinch	3	6,753	4	1,729	30	335	12	177
29	Anstruther	4	18,309	5	2,835	121	1,746	42	675
30	Gilliesfaulds (Elmwood Campus)	3	7,597	0	0	30	635	2	47
31	Prestonhall Industrial Estate	4	10,020	2	1,427	1	20	0	0
32	St Andrews	24	91,862	26	24,701	836	10821	143	2928
33	Kirkcaldy (St Clair Street)	8	31,899	3	2,903	560	5589	259	6365
34	Mitchelston Industrial Estate	15	46,407	13	15,207	235	2349	145	2437
35	Eastfield Industrial Estate	14	33,349	5	3,596	36	542	24	298
N/A	**Total**	**274**	**876,146**	**246**	**263,178**	**5,653**	**63,517**	**2,579**	**46,277**

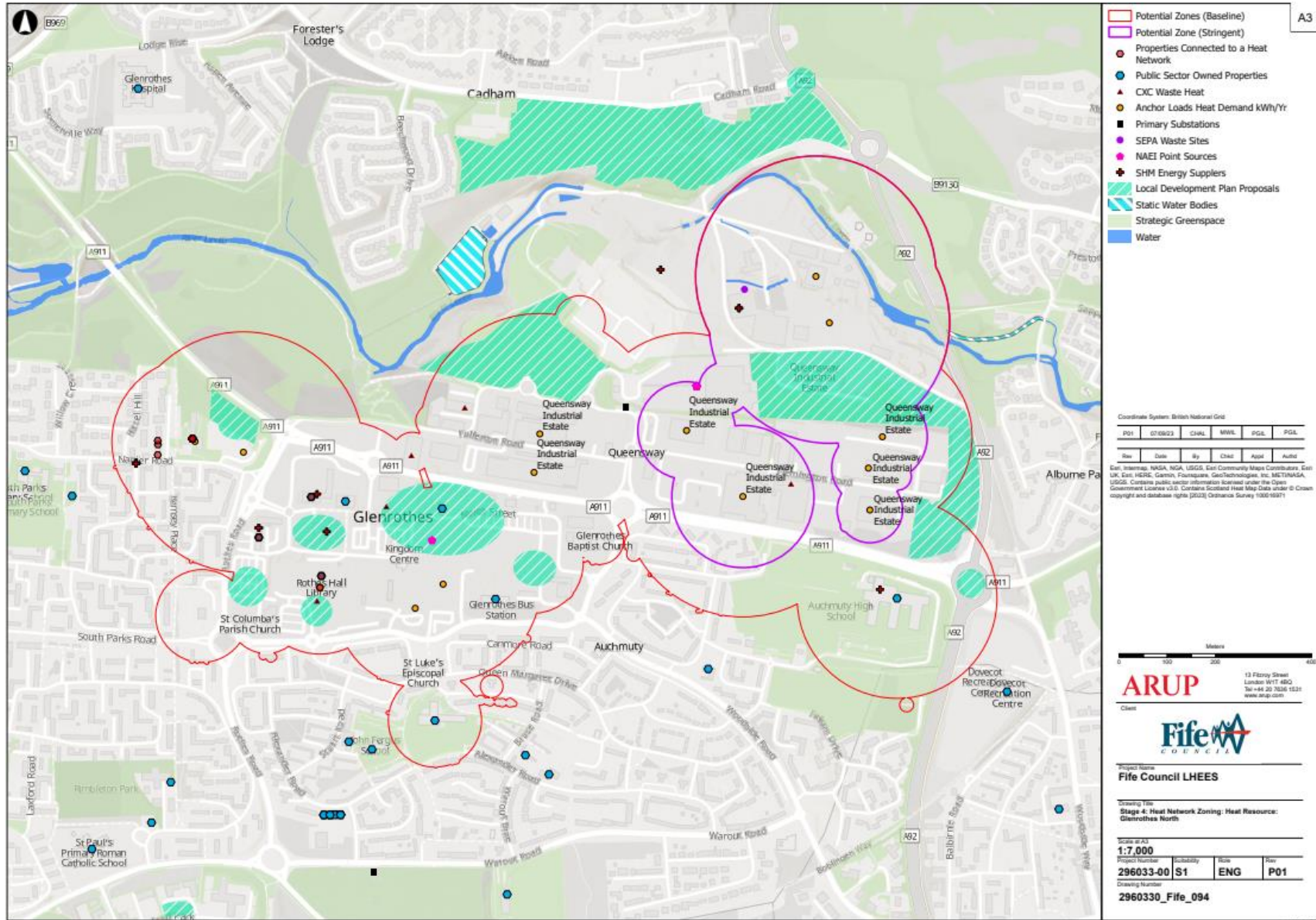# 6. Appendix 5 – Potential Heat Network Zones – Level 2 Analysis Maps

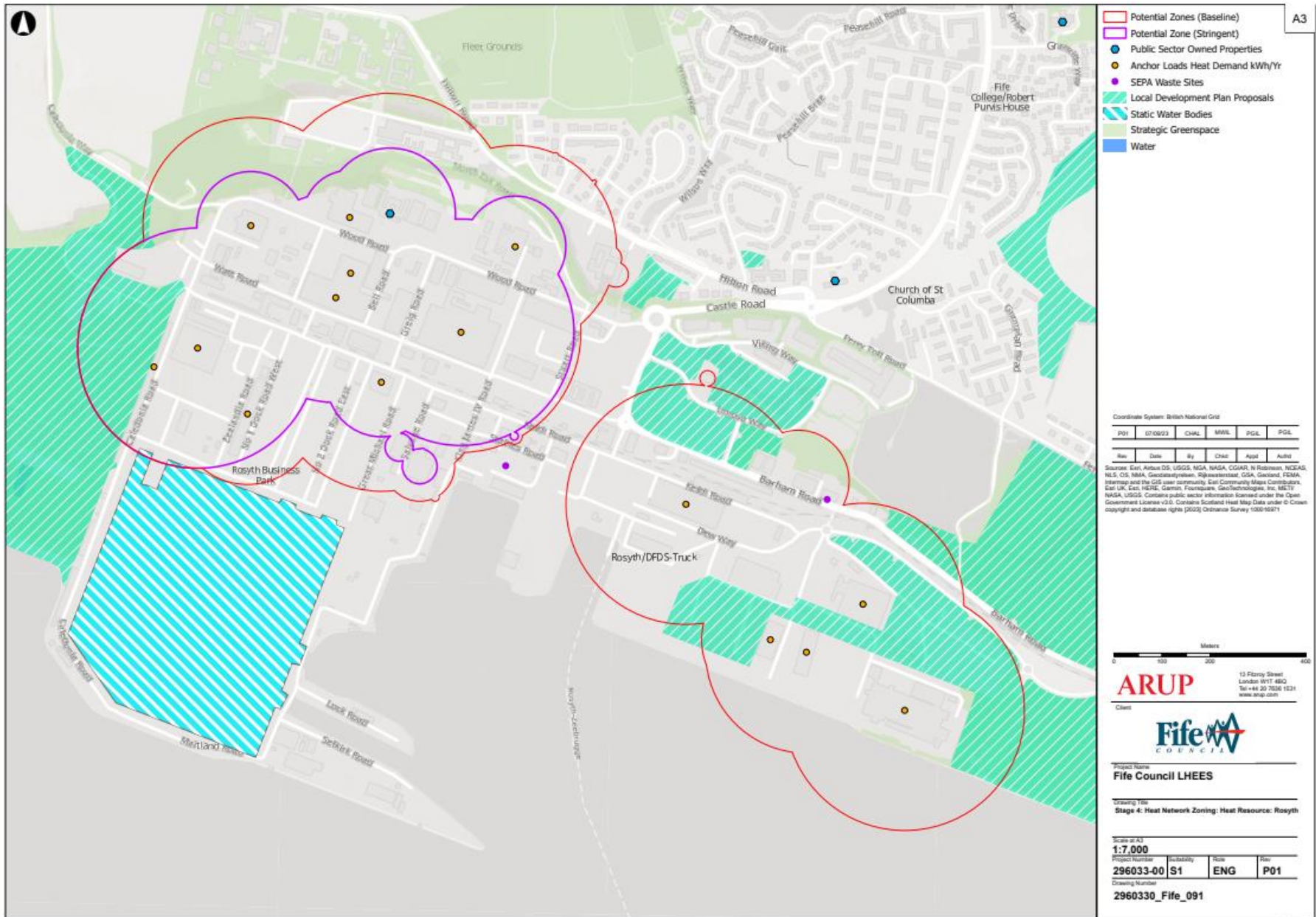**Figure 1: Glenrothes North zone - heat resource map**

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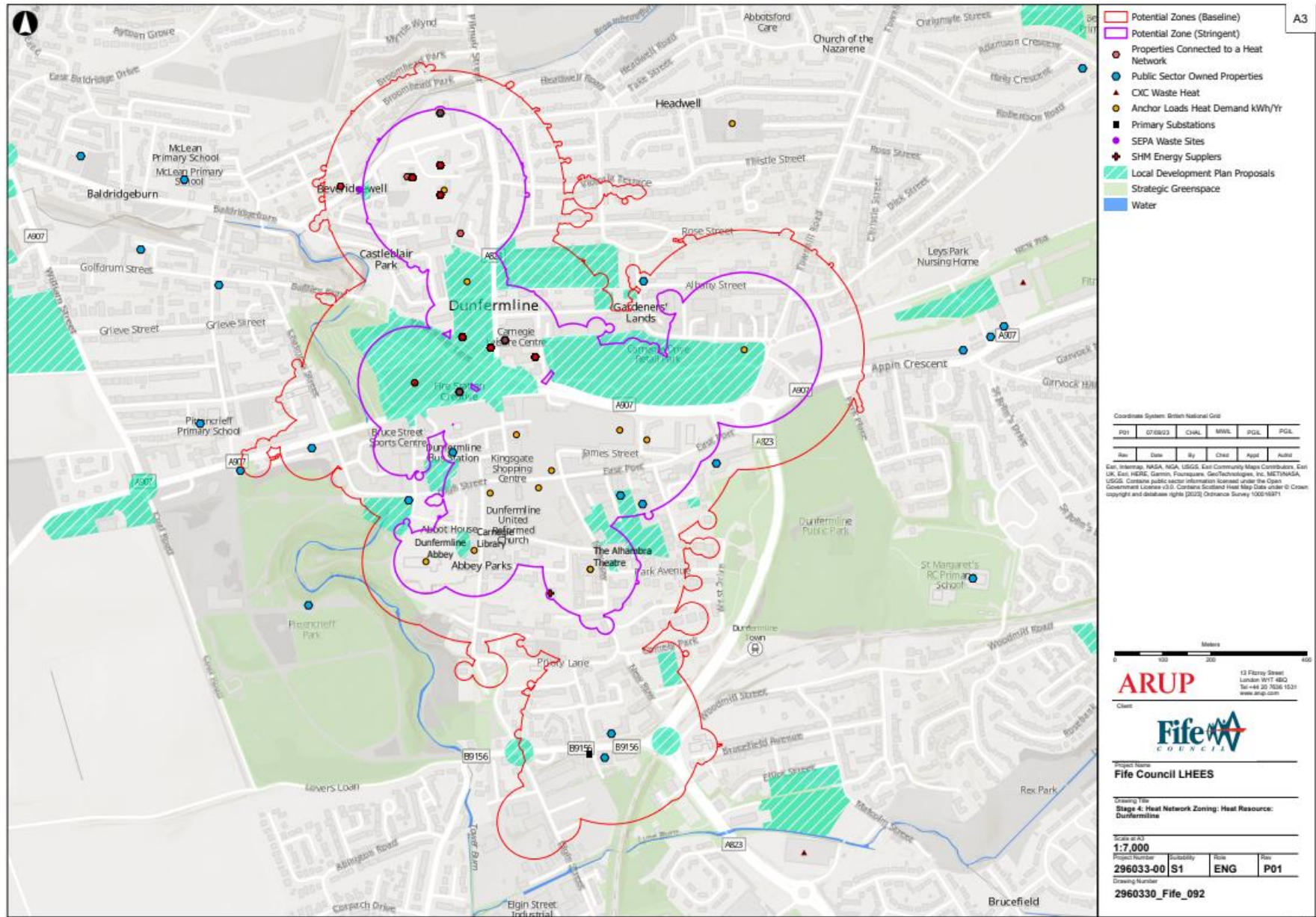**Figure 2: Rosyth Waterfront zone - heat resource map**

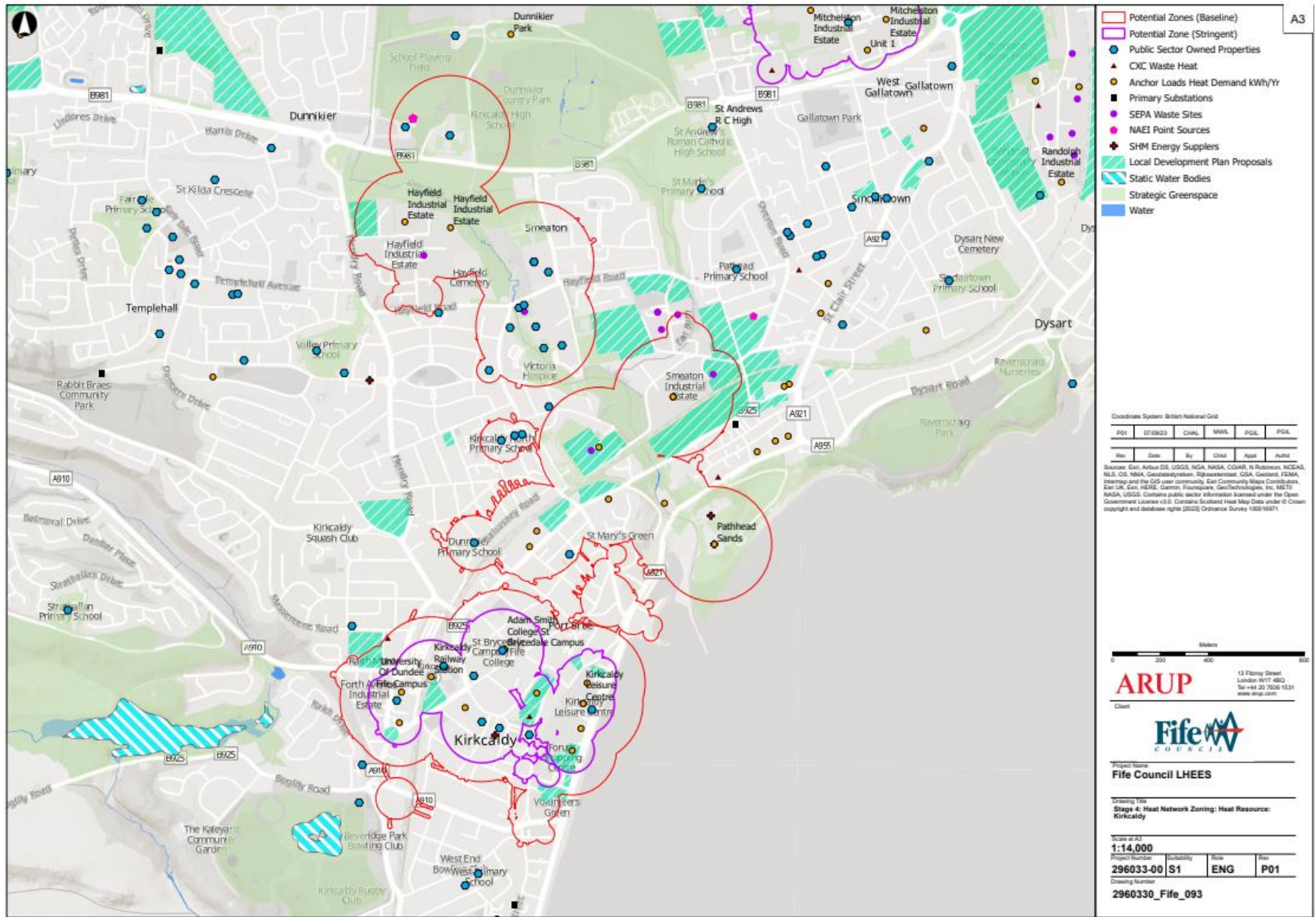**Figure 3: Dunfermline zone - heat resource map**

Figure 4: Kirkcaldy Centre and Kirkcaldy North West (Victoria Hospital) zone - heat resource map