East Lothian Heat

A community energy network

"No heat is wasted,
no home is cold"

Feasibility Study Report

June 2025

Executive Summary

East Lothian Heat is a visionary infrastructure project to deliver clean, affordable heat across the Lothians by capturing local waste heat and renewable energy in a heat network, under a community-led, not-for-profit model. The project's guiding vision is *"a community where no heat is wasted and no home is cold,"* reflecting our commitment to eradicate fuel poverty and use energy more efficiently.

A volunteer steering group of local experts and community leaders formed in 2024 to explore this opportunity, commissioning a professional feasibility study with support from charitable funds. This study, delivered by consultants Viegand Maagøe, has confirmed the technical and economic viability of a county-wide heat network, including detailed modeling of heat demands, capital and operating costs, heat distribution, and socio-economic impacts.

Early results are highly encouraging: even **without subsidies**, the proposed heat network could deliver heat **at lower cost per unit than the leading low-carbon alternative (individual heat pumps)**. Moreover, an integrated **regional approach – extending supply to neighbouring Edinburgh – further reduces costs for East Lothian consumers** by leveraging economies of scale. These findings demonstrate that the East Lothian Heat Network can be both **feasible and cost-competitive**, unlocking local economic benefits, long-term price stability, and significant carbon reductions.

The recommended strategy is to implement the network in **four phases** over the coming decade, starting with a **Phase 1** project centered on Musselburgh in western East Lothian and progressively expanding eastwards and into the wider region. Each phase will build momentum, connect major heat sources (from industrial waste heat to a new data centre and renewable sources), and deliver heat to homes, businesses, and public buildings. By **Phase 4**, the network would form a "**heat transmission highway**" spanning East Lothian and feeding into the Edinburgh heat system. This phased delivery allows early wins at local scale while laying the groundwork for a transformative regional heat infrastructure.

The project's **ownership and delivery model** is evolving with a clear principle: to maximise community benefit and public value. International best practice shows that the most successful heat networks feature strong community or municipal ownership, ensuring affordable and reliable heat supply. In East Lothian's case, a not-for-profit operating model is envisioned for the primary heat transmission network, so that **any surplus value is reinvested or passed on as lower heat prices**.

The project team is exploring models that emphasise community ownership and wealth building, such as cooperative and community-interest company structures, with the possibility of creating a regional community-owned energy company (provisionally referred to as **"Lothian Community Energy"**) to own and operate the network in the public interest *(Note: This is an emerging concept outside the provided feasibility documents for future governance.)*. This approach would allow East Lothian Council, communities, and potentially regional partners to share ownership and governance, similar to the Danish heat networks owned by municipalities and operated on a commercial-but-not-profit-maximising basis.

While **significant challenges** are acknowledged – including securing the estimated £40+ million capital investment for phase 1 and up to £1.2bn needed for the entire regional approach, establishing the legal entity and risk-sharing arrangements, and aligning with current government policy – the project has made substantial progress in de-risking and defining the path forward. A broad coalition of stakeholders is already engaged: local industry has signaled interest in supplying and using heat (e.g. *letters of intent* from a major heat network operator to serve thousands of homes in Musselburgh, and public-sector partners are involved in planning and technical support.

The community-led team has proactively sought government support mechanisms, requesting Council facilitation to tap into the Scottish Government's **Heat Network Support Unit** and the UK **National Wealth Fund** for expertise and financing options. These partnerships will be critical to overcome policy hurdles (national criteria historically favor smaller local heat schemes by demonstrating the viability and national benefit of the regional model.

A phased business case development is the next key milestone, if development funding is available, then we would aim for a Phase 1 Final Investment Decision by mid-2027.

In summary, the East Lothian Heat Network is technically **feasible, economically sound, and socially compelling**. It offers a once-in-a-generation opportunity to harness East Lothian's abundant waste heat and renewable resources to deliver affordable warmth, local jobs and climate action.

The following report details the project vision and origins, the proposed ownership model, the feasibility study findings, the phased delivery plan and supporting appendices with key maps and illustrations.

East Lothian Heat Solution

Acknowledgements

Our first thanks go to the generosity of the Trustees of East Lothian Community Benefits. CWP Energy, Scottish Enterprise, East Lammermuir Community Council and the Association of East Lothian Community Councils, without whom this work would not have been possible.

The whole project has grown from the vision and leadership of Martin Hayman who through his approach to LHEES preparation, brought together a diverse set of stakeholders and got us so motivated and excited by the potential we have within our own community.

This report has been written by Dr. Gemma Bone Dodds as Chair of the Community Heat Network Steering Group, based on the feasibility study carried out by the expert team at Viegand Maagøe. The report presents the results to a wider audience of stakeholders and should be seen to go hand in hand with the detailed modelling and reporting from the team at VM. Our thanks go to Peter Maagøe Petersen, Jakob Byg Hornbek, Emil Kruse Sørensen and Astrid Estrup Enemark who went above and beyond for us, truly bringing life to the concept of partnership working.

One thing we have in East Lothian in abundance is expertise, generosity and enthusiasm - our people are our key resource and so immense thanks go to the following for their invaluable support throughout:

Steering Group: Ralph Averbuch, Philip Revell, Dr Mike Edwards, Chris Bruce and Dr. Gemma Bone Dodds (Chair).

Expert Advisory Group and Quality Assurance Reviewers: Simon Kerr, Lukas Fabricius, Chris Bruce, Dr. Ruth Bush, Bobby Pembleton, Simon Gill, John Maslen, Simon Thompson, Tim Hetherington, Prof. Jan Webb, Charlie Blair, Kira Myers, Michael King, Chris Yendell, Dr Simon Shackley, Fiona Burnett, Dame Susan Rice, Kirsty Hamilton OBE, Sarah Bronsdon,Gaynor Allen, Amanda Grimm, Andy Long, Ben Morse, Bobbie Milligan, Dave Pearson, Hamish Martin. Hilary Blackman, Ian Malcolm, Isaac Whitelaw, Mark Burns, Ruaidhri Higgins-Lavery, Russell McLarty, Steven Findlay, Andrew Sudmant. Fraser Stewart, Dr. Tanja Groth, David Walker, Adam Ben-Hamo.

We also couldn't finish without extending a huge thanks to SAV Systems for so generously hosting us at their offices and SAV and EnergiRaven for supporting the publication of this report with their amazing marketing team.

We are actively seeking conversations with partners who can help us bring this to life. Please email the team at **eastlothianheat@gmail.com**

1. Vision, Origins & Who We Are

Vision: *"No heat is wasted and no home is cold."* This simple statement encapsulates the community's driving vision for the East Lothian Heat Network. The ambition is to create an integrated, county-wide heating system that captures heat from wherever it can be found – industry, data centres, wastewater, renewable sources – and delivers it efficiently to meet local needs.

At its core, this vision is about **ending fuel poverty and eliminating energy waste** simultaneously. East Lothian has an unprecedented opportunity to leverage its unique assets: a **wealth of potential heat sources** (ranging from waste heat at industrial sites to proximity to offshore wind power) and a community of innovators with energy sector expertise.

By tapping into these resources, the project aims to tackle some of the county's biggest challenges: high rates of fuel poverty, dispersed rural communities hard to serve with traditional grids, and the urgent need to transition off natural gas to meet climate targets. The vision draws inspiration from world-leading heat networks which are often **owned by communities or municipalities**, delivering reliable, low-cost and consistent heat as a public service. East Lothian's heat network seeks to follow this model – **putting community benefit, long-term affordability, and sustainability first** in every aspect of its design and operation.

Origins:

This project began as a grass-roots initiative in late 2023, during East Lothian Council's consultation on its Local Heat & Energy Efficiency Strategy (LHEES). With the Council's LHEES draft identifying the need for heat decarbonisation but constrained by funding to pursue it, a group of concerned residents and professionals came together to ensure the idea of a county-scale heat network was fully examined.

We were short on one kind of resource - money - but what we had in abundance was a different, and perhaps more important resource - our people - experts in finance, energy systems, heat technicalities, community engagement, policy and beyond. What we found was a groundswell of enthusiasm and the willingness to explore what is possible together.

In early 2024, this informal coalition crystallised into a dedicated **community steering group**, driven by the belief that East Lothian could pioneer a new approach to green heat. The group members include volunteers from academia, energy industry, finance, and community development – all **East Lothian citizens** bringing their expertise to the table.

With no initial public funding available for feasibility work, the community took the lead: the charity *East Lothian Community Benefits* (chaired by a steering group member) partnered with East Lammermuir Community Council to raise funds for a feasibility study, with Community Wind Power funding the study alongside a contribution from Scottish Enterprise.

By May 2024, the group had secured expert consultants (Viegand Maagøe, from Denmark's renowned district heating sector) to carry out a comprehensive feasibility study, demonstrating remarkable initiative and commitment at the community level. East Lothian Council's LHEES Project Officer, Martin Hayman, joined the effort as a key advisor, ensuring access to data and alignment with council strategies. This collaboration between community and council from the outset exemplifies the project's ethos: **working in partnership** to achieve shared climate and social goals.

Who We Are:

The East Lothian Heat project is spearheaded by a **volunteer Steering Group** and a wider Expert Advisory Group, all serving in a personal capacity as local citizens. This team boasts an impressive range of skills relevant to delivering a heat network. For example, the steering committee includes:

The Steering Group* and Expert Advisory Group are volunteering in their personal capacities as citizens of East Lothian. Their professional expertise has been invaluable in ensuring the quality and design of the project.

Dr Gemma Bone Dodds* Director of Insight and Policy at the Scottish National Investment Bank. Scottish Government's Green Heat Finance Taskforce. Expertise in participatory and systems approaches to finance. **More**	**Ralph Averbuch*** Vice Chair, Association of East Lothian Community Councils. Vice Chair, Association of Scotland's Self-Caterers. Chair, East Lothian Community Benefits. **More**
Dr Philip Revell* Independent researcher and community activist. Board member, Sustaining Dunbar, Scottish Communities Climate Action Network and East Lothian Climate Hub. Ex Chair of Community Energy Scotland. **More**	**Dr Mike Edwards*** Heat Networks, Department for Energy Security and Net Zero. Technical and regulatory expertise. **More**
Chris Bruce* Chair, East Lothian Community Council, Trustee and Director for other local groups and community association and community benefits SCIOs and Companies. Active in the social care and independent living sector.	**Martin Hayman** LHEES Officer, East Lothian Council. Providing access to data and alignment with ELC's LHEES strategy.

Expert Advisory Group: Simon Kerr, Lukas Fabricius, Chris Bruce, Dr. Ruth Bush, Bobby Pembleton, Simon Gill, John Maslen, Simon Thompson, Tim Hetherington, Prof. Jan Webb, Charlie Blair, Kira Myers, Michael King, Chris Yendell, Dr Simon Shackley, Fiona Burnett, Dame Susan Rice, Kirsty Hamilton OBE, Sarah Bronsdon, Gaynor Allen, Amanda Grimm, Andy Long, Ben Morse, Bobbie Milligan, Dave Pearson, Hamish Martin. Hilary Blackman, Ian Malcolm, Isaac Whitelaw, Mark Burns, Ruaidhri Higgins-Lavery, Russell McLarty, Steven Findlay, Andrew Sudmant.

This diverse volunteer coalition is united by a common purpose: to design a heat solution that works for **East Lothian's people and businesses**. As a testament to the project's collaborative spirit, a broad network of supporters has coalesced around the core team – from members of East Lothian Climate Action Network (ELCAN) to academic partners at University of Edinburgh and Queen Margaret University who are advising on technical and social aspects. Together, "who we are" is an expert and engaged community empowered by expertise and passion, **driving forward an innovative project for public good**.

Viegand Maagøe

Viegand Maagøe (VM) were our consultants for this piece of work. They were chosen for their expertise in project development and feasibility studies within utilising waste heat sources for economically viable and sustainable district heating solutions. VM during the past decade has been a frontrunner in developing such solutions in Denmark and globally integrating data centres, waste incineration plants and large industries into district heating solutions. As such, VM possesses comprehensive data (CAPEX, OPEX etc.) from solutions already built and commissioned as well as significant experience in organizational structures and governance models surrounding this important area.

2. Ownership & Delivery Model

From the outset, East Lothian Heat has been conceived not just as an engineering project, but as a **community enterprise** that delivers lasting local value, fully in line with East Lothian Council's **Community Wealth Building Charter**, **LHEES** plan, and **Climate Change Strategy**.

The **ownership and delivery model** will therefore be critical to its success. It is important to note that the model was not part of the feasibility study, nor is it possible for the community group to determine this outside of bigger regional conversations, but as it will be important for the further development of the project we would like to share some background to our thinking alongside some learnings we have gathered during this process.

The emerging model should be grounded in the principle of **community and public ownership for public benefit**, balancing non-profit motives with professional, commercial-quality operation. The goal is to keep heat prices as low as possible and ensure any financial surplus is reinvested or returned to the community, rather than extracted as private profit over the long term.

We do however recognise and accept that investors will be seeking a return for taking risk, especially at the outset of the project and we recognise that this risk will need a return to pay off their investment. We have been having several productive exploratory conversations with some investors, and our model needs to fairly balance long-term community ownership with the needs of investors and funders where we will face capital heavy construction costs but stable and long-term economic returns.

We are investigating models that would allow any public subsidy, public resources other than money, or philanthropic capital available at the outset to be used to provide a meaningful stake for the community at the capital table. To enable some participation in risk sharing with private investors through the development and construction phases is important but we recognise this is likely to be a smaller proportion compared to other investment stakes. Therefore we are looking at models that can grow the initial community stake over time, pragmatically recognising current constraints whilst actively seeking to grow the communities ownership stake over time.

To deliver a fair, resilient and cost-effective heat network, the project draws on proven ownership models from international and UK community energy practice. Central to this is a **public-interest approach** that balances community, local authority, and private sector roles while protecting long-term affordability and public value.

Some models that work well elsewhere are:

Not-for-Profit Transmission Company

A central proposition is the creation of a **not-for-profit entity to own and operate the primary heat transmission infrastructure** (the large pipelines and pumping systems). This could be jointly owned by local authorities and/or community interests, inspired by Denmark's **TVIS model**—a multi-municipal transmission company legally obliged to operate commercially but without profit maximisation. Tariffs are set annually to cover operating costs and reinvestment needs only, with an obligation to stay competitive compared to alternative heat delivery models.

This model ensures that no single heat supplier or operator can dominate pricing, fostering a competitive, transparent, and stable market. In line with Danish precedent, the transmission company would aim to secure low-cost public finance—such as loans guaranteed by councils, the Scottish Government, or UK infrastructure banks—enabling low-cost heat over the long term. The principle is clear: **when the community assumes development risk, it captures long-term benefits.**

Local Distribution Companies

At the local level, heat distribution would be managed by companies responsible for town - or neighbourhood-scale networks. These **local distribution companies** could be established as community-owned enterprises, cooperatives, or joint ventures with councils and trusted private partners.

The **Phase 1 Musselburgh scheme** may form an early prototype, potentially under an "East Lothian Heat Company" structure. Governance and ownership models under discussion include majority community or public ownership, or a joint venture with a specialist operator to bring delivery expertise. In all cases, **local accountability and cost control** are key principles.

Community Cooperative & Regional CIC

As the network expands, a **county-wide cooperative or Community Interest Company (CIC)** is being explored. This could serve as an umbrella entity integrating multiple phases and local operations—possibly under a **"Lothian Heat Cooperative"** model or through the creation of a **regional body like "Lothian Community Energy"**.

Such a structure would enable **community membership, regional scale, and long-term governance continuity**, following examples like Energy4All and community infrastructure financiers such as Abundance Investment. It could align governance and financing across East Lothian, Midlothian, and Edinburgh—supporting integration and interoperability across council areas.

Private Sector and Joint Ventures

The model **welcomes private sector participation** where aligned with community objectives. For instance, discussions with **Vattenfall Heat UK** suggest interest in co-developing the Phase 1 project under a structure that protects fair pricing and community benefit through concession agreements or shareholder terms.

Industrial actors—such as **Viridor, Tarmac**, and **Glenkinchie Distillery**—may become anchor heat suppliers. In such partnerships, they receive long-term revenue and public value benefits in exchange for supplying heat at regulated, fair rates. If the transmission system is set up to only allow the cheapest source access to the transmission system, this can ensure the operation of a commercial and competitive heat market.

Development Phase Entity

To move from feasibility to delivery, a **dedicated Project Development SPV (Special Purpose Vehicle)** may be established. This would enable the project to raise early-stage finance—covering legal, engineering, and project management work—without exposing council budgets or volunteer groups to financial risk.

Potential funders include **social investment funds and specialist infrastructure investors** aligned with the project's community-first ethos. Future capital investment will likely blend public grants, institutional debt (e.g. via the UK's National Wealth Fund or Public Works Loan Board), and strategic private equity. The project will develop a **balanced delivery and financing model**, combining early-stage public and community de-risking with private capital mobilisation to deliver large-scale infrastructure.

Summary

In summary, ownership models that work well for the end consumer elsewhere trend toward a **public-community partnership**: a **non-profit transmission operator** (likely owned by a consortium of community, Council, and potentially regional public bodies) and **local distribution companies or co-ops** serving consumers. In the UK, policy tends to expect a larger role for private investors, and we believe this could be integrated by looking at an increasing community ownership stake over time.

East Lothian is effectively **building a community utility from the ground up**, learning from European exemplars but tailoring it to the Scottish context. The evolving legal structure will continue to be clarified (for instance, the merits of a Community Benefit Society vs. a CIC vs. a Council-owned company are being weighed), testing a short-list of models with investors aiming for a final recommendation to emerge alongside the next phase of work. The project team acknowledges that getting the governance right is as important as the engineering – and they are committed to a model that endures and benefits residents for decades to come.

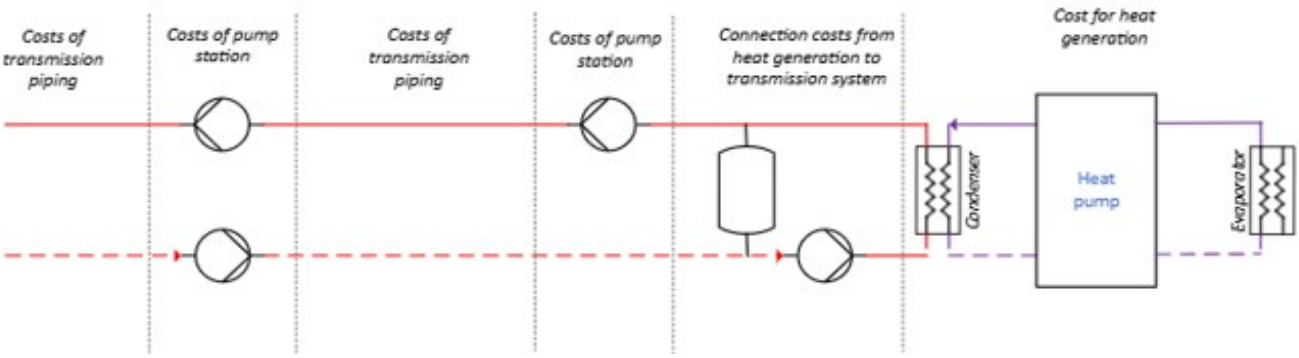
3. Feasibility Study: Key Findings

A comprehensive feasibility study for the East Lothian Heat Network was undertaken between late 2024 and June 2025 to answer a fundamental question: *Can a district heating network for all of East Lothian be technically and financially viable?* The scope was intentionally ambitious, with the aim of shaping a credible pathway to a large-scale low-carbon heat solution for the county and beyond.

Methodology

The consultants, Viegand Maagøe, were asked to produce conservative estimates for both the Heat Network and the alternative low carbon heat alternative air source heat pumps (ASHPs). They were asked if the model was financially viable without taking into account any subsidisation or grant funding.

As such, a detailed CAPEX- and OPEX-model has been established modelling all elements of a regional heat network solution as illustrated in the figure below (only illustrates elements in transmission CAPEX-model):



A 25% contingency was modelled due to the nature of the complexity of the project. We believe that the numbers presented are extremely robust and that we expect that there will be significant upsides, which are not presented here but should be explored in the next phases of the project.

Scenarios Explored

The study examined three network configurations:

- **Western Scope**: Focused on Musselburgh and nearby towns, this system was to be powered by seawater-source heat pumps at Cockenzie.
- **Eastern Scope**: Designed to harness waste heat from major industrial emitters — Viridor's Energy-from-Waste plant and Tarmac's cement works in Dunbar — to supply towns like Dunbar, Haddington, and East Linton.
- **Regional Scope**: A combined model, connecting both east and west networks and enabling constant export of **100 MW** of heat to Edinburgh and Midlothian — positioning East Lothian as a regional heat supplier.

Technical and Financial Modelling

Each scope was modelled in detail for:

Capital Expenditure (CAPEX): Including heat generation (e.g. heat pumps or industrial waste heat exchangers), transmission and distribution pipes, pumping stations, and customer connection costs (Heat Interface Unit's or HIU's).

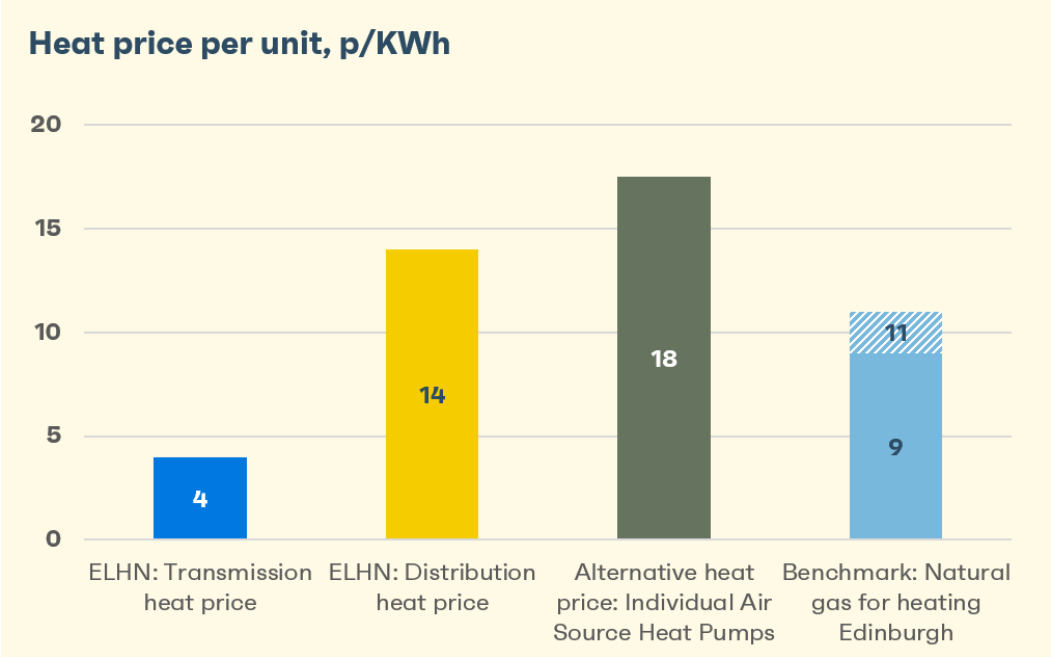
Operational Expenditure (OPEX): Covering electricity for pumps and top-up boilers, maintenance, administration, and reinvestments in key assets over a 50-year lifespan.

Temperature profiles of 90°C/47°C (transmission) and 80°C/40°C (distribution) were chosen to ensure compatibility and future flexibility. For transmission pipes, DN600 size was used in the regional scope to accommodate high flows and future expansion, such as a heat corridor towards Edinburgh.

Heat Price Modelling

A cost-recovery model was used to calculate the delivered heat price per kWh, under three electricity price scenarios: £200/MWh (base case), £110/MWh (curtailed renewable energy), and £83/MWh (private wire option). Even under the base case, heat from the network was shown to be cheaper than from individual Air-Source Heat Pumps (ASHPs), which cost between **£16.0–18.5 p/kWh**[1], depending on dwelling type and efficiency assumptions.

The concluded heat prices are summarized in the illustration below:



1 ASHP costs based on £13k per property, accounting for the heat pump and a small amount of radiator work, using local housing association data on smaller properties. Larger homes cost more but we have stayed with the more generous lower figure. Current available subsidies of £7.5k have not been modelled because these are unlikely to be available for such volumes of homes in the future and to enable a fair comparison of the levelised cost of heat between ASHPs and Heat Network over the long-term.

This outcome is significant: *even with conservative assumptions and no subsidies*, the network remains competitive with ASHPs, which would also be impacted by electricity price volatility. The modelling also assumed **20% heat loss** in distribution systems and did not include potential cost offsets from avoided electrical grid upgrades or new policy incentives.

It should be added, that any other alternative heat delivery model, by example hydrogen, is known to produce heat at much higher prices than concluded above.

Advantages of Scale: Regional Scope

Among all scenarios, the **Regional Scope** emerged as the most cost-effective. It achieved the lowest levelised heat prices due to higher utilisation of infrastructure and the ability to deliver 100 MW of constant base-load heat to Edinburgh and Midlothian. This improved capital efficiency and enabled better use of large-scale, low-cost sources such as:

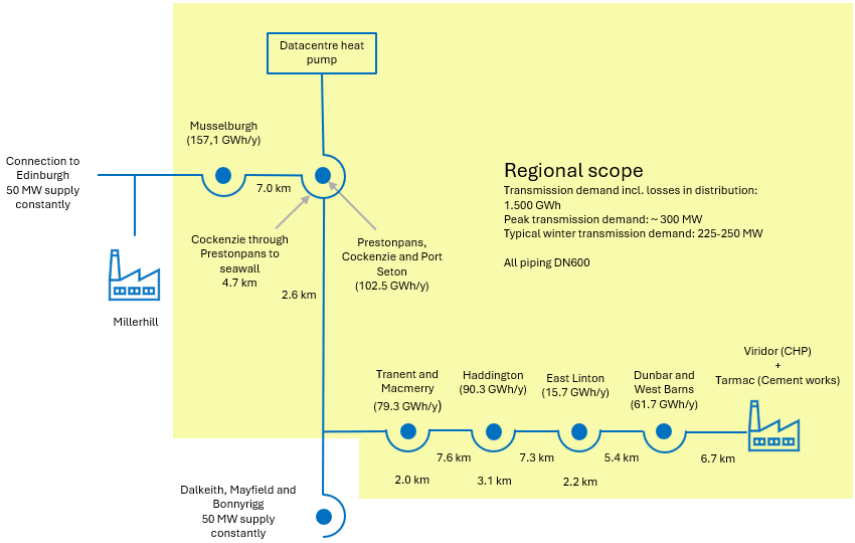
- **Datacentre waste heat** at Cockenzie (delivering up to 800 GWh/year),
- **Viridor and Tarmac (co-located)** industrial heat (up to 700 GWh/year combined),
- **Offshore Wind:** East Lothian is set to become a major hub for offshore wind energy. Several projects are planning to bring power ashore at Cockenzie, and the 4.1 GW Berwick Bank offshore wind farm will connect to the grid near Torness. The development of a region-wide heat network in East Lothian presents opportunities to better coordinate the use of energy from these wind farms. This would represent a shift in the way the electricity system, and wider energy system, is planned and how the energy market operates[2].
- Potential long duration and even interseasonal pit **thermal storage** at Tarmac, to store industrial process heat during periods of lower heat demand, further alleviate grid constraints and wasted electricity, and avoid constraint payments by bill-payers by taking advantage of curtailed wind.

2 planning, including Regional Energy Strategic Plans (RESPs) and, at the national level, the Strategic Spatial Energy Plan (SSEP).

New and final Regional Scope

Viegand Maagøe

Modelling assumptions



- A combination of eastern and western scope allowing also for constant heat export to:
  - Edinburgh – 50 MW
  - Midlothian – 50 MW
- Seawater heat pump replaced by datacentre heat pump
- Networks designed to deliver base load of 100 MW of heat all year thus increasing total amount of delivered heat significantly
- 2 networks not interacting on the short-term – but allows for enhancement/flexibility in the future
- Peak-load and back-up partly delivered by electric boilers

Notably, the regional design also introduces **future-proofing**: even if local heat demand fluctuates, external demand (e.g. from Edinburgh) ensures continued high throughput, enhancing financial and operational resilience.

System Design and Phasing

The proposed layout features a **backbone transmission pipe**, running broadly along the A1 corridor, with branches into local towns. The network design incorporates:

- **Heat blending** from multiple sources,
- **Thermal storage** to decouple supply and demand,
- **Flexible temperature optimisation**, balancing CAPEX/OPEX trade-offs and minimising losses,
- **Redundancy** through multiple sources and electric backup boilers to ensure resilience.

Phasing is anticipated over a **10-year construction window**, with heat exports to Edinburgh expected from 2035 onward, due to dependencies such as the Musselburgh Flood Protection Scheme.

Socio-Economic Value

The socio-economic assessment was rigorous and applied Treasury Green Book methodology. It quantified "hard" benefits (cost savings, reduced emissions, avoided infrastructure investments). In the figure below, a summary of the socio economic benefits of an East Lothian Heat Network is shown as compared to a counterfactual scenario (individual air source heat pumps – ASHP).

Net present value over 50 years **Approx. £ million** **Treasury's Green Book Methodology**	**East Lothian Heat Network**	**Alternative: Individual ASHPs**	**Difference**
Investments (Transmission and distribution incl. necessary reinvestments)	1,300	1,000	-300
Operation and maintenance	325	225	-100
Energy costs (Including GHG emission and air quality damage costs)	1,650	2,950	1,300
Socio-economic cost	**3,275**	**4,175**	**900**

It is a key finding that an East Lothian Heat Network over a 50-year period can demonstrate a significant socio-economic benefit for the region – **more than £900 million**.

There are also many additional benefits (health, equity, resilience) compared to individual ASHP deployment that need further work to outline in detail. These include:

- **Potential substantial benefits** from integrating heat into the local energy supply, creating savings from the avoidance of grid reinforcements and providing solutions to avoid curtailment of local wind and solar.
- **Local Employment:** A multi-phase, multi-decade construction and operation schedule will generate significant jobs across engineering, supply chain, and O&M.
- **Community Wealth Building:** Revenues from heat sales stay local, reducing reliance on imported fuels and creating a circular local economy.
- **Fuel Poverty Alleviation:** The network will offer long-term, stable tariffs for vulnerable households.
- **Environmental Impact:** By replacing fossil heating with waste heat and renewables, the project will contribute meaningfully to East Lothian's climate goals. CO2 reductions and air quality improvements are especially impactful in dense residential areas.
- **System Resilience:** With distributed sources and large storage, the network enhances heat security, reducing exposure to gas market shocks or single-source failures.

The feasibility strongly recommends exploring additional socio-economic benefits in terms of saved electricity grid enforcements, employment, health and other parameters further and is in active discussions with partners to advance our understanding of further savings and benefits. UK-based studies have demonstrated that the societal benefits of low-carbon measures can greatly outweigh their financial benefits, particularly when implemented in an integrated, joined-up manner[3]. For example, a recent study found that connecting neighbourhoods to heat networks across Edinburgh, Midlothian and East Lothian generated an average of **£13,000 per household** in social benefits[4].

Quality Assurance:

The feasibility results have undergone a peer review. A panel of external volunteer experts was invited to **sense-check the assumptions and findings** during May-June 2025. The reviewers examined things like the assumed costs and performance of alternatives (e.g. the **heat pump baseline costs**), the future **electricity price scenarios** used, the engineering design choices around **transmission and distribution losses**, and the accounting of "soft" benefits (e.g. health improvements from better heating). Their feedback has been incorporated to refine the final feasibility report.

Notably, no major flaws have been identified – the consensus is that the study's approach is solid and conservative. Some areas for further analysis include exploring possible **market mechanisms for heat** (since the regulatory environment for third-party heat sales is evolving) and any **subsidy opportunities** that might be on the horizon (such as the UK's Green Heat Network Fund or Scottish Government support, which were not included in the base case).

Conclusion and Next Steps

The feasibility study makes a clear case: **a district heat network for East Lothian is both technically sound and economically attractive** — especially under the Regional Scope. It can offer consumers a cleaner, cheaper, more secure heat supply than individual electrification routes.

3 Sudmant, A., Boyle, D., Higgins-Lavery, R., Gouldson, A., Boyle, A., Fulker, J. and Brogan, J., 2024. Climate policy as social policy? A comprehensive assessment of the economic impact of climate action in the UK. *Journal of Environmental Studies and Sciences*, pp.1-15.

4 Sudmant, A. and Higgins-Lavery, R., Brogan, J. 2025. The Socio-Economic Impact of Realising Zero Carbon Heat in the LHEES Zones of Edinburgh, Midlothian and East Lothian. Edinburgh Climate Change Institute, University of Edinburgh.

Next steps include:

- Locking the preferred scope and delivery model,
- Refining pipe routing and sizing,
- Clarifying governance and financing options,
- Assessing further socio-economic benefits including avoided grid upgrades, health and other forms of savings,
- Securing strategic partnerships (e.g. with data centres or developers),
- And mobilising community and policy support for the next project phase.

The feasibility study has provided the foundations for further refinement to enable regional discussions bringing together East Lothian, Midlothian and Edinburgh City Council. The further scope refinement should enable an **Outline Business Case** to be developed, which the team hopes to undertake with formal support from the Heat Network Support Unit (HNSU). Recognising that the project is now moving from concept to planning, the community group has appealed to East Lothian Council to formally engage with HNSU and the UK National Wealth Fund – for their **expert advisory services and financial modeling support**, which come at no cost and no risk to the Council. Gaining this support is considered crucial to align the feasibility study with the latest government policy thinking and to prepare for funding applications in the next stage.

In summary, the feasibility work to date has **proven the concept**: it is technically and economically feasible to build a county-scale heat network in East Lothian that meets social, economic, and environmental objectives. The study provides a strong evidence base – from heat density maps and engineering schematics to financial models and impact assessments – to proceed confidently to the development phase. The project's focus now shifts from "can we do this?" to "**how do we deliver it?**" The next section outlines the roadmap for delivery in four coordinated phases.

4. Next Steps: Delivery in Four Phases

Delivering a project of this scale requires a phased approach. East Lothian's heat network will be rolled out in **four major phases**, which are supportive of one another, and could be explored in parallel or when resource allows, to gradually achieve the full vision of a regional heat highway. This phased strategy allows for manageable project segments, early benefits, and the flexibility to adapt and incorporate lessons learned along the way. Below we describe each phase – what it entails, its current status, and the next steps needed to bring it to fruition.

4.1 Phase 1 – Musselburgh (Western Network)

Overview: Phase 1 focuses on East Lothian's westernmost communities (Musselburgh and nearby areas), which border the City of Edinburgh. This phase is essentially the **pilot heat network** that will kick-start the wider project. The goal is to connect the initial **anchor heat demand** of roughly 2,000–2,500 homes in Musselburgh – including social housing and public buildings – and supply them with low-carbon heat.

Figure 1 - Phase 1

By demonstrating success at this local scale, Phase 1 will attract further investment and build public confidence. It will also establish the operational framework (customer billing, maintenance regimes, etc.) under real-world conditions. Crucially, Phase 1 sets down part of the **physical and organisational infrastructure backbone** that later phases will extend. The target timeline is to complete detailed design and business case development by 2026, reach a Final Investment Decision (FID) by mid-2027, and begin construction thereafter. This aligns with the council's ambition to see tangible progress before the end of the decade.

Heat Sources and Network Configuration: Phase 1 will utilise the existing heat supply from Midlothian Energy from the Millerhill Energy Centre and connect it to existing homes.

Demand and Customers: Musselburgh offers a dense heat demand area ideal for an initial network. The focus is on connecting **social housing complexes, council facilities (schools, libraries), and new development sites** first, since these can often be aggregated under single ownership or funding streams. Indeed, local housing associations and the Council have shown strong interest – the project has had conversations exploring heat offtake specifically for **social housing in Musselburgh**, including willingness to contribute to connection costs. The subsidy this creates for those customers would take 2p off the heat supply. It would also reduce the long-term maintenance costs for social housing as Heat Exchange Interfaces have less maintenance and last longer than gas boilers and ASHPs.

This indicates that from day one the network could have a guaranteed customer base that ensures revenue. The intention is to quickly expand service to surrounding private residences and businesses once the core spine is operational. Notably, heat network operator **Vattenfall** has signaled interest in this area, suggesting, subject to further discussions, to deliver connections to the 2,000+ homes and manage customer service, in line with our community ambitions. In practice, Phase 1 might start with a few hundred homes in a pilot cluster, then scale up to the full target as pipelines extend through Musselburgh's neighbourhoods.

Progress and Next Steps: During 2025 and going into 2026, the immediate task is to complete an **Outline Business Case (OBC) for Phase 1** – effectively a detailed project plan and investment proposal. This will refine Phase 1's engineering design, firm up costs (now that feasibility gives a baseline), and structure the delivery and funding approach for this phase. The community team plans to leverage external support for the OBC: as mentioned, applying to the Scottish Government's Heat Network Support Unit for expert assistance with the business case and commercial structure.

The OBC will also detail the **Phase 1 delivery vehicle** (likely establishing the East Lothian Heat (Musselburgh) Company as discussed in Section 2) and any partnerships (e.g. with Vattenfall or other private partners). Define the Council's role and appetite, and consider funding and finance sources for the project.

The team will continue **stakeholder engagement in Musselburgh**, including public consultations with residents about roadworks and the benefits of heat networks, to build local buy-in. By the end of Phase 1, expected outcomes include: hundreds of households receiving low-carbon heat, a fully operational initial segment of the heat highway, and a blueprint for scaling up in subsequent phases.

4.2 Phase 2 – Dunbar (Viridor/Tarmac Waste Heat Cluster)

Overview: Phase 2 shifts attention to East Lothian's eastern flank, around the town of Dunbar. This area hosts **some of the county's largest industrial heat sources**, making it a logical next phase to develop. The centrepiece of Phase 2 is capturing waste heat from the **Viridor Energy Recovery Facility** at Dunbar.

Figure 2 - Phase 2

This modern waste-to-energy (WtE) plant processes municipal waste and in doing so generates a continuous output of heat (in the form of steam or hot gases) as a byproduct of electricity generation. Currently, that heat is largely **vented as waste**, but it could be harnessed for district heating. In tandem with Viridor, the **Tarmac cement works** at Dunbar (a heavy industry site) also emits substantial waste heat from its kilns and processes. Phase 2 aims to integrate these sources, along with innovative thermal storage, to supply heat locally and feed into the wider network. Essentially, Phase 2 will establish an **"Eastern Heat Cluster"** that can later be linked to Phase 1's infrastructure, creating a county-spanning system.

Heat Sources and Innovations: The Dunbar cluster is remarkable for the **quantity and high grade** of heat available. The Viridor WtE plant alone can potentially provide in the order of 20–30 MW of heat continuously (enough for thousands of homes), and since it runs year-round, it offers a stable baseload. The feasibility study highlighted this as a prime candidate for integration. Close by, Tarmac's operations release high-temperature exhaust that could be recovered via heat exchangers. Together these constitute **"waste heat from industry"** that Phase 2 will utilise.

A key proposal in Phase 2 is to construct a **Seasonal Thermal Storage facility**, potentially using a repurposed quarry near Dunbar. This concept, labeled **"Excess Power-to-Heat (Seasonal Quarry Storage)"** involves converting surplus renewable electricity (for instance, when winds are strong at night and turbines might otherwise be curtailed) into heat and storing it in a large insulated volume of water or stone underground.

1. An excavated section of a quarry could be insulated and filled to act as a giant thermal battery.
2. During periods of excess wind or other electricity, heating elements or large heat pumps would store heat in the quarry;
3. then during peak heat demand (e.g., cold winter days), that stored heat can be released into the network.
4. This not only balances the network and reduces the need for fossil backup, but also provides a **valuable grid service** by using up excess renewable power that would otherwise be wasted at the expense of all UK energy bill payers.

Another future-proofing element in this cluster is the proximity to the **Torness Nuclear Power Station** (just east of Dunbar). Torness is scheduled for decommissioning by 2030, but until then it's a potential heat source (nuclear plants reject vast amounts of low-carbon heat). Moreover, the site may host a **Hydrogen Production Plant** in the future or even become a potential site for future **small scale nuclear** energy production. If that should occur, both of these would be large sources of future waste heat that could be captured. Phase 2 design will keep a watching brief on these developments, ensuring the network routes and capacities could handle a future connection from Torness or a hydrogen facility.

Network and Demand: The immediate use of the Dunbar heat will be to supply **local needs in Dunbar town and environs**. This includes residential areas (Dunbar, West Barns), local schools, and potentially sites like Dunbar Leisure Pool (a high heat demand site that could significantly benefit). **Haddington**, the county town located midway between Dunbar and Musselburgh, is another demand centre that Phase 2 could start to serve by extending the pipeline westward as far as that town. By phasing, the project may first build the cluster around Dunbar and a trunk line from Dunbar toward Haddington. Phases 3 and 4 would join Haddington to Musselburgh, closing the loop. However, some initial "island" operation is possible: Dunbar's cluster might operate on its own network to begin with, if linking to Phase 1's pipe immediately is not feasible.

For now, Phase 2 demand will comfortably be met within East Lothian. The network build-out will likely include a **transmission pipeline westward** from Dunbar. An interesting aspect under discussion is utilising existing corridors for this pipeline – one proposal is to coordinate with a **new cycle route** planned in East Lothian. By laying the heat main along the same route (possibly an old rail line being converted to a path), the project can minimise new land disturbance and deliver a dual benefit (improved active travel infrastructure alongside heat infrastructure).

Status and Next Steps: As of mid-2025, Phase 2 is in a conceptual stage. The feasibility study's data indicates strong viability, but **detailed engagement with the industrial partners** and **strategic regional energy planning with SPEN and NESO** is the next step.

Both Viridor and Tarmac have been approached; their initial responses are positive, seeing this as an opportunity to improve their environmental performance and potentially receive some financial return for heat provision. In parallel, technical teams will need to perform **heat offtake studies** at these sites – assessing how to technically extract the heat (e.g., where to tap the steam cycle at Viridor, what heat exchanger or heat pump is needed to integrate Tarmac's heat). Funding for these specific studies may come from grants aimed at industrial decarbonisation or through partnerships with Zero Waste Scotland.

On the community side, **Sustaining Dunbar** (a local community development trust) and other local groups will be engaged to begin discussions about the network's impact and benefits in the Dunbar area. The project recognises that building trust and enthusiasm locally is key, especially as Dunbar would see construction activity and a new energy facility (for pumping/storage). The presence of community champions on our steering and expert advisory groups ensure strong local outreach.

For Phase 2 financing, initial estimates suggest it will require significant capital. The timeline for Phase 2 will hinge on Phase 1 progress but could follow a few years behind. If Phase 1 construction starts ~2027, Phase 2 might ambitiously achieve FID by 2028–29 and commission in the early 2030s. Notably, some enabling work for Phase 2 can occur in parallel with Phase 1: for instance, **obtaining pipeline route permissions** east of Haddington could be started early, and even laying oversized pipes in certain sections during Phase 1 (future-proofing connections) is an option. By the end of Phase 2, East Lothian will have two major heat generation hubs (Musselburgh-west and Dunbar-east) ready to be linked, covering both ends of the county with low-carbon heat supply.

4.3 Phase 3 – Cockenzie (Data Centre Integration)

Overview: Phase 3 centres on fully developing the heat network assets around **Cockenzie and the former Cockenzie Power Station site,** roughly in the middle of the East Lothian coast. The anchor of this phase is the potential for a **new Data Centre** being developed on that site. Any large data centre that will produce substantial waste heat is a significant opportunity for the local community.

Figure 3 - Phase 3

While Phase 1 intends to tap into this data centre to supply Musselburgh, Phase 3 involves expanding and optimising that integration as the data centre grows, and extending heat distribution to communities in the Cockenzie–Prestonpans–Tranent corridor. In essence, Phase 3 turns the **Cockenzie area into a robust second heat supply hub** (in addition to Dunbar's in the east). This phase is also about **connecting the dots**: it likely involves laying the remaining sections of the trunk transmission pipeline to join Phase 2 and Phase 1 segments, creating a continuous line from Dunbar through Cockenzie to Musselburgh. Once Phase 3 is complete, East Lothian will have an integrated county-wide network ready for regional connection.

Heat Source – Data Centre Waste Heat: Data centres are energy-intensive facilities that convert nearly all the electricity they consume into heat. The planned Cockenzie data centre is expected to have an electrical load in the tens of megawatts. Without a heat recovery system, all that energy would be dissipated via cooling towers to the atmosphere. Instead, this project will capture it for the community. The data centre at Cockenzie is expected to use liquid cooling or air cooling that can be intercepted with heat exchangers. **Low-temperature waste heat (around 30°C)** from the servers can be upgraded via large heat pumps to around 75–80°C for the heat network. One can view the data centre as effectively a giant **heat source** that runs 24/7.

By Phase 3, we anticipate the data centre is fully operational (possibly expanded in stages) and capable of providing a **backbone heat supply to the western half of the East Lothian network**. For reliability and peak capacity, Phase 3 will also incorporate the **Seawater Source Heat Pump** at the Cockenzie site (if not already built in Phase 1). This additional source can cover periods when the data centre load (and thus waste heat) might dip or when demand spikes beyond what the data centre alone can supply.

Our heat network would ensure that we would be open to other industries that may locate in the redeveloped Cockenzie/Prestonpans area (the site is part of an Enterprise Zone with potential for more businesses) either as a heat supplier or heat offtaker. If any such future industries materialise (for example, manufacturing or large food processing), their waste heat would be integrated as well. A heat source on site may encourage high heat users to be encouraged to invest in the other parts of the Cockenzie site, further supporting East Lothian's economic development ambitions.

Distribution Expansion: Phase 3 will extend heat distribution networks to **Prestonpans, Cockenzie, Port Seton, and Tranent**, and potentially further into inland villages like Longniddry and Ormiston. These communities lie between the Musselburgh area and Haddington, and currently rely mostly on individual gas boilers or electric heating. By laying distribution pipelines here, the project captures another large tranche of customers. Tranent, being one of the larger towns in East Lothian, is a notable target – it has a mix of social and private housing, schools, and a mining museum (which interestingly sits above old mine workings that could even provide *geothermal heat* with further exploration).

Figure 3 shows Prestonpans, Port Seton, and Longniddry along the route of the heat highway, indicating anticipated network branches in those locations. The distribution in these towns will branch off from the main transmission line. A careful hydraulic design will ensure that when Phase 2's heat comes from the east and Phase 1's from the west, they meet seamlessly in this central sector, maintaining pressure and temperature for all connected loads. Phase 3 may also involve installing additional **thermal storage tanks** at Cockenzie (shorter-term storage to buffer daily variations, complementing Dunbar's seasonal storage).

Infrastructure and Integration: As noted, one of Phase 3's critical tasks is to **join the networks built in Phase 1 and Phase 2**. If Phase 1 built from Musselburgh towards Cockenzie and Phase 2 built from Dunbar towards Haddington, Phase 3 likely covers the middle segment (around Haddington to Cockenzie). By completing this, East Lothian achieves a contiguous heat transmission route. This integrated pipeline allows heat to flow as needed: for example, excess heat from Dunbar's Viridor plant in summer could be sent west to supply any Edinburgh demands or charge a thermal store there, and conversely in winter, if Dunbar's industry can't meet peak, the data centre and other sources can send heat eastward. Such flexibility greatly enhances **energy security** for the network. The control systems and telemetry to manage this will be implemented in Phase 3 – a central control centre might be established (perhaps co-located with one of the energy centres) to monitor temperatures, flows, and dispatch decisions across the county.

Status and Next Considerations: Phase 3 is somewhat dependent on external timelines, particularly the **data centre development schedule**. If the data centre is constructed earlier than expected, the project might accelerate part of Phase 3 (i.e., building the connection to it in Phase 1) to utilise that heat as soon as possible. Conversely, if its development is delayed, the network may rely more on interim sources in Phase 1 until Phase 3 can be executed. The project team has been in dialogue with the data centre developers via the Council's economic development channels (as the Cockenzie site is a key regeneration project for the area). So far, the developers are cooperative – they see the benefit in being part of a green flagship project, and it may help with planning permissions if they can demonstrate climate-friendly design by reusing heat.

An **agreement in principle** to capture heat from the data centre will be needed. Technical studies on how to integrate the cooling systems will follow. On the community side, Phase 3 will entail engagement in the communities of Prestonpans, Cockenzie, etc. These areas have their own community councils and local concerns, so the outreach done in Phases 1 and 2 will extend here, ensuring residents are informed about the project plans (especially important if roads will be dug up for pipe-laying).

Financing for Phase 3 may be independent or could be packaged with either Phase 2 or Phase 4, depending on strategy. Since Phase 3 essentially "completes" the East Lothian core network, it could be financed as part of the expansion to region. The **National Wealth Fund** and other public sources might be more inclined to fund the main transmission backbone, which Phase 3 would finalise, as it has the larger strategic value. The timeline for Phase 3 could be in the early 2030s, aiming to coincide with or soon follow Phase 2. There is some flexibility – if the data centre is ready and waste heat is being vented, there will be a strong incentive to capture it sooner. Thus, Phase 3 could even run partly in parallel with Phase 2 if resources allow, to connect Cockenzie and then progress eastward. Ultimately, by the conclusion of Phase 3, East Lothian will have a **fully interconnected heat network from east to west**, with multiple supply points and most major towns connected. This paves the way for the final and most outward-looking phase: regional integration.

4.4 Phase 4 – Regional Expansion (Heat for Edinburgh and Beyond)

Overview: Phase 4 represents the culmination of the project's vision: extending the East Lothian Heat Network beyond the county's boundaries to become a **regional heat network**, exchanging heat with the City of Edinburgh (and potentially Midlothian).

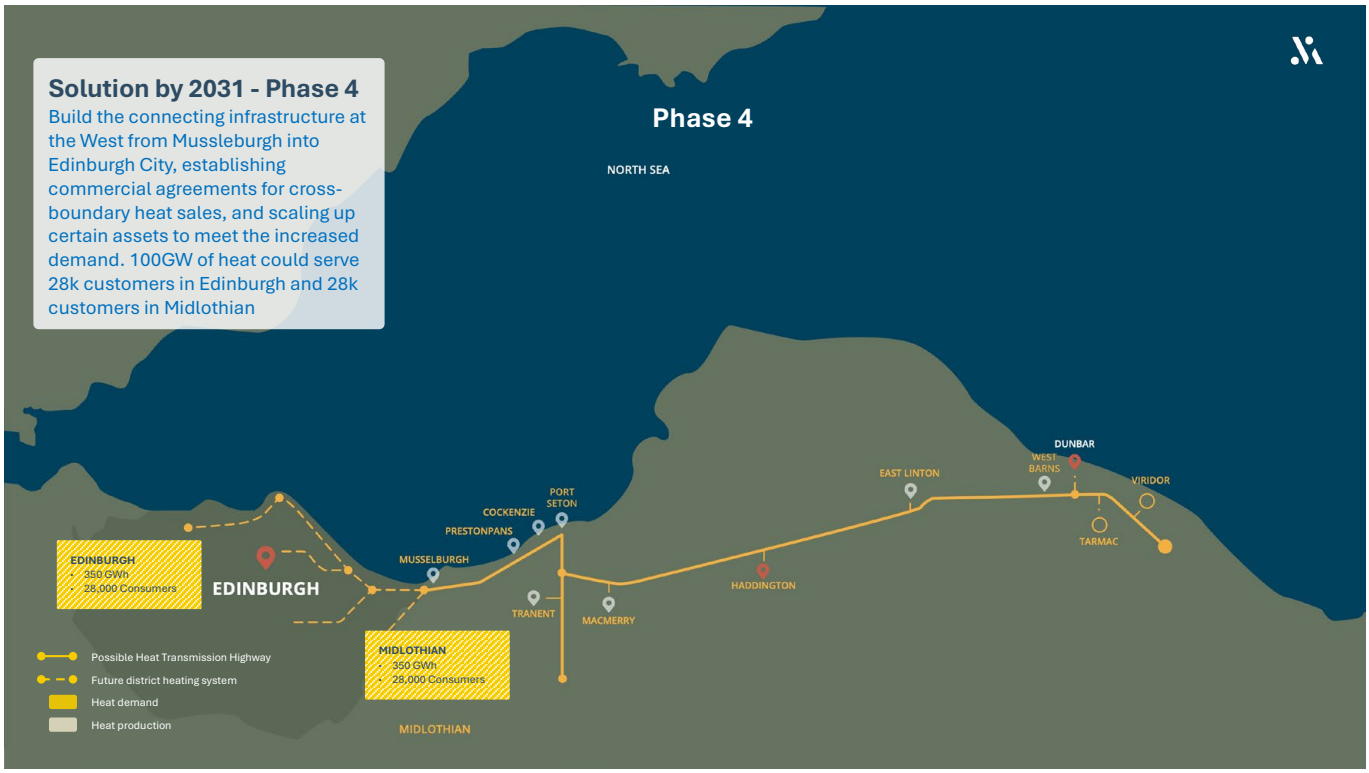


Figure 4 - Phase 4

In this phase, the network effectively becomes a **two-way "heat highway"** – not only distributing East Lothian's waste heat to local consumers, but also supplying surplus heat into Edinburgh's urban heat networks, and possibly taking advantage of any excess heat or storage capacity that larger city systems can offer. The feasibility study showed that integrating with Edinburgh can significantly improve the economics for East Lothian, by accessing a larger customer base and fully utilising the heat sources available. Phase 4 will involve building the connecting infrastructure at the western end (from Musselburgh into Edinburgh city zones), establishing commercial agreements for cross-boundary heat sales, and potentially scaling up certain assets to meet the increased demand. By doing so, East Lothian transitions from a local project to a key player in the region's net-zero infrastructure, helping decarbonise not just one county but the wider Lothian area.

Connection to Edinburgh: Practically, Phase 4 would see the construction of **insulated pipeline connections from Musselburgh into Edinburgh**. There are a few possible routes, which may tie into existing or planned heat networks in the capital. One likely link is towards the **Edinburgh Waterfront** areas, where significant redevelopment is underway and a series of low-carbon **heat networks are planned**. By feeding East Lothian's heat into this, it substitutes or reduces the need for gas CHP or other less green sources the city might use. Another connection could be southward to the **Shawfair/Millerhill area** on Edinburgh's outskirts, where a new town (Shawfair) has an existing small district heating system and the Millerhill waste plant (which East Lothian already sends waste to) operates – synergy here could allow sharing heat between the two waste plants (Millerhill and Dunbar) or simply add redundancy. Additionally, the network could branch towards central Edinburgh – the **Holyrood area (Scottish Parliament) and surrounding public buildings** have been mooted as a candidate for district heating. If an opportunity arises to supply that, East Lothian's trunk line could extend a spur in that direction.

Supply Capacity: The regional phase envisions providing in the order of **100 MW of heat export** to Edinburgh. To put this in perspective, 100 MW could heat tens of thousands of homes. East Lothian's identified sources (Viridor, Tarmac, data centre, etc.) combined have this scale of output, especially when supplemented by the innovative storage and power-to-heat systems in Phase 2. Phase 4 might require some **capacity upgrades**: for example, adding more heat pump modules at Dunbar or Cockenzie to draw even more heat from sources during peak times, or increasing pumping capacity for higher flow rates to the city. These technical enhancements would be determined during the detailed design for regional supply.

The Danish analogy is apt here – just as Denmark built "transmission highways" moving heat between towns, East Lothian's network will effectively become a branch of a future **Scottish heat super-grid**. By being an early mover, East Lothian stands to benefit from this integration through economies of scale and possibly financial support (since supplying a city could attract investment from city authorities or others).

Policy and Agreements: Phase 4 is heavily dependent on **cross-authority collaboration and supportive policy frameworks**. One major challenge identified is that current Scottish Government heat network policy did not originally envision a regional scheme. For Phase 4 to happen, it's likely that the success of Phases 1–3 will need to demonstrate the viability and benefit, thereby encouraging government to back regional expansion. We want to prove the model, build the infrastructure and expand to mazimise the benefits - taking everyone with us along the way.

The project team has been proactive in this regard: they pose the "**East Lothian Question**" – essentially asking national policymakers to reconsider if net zero can be achieved without utilising our plentiful waste heat, as East Lothian proposes to do. There are encouraging signs: East Lothian Council is working with the Edinburgh & South East Scotland City Region Deal on a **Regional Energy Masterplan** that is studying such cross-boundary energy opportunities. If that masterplan endorses a regional heat network, it will provide political momentum and possibly funding to Phase 4. Additionally, East Lothian Council, Midlothian Council and Edinburgh City Council should investigate their appetite and models for a regional approach at the earliest opportunity.

Commercially, Phase 4 will involve **heat offtake agreements** with large customers in Edinburgh. These could be with a city-owned energy company (if Edinburgh sets one up for its networks) or directly with developers of large housing schemes. The structure might resemble a utility purchasing agreement: Edinburgh buys X MW of heat per year from East Lothian at an agreed price which guarantees a market for East Lothian's heat. Meanwhile, East Lothian's network guarantees supply (with contractual penalties if not delivered, etc.). These are new territory contracts in Scotland, but examples exist in Scandinavia for inter-city heat trade.

Benefits to East Lothian and Region: By exporting heat, East Lothian **increases throughput on its network**, which spreads fixed costs and can actually lower tariffs for everyone in East Lothian and Edinburgh. Any surplus from selling heat to Edinburgh would be reinvested to lower prices further or to fund network extensions to any remaining unserved villages or wider heat solutions. For Edinburgh and the region, Phase 4 provides a supply of **low-carbon heat at scale**, aiding the city's decarbonisation without having to build all generation within the city. This symbiotic relationship is the essence of a **"heat highway" approach** – moving heat from where it's abundant to where it's needed, much like the national electricity grid moves power.

In a broader sense, Phase 4 positions the region as a **leader in innovative climate solutions**. It showcases a working model of circular energy economy: capturing industrial waste in a rural area to warm urban homes, instead of wasting that energy and simultaneously burning fuel in the city for heat. If achieved, it will influence and reframe national policy, leading to replication elsewhere (other regions with dispersed industry and nearby cities could adopt the template).

Timeline: Phase 4 is the longest-term aspect of the project. Realistically, it may not be fully implemented until the early-to-mid 2030s, after Phases 1–3 have established the core network. However, preparatory steps are imminent. The request for Council to engage now with the Heat Network Support Unit and the National Wealth Fund is partly to prepare for this phase – these bodies can help structure the outline business case with a regional perspective in mind.

5. Conclusion

The East Lothian Heat Network feasibility study presents a compelling case for a transformational regional energy infrastructure. The evidence shows this project can deliver affordable, low-carbon, and secure heat to tens of thousands of homes and businesses — while generating strong local economic, environmental, and societal value. Yet to move from feasibility to delivery, a supportive policy and regulatory environment is essential.

It is also worth noting that as a community approach, the Heat Network will not reach every community, so we are actively supporting smaller scale approaches that can enable a just transition, particularly for our rural communities who are off gas grid. It has been however out of scope for this study, but it is very much part of our ambitions to support all in our county.

To unlock this potential, we set out the following key asks of **government, regulators**, and **regional partners**:

Policy Enablers – From Principle to Implementation

The Scottish Government and the UK Government has already outlined strong principles for heat decarbonisation. We welcome these, but urge timely and coordinated implementation to ensure heat network readiness aligns with policy goals and gives confidence to investors and consumers alike. Specifically:

- **Ensure reform of the electricity market** supports the use of renewable generation across the whole energy system including using it as a source of heat. This is critical to ensuring that Scottish wind generation is used effectively.
- **Mandate public sector connection**s: All publicly owned buildings should be required to connect to a heat network where one exists and it is viable. This creates critical early anchor loads, reduces project risk, and exemplifies public leadership.
- **Firm up the Heat in Buildings Bill**: The Bill should include binding timelines that align with planned heat network rollouts. Consumers need certainty on future heating options, especially in zones where district heating is likely to be the most cost-effective path to Net Zero.
- **Support flexible zoning**: Heat network zones must be place-based and pragmatic. They should accommodate large, cross-boundary systems like the East Lothian–Edinburgh corridor, which has strategic potential for grid balancing and low-cost heat production through diverse sources.
- **Enable utility parity**: Permitting schemes and statutory undertaker rights must be introduced to treat heat networks as essential infrastructure. This would streamline delivery, reduce costs, and accelerate connection. Heat networks must be allowed to operate on equal terms with other regulated utilities.
- **Include heat in national and regional energy planning**: Strategic planners like SPEN and the future NESO should embed heat infrastructure into regional energy system models. This integration will help unlock synergies between electricity, heat, and storage, and ensure least-cost decarbonisation pathways.
- **Build future sources of waste heat** (such as hydrogen, data centres and CCUS) in places **where the substantial waste heat can be used**. Make it a planning condition and connect these policy areas with the opportunities for decarbonising heat.

A Call for Regional Collaboration

We call on **East Lothian, Midlothian**, and **Edinburgh City Council** to commit to progressing this vision, jointly. Only through coordinated local authority leadership can this integrated network be realised. The following actions are proposed:

- Initiate a joint governance and funding framework for early-stage project development.
- Identify lead officers or champions within each council to drive alignment.
- Embed heat network planning in Local Heat and Energy Efficiency Strategies (LHEES) across the region.
- Begin joint exploration of suitable procurement and delivery models — including local authority-owned, community-led, or public-private approaches.

This project has the potential to be the largest and most impactful heat network in the UK, serving over 100,000 consumers with clean, affordable energy. We are actively seeking conversations with partners who can help us bring this to life. Please email the team at **eastlothianheat@gmail.com**

With shared ambition and aligned action, we can make this future a reality — and ensure that **no home is cold, and no heat is wasted.**

Known as The Bridge To Nowhere, bridge over Biel Water where it flows into Belhaven Bay and the North Sea at Dunbar. East Lothian, Scotland

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