East Lothian Council

COMMITTEE:	East Lothian Council
MEETING DATE:	28 October 2025
BY:	Executive Director for Place
REPORT TITLE:	Energy Report and Local Heat and Energy Efficiency Strategy Delivery Plan Update
REPORT STATUS:	Public

1 PURPOSE OF REPORT

1.1 To provide Council with an update on the Local Heat and Energy Efficiency Strategy (LHEES) Delivery Plan and on energy related matters, and to seek agreement on next steps.

2 RECOMMENDATIONS

Members are recommended to:

2.1 Note progress made on the actions in the LHEES Delivery Plan;

2.2 Agree the amendments to the actions in the LHEES Delivery Plan that are set out in paragraph 3.8 of this report;

2.3 Agree that officers should continue to explore the potential for district heat networks across the authority, noting the particular opportunities on the potential for a district heat network at Cockenzie using waste heat from a data centre, and the potential of utilising minewater geothermal energy for the Blindwells development and surrounding area;

2.4 Agree that officers continue to work regionally, in partnership with other Councils, to further develop the Regional Energy Masterplan, and ensure that the full potential of regional infrastructure is utilised effectively and efficiently and for this work to explicitly include the potential from heat networks;

2.5 Agree the principle of a partnership with Lothian Heat Community Interest Company, which should be aligned with regional discussions, and subject to officers developing an MOU to be agreed at a future Council meeting;

2.6 Note that the principle of developing Heat Networks in the Council is not dependent on capital resources from the Council given our financial position and wider demands on resources; and

2.7 Ask officers to write to SGN Ltd to confirm that the Council in principle supports the Caledonia H2 project.

3 BACKGROUND

3.1 Local authorities, under the Local Heat and Energy Efficiency Strategies (Order) 2022, are required to prepare a Local Heat and Energy Efficiency Strategy (LHEES) with an accompanying five-year Delivery Plan. These should set out a long-term plan for improving energy efficiency and decarbonising heat in all domestic and non-domestic buildings within each Local Authority area. LHEES is primarily driven by Scotland's statutory targets for fuel poverty and greenhouse gas emissions reduction, including:

• By 2040, as far as reasonably possible, no household in Scotland is in fuel poverty; and

• A reduction in net zero emissions by 2045, with carbon budgets that decrease every five years until Scotland reaches net zero.

3.2 The heat and energy efficiency environment in which this report has been prepared is rapidly moving in terms of policy, legislation and technology.

3.3 Members will recall that the LHEES and its Delivery Plan were approved by Council on 29 October 2024. One of the main reasons why LHEES is split into a Strategy and a Delivery Plan is to enable successful monitoring against actions that have been developed through the process.

3.4 The approved Delivery Plan contains 42 actions. Council officers have been working to deliver those actions. A RAG Assessment showing progress on the actions is contained in Appendix A to this report. The assessment shows that 8 actions are green, meaning that they have been completed, 17 are amber, meaning that some progress has been made, and 17 are red, meaning that progress has yet to be made.

3.5 Actions 12 to 14 relate to council homes. The Council is still awaiting details from the Scottish Government on the Net Zero Standard for council housing. Despite this, the following progress has been made in the last year on council homes:

- 104 properties have had loft insulation installed;
- 58 properties have had cavity wall insulation;
- 3 properties have had external wall insulation;
- 475 properties have had energy efficient windows installed; and

- 236 properties have had insulated doors installed.

3.6 Actions 19 to 22 relate to Council-owned non-domestic properties. Progress remains aligned to the ongoing review of Council assets with current progress to non-domestic properties summarised below:

- Improvements to building fabric and energy efficiency measures during routine maintenance operations;
- Installation of low energy and renewable technologies including photovoltaics, battery storage, heat pumps, LED lighting replacements and building energy management system improvements; and
- Programme of automated meter reading installation underway to monitor trends in energy and utilities consumption for trend analysis and early detection of issues.

3.7 Proposals to further decarbonise and meet the aims of LHEES are regularly discussed within the Climate and Nature Emergency Group, the Joint Members Climate Group, and the Energy Board, and these groups provide effective forums to both share ideas and to provide governance on energy related matters.

3.8 The Delivery Plan is a live document that may need change to some of the actions within it. Having reviewed the Plan, it is recommended that the following changes are made to the existing actions:

a) ‘Action 22 - Extend the preparation of Council assets to those that are leased to other businesses.’ It is proposed that this action be deleted, as Action 21 already requires that net zero plans are prepared for Council assets currently using LPG or oil for heating;

b) ‘Action 32 - Secure funding to undertake a regional energy masterplan study.’ It is proposed that this action be deleted, as this issue is already covered by Action 24 - Work with Midlothian, Edinburgh, West Lothian and Fife Councils through the City Region Deal on a regional heat masterplan, exploring the potential demand for heat and heat network connections across the region;

c) ‘Action 41 - Explore opportunities with credit unions to develop local loan solutions for retrofit work’. It is proposed that this action be amended to, ‘Explore opportunities for loans and grants to develop local loan solutions for retrofit work,’ as there may be opportunities for grant funding, as well as local loan solutions.

3.9 At the meeting of 29 October 2024, Council also agreed that officers should continue to explore all opportunities to undertake feasibility studies where funding is available to assess the technical and financial viability of district heating and smaller-scale local heat solutions.

3.10 An example of this happened earlier this year, when Pencaitland & District Community Council (P&DCC) approached the Council seeking our support to seek funding to assess the technical and financial viability of a district heating scheme to supply residential and commercial properties in the village of Pencaitland. This was discussed initially

through the cross-party Climate and Sustainability Group, who expressed in principle support, noting that whilst not a decision-making forum, that this remained aligned to the Council decision to explore opportunities to progress with feasibility studies where opportunities aligned. As such, Council officers submitted an application to the Scottish Government Heat Network Support Unit (HNSU) seeking funding for this feasibility work.

3.11 Unfortunately, in August 2025, the HNSU informed the Council that the application had been unsuccessful. The HNSU decision is set out in Appendix B.

3.12 Discussions at a national level have continued between Council officers and the HNSU. The HNSU is sponsored and managed by the Scottish Government, with partners Scottish Futures Trust and Zero Waste Scotland providing a range of support services. It supports the development of new low or zero emission heat network projects in Scotland through grant funding and expert advice. All HNSU funding is subject to availability and is offered on a first-come-first-served basis. In discussions, the HNSU advise that applications for funding would only be supported where, amongst other things, there was clear support from a Committee of the Council, and where the HNSU was satisfied that there was a clear pathway to development in the short to medium term. The HNSU have also advised that the Council would need to demonstrate that any proposed project would have sufficient resourcing from the Council, in the form of proposed governance, including representation from senior Council officers.

3.13 Council officers at both senior and officer level have been successful in starting regular discussions at a regional level with colleagues from Midlothian and Edinburgh Councils. Officers have agreed that regular collaboration and sharing of intelligence is crucial in discussions over heat networks that could potentially cross local authority boundaries.

3.14 Through the City Deal, work has commenced on a Regional Energy Masterplan (REMP). REMP is a strategic initiative aimed at advancing the region's transition to a low-carbon energy system. It seeks to consolidate local energy-related data into a unified regional repository, facilitating informed decision-making across innovation, investment, policy, and regulation. By modelling the interdependencies within the energy system, the plan aims to assist regional partners in identifying optimal pathways to achieve deep decarbonisation cost-effectively, while promoting clean, sustainable, and inclusive growth.

3.15 Early exploratory discussions have taken place with regional colleagues to discuss opportunities to further collaborate on heat networks and wider heat solutions, maximising the full potential of existing infrastructure within the region.

3.16 Members may also be aware that in 2020, Midlothian Energy Limited (MEL) was formed, a 50/50 joint venture between Midlothian Council and Vattenfall Heat UK. MEL has an energy centre that captures low carbon heat from the Millerhill Recycling and Energy Recovery Centre. The new

MEL Energy Centre will then use this captured heat to supply around 3,000 homes, education and retail properties in a district heating network supplying the new settlements at Shawfair and Craighall village. A number of new homes have already been connected to this network.

3.17 MEL advise that they are looking to provide low carbon energy infrastructure to the region, and whilst this is initially focussed on using the waste heat at Millerhill, they intend to add further waste heat sources over time. They advise that the difficulty in taking heat over larger distances is that it is more costly. To offset this cost, demand assurance is needed to ensure that they do not have a stranded asset. The longer the heat network spine network, the bigger the demand needed to cover the capital cost.

3.18 The new MEL Five-Year Business Plan, which MEL hope will be endorsed by Midlothian Council in December, will continue to reference opportunities to expand into the east of East Lothian, including the potential to connect at the Queen Margaret University and build out a network from there. While they advise that this activity will not be a priority at present, MEL is ready to engage with potential partners in East Lothian. MEL confirm that there is no single structure for projects that they will be prepared to take forward and this may ultimately, in East Lothian, be influenced by the approach East Lothian Council takes in terms of facilitation or direct delivery of district heating.

3.19 Officers are continuing to work closely with colleagues from City of Edinburgh Council, who are continuing to develop their heat network proposals, and a delivery model for them. Earlier this month, officers from City of Edinburgh Council informed Council officers that they had engaged consultants who are about to undertake work on spinal routes for supplying large-scale heat to heat networks in Edinburgh. This work will further evaluate route options, including evaluating strategic options for bringing heat into heat network zones in Edinburgh from primary heat sources. While these could potentially include those in East Lothian and Midlothian, the consultants have suggested that their initial focus with respect to neighbouring local authorities would primarily be on access to electricity, rather than heat sources, given challenges around long distance transmission of heat, and on the basis that access to low-cost electricity will help unlock heat network development. Officers have requested that they be consulted on this work, in order to ensure that the consultant's work reflects the opportunities within East Lothian.

3.20 In June 2025, a feasibility study report entitled 'East Lothian Heat – A community energy network' was published. The report was written by Dr. Gemma Bone Dodds, as Chair of the Community Heat Network Steering Group, and is based on a feasibility study carried out by Viegand Maagøe, a Danish company with expertise in district heat solutions. The charity East Lothian Community Benefits partnered with East Lammermuir Community Council to raise funds for the feasibility study, with Community Wind Power funding the study alongside a contribution from Scottish Enterprise. A copy of the feasibility study report is set out in Appendix C.

3.21 A county-wide heat network is proposed, which the report concludes is technically and economically feasible. The heat network is proposed in four phases.

- Phase 1 would utilise the existing heat supply from MEL from the Millerhill Energy Centre and connect it to existing homes and buildings within Musselburgh and nearby areas.

- Phase 2 would capture waste heat from the Viridor energy from waste facility at Oxwellmains and from the Tarmac cement works. Phase 2 aims to integrate these sources, along with innovative thermal storage, to supply heat locally and feed into the wider network. Phase 2 would likely include a transmission pipe westward from Dunbar.

- The anchor for Phase 3 would be a data centre that could potentially be developed on part of the former Cockenzie Power Station site. Phase 3 would develop a heat network to communities in the Cockenzie–Prestonpans–Tranent corridor, and potentially further into inland villages like Longniddry and Ormiston. Phase 3 would also incorporate a seawater source heat pump at the Cockenzie site.

- Phase 4 would involve extending the heat network into Edinburgh and Midlothian, potentially serving 28,000 customers in Edinburgh and 28,000 customers in Midlothian.

3.22 The ownership and delivery model was not part of the feasibility study, nor is it possible for the community group to determine this outside of bigger regional conversations. The Community Steering Group do however advise that 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 the Community Steering Group believe this could be integrated by looking at an increasing community ownership stake over time. They further advise that the evolving legal structure will continue to be clarified (for instance, the merits of a Community Benefit Society vs. a Community Interest Company 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.

3.23 In a recent letter to Council officers, the Community Steering Group advise that they have recently established the Lothian Heat Community Interest Company (LHCIC), which has been set up to provide a development vehicle to serve the interests of those living and working in East Lothian, Midlothian, and Edinburgh the following charitable objectives:

1. To explore solutions for minimising waste heat and delivering clean, affordable heat to homes across the Lothians and Edinburgh.

2. To maximise community ownership of and benefit from future heat solutions.

3.24 The LHCIC wish to enter into a non-legally binding Memorandum of Understanding with East Lothian Council to collaborate on finding heat solutions to support the people, Council, and businesses of East Lothian. The LHCIC letter also sets out a framework for collaboration, which includes suggested commitments for both the Council and for LHCIC. A copy of the letter from LHCIC is set out in Appendix D.

3.25 The feasibility study report sets out an ambitious proposal, which has been successful in focussing discussions on the need to decarbonise. Officers are grateful to members of the Steering Group for the time they have put into advancing this work. Offering an efficient, environmentally friendly way to heat homes and businesses, it is recognised that heat networks will play a key role in achieving our climate change targets. They can also lead to fuel savings, helping to reduce fuel poverty.

3.26 To progress a project of this scale would be significant, both in terms of the financial resource required and the significant skills and expertise needed to unlock this in an ever-changing environment. The Council has been clear as to the scale of current and financial challenges facing East Lothian whilst at the same time pressures and demands are increasing across Council services, and the ongoing financial sustainability of the Council remains a critical priority. As well as facing significant financial challenges, the Council is already progressing a number of major strategic projects, including the redevelopment of the former power station site in Cockenzie, the Innovation Park at Queen Margaret University, and the new settlement at Blindwells. These projects are not only strategically important, but also required significant officer resource across many Council services to make them happen. As noted later in this report, these projects may also present opportunities for alignment with our LHEES.

3.27 More broadly, local authorities in Scotland do not have all of the necessary powers or revenue streams similar to the successful European examples of heat networks in Europe, such as in Denmark. It is simply not possible for a local authority alone in Scotland to bring forward a heat network of the type proposed in the feasibility study report, nor take on the proposed financial liability and associated risks of delivering and energy project of this scale.

3.28 Council officers are clear that a district heat network proposed in the feasibility study is a national scale project that requires support from the Scottish Government. It is not a project that could be delivered in the short to medium term, and it is unlikely that feasibility for the entirety of the scheme would be funded by the HNSU. It is also worth noting that in July 2025, the Council leader wrote to the Scottish Government inviting Gillian Martin MSP, Cabinet Secretary for Climate Action and Energy, to meet with him and the Chair of the East Lothian Community Benefits organisation to discuss the potential for scaling up heat networks across East Lothian and the wider Southeast Scotland region. This has been

passed to Màiri McAllan MSP, Cabinet Secretary for Housing, as this falls under her portfolio interests. Unfortunately, due to significant diary pressures, the Cabinet Secretary was unable to accommodate a meeting at this time. A copy of the letter of response is set out in Appendix E.

3.29 What is also crucial is the need for the Council to continue to work regionally on this, in partnership with Edinburgh and Midlothian Councils. Continuing to develop the Regional Energy Masterplan, and ensuring that the full potential of regional infrastructure is utilised effectively and efficiently, should help the Councils to identify the optimal pathways to achieve deep decarbonisation most cost-effectively.

3.30 The letter from the Steering Group was only recently received, and officers will explore the request from them. Council officers are in principle supportive to ongoing engagement with the Steering Group and to the concept of some form of partnership. It is therefore recommended that a further report be brought back to Council recommending whether the Council should enter into a Memorandum of Understanding with LHCIC.

3.31 In February 2025, Council agreed to select Social Development Capital LLP (SDCL) as the preferred supplier to deliver a Data Centre on the land of the former coal store at the former Cockenzie Power Station site. The aim is to explore the opportunity of developing a joint venture between both parties and will be subject to further Council determination. Before any development can take place, the plans would need to be assessed fully through the normal planning application process, and members of the public would have the opportunity to comment on the proposal. Data centres consume vast amounts of heat. This waste heat could potentially be used as the backbone for a district heat network. Discussions with SDCL, who have experience of such technology, on this potential have already begun. Whilst it is too early for a funding application to be made, it is recommended that officers should focus on the potential for a district heat network at Cockenzie using waste heat from a data centre.

3.32 It is also clear that delivering a heat network for new build development is significantly easier than retrofitting to existing buildings, and the Council should continue to explore opportunities where this can be achieved.

3.33 In line with the current Local Development Plan 2018, the Council has carried out concept and pre-feasibility studies across the former East Lothian coalfield in collaboration with the Mining Remediation Authority to explore the potential for utilising mine water geothermal energy. A number of potential locations where such potential exists has been identified at Musselburgh, near Craighall, and at Wallyford and Tranent, as well as at Meadowmill, Cockenzie, and Blindwells.

3.34 Given existing public assets there, the proximity of potential mine water resources, and future development ambitions in this wider area, a focused piece of work has been developed by the Council to explore

opportunities in greater depth that are accessible via public assets; this is alongside feasibility work carried out and under development by the owners of the Blindwells Development Area in respect of the current allocated site and potential expansion.

3.35 In this context, the Scottish Government's Heat Network Support Unit has indicated that there may be an opportunity for the Council and private sector partners to explore these opportunities further through feasibility opportunities and it is recommended that Council officers continue to further explore this.

3.36 Taken together, there could be around 10 MW of energy potential within the Cockenzie, Blindwells and Meadowmill area where major sites are undergoing redevelopment. It is therefore recommended that officers should also focus on exploring this opportunity further, together with the Mining Remediation Authority and the prospective developers of Blindwells.

3.37 There are a range of energy efficiency and decarbonisation opportunities and technologies available to reduce building emissions and support net zero. Council officers will continue to explore such opportunities, including hydrogen, which could be used to decarbonise many parts of our economy, including industry and transport.

3.38 EDF advise that they are exploring the potential for low carbon energy projects on the land around Torness. Some potential developments could include a data centre, battery storage, or a hydrogen project. On the topic of hydrogen specifically, EDF advise that Torness has available land and a grid connection, as well as close proximity to sources of biogenic CO2, which Hynamics (EDF's consultants) feel makes it strategically well positioned for e-fuel production. EDF stress that they have not yet concluded on the 'chosen' technology to promote for this land.

3.39 Officers also met recently with colleagues from SGN Ltd. They provided details of their H2 Caledonia project, which aims to provide a hydrogen network to connect producers to industrial and commercial and offtakes in the region, helping to support decarbonisation and de-risk development projects. They are currently developing a needs case report for the project, which they hope will demonstrate the potential and value of a hydrogen ecosystem in supporting decarbonisation across Scotland. Further details of their project are given in Appendix F. SGN Ltd have requested that the Council provides a letter of support, and this would be referred to in their final report. It is recommended that a letter is sent to SGN to confirm that the Council in principle supports this project, and gives consent for the Council logo to be used in the final report.

4 POLICY IMPLICATIONS

4.1 This report builds upon the Council's approved LHEES and supports the Council's roles in relation to the development of heat networks in East Lothian.

5 RESOURCE AND OTHER IMPLICATIONS

5.1 Finance: None

5.2 Human Resources: None

5.3 Other (e.g. Legal/IT): None

5.4 Risk: None

6 INTEGRATED IMPACT ASSESSMENT

6.1 ***Select the statement that is appropriate to your report by placing an 'X' in the relevant box.***

An Integrated Impact Assessment screening process has been undertaken and the subject of this report does not affect the wellbeing of the community or have a significant impact on: equality and human rights; tackling socio-economic disadvantages and poverty; climate change, the environment and sustainability; the Council's role as a corporate parent; or the storage/collection of personal data.	X

or

The subject of this report has been through the Integrated Impact Assessment process and impacts have been identified as follows:	

Subject	Impacts identified (Yes, No or N/A)
Equality and human rights	
Socio-economic disadvantage/poverty	
Climate change, the environment and sustainability	
Corporate parenting and care-experienced young people	
Storage/collection of personal data	

Subject	Impacts identified (Yes, No or N/A)
Other	

[*Enter information on impacts that have been identified*]

The Integrated Impact Assessment relating to this report has been published and can be accessed via the Council's website:

https://www.eastlothian.gov.uk/info/210602/equality_and_diversity/12014/integrated_impact_assessments

7 APPENDICES

7.1 Appendix A – RAG Assessment showing progress on LHEES Delivery Plan Actions

7.2 Appendix B – HNSU decision in respect of the Pencaitland District Heating Scheme

7.3 Appendix C – Feasibility Study Report entitled 'East Lothian Heat – a community energy network', by the Community Heat Network Steering Group, June 2025

7.4 Appendix D – Letter from Lothian Heat Community Interest Company, dated 10 October 2025

7.5 Appendix E – Letter sent on behalf of Scottish Government's Cabinet Secretary for Housing, dated 18 August 2025

7.6 Appendix F – Details of the H2 Caledonia Project, December 2024

8 BACKGROUND PAPERS

8.1 None.

9 AUTHOR AND APPROVAL DETAILS

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Confirmation that IIA and other relevant checks (e.g. finance/legal) have been completed	Yes
Approval Date	20 October 2025

Appendix A

East Lothian Heat and Energy Efficiency Delivery Plan - 2024-2028

Ref	Intervention	Outcome	Target dates	Lead Service	Indicator	Baseline	RAG Tracker	Notes
Outcome 1 - Property owners are engaged with the need to reduce carbon emissions and empowered to make decisions on energy efficiency and heating solutions								
Key Priority Area 1: Raising Awareness								
1	Increase awareness among home and business owners of the urgent need to plan for changes to how their property is heated	Campaigns to raise awareness	ongoing	Scot Gov / Community	Change in survey responses	Determined by community surveys		Scot Gov public communication plan was shelved due to lack of funding. Local community led plan being developed with East Lothian Climate Action Network as part of National Lottery partnership bid. The scope would be dependant on heat network decisions. The intention is that this will link in with any national programme that is subseqently developed.
2	Increase awareness among home and business owners of available funding resources and support for installing energy efficiency improvements	Funding secured for retrofit		Community / HES / BES	HES enquiries, Grants awarded - quantity and value	2023 statistics		Several meetings with Home Energy Scotland to ensure their advisory teams can provide targeted information for East Lothian homes. Broad agreement on approach that will be tested in East Lammermuir and Pencaitland.
Key Priority Area 2: Building Community Leadership								
3	Identify action groups and volunteers in each community to take a local leadership role	Key groups identified	end 2024	Community	No. of groups / volunteers committed	Existing ELCAN network		Community Heat Teams in place in Dunbar, Musselburgh, East Linton, Garvald/Morham with one in planning for Cockenzie - 20 volunteers in total. 67 surveys carried out last winter - mainly testing approach and for training
4	Establish data management and sharing procedures to facilitate data collection and community-based activities	Agreement process in place	end 2024	Community/ LHEES	Data agreements in place	New initiative		Rural projects have received data via Local Energy Scotland to make data sharing easier.
5	Agree action plans for each community to support energy efficiency drive and where appropriate, preparation for heat networks	First by June 2024	ongoing	Community	No. of plans in agreed	New initiative		Will form part of the programme covered by the proposed Lottery bid - see Intervention 37
6	Undertake a programme of resident surveys and thermal imaging work to raise awareness and improve data on energy use and heating	Increasing accurate data coverage	ongoing	Community	Survey responses Properties imaged	New initiative		Work underway with Community Heat Teams trialling heat surveys ahead of site surveys - preparing plans for winter 25/26
Outcome 2: East Lothian's homes and buildings are as energy efficient as possible								
Key Priority Area 1: Conservation Areas								
7	Agree advice on energy efficiency measures that can be provided to all owners of properties in Conservation Areas	Website updated	end 2024	Planning / LHEES		New initiative		Delayed due to implementation of new Article 4 direction
8	Deliver free pre-application advice for Conservation Area properties with proposals for renewables and/or energy efficiency measures to encourage early action	Increase in adaptions in Cons. Areas	ongoing	Planning / Community	No. of enquiries received	New initiative		Agreed and promoted via Council website - though need to know where to look
Key Priority Area 2: Solar PV Installations								
9	Track number of properties with solar PV and batteries, prioritising those suitable for communal and individual heat solutions	10000 PV, 500 Batteries	2028	LHEES / Community	MCS registrations	SPV 5116 at end 2023, 1106 new PV in 2023, 14 new batteries (no accurate record of earlier battery installations)		981 PV and 60 new batteries installed during 2024. 740 PV and 89 battery up to end Sept 2025. Totals of 6,837 PV and 163 batteries. Rate closely linked with the slowing of new developments though many will be retrofit. Data is not available on the split between new and older properties.
Key Priority Area 3: Owner-occupiers								
10	Ensure Scot Gov EES:ABS funding for vulnerable households is targeted effectively and aligns with any heat network expansion timeline	Full budget spent annually	ongoing	Housing	Annual plan to spend all funds available	£1.1m in 2022/23 and 2023/24		£1.1m on track to be spent in 24/25 though late decision - 15 Solar PV & battery properties, 12 properties for external wall insulation and a cavity wall insultation project in Wallyford. Plans in place for £1.1m in 25/26 to ensure efficient spend
11	Working with community action teams, deliver community driven programme promoting improved insulation, building on survey work and highlighting potential savings	To be decided		Community / HES	HES enquiries	509 enquiries in Q4 2023		Limited ability to be proactive until major heating decisions are made. East Lammermuir project being established working with ELC Housing and community groups. Funding coming from Community Benefits linked with EGL1 project.
Key Priority Area 4: Council Homes								
12	Continue to deliver a rolling programme of fabric upgrades to improve energy efficiency	Targets to be determined - see below	ongoing	Housing	EPC and condition reports			Application to Social Housing fund for £400,000 was unsuccessful - targeting solar PV and battery instalations. Interim Energy Retrofit Policy being prepared while the Social Housing Net Zero Standard and the Local Heat Energy Efficiency Strategy take shape. Feeding into 2030 housing investment plan that is being prepared to highlight value of district heating approach.

Ref	Intervention	Outcome	Target dates	Lead Service	Indicator	Baseline	RAG Tracker	Notes
13	Monitor the outcome of the Scottish Government consultation on Net Zero Standard and the implication for fabric improvement priorities		end 2024	Housing	To be confirmed			Still waiting for details from Scot Gov before a baseline and response can be prepared. Interim Energy Retrofit Policy being prepared by Housing colleagues to provide guidance until further national ghuyidance is forthcoming.
14	Promote Solar PV and battery options for properties that may be suitable for communal and individual heat solutions		ongoing	Housing				Priority areas will be assessed when heat network proposals are further developed though it will form part of the East Lammermuir project to test the approach. This is covered in the interim policy outlined above.
Key Priority Area 5: Private Rented and Short Term Lets								
15	Agree procedure and responsibility for enforcing new legislation on minimum EPC standards		End 2024	LHEES / Licensing / Housing	Home Analytics and Private Landlord Register	772 without EPC and 2179 rated below EPC C		No clear timeline yet from Scot Gov on the expectations for enforcement. There was some communication from the government's legal team in late 2024 but its gone quiet. It might be included within the much delayed Heat in Buldings Bill.
16	Proactively target owners of poor performing with warnings and energy efficiency advice ahead of EPC changes	To be set in late 2024 based on Scot Gov advice		EST / LHEES / Licensing / Housing	EPC quarterly updates and Private Landlord Register	As above		Offer of a free thermal imaging survey from the CHT was made to Musselburgh landlords via email - Private Landlord Register. Unclear yet if there was any direct response. Review and promote in autumn 2025. Again East Lammermuir project provides an opportunity to test the messaging to engage landlords.
Key Priority Area 6: Social Rented								
17	Engage all Housing Associations regarding interest in potential heat network connection opportunities		decided following feasibility	LHEES / Housing		ELHA and Homes for Life engaged		Paused until key decisions are made regarding heat networks. Places for People still not engaging - waiting for district and local heating proposals to then will attempt to generate interest.
18	Explore options for socially rented properties that may be suitable for communal heat network/pump connection	To be decided		LHEES	Number of properties connecting	New initiative - 125 with electric heating		Small number of properties within the areas covered by rural projects under development, mainly in Pencaitland and East Lammermuir
Key Priority Area 7: Council-owned Non-domestic								
19	Identify assets that could be served by a heat network, following the Asset Review	Property list	End 2024	LHEES / Assets	Number of properties	77 on-gas sites prior to the review		Will be revisited on completion of Asset Review. Heat in Buildings Bill is expected to make public sector connection to heat networks compulsory so the Council has a strong incentive to engage in project development.
20	Prioritise energy efficiency investment for these properties with a pipeline of possible projects to take advantage of funding opportunities		ongoing	Assets	HNR tracker / Annual gas use	Initial list produced in 2023		No suitable projects were identified for 25/26 funding call - very short timescale. Progress being made on solar PV and battery options for key assets using confirmed Climate Action funding.
21	Prepare net zero plans for Council assets currently using LPG or oil for heating		mid 2025	Assets	Number remaining to convert	7 properties outstanding		Likely to be fewer properties following the Review outcomes
22	Extend the preparation of Council assets to those that are leased to other businesses			LHEES / Estates	Number requiring action	Unknown - still being explored		No progress on this
Key Priority Area 8: Other Non-domestic								
23	Encourage all businesses to explore and prioritise energy efficiency measures	Improvements in EPCs	Ongoing	Econ Dev / Community / BES	Businesses engages with BES	Projects already completed		All funding currently committed through to end Mar 2026. No grant funding currently available beyond that date so awaiting further news to enable proactive work to continue.
Outcome 3 - Heat solutions are delivered to tackle fuel poverty and meet 2045 net zero target								
Key Priority Area 1: Heat Network Opportunities								
24	Work with Midlothian, Edinburgh, West Lothian and Fife Councils on a regional heat masterplan, exploring the potential demand for heat and heat network connections across the region	Phase 1 completed	Mar-25	LHEES	Report and GIS visualisation	LHEES reports		Funding agreed between regional partners for further work to prepare a Regional Energy Investment Prospectus and consider potential regional delivery models for heat transmission. This phase is scheduled to be completed by end Mar 2026.
25	Subject to securing funding, undertake strategic feasibility work on a range of local heat solutions	Report completed	mid 2025	LHEES	Report completed	New Initiative		Steering Group established leading a community-led study funded by East Lothian Community Benefits. Work commenced Jan 25 with report published June 25. The Council is to review this and respond. A Pencaitland application was submitted to the Heat Network Support Unit in June but was rejected Aug 25. A revised approach to Pencaitland is being considered based on the feedback provided.
26	Maintain contact with all relevant external partners and stakeholders related to heat network opportunities while feasibility studies are being carried out	regular communications	ongoing	LHEES	List of engaged stakeholders	List from LHEES report		Ongoing contact is being maintained with stakeholders kept informed of progress with feasibility study and subsequent Council review.
27	Determine any phases of heat network development based on the outcomes of feasibility studies	Early phase options agreed	TBC	LHEES / Community	Number of phases under consideration	New Initiative		ELC work on phases has not commenced
Key Priority Area 2: Communal and Individual Heat Solutions								

Ref	Intervention	Outcome	Target dates	Lead Service	Indicator	Baseline	RAG Tracker	Notes
28	Identify groups of properties that might be suitable for communal heat networks such as shared air source or ground source	Will be clarified by end 2024		LHEES / Community	No. of identified leads	Biomass solutions already operational		Initially starting with communities that are showing local leadership. First proactive effort will form part of the East Lammermuir project, targeting villages such as Innerwick, Oldhamstocks, Spott and Stenton. Lack of funding via Local Energy Scotland for other areas may limit the ability to be proactive in other parts of East Lothian.
29	Engage residents and refer community groups to Community Energy Scotland for targeted advice		ongoing	Community / CES	Successful applications for CES funding	Pencaitland, Innerwick and Tyninghame		Tyninghame, Crowhill and Mainshill have had studies undertaken by ReHeat, funded by CARES programme. Reports circulated in March 2025. Decision on next steps for Tyninghame and Crowhill will be influenced by district heating decisions as they could posdsibly connect to the district network.
30	Refer decision makers for individual solutions to Home Energy Scotland for targeted advice		ongoing	Community	HES quarterly reports to ELC			Processes agreed with HES in Mar 2025 to ensure appropriate advice is given to property owners. East Lammermuir will be the first major test of proactive efforts.
31	Track the levels of air source and ground source heat pump installations	Quarterly reporting	ongoing	LHEES	MCS registrations	ASH - 458 total at end 2023, 69 new in 2023 GSH - 53 total at end 2023, 1 new in 2023		126 ASH in 2024 and 5 new GSH. 88 ASH up to end Sept 2025 and 5 GSH. 10 new ASH fitted as part of technology trail into thermal storage with Sunamp during 2025. Totals - 672 ASH and 63 GSH.
Outcome 4 - Investment and grant funding is secured to deliver net zero projects								
Key Priority Area 1: Feasibility Studies								
32	Secure funding to undertake a regional energy masterplan study	Funding secured from UKSPF	Jul-24	LHEES / Fife / Edin / Mid	Funding secured			Phase 1 approved and carried out. Agreement reached with 6 LAs for work on regional energy investment portfolio in 25/26 and consultants procured in Sept 25. This is preparing ground for future City Region Deal funding and other investors.
33	Secure funding from Heat Network Fund for a strategic level feasibility study on Heat Network proposals		May-24	LHEES	Funding secured			Application delayed due to 24/25 budget spent. Intervention overtaken by decision by East Lothian Community Benefits to fund a feasibility study with £90,000 from their funds and £5,500 from Scottish Enterprise. Application relating to a Pencaitland heat network were submitted but rejected in Aug 25.
Key Priority Area 2: Infrastructure Investment								
34	Develop business plans for each phase of heat network development	Plans produced and agreed	TBC	TBC	Plans prepared			Can only proceed when Council takes a formal decision relating to heat network development and phases subsequently agreed.
Key Priority Area 3: Grant funding from Scottish and UK Governments								
35	Secure annual funding from Scottish Government for ongoing energy efficiency programmes	April each year		Housing	Budget approved	£1.1m secured in 2023/24		£1.1 spent in 24/25 and a similar sum secured for 25/26
36	Develop a pipeline of ELC projects that can apply for ongoing rounds of capital funding via the Public Sector Heat Decarbonisation Fund	Revise list by end 2024		Assets	Number of applications made and grants secured	New initiative		Ongoing Assets Review meant that timing was wrong for application for 25/26 round
Key Priority Area 4: Community Funding								
37	Support an application to the National Lottery Climate Action Fund to support Community Heat Team expansion	Phase 1 Submission	TBC	Community / LHEES	Application success	New initiative		Application is being considered by East Lothian Community Benefits and East Lothian Climate Action Network to support the communications activities relating to future heat projects inlcuding the Community Heat Team - targeting submission by the end of 2025.
38	Support efforts by the Association of East Lothian Community Councils to coordinate community benefits from energy companies that support the development of local heat solutions	Ongoing		Community / LHEES	Number of agreements and annual value	New charity established in Feb 2024		First element funded the feasibility study. Estimate of annual income over next 5 years to be made by mid-2025 to enable development budget for a community-led activity to be prepared. £3m secured in East Lammermuir for heat decarbonisation and energy efficiency measures.
Outcome 5 - A significant proportion of the benefits of net zero investment remain within the East Lothian economy								
Key Priority Area 1: Community Wealth Building								
39	Subject to feasibility studies, investigate and decide on the most appropriate corporate structure to develop and manage East Lothian's heat networks and other energy infrastructure	Timing dependant on feasibility work	end 2025	LHEES / HNSU / Community	Delivery model agreed	Early investigations into Community Benefit Company / Cooperative		Not-for-profit models being explored by Steering Group with the potential of a regional structure also under consideration. Needs Council engagement and input from the National Wealth Fund to reach an agreed position.
Key Priority Area 2: Tackling Fuel Poverty								

Ref	Intervention	Outcome	Target dates	Lead Service	Indicator	Baseline	RAG Tracker	Notes
40	Aim for a delivery model for heat networks with no connection costs to ensure all customers can benefit from lower costs and net zero solutions		end 2025	LHEES	Delivery model agreed			Range of opportunities are being documented that could help meet fuel poverty objectives. This was explored as part of the East Lothian Community Benefits feasibility study though will require further testing.
41	Explore opportunities with credit unions to develop local loan solutions for retrofit work		end 2025	LHEES	Number of applications made	New initiative		Will be actioned in late 2025 or early 2026 when district heating plans are clearer
Key Priority Area 3: Developing the Local Supply Chain								
42	Increase the number of skilled installers in the region, to help towards closing the skills gap for both energy efficiency and any future heat network installation	To be decided following feasibility		Econ Dev	Number of companies involved	Output from Regional project on skills		Scottish Enterprise's contribution to the heat network feasibility study was linked to job creation potential. Training courses accessed via UKSPF at the Energy Training Academy in Dalkeith in 24/25. East Lothian Housing Association and R3 supported to get advice from Scottish Enterprise on preparing for retrofit and actively engaged with East Lammermuir Project. Some corporate interest has been expressed in locating to Cockenzie site if heat network development progresses.

Lead Service Key:
HES - Home Energy Scotland; **BES** - Business Energy Scotland; **CES** - Community Energy Scotland; **LHEES -** LHEES Officer at East Lothian Council

From: Alastair.Robertson@gov.scot
To: Hayman, Martin
Cc: HeatNetworkSupport@gov.scot; Dingwall, Keith
Subject: HNSU40 - Pencaitland - Outcome
Date: 01 August 2025 13:10:43
Attachments: image001.png

Hi Martin,

Thank you for submitting an application to the HNSU. We regret to inform you that following a panel evaluation, the application has been unsuccessful in receiving funding for a feasibility study.

Due to constrained budget and capacity, applications for HNSU funding must clearly demonstrate that proposals have a strong enough basis to result in the deployment of a heat network.

The panel noted that the project is well-researched and the rationale for conducting a full feasibility study is clear following the pre-feasibility work. However, the application did not demonstrate that the project would be likely to progress to outline business case and delivery in the near term. Consequently, it is not clearly demonstrated that providing funding for a feasibility would represent value for money.

The reasoning for this summarised below:

- The project relies on domestic properties to be viable, but the application has not demonstrated that there is sufficient interest from homeowners to provide demand assurance and therefore confidence that this project can reach delivery.
- Based on review of panel documentation, the heat density is anticipated to be very low. Despite Pencaitland being present in the ELC LHEES, it is not one of the areas identified as having high heat demand, risking poor financial viability.
- The distance of the Glenkinchie Distillery from the village means it is not clear that this is a viable waste heat source, even if picking up other domestic loads en route. This combined with the anticipated low heat density, poses a significant risk in the viability of the project.

Please also note that the proposals for the project team and governance do not meet expectations set out in application guidance. In particular, the time committed by senior council staff and representation from wider services (housing, finance etc). Governance structures and procedures would also require further consideration and detailing.

Kind Regards,

Alastair

Alastair Robertson (he/him)
Head of Heat Network Delivery
Heat in Buildings Delivery Division
5 Atlantic Quay | 150 Broomielaw | Glasgow G2 8LU
Tel: [redacted] alastair.robertson@gov.scot

Appendix C

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.

The ruin of 13th century Dirleton Castle and gardens on a sunny day. East Lothian, Scotland

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**

* Please note that Hamish Martin and Hilary Blackman solely provided quality assurance input to the technical aspects of the study.

The Old Mill wheel and stream at East Linton.
East Lothian, Scotland

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, 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.

North Berwick Law, a volcanic plug (and crag and tail), in North Berwick, East Lothian.

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.

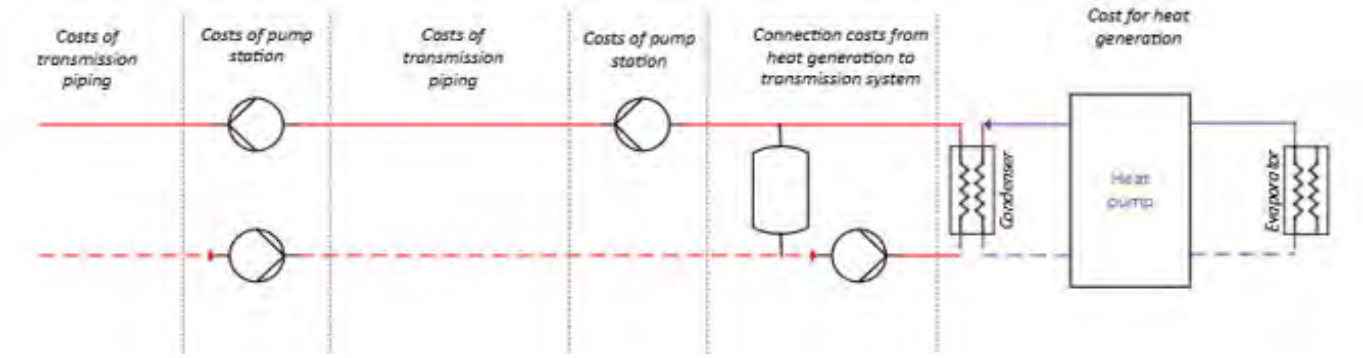
3. Feasibility Study: Key Findings

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).

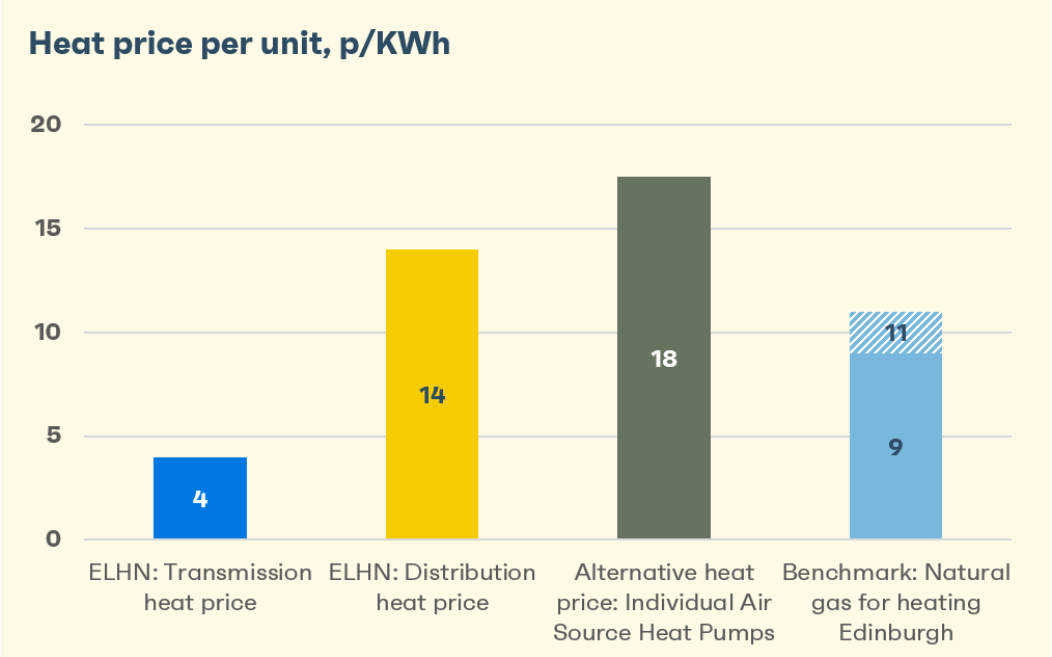
Operational Expenditure (OPEX): Covering electricity for pumps and top-up boilers, maintenance, administration, and reinvestments in key assets over a 50-year lifespan.

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

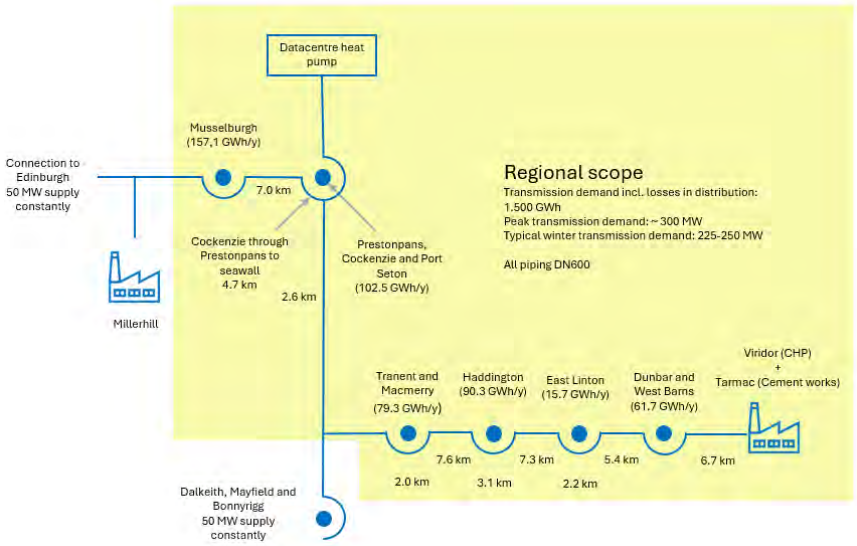
Among all scenarios, the **Regional Scope** emerged as the most cost-effective. It achieved the lowest levelised heat prices due to higher utilisation of infrastructure and the ability to deliver 100 MW of constant base-load heat to Edinburgh and Midlothian. This improved capital efficiency and enabled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

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.

Aberlady bay in East Lothian, Scotland lies between Aberlady and Gullane.
Is a part of the John Muir Way, a long distance footpath from Musselburgh to Dunglass.

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).

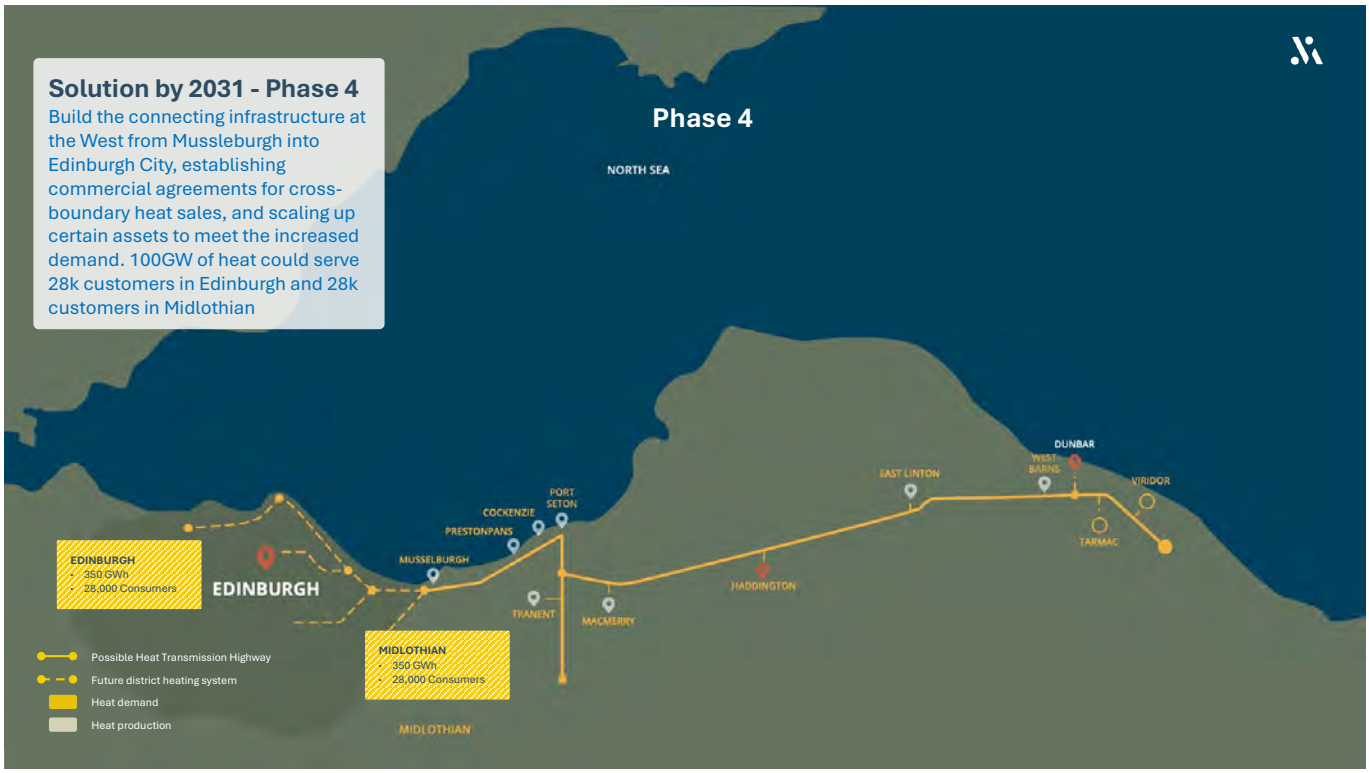


Figure 4 - Phase 4

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

Rev 2 2025

Appendix D

10 October 2025

SUBJECT: Proposed working partnership between East Lothian Council and Lothian Heat CIC

Dear Laurence

As per our conversation earlier today, this letter summarises the key points of what we would anticipate forming the basis of a non-legally binding **Memorandum of Understanding (MOU)** signed between **Lothian Heat CIC (LH)** and **East Lothian Council (ELC)** to collaborate on finding heat solutions to support the people, council and businesses of East Lothian. The aim is to establish a working partnership to combine expertise and resources for the effective planning and development of initiatives that align with ELC's LHEES, Fuel Poverty, economic development and public sector decarbonisation objectives.

Lothian Heat CIC

We are a newly formed Community Interest Company, that has built up from over 2 years of deep feasibility work supported by East Lothian Community Benefits[1] that culminated in East Lothian Heat's Feasibility Study Report. It has been set up to provide a development vehicle to serve the interests of those living and working in East Lothian, Midlothian and Edinburgh the following charitable objectives:

1. To explore solutions for minimising waste heat and delivering clean, affordable heat to homes across the Lothians and Edinburgh.
2. To maximise community ownership of and benefit from future heat solutions.

We have a number of projects that we wish to explore that are relevant for East Lothian communities, including:

- Large and small-scale district **heat networks** which we believe can support the Council's public sector decarbonisation challenge.
- Communal approaches to shared group loop, micro-scale heat network and individual heat pump or other suitable solutions, particularly for **rural communities** and those currently off the gas grid, including East Lammermuir, Tyninghame and Pencaitland.
- Supporting **regional retrofit** endeavours such as East Lothian Climate Action Network and Sustaining Dunbar's Community Heat Teams and East Lammermuir Council's priorities for the disbursement of community benefit funding.
- Regional collaboration with a laser focus on delivering the **cheapest possible heat price** for customers.
- Work with SPEN and NESO to explore the impact of a heat network and thermal storage as a **flexibility solution for the regional grid**, aiming to prevent curtailment and reduce energy bills.
- Working on **local supply chain development, skills and training** for business opportunities related to heat network and retrofit projects.

[1] ECLB's East Lothian Heat Project and East Lothian Climate Hub's Community Heat Teams are two of three shortlisted projects for BE-ST's Accelerate to Zero Community Champion Awards in November.

We have working groups looking at each of these, and if we have support of East Lothian Council we are confident we can unlock identified external funding streams to employ staff and funding to progress these projects.

It is our belief that the Council, whom we recognise has budgetary and resource challenges, will be served by working with us to leverage what limited resource it has for the benefit of all the residents and businesses of East Lothian, as well as regional players and partners.

Framework for collaboration

Our suggestion is that the following may be areas that we could define clear joint working.

East Lothian Council (ELC)	Lothian Heat CIC (LH)
Agree to promptly progressing an MOU with LH which sets out joint areas of interest.	Progress MOU's with the other regional Councils, specifically Edinburgh and Mid Lothian.
Consider providing some **staff resource** (secondment part or full time or joint working to progress projects of joint interest that sit within the LHEES plans)	Unlock external funding to fund and appoint a staff team to work on project development and leverage LHEES officer time from each council to progress projects of shared interest with ELC, ECC, MLC.
Appoint a **liaison representative** and appropriate governance arrangements that satisfy ELC procedures.	Finalise Governance arrangements with an experienced board with energy sector, heat network and financial expertise.
Facilitate relationships with **external stakeholders** (e.g., Viridor, Tarmac, landowners, Data Centre Operator).	Develop MOU's with key stakeholders and develop relationships that can unlock further detailed studies and action as required.
Explore how **ELC assets and projects** might support network development including, but not limited to:	Work with regional energy masterplanning to identify routes to efficient and effective

1. Mussleburgh Phase 1 project to c2,500 homes and Queen Margaret University - an application for feasibility development to HNSU. 2. Utilising the opportunity of the Data Centre proposals at Cockenzie for the public good to be served by utilising the significant waste heat. 3. East Lammermuir project development - planning and consenting. 4. Assessing the impact a heat network could have on ELC public sector decarbonisation targets.	whole system integration for the benefit of Edinburgh and the Lothians.
Support external funding applications for research, feasibility study and business case development work.	Recognise ELC's financial and resource constraints and that they have no appetite or capacity to invest and to make that clear in any project development, business and financial modelling work.

Joint Responsibilities include overall planning, facilitating data sharing, securing necessary approvals, exploring opportunities for **local supply chain development** (with Scottish Enterprise), and proactively communicating any challenges.

Governance and Funding

- A regional public sector **Steering Group (SG)**, including representatives from LH, ELC, Edinburgh City Council and Midlothian Council will be established. This group will meet regularly to review progress and make strategic decisions.
- Both parties will cooperate to **identify, secure, and manage funding**. A Lead Applicant will manage the formal claims process, with both parties assisting with necessary financial information and reporting to ensure transparency.

In summary, we are seeking your agreement to a formal commitment by Lothian Heat CIC and East Lothian Council to collaborate on working to find solutions for East Lothian residents and businesses and to progress regional collaboration and resource.

If you have any further questions about the specifics, please do not hesitate to ask.

Yours faithfully,

Ralph Averbuch, Dr. Gemma Bone Dodds, Chris Bruce

Appendix E

Cabinet Secretary for Housing
Rùnaire a' Chaibineit airson Taigheadas
Màiri McAllan MSP
Màiri NicAilein BPA

T : 0300 244 4000
E : scottish.ministers@gov.scot

Scottish Government
Riaghaltas na h-Alba
gov.scot

Cllr Norman Hampshire
grandison@eastlothian.gov.uk

Our Reference: 202500476911
Your Reference: 20230722/HeatNetworks_SG

18 August 2025

Dear Cllr Hampshire,

Thank you for your letter of 22 July 2025 inviting Gillian Martin MSP, Cabinet Secretary for Climate Action and Energy, to meet with you and the Chair of the East Lothian Community Benefits organisation to discuss the potential for scaling up heat networks across East Lothian and the wider Southeast Scotland region. This has been passed to Màiri McAllan MSP, Cabinet Secretary for Housing, as this falls under her portfolio interests.

Unfortunately, due to significant diary pressures, the Cabinet Secretary is unable to accommodate a meeting at this time. She has asked me to pass on her gratitude for the kind invitation and has requested that you continue to liaise with her officials to explore opportunities for advancing heat networks development across East Lothian and the wider region. We would be grateful if you continued to direct any enquires to HeatNetworkSupport@gov.scot for further consideration.

Yours sincerely,

Courtney Gibson
Private Secretary

St Andrew's House, Regent Road, Edinburgh EH1 3DG
www.gov.scot

Appendix F

H2 Caledonia

A Hydrogen Ecosystem for Scotland

Stimulating Scotland's hydrogen economy

December 2024

PRIVATE AND CONFIDENTIAL

SGN
Your gas. Our network.

SGN is working with a range of stakeholders to support the transition to a Net Zero gas network powered by hydrogen

SGN is dedicated to supporting the UK Net Zero target and assisting organisations in Scotland to decarbonise their operations

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Your gas. Our network.

Scotland Gas Networks (SGN) is a **leading independent gas distribution network,** delivering gas to over 5.9 million homes and businesses **across Scotland and the south of England**. We are committed to providing a **safe, reliable and affordable gas supply,** while also **playing a key role in the UK's transition to a Net Zero future by investing in renewable gas and hydrogen technologies**

LTS Futures
A £30 million project testing the compatibility of repurposing a decommissioned 30 km pipeline in Scotland for hydrogen transport.

H100 Fife
Our pioneering plan for a world-first hydrogen heating network, supplying 300 local homes with clean gas, powered by offshore wind.

H2 Connect
A project exploring a future hydrogen ecosystem of demand, production, storage and imports in the south of England.

H2 Caledonia - The focus for this discussion

H2 Caledonia is our flagship project aiming to connect blue and green hydrogen production with industrial and commercial customers across Scotland resulting in the creation of a Scottish hydrogen ecosystem.

H2 Caledonia will demonstrate the safety and practicality of transporting hydrogen as a means to decarbonise in an affordable and secure way

SGN

H100 Update

H100 Fife - in the final stage of commissioning

SGN

Hydrogen will play an essential role in the UK's transition to Net Zero, helping to decarbonise the energy system and hard-to-abate industries

Hydrogen is key to reaching Net Zero

Energy carrier

Hydrogen is the most abundant element in the universe and is able to store and quickly deliver large amounts of energy

Clean

When burned, hydrogen produces only water vapour, making it a viable low-carbon alternative to fossil fuels

Versatile

Hydrogen has countless industrial and commercial use-cases. It can also be produced via multiple production methods

Backed by Government

The UK Government has hydrogen production targets of 10GW by 2030 supported by business model funding

A hydrogen economy and value chain is being developed to address this need

Upstream – Production

Green hydrogen

Produced by electrolysis using only renewable electricity and water, resulting in zero CO_2 emissions

Blue hydrogen

Produced via steam-methane reforming, with CO_2 emissions captured and stored safely and permanently underground

Supported by H2 Production Business Model (HPBM)

Midstream – Transport & Storage

Hydrogen networks

Designed to safely and practically transport hydrogen across the UK, connecting producer with end users

Hydrogen storage

Allows excess energy to be captured in the form of hydrogen and kept in geological and man-made stores until it is required

Supported by H2 Transport and Storage Business Models

Downstream – Industrial and commercial use cases

Back-up power generation

Strategic reserves used to provide back up power and efficient storage of excess energy

Renewable energy integration

Long-term, low-carbon energy storage

Industrial use

Decarbonised heat for industrial process such as aluminium, cement, chemicals, iron/steel, paper

Renewable feedstock

Conversion into usable end-products such as fuels, plastics, pharmaceuticals and chemicals

Transportation

Zero emission fuel-cell vehicles such as buses, trucks, trains, ferries and aerospace

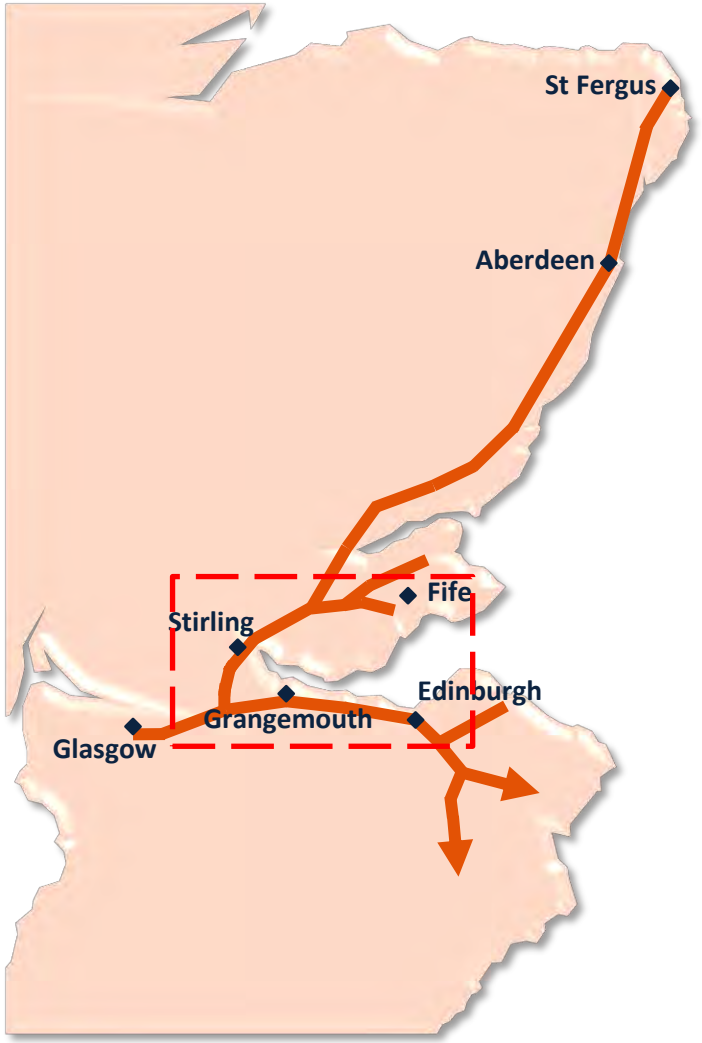
Subsidised by the HPBM at prices similar to current gas prices*. *Grant funding is also available via the IETF***

Hydrogen is a credible decarbonisation solution for carbon-intensive industrial sectors, offering a viable alternative to natural gas

SGN

Note: (*) Under the Hydrogen Production Business Model, end-users pay the unit price of natural gas to producers, this is then topped up by a subsidy to enable producers to recover their costs, support models may vary by end-use sector (**) IETF = Industrial Energy Transformation Fund

H2 Caledonia is leading the way in enabling a hydrogen ecosystem in Scotland and will be the cornerstone project for the country



H2 Caledonia is being developed to achieve four key objectives and will be fundamental in delivery of the transition to Net Zero in Scotland:

- **To enable development of a Scottish hydrogen economy** by connecting hydrogen production with industrial and commercial consumers through new-build and repurposed transport infrastructure
- **To safeguard the Scottish industrial manufacturing sector and associated jobs in Scotland** by providing a technically proven and commercially viable option for decarbonisation
- **To support delivery of Scotland's Net Zero ambitions** by creating a credible route to decarbonisation for hard-to-abate sectors
- **To futureproof and provide resilience to the Scottish energy system** and enabling a route to market for substantial amounts of offshore wind generation in the coast of Scotland

Extensive technical work has been carried out to date by delivery partner Wood Group plc, strategically balancing costs and environmental impacts of the network route to confirm the technical feasibility of H2 Caledonia

Detailed routing studies (Complete)	H2 Caledonia needs case report 2025	FEED 2026	Detailed Design 2029	Target Phase 1 Construction 2030	Target Phase 1 COD 2033

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H2 Caledonia has the potential to deliver a wide range of benefits for end-users, producers, the regional economy the Scottish energy system

Benefits for end users

A viable decarbonisation pathway for hard-to-abate industries

Subsidised costs at similar levels to natural gas

A secure supply of hydrogen

A future-proof route to low-carbon energy consumption

Benefits for hydrogen producers

Opportunity to access up to **4GW of identified potential demand**

Access to a **viable network** with **long-term scalability** plans

A platform to connect with the wider hydrogen value chain, enabling collaboration to de-risk projects and support regional development

H2 Caledonia Benefits

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Benefits for the region

Thousands of jobs retained and created by safeguarding regional industries

Billions of private capital investment potential unlocked in the Scottish hydrogen economy

Up to 6 million tonnes of GHG emissions abated per year *(equivalent of 2.5m cars)*

A route to market for additional offshore wind capacity to come online in the 2030s

A credible means to **deliver a clean and secure energy system**

Benefits for the Scottish energy system

SGN

A consortium is being developed to enable cooperation and ensure H2 Caledonia can deliver on the needs of regional stakeholders

The four guiding principles of the H2 Caledonia Consortium

1

Combine ambition

Set a **clearly defined vision, purpose and objectives** that are well understood and agreed by members

2

Drive collaboration

Enable collaboration and connection between members, including strategic cooperation in order to maximise the opportunity provided by H2 Caledonia

3

Demonstrate commitment

Drive holistic progress by **providing the confidence to members**, enabling them to push on with their own hydrogen and decarbonisation plans

4

Champion sustainability

Collectively progress towards regional decarbonisation and sustainability goals through enduring collaboration, momentum and commitment over time

We invite you to join the consortium group and collaborate with us in driving the vision forward

SGN

H2 Caledonia plans to bring together a diverse and extensive group of over 60 regional stakeholders across Scotland

Based on regional engagement to date, we have developed an initial view of the potential scale of H2 Caledonia. We are now accelerating regional engagement with the aim of building a broad consortium of support

The H2 Caledonia consortium of support could potentially include:

11 Upstream
Hydrogen production

2 Blue Hydrogen Sites

9 Green Hydrogen Sites

Key players in the Scottish energy system actively involved in developing hydrogen projects include: SSE, RWE, ExxonMobil, Shell, Scottish Power, Carlton Power, Storegga and Statera

46 Downstream
Hydrogen end-users

18 Manufacturing Sites

16 Power Generation Sites

6 Waste Treatment Sites

3 Healthcare Providers

2 Transport Hubs

1 Public Defence Site

7 Local stakeholders

Including representation from local authorities across regions in focus for H2 Caledonia, such as:

- *Edinburgh*
- *Fife*
- *Aberdeenshire*
- *Falkirk*
- *Stirling*
- *Clackmannanshire*
- *West Lothian*

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Note: This is a prospective view of the consortium and will be confirmed during further stakeholder engagement

The H2 Caledonia consortium will initially be focused on fostering collaboration and purpose, and to lay the foundations for the future

What you can expect from us

Engagement opportunities such as roundtables and townhalls, including key regional stakeholders to help shape the vision and build support

Opportunities to connect with others across the value chain, such as end-users or producers

Receive exclusive updates on the project status such as grid timings, route location and development timings to inform your Net Zero plans

What we will be asking of you

Provide a **letter of support for H2 Caledonia and/or permission to include your company logo** in our materials

Support regional hydrogen development by attending consortium meetings and helping shape the future energy system

Provide project data to support H2 Caledonia routing and design options and techno-economic analysis of the potential benefits

Outputs of this phase of work

H2 Caledonia Commercial Needs Case Study

Publish: Expected 2025

Key outcome: Public facing report which communicates the socio-economic benefits and needs case for building a hydrogen ecosystem in Scotland

H2 Caledonia Launch Event

Date: Expected 2025
Location: To be confirmed

Key outcome: Ministerial event for the official launch of H2 Caledonia, convening all prospective consortium members and regional stakeholders including MPs and MSPs

H2 Caledonia represents an opportunity to connect with like-minded organisations to drive change in Scotland

SGN

The H2 Caledonia team is excited to be commencing engagement and looks forward to collaborating with you on this opportunity

	Jan - March 25	Jan 25 – May 25	Expected 2025	Ongoing engagement
Stages	1 **Introduce H2 Caledonia**	2 **Progress data sharing**	3 **Launch event**	4 **Establish long-term cooperation**
Key activities	• **Contact prospective consortium members** to introduce the project team and the opportunity, as well as answer any questions you may have • **Establish a regular cadence of meetings and ways of working** with prospective members to ensure alignment • **Discuss hydrogen production/offtake plans** to explore how H2 Caledonia and SGN can support you to achieve your hydrogen and decarbonisation ambitions	• **Share information requests** to support routing design and quantification of potential benefits • **Agree a Letter of Support and provide permission for logo** for use in a public facing report and materials • **Collect quotes and case studies** demonstrating consortium members' early views on the benefits H2 Caledonia can bring to be showcased within the public facing report	The **culmination of this phase of engagement and data sharing** will be the **H2 Caledonia launch event**, which will bring together all consortium members and key regional stakeholders	• **Deliver wider Consortium member benefits**, such as online and in-person events, regular updates, and roundtables connecting end users to producers • **Support the eventual development of bilateral relationships** that allow consortium members to establish the necessary commercial arrangements to enable H2 Caledonia in the long term

SGN would welcome the opportunity to work with you to develop the vision of H2 Caledonia over the coming months

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