Insulate*Innerwick*

FEASIBILITY STUDY

May 2025

Introduction

What Is this project?

Insulate*Innerwick* is a local home energy research project for ***everyone*** in the Innerwick area, run by local people who believe in working **TOGETHER!**

Who are the Team?

Elisabeth Wilson is an Innerwick resident, trustee of the Innerwick Parish Welfare Association, and has a background in politics and management training.

Jo McNamara is the Chair of Sustaining Dunbar, a climate action group who administer the funds and provide support for this project, as well as others in the locality.

Sarah McLeary is an urban designer, working on strategic projects across the UK, and also sits on the board of trustees for Innerwick Parish Welfare Association.

Ruth Rodger is an architect and PAS2035 Retrofit Designer and Coordinator.

SMITH SCOTT MULLAN

Ruth is employed by Smith Scott Mullan architectural practice.

What is this report?

This document records the work of the project team through the feasibility stage.

Our audience is potential investors, funders, and decision-makers.

We outline our progress, and lay out short- medium- and long-term plans for the future of the project.

We have had a huge amount of support from volunteers, thank you to everyone who has helped us.

If you think you can help or want to know more, contact Elisabeth Wilson on **insulateinnerwick@gmail.com,** or Sustaining Dunbar through their website.

InsulateInnerwick

We believe;

- **Everyone has the right to a healthy and comfortable home, which doesn't cost the earth.**
- **We have a responsibility to channel our skills and actions for the greater good, to accelerate to Net Zero, and challenge the Climate, Nature and Housing Crises.**
- **Every voice is important. Working together towards bigger impact and a stronger community has power and value.**
- **Sharing our learning and our journey is a powerful tool to continue along the right path with conviction and energy.**
- **By working in partnership and through collaboration with others can we reach our goal, to help local people.**

Our study area is the polling district of Innerwick, a coastal and rural area of East Lothian.

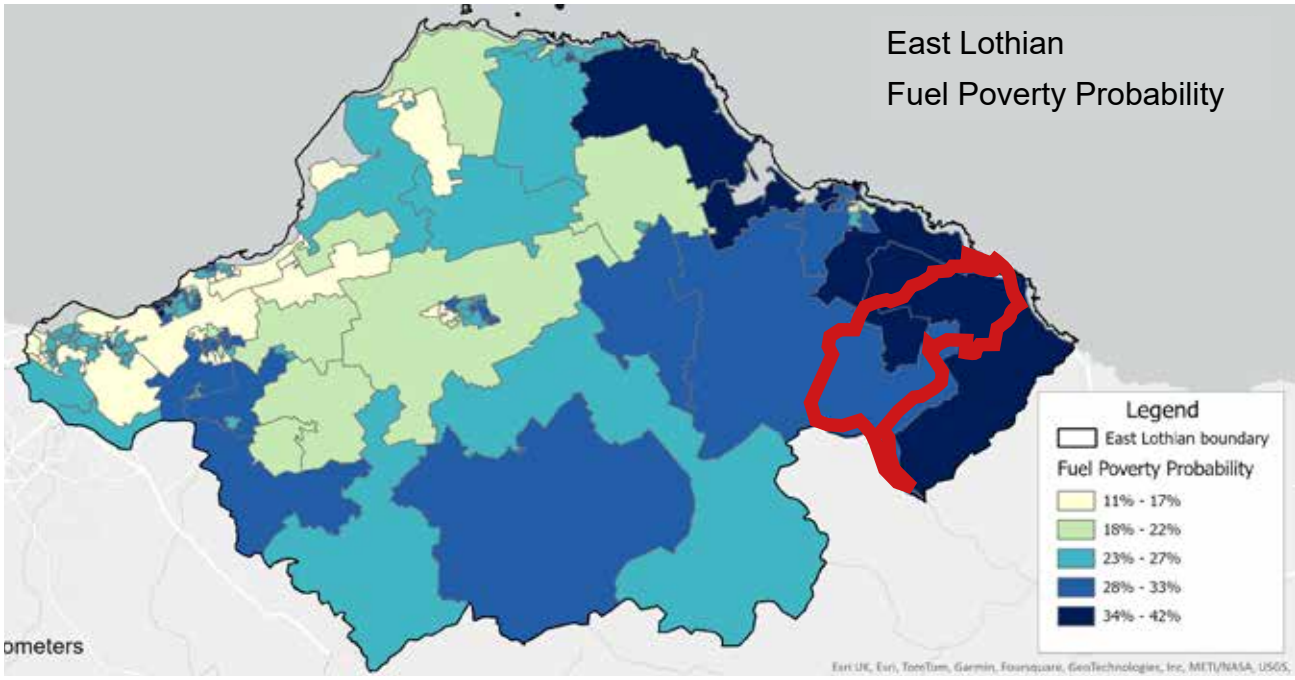
Our overarching aim is to look at how we can upgrade (or retrofit) all homes in the Innerwick area, at scale, to alleviate the high risk of fuel poverty.

We have wider aims; to capture our learning and make this a replicable project throughout rural Scotland.
Scotland's national plan targets;

- ALL Scottish homes to achieve EPC band C or equivalent by 2033,
- Zero emissions heating systems in ALL homes by 2045.

A pragmatic and deliverable plan for the upgrade and retrofit of our rural homes is a huge step towards that goal.

Our approach highlights is people-centred bottom-up approach, looking to plug the known gap in the owner-occupier sector for those who are facing barriers to home upgrades.



Executive Summary

Insulate*Innerwick* is an action research project, by local people. We address the risk of rising fuel poverty, and the challenges that folk face to keep warm and healthy in their homes.

Our study area is the rural area of the Innerwick polling district, however our methods are replicable across any rural area.

We are concerned with how to improve the fabric of our homes, at scale, and in line with best practice. We call this 'home upgrades,' or 'retrofit'.

In line with industry practice, we espouse a 'fabric-first' approach to decarbonising our homes and accelerating to net zero. This reduces the energy used to heat a home, and makes the subsequent installation of low-grade low-carbon heating systems efficient and economical. This is essential to reduce stress on the decarbonising grid, and ensure energy resilience for all.

Our evidence base includes community views gathered through consultation for the East Lammermuir Local Place Plan, and the technical study undertaken by engineering students from Flensburg University in 2023, looking at how to aggregate data to assess the need for retrofit at scale.

The challenge faced by householders

Through a range of methods, we have gained an understanding of the barriers people face when thinking about home upgrades. These are outlined in this report, alongside proposals to break down these barriers.

One opportunity to break down all these barriers is through a hand-holding home upgrade coordination service — a One-Stop Shop — providing free impartial advice, from a trusted local service who will help navigate the minefield. A local service will build relationships and measure impact through and post-upgrades. We outline how this would work for Innerwick and other rural areas.

The technical challenge

Typical of a rural location, there are a high proportion of 'hard-to-treat' homes meaning the building's age, form and materials make it more complex to design and delivery fabric upgrades.

We meet this challenge by assessing the area through a visual survey, analysis of available EPC data, and a householder survey, to paint a picture of the area today. We also capture the demand for a hand-holding service.

The financial challenge

Innerwick is disproportionately impacted by substantial change and upheaval due to renewable energy developments in the area, which negatively affect the landscape, roads, and daily life.

*see p8
**see p10

In the context of the Just Transition*, projects which positively impact the community could receive Community Benefits**.

We wish to capture existing and potential funding and investment, and look holistically at the positive value of home upgrades, including health and wellbeing.

What next?

Our overarching aim is to empower folk to make positive change and be more comfortable in their home. The report identifies pathways for residents, as well as short- medium- and longer-term plans.

Contents

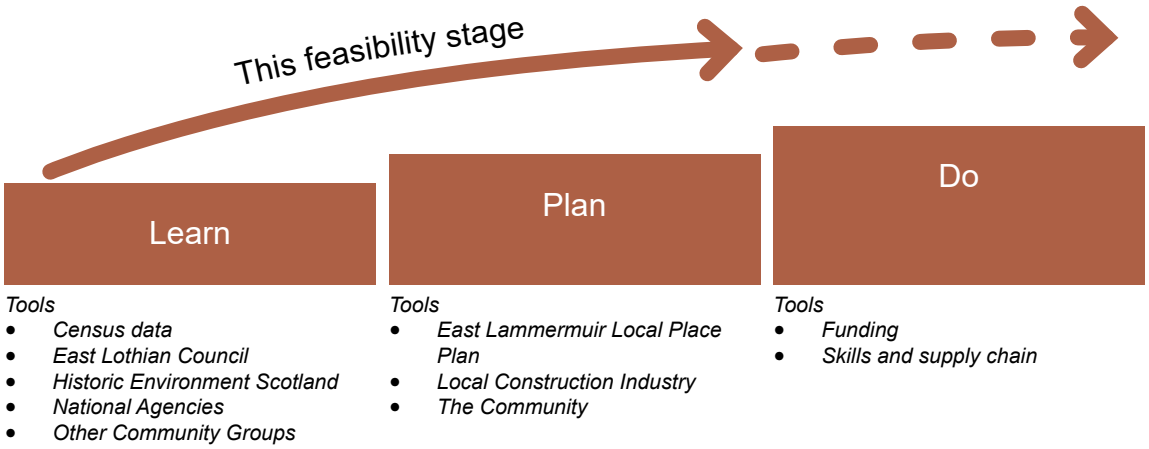
This is the story of our project so far, what we have learned, our plans for the future, and the ask to potential investors and funders.

Technical Report

The Technical Report includes a desktop study, maps, and deeper analysis of householder-provided information.

Appendices

A Local Energy Plan



Local Energy Scotland

SUSTAINABLE ENERGY COMMUNITIES PROGRAMME HANDBOOK, Sustainable Energy Authority of Ireland 2018

The Scottish Government provides guidance for communities looking to address and reduce energy use at a neighbourhood or village scale. This document follows the guidance, following the format of a Local Energy Plan, focussing on Home Energy.

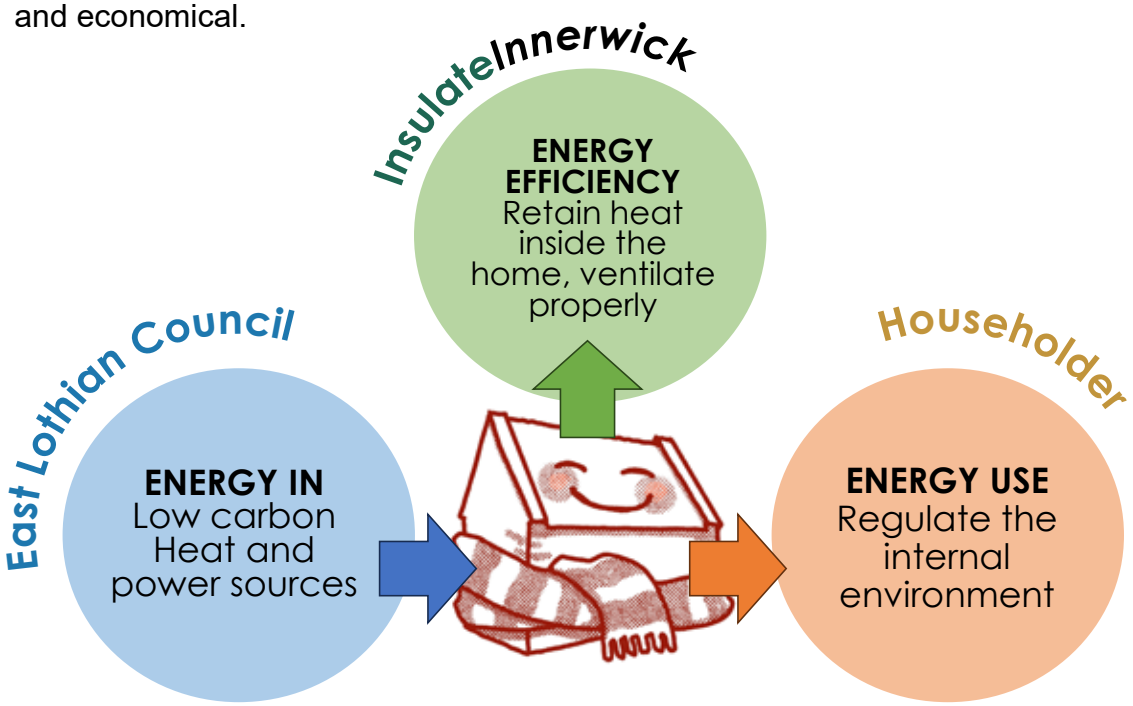
We have also looked towards the Irish government's guidance for Energy Communities, through the Sustainable Energy Authority of Ireland [SEIA].

The diagram above shows the SEIA model for moving from learning, to planning, to doing. This report covers the first two of these categories, and we have overlapped in part as the Scottish national framework emerged for us.

We see 'home energy' holistically.

This study focusses on home energy efficiency - how to keep heat in the building, and keep residents warm, healthy and comfortable.

How to decarbonise the energy coming into homes is the remit of East Lothian Council's 'Local Heat and Energy Efficiency Strategy. We are signposting folk to information on how to decarbonise their heating systems, however homes must meet a minimum performance for a decarbonised heating system to be efficient and economical.



Our Scope and Process

Headings adapted from Changeworks Net Zero Pathways, Impact Report 2022-23

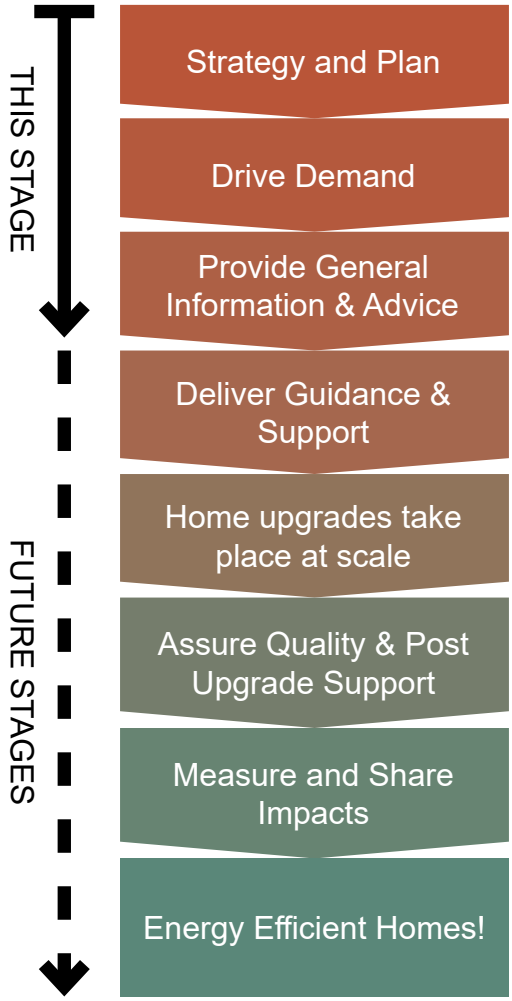
The Scope of this project

The **InsulateInnerwick** team has looked at how to improve energy efficiency and ultimately decarbonise rural homes at scale.

This involves looking at;

- the barriers for homeowners and landlords,
- the funding and delivery frameworks that are available, and where there are gaps to fill,
- and whether or not it is beneficial to work together as a community on this pressing issue (it definitely is),
- getting out in the community, informing householders through an appropriate level of information on technical topics, empowering people to understand more about their home energy and positive changes they could make,
- assessing the housing stock through multiple methods, to test options for next steps.

Decarbonisation Step-by-step



A Framework

Our project looks at 'driving demand and activity', one of the four pillars identified by the Sustainable Energy Authority of Ireland in their 'Four Pillars of a Framework Approach' which underpins Ireland's pathway to decarbonisation.

As we do not have the framework in Scotland, we have also looked at the other three pillars, and who we might partner with to fund, supply and structure a scaled area based retrofit programme.

The Four Pillars of a Framework Approach adapted from SEIA

Why are we doing it?
Policy landscape and benefits

A Fairer Greener Scotland

The Just Transition is a process and an outcome that aims to create a fairer, greener future for all through a transition to net zero. The Scottish Government has committed to delivering a just transition by 2045.
The Scottish Government defines a just transition as:

- *Involving all affected parties*
- *The transition should be co-designed and co-delivered with communities, businesses, unions, and workers.*
- *Addressing inequalities*
- *The transition should address social, economic, and regional inequalities.*
- *Creating green jobs*
- *The transition should create well-paid, secure, unionized green jobs in urban and rural areas.*
- *Making homes energy efficient*
- *The transition should help reduce fuel poverty by making homes more energy efficient.*
- *Building infrastructure*
- *The transition should build infrastructure, transport, and communities that support decarbonization and are resilient to climate change.*
- *Ensuring benefits are shared widely*

The transition should ensure that the benefits of climate change action are shared widely.

Just Transition Commission (2021)

Accelerate to Net Zero

The Innerwick area is disproportionately impacted by the construction of multiple large scale renewable energy projects. While the community generally supports the decarbonisation of the grid, the impact on roads, the landscape, and resources has a deeply negative impact on daily life.

A key principle of the Scottish Government's Just Transition framework is to promote actions that protect the environment, and ensure vulnerable communities benefit from the transition.

The community is already engaged in the transition, with community focus groups on traffic and ecology liaising with energy developers, and an ongoing series of stakeholder meetings teasing out issues such as the role of a community liaison officer.

Improving the energy efficiency of our homes is one way in which the Just Transition can play out in East Lammermuir.

We are a decarbonisation, energy efficiency, and social project.

We want to make **energy efficiency improvements in buildings, with a focus on domestic buildings.**

This will make homes suitable for the installation of **low and zero emission renewable heating systems.**

We aim to bring together a local framework of trades, to support **local skills development, training and employability**.

This will support those in or at risk of **fuel poverty**, and improve **wellbeing and quality of life** for residents.

Community is at the heart of our project. We **work in partnership** with agencies and the local authority towards shared goals.

Moving forward, an **Insulate*Innerwick*** demonstration project can show that Rural Net Zero Neighbourhoods are an investable model. Key to this is **measuring the impact** which is possible at demonstrator-level.

Why are we doing it? Policy landscape and benefits

We believe that everyone has the right to a healthy, comfortable home, which is economical to maintain and heat.

Why do we need to improve Scotland's rural housing?

We are facing multiple crises, nationally and locally. Improving the fabric of our homes addresses multiple crises simultaneously.

The aims align with national and local policies and frameworks.

National Planning Framework 4; Scottish Government

Housing crisis

Key Scottish National Planning policies include ***Rural revitalisation, just transition, conserving and recycling assets*** and ***compact urban growth.***

Improving building fabric extends the lifespan of our housing stock, reducing the need for replacement dwellings. This is especially important in rural locations where a higher proportion of pre-1919 homes add greatly to the sense of identity and character, and where creating replacement homes is relatively more technically and economically challenging.

We must *urgently* invest in maintaining and improving building fabric, to reduce the high risk of fuel poverty for off-grid households, ensure our rural homes are fit for micro-renewable energy systems such as heat pumps and solar panels, and reduce pressure on the decarbonising grid.

About Innerwick

Innerwick is a rural and coastal area in East Lothian, with around 450 residents in 200 homes.

Innerwick has a stable community, mainly because of its desirable location and surroundings. There are two active organisations in the area. First, **Innerwick Parish Welfare Association** owns the village hall and a small adjacent playing field. It distributes a monthly newsletter throughout the area and organises events from time to time. The village hall is available for hire. The **Horticultural Society** run the Innerwick Flower Show, revived in 2022 after 2 years' absence because of COVID; in 2023 it was 150 years old. There is also an active Facebook Page, Innerwick Village, run locally.

Employment

There are a few self employed tradespeople, artisan businesses and farms in the area. Otherwise most people in employment have to commute or work from home.

Torness power plant is a major employer.

Education

Innerwick school has an award-winning nursery and three primary classes: 1/2, 3/4/5, and 6/7. It has ample grounds including a small football pitch and wooded area. The current head is proactive in fostering links with the local community.

Subsequent to the recent sale of the Church, the current minister will remain operating from the church in Cockburnspath. Reverend Suzie is widely known beyond the church community throughout the area and supports this project.

Movement and Transport

Public transport in the area is inadequate. There is a commercial bus service to the village, the 253, operated by Border Buses from Berwick-upon-Tweed. The service has been considerably diminished in the last 7 years.

A recent Demand Responsive bus service was trialled on the area, into Dunbar and across to Oldhamstocks. The pilot was very successful, advertised through word-of-mouth and supported by a smartphone app created by a local firm.

Over 90% of residents own a private vehicle.

Local support

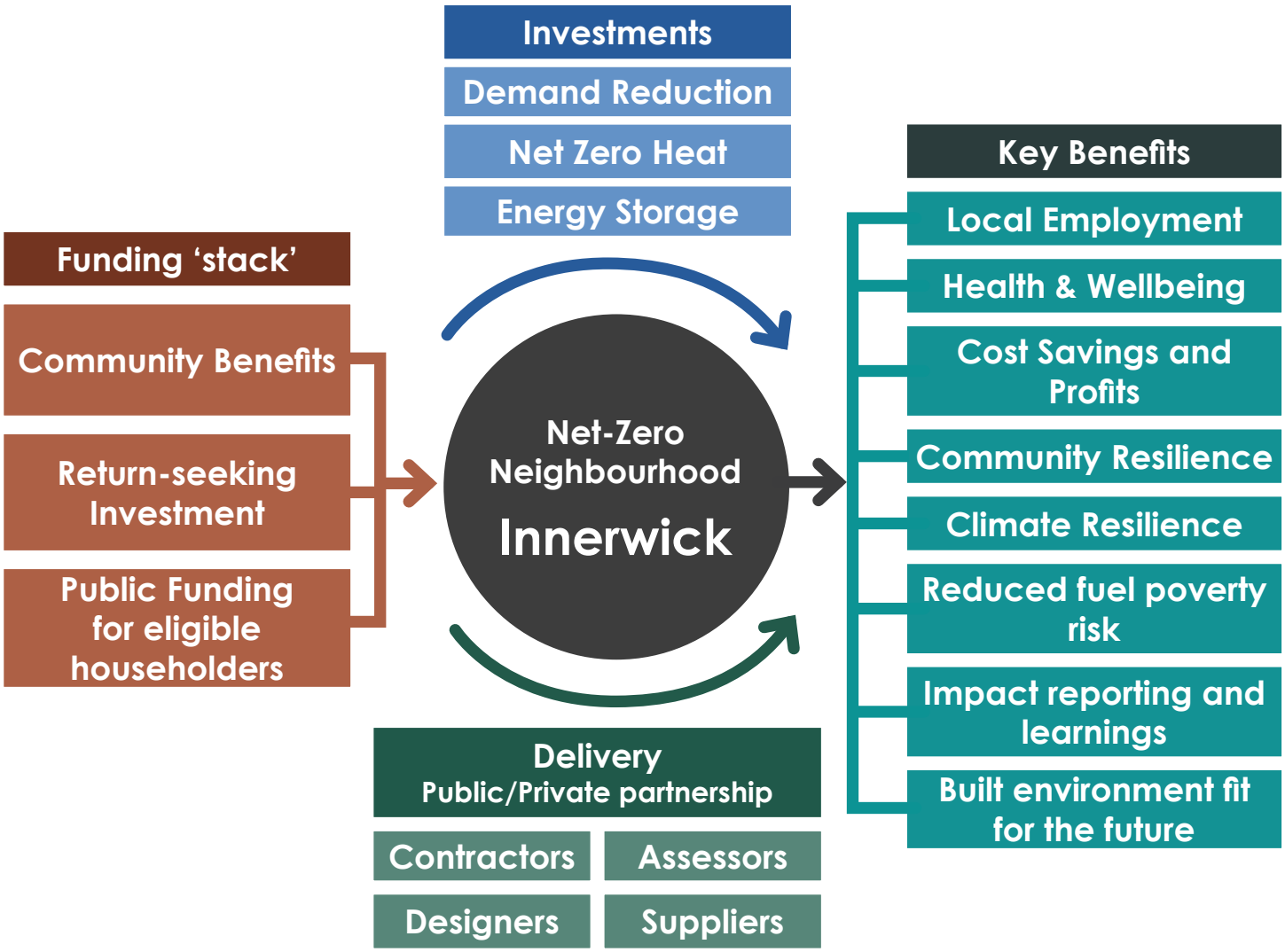
There is support for this project from the three ward councillors (Dunbar and East Linton):

- Councillor Norman Hampshire, Labour, and leader of the Council
- Councillor Lyn Jardine, leader of the SNP group and with a background in housing
- Councillor Donna Collins, Conservative, who lives in the Innerwick area, as well as
- Paul McLennan MSP for East Lothian and Housing Minister
- Innerwick Parish Welfare Association
- East Lammermuir Community Council
- St. Anne's Eco-group, Dunbar

www.scotlandscensus.gov.uk

Key Learnings; Every community is different, we are never starting from scratch. To make the greatest impact, see what is already happening in your locality.

Where could the money come from?



Adapted from Living Places (2024)

A Multi-intervention, place-based funding and delivery model

**Community benefits are the positive contributions energy projects, such as wind farms or renewable energy developments, make to local communities. These can include direct financial payments, and/ or funding for local projects, job creation, and long-term social and economic support.*

We want to capture Community Benefits* and other funding and investment to benefit the local and wider community.

The goal is to ensure that local residents gain tangible advantages from developments that may impact their environment or daily lives.

Innerwick is a great candidate to become a rural Net Zero Neighbourhood.

Many groups are working on models to finance area-based projects exactly like Insulate Innerwick.

These models look holistically at the value that home upgrades add to the overall system, including health and wellbeing, with a return-on-investment gained from the holistic model.

We will use a range of funding, some of which is available already to individual householders and landlords, and work in partnership with East Lothian Council and other agencies to smooth the funding and delivery gaps.

We need additional funding for these early stages of driving demand, to 'connect the dots' for the community, front-load plans for householders, and remove all barriers to the process.

Evidence Base

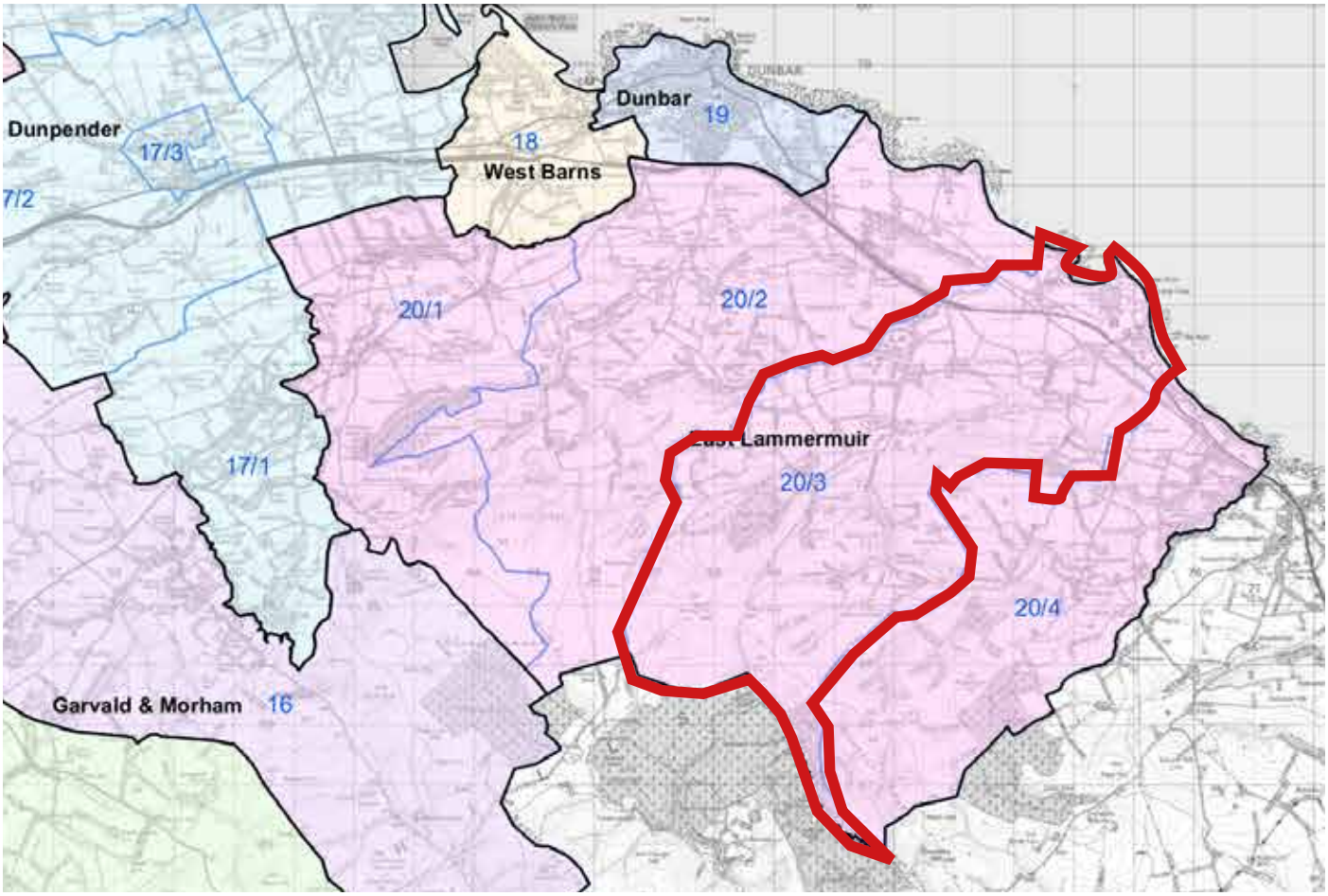
East Lammermuir Local Place Plan 2024-2034, East Lammermuir Community Council, 2024
elcc.scot/local-place-plan/

The East Lammermuir Local Place Plan records the community's issues, ambitions and dreams, and is an action plan for managing change over the next ten years. The Local Place Plan was validated by East Lothian Council in July 2024.

The Consultation Report and Survey Report record the many strands of consultation undertaken by the Community Council. Sarah — who was commissioned by the Community Council to write the Local Place Plan — facilitated events across the East Lammermuir region, and heard first-hand the concerns, aspirations and hopes of people in Innerwick and beyond.

While the Local Place Plan covers the wider area of East Lammermuir, many of the concerns of residents in Innerwick were repeated across the neighbouring areas.

Eats Lammermuir Community Council area, with Innerwick polling district overlaid in a red line



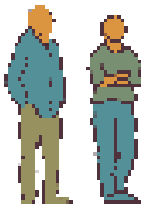
Lessons from the Local Place Plan Consultation Themes

A strategic deep and wide engagement process for the Local Place Plan included in-person workshops, sessions in the primary schools, online and paper surveys.

Resilience — community, energy, and environmental — is a major concern for people.

85 people filled in the survey

76 people attended at least one of ten in person events across two phases of in-person engagement



54 school pupils were consulted

Consultation Report, East Lammermuir Local Place Plan 2024-2034, East Lammermuir Community Council, 2024

The themes which emerged from the face-to-face events and questionnaires paint a picture of the East Lammermuir region, the concerns and priorities of the community.

Most comments relate to these overlapping issues, which have been arranged to illustrate the number of comments on each topic.

Key Learnings; Each community has different priorities and will face challenges in their own way. All recent available data on the concerns and aspirations of a community feeds into the evidence for community energy projects.

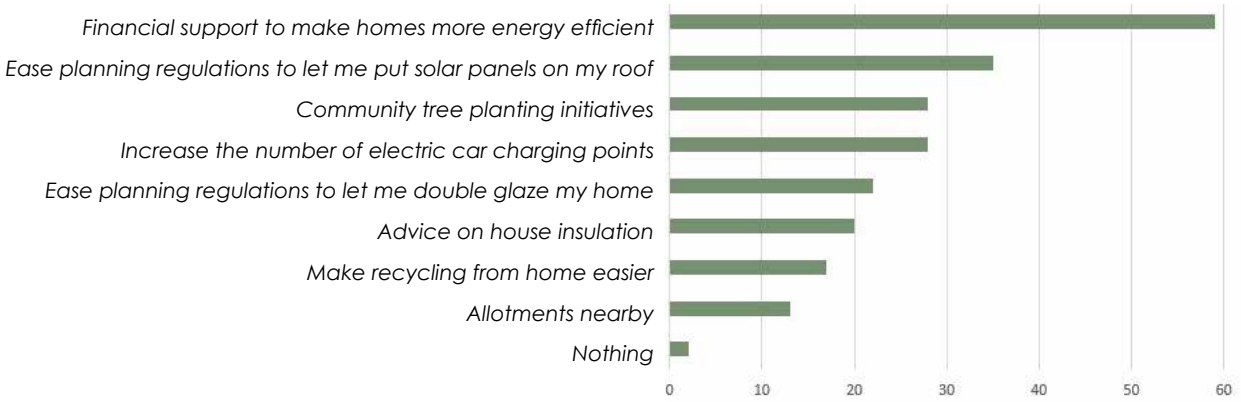
Lessons from the Local Place Plan Survey Results

Survey Report, East Lammermuir Local Place Plan 2024-2034, East Lammermuir Community Council, 2024

A survey was completed by a representative 85 people across East Lammermuir in Autumn 2023.

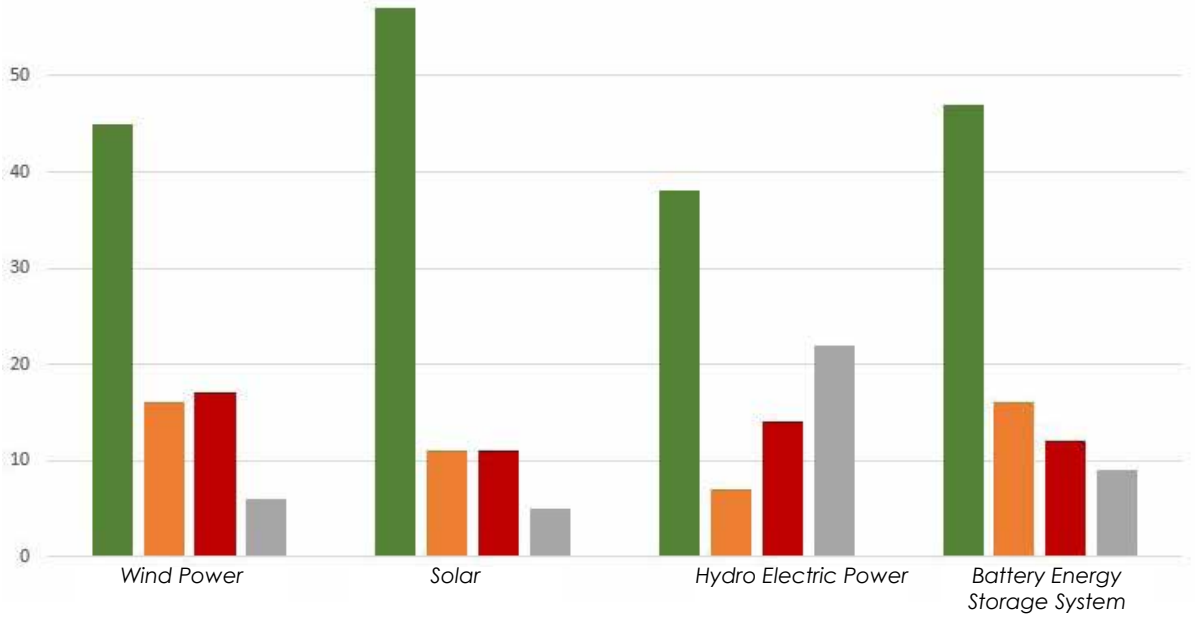
Results which are relevant to the Insulate Innerwick project are represented below.

What would help you to minimise your impact on climate change? tick all that apply:



If the Community Council found a good site for a community renewable energy project in the East Lammermuir area, would you support it?

By community renewable energy project we mean one owned by the community, with the profits used by and for the community.



Lessons from the Local Place Plan Action Plan

East Lammermuir Local Place Plan 2024-2034, East Lammermuir Community Council, 2024

The Local Place Plan includes actions to support the just transition, resilient communities, rural revitalisation and making productive use of existing buildings.

Retaining the vitality, social and cultural sustainability of rural areas through enabling a variety of people to live and work in a rural setting, is of key importance to the community.

SUSTAINABILITY AND THE ENVIRONMENT ASPECTS OF HOUSING AND BUILDINGS Communities must be able to thrive - in an increasingly technologically driven society, local communities should be able to regularly come together		
ACTION PLAN	**WHO CAN HELP**	**TIMESCALE**
System support for local energy groups, including Insulate Innerwick	East Lothian Climate Action Hub Sustaining Dunbar	Ongoing
Build awareness of the Local Heat and Energy Efficiency Strategy [LHEES] by ELC, and what that means for everyone in the community. LHEES is the main mechanism for locally-led heat planning in Scotland.	ELCC Sustaining Dunbar Community Energy Teams	Ongoing
Clearer and consistent planning regulations to allow home energy upgrades in Conservation Areas and for listed buildings	ELC Planning Team	Next review of residential guidance
Coherent plan for Net Zero;		
Renewable energy sources like shared ground source heat systems and district heating, linked to village halls.	Local Energy Scotland CARES funding Energy Developers ELC	Ongoing
Decarbonise heating of homes - support to raise awareness of home energy upgrades, funding opportunities and trusted tradespeople.	ELC Energy Team East Lothian Climate Action Hub Sustaining Dunbar Home Energy Scotland - Scottish Govt	Ongoing
Support for home energy upgrades in terms of policy framework, planning policy, financial framework, skills availability, and supply chain framework	Scottish Government ELC	Ongoing
Support for small scale community-owned district heating systems, from planning to funding and installation.	ELC ELCC Energy Developers Community Sustaining Dunbar	Ongoing
Support for community-owned energy generation; wind, solar, HEP and BESS and other emerging technologies		Coordinated with energy infrastructure

The Engagement Strategy Listening to Innerwick

The Community Engagement Report records all events, meetings, and methods we have used over the past 20 months.

The key to moving forward with an ambitious project is defining the aim, recognising the challenge, and working together towards solutions.

It is essential to listen to and understand the views and concerns that people have about their homes and energy bills.

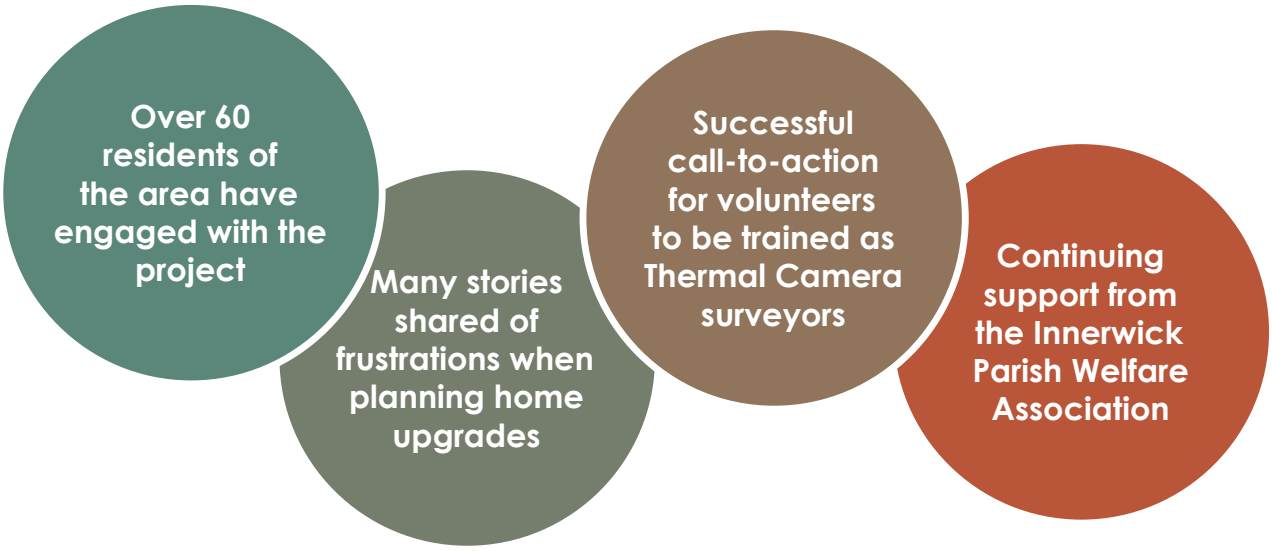
A responsive, flexible strategy of varied events, talks, events and information sharing has informed our work, and will continue to inform the work as we move forward.

Without trust and awareness, there is no project!

Date	Engagement type	Key Learnings
Feb 2023	Meet the Flensburg Students - Community Conversation	Folk know a lot about the history of their homes, and are interested in finding out more. The students' data modelling and maps were interesting to residents.
2024	Lessons from the Local Place Plan - Consultation and Action Plan	Community resilience, the impact of energy developments, movement, landscape and heritage are key themes in the concerns of local people. Funding for home upgrades is a strong aspiration. Community-owned energy generation is strongly supported.
Jan 2024	Mapping the Barriers and Opportunities - Community Exploration	Barriers include knowing who to trust, many aspects of accessing funding, designing upgrades, and finding trusted installers and tradespeople. Despite the challenges, folk want to upgrade their homes, reduce their bills and be more comfortable.
Mar 2024	Meet the Experts - Presentation by Home Energy Scotland and Insulate Innerwick team, information from Changeworks	A lively Q&A session brought out a range of queries; from planning concerns, to technical questions. It was clear that while generic advice is useful, individual, tailored advice is much needed. From fuel bills to what insulation to use, folk have detailed queries and need specific, trusted advice.
Sept 2024	Household Survey - Online and paper survey, volunteers door-to-door, data collection.	Some folk feel comfortable in their homes and don't want to make changes. Info on all homes is valuable, but can be hard to obtain. A local, trusted face is needed to 'connect the dots'.

Key Learnings; The engagement strategy was founded in what we know about our community, and identifying the challenges people were facing.

The Innerwick Community



Key learnings which inform the project moving forward are;

- Many of us know about the history of the home we live in, and the fabric of the building's walls, floors and roof.
- We are aware that some areas are colder than others, more draughty, or need maintenance and upkeep.
- Many people have made improvements to their home, either as a major building work such as an extension or heating system overhaul, or maintenance and upgrades like double glazing. It's a mixed picture, and generic advice only goes so far.
- The current system is a 'minefield', there are multiple barriers preventing folk being able to see what's possible, and then working towards that.
- People need individually tailored advice to inform their decisions. The available information is often overwhelming, or too generic.
- Difficulty finding trusted installers locally is preventing improvements being made.
- ***Sharing stories, challenges and successes can help our neighbours to make their own upgrades.***

Inform, Educate and Empower

There is interest from a mix of people; some who have engaged with funding agencies and the process has stalled due to mixed messages, some who are struggling to find trained installers or maintenance, and many who are interested to know more about their own home and what they can do to reduce their bills.

We are drawing interest from residents who want to get a Thermal Camera survey undertaken.

What We Learned

The Barriers

At a discussion event in January 2024, and through an online survey, we found out about the barriers that people are facing, with respect to home energy. This has informed our action plan, however we can only move to this next stage of the project by drawing funding or investment.

The Barriers		How has this informed what we want to do next?
Planning requirements	*Folk feel there is inconsistency in the application of planning policy, which makes it difficult to plan with confidence.*	Clarity and consistency of decision is a key ask to East Lothian Planners. For energy efficiency measures and micro-renewables, written guidance would reduce the risk for applicants. We would work with ELC on this aspect.
Where to start?	*Upgrading your home can seem daunting. Where are the biggest wins? How much can I save on bills by making changes? Is it worth making small improvements?*	There are industry-recognised templates and methods for surveying, strategising and presenting plans for householders. A hand-holding service should be made available. We want to create this local, trusted source of information and guidance, with clear costs and outcomes for the householder.
Finding trusted advice	*Who is impartial and informed?* *How can folk distinguish scammers from genuine funding opportunities?*	We have already begun partnering with Home Energy Scotland and Changeworks. We would continue that work, and look to expand our connections, bringing best practice to rural communities to consolidate the project's position as a trusted, impartial service.
Finding funding	*Grants and loans could be available. There are several layers of barrier, including finding which funds you are eligible for, understanding what the funding covers and what it doesn't, matching that with your own goals and home, applying for the funding, and sometimes having to provide payment yourself before claiming back.*	We have created a paper guide to funding which folk are most likely to be eligible for. We also signpost to the Home Energy Scotland funding finder for householders. A holistic look at funding could make it simpler to find and access what folk are entitled to. The cost to make a plan, the iterative process where the design of the upgrades needs to be in place before funding can be sought is a major barrier. If funding and delivery was available for individual plans, barriers could be lifted.
Finding suppliers, installers and tradespeople	*Folk have had bad experiences with ASHP suppliers in particular, being left with no ongoing maintenance.*	We want to bring together trusted local tradespeople, and match with enough work to support ongoing upskilling in emerging techniques and technologies. We anticipate funding would be required for a coordination role, creating and managing packages of works and maintenance contracts to attract tenders from a wider catchment. This could be a surveyor and/or assessor. There is an opportunity to work in partnership with East Lothian Council's Strategy & Development team to bring assessors, a delivery model, and PAS2035/Trustmark accredited installers and trades to the project.
Scams	*We heard from the ELC Energy officer that the local authority are working hard to combat in-person, leaflet, and online scams. Some are very difficult to spot, and clicking on one link can start a barrage of similar ads.*	Anyone can fall for a scam. It's essential to provide guidance through a range of media to ensure all residents are empowered to ask the right questions and seek further guidance where necessary. At the moment folk can contact ELC for information.

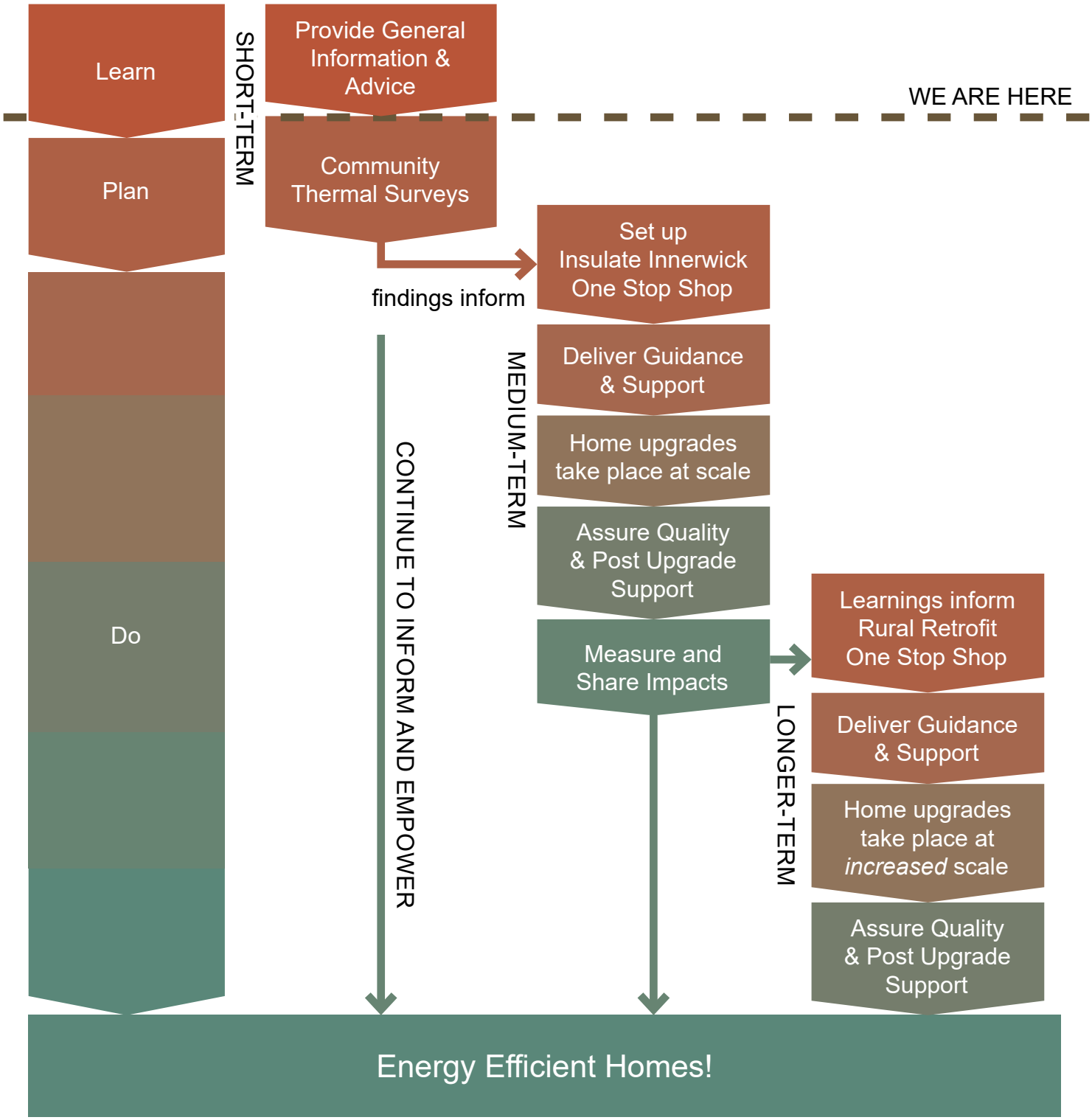
Future Stages

There are many pathways to decarbonisation. We believe that a tangible, robust plan needs to be flexible, pragmatic and scalable.

Our short- medium- and long-term goals reflect the work done so far in researching the technical challenges as well as the people and places that make Innerwick unique and special.

All our plans centre the householder, and meet folk where they are in the journey.

Each home is individual, each plan will be tailored within a robust framework that people understand and trust.



The Short-Term Plan; Information and Thermal Cameras

Partnership working

Link with EcoCosi and associated consultants. A small amount of funding would allow us to reach out to early adopters and start making home plans.

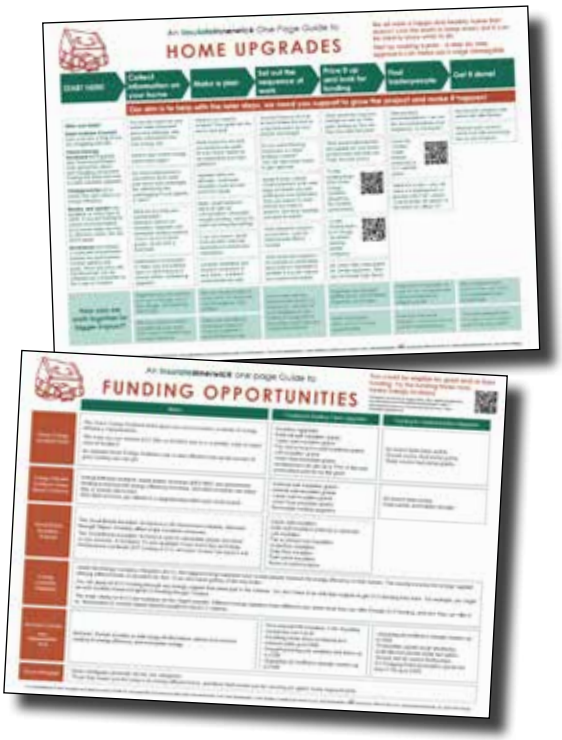
Information

Get information out to local residents, to help break some of the barriers we know folk are facing.

Trusted information - we will link from our website to impartial and expert information and guidance which has been vetted for common sense and to be jargon-free.

Three paper guides are about to be published, and will be available at the Village Hall and hopefully Dunbar Library.

- Home Upgrades; How to Make a Plan
- How to Upgrade-As-You-Go
- Home Upgrades; Funding Opportunities



Thermal Camera Surveys

A thermal camera survey carried out by trained volunteers is a great way for people to find out more about their homes, providing a report so folk can refer back as they form a plan for their home.

Through making contact with the West Linton Community Heat Team, and with support from ELCAN, we will be part of a widening of their project through East Lothian in Winter 2025. Sustaining Dunbar and other climate action groups in East Lothian will be undertaking surveys.

The surveys are a powerful and compelling tool to empower people to make positive change.

West Linton Heat Team report 86% of people who had a survey done have taken subsequent measures to upgrade their home.

The Medium-Term Plan; Insulate Innerwick One Stop Shop

A Net Zero Neighbourhood implementation vehicle

The Insulate Innerwick One Stop Shop could deliver a householder hand-holding service through all stages of planning, funding and delivering upgrade / retrofit for every home.

We would look to provide a framework of trusted assessors and local contractors, in a defined process where folk would feel supported at every step by a trusted, local service. We would give advice on process and funding, deliver upgrades, provide maintenance, and measure impact.

While we would follow best retrofit practice and process, we are **not** intending all retrofits to be 'exemplar' standard. Each plan will be appropriate to balance the goals of the householder with building performance outcomes.

We want to look beyond the "willing-to-pay" market, and truly address the barriers to making upgrades with hyper-local grants and low-costs loans available to those who need them.

We are starting to pull together a framework of experts, with local contractors, a PAS2030 / PAS2035 certified team, and Conservation Architects.

Looking across tenures, we see an opportunity to work in partnership with East Lothian Council's Energy team, who deliver the Energy Efficient Scotland: Area Based Scheme. This will begin with an information event in Innerwick.

The Medium-Term Plan; Insulate Innerwick One Stop Shop

Adapted from https://www.changeworks.org.uk/improve-my-home/what-is-ecocosi/how-much-does-ecocosi-cost/

Funding 'stack'	Householder Journey
Community Benefits + Public Funding for eligible householders	**Engagement and assessment** This stage includes an in-depth Home Assessment and Whole House Plan, including "easy wins" (short-term measures), sequencing of work, and options for different scenarios based on the householders' aspirations.
	Retrofit Design - Fabric A Retrofit Designer works with the residents to draw out their goals and brief for the project, refines the plan. The Advisor connects the householder with a trusted local installer network. The design of the work is undertaken, in line with best industry practice with regard to the type of upgrades, considering sequencing and risk. We would manage the statutory applications; planning and building warrant, and the technical design of the retrofit plan.
Return-seeking Investment + Public Funding for eligible householders	**Building Fabric** We would specify appropriate materials, preferring locally sourced, natural and low-carbon materials.
	Heating System / Renewables The heating system will be designed in line with the fabric performance targets, and to ensure residents are not at risk of fuel poverty.
	Transformation This will be a calculated, fixed fee, based on the measures and scale of works. This stage includes project management services, and Quality Assurance process. Regular inspection would be carried out to ensure works are in accordance with the plan, and minimising risk to the inhabitants and building.
Community Benefits	**Impact Assessment** Post-installation support for any technical issues, the project would be signed off. Impact assessments will be undertaken, recording the residents' experience during and after upgrades.

The Medium-Term Plan; Insulate Innerwick One Stop Shop

Where will this be based?

Project personnel would not need to be available full-time, however a consistent presence in the area is important. There are a number of desk spaces available near Dunbar High Street, and the Village Hall could host a desk on a regular slot.

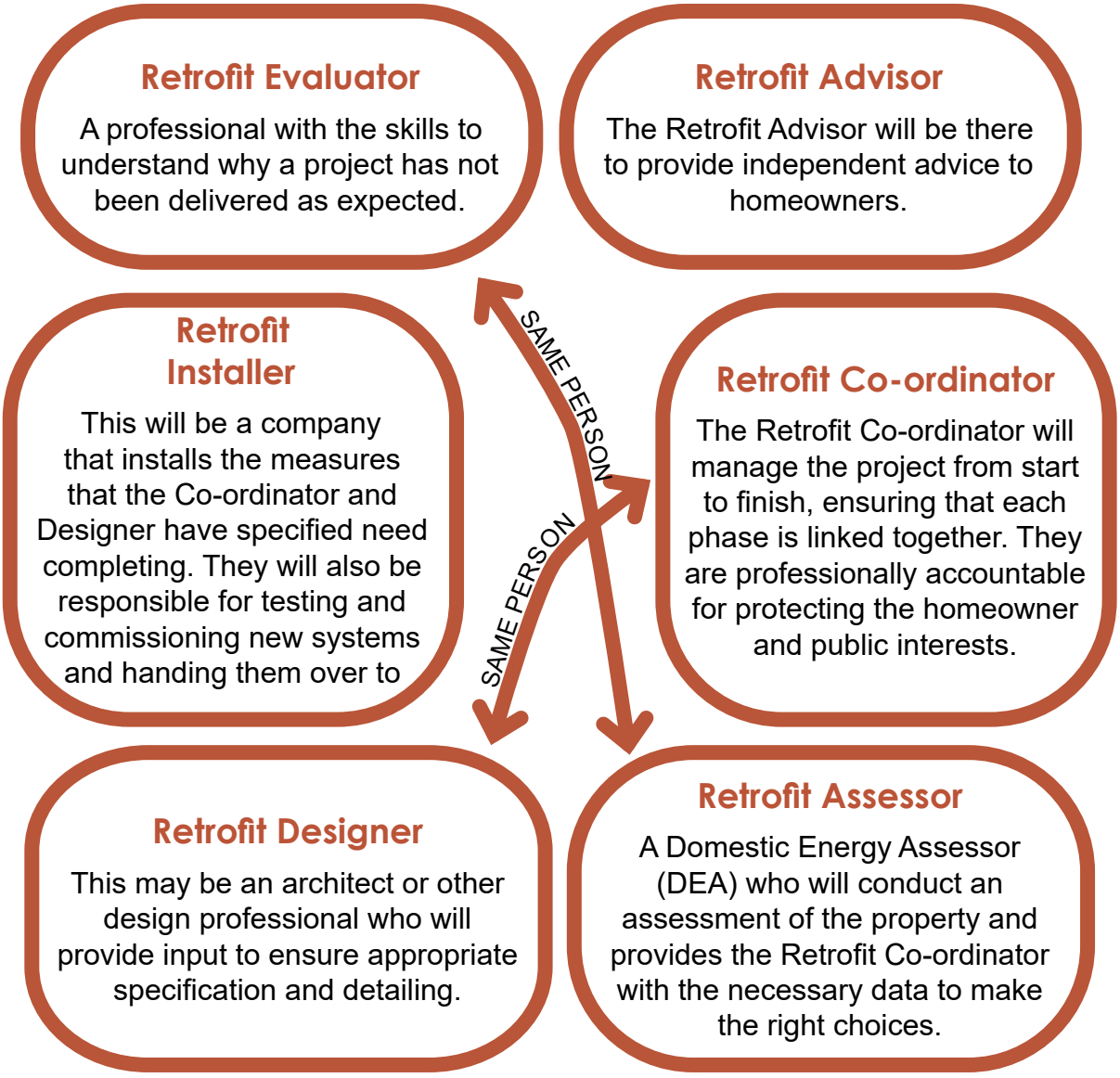
Who will be involved?

In the PAS2035 system, all of the roles below must be filled, however some may be undertaken by the same individual.

Not all roles are required throughout the process.

The project team is aware of accredited people who can undertake these roles, as part of an en-to-end framework.

The PAS 2035 Quality Assurance System



The Longer-Term Plan; Rural Retrofit One Stop Shop

We need to Accelerate to Zero.

To effectively decarbonise homes on a large scale, we must provide clear information, collaborate on a shared vision for the future, and ensure that home upgrades are simple, accessible, and positive experiences.

Bottom-Up

The Scottish Climate Action Network coordinates community action through regional hubs. The East Lothian Climate Action Hub brings together community action in this area, and provides support at the grassroots level.

This could be a model for Scotland-wide home energy hubs;

- Building on success - recording and sharing householder journeys
- Learning about our communities - using Local Place Plans to inform our process.

Continuous Learning

The Innerwick demonstrator would enable a scaling-up of impact across a wider area, using the learnings and framework gathered through the project.

Trades and skills - the demonstrator would support trades to upskill in retrofit techniques in a rural context.

Details - a library of generic details would be compiled, through working with suppliers and installers

Materials - We would encourage low carbon materials, and anticipate that a rolling programme of works will enable a supply chain of natural, local materials to be used where possible. Suitable materials could include local hemp, and blown wood fibre.

Focus on rural homes

Scottish House Condition Survey 2022 Key Findings www.gov.scot

Only 33% of Scottish rural homes have EPC score of A-C, compared to 56% of urban homes.

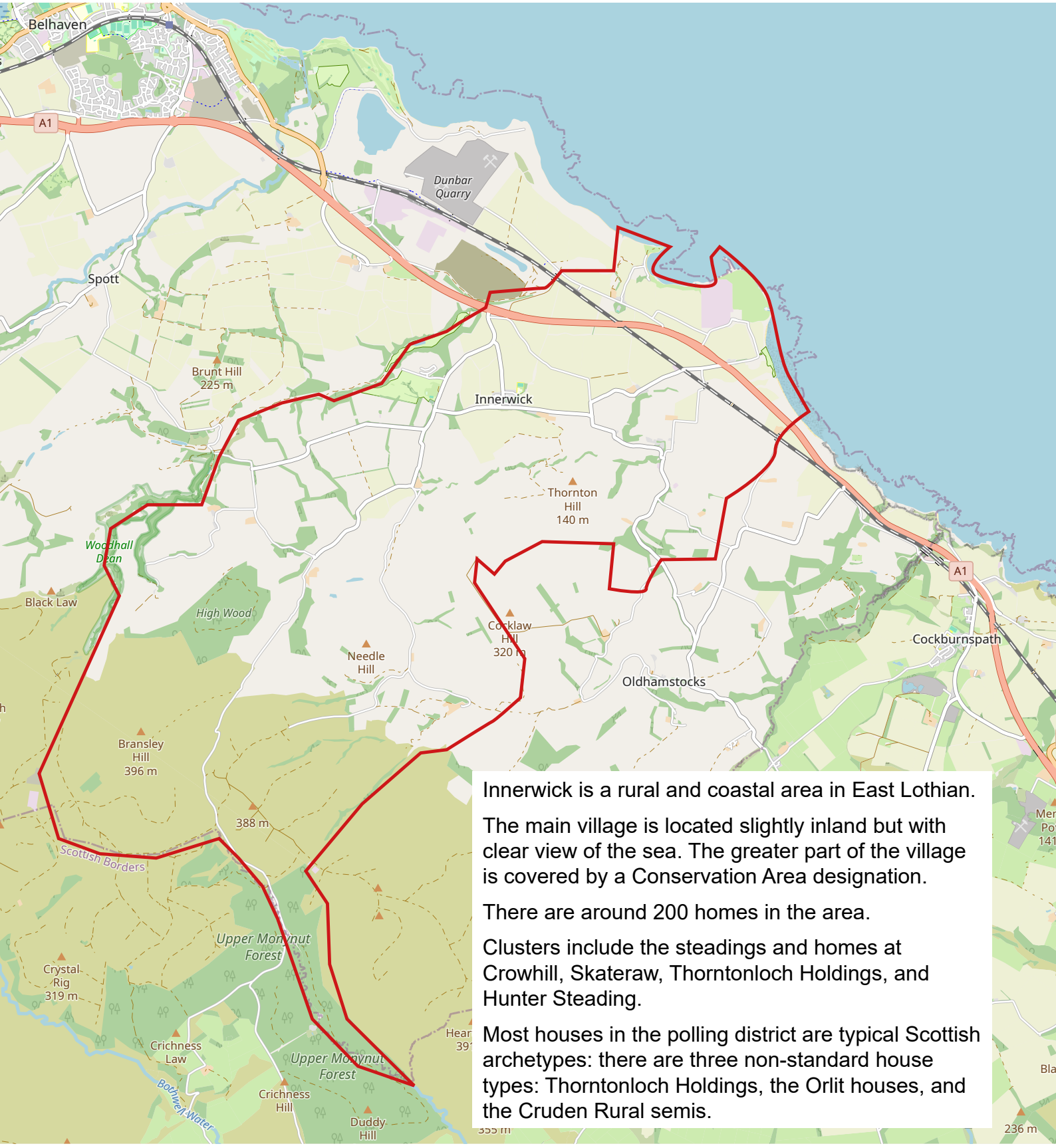
As far as our research has found, the Scottish rural context has had no focus in this way. While demonstrators such as the island of Raasey with Home Energy Scotland have been successful, Islands are a specific challenge as a subset of Scottish Rural homes.

'Dwellings in the lowest energy efficiency bands (F and G) are more likely to be pre-1919 dwellings (11%), non-gas heated properties (16% for electric, 17% for oil and 19% for other fuels), detached properties (8%), off gas grid properties (20%), and in rural areas (14%).'

There is potential to improve energy efficiency and make a huge impact on overall energy use in hard-to-treat buildings across Scotland, building on the lessons learned through a robust demonstration project.

Technical Report

The Innerwick Area



Innerwick is a rural and coastal area in East Lothian.

The main village is located slightly inland but with clear view of the sea. The greater part of the village is covered by a Conservation Area designation.

There are around 200 homes in the area.

Clusters include the steadings and homes at Crowhill, Skateraw, Thorntonloch Holdings, and Hunter Steading.

Most houses in the polling district are typical Scottish archetypes: there are three non-standard house types: Thorntonloch Holdings, the Orlit houses, and the Cruden Rural semis.

OpenStreetMap with Polling District boundary overlaid

Key Learnings;

GIS map data is available from Council websites https://spatialdata.gov.scot and https://opendata.scot/datasets/

GIS info can be read for free on QGIS software

The Innerwick Area

Innerwick Village

The main settlement within the Innerwick area is the village, which has c. 90 dwellings.

Tenure throughout the area includes owner occupied, social housing (both Council and Housing Association) and privately rented homes. The village has the only social housing in the area, and has a socially mixed population.

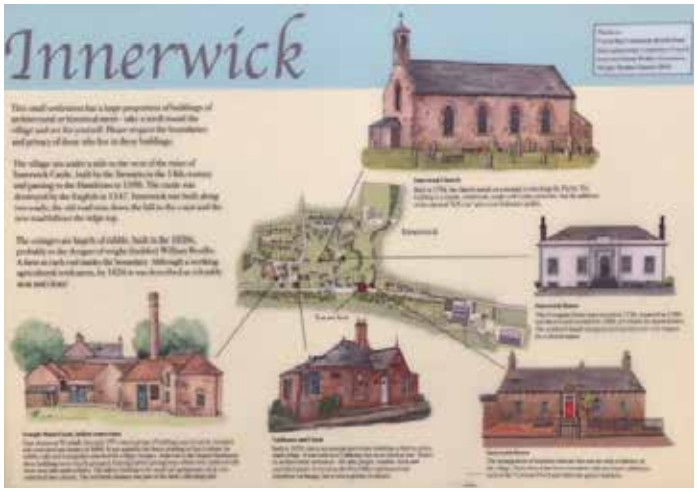
Innerwick Conservation Area covers around 50 homes, and there are 14 listed buildings.

Innerwick has a typical mix of rural properties: pre-1900 stone one-storey cottages and houses, including some that are partially 'back-to-earth' where they are one storey at the front and two at the rear.

There is a 2008 steading development (see next page) and two infill new builds, plus two homes under construction.

With a coastal / rural / woodland location and a mix of housing types and constructions,, Innerwick is an example of a 'typical' Scottish village, making it a good candidate for a demonstrator project.

Main Street



Interpretation Board on Barns Ness Terrace

Manse View

Innerwick Village Hall

Barns Ness Terrace

Kirk Brae

The Innerwick Area

Steadings and Terraced Conversions

There are two Steadings conversions in the area; Temple Main Steading in the village, and Hunter Steading.

Each are formed from an existing stone building, and have been rebuilt to form contemporary living accommodation.

Crowhill was converted in the late-2000's from a row of single storey farm cottages, to form a terrace of contemporary 1 1/2 storey homes. A successful planning application for the steadings to the rear of the cottages could form further accommodation.

Temple Mains Steading converted in the mid-2000's forms 11 homes, retaining some of the stone structure of an agricultural cluster and adding buildings in a courtyard pattern to form a contemporary steading pattern. The historic chimney structure has been retained as a feature and landmark.

Hunter Steading was converted in the early 2000's to form 20 homes in the shell of a former stables.

Crowhill

Crowhill

Hunter Steading

Hunter Steading

Temple Mains Steading

Temple Mains Steading

The Innerwick Area

Pre-1919 Dwellings

There are over 50 homes recorded in EPC data as constructed pre-1919, equating to 25% of all homes in the area. While we cannot extrapolate to the 30% of homes with no EPC, many of these have solid stone walls, evident from visual inspection.

The high proliferation of stone-built homes is typical of villages in the Lothians and elsewhere in Scotland, and these homes contribute greatly to the character of villages and clusters, both through the high quality heritage materials, individual designs, and positioning in relation to the streets and spaces they address.

In Innerwick, the facade of the building often sits hard against the footway, defining the street edge. Spaces between buildings varies. In some cases the space between manages level difference. There are some homes which are harder to access for larger vehicles, which could present a challenge to significant works.

Pre-1919 homes can be classed as 'hard-to-treat', they are often a bespoke design and over time householder upgrades and changes are made which resist a neat categorisation and analysis as groups.

While we recommend all homes have a plan for upgrades, it is particularly important for pre-1919 homes which carry a greater risk of becoming an unhealthy internal environment if unplanned upgrades take place. Moisture movement and airtightness must be taken into careful consideration, along with microclimate, and use pattern. In a building with a high form factor* managing interfaces, details and junctions becomes more complex.

There is a huge potential benefit to upgrading the fabric of these relatively lower-performing homes, both for the health and wellbeing of residents, and in reducing fuel costs and heat loss.

**complex wall, roof and window geometry, eg chimneys, bay windows, protruding porches, roof dormers*

Smithy Cottages

Main Street

Tyme Cottage

Templelands Leigh

The Innerwick Area

Manse View

Post-1919 Dwellings

Built mostly in multiples or clusters, post-1919 homes in the area share characteristics with their neighbours.

The first grouping is Thorntonloch Holdings, consisting of 21 homes, spreading over a sprawling area that straddles the A1.

These were built in conjunction with a national scheme where smallholdings were given to disabled and shell shocked WW1

veterans. They were constructed from breeze blocks, and are two types: single storey and some known as 'one and a half' where the

bedrooms are built into the eaves. From visual inspection they have a suspended floor, and had underfloor lead piping originally heated via a back boiler. With the sale and amalgamation of many plots, houses have been improved and extended.

In Innerwick village Manse View is mixed-tenure, mostly owned by East Lothian Council. There are16 houses and bungalows, at least three of which are in private ownership. Council housing was built in 2 tranches in 1931- 2, and 1938-9. There are two types of the 'garden city' design used all over the UK: some single storey, and others with bedrooms in the eaves. There has been some piecemeal retrofit and upgrades. Most remain in council ownership with one having been transferred by East Lothian Council to the Homes for Life housing association.

A further five houses were built in 1994 by East Lothian Housing Association, one of which is now in private ownership. All have an early version of solar panels, and have been upgraded.

Barns Ness Terrace

Thorntonloch Holdings

The Innerwick Area

Kirk Brae - home to the right has external wall insulation up to party wall

Kirk Brae - Cruden Rural type

Post-1919 Dwellings cont.

Kirk Brae has 2 and 3 bed single storey council housing that was built in three stages between 1948 and 1953.

The first eight houses on the left hand side (numbers 7-14) are the Orlit design. This was an experimental post-war design, with steel frames and concrete panels. Three of these houses are in private ownership.

In 2019 East Lothian Council undertook a wholesale upgrading of their Orlit homes, increasing loft insulation, providing external wall insulation, new doors and windows and modern heating systems: a choice of electrical heaters or an air source heat pump. Similar improvements were implemented for the later single storey houses in council ownership with a more traditional construction design including cavity walls.

The six council houses at numbers 1-6 Kirk Brae are known as 'Cruden Rurals', and were a refabricated construction in the 1950s.

The original steel exteriors have been improved by external brickwork.

There are a few single post-1945 houses in the village, and throughout the polling district built on individuals plots. Post 2000 more private houses were built in the village, generally infill, as in and adjacent to Temple Mains Steading.

The Fourth Statistical Account of East Lothian 1945-2000 chapter: Innerwick https://el4.org.uk/parish/innerwick/ accessed 23.11.2024

The Original Orlit Prototype House https://nonstandardhouse.com/the-original-orlit-prototype-precast-reinforced-concrete-prc-house/ accessed 23.11.24

Cruden Rural hotel Framed Housettps://nonstandardhouse.com/cruden-rural-steel-framed-house/ accessed 23.11.24

Innerwick Area Maps

Innerwick Area Maps

Skateraw

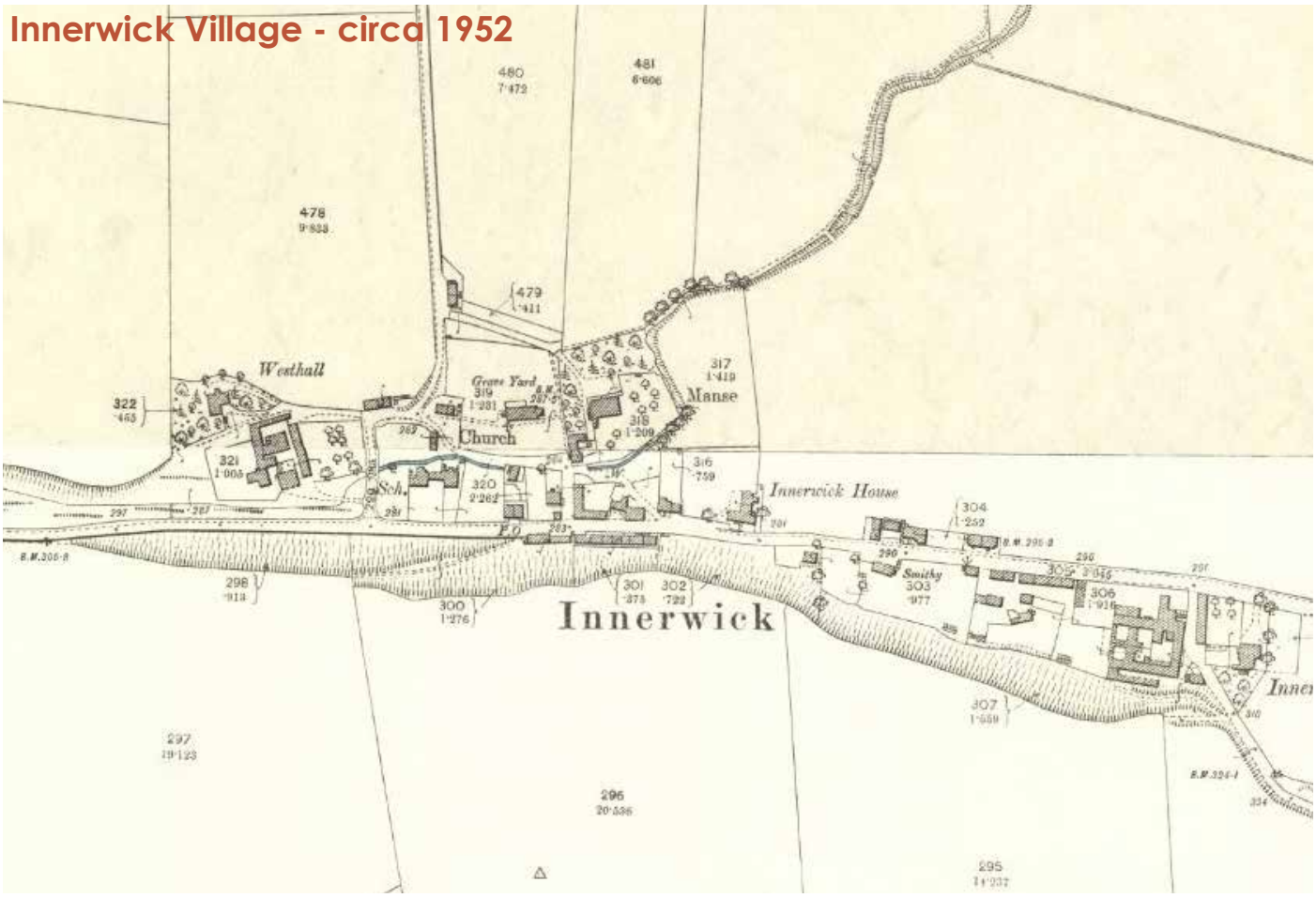
Thorntonloch Holdings

Innerwick Area Maps

Crowhill

Thurston Mains

Innerwick Area Maps - historical



The Flensburg Study - summary

The feasibility stage was kick-started in early 2023 by the work undertaken by four Engineering Masters students from The Europa University Flensburg, Germany. The MSc programme in Engineering, Energy and Environment Management arranged for 16 of their students to undertake 5 weeks fieldwork in the Dunbar area, in January and February 2023. All are qualified and experienced engineers. The group of students plus two professors were hosted by Sustaining Dunbar and based at the Dolphin Inn, Dunbar.

As part of the fieldwork four students undertook a case study in Innerwick. They planned to establish the need for insulating and retrofitting homes within the area, and to calculate costs.

The students employed two methodological approaches.

1 - Innerwick Measured Model

A desktop study made extensive use of open source information, using Scottish, UK and EU sources. This was supplemented by on-site visits, and information derived from local knowledge and also the Fourth Statistical Account of East Lothian (2000) about the age, type of building, and number of storeys. Because of time constraints this focused on the most densely populated areas, where each polygon (housing profile) was mapped and categorised. Open source Ordnance Survey information allowed mapping and measurements to be taken.

2 - Generic Desktop Mapping Model

The students used publicly available information about Energy Performance Certificates (EPCs) which - since 2008 - are legally required when a home is constructed, sold or newly rented. An algorithm was produced to calculate the potential need for energy saving improvements.

These two approaches were combined to predict the need for retrofitting and the overall cost.

Results

The students made two recommendations, for “standard” and “ambitious” refurbishment. In each case this would include all necessary insulation, including cavity, external and internal wall insulation as appropriate, plus glazing. Heat pumps were costed separately. These measures would respectively reduce energy demand by 58% and 71% and the cost at current prices for the energy savings measures was estimated.

There were a number of constraints, and the students suggest several ways in which the model could be improved. It would also need be extended to areas not covered (mostly very rural and/or upland), and include energy saving improvements already made. The economies of scale offered by a coordinated project are not included.

The strategy, methodology and technical model can be adapted for any area of Scotland.

See Appendix for details of methodology and outcomes.

The benefits and limitations of an Archetype approach

One approach to retrofitting at scale is to group dwellings with shared attributes for ease of assessment and generic costings. This is known as the 'archetype approach' and is recommended by industry experts.

This approach is useful for assessing an area to look at the overall upgrades required, costs, and supply chain management.

This approach centres on the building rather than the occupant, which is one limitation. Other limits include a disregard of complexities within an archetype such as local climate conditions and aspect, occupancy patterns, and the consideration of past modifications and maintenance.

A workshop run by University of Edinburgh brought together key stakeholders in the decarbonisation of homes. The workshop report was shared with us by Dr Julio Bros-Williamson.

The report suggests we group dwellings by age and wall construction. As with most settlements, homes were built in clusters of the same or similar housetypes.

Before making recommendations for upgrades or retrofit, each building needs a standalone plan, which considers its unique aspects and use patterns.

Adapted from;

Bros-Williamson, J. and Smith, S., 2024. *Applying a retrofit and low-carbon technology archetype approach to buildings in Scotland: Outcomes from the workshop series organised by the School of Engineering and the Centre for Future Infrastructure, at the University of Edinburgh.* University of Edinburgh, Edinburgh, Scotland, UK.

Archetype	Most Common External Wall KEY Archetypes	Coding	Sub-Categorisation Guidance within KEY Archetypes
Common archetypes in Scotland			
1	Pre1919 sandstone house (solid)	SW - SS - 1	Variation of finishes room side
4A to 4E	Timber frame based (block or brick outer leaf)	CW - TF - A	90mm mineral wool insulation (inner leaf)
		CW - TF - B	rigid foam insulation (inner leaf)
		CW - TF - C	expanding foam (inner leaf) - note different types
		CW - TF - D	140mm mineral wool insulation (inner leaf)
		CW - TF - E	Other - e.g. SIPS inner leaf
5	Brick full depth (solid)	SW - B - 1	Variation of finishes room side and outer leaf
6A to 6D	Masonry & block cavity wall	CW - MB - A	Brick outer skin - dense block inner skin
		CW - MB - B	Block & render outer skin - dense block inner skin
		CW - MB - C	Block & render outer skin - LWA block inner skin
		CW - MB - D	Block & render outer skin - Aircrete block inner skin
Non-traditional types			
	NT Cruden Rural		

Statistics
Energy Performance Certificates

Heat in Buildings Strategy - achieving net zero emissions in Scotland's buildings

https://www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings/pages/3/

'Improving the energy performance of buildings is essential to unlock the rollout of zero emissions heating. Energy efficiency measures alone will not reduce emissions enough to meet our emission reduction targets, but they are a critical precursor to deployment of many zero emissions systems and are vital to supporting households and businesses to reduce their energy costs today. Energy efficiency remains at the core of our heat in buildings policies and programmes, and a fabric first approach continues to be the mainstay of all our fuel poverty interventions.'

'We know that a minimum level of energy efficiency is an important prerequisite and is needed to underpin the rollout of zero emissions heating across all technology scenarios.'

The Scottish Government's Heat in Buildings Strategy requires all homes meet at least the standard of an EPC C or equivalent by 2033, and that all homes use zero emissions heating (and cooling) by 2045

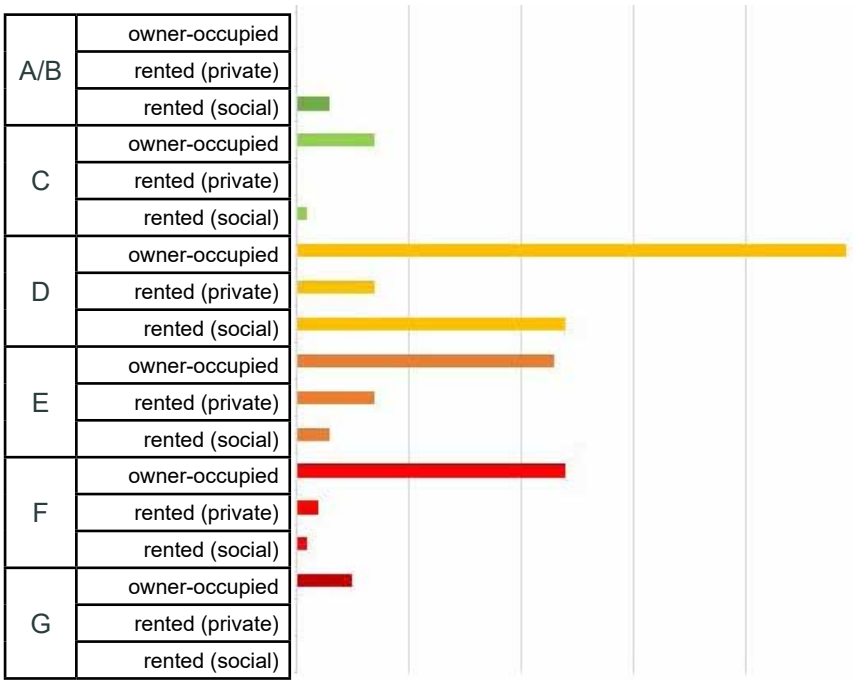
The available EPC data for the area gives a limited overview of the challenge, however we can say for certain that of the 167 homes recorded in this way and captured in 2023;

87% social rent homes are recorded as lower than EPC C

93% owner-occupied are recorded as lower than EPC C

Innerwick EPCs captured 2023

EPC category by tenure



Compared to data in the Retrofit At Scale report published by Sustainable Development Foundation, Innerwick homes perform below the national average.

We will outline some of the many pathways to improve the performance of homes, all of which must centre the householder.

Statistics
Energy Performance Certificates

EPC information was gathered by the Flensburg students and made available to the Insulate Innerwick team.

This data has been analysed to give a snapshot of the village, in order to allow categorisation of the archetypes, and assumptions about the condition of building fabric.

Limitations of the data;

- Out of around 200 known domestic addresses in the study area, only 167 EPCs are recorded. Properties without EPCs have not been sold through a solicitor since January 2004.
- We know EPCs are a blunt tool to assess and make recommendations for dwellings. Much of the information is taken from a visual survey.
- This data cannot be extrapolated, as the condition of dwellings without an EPC cannot be assumed.
- The data on homes does not take into account how people feel lin their homes, nor how willing or able residents are to undertake upgrades.

Historic Environment Scotland. (2023). *Guide to Energy Retrofit of Traditional Buildings.* Revised ed. [PDF]
Available at: https:// historicenvironment.scot [Accessed 20 Aug. 2024].

Our recommendations;

- Many in the construction industry see the limitations of the EPC system. The National Retrofit Hub will shortly publish their recommendations for EPC reform. We recommend following their guidance when published. This is likely to include a ‘fabric rating’ as the most important metric, and a role for the EPC to incentivise performance upgrades.
- We recommend centring the householder rather than the building., To that end, and to improve the accuracy of To improve the accuracy of our data,
- EPCs are not available for 30% of homes, and EPCs are only a snapshot of the dwelling. Accuracy could be improved, and additional data could be more useful to assessing the dwellings’ potential for upgrading.
- Historic Environment Scotland recommend a full assessment of the building should be undertaken by an experienced assessor, using the ‘extended data’ options, to ensure accurate and useful information informs a plan for the dwelling.

https://nationalretrofithub.org.uk/

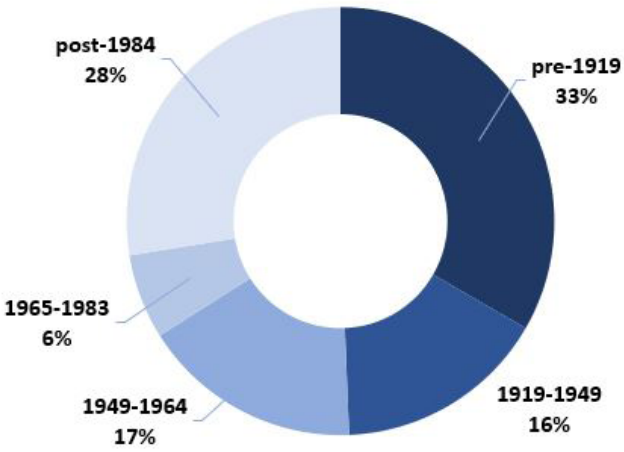
We have subsequently surveyed residents about their home and energy use, which informs our action plan. The information we have gathered looks at key building elements, as well as — crucially — how comfortable people feel in their homes.

Analysed, anonymised data will be available in due course, as a separate report.

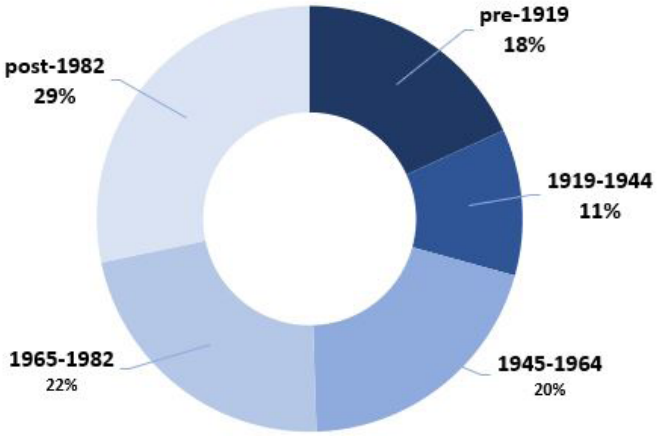
Statistics
Dwelling age and tenure

There is a higher percentage of pre-1919 homes compared to the Scottish average.

Age of Dwelling - Innerwick area



Age of Dwelling - Scotland



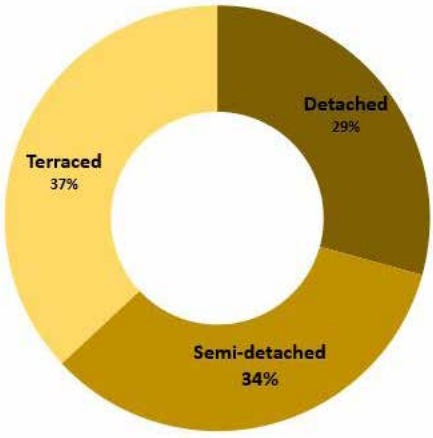
The tenure of homes is generally comparable to the Scottish average.

Tenure - Innerwick area

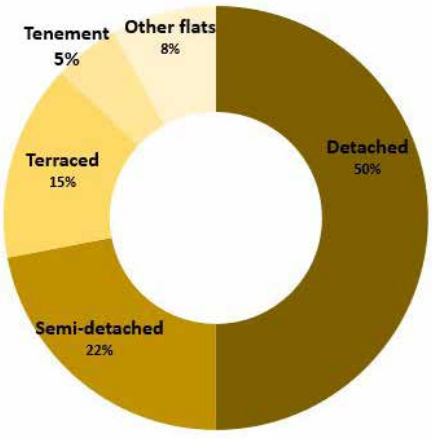
Tenure - Scotland

There is a greater proportion of semi-detached and terraced homes in Innerwick compared to the rural Scotland as a whole.

Dwelling type in Innerwick area



Dwelling type in rural locations - Scotland



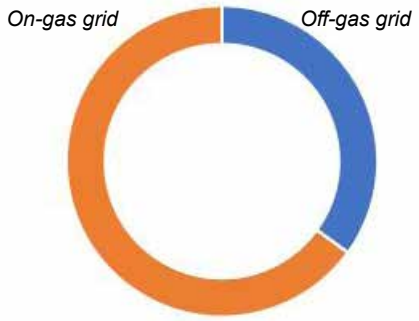
Statistics
Fuel types

https://www.gov.scot/publications/scottish-house-condition-survey-2022-key-findings/pages/1-key-attributes-of-the-scottish-housing-stock/

All dwellings in the Innerwick area are off-mains gas. This puts residents at a higher risk of fuel poverty and is a concern for future fuel resilience.

Around 60% of Scottish rural homes have are off-mains gas.

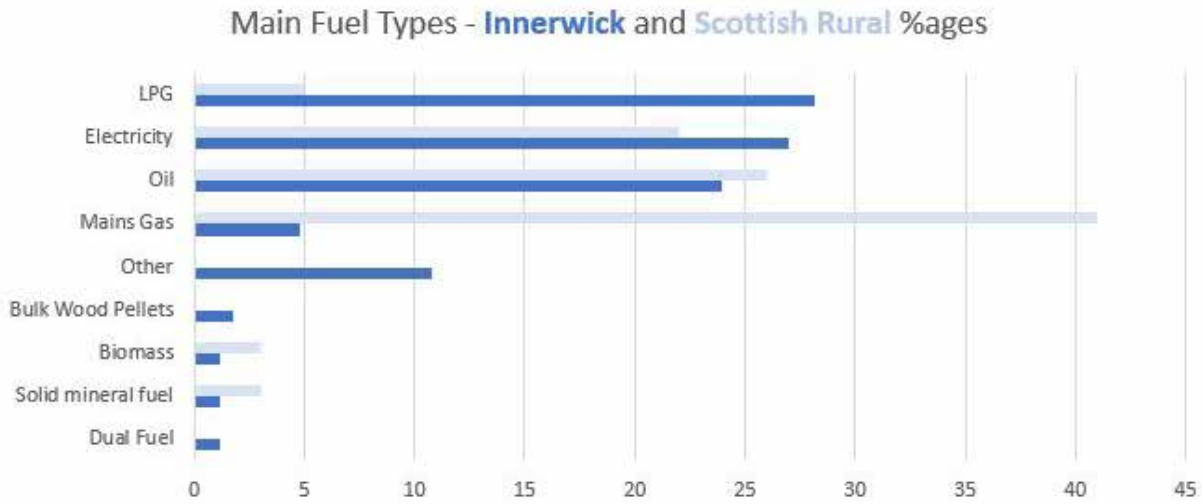
Dwellings' Gas Supply - Scottish Rural



Residents use a wide range of fuel types, many rely on deliveries of LGP or solid fuel.

There is a local district heat network between homes in the village, installed and run by the landlord of a cluster of homes, this is fuelled by biomass harvested as a waste product from the farm, a great example of circularity which is appropriate for this rural location. This solution would not be sustainable, however, in an urban situation.

Source; EPC data, known to be inaccurate



Householder Survey

A survey was created to ask households about their homes. The survey is live through the latter half of 2024 and into 2025.

The aim is to collate accurate data about the housing, as well as qualitative data on how people feel in their homes.

The data has not been fully analysed, an addendum to the report will be available in due course, including anonymised data from the survey.

Insert in the IPWA newsletter, September 2024

Elisabeth and Duncan at the Innerwick Flower Show 2024

Review of pathways

Our homes are the place we should feel safe and comfortable.

Buildings don't use energy, people do. Every home is a working system of fabric, utilities and services, providing much more than shelter for the inhabitants. We must not do retrofit 'to' a community, and we would never experiment with people's homes.

Our approach to retrofit at scale centres the householder at every stage, informing and empowering people to make the right decision at the right time for them to suit their goals, lifestyle, and family.

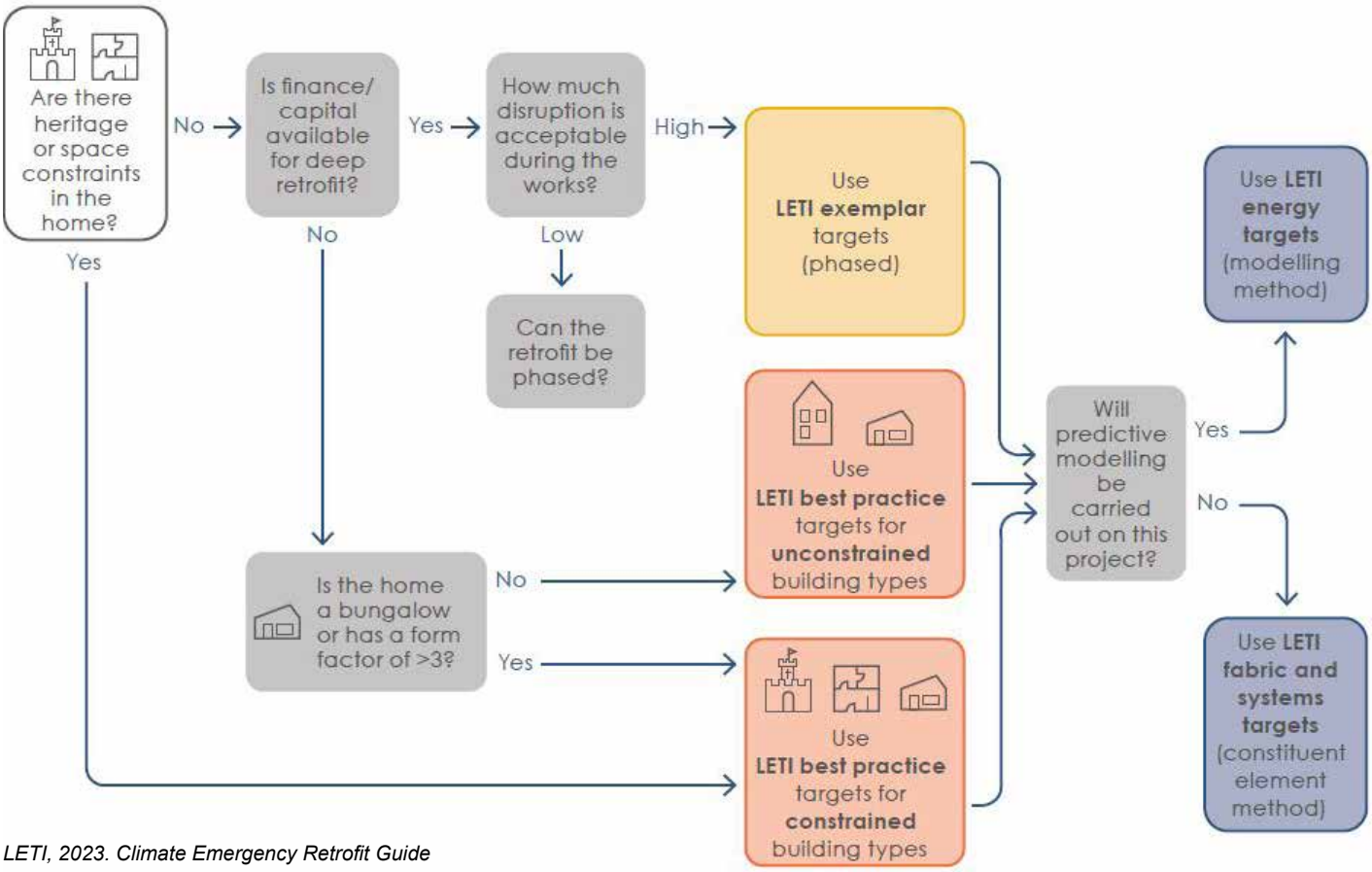
We aim to improve health and wellbeing, and reduce fuel poverty by improving the energy efficiency of homes, and allowing decarbonisation of heating systems.

There are various performance and measurement standards indicated by the impartial group Low Energy Transformation Initiative (LETI).

Fabric first approach

All options presented here centre a "fabric first" approach. This involves surveying the existing building, analysing performance and identifying where upgrades can be made to the building elements. *'Best practice retrofit is fabric first, improving fabric energy efficiency before introducing low carbon technologies. Best practice retrofit can be carried out in one go, or phased according to a well considered Retrofit Plan.'* LETI

We recommend utilising LETI's guidance for performance targets when assessing retrofit options.



LETI, 2023. Climate Emergency Retrofit Guide

LETI, 2023. Climate Emergency Retrofit Guide. [PDF] Available at: https://www.leti.london/retrofit [Accessed 4 September 2024].

Twinn, C. and contributors, 2023. Retrofit-at-Scale: Upgrading Our Homes to Meet UK Climate Targets. Sustainable Development Foundation. Available at: https://sdfoundation.org.uk/news/retrofit-at-scale [Accessed 23 Aug. 2024].

Review of Pathways

While the assessment, design and delivery process follows a linear path, there are multiple pathways for householders.

All can be accommodated within the framework, and the first step is always to assess the home with an appropriate survey.

Pathway	Householder Journey
Small measures – DIY	
Small measures are removable changes to the building, eg thick interlined curtains, draught proofing to windows and doors, shutters and blinds, chimney stuffers. Loose loft insulation blankets may be included in this category.	*There can be huge benefits to managing cold-spots, draughts and colder weather through DIY reversible methods.* *Changeworks provided packs of small measures to folk who attended the 'Meet the Experts' event, including draught excluders, radiator foil, and LED bulbs. Measures were easy to install, with clear instructions.* *DIY measures can help empower residents to make more significantly beneficial upgrades.*
Upgrade while you improve - step-by-step retrofit	
It's possible to make step-by-step changes to upgrade the fabric of a home while at the same time improving the accommodation. 'Improvements' may include new bathrooms and kitchens, larger maintenance projects, extending the ground floor or the whole building, replacing cladding or repointing, or replacing an older boiler.	*All homes need improvements from time to time. These changes can be disruptive, and require planning and funding.* *Residents will experience relatively less disruption if they make energy efficiency upgrades, and the aesthetic benefits will be evident.*
BASIC Retrofit	
The impartial group Sustainable Development Foundation have published a guide to BASIC retrofit, which aims to provide guidance for a 'good enough' building performance. 'BASIC is intended to be a performance standard and not a set of prescriptive retrofit measures... BASIC aims to deliver a 50% heat demand reduction averaged across the stock for a cost that is a third of typical current best practice... and be applicable to two thirds of UK homes.'	*BASIC retrofit is likely to include wall insulation, appropriately designed for the dwelling's construction, age and designation. For example, a solid stone building in the conservation area may receive internal wall insulation to street-facing elevations, and less disruptive external wall insulation to the rear elevations.* *The dwelling's improved efficiency will make a lower-carbon heating system economically viable for the resident.*
Deep Retrofit	
Deep retrofit achieves very high performance, we assume a reduction in heating demand of over 70%. When considering a deep retrofit, this is likely to be more invasive and disruptive to the resident, however the results may be worth the challenge, depending in the context. *Deep retrofit may be suitable for a proportion of residents, see LETI flowchart on previous page for details.*	*Significantly increased insulation and airtightness of the dwelling must be carefully managed to avoid issues of moisture movement, so a deep retrofit is likely to include careful sequencing of work.* *Deeper measures could involve greater disruption, however the overall benefits of improved comfort, lower bills, and improved internal air quality will be felt by the resident.*

Less disruptive
Lower impact

More disruptive
Greater impact

Review of Pathways
How the project may progress

While the process of analysis, planning and undertaking works will be managed in a linear progression, the process of driving demand may be piecemeal as residents have need to engage with the project.

There are a number of scenarios, all or some of which may occur.

Our plans are flexible enough to manage all scenarios and achieve positive outcomes.

Early Adopters	
Early adopters who have already started home renovations, live in a lower performing home, have recently moved, or have other motivations for making changes will be somewhere on the journey to home upgrades already. *These folk are likely on our radar already, on our mailing list or otherwise in touch with the project team.*	*It makes sense to contact early adopters first, to catch opportunities to manage work in an 'upgrade-as-you-improve' scenario, minimising disruption.*
Those in, or at a high risk of fuel poverty	
We aim to move everyone out of risk of fuel poverty, however many will be already in a situation of unaffordable bills. *All homes are off-gas in the area, increasing the risk of fuel poverty and reducing fuel resilience.*	*We will continue to reach out using all our platforms to ensure we spread our message to those who need help most.* *IPWA are committed to the welfare of residents, and continue to signpost help.* *We hope to break down any barriers - lack of time, communication barriers - and provide a local, friendly face to help manage the situation and make a robust and deliverable plan with the appropriate support in place for all households.*
Spatial clusters	
Making a coordinated plan for similar homes in a cluster achieves economies of efficiency. *All residents can benefit, if the residents are supported appropriately throughout the process.*	*All residents in a cluster would be contacted - either door knocking, or through the post - and invited to engage as individuals or ideally together as a group, to collate their ambition and barriers.* *Individual plans would be created, based on shared information and with an economy of scale achieved.* *Work packages could be bundled to attract a wider pool of tenderers.* *We would never suggest to impose change on someone's home, or make plans for individual dwellings which didn't involve and centre the residents.*
Similar homes within an archetype	
As above, there are economies of effort and time to be gained through assessing similar homes as a package. *An alternative approach is to use the learnings from one home to inform recommendations for a similar building type. This has limitations, however details and materials if applied correctly as part of the overall plan for an individual dwelling, will have benefits.*	*With each plan that is created, we will build a library of methods, lessons, details and materials which can be applied to the next technical challenge. This information will be anonymised.* *There is a parallel strand of measuring impact and learning from each other.*

Appendices

What are the risks?

Twinn, C. and contributors, 2023. Retrofit-at-Scale: Upgrading Our Homes to Meet UK Climate Targets. Sustainable Development Foundation

'For a mass rollout to be viable and practical, industry needs to deliver retrofits for less cost, and be able to guarantee it actually delivers on the energy savings. This will involve changing the way we do retrofit, including using more appropriate products, and more integrated implementation processes. The industry will need to deliver far more retrofits using less time, with the expected limited workforce availability'

There are risks in every project, and this is no exception.

We believe the biggest risk is to 'do nothing'; to rely on others to fix the climate crisis and fuel poverty, and to carry on as we are.

We look to others — eg the National Retrofit Hub — who are testing options and in some cases correcting previous mistakes, to ensure we appreciate and measure risk.

Stage	Risk	Mitigation
Drive Demand	People live busy lives, engagement can be low, especially at the start of long term projects.	Build capacity, tap into existing networks and projects. Keep the project rolling with generic advice and advice available on our website, and trusted agencies signposted. East Lothian Climate Action Network, and the thermal camera project is a great example, to draw people in as the project continues.
Provide Information & Advice	We want to bring everyone along the journey and share our stories of home energy wins. Lack of trust could hamper that goal.	Be clear and focussed with the information we share with the community, who we are, and what we are doing. Only share information from impartial, trusted agencies with checks and references, such as Energy Savings Trust, SEDA, LETI, Changeworks.
Making a plan for a home or group of homes	Over ambition, lack of coordination, too expensive for the project budget.	Every home is as individual as the resident. Centre a whole dwelling plan around the householder and their aspirations. Make a whole-house plan then assess in terms of connecting groups of dwellings and coordinating work for better returns. Follow guidance and templates such as those created by People Powered Retrofit, to provide options and pathways which have flexibility.

What are the risks?
Future Stages

Stage	Risk	Mitigation
Home upgrades take place at scale	Risk to buildings and ultimately health can be caused by poor design, incorrect sequencing of work, unsuitable materials, incorrect detailing, and poor installation of home upgrades. The most common detrimental effects are increased risk of mould and damp caused by upgrades 'trapping' moisture inside rooms and/or the building fabric.	PAS 2030:2023 is an industry standard assessment method which ensures high-quality, compliant assessment, design and installation of energy efficiency measures in existing homes, advancing sustainability and performance. We would work with appropriately trained assessors, designers, and installers. Post-upgrade evaluation would ensure upgrades were installed correctly and in line with the design, and of course the residents' wishes.
Financing and funding	Works may not find funding, either from 'willing to pay' householders or from other funding methods.	We are looking at the range and potential to aggregate funding options, including hyper-local BeGreen funding, and national schemes [GBIS, ECO4, Home Energy Scotland grant]. We signpost funding calculators by Snugg and Home Energy Scotland. Any individual plan would be staged to ensure if the work stops at any point, there is no detriment to building fabric. To fund 'gaps' in the system, and ensure impact reporting can be delivered, we are looking to secure Community Benefits.
Supply chain, skills and standards	Lack of local workforce. Lack of trusted tradespeople. Lack of tradespeople for ongoing maintenance.	A strategic, scalable approach has a number of benefits, creating more work-flow certainty for local trades, allowing training and capacity to be built up. Connecting with contractors on the local authority's framework assures quality and accountability, through PAS2035 and Trustmark accreditation.
Policy changes	Planning policy and national framework priorities change, away from the current support for area-based schemes.	The science on benefits of fabric improvements and retrofit is long-proven, and independent of political will. The housing and climate emergencies persist, these are cross-party global issues.

What are the gaps in the system, and how can we address them?

Adapted from Dark Matter Labs, London Community Retrofit report

What is missing from the current approaches to retrofit?	How can **InsulateInnerwick** address them?
Early householder engagement and emphasis on the user journey through the entire process	We have begun this work, raising awareness and prompting discussion through events and the IPWA newsletter
An approach that sees the house, its inhabitants and the neighbourhood as an integrated system	The foundation of our work is the Local Place Plan; rooting action in local knowledge, ambition and love.
Investment in long term skills development and prioritising local networks of contractors and delivery partners	We see a local demonstrator as an way to build skills for the future, building up an accredited, ambitious and sustainable workforce.
Opportunities for attractive, equitable, low-costs finance and developing collective buying power	The 'One-Stop-Shop' project will attract finance in a blended model around a single place.
A long-term policy landscape and a streamlined approach to accessing funding	We encourage partnership working with East Lothian Council housing, energy and planning departments.
Accounting for whole-life carbon and wider impact of materials use and supply chains	We are exploring local materials and low carbon materials as a physical library for the householders to access, in collaboration with East Lothian Council's Conservation Area officer.
Wider definitions of value creation and focus on designing for and capturing the multiple co-benefits of retrofit as a catalyst for neighbourhood transition	Quality assurance, post-upgrade support and and impact reporting will record the impacts on inhabitants. We hope the impacts reach further than individual homes, improving community resilience and sense of civic pride.
Detrimental effects to building fabric due to poor planning, poor installation and inadequate inspection methods.	Appropriate planning for work, and inspection by an accredited assessor is crutial to ensure work is undertaken correctly. This will mitigate health risks to the inhabitant and damage to building fabric. Our medium- and long-term plans highlight the importance of this role as part of an end-to-end framework.

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