



# LOCAL HEAT AND ENERGY EFFICIENCY STRATEGIES

## HISTORIC AND TRADITIONAL BUILDINGS



HISTORIC  
ENVIRONMENT  
SCOTLAND

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EACHDRAIDHEIL  
ALBA

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# LOCAL HEAT AND ENERGY EFFICIENCY STRATEGIES (LHEES) HISTORIC AND TRADITIONAL BUILDINGS

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## 1. INTRODUCTION

This brief document is aimed at anyone producing, revising or working with Local Heat and Energy Efficiency Strategies (LHEES) in relation to traditionally constructed buildings and the historic built environment.

It does not provide detailed, building-specific guidance, instead it sets out broad, general principles for working with traditional buildings and signposts readers to further sources of information. It looks at planning considerations as well as at the technical aspects of making traditional and historic buildings more energy efficient.

LHEES, which are produced by local authorities, cover heat and energy efficiency for all built environments. As 19% of buildings in Scotland are of traditional construction, it is essential for LHEES to take their specific needs and characteristics into account.

Table 1 matches sections of this document to relevant clauses within the [guidelines produced by the Scottish Government for LHEES](#). It is not comprehensive, but indicative of how traditional buildings should be factored into LHEES plans.

As always, each building should be judged on its own merits. However, the guidance presented here will serve as a baseline for those involved with the development of LHEES.

**Table 1: How the content of this document relates to the Scottish Government’s guidelines for LHEES.**

Scottish Government LHEES guidance clause	Relevant section within this document
1.13, note 5: ‘installing those measures recommended by the EPC assessment as being technically feasible and cost-effective for that building.’	Section 5.1
3.3 ‘The local authority should complete a review to set out the national and local policies, targets and strategies that are linked to, impact, or could be impacted by LHEES.’	Section 2
3.5 ‘Strategic Zoning and Pathways.’	Section 2

Scottish Government LHEES guidance clause	Relevant section within this document
3.6 'In practice, this could be clusters of buildings that have similar levels of poor building energy efficiency, have similar pathways or technology interventions to decarbonise the heating system, have similar heritage status or could be a smaller subset of buildings considered as part of existing place-based or city-wide activity.'	Section 3 Section 4
4.12 ' <i>Energy efficiency and other outcomes:</i> The LHEES Considerations that focus on poor building energy efficiency, as well as mixed-tenure, mixed-use and historic buildings should start to indicate at the strategic level the potential opportunities for building-level energy efficiency retrofit and the number of buildings that may require additional focus through support and regulation in the future.'	Section 3 Section 5
4.16 'The first Delivery Plan should be framed around what can be delivered now given the existing and known policy landscape.'	Section 2 Section 5
4.17 'Monitoring and evaluation should also be considered as part of the Delivery Plan process.'	Section 5
4.18 'Wider policy that LHEES is to support regionally and locally.'  'Consideration of constraints, resources and new/ future developments that could impact any decision to finalise a Delivery Area - this includes any level of disrepair to the building stock.'	Section 2 Section 3

Scottish Government LHEES guidance clause	Relevant section within this document
Annex A ' <b>Poor building energy efficiency</b> . LHEES should identify possible locations at a strategic and delivery level where poor building energy efficiency exists across the local authority. This could be low levels of wall insulation, loft insulation or glazing - or a combination of these measures.'	Section 3 Section 5
Annex A ' <b>Mixed-tenure, mixed-use and historic buildings</b> . For mixed-tenure and mixed-use (including the non-domestic sector), building level intervention is likely to be the most effective way to reduce emissions caused by heating. For historic buildings (including those in listed buildings and conservation areas), these are categories that may require tailored approaches to the installation of zero emissions heat and energy efficiency solutions, or where specific advice and support might be available. Identifying such areas will enable the public sector to coordinate or regulate to achieve this outcome. LHEES should identify at a strategic and delivery level where there are buildings of mixed-tenure or mixed-use and also where there are historic buildings (covering listed buildings and conservation areas).'	Section 3 Section 5 Section 6

## 2. NATIONAL POLICY AND STRATEGY CONTEXT FOR THE HISTORIC ENVIRONMENT

### 2.1 Historic Environment Policy for Scotland (HEPS)

In preparing their LHEES, local authorities should take into account national-level policy and strategies for the historic environment.

The [Historic Environment Policy for Scotland](#) (HEPS) is a policy statement for guiding decision-making relevant to the whole of the historic environment. It is



used at all levels, from local to national. Alongside it, Historic Environment Scotland (HES) has also recently published a statement called [Pointing the Way to the Future](#), which discusses the climate and nature crises and our approach to our regulatory and advisory services in the planning and other consenting systems.

There are six policies within HEPS that define how the historic environment should be managed. The policy document sets these out along with the core principles that underpin them, and explains how they should be applied.

All six policies are applicable to LHEES, with HEP3 and HEP4 being particularly relevant:

**HEP3:** Plans, programmes, policies and strategies, and the allocation of resources should be approached in a way that protects and promotes the historic environment. If detrimental impact on the historic environment is unavoidable, it should be minimised. Steps should be taken to demonstrate that alternatives have been explored and mitigation measures should be put in place.

**HEP4:** Changes to specific assets and their context should be managed in a way that protects the historic environment. Opportunities for enhancement should be identified where appropriate. If detrimental impact on the historic environment is unavoidable, it should be minimised. Steps should be taken to demonstrate that alternatives have been explored and mitigation measures should be put in place.

## 2.2 Our Past, Our Future

[Our Past, Our Future](#) is the new strategy for Scotland's historic environment. It sets out a national mission to sustain and enhance the benefits of the historic environment, for people and communities now and in the future. The strategy is a collaborative one, owned and delivered by everyone. All of us – the public sector, business, the charitable and third sectors, private owners and communities across the country – have a role to play. When this strategy talks about the things 'we' can do, it refers to everyone in Scotland. The public sector, led by Historic Environment Scotland, will work to facilitate, enable and drive delivery of key elements of the plan, and to co-ordinate monitoring and reporting on delivery.

This strategy targets areas where action in support of the historic environment can deliver the most benefit for the people of Scotland over the next five years. Through consultation and engagement, three priority areas for action have been identified:

- Delivering the transition to net zero.

- Empowering resilient and inclusive communities and places.
- Building a wellbeing economy.

To help further target resources, align activity and define success, the strategy identifies several outcomes under each priority heading towards which we can all work together. It also identifies some high-level actions that could help to realise these outcomes. More actions will be developed over time.

## 2.3 National Planning Framework 4

The [National Planning Framework](#) (NPF4), adopted in February 2023, is a spatial strategy for Scotland that contains detailed national policy on a number of planning topics. It is part of the Development Plan and so influences planning decisions, which must now be determined with reference to NPF4 and Local Development Plans (LDPs). It states that LDPs should take into account the area's Local Heat & Energy Efficiency Strategy (LHEES).

Policy 19 of the Framework supports decarbonised solutions to heat and cooling demand.

Policy 7a states that proposals with a potentially significant impact on historic assets or places should also be informed by national policy and guidance on managing change in the historic environment. See section 4 LHEES and Listed Buildings of this document for more.

## 2.4 Strategic Environmental Assessment

The Scottish Government Strategic Environmental Assessment (SEA) Gateway has been working with the Consultation Authorities (SEPA, NatureScot and HES) and the responsible authorities (the local authorities) to reach a shared understanding of the information required for screening reports for LHEES. More information on this can be sought by contacting the Scottish Government SEA Gateway at [sea\\_gateway@gov.scot](mailto:sea_gateway@gov.scot).

# 3. HISTORIC ENVIRONMENT INFORMATION

## 3.1 How to define the scope of the historic environment

There are a number of useful sources of information that can help in determining the scope of the historic environment.

When considering buildings with statutory protection for conservation areas, it is best to make enquiries directly to the local authority. These will most likely be listed in local development plans, but council planning departments will confirm.

For listed buildings, the [Historic Environment Portal](#) contains both data downloads for Geographic Information Systems (GIS) and searchable,

downloadable lists and maps. Results can be filtered by local authority: for example, Fife has 4,877 listings, for which data can be downloaded as a CSV file.

It is worth remembering, however, that not every listing will be a building. Other types of structure such as bridges, industrial machinery or street furniture can also be listed. Conversely, sometimes a single listing can encompass a large number of buildings or dwellings. For instance, [1-14 Hope Street \(LB40902\)](#) in St Andrews is a single listing.

HES is currently working on a pilot project exploring how our listed building data can be connected to unique property reference numbers (UPRNs) to facilitate links to third-party data. While this functionality won't be available for the first iteration of LHEES, if developed further, it may be valuable in informing the baseline evidence for future iterations.

### 3.2 Identifying unlisted historic buildings

The majority of traditionally constructed buildings are not currently listed or situated within a conservation area, so identifying them in a LHEES plan will depend on local knowledge and/or professional assessment of a building's age.

It should not be assumed that areas with a high concentration of traditionally constructed or historic buildings automatically have poor energy efficiency. The performance of traditional buildings can be significantly improved; in fact, this may well be easier to achieve for traditional buildings than for other building types. For example, system-built houses from the postwar period may prove harder to make energy efficient than traditional buildings. The long-term durability of traditional buildings is also an important factor that should not be overlooked.

## 4. LHEES AND LISTED BUILDINGS

### 4.1 Principles of listed building consent

Historic Environment Scotland's [Interim Guidance on the Principles of Listed Building Consent](#) is relevant guidance for listed building consent applications involving LHEES. It suggests that the majority of listed buildings are adaptable, and that change should be managed to protect a building's special interest while enabling it to remain in active use.

Although each case should be judged on its own merits, in general terms listing rarely prevents adaptation to modern requirements but ensures that work is done in a sensitive and informed manner.

## 4.2 Managing change in the historic environment

When a proposed change has the potential to affect the historic environment, decision-makers should consider the policies and principles set out in the Historic Environment Policy for Scotland. This policy is supported by guidance on specific topics in the [Managing Change in the Historic Environment](#) series.

The relevant guidance for any application will depend on the specific proposals and the historic asset or place that may be affected. For LHEES, there are three guidance notes that are likely to be particularly relevant:

- [Use and Adaptation of Listed Buildings.](#)
- [Micro-renewables.](#)
- [External Fixtures.](#)

### 4.2.1 Use and adaptation of listed buildings

The [Use and Adaptation of Listed Buildings](#) guidance is primarily aimed at larger, more complex buildings whose future is uncertain. It aims to support and enable the use, re-use and adaptation of such buildings through solutions such as energy improvements or climate change adaptation, which can help keep a building fit for purpose and safeguard its future.

There are also a number of case studies associated with this guidance, covering a range of different building types – they are [available on the HES website](#).

### 4.2.2 Micro-renewables

The Managing Change series includes [guidance on micro-renewables](#). As this guidance was published in 2016, it is somewhat limited in the specifics of the technology it covers. However, its key message is that renewable energy technology can be supported where the character of a historic building or place can be protected through careful siting and design.

The guidance notes that micro-renewable installations should be planned carefully to minimise intervention affecting historic character, while balancing the potential of available renewable energy sources. It includes sections on solar, wind and hydro power along with advice on heat pumps and biomass.

### 4.2.3 External fixtures

Historic Environment Scotland also has [guidance on external fixtures](#) that may be useful. It notes that new external fixtures should be carefully sited in order to preserve the special architectural or historic interest, integrity and fabric of a building.

Although this guidance does not specifically mention heating and energy infrastructure, it sets out general principles on the siting of any new fixtures and

associated cabling or pipework. It advises situating fixtures in locations where their impact on a building will be minimal, such as secondary elevations, outbuildings, roof valleys or flats that are out of sight from principal views.

If siting a fixture on a prominent elevation is unavoidable, the guidance advises that it should be discreetly positioned and any damage to architectural features should be avoided. It also notes that painting new fixtures to match the colour of stonework can sometimes reduce their impact.

## 5. TECHNICAL GUIDANCE

Historic Environment Scotland's technical guidance around retrofit for energy efficiency centres on ensuring compatibility with existing building fabric. Traditionally constructed buildings have particular performance characteristics relating to moisture movement, ventilation and construction techniques, and it is important that any retrofit measures take these factors into account.

Retrofit changes the way a building works in terms of moisture and condensation. Again, it is imperative that this is fully factored in when planning and carrying out any fabric improvement measures.

Historic Environment Scotland has undertaken a wide range of monitoring and evaluation as part of its programme of site-based technical research. This has included monitoring of moisture and humidity levels within buildings, as well as measuring in-situ U-values to assess thermal performance. A comprehensive review of the impact of these interventions has been published in our [Technical Papers](#) and [Refurbishment Case Study](#) series.

There is a wide range of post-retrofit monitoring and evaluation work that can be carried out on traditional buildings. This vital work is recommended in the Scottish Government's LHEES guidance, as it is the only way to determine the success or otherwise of retrofit.

### 5.1 Energy Performance Certificates (EPCs)

When considering recommendations from EPCs as applied to traditional buildings, it is essential to take into account the particular needs of the buildings. The HES [Guide to Energy Retrofit of Traditional Buildings](#) addresses this issue in its section on Energy Performance Certificates. There is also considerable relevant content in [Refurbishment Case Study 37: Holyrood Park Lodge, Edinburgh](#).

The methodology for producing EPCs through Reduced data Standard Assessment Procedure ([RdSAP](#)) is changing, with the latest version likely to come into use in 2024. HES will be producing guidance on this.

## 5.2 Skills and qualifications

The importance of a skilled and knowledgeable workforce cannot be underestimated when considering how to meet LHEES objectives.

Historic Environment Scotland was part of a group which, under the auspices of the Energy Skills Partnership, created the [Installer Skills Matrix](#). This matrix sets out a qualification structure for those undertaking retrofit to buildings. It suggests that workers on traditionally constructed buildings should hold the qualification Level 3 Award for Energy Efficiency Measures for Older and Traditional Buildings. This is also a requirement for a number of roles under [PAS 2035](#), the British standard for retrofitting dwellings. PAS 2035 has recently been updated, with a wider requirement for holding this qualification.

It is also important to consider the skills needed for repair and maintenance of buildings prior to retrofit. Although this point is not specifically addressed within LHEES, it is vital for buildings to be in good repair and maintenance before retrofit takes place.

HES has a well-established suite of technical publications related to the retrofit of traditional buildings, centred around the [Guide to Energy Retrofit of Traditional Buildings](#). There are also numerous related refurbishment case studies and technical papers that support the guide. When local authorities are looking to implement measures under LHEES, this guidance will serve as a useful baseline body of knowledge.

A 'fabric first' approach is vital in energy efficiency retrofit. This type of approach considers not just retrofit, but also repair and maintenance needs.

Keeping buildings in good repair is critical to the long-term success of retrofit and to ensuring that they continue in operation, meeting circular economy principles. A wide range of publications containing guidance on many aspects of the repair and maintenance of traditional buildings is available through Historic Environment Scotland's website.

## 5.3 Low-carbon heat and power

Technical guidance on the use of micro-renewables within traditional buildings can be found in HES's [Short Guide: Micro-Renewables in the Historic Environment](#).

There is also a managing change guidance document around the use of micro-renewable technology: [Managing Change in the Historic Environment: Micro-renewables](#).

Further research into the use of micro-renewables, particularly air source heat pumps, is in the pipeline. There are some existing resources on this topic produced by other heritage agencies, such as Historic England's [Installing Heat Pumps in Historic Buildings](#).

In terms of low-carbon heat and renewables, there needs to be a careful assessment of existing traditional buildings in order to ensure that any measures undertaken are compatible with the building being improved. This issue is not unique to traditionally constructed buildings – however, an awareness of the specific characteristics of traditional buildings and how they work is central to the success of any intervention, whether to fabric or services.

## 6. EMBODIED CARBON AND THE CIRCULAR ECONOMY

### 6.1 Embodied carbon

In the context of traditional buildings, the term 'embodied carbon' relates to the carbon emissions associated with materials used and construction processes across the whole life of a building. It includes emissions from materials extraction, product manufacture, transport to site, construction processes, maintenance, repair, refurbishment and end-of-life processes.

Saving carbon is not all about operational energy reductions as achieved through retrofit. There are also important savings to be made from the embodied carbon. Currently, embodied carbon accounts for 20% of built environment emissions, and this figure is projected to rise to over 50% by 2035 as operational carbon decreases. This makes embodied carbon a priority area for reduction that can no longer be ignored if we are to meet our net zero targets. However, embodied carbon is currently unregulated in Scotland. It therefore falls to local authorities to drive the inclusion of measurement and mitigation of embodied carbon within the LHEES.

When planning energy efficiency improvements to a building, it's important to factor in the embodied carbon of the measures under consideration in order to ensure they do not exceed the expected operational savings. This approach can also help us maximise the carbon savings made from an energy efficiency project.

The embodied carbon of a product, material or project can be measured by a life cycle assessment (LCA). All LCAs should follow the standards [EN 15978: Sustainability of construction works](#).

Measurement of the embodied carbon in a product is usually undertaken by the product manufacturer and published as an Environmental Product Declaration

(EPD). EPDs should be verified to ensure they meet the correct standards. The number of products with EPDs still tends to be quite low, but is increasing.

Retaining buildings and retrofitting them appropriately reduces the embodied carbon emitted by retrofit. A recent study by Historic England found that for a typical existing traditional dwelling, retrofitting saves more carbon than demolition and replacement.

The basic ways to reduce the embodied carbon of a project are to:

- Retain and retrofit existing historic buildings appropriately, using HES guidance.
- Retain existing materials where possible, to reduce the waste generated by retrofit works and the need for new materials to replace those lost.
- Design the retrofit so that it retains the special interest of a building; this will give the building the best chance of continued use and survival.
- Design the retrofit so that it is long-lasting, maintainable and repairable.
- Use low-carbon materials such as pre-used materials, materials with recycled content, or those derived from natural sources.
- Source materials locally, to reduce transport emissions and support the development of local supply chains.
- Source natural materials from suppliers who use sustainable or regenerative growing practices.
- Work with suppliers to support them in reducing the emissions associated with their products.

## 6.2 The circular economy

The circular economy is a key policy area in Scotland, being driven by [Scotland's Circular Economy Strategy](#), [Scotland's Climate Change Plan](#) and the forthcoming [Circular Economy Bill](#). It is also being integrated into other policy areas such as [National Planning Framework 4](#), which includes a presumption in favour of retention and re-use of existing buildings, minimising waste.

Maximising circular economy principles in energy efficiency projects ensures that environmental and social impacts are considered and can be minimised. The earlier circular economy principles are integrated into strategies and projects, the more effective they can be.

Traditional buildings are already great examples of assets that are circular in nature, as they have lasted and are repairable and upgradable. It's therefore important that efforts are made to retain these circular qualities when carrying out upgrades and retrofits. This means thinking about how retrofit design and material choices can support long life, repairability and flexibility to future changes, as well as waste reduction or elimination during construction and at end of life.



The benefits of a circular economy approach to building projects include:

- Reducing the carbon emissions of a project.
- Minimising waste and associated costs and impacts.
- Considering the whole-life impacts of a retrofit and seeking to minimise these.
- Helping to build local supply chains and stimulate local economies.
- Reducing our reliance on finite raw materials and fossil fuels.
- Creating opportunities to design in measures for improved health and wellbeing, while designing out waste.

## 7. WHAT CAN YOU DO WITH LHEES?

LHEES will support projects by allowing you to:

- Integrate circular economy principles within your strategies, including a preference to retain and retrofit over demolition.
- Celebrate and retain the high-quality historic environment that has already stood the test of time and use [HES guidance](#) to upgrade effectively.
- Develop and provide guidance for the integration of circular economy principles into retrofit from planning to design, procurement and construction phases.
- Consider your whole supply chain, what materials and skills you will need to ensure your retrofit approach.
- Integrate circular economy principles and develop these locally.
- Develop material sharing and re-use networks with partners and neighbouring local authorities.
- Develop long-term strategies beyond initial retrofit measures to enable the continued maintenance and repair of buildings.
- Develop and define key performance indicators for measuring the success of circular economy principles; for example, targets for the amount of local materials procured, waste generated per project, quantity of new materials used per project, or quantity of natural materials used per project.

## 8. LINKS TO RESOURCES AND FURTHER READING

### General themes

Circular Economy: [The Circularity Gap Report: Scotland](#)

Historic Environment Scotland: [Guide to Energy Retrofit of Traditional Buildings](#)

UK Green Buildings Council: [The Circular Built Environment Playbook](#)

Zero Waste Scotland: [Designing out construction waste: A guide for project design teams](#)

Zero Waste Scotland: [Procuring resource efficient construction projects](#)

Zero Waste Scotland: [Site waste management plan](#)

### Scottish Government links

[Circular Economy Bill](#) (forthcoming)

[Energy efficiency, zero emissions and low carbon heating systems, microgeneration and heat networks for homes](#)

HEPS Policy Statement: [Historic Environment Policy for Scotland \(HEPS\)](#)

[National Planning Framework 4](#)

[Scotland's Circular Economy Strategy](#)

[Scotland's Climate Change Plan](#)

Scotland's new strategy for the historic environment: [Our Past, Our Future](#) (HES collaboration)

Scottish Government for LHEES: [Local heat and energy efficiency strategies and delivery plans: guidance](#)

Scottish Government Strategic Environmental Assessment Gateway:  
[sea\\_gateway@gov.scot](mailto:sea_gateway@gov.scot)

### Historic Environment Scotland links

[Interim Guidance on the Principles of Listed Building Consent](#)

Listed buildings: [Listed buildings portal](#)

[Managing Change in the Historic Environment](#) series

Managing Change in the Historic Environment: [Use and Adaptation of Listed Buildings](#)

[Pointing the Way to the Future](#)

[Refurbishment Case Study 37: Holyrood Park Lodge, Edinburgh](#)  
[Short Guide: Fabric Improvements for Energy Efficiency](#)

## REFURBISHMENT CASE STUDIES

This series details practical applications concerning the conservation, repair and upgrade of traditional structures. The Refurbishment Case Studies seek to show good practice in building conservation and the results of some of this work are part of the evidence base that informs our technical guidance.

All Refurbishment Case Studies are free to download from the HES website:

[www.historicenvironment.scot/about-us/what-we-do/conservation/refurbishment-case-studies/](http://www.historicenvironment.scot/about-us/what-we-do/conservation/refurbishment-case-studies/)

## TECHNICAL PAPERS

Our Technical Papers disseminate the results of research carried out or commissioned by Historic Environment Scotland. They cover topics such as thermal performance of traditional windows, U-values and traditional buildings, keeping warm in a cool house, and slim-profile double glazing.

All Technical Papers are free to download from the HES website:

[www.historicenvironment.scot/technical-papers](http://www.historicenvironment.scot/technical-papers)

## INFORM GUIDES

Our INFORM Guides provide overviews of topics relating to traditional skills and materials, building defects, and the conservation and repair of traditional buildings. The series has over 50 titles covering topics such as ventilation in traditional houses, the maintenance of sash and case windows, domestic chimneys and flues, damp causes and solutions, improving energy efficiency in traditional buildings, and biological growth on masonry.

All INFORM Guides are free to download from the HES website:

[www.historicenvironment.scot/inform-guides](http://www.historicenvironment.scot/inform-guides)

## SHORT GUIDES

Our Short Guides are aimed at practitioners and professionals, but may also be of interest to contractors, homeowners and students. They provide advice on a range of topics relating to traditional buildings and skills.

All Short Guides are free to download from the HES website:

[www.historicenvironment.scot/short-guides](http://www.historicenvironment.scot/short-guides)

## THE ENGINE SHED

The Engine Shed is Scotland's building conservation centre. Run by Historic Environment Scotland, it is a hub for everyone to engage with the nation's built heritage. We offer training and education in traditional buildings, materials and skills. For more information, please see our website at [www.engineshed.scot](http://www.engineshed.scot).



SCOTLAND'S BUILDING CONSERVATION CENTRE



Historic Environment Scotland is the lead public body established to investigate, care for and promote Scotland's historic environment.

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