

Energy Efficiency Measures for ~~Heritage~~ Traditionally Constructed Buildings

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A traditional building is...

- “a *building* or part of a *building* of a type *constructed* before or around 1919:
- a) using *construction* techniques that were commonly in use before 1919; and
- b) with permeable components, in a way that promotes the dissipation of moisture from the *building fabric*”

Traditional Buildings





Maintenance:
Buildings should be
in a good state of
repair prior to
retrofit

LISTING

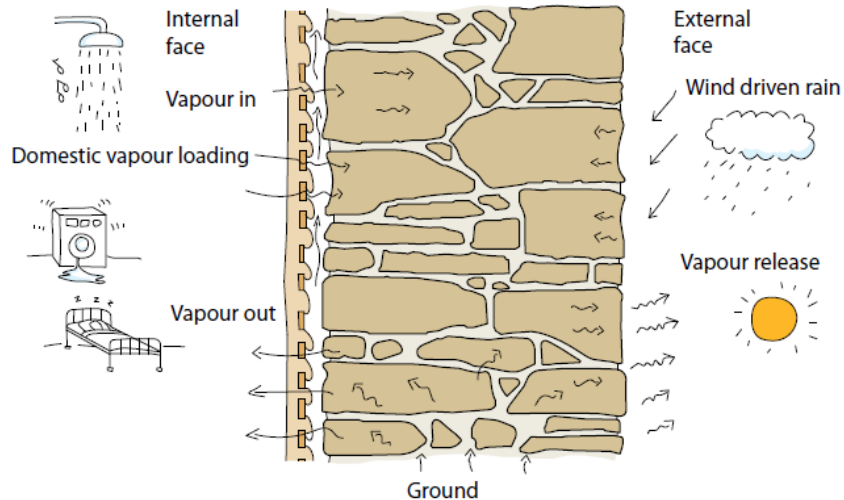
Listing should be viewed as:

- Management tool to inform the planning system
- To inform planning decisions and the management of heritage buildings
- To provide a check in the planning process
- To prevent unthinking change

LISTED BUILDINGS

- The local authority or National Park are the first point of contact.
- Homeowners should always ask first if a measure requires listed building consent.
- If contacting Historic Environment Scotland, email the Planning, Consents and Advice Service at hmenquiries@hes.scot.
- The majority of traditional buildings are not listed.
- Those that are should not be regarded as “untreatable”.

Sources of moisture in a traditional building



- Moisture in buildings is often the product of habitation such as showers, cooking etc
- Building defects are a further cause of moisture entering a building and should be rectified
- No wall should ever be constantly wet



“Breathability”

- Breathability in buildings should not be confused with air movement but entirely refers to the way moisture moves in relation to the building fabric. Breathability is based upon three essential mechanisms of moisture transport:
 - Vapour permeability
 - Hygroscopicity
 - Capillarity
- 

What this means for energy efficiency

- If vapour impermeable materials and vapour barriers are installed, in instances where warm moist air travels behind these linings the air will quickly cool and form condensation.
- Where non permeable and non hygroscopic materials are used this will enter building fabric which will have little chance to dry out as it has been made colder due to improved energy efficiency.

Neglecting internal moisture can make a building uninhabitable



[illegible]



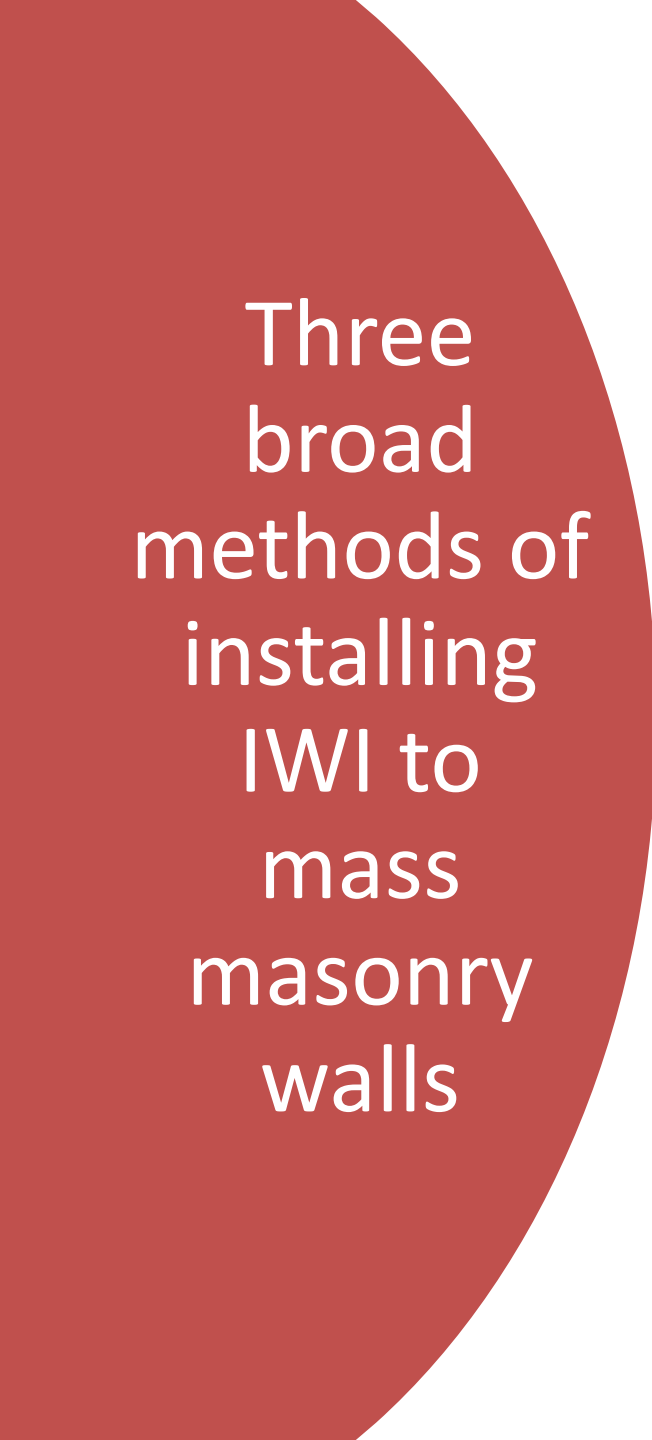
Humidistat controlled ventilation



Need to avoid
Defects in
retrofit...



Insulating traditional mass masonry Walls

A large red circle on the left side of the slide, containing the title text.

Three broad methods of installing IWI to mass masonry walls

- Putting a material behind an existing wall lining
 - Applying a material directly to the masonry
 - Building a frame and using this to hold a board based material in place
 - There are pros and cons for each method, no method is applicable in all situations
- 
- Several short, curved purple lines of varying lengths and orientations located in the bottom right corner of the slide.



Cellulose Insulation
behind lath and
plaster wall lining,
u-value 0.5

Materials can be applied directly to mass masonry where no frame is to be built out 30mm Calcium silicate board applied directly to mass masonry, u-value improvement from 2.1 to 1



10mm Aerogel
blanket fixed directly
to mass masonry





80mm Wood fiber board
u value 0.19

External
insulation may
be appropriate
in some
instances
where
appearance is
not an issue
but brings
technical risks

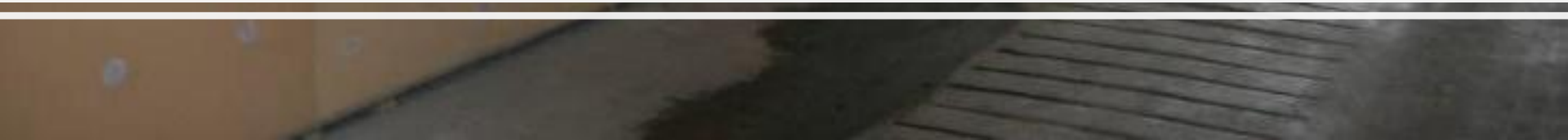




Insulated external
lime render
0.5 u-value
achieved



Wood fiber insulation, Glasgow, fixed with thermally decoupled expansion fasteners directly to masonry





With 2 coat render system being applied, u-value improvement 1.3 to 0.4



Detailing of external insulation can prove extremely difficult in many traditional buildings



Lofts and Roof spaces



wood fibre
board between
ceiling joists u-
value 1.5 to 0.2

Don't ignore Coombs



Insulating behind existing ceiling linings in inhabited loft space, u-value improvement 1.6 to 0.8



It is vital to ensure adequate ventilation in roof spaces



FLOORS:

- **Insulating timber floors:** either on the underside or above, by lifting the floorboards
- A material which allows some degree of moisture movement should be used
- A U-value of 0.7 can be achieved





FLOORS:

- **Insulating solid floors:**
Insulation boards (e.g. aerogel) or insulated lime concrete floor
- **Insulated lime concrete floor:**
either by mixing the insulating material (e.g. hemp or recycled glass) or by laying an insulated layer (e.g. a lightweight expanded clay aggregate (LECA)) under the lime concrete layer
- Good base for underfloor heating





WINDOWS

OUR HIERARCHY

- Repair
- Shutters (51% improvement) & roller blinds (22% improvement)
- Draught stripping if necessary, but ventilation still required
- Secondary glazing – internal (71% - 88% improvement)
- Storm glazing – external
- New glass in existing sashes
- New sashes in existing cases
- New timber DG windows with standard detailing



WINDOWS



Left to right: New double-glazed units standing next to the existing single-glazed timber windows before being retrofitted; draught-proofing; existing casements fitted with slim profile double glazing



GUIDANCE AVAILABLE ON HES WEBSITE

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Short Guide

AIR SOURCE HEAT PUMPS IN TRADITIONAL BUILDINGS



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HOW RDSAP 10.2 IMPACTS ENERGY PERFORMANCE CERTIFICATE (EPC) ASSESSMENTS IN TRADITIONAL BUILDINGS

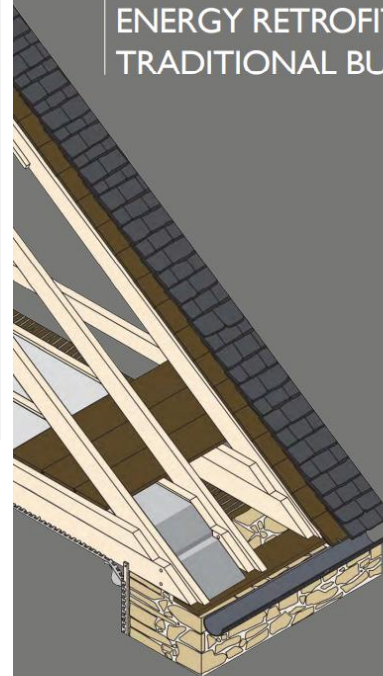
Conservation, Homeowners, Sustainability | Written by: Moses Jenkins | Wednesday 1 October 2025

Energy performance certificates (EPCs) tell us how energy efficient our buildings are. The way these certificates are generated has changed.

Our Project Manager Moses Jenkins explains what recent changes mean for professionals and owners of traditional (pre-1919) buildings in Scotland.



GUIDE TO ENERGY RETROFIT OF TRADITIONAL BUILDINGS



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