

# 1 Traditional Building Retrofit - Scotland

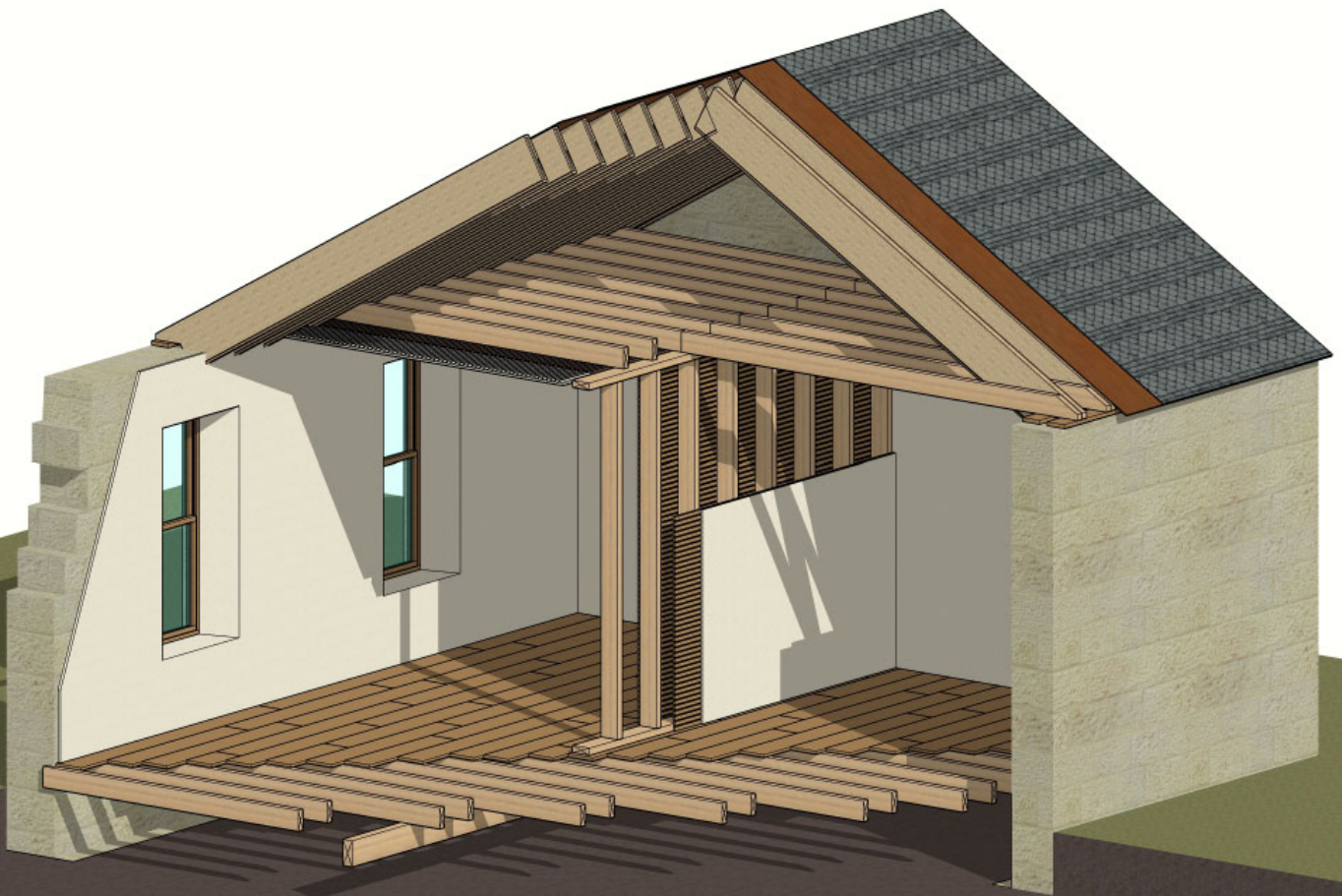
This chapter provides detailing and advice for using IndiTherm to retrofit traditional solid masonry buildings.

## Product information section:

All IndiNature products are easy to handle, cut and install. Care should be taken to make sure all material friction fits between timber studs so as to minimise any air gaps. Product should be installed in a clean, dry condition in a dry application and not be left permanently exposed to the elements. For cutting please see cutting guide at the end of this document.

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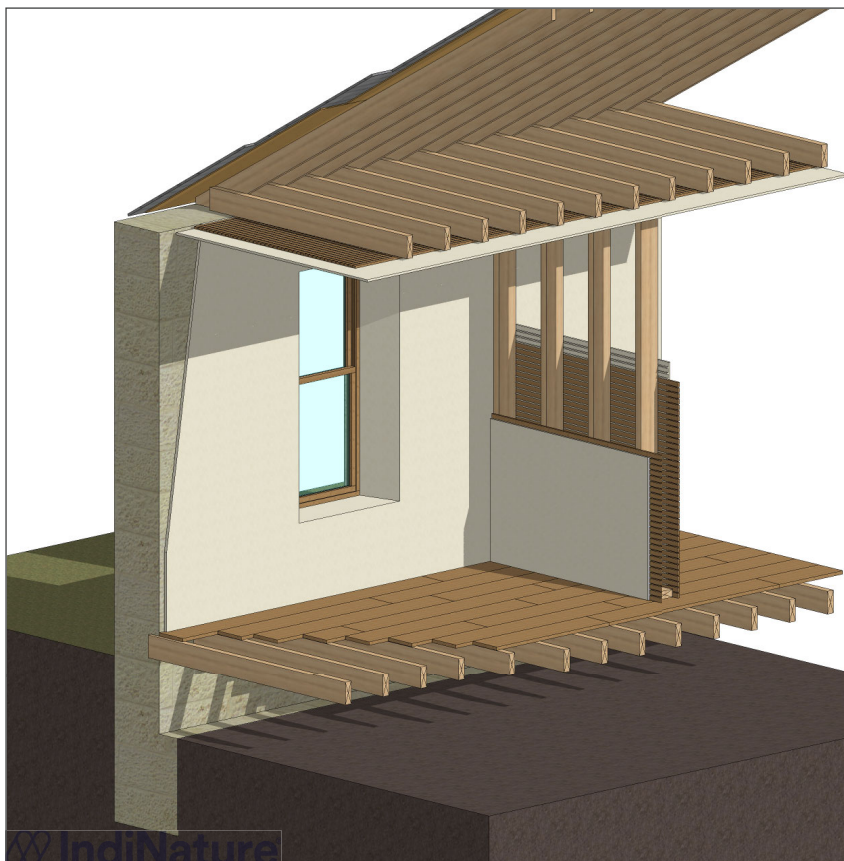


1.1 Traditional Building Characteristics

Traditional Building Characteristics

IndiTherm will be best suited for floor and loft insulation where there is already a structure in place for the insulation to be installed between. For internal wall insulation (IWI) IndiTherm will require a stud structure to be built in order to be fitted. IndiTherm is not suitable for insulating window reveals, for this location a rigid insulating board would be ideal.

Customers are encouraged to contact our technical team should they have any queries, or require context specific guidance. Additionally, we advise the use of WUFI (or other building performance modelling) to ensure minimising the risk of interstitial condensation.



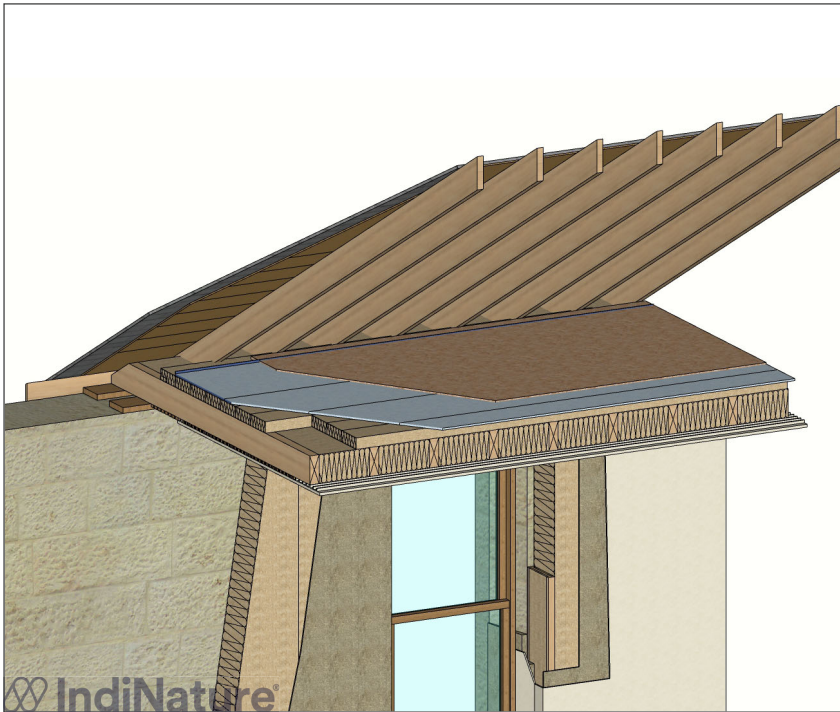
Key Characteristics:

- Solid masonry walls, typically between 500mm and 600mm thick, with a sandstone exterior face. These walls are typically vapour open, although interior finishes may reduce the permeability.
- Timber stud interior walls with lath and plaster. Ceiling is also lath and plastered
- Ceiling joists on the top floor sit on top of the masonry wall, and the attic space is ventilated ceiling joists in intermediate floors are seated in the masonry wall.
- Roof joists meet ceiling joists, and the roof is made up of sarking board below (typically) slate tiles.
- Ground floor is suspended on timber joists with a ventilated crawl/solum space below.

## Insulating to create a cold attic/loft space

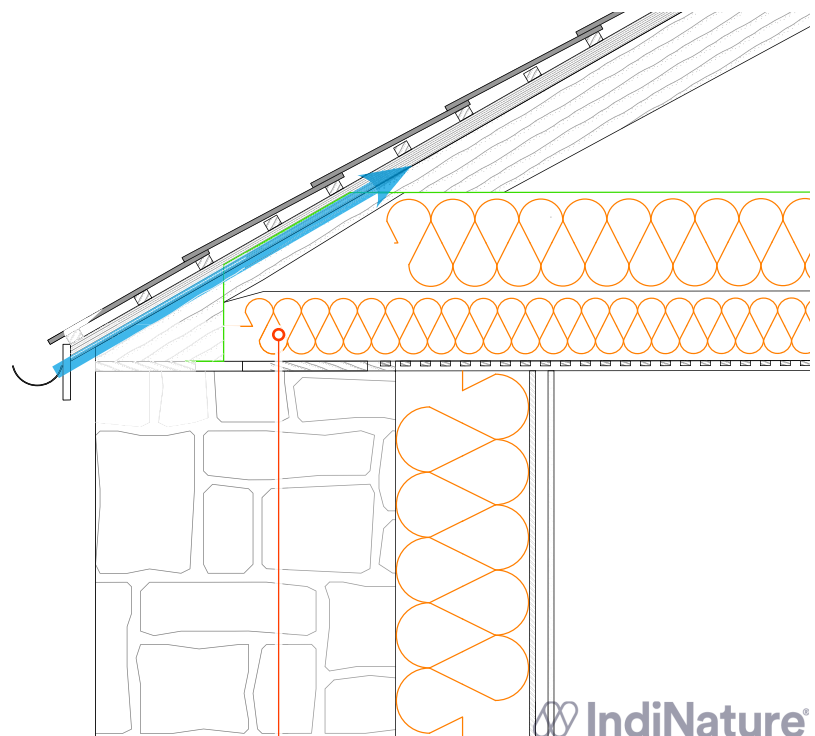
1.2

Cold Loft



Cold roof loft insulation is one of the most effective ways to reduce heat loss through the building fabric. Batting should be at least 280mm deep to achieve maximum performance. Batting should be layered perpendicularly to perform most effectively. A vapour permeable membrane can also be laid on top to prevent air circulation through the batting which can draw heat through the insulation and reduce its efficacy.

- Insulation should be friction fit between ceiling joists. Care and attention to detail are important here to eliminate gaps between batts and joists as much as possible.
- The layer of insulation on top of the joists should be perpendicular to the joists.
- An air tight breathable membrane can be laid on top of the insulation as this will reduce 'wind-washing' which draws heat from the outer layer of the insulation. The membrane joints should be taped and the edges should be taped to the wall to ensure air-tightness
- Insulation should be extended as far over the wall head as possible, but a **50mm gap should be left between the top of the insulation and the bottom of the sarking to allow ventilation air flow.**



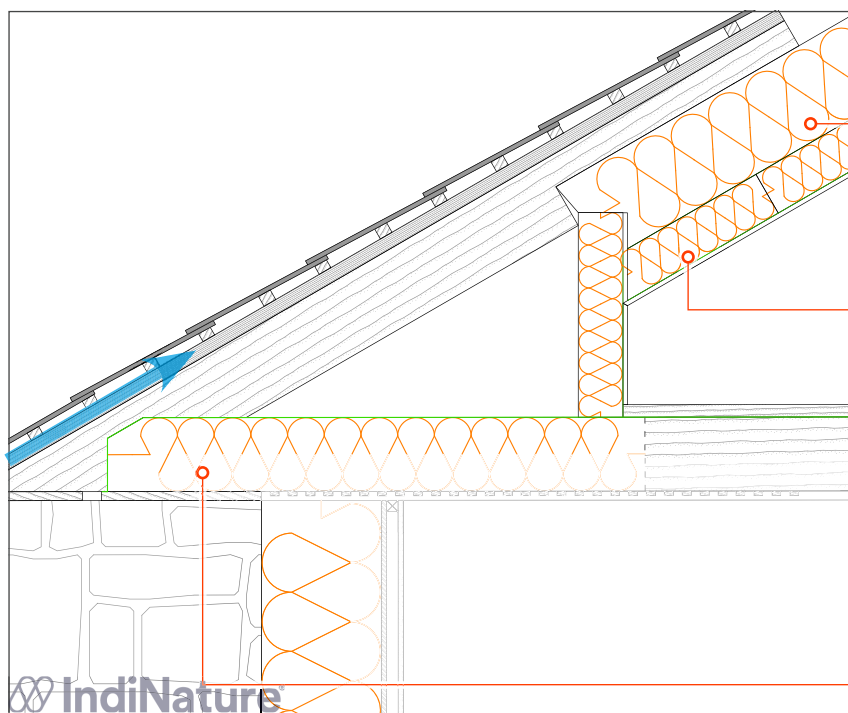
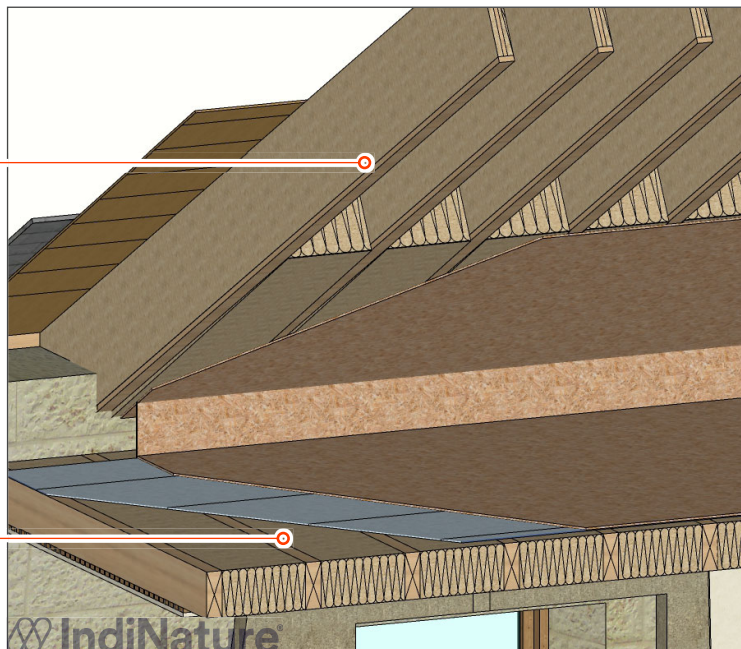


### 1.3 Insulating to create a warm attic/loft space

## Warm Loft

When creating a warm loft space, insulation should be placed both in between the ceiling/floor joists and the roof joists. Overall 280mm insulation is required to achieve the current Building regulations for Scotland.

**There should be a 50mm gap between the insulation and the sarking board/roofing felt** so that there is plenty of airflow to allow any moisture to evaporate. Insulation butted tight to the sarking/felt can lead to 'sweating'/moisture build up. The full depth of the ceiling/floor joists should be filled with insulation for maximum performance.

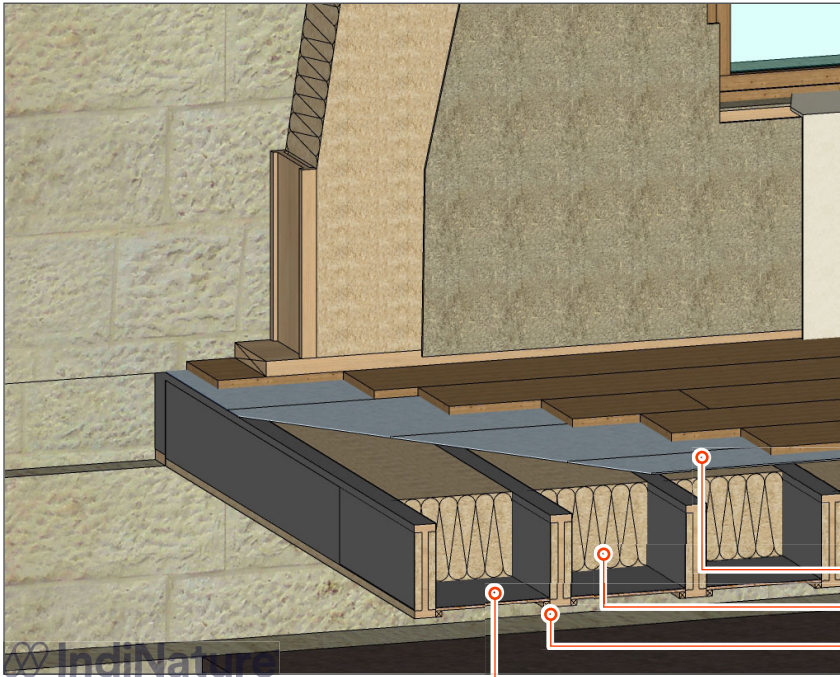


Ensure there is a 50mm ventilation gap between the sarking board and IndiTherm between the roof joists.

IndiTherm should be fit **snugly** between the roof joists, floor joists and any stud-work.

Minimum 50mm gap at the perimeter not to block the ventilation under the sarking

Methods for fitting insulation in between the floor joists of a suspended floor



**Retrofitting From Above**

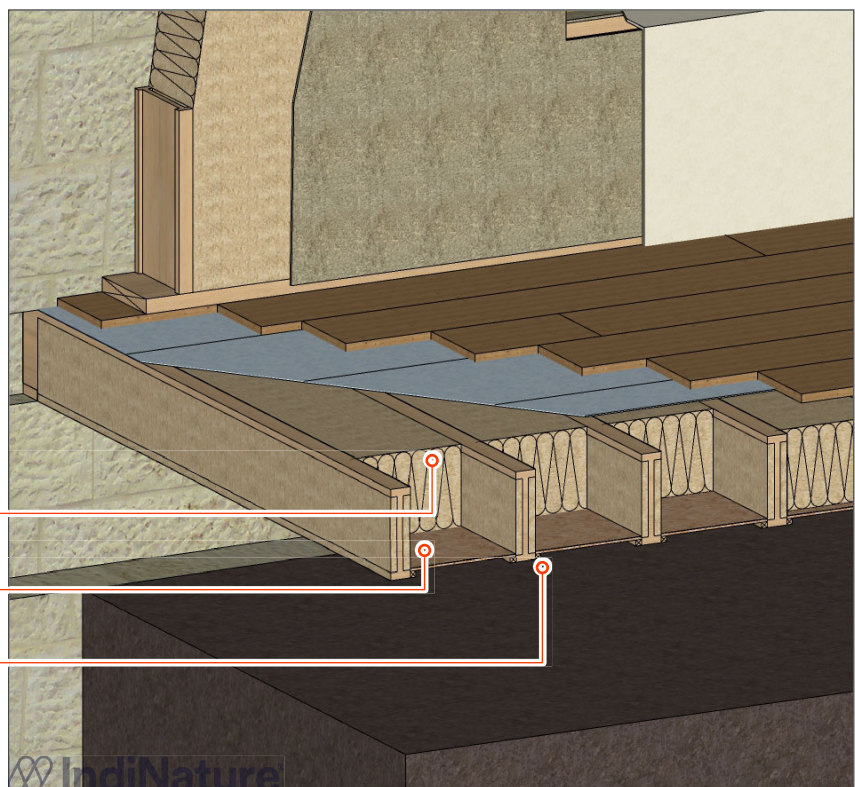
Floor retrofits can be approached from two ways, from above or below. If retrofitting from above, a vapour-open membrane can be lapped over the joists or OSB support panels can be fitted. Small battens should be tacked in the corner of the membrane to tension it evenly. A breathable air membrane can be laid on top of the insulation and floor joists in order to stop downward draughts forcing heat through the floor, insulation and potentially into the joist ends, where moisture can collect.

- Air Membrane
- IndiTherm
- Tension Batten
- Support Membrane

**Retrofitting from Below**

If retrofitting from beneath the floor, boards such as OSB should be used to support the insulation. Membranes, netting or stainless steel mesh, can also be used, however if not installed with adequate tension the insulation can sag, which could lead to a reduction in performance. Creating a snug fit between the batting and floor joists will minimise thermal bypass and the load on the supporting membrane/board. Over all 300mm of IndiTherm at 0.040 lambda value is required to achieve the current Building Regulations.

- IndiTherm
- Rigid board such as OSB fixed with battens to support the Insulation
- Fixing Battens





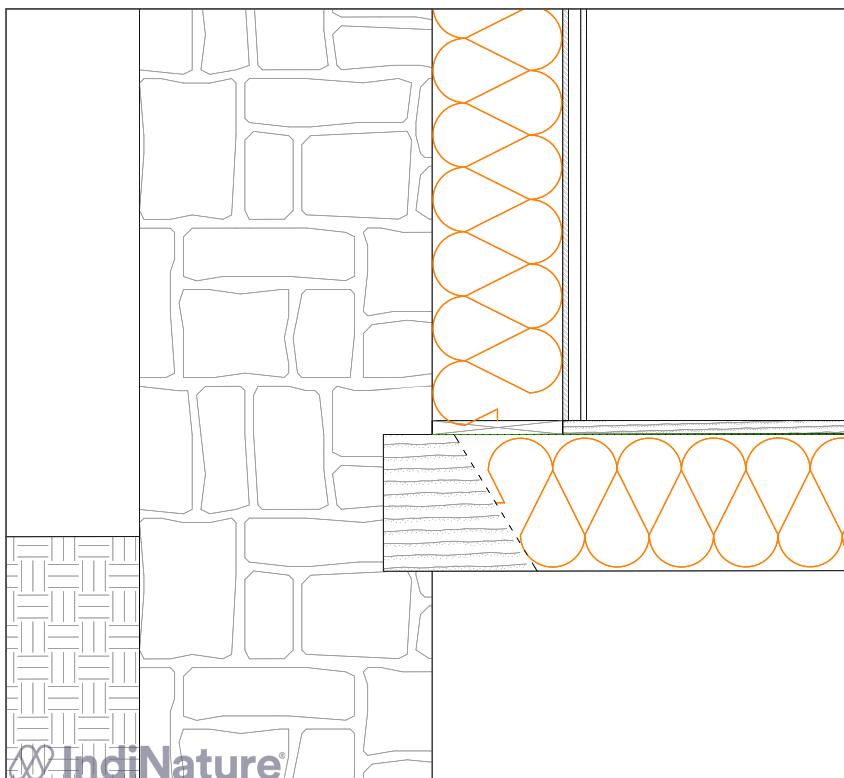
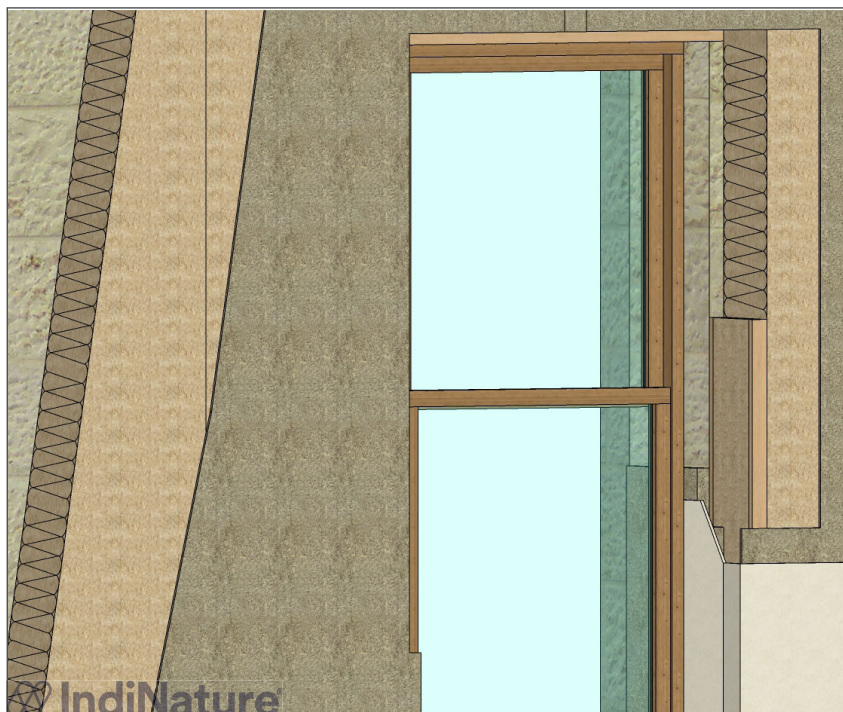
**1.5** Insulating on the inside face of external, solid masonry walls

**Wall Insulation**

Current best practice guidelines advise that natural insulation be installed directly on the wall without an air gap.

Stripping back the original finish/plaster may be advisable if the aim is to maximise the breathability of the wall. If a vapour control membrane is to be used on the inner face of the insulation then stripping the original finish is not necessary. Note that using a VCL will eliminate the benefits of breathable walls.

Window reveals are an especially tricky point to insulate as there is very limited space. Stripping back the original finish will provide extra space in which a rigid insulating board may be fitted.



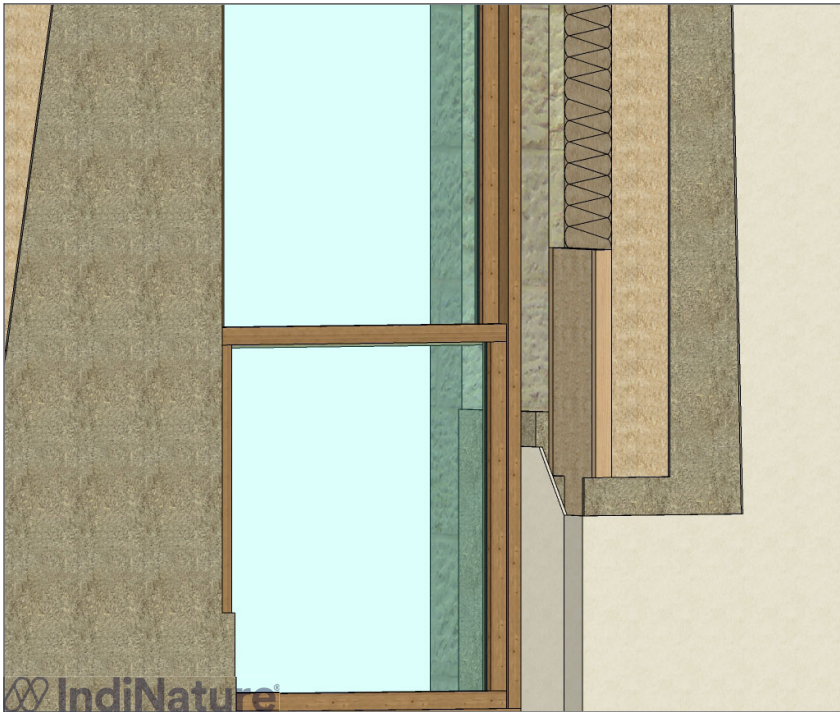
IndiTherm should be installed in between studwork which can be finished in a number of ways. Current advise is to install 140mm of IndiTherm.

The studwork can be finished with plasterboard and a plaster skim. This will have limited breathability. Alternatively, an additional layer of natural fibre insulating **board** can be fixed to the studwork, and then a lime plaster finish can be applied. This second option has the double benefit of being both breathable, and more insulative.

Insulating window reveals

1.6

Window Reveal



Window reveals are an especially tricky point to insulate as there is very limited space. Stripping back the original finish will provide extra space in which a rigid insulating board may be fitted. Tapered rigid insulation boards are provided by other manufacturers which are ideal for this situation.

Vapour open adhesives can be used to fix the reveal insulation in place.

The window frame should be fully taped and sealed to the masonry prior to installing the new insulation.



Original plaster should be removed and insulation installed directly on stone wall

IndiTherm, 280mm to achieve current Building Regulations with 20-50mm between insulation and wall finish

Rigid natural fibre insulating board, that can be plastered on

Lime plaster finish

# IndiTherm®

## Product Cutting Tools

IndiTherm natural fibre insulation batts can be cut to size using a number of different tools.

This sheet provides guidance and examples of recommended tools for cutting IndiTherm easily and quickly. Other tools are available.



### Bahco Insulation Specific Hand Saw

Bahco manufacture a hand saw with 'wave-formed' teeth which are specifically designed to cut insulation and is preferable to dulled hand saws while still being an inexpensive solution. This saw can easily be found in online trade stores.



### DeWalt Cordless Alligator Saw

DeWalt manufacture a cordless saw capable of cutting a range of materials. This solution is a more expensive one, but is worth considering for larger projects or tradesmen who will be working frequently with insulation materials. This tool can easily be found at online trade stores.



### Festool Cordless Insulation Saw

The Festool Insulation Material Saw is specifically design for cutting insulation materials quickly, with minimal effort, and maximum precision. It can be bought with a range of guides and accessories to ensure a precise cutting. It is much more compact than the DeWalt alligator saw which increases its convenience in both transport and use. It is the most expensive tool on this list, and as such we would only recommend this for very large projects or trade use.

