

## 92 Livingstone Rd, Hove, BN3 3WL



### Introduction and approach

Jim Miller is applying principles from his Passivhaus design practice to the renovation of his own home. The plan is to repair and insulate each element to the highest possible standard, rather than attempting a range of cheaper, quick fix solutions that might compromise the results.

The first area for renovation is the back wall, which suffered badly from penetrating damp, rising damp and had blown plaster and render. The windows were also poor quality and rotting. This has now been stripped back to the masonry on both sides, finished with lime render and plaster and then insulated externally with breathable Woodfibre external insulation. New windows are triple glazed and timber framed.

Jim's expertise has ensured that the fine detail has been meticulously covered, with no cold or damp bridging (where possible). He will be giving talks to visitors, running through the logic underlying the design and use of materials for this project.

#### OVERVIEW

Type: Terraced

Age: 1895

Beds: 3

Walls: Solid rendered

Area: 89m<sup>2</sup> (internal floor)

Residents: 2 adults, 2 children

#### FEATURES

- + Airtightness
- + Condensing boiler
- + Low energy lighting
- + Natural materials
- + Solid wall insulation (External, Breathable)
- + Triple glazing

### Energy efficiency measures

#### Insulation

The renovation at this house is only just starting and has initially concentrated on insulating and dampproofing the tall rear wall.

Walls – The rear wall had blown render and internal plaster and was severely damaged by damp. This was exacerbated by the use of vinyl based external paints, which had become cracked and allowed water to enter in behind them, preventing the wall from breathing or drying. In effect, water steadily trickled in and accumulated within the masonry, rotting the window frames and damaging plaster.

The situation was made worse by high garden walls on each side which butted onto the back wall, funnelling in damp. The absence of a damp course further increased the problem at the lower floor level.

The solution involved hacking off external render and applying a breathable lime parge coat, ready for the fixing of two layers of 100mm woodfibre insulation (200mm overall). The first layer was NBT's Pavadentro board and the outer one Diffutherm. This was finished with lime based render bedded into mesh reinforcement. Breathable insulation has been chosen not only because it is made from sustainable woodfibre, but also because it allows moisture to pass freely in and out of the

wall, which is important for older buildings that need careful control of damp.

In addition, it was necessary to inject a dampproof course, not only horizontally, but also vertically along the garden wall junctions.

All the rear windows were removed and the reveals lined with plywood before fitting timber framed, aluminium clad triple glazed units. These were fitted level with the first woodfibre layer, to minimise thermal bridging and maximise light gathering.

At the same time, it was necessary to remove the old cast iron soil pipe and rainwater goods. A new bespoke aluminium gutter was made, remarkable cheaply at about £300 + VAT, to fit above the insulation layer. New soil and rainwater pipes have gone onto the raised external surface.

## Carbon emissions

Jim has modelled the effect of these improvements in PHPP software, which has indicated a 25% reduction in heat loss from the house.

## Professionals

### Design –

[www.jimmillerdesign.co.uk/](http://www.jimmillerdesign.co.uk/)

### Windows -

[www.internorm.com/uk/internorm.html](http://www.internorm.com/uk/internorm.html)

**Solid wall Insulation** - Diffutherm and Pavadentro from [www.natural-building.co.uk/](http://www.natural-building.co.uk/)

**Solid wall insulation installer** – [www.downsenergy.co.uk/](http://www.downsenergy.co.uk/)

Eco Open Houses is an annual collaborative project between Low Carbon Trust, Brighton Permaculture Trust and Brighton & Hove City Council. This year the event is run as part of the Ecobee Project and has been selected within the scope of the INTERREG IV A France (Channel): England cross-border European cooperation programme and is financed by the ERDF. For more information on the Ecobee Project see: [www.ecobeeproject.eu](http://www.ecobeeproject.eu)