

## 3 Brewer St, Brighton BN2 3HH



### OVERVIEW

Age: Mid 19th Century

Type: Terraced

Beds: 3

Floors: 3

Walls: Solid rendered

Area: 109 m<sup>2</sup>

Residents: 1 adult

### FEATURES

- + Condensing boiler
- + Draughtproofing
- + Heating controls
- + Loft Insulation
- + Solid wall insulation (External)

### Introduction and approach

When Neil moved into this house in 2012, it was in a very neglected state and he has since undertaken a great deal of basic maintenance and repairs. Part of this work involved a number of measures to improve efficiency, such as repairing sash windows, installing a new condensing boiler and generous loft insulation.

The Green Deal assessment, which was undertaken recently, has opened up a number of new ways to further reduce energy consumption. In particular, the installation of solid wall insulation externally has had a big impact on what was the biggest remaining area of heat loss; the walls. Whilst doing this work, it was decided to carefully replicate external mouldings and pediments on the new wall surfaces, in the interest of conserving period features and maintaining the handsome appearance of the house. Further detailing on draughtproofing, such as chimney balloons, has tackled the other main weakness of Victorian properties, ventilation losses.

### Energy and CO<sub>2</sub> performance

As the work has only recently been completed, it is not yet possible to measure the impact of energy saving measures on consumption and CO<sub>2</sub> emissions. However it is estimated that these should be around 40–50 % lower than a typical UK dwelling, although the final figure may turn out to be better, due to Neil's careful management of temperature and heating periods.

### Energy efficiency measures

#### Heating and hot water

The new condensing boiler has made a big improvement in efficiency over the old one of around 10–15%.

The heating system is managed efficiently via a programmer and Thermostatic Radiator Valves (TRVs), and Neil tailors the heating carefully to occupancy, with it running for only around 6 hours per day.

#### Insulation

Prior to the latest refurbishment, Neil had already fitted 270mm of loft insulation, under the old CERT

scheme, which has made the house much warmer.

The front and rear walls have been clad in 100mm Kingspan Kooltherm phenolic external wall insulation, using the Wetherby system. This was fixed to the existing rendered surface using broad headed plastic anchor bolts and the insulation was covered with an armoured fibrous mesh, bedded into an initial resin-based render coat. This mesh is designed to protect against impact damage and was finished with a self-coloured textured render top coat. This has had the effect of cutting wall heat loss by over 90%, with wall u values improved from 2.1 W/m<sup>2</sup>K to 0.18.

Existing architectural mouldings and features were copied by Sytex and new lightweight mouldings, with a core of dense extruded polystyrene (EPS) foam and shell of flexible stone, were fixed to the finished surface to match adjacent houses and preserve the integrity of the terrace.

The rear extension bathroom was previously over-ventilated via two large wall grilles, which continuously leaked heat. One was sealed and the other replaced with a fan, which seals automatically

when not extracting, to minimise ventilation losses.

Draughtproofing was fitted around the front and back doors and the rear doors were replaced with new hardwood double glazed French doors, which were properly draughtstripped. Draughts have also been controlled to some extent by Neil's earlier action to have the sash windows overhauled. However, they still remain single glazed, which is a continuing area for heat loss. Finally, chimney balloons have been inserted into the open fireplaces, enabling the retention of these attractive architectural features, without the accompanying heavy loss of warm air up the chimney.

### Lessons learned/ future improvements

At the outset, one of Neil's priorities was the installation of double glazing to replace the leaky sash windows, but unfortunately the scheme's funds did not allow for this, as window replacement is not a priority under the Green Deal. However, Neil will be using his green deal assessment to find out what funding in the form of loans or grants might be available to complete this work. Alternatively, cheaper secondary double glazing may work as an interim measure.

Similarly, the budget did not extend to insulating internally the cold front wall in the lower ground floor, nor was the lower ground floor insulated. These remain projects for the future, to complete the insulating shell and improve comfort conditions in the lower living area.

### Some costs of the energy efficiency measures

Please note that these do not include a Green Deal Assessment or project management of the works

External solid wall insulation	8,795
Re-instate architectural details on front	1,751
Upgrade back door	2,151
Draught proof external doors	890
Fit chimney balloons	356
Replace bathroom natural ventilation with mechanical self sealing fan	521
<b>Total</b>	<b>14,464</b>

### Professional team on behalf of The Green Building Partnership

- Project Management**  
Earthwise Construction:  
[www.earthwiseconstruction.org](http://www.earthwiseconstruction.org)
- Contract Management**  
The Green Building Partnership:  
[www.greenbuildingpartnership.co.uk](http://www.greenbuildingpartnership.co.uk)
- Design**  
Cityzen: [www.cityzendesign.co.uk](http://www.cityzendesign.co.uk)
- Solid wall insulation**  
Beaumont Facades:  
[www.beaumontfacades.co.uk](http://www.beaumontfacades.co.uk)
- Carpentry**  
Minton Young:  
[www.mintonyoung.com](http://www.mintonyoung.com)
- Electrics & plumbing**  
Woodmans: [www.woodmans.net](http://www.woodmans.net)

### Materials

- Wetherby insulation system**  
[www.wbs-ltd.co.uk](http://www.wbs-ltd.co.uk)
- Insulation board**  
Kingspan Kooltherm Phenolic:  
[www.kingspaninsulation.co.uk](http://www.kingspaninsulation.co.uk)
- Architectural mouldings**  
[www.sytexuk.co.uk](http://www.sytexuk.co.uk)

This house was renovated as part of the Green Deal Pioneering Places project delivered by Brighton & Hove City Council, Brighton & Hove 10:10, The Green Building Partnership and Low Carbon Trust. The project was funded by the Department of Energy & Climate Change through the Local Authority Fund



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 ECOFab 2 project and has been selected within the scope of the INTERREG IV A France (Channel): England cross-border European cooperation programme and is co-financed by the ERDF. The Green Deal strand of the project has been funded by the Department of Energy and Climate Change through the Local Authority Fund

