

People Exploring Low Energy Homes

## Gwydir Street, CB1 2LG

Alex Rice, Alex says:

We moved into the property about two years ago, inheriting a solid wall property with a vintage back-boiler. Much of the work so far has been related to making the building liveable although there has been some progress on the low-energy portions of the project and on the veg garden.



### Overview

Age, Type: **1840, Victorian, Terraced**

Wall type, Floor area: **Solid brick, 52 sq m**

Project timescale: **1 yr, Ongoing**

Cost of measures: **About £1800 so far**

### Energy usage – 3 adults

After: Not yet available

Before: **40 kWh** per sq m pa electricity  
**60 kWh** per sq m pa hot water  
**200 kWh** per sq m pa heating

### Current features

+ insulation: loft insulation, some internal wall insulation, loft hatch

+ windows: mostly double glazed

+ air-sealed: chimneys, hidden holes in building

+ radiators: thermostatic valves

+ lighting: CFLs

+ wood burning stove

+ vegetable garden

+ chickens

+ Sheffield stands for bikes

### Renovation plans

+ insulated cladding

+ internal insulation

+ heat recovery fans

+ underfloor heating

+ triple glazed windows

+ condensing gas boiler

In the longer term the building will be retrofitted to the EnerPHit standard. This will reduce energy consumption by around 90% while significantly improving comfort and give me an opportunity to put my professional skills as a low-energy building expert to good use.

The project will be entirely self-built, we'll be living here through-out, and working on a limited budget so progress will be gradual.

### Low Energy Measures

**Loft insulation** increased from 50 mm to 300 mm, joists beefed up and area boarded over for storage.

Lodger's room insulation improved with **insulated plasterboard** on 'dot and dab' and sloping ceiling insulated internally.

**Improved heating controls** allow temperature set-back rather than simply turning the heating on and off.

Internal temperatures set to around 18 C most of the time.

Good quality **sash windows** with **high-performance double glazing** ( $U = 1.1 \text{ W/m}^2\text{.K}$ ) installed at the front of the house

Insulated and draught stripped loft hatch.

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Some basic **improvements to airtightness**, blocking chimneys etc.

Plaster stripped off front wall before moving in to get the worst of the dust out of the way and get it ready to be insulated.

### Sustainability Measures

The fireplace was re-instated after having been bricked up and **wood stove** was installed. Being able to make part of the house cosy **makes lower ambient temperatures** tolerable.

We now have **chickens** for eggs.

We're converting an allotment-style veg garden from the previous owner into **raised beds with permanent paths** to avoid compacting the soil and are generally in the process of **improving the soil**.

Proper **Sheffield stands** for bikes.

### Renovation Plans

My chosen standard, **EnerPHit**, is the equivalent of PassivHaus but for renovated properties. It allows a maximum consumption for heating of (25 kWh/sq.m/year), and stringent requirements for airtightness. It encourages a '**fabric first**' approach with high levels of insulation and avoidance of thermal bridging.

The front of the building will get about 100 mm of **internal insulation**, with a ventilated air gap between the insulation and the brick wall to avoid issues with damp.



At the rear of the building it's likely that it will get an **insulated cladding**.

Floors will get about 100 mm of insulation between joists with **under-floor heating** on top.

Ventilation will be provided by combination of single room **heat recovery fans**, a kitchen extractor hood and opening windows from time to time.

**Triple glazed windows** will be installed at the rear, remaining double glazed at the front to retain sliding sash windows.

Most of the heat will come from a small **condensing gas boiler**. There will be a **solar thermal system** linked into the **wood stove**.

### Products and Costs

So far, we've installed:

**Insulated plasterboard:** Gyproc Thermaline Plus 27mm, [www.british-gypsum.com](http://www.british-gypsum.com)

**Loft insulation:** Generic insulation, from B&Q

**Wood Stove:** Stovax Brunel 1, now out of production