

People Exploring Low Energy Homes

Gwydir Street, CB1 2LG

Alex Rice, Alex says:

We moved into the property about a year 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

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** ($U = 1.1 \text{ W/m}^2\cdot\text{K}$) installed at the front of the house

Insulated and draught stripped loft hatch.



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

Loft insulation: Generic insulation, from B&Q

Wood Stove: Stovax Brunel 1, now out of production