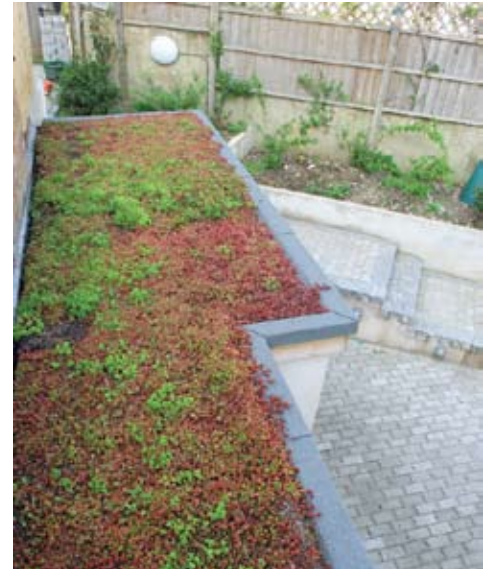


1a Whichelo Place, Brighton BN2 9XE

www.drparchitects.co.uk



Overview

Age/period of house:	2007
Type:	Detached bungalow
Years in residence:	1
No of bedrooms:	2
No of other rooms:	3
No of floors:	1
Floor area:	76m ²
Cost	£200,000
Wall type:	Timber frame

Key words

+ timber frame	+ solar thermal
+ sheep's wool insulation	+ condensing boiler
+ grey water system	+ green roof

Introduction and approach

Jackie and Alan had lived in Brighton from 1992 in various houses and were 'fed up with living in cold, damp, draughty places, paying huge heating bills and constantly running up and down stairs.' After going on a self-build course they decided that they wanted to have their own house built for them that would be as 'green as possible'. They looked around Brighton for a suitable site and the plot in Hanover came up at auction, which they successfully bid on. They gained planning permission to build a bungalow and the project was completed in 2007. The house was built to 'Eco homes' excellent standard and is a Green Apple National Silver Winner.

Features

Energy efficiency measures:

The bungalow is a highly insulated timber frame building with under floor heating throughout. The under floor heating is set in a polished concrete screed, which also provides large areas of exposed thermal mass to help regulate the temperature. A Worcester and Bosch condensing gas boiler provides heat and hot water, which is stored in a Vaillant Unistor 210 litre stainless steel unvented hot water cylinder. The cylinder has a twin coil inside it so it can take hot water from either the gas boiler or the solar thermal system.

Due to the restrictions of the site, the bungalow is slightly set into the ground and is over looked by houses on three sides. Although this makes it sound dark, it is very light and airy inside. Each room has its own roof light that let in lots of natural light, reducing the need for lighting.

The windows are high performance double-glazed units and have trickle vents embedded in the frame for easy ventilation. The windows are made by Rationel and are softwood clad in aluminium to make them more durable with lower maintenance. The units are 32mm deep: 6mm low-e laminated glass to the inside, a 22mm argon filled gap and 4mm toughened glass on the outside.

All appliances are energy efficient as possible, including a triple-A-rated Electrolux lavamat washing machine.

Renewable energy

There is a solar thermal system in place on the south facing main roof and this feeds into the thermal store. This system provides almost 100% hot water in summer,

around half in spring and autumn and virtually none in winter, when the condensing gas boiler steps in. The system is a 2.8m² Thermomax DF100 system and the 20 evacuated tubes can provide an estimated 1,300kwh of hot water each year; a potential saving of around £60 per year. The Low Carbon Building Program and Brighton and Hove City Council solar thermal grant scheme supported the installation.

Water

There are various water conservation measures in place including a water meter, dual flush toilets, rainwater harvesting and a novel greywater recycling system. The grey water system takes wastewater from the bath and stores it in an underground tank outside. The grey water is treated with bromine tablets and when the dual flush toilet is flushed it draws grey water from the tank.

The water saving measures in place mean that the house has used 22.10m³ of water between 21/08/07 and 23/02/08, which is an extremely low 60 litres per day per person over the period. This compares to an average of 169 lpd in the rest of the South East region! The reuse of grey water means that 55 lpd of sewage per person is exported per day. Together, these give a rough combined total of water bills of less than £100 per year!

Materials

Many of the materials used in the construction of the bungalow are ecologically sound. As the bungalow is timber frame, lots of wood was used in the project and it all was certified from Forest Stewardship Council (FSC) sources. The external walls are clad in locally sourced sweet chestnut cladding and the timber frame is insulated with sheep's wool insulation

The kitchen work surfaces are made from recycled glass and were manufactured by Eight Inch in Newhaven. Other recycled products include glass tiles in the bathroom and shredded tyres instead of gravel on the pathways around the building.

The bungalow has a green roof on it, which is a sedum mat, or lots of little plants going on it. The roof system is by Bauder and encourages biodiversity and wild life in the area, including local foxes!

Other materials include:

- Visqueen Ecomembrane – a recycled damp proof membrane
- Lime based render for external wall finish
- Masterblock 'Enviroblock' recycled aggregate block work used for plinth & external walls

- Pavatec 'Isolair L' wood fibre board on external walls
- Lindab galvanised steel guttering with diverting down pipes for rainwater collection
- Natural paint

Future improvements planned

Potential installation of photovoltaic panels although they are expensive and the roof is partially shaded.

What was difficult?

There were various difficulties with the project.

- Gaining planning permission
- Getting advice on all the different components and technologies
- Site restrictions on development
- Bureaucracy of the Ecohomes standard, which didn't accept sweet chestnut cladding as a sustainable material

Things that might have been done differently

A ground source heat pump was considered, but the equipment needed to dig the hole couldn't get onto the site. On reflection the heating system installed was superior and cheaper.

Professional contacts

DRP Architects – <http://www.drparchitects.co.uk/>

Suntrader Solar Energy Systems – <http://www.suntrader.co.uk/>

Materials

Bauder Green Roofs – <http://www.bauder.co.uk>

Eight inch – <http://www.eightinch.co.uk/>

Rationel – www.rationel.co.uk/

Second Nature – <http://www.secondnatureuk.com/>

Grants

Low Carbon Buildings Program – <http://www.lowcarbonbuildings.org.uk/home/>

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