CASE STUDY

51 Northcourt Road Worthing BN14 7DT

eco open houses
ecoopenhouses.org

Overview

Type: Mid terrace

Age: Victorian

Beds: 3-4

Walls: part solid brick, part cavity, part rendered

Area: 96m^2

Residents: 2

Features

Condensing boiler

Double glazing

Draughtproofing

Food growing

Heating controls

Loft insulation

Low energy appliances

Low water goods

Rainwater harvesting

Introduction and approach

Claire and Ryan fell in love with this 'leaky' Victorian terraced house in 2006, but it wasn't until 2007, when Claire did a Permaculture Design Course, that they started to think about the way they live from a permaculture perspective.

Victorian houses present challenges, but commonsense measures, such as installing a new condensing boiler, new timber double glazing and draughtproofing, have contributed, along with behavioural changes, to them reducing gas use by one third and electricity by half. This is a work in progress and hopefully more inroads will be made by dividing one large, hard-to-heat room into two, secondary double glazing and improved loft insulation.

They have also adopted a deliberately sustainable lifestyle, with food production from the garden and allotment, rainwater harvesting for home gardening, reducing car use, buying fewer new consumer goods and orienting their garden to be welcoming to wildlife, including a 'green roof' on the bike shelter and shed.

Energy efficiency measures

Heating and hot water

The old inefficient boiler was replaced by a Worcester Green Star condensing boiler. With hindsight, it would have been better to have fitted one with Flue gas heat recovery, but the new one is still 10/15% more efficient. The programmer is wi fi and therefore portable.An old Edwardian cast iron fire surround with gas fire was fitted in the front sitting room.With hindsight a woodburning stove would have been better. That may yet happen, but is not a first priority for investment.

Insulation

Walls – at the front these are solid rendered, but at the back they appear cavity. The cavity was assessed some time ago as too narrow to fill, but this will be reassessed because of the potential to cut heating bills by around 15/20%. Claire and Ryan are concerned that it might create a condensation problem.

Windows – three old ugly windows at the rear have been replaced with elegant new double glazed timber sliding sash units. Further windows will follow when funds allow, but in the meantime, Claire and Ryan have fitted acrylic magnetic double glazing of downstairs sashes. This cost around £100/150 per sash window, was easy to do and is nearly invisible.

Roof – the loft conversion has 100mm of rockwool between the joists, which offers reasonable insulation. In the eaves and loft areas, there is also 100mm of fibre insulation between the joists. There are plans to clear the spaces and raise the floor by using new joists at right angles, to create the space for additional

insulation, before overboarding again to restore storage space.

Renewables and low carbon technology

A solar PV system was rejected as uneconomic because of limited roof space. With only two occupants, demand for hot water was considered too low to install a solar thermal system. A switch to Ecotricity for mains supply does help the development of renewables.

Electricity

By addressing waste and using electricity carefully, annual consumption has already been halved.

The remaining high energy lamps have been replaced with low energy ones, particularly LEDs.

Carbon emissions

Energy Use: Electricity 2100 kWh pa, Gas 13,081 kWh pa

Net CO_2 emissions: Total 3.7 tonnes (33% less than average UK dwelling), 38.3 kg/m2 (40% less than UK average).

Other sustainable measures/ lifestyle decisions

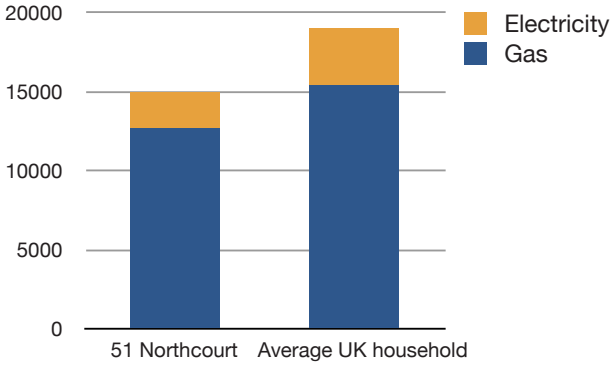
Water conservation – rainwater from the house is collected in a 750 litre butt in the rear garden and there is another smaller one to collect from the shed. No mains water is used outside. The shower also has an aerating head to limit flow.

Rainwater diversion – a downpipe shared with the neighbours previously discharged onto the ground and into the road. Rather than risk overloading the drains, the run-off is now diverted to a water butt in the front garden, with an overflow to a planter bed. This in turn overflows to a channel running to a new soakaway. All rainwater from the front of the two houses now goes back into the ground.

Organic food cultivation – food grown in the rear 'forest garden' is mostly fruit from trees and bushes. However, Claire and Ryan also have an allotment where they grow vegetables – and more fruit.

Therapeutic gardens – Claire and her colleague Lisa Leach run a social enterprise, 'Breathing Spaces', to create or adapt gardens in places such as care homes and community centres, to give people with support needs the opportunity for constructive and/or pleasurable activity.

Energy and generation (kWh)



Transport – Both Ryan and Claire use bicycles to get around and share a car with another family. Car use is mostly limited to long distance journeys not achievable by public transport.

Home sharing – One of the spare bedrooms is now rented to visitors via Airbnb, which makes more use of the space and generates income that can be invested in further improvements.

Lessons learned

Claire's Permaculture course caused a major shift in a perspective. Some of the 'pre-permaculture' decisions have been regretted, e.g. making two cosy rooms into one large hard-to-heat room, now being reversed by installing folding doors.

They also regret the installation of the now unused, electric underfloor heating in the kitchen breakfast room.

Professionals/Materials

Timber double glazed windows – www.chartwellwoodenwindows.co.uk

VOC-free, compostable paint – www.naturepaint.com

Thermal lining and curtain material – The Fabric Shop, Chapel Road, Worthing

Green roof sedum mix (on bike shelter) – www.nickys-nursery.co.uk

Chemical-free, durable, Thermowood decking – www.alsfordtimber.com

Secondary double glazing –Standard Magnetglaze (bought online) and acrylic sheets from Worthing Plastics (01903 366862). For more information see www.transitiontownlewes.org/magnetic_secondary_double_glazing.html

LED dimmable light bulbs – www.ledhut.co.uk

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