

# Low-cost retrofit of ex-council 1950s home: CB1



## Property overview

**Property age:** 1950s

**Type:** Semi-detached

**Wall type:** Cavity

**Floor area:** 88m<sup>2</sup>

**Project Timescale:** 15 years

**Cost of Build:** £46,000

**Occupants:** 2 adults, 2 children

## Meet your hosts: Suzie and Iain

When looking for our first home, we wanted it to be south facing, with a big garden. A big lounge for socialising, was also an important factor. In 2006 we moved into a home with aluminium framed double-glazed windows, minimal insulation and an old gas fire with boiler.

We are both very passionate about the environment and love that our home is now an expression of this. We sometimes put our ideology before our finances or convenience but are happy about this. Now our utility bills are only £50 a month, yet our home is warm and snug, with a close connection between the house, garden and seasons. This is about 1/3 national average.



## Low Energy Measures

We drew up a five-year plan. The major eco work so far has been installing the hot water and heating system - adding solar thermal hot water and a 9kW wood-burning stove which supplies hot water for taps and central heating. We had ourselves cut off gas when this was installed. We are constantly improving our firewood processing making the most of all the wood and the 'sawdust waste', as well as improving storage. At the same time, installing a highly insulated [Akvaterm](#) hot water tank, designed to be heated by wood and sun, or electricity if we are desperate.

We had the cavity walls insulated, and we did the loft insulation ourselves with 150 mm of British sheep's wool, on top of the 150mm of yellow itchy insulation already in situ. We also insulated under the bath (re-using coats and pillows) - so now we can have a good long soak in the bath because the water stays warm for ages! Accessible pipes are insulated with grey foam coats, or [Kingspan](#) Tarec. We have a thermally-lined curtain which reduces the size of the sitting room in winter, making the stove more effective and the room more cosy. The fireplace is rendered with lime. In recent years' we have insulated and double glazed our extension. Insulating cork floor and underlay in the kitchen and extension have made it a better place for our children to play and keep us warmer.

Suzie's favourite energy saving aspect of our home is the kitchen sink area. After a partial kitchen refit and lots of decluttering, the crockery and cutlery are permanently stored where they dry. Under the sink rubbish and reusable bags are sorted. All this saves human time and energy. We mainly use eco paint and minimal eco-cleaning products. We have only bought six new items of furniture or white goods, the rest were all second hand. This has helped create a low toxin



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environment for us and our daughters. Our water use includes 5 water butts for the garden. And to reduce our mains water use we have the lowest flush toilet locally available. We have fulfilled the final part of our 10-year plan by buying a compost toilet. It was made by [Strumpet and Trollop](#) and constructed by us in our outside loo room.

Other DIY measures include low-energy and LED light bulbs, draught-proofing and secondary glazing. The kitchen ceiling is painted white to reflect light. Sadly, after 13 years of fridge-free living, we now have a fridge and freezer as Suzie couldn't see a way to child mind without. We also partially refitted the kitchen, bathroom and extension.

Outside we have a sedum green roof on one of the woodsheds. Another shed has a clear roof for extra growing space. In the garden we grow some of our own fruit, nuts and some vegetables. We have built our own hurdle fencing from local coppice. Iain loves nature so the abundance of nature in our garden is his favourite part of our home.

The last time we flew was 2005 and we will not fly for leisure again. We successfully share a cargo bike with local friends. We try to use feet, bikes, buses, boats and trains for most of our travelling. We've made our bikes more accessible and secure.

As soon as we moved in, we switched to [Good Energy](#), who only provide 100% renewable energy. A friend invested in a solar photovoltaic (PV) system for our roof. When they have recouped their costs from the Feed-in-Tariff, we will get any future profits. Our electricity usage is a third of the national average and we 'make' three-quarters of what we use.

## Performance

Home energy use was reduced by 60% – and to 68% less than the national average. CO2 emissions were reduced by 60%, currently approximately 0.44 tonnes a year (from 1.05 tonnes). Because our electricity comes from Good Energy, which is 100% renewable, in theory our CO2 emissions from electricity is zero. We have shown the reduction as if we were using the standard electricity mix. Overall, we only expect to use 1100 of the 1500 kWh electricity that our solar array produces per year.

## Key specifications

### Energy Usage

Electricity kWh/m <sup>2</sup> /yr	Gas kWh/m <sup>2</sup> /yr	Carbon kgCO <sub>2</sub> /yr /m <sup>2</sup>	Carbon kgCO <sub>2</sub> /yr /person
Before: 25kWh After: 11kWh	2kWh none	14.0 6.7	308 148

### Insulation

- Cavity wall & loft insulation
- Insulated water tank & under bath
- Triple-layered, thermal-lined blackout curtains
- Cork flooring

### Glazing

- Windows & external doors double-glazed

### Heating/energy

- Wood-burning stove
- Solar PV system
- Low energy lighting (house)

### Water

- Lowish flush toilet, compost toilet, water butts, Ebac washing machine with hot and cold fill

### Other

- Sedum roof on shed
- Fruit, vegetable & wildflower garden

## Professional Contacts

**Solar thermal system & wood-burning stove:** Jonathan Cooke of [Dragon Renewables](#)

**Solar PV system:** [Midsummer Energy](#)

**Kitchen refit +:** via [Mother's Little Helpers](#)

## Products and Costs

**Insulation:** [Thermafleece](#), from Earth and Reed\*

**Green materials:** NCT Paints, Earth and Reed\*

**Wood stove:** 9kW [Woodwarm](#) System, [Metal Developments](#)

**Solar thermal system:** [Gasokol](#) £2,900

**Solar PV system:** 1.85 kWp [Romag](#) panels £9,500

**Windows & external doors:** Wood-framed, double-glazed, from Everest (not recommended) £10,000. Some PVC windows, from [Polarglaze](#) (highly recommended) £8000 approx.

**Architectural salvage:** Cambridge Woodworks\* £70

**Extension Improvements:** [Green Hat Construction](#)

**Floor:** <http://corkfloor.co.uk> £750

**Compost toilet:** [Strumpet and Trollop](#) £420.

*\*Company now dissolved*

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