

51 Northcourt Road Worthing BN14 7DT

Overview

Owners: Claire Hunt and Ryan Haines

Type: Mid terrace

Age: Victorian

Beds: 3-4

Walls: part solid brick, part cavity, part rendered

Area: 130m²

Residents: 2

Key features

Air source heat pump

DIY Secondary double glazing

DIY solar powered toilet

Rainwater garden

Other features

Loft insulation

Double glazing

Draught proofing

Food growing

Composting

Low energy appliances

Rainwater harvesting

Introduction and approach

Clare & Ryan's approach for many years has been to use low tech, low spend solutions in their home to save energy, reduce mains water use and recycle resources, saving themselves money at the same time. They still do this but in 2022 they invested in an air source heat pump. This doesn't save them money because electricity is much more expensive than gas - it doesn't get the subsidies that oil and gas do. But they are now off-gas completely and, with a 100% renewable electricity supplier, they have effectively cut their household carbon emissions to zero. If you want to see how this new technology keeps a Victorian terrace house cosy, come and check it out.



Claire & Ryan's technique of fitting secondary double glazing has always generated lots of interest during Eco Open Houses. And the other unique feature on show is their DIY solar powered toilet, which saves approximately 10 pints of water every time they flush it. If they use their toilet say 6 times a day, that is a whopping 60 pints of water a day, or 21,900 pints of water saved a year... Imagine that reduction on your water bill!

Claire & Ryan's small front & rear gardens both showcase effortless ways to collect rainwater, ensuring it doesn't add to the risk of surface water flooding. Instead, it flushes their loo, tops up the pond and waters their plants too. The gardens also make space for nature and are packed with useful, edible & pollinator plants.

If you want to be more energy and water conscious and see how natural gardens can store both carbon and water, be a haven for wildlife and produce fresh food, this home is well worth a visit!

Energy efficiency measures

Heating and hot water

When Claire & Ryan moved here in 2006 they replaced an old inefficient boiler with a 10-15% more efficient Worcester Green Star condensing boiler. 16 years later, they replaced it with an air source heat pump - see **Renewables & Low Carbon Technology** section below.

Insulation

Walls - at the front, these are solid rendered, but at the back they are cavity. The cavity was assessed some time ago as too narrow to fill without causing condensation problems.

Windows - three old windows downstairs at the rear were replaced with elegant double glazed timber sliding sash units.

Claire and Ryan have fitted acrylic magnetic 'secondary' double glazing on all the other windows. This cost around £100/£150 per sash window, was easy to do, also sound-proofs and is nearly invisible.

Roof - the loft insulation used to be 10cm of Rockwool between the joists and was over-boarded as a storage space. This was upgraded before fitting the heat pump. Claire & Ryan added 'loft stilts' on the joists to allow an additional layer of insulation to the government recommended 27cm, before over boarding again to restore storage space.

Renewables and low carbon technology

Claire & Ryan haven't yet fitted a solar PV system because of cost & limited roof space. And with only two occupants, demand for hot water was considered too low to install a solar thermal system. Instead they chose to help the development of renewables by switching to an energy supplier that is 100% renewables, currently Octopus. It was the Renewable Heat Incentive scheme (now closed, although grants are still available) that encouraged them to invest in low-carbon air source heat pump technology.



They were advised to choose an 11.2 kw Mitsubishi EcoDan for their size of house following a detailed heat loss survey and upgrading of insulation.

Electricity

Before the heat pump, Claire & Ryan halved their annual electricity consumption by addressing waste and using electricity carefully. And high energy lamps were replaced with low energy ones, particularly LEDs.

Since switching to an air source heat pump, they obviously use more electricity but up to 3.4 times more efficiently than standard electric heating. *Being off-gas and using renewable energy their carbon emissions are operationally zero.

Carbon emissions

Energy Use: Electricity up from 2277 kWh pa to 5,919 kWh pa, Gas down from 6014 kWh pa to 0!

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. A small pond is home to newts and frogs. The shower also has an aerating head to limit flow.

Rainwater diversion - a downpipe from the roof shared with the neighbours previously discharged onto the ground and into the road. This is now diverted to a water butt in the front garden, with an overflow to a 'stormwater planter' bed. This in turn overflows to a channel running to a new soakaway and garden bed. There is no run-off to the drains, reducing flood risk and storm overflow pollution.

Organic food cultivation - food grown in the rear 'forest garden' is mostly fruit from trees and bushes, which includes figs, grapes and an Ashmead's Kernel apple tree. They also grow plums, raspberries, blueberries and Juneberries.

Claire and Ryan recently gave up their allotment and have made room for a small veg bed and use a small lean-to greenhouse to extend the season.



Community gardening - Claire and her colleague Lisa Leach run a TTW project, 'Breathing Spaces'. They lead a community garden at Maybridge Keystone Centre, which also features a rain garden as well as solar powered lighting and water pump.

Transport - Ryan and Claire use cycles to get around town and designed bike storage for the front garden. Now retired, they choose train and ferry travel over flights. Their car is a second-hand hybrid as they prefer their front garden to off-road parking for an electric car!

Lessons learned

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

They don't use the electric underfloor heating in the kitchen, although that could change if they had solar PV.

The green roof they built on the shed was too heavy, caused it to leak and the roof had to be repaired.

Some of the trees in the original forest garden got much larger than expected and have had to be thinned out to keep up light levels.

Professionals/materials

Air source heat pump:

Mitsubishi Ecodan air source heat pump
<https://agreeneralternative.co.uk/>

Induction hob:

Moors Appliances, South Farm Road

Loft stilts & recycled insulation:

B & Q

Timber double glazed windows:

www.chartwellwoodenwindows.co.uk

VOC-free, compostable paint:

www.naturepaint.com

Thermal lining and curtain material:

local shop now closed

Secondary double glazing:

Standard Magnetglaze (bought online) and acrylic sheets from CutMyPlastic (Small Dole) 01903 389024

LED dimmable light bulbs:

www.ledhut.co.uk