

Open Home Profile

### Homeowner Information

* **Name:** Frances Robertson
* **Contact (optional):** frances\_robertson@yahoo.co.uk
* **Location:** 5 Cherington Road, BS10 5BH

### Home Overview

* **Home Type:** Semi detached house
* **Size:** 3 bedrooms, one bathroom
* **Renovation History:** The house was purchased by the current owners in 2006 and had previously had double glazing and gas central heating installed. In 2006 internal solid wall insulation was installed along with a new gas boiler and solar thermal panel to heat the hot water. In 2010 solar PV was installed. In 2021 the gas boiler was replaced with an Air Source Heat pump and a second set of solar PV installed.

**Green Features**

#### **Energy Efficiency**

* **Insulation:**

Internal solid wall insulation to most external walls, underfloor insulation to most of the ground floor of the house, and loft insulation.

* **Windows and Doors:**

Replaced older double glazing and front door – new 2019

Garden Room bifold and external door – new 2023

* **Heating System:**

Air Source Heat Pump mostly using existing radiators – installed 2021

* **Cooling System:** (Type, efficiency, and control system)

None

* **Lighting:**

All internal and external lights are LEDs

* **Appliances:**

All white goods were A or A\* rated (previous rating system) when installed

All gas removed from house and Induction Hob installed in 2021

* **Smart technologies**:

Smart meter which allows for payments for the export of surplus electricity from the PV panels and to make us of flexible time-of-use tariffs maximising the use of electricity at cheaper periods of the day and night.

Zappi EV charger which integrates with the Solar PV system to maximise the charging using the surplus electricity generated.

#### **Renewable Energy**

* **Solar Panels:**

2.1 kW system on side roof installed in 2010

2.27 kW system on rear roof added in 2021

* **Battery Storage:**

None

* **Other Renewable Sources:** (Specify any additional renewable energy systems)

Solar water heating system installed in 2007.

#### **Indoor Environmental Quality**

* **Air Quality:**

All paints used were Green paints. Now most paints are low VOC easier to source environmentally better paints.

Wool carpets throughout to reduce plastics and chemicals.

Marmoleum used for hard flooring areas.

* **Ventilation systems**

Extractor fans in kitchen and bathroom are heat exchanging with on/off override

Tile Vents in roof to reduce loft condensation

All rooms have opening windows

Velux automation determines temperature and CO2 levels to decide if Garden Room needs ventilation. Can be manually operated through the electronic system.

Garden Room has bifold doors to enable the whole room to be opened to the rear garden.

* **Natural Lighting:**

Old lean to conservatory replaced by insulated Garden Room.

Garden room constructed in 2023 with green roof and automatic Velux windows.

Garden Room replacement with Velux windows has increased natural light into house.

#### Other useful information:

* Water from our roofs is captured in a number of different sized water butts and pumped to pond and greenhouse and used for pot watering as needed.
* Bike shed and garden room have green roofs. Green roofs slow down water runoff.
* All timber used for raised beds and pergola in garden is FSC and UK or European grown
* EV charger on side of house is Zappi charger which has eco modes and can charge solely on surplus energy from our solar pv system
* All battery powered items use either rechargeable batteries or solar charging (e.g. for security lighting)

#### Performance and Savings

* **Energy Savings:** (Annual kWh saved, percentage reduction compared to previous years)

Overall the homes’ energy use has been reduced by 65%.

Insulation, solar hot water and replacement gas boiler reduced gas consumption by 36% - 16,000 to 10,000 kwh.

The Air Source Heat Pump and induction hob have replaced this gas use with 3,800 kwh of renewable electricity per year.

Solar PV Panels generate some 4,000 kwh of energy which is used in the following ways:

* House – 1,000 kwh
* Car – 1,000 kwh
* Export – 2,000 kwh
* **Carbon Footprint Reduction:** (Estimate of CO2 reduction - this can be a useful tool to use <https://www.carbonfootprint.com/calculator.aspx>)

The home is now fossil fuel free and runs entirely on renewable electricity.

The carbon footprint of the house was originally 4 tonnes per year– 3 tonnes from gas and one from electricity. The owners have improved the energy efficiency of the house and installed solar panels which have reduced its footprint by 50% - 2 tonnes per year.

The carbon footprint of this renewable electricity could be considered to be zero or approximately 1 tonne per year depending on the carbon account approach.

* **Financial Savings:** (Utility bill reductions, payback period for green investments)

Overall, at Sept. 2024 prices, the home’s energy bills have been more than halved from £1,800 to £750.

#### Challenges and Solutions

* **Challenges Faced:** (Issues encountered during the renovation/work)

Unable to find external wall insulation contractors in 2007 so had to insulate internally and the dispution of this has been minimised by linking it to other changes and redecoration of the house.

#### Future Plans

* **Upcoming Projects:**

More solid wall insulation:

* Add external wall insulation to front wall that has no internal insulation.
* Finish internal wall insulation in hallway.
* Insulate rear bedroom
* **Long-Term Goals:** (Goals for further reducing environmental impact)