GREEN OPEN HOMES WEEKEND

BRISTOL ENERGY NETWORK

FUNDED BY Retrofit West

# Open Home Profile

**Name:**

Matt Williams

**Contact** (optional)**:**

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**Location:**

52 Broomhill rd BS4 4SD

# Home Overview

**Home Type** (e.g., Detached, Semi-detached, Apartment, Bungalow)**:**

Detached Bungalow

**Year built** (Approx)**:**

1925

**Size** (Square footage or number of bedrooms/bathrooms)**:**

9osqm 3 bed 1 bath

**Renovation History** (Include any green renovation dates or milestones)**:**

Purchased property in summer of 2015. It was in need of full renovation as it didn't have a working heating system or bathroom.There was also a significant overheating issue and evidence of damp on some walls. We planned to improve efficiency at the same time and had to move in within two weeks of purchasing. So there were a few temporary fixes carried out in the first two weeks. One or two may still be on the to do list. When and what works have been completed have had to be a compromise and timed carefully. Due to budget constraints we had to take a mosly diy approach and with real life getting in the way. It has taken us 10 years so far and we are about 80% complete.

# Green Features

## Energy efficiency

**Insulation** (Type, areas insulated)**:**

IWI PIR most walls. Some limecork EWI along car port. Loft has a mix of mineral wool celulose, and pir under storage area. Floor has air tightness and 15mm woodfibre.

**Windows & Doors** (Type, materials used, double/triple glazing)**:**

UPVC Triple glazing to the front. UPVC double glazing to the sides and rear.

# Green Features

## Energy efficiency

**Heating System** (Type, efficiency rating, and control system)**:**

Main heating is from a Vaillant Arotherm 5kW+ air to water heat pump. This will have an open loop system with weather compensation. It will be set to run in eco I mode for hot water and sound reduction mode for space heating as these can boost the running efficiency due to reduced compressor and fan loads.

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

ElectriQ Wall mounted all in one air conditioning. Cooling capacity of 3.5kW with power use of up to 1.35kW. Phone app controlled, but can also be linked to home assistant for automation. Usually runs on self generated solar power.

**Lighting** (LED, smart controls, natural light)**:**

Led downlights throughout. Some zoned controls in some rooms with a few point of use LED lamps with app control.

**Appliances** (Energy Star rated, specific energy-efficient models)**:**

Induction hobs, smart plugs

**Smart Technologies** (Smart meter Tariffs, integration tech)**:**

Smart meters with Intelligent Octopus Go working with 17.7kWh of Givenergy batteries. Set to fully charge nightly and discharge during the day all year. Just started experimenting with Home Assistant, but that is a steep learning curve.We also have a number of app controlled smart plugs.

## Energy efficiency

**Solar Panels** (Number, capacity, and type)**:**

10.2kW on the main house installed over 3 periods. With a 9kW export limit. Positioned on 6 roofs (Including NE & NW) on two strings with solar edge optimisers. A further 4kW in the garden or on the garage with micro inverters. the garden panels will be put away during the open homes event.

**Battery Storage** (Type, capacity, and integration):

AC connected 17.?kWh of Givenergy batteries with a 3kW inverter

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

# Green Features

## Indoor Environmental Quality

**Air Quality** (air purifiers, low-VOC paints and materials):

Air purification in each room

**Ventilation Systems** (Trickle vents, wall vents, MHRV):

Humidistat controlled extraction in the bathroom via an app to adjust flow rates and run times

**Natural Lighting** (Skylights, sun tunnels, and window placement):

multiple skylights.

**Other useful information:**

Large rain water collection for garden use. (2000 litres) bike storage. Single potable induction used to supplement the built in gas hob.

## Performance & Savings

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

I will have graphs at the event. The reduction in gas use of the years is very evident. Now the heat pump is in we technically have 100% savings on gas use and reduced standing charges costs.We also have reduce Diesel adn Petrol use, but electricity use has increased.

**Carbon Footprint Reduction** (Estimate of CO2 reduction - this CO2 calculator can be a useful tool to use):

Not something I am interested in. Our EPC rating is in the top 25 in the BS postcode (of around 230,000 EPCs) so I feel we do enough.

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

Difficult to say because it all interacts and some is less than a year old. Our house produces more energy than it needs and enough to run a smart EV car and a plug-in hybrid. I The EV cars alone save us around £2-3,000 in fuel costs. I will have more details available.

# Green Features

## Challenges & Solutions

**Heating System** (Issues encountered during the renovation/work):

We are a small bungalow so planning a space for a hot water cylinder was a challenge. it could have gone in the loft, but the boiler was towards the back of the house. We built a utility cupboard to house the cylinder and stacking the washing machine and drier gave us just enough room for the cylinder with some amazing pipe work magic from our heat pump installers. Timing for the install we critical as the boiler I needs to be removed for the hot water cylinder to be installed it meant a few days without hot water, where some installs can be less then one. Aware of this, we planned for the installation to take place the week that most of the family were away at scout camp.

**Solutions Implemented** (How challenges were overcome, any innovative approaches):

We have gone with a dual core hot water cylinder. it is actaully the vaillant 250 litre solar thermal version. I hope to one day adapt the cypto miners for water cooling and use that to heat some of our hot water. Heat pumps are great, but a heat system that generates income is better. In the short term we have set up both cores in series with the heat pump to eak out a bit more efficiciency. Combined with running in ECO mode and the lowest temperature we are happy with. Should give us the best efficiency we can acheive.

**Upcoming Projects** (Planned upgrades, additional sustainability measures):

Planning to:
Have one final air pressure test to check for any further air leaks and to see if the resulting air permeability certificate will increase our EPC rating a bit.
Use solar panels as external shading over the south facing windows to help reduce overheating. Even if we don't connect them. Second hand solar panels are cheaper than actual shades.
Build DIY batteries to utilise more of the solar panel system there.

**Long-term Goals** (Goals for further reducing environmental impact):

This is our forever home. Long term goal is to not have so much dust from all the works, not have tools and materials around the place. The garden and driveways need work now the house is nearly as good as it can get. Life uses energy, so fit the most efficient stuff you can and then get on with living.

## Any other information you'd like to share?

To date we have:

Changed the location of rooms to make better use of the local envonment by moving bedrooms to the cooler north side of the building. Removed concrete outbuildings to add more usuable garden. Lowered external ground levels to reduce risk of historical damp issues returning. Changed layout to remove space wasted by corridors. Resulting in increased bedroom size. Reduced window sizes on south sides to reduce overheating risks Internally insulated most of the property with 50-75mm of pir insulation (including window reveals and seals). Plus a small amount of external cork insulation. Floors have been partially insulated with wood fibre mostly 15mm, but 150mm mineral wool under kitchen cupboards. Carried out thermal and air pressure testing to highlight leaks and improved air tighness with Pro clima air tighness tape on floors and some windows. Reroofed the main and flat roof areas. Added some of the solar PV at the same time as reroofing to save on scaffolding costs.

Heating system additional information:

We also have an all in one air to air unit that can be used to boost heat up time, but is mainly used for cooling or air movement. This is control via local control and an app. Finally we have crypto heaters. These solve complex puzzles and get paid for that work while also producing heat for the property.These are on smart plugs and work when the energy tariff is low enough for the miners to make more income than they cost to run or when we have excess solar generation.

Future plans:

more loft insulation -more to tidy up what is there as we already have plenty -The 9/10 year temporary fix that we did in the bathroom needs going back to. While a good tempory fix is a perminant fix. We have a waste water heat recovery unit waiting to go in - ongoing air quality monitoring and possible increased mechanical ventilation depending on the data -More use of AI and home assistant for automating and optimising things -Do the final decorations and possibly reskim a ceiling or two. Don't judge the house be the quality of the decoration. ii is what you can1 see that makes it a top 25 property -Start 12 months of monitoring for super home certification

# For Internal Use

## Your Availability

**What days/times can you do?** (We'll be running the days from 11-4pm)**:**

Sat and Sun 12-4pm

**How many volunteers would you like?** (You can have up to 2)**:**

**How would you like people to come to your home?**

Drop-in ☒ Booking ☐ Hybrid ☒

# Instructions

Please return this pack to communications@bristolenergynetwork.org. We will upload your open home profile to the Green Open Homes website so that potential attendees can learn more about your home.

**Privacy Notice for Green Open Homes Participants**

By submitting this information, you consent to Bristol Energy Network collecting and using the data you provide for the purposes of promoting the Green Open Homes event and reporting to our funders, Retrofit West.

We will only share your data with our funders or project partners where necessary and relevant to the delivery of this project. We will never share your data with any other third parties without your prior consent.

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