

Domestic Fuel Saving Project (1)

- Modern detached house
- Central Bradford on Avon
- Built in 1997
- 5 bedrooms
- Double-glazed
- Insulated cavity walls

Intended Upgrades:

- Improve insulation
- Add solar photovoltaics (PV)
- Change from gas central heating to air-source heat pump

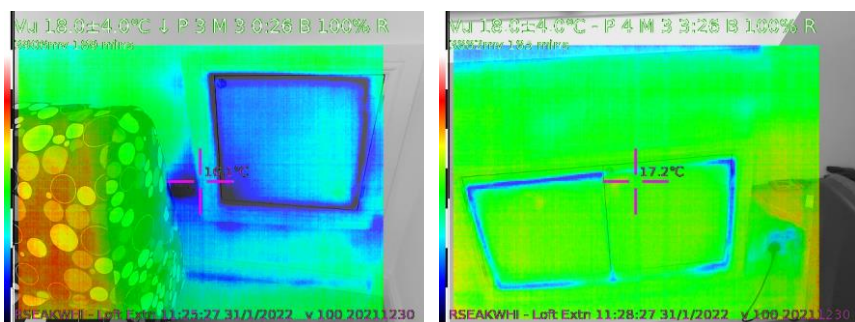


Insulation – Heat Loss Survey

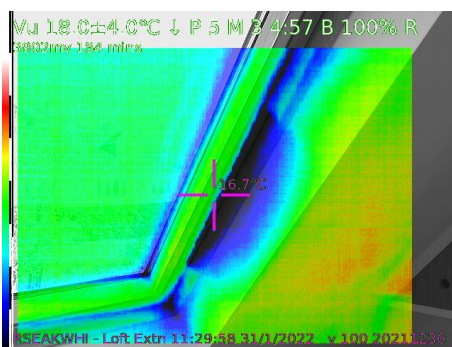
- CHEESE (Cold Homes Energy Efficiency Survey Experts) survey in Winter 2021
- Survey works by reducing internal air pressure inside the home on a cold day, then using an infrared video camera to identify places where cold air is leaking in (equivalent to warm air leaking out)
- Generally the home was well insulated, but numerous places identified where cold air leakage occurred

Insulation Improvements

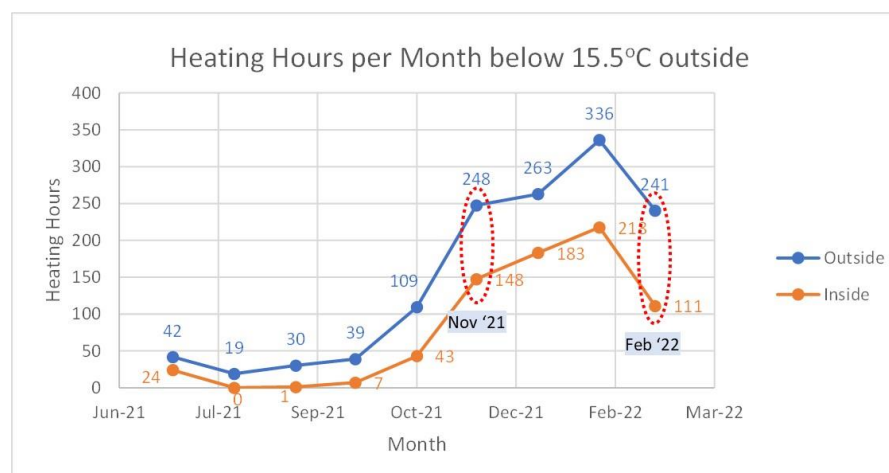
- **So far:**
 - Cap extractor fans in laundry room and cloakroom
 - Seal around water pipe inlets in bathrooms and cloakroom
 - Insulated wall plug sockets on external walls
 - Draft excluder around eaves access hatches in attic
 - Add keyhole cover and draft excluder around lock on patio doors
 - Shut window trickle vents in winter
- **To be done:**
 - Add draft excluder to Velux window frames
 - Fit new insulated exterior doors – chosen Palladio doors with U value < 1 W/m²K from LF Replacement Windows in Chippenham



Eaves access hatches before and after adding draft excluder (note also the plug socket leaking cold air)



Velux window leaking cold air



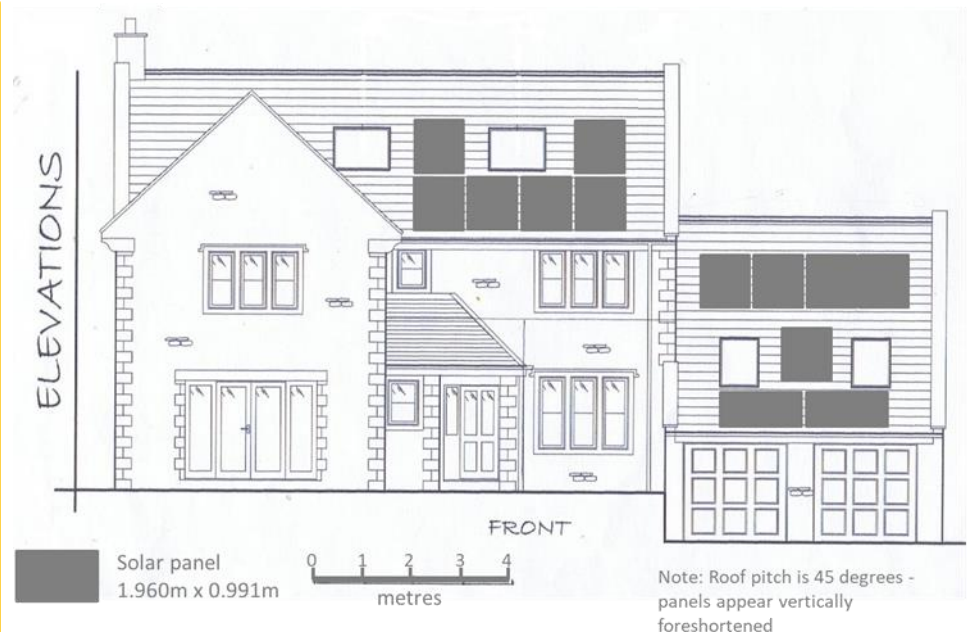
Reduced heating

required: In November 2021 the central heating was on for 148 hours, when the outside heating requirement was 248 hours. After initial draft reduction work, in February 2022 the central heating was only needed for 111 hours, even though the outside heating requirement was 241 hours. Around 30 hours less central heating was required for similar outside temperatures.

Domestic Fuel Saving Project (2)

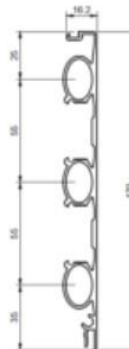
Solar PV

- Signed up to Wiltshire Council Solar Together scheme
- Installation will be delivered by Infinity Renewables in February 2023
- System:
 - 13 no. JA Solar 390W Mono Percium All Black modules
 - Optimisers on all panels
 - Inverter
 - Immersion heater controller
 - 6 kWh battery storage
 - Emergency power supply off battery (during power outages)
 - Predicted annual power output 3910 kWh (after allowance for shading)
 - Annual domestic power consumption 2000 kWh

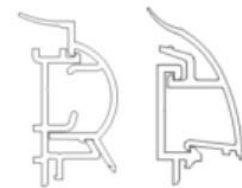


Technical Data Sheet

Profile Details



Optional Profile Capping



Approvals & Warranty

CE Marked to BS EN 442:1
BSRIA
TUV (Germany)
KTH
10 Year Warranty

Thermal Performance

The listed temperatures are mean water temperature at the skirting, with the calculated outputs factored on the BSRIA Test 51397.1.
Flow rate is assumed to be 56.80g/m/s
Outputs are per linear metre

Temperature (°C)	Heat Output (W/m)
30-35	73
40-45	103
50-55	135
60-65	168
70-75	202

Air Source Heat Pump (ASHP)

- ASHP could be powered by solar PV
- Will not be able to use existing radiators and we are reluctant to retro-fit underfloor piping. Therefore:
- Considering Discrete Heat **Thermaskirt** to replace radiators. This comprises panels that replace the skirting boards and have a similar profile (thickness, height)
- So far supplier has failed to attend appointment but their product looks attractive!
- Currently no idea of costs!

