57 NAUNTON LANE

CONSTRUCTION: Typical small early twentieth century solid-wall house.

KEY FEATURES: internal and external insulation, solar pv, wooden double and triple glazing, solar gain conservatory, and LED lighting.

NUMBER OF BEDROOMS: 2

NUMBER OF OCCUPANTS: 2

What we did

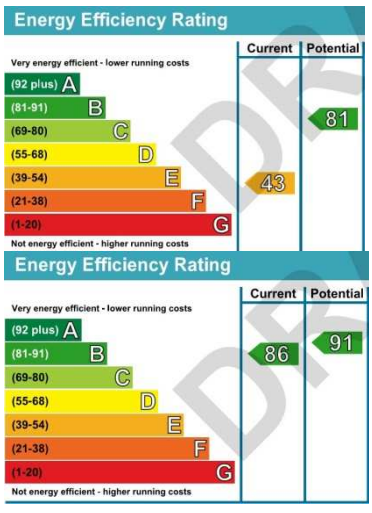
In 2011 we wanted to make some significant alternations to the house, so it was a good opportunity to think holistically about how we could make it more energy efficient – thus both reducing our bills and helping the environment by using less fossil fuels and generating our own electricity.

	Before	After
Energy Rating	43	86
Gas consumption p.a.	11,613 kWh	6,903 kWh
Electricity generation p.a.	0	1,500 kWh
Carbon emissions p.a.	5.5 tonnes p.a.	1.1 tonnes

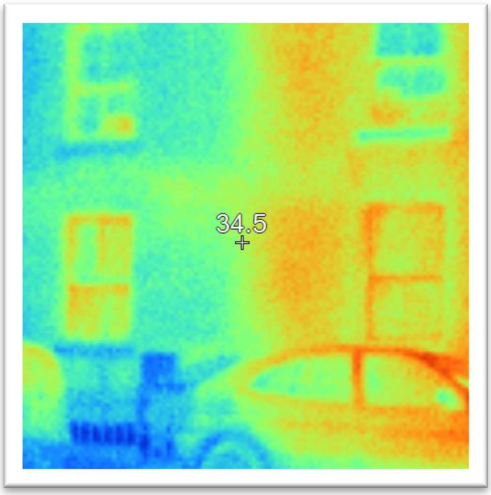
Energy Performance Certificate

A before and after EPC showed that our improvements had doubled the energy rating from 43 (E) to 86 (B). The table below shows the effect of each improvement incrementally:

Improvement	Rating after improvement
Seal open chimney	44
Wall insulation	59
Draught proofing to doors	60
Double/triple glazing	64
Bathroom ceiling insulation	66
Disconnect decorative gas fire	72
Solar PV	86



"Our back door was very draughty. This and the uninsulated solid walls meant that in winter, the boiler used to be on most of the time, struggling to reach the temperature on the room thermostat. Now the heating comes on for an hour or so, and the temperature is reached so the boiler goes off. Having a well-insulated house means it keeps the heat in for longer, so the boiler is on much less, and we have noticed the difference in our gas bills."



No cost and low-cost improvements

Not all the improvements cost money – Thinking about how we use the heating system made a difference. Knowing that generally the most efficient way to heat a house is using a controllable central heating system, and knowing that the gas coal-effect open fire is only 30% efficient, and that the chimney caused draughts, we blocked it up and disconnected the fire. We experimented with the wireless room thermostat moving it to the rooms we want to be warmest at any given time, and keeping the house at a relatively low temperature all day, increasing it when we feel cold, but not allowing the temperature to drop too low.

The thermal imaging camera showed draughts around the front and back doors. Draught proofing is a very simple measure. We also use LED lights when bulbs need replacing.

Wall Insulation

Solid wall insulation is less easy and more expensive than cavity wall insulation, but with a house like ours, there are no cavities. 50mm phenolic board insulation was fixed to front wall internally, so that the outside appearance from the street was unaltered. The side

and rear walls were insulated externally, giving a smart rendered appearance. “Breathable” products and brick effect finishes are also available. The work was quite disruptive and noisy, with scaffolding outside and radiators and skirtings needing to be removed inside, but we are pleased with the result – both the appearance and the effect on our heating bills!

Bathroom sloping ceiling insulation

With no loft hatch to the roof in the back of the building, but with a ceiling high enough to allow insulated plasterboard to be fixed underneath, this is an alternative to conventional loft insulation. This can be done by a builder or DIY.

Double/triple glazing

We prefer wooden windows, as a natural product and because of the toxic nature of PVC production. The front windows and sliding door were made by MB Joinery from Gloucester tel 01452 739293. We chose wooden triple glazed windows for the alterations at the back of the house. Jeld-Wen for example make triple glazed windows in standard sizes for not much more than double glazed.

Conservatory

To make the most of solar gain in Spring and Autumn, we open the door between the conservatory and the house to bring warm air into the house. It is also a great place to bring on plants and seedlings.

Solar PV

With a south facing roof, and at the time of a generous feed in tariff, it made sense to generate our own electricity. It is a relatively small roof, fitting 8 panels – a 1.76 kWp system. It earns over £700 pa, but installation costs are much lower now. New installations should still achieve payback in 7 – 10 years – until FITs are slashed in January.
Local installers – Shackleton and Wintle www.shackleton-wintle.co.uk tel 01242 222641 or Roxon Electrical www.roxonelectrical.co.uk 01452 371840

For more information, see video at www.cheltenhamgreendoors.org.uk/57-naunton-lane

Energy saving grants have just about gone, but free advice is available from Warm and Well on 0800 500 3076. For local installers see www.linktoenergy.org.uk Both these are run by Severn Wye Energy Agency.