CASE STUDY

Stonewall Terrace – 3 Bed
1960's Terrace



This case study can be found online here

- Low-cost improvements
- 'Big' insulation works
- Glazing
- Lighting systems & electricals appliances
- High spec heating
- Renewables: electricity
- Water management
- Lifestyle change

Sue has lived in her property for the last 12 years. When she moved in, the house had cavity walls with cavity wall insulation, and double glazing installed in 2004. The windows had no trickle vents. Heating provided by a three-year-old gas condensing boiler.

Before the retrofit, the property had internal mould patches and condensation issues, with no passive or active ventilation. Sue wanted to improve the home's comfort and indoor environment while reducing her energy bills and overall energy use. Luckily, she already had a good knowledge of retrofit, supported by further degree-level study in the subject and some practical experience, and was also supported by a fellow former CAT student in developing the retrofit approach.

Energy Efficiency Measures

Low-Cost Improvements: lined curtains and thermal blinds

Draught proofing: not needed but I put enclosed porches on both front and back doors and an extension on the double doors originally to the back patio

Ventilation: Single room heat exchanger above cooker in kitchen; active mechanical extractor fan above bath/shower

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Floor insulation: 30mm styrofoam on the uninsulated concrete slab floor throughout ground floor; extension and porches front and back with current standard insulation

Internal Wall insulation: One wall (gable end) which projects into neighbour's property - sheepswool faced with fermacell breathable board

External wall insulation: 100mm polystyrene and lime based render (Knauf system)

Double or Triple Glazing: No change other than windows that begin to 'leak' are replaced like with like

Solar panels: 3.8 kw installed 2014 with Immersun which directs power to hot water tank via immersion when there is surplus being generated after use by background appliances. This has saved loads of £.

Water conservation: four water butts

Lifestyle/behavior changes: Thermostatic radiator valves turned off unless a room needs heating. I do not heat bedrooms unless needed - never heat my bedroom. Upstairs there is usually just the one small radiator on in the landing unless there are visitors staying. Downstairs I heat the dining room/kitchen for a short time each day when needed in winter and the lounge only when I am in it. I also have lined curtains and thermal blinds which are closed at dusk in autumn/winter to keep the heat in.

Heat gain in summer: I now use bamboo blinds which I hook on the window frames outside and these are closed at all times (they do let a little light in) as well as the curtains/blinds inside are shut. The house is then opened up at night to cool. This way I have kept my living spaces to a comfortable temperature when it has been 32 degrees and more (on occasions above 35). Before that the downstairs rooms were getting too hot (28 degrees). The outside blinds will be removed when the hot weather is over and stored in the attic for use next year.

Annual Energy Consumption: I have no comparison as I began to do the work when I moved into the property. Current usage (2025): electricity 520kwh, gas: 1844 kwh. Cost £506. This obviously doesn't include electricity used when the solar panels are generating. I get the Feed In Tariff which in 2025 netted £900. My low use is due to: 1. sole occupation 2. Careful use of heating controls 3. Although I have an electric shower it is rarely used as I use the shower linked to the hot water tank (electric showers are very expensive to run). 4. I

have no dishwasher. 5. I do not use the oven much (which is electric) - I have a combined microwave/grill/convection oven so if I'm only cooking something small enough for that I'll use it. I also time my use of cooking appliances to make best use of the solar energy generation (so cook during the day not in the evening). I also have a slow cooker, and pressure cooker, which are low users of energy. A pressure cooker is a marvellous thing for cooking in bulk for little cost. 6. I don't do much ironing (haha). 7. The bath is rarely used - it uses a whole tank of hot water (although when the Immersun is working heating the water costs me nothing).

Architects/Installers/Contractors: The work on my house began in 2012 and was finished in 2014. A local architect did the extension design. A colleague project managed the ecorefurb (Paul Buckingham/Sustainable Lifestyles) and a local builder (Ingo/Elements Build) did most of the building work with a couple of other blokes to help. I did some of the work, including the floor insulation and flooring. It involved a lot of work: removing tiles/carpets, putting down floor insulation (I only did half the ground floor then did the rest in winter 25/6 when I got rid of the old carpet), perimeter external insulation around the floor slab, removing all the windows before putting up the external wall insulation then replacing them, rendering the insulation, building front and back porches and a single storey back extension built to modern building standards, repairing the back patio. The roof was also taken off and the roofing fabric replaced. At the same time the EWI was extended in front of the single concrete blocks above all the top windows - in these houses a major cold bridge and inside the house where condensation occurs (where the ceiling meets the wall above the window). Extractor fans installed in bathroom and kitchen (heat exchanger). At the same time I replaced the bath with a walk in bath which is mostly used for showering - the bathroom is very small and this was a good way to make more space.

Learning: A lot! The solar and immersun have been very worthwhile, as has the floor insulation. Especially now the whole ground floor is done. Also now I have no problems with mould and condensation but know that houses in this area and of this build type do suffer from both especially as they were constructed with unbreathable concrete blocks and designed to have ventilated rooms and cavities (heated by coal/open fires and back boilers when built) then later sealed in with double glazing.