

## Eltisley Avenue, CB3 9JG

Tom and Anne:

Tom is a retired electronics engineer and Cambridge Carbon Footprint's Chair of Trustees. Anne also has an engineering background and is the Director of The Creativity Partnership.

*'We bought the house in 2001 and have a longstanding interest in sustainability and innovation. The house shows the dramatic impact of a steady succession of improvements over a 15 year period. Many of these were DIY, some were done by professionals. We like trying out new ideas, so have various "inventions" to share.'*

### Overview

**Property age & type:** 1902, mid-terrace

**Wall type:** Solid brick

**Floor area:** 129 m<sup>2</sup>

**Cost of retrofit:** Approx £7,000

**Occupants:** 2 adults

	Energy kWh/m <sup>2</sup> /yr		Carbon kgCO <sub>2</sub> /yr	
	Elec	Gas	/m <sup>2</sup>	/person
<b>Before</b>	23	97	27.9	1799
<b>After</b>	11	16	7.7	495

### Key features

#### Insulation

- Better than building regs 2015 loft extension
- DIY under-floor insulation
- Passive cooling
- Extensive improvements to air tightness

#### Glazing

- All triple, double or DIY secondary glazing

#### Heating

- Woodburning stove, scavenged wood

#### Lighting

- Low energy lighting, with a variety of LEDs

#### Water

- Low, dual-flush loos.

#### Materials

- Reclaimed pine flooring in loft extension.
- Marmoleum (eco-lino) in Kitchen



## Low Energy Measures

### Insulation

We've progressively installed underfloor insulation on most of the ground floor, using several different DIY methods. The 2015 loft extension is much better insulated than the original, with better-than-building regs Celotex and double battened tri-iso insulation in the walls and ceiling, and triple glazed Velux windows. In other areas of the attic, we've used Rockwool + Celotex to maximise insulation performance without reducing the available height for storage.

### Draughtproofing

We've made extensive air tightness improvements which have made a big difference to a previously draughty Victorian terrace. We've explored various ways of finding leaks, from a simple homemade indicator wand to a survey using thermal imaging camera and blower-door. We were a pain to the builders of our loft extension, insisting on better than building regs air tightness.

### Heating/energy

We now get half our heating from a woodstove burning scavenged and hand-cut wood. Wood is stored in a sedum roof wood store which also forms the front fence.



### Lighting

We're now progressively upgrading from CFLs to LEDs, trying out a variety of types in different places.

### Cooling

To keep cool in summer we use our own design of easily demountable home-made awnings to shade south facing windows. Passive stack ventilation draws cool air from the underfloor void up to a small Velux window in the attic.



### Future Plans

We're planning to replace our poorly insulated back doors, and hope to install solid wall insulation with the help of a grant help from the Cambridgeshire Solid Wall Insulation Fund.

### Performance

Home-energy carbon emissions have been cut by 72% since 2001, with further improvements expected as a result of the 2015 loft extension. Much of this is due to the technical changes, but it also been very worthwhile steadily getting comfortable at lower temperatures. Our thermostat is usually set at 15C.

We now wish that we'd installed internal solid wall insulation when doing the kitchen in 2003.

### Professional Contacts

#### Insulation

Loft Insulation: [Celotex](#), or Celotex + double battened [Tri-iso](#) multifoil; Storage area DIY insulated with 90mm rockwool plus 60mm Celotex.

DIY under-floor insulation: Living room: 200mm Rockwool. Hall: 100mm celotex and recycled PET "[homeeco](#)". [See Article](#)

#### Glazing

High performance Jeld-wen sash windows, (U 1.4)) and triple glazed velux (GPL 3066). DIY secondary glazing with 2mm acrylic from [Engineering & Design Plastics](#), with adhesive Velcro from [MDP hook & loop](#).

#### Heating

[Morso 04](#) wood-stove, installed by Peter Wakely, 01954 211049

#### Lighting

Robus Acorn from [Lighting Direct](#) on kitchen ceiling. 3W under cupboard lights from [Simple Lighting](#)  
LED Strips from [Ultra LEDs](#)

#### Water

[Ifö Cera](#) 4/2 litre flush loo from [Green Building Store](#)

#### Secondary materials

Secondary glazing (in sitting room) from [Go-Glass](#)  
Reclaimed pine flooring from [Solopark](#) £47/m<sup>2</sup> in loft. Reused carpet in storage areas [Marmoleum](#).