

People Exploring Low Energy Homes

## Fen Road, CB4 1BS

Peter Pope and Meg Clarke:

Peter moved into this 1897 Victorian semi in 1978 and joined with Meg in the property next door in 1997. Energy efficiency has always been a priority for this household. Meg and Peter independently read Seymour's Self Sufficiency back in the 60s and are grounded in 'alternative' solutions. Meg took the Carbon Conversations course with CCF and subsequently ran sessions with Fabiola Blum. Peter drew inspiration from the Autonomous House (Vale and Vale, 1976) and with a hands-on approach has fitted solar water heating and some internal wall insulation. Progress has not always been quick - we take time to fully research all options to ensure we make the right decisions for the next stage of our plan. The best success has come where energy and functional design aspirations have combined to yield double rewards - in the kitchen.

### Overview

Age, Type: **Built in 1897 Victorian Semi-detached**  
 Wall type, Floor area: **Original walls: solid brick**  
**Floor area: 142m<sup>2</sup>**  
 Cost of retrofit: **£18,695**

	Energy		Carbon		2 people
	kWh/m <sup>2</sup> /yr		kgCO <sub>2</sub> /yr		
	Elec	Gas	/m <sup>2</sup>	/person	Notes
<b>Before</b>	20.5	144	35.6	2022	
<b>After</b>	14.1	0.05	6.3	357	

### Key features

- Solar thermal
- Solar thermal heating
- Thermal store
- Condensing boiler
- Underfloor heating
- Wood burning stove
- Internal insulation
- External wall insulation, in progress
- Heat zoning scheme
- Radiator reflectors
- Double glazing, some secondary glazing
- CFL and LED lighting



### Low Energy Measures

**Fabric First:** This philosophy means getting the insulation, air tightness and ventilation fixed as a priority over renewable energy. The first step has been to insulate walls internally; this is now being supplemented by external wall insulation under the current Green Deal Communities programme for Cambridgeshire. Some windows have been fitted with secondary glazing and where French doors were added they are double glazed in compliance with Building Regulations. The bathroom uses passive stack background ventilation with a solar powered fan to boost the extract as needed. **Lighting and Appliances:** The house has used Compact Fluorescent Lamps since they became available. One lamp is still going after 25 years! The recent work on the kitchen has introduced LED down-lighters (7W each) which give a very satisfying colour and intensity of light. The new fridge has an A+ rating.

**Heating:** Solar water heating was installed in 2004 and provides all our needs during the summer. A thermal store retains the heat until needed and has the feature of delivering hot water at mains pressure. A condensing boiler is also coupled to the

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store and takes over automatically in the autumn as the solar supply reduces. Under-floor heating in the kitchen draws on the store so that a proportion of the heating for this northern room is derived from the sun. Radiators elsewhere run from the boiler in two separate zones. Counting the UFH as well this makes a 3 zone system. There are two pumps in the system and are both A rated.

**Performance**

The recently completed kitchen has become the centre of the household. By concentrating winter activity in a single space and using zoned heating we minimise demand on the boiler. The kitchen is the best insulated space in the house and is comfortable when the floor temperature is 19-20 degrees. We enjoy it enormously. Solar heated water in the summer is a revelation – carbon footprint nil.

A rudimentary spreadsheet indicates that, compared with the original Victorian condition, we should ultimately reduce our heating demand by more than 70% when all measures are in place.



**Future Plans**

One of the greatest shortcomings of Victorian architecture is draughty suspended timber floors. We plan to make ours airtight, insulated and under-floor heated. A bespoke control system for these floors will utilise a Raspberry Pi computer connected to the internet. This style of house also has a front door opening directly into the living room. A porch will provide a buffer space and being south facing will also give us valuable growing space for the spring.

**Professional Contacts**

80 percent Hub – Green Deal assessment

Property Revolutions Ltd – Property Management

**Products and Costs**

LEDs are OSGRAM GU10 Warm White &W

EWI (quote No5)	£7,995.00
IWI (DIY)	£1,000.00
Floors (DIY)	£2,000.00
Architect	£4,000.00
solar heating (DIY)	£1,500.00
Boiler	£2,200.00
<b>Total</b>	<b>£18,695.00</b>

