

## Milton Road, CB4 1SU

**Spencer Hagar** – Spencer says:

My mother Eva bought the house next door to ours. It needed substantial upgrading, but as she was able to stay with us in the meanwhile, the work was far quicker than if she had been living there.

Eva's main aims were to create a beautiful, light and practical house, in which to stay warm all year round, to minimise energy use and environmental impact, and to make provision for disabled living.

The upgrading - both overall and in detail - has been designed in keeping with the late 1920s style of the house, most notably in its outside wall covering, windows, doors and porch, and inside in its floors, doors, finishes, fixtures, fittings and furnishings.



### Low Energy Measures

The **envelope of the house** was transformed by:

- temporarily removing the roof tiles, increasing the depth of the rafters with extra timbers, and **insulating between and under them**;
- removing the previous ground floor & replacing it with **fully insulated slab with high conductivity screed** to carry heating tubes;
- **insulating the exterior wall covering**;
- installing **double-glazed, argon-filled** windows and glazed doors and bi-fold doors, and **triple glazed, argon-filled** Veluxes in the roof.

An **outer hallway** helps **prevent heat loss** between the front door and the reception hall/upper house.

**Under floor heating** upstairs and downstairs runs off an **air source heat pump**, and the conservatory in the extension gets day-long, year-round **passive solar gain**. Thermostats in all living rooms and bedrooms provide sensitive temperature control.

**Removal of both chimneys** took out two major sources of heat loss and gained a total of about 20m<sup>3</sup> of critical living space, shared among the reception hall/upstairs bathroom and the main bedrooms, one downstairs/one upstairs.

**Whole-house ventilation with heat recovery**, with its piping skilfully retro-fitted so as not to intrude into living space, complements the good levels of insulation and airtightness now achieved. There is manual or automatic summer bypass, and natural ventilation is obtained through almost all the windows, as well as through large bi-fold doors at the back of the house and in the conservatory.

**Photovoltaic panels** are fitted on the s/east and s/west aspects of the roof at the back.

**Rainwater harvesting** with below ground storage, and delivery system to garden.

#### Overview

Age, Type: 1927, Chalet bungalow, Detached

Wall type, Floor area: Solid brick + Cavity, 205 sq m

Project timescale: 9-10 mths

Cost of build: £95,000

#### Energy usage – 2.5 adults

Not yet available

#### Key features

+ insulation: ground floor, roof, exterior walls

+ windows and doors: double glazed

+ roof windows: triple glazed

+ natural light improvements throughout

+ air-sealed entrance lobby

+ under floor heating

+ air source heat pump

+ heating controls: thermostats throughout

+ photovoltaic panels

+ passive solar gain: conservatory

+ ventilation: passive and heat recovery system

+ LED lamps

+ rainwater harvesting

+ sedum roof to single story extension

+ reflective solar glazed roof lanterns

+ low carbon footprint garden landscaping



**Sedum roof** on single story extension at the back, with large, low E, double-glazed roof lanterns serving the kitchen and conservatory beneath, whose **cavity walls** are filled with 100mm fibreglass

## Professional Contacts

**Builder:** David Wake, Willingham, 07836 290112

**Architectural Design Consultant:** Jane Sunderland, [jane.sunderland.design@gmail.com](mailto:jane.sunderland.design@gmail.com) 077380 62298

**Designer/Assistant Project Manager:** Alexandra Kidgell [alkidgell@gmail.com](mailto:alkidgell@gmail.com) 07891 462703

**Interior Design:** Alison Carter Interior Design [allylulu@btinternet.com](mailto:allylulu@btinternet.com) 07843 618066

**Architectural Consultants (Environmental systems):** AC Architects [www.acarchitects.com](http://www.acarchitects.com)

**Structural engineer:** Dave Turner, Prior Associates [www.prior0associates.co.uk](http://www.prior0associates.co.uk) 01353 722330

**Energy Systems Specialist:** Evergreen Ventures Ltd [www.evergreenventuresltd.co.uk](http://www.evergreenventuresltd.co.uk) 01945 419090

**Garden Design:** Helen Allison Garden Designer [www.helenallison.co.uk](http://www.helenallison.co.uk) 07717 844554

## Products

**Insulation (roof and floor):** Ecotherm Eco Versal

**Roofing/flooring board:** Ridgeons, [www.ridgeons.co.uk](http://www.ridgeons.co.uk)

**Air source heat pump:** Daikin Altherma heat pump system, Evergreen Ventures Ltd

**Photovoltaic panels:** Caymax PV Pro monocrystalline modules, Evergreen Ventures Ltd

**Heat recovery ventilation system:** IDEO Intelligent Whole House Heat Recovery System, Evergreen Ventures Ltd

**High conductivity floor screed:** Wodecki Ltd, Bedford [www.wodecki-ltd.co.uk](http://www.wodecki-ltd.co.uk) 01234 303118

**Under floor heating:** Speedfit, Evergreen Ventures Ltd

**LED lighting:** EcoLED recessed spotlights and low energy bulbs (EcoLED)

**Windows:** Double glazed, argon filled, low E, Cambridge Joinery [www.cambridgejoinery.co.uk](http://www.cambridgejoinery.co.uk)

**Lantern lights:** Elglaze, with Celsius One performance solar glazing [www.elglaze.co.uk](http://www.elglaze.co.uk) 01223 323232

**Exterior insulation and render:** Weber EW1/100mm, Weber render, Pinnacle Spray Renders Ltd [www.pinnaclesprayrenders.co.uk](http://www.pinnaclesprayrenders.co.uk)

**Paint:** Low VOC emulsion

**Green Sedum Roof:** Bauder Xero Flor XF301 sedum blanket, Voland Roofing [www.volandroofing.co.uk](http://www.volandroofing.co.uk)

**Rainwater recycling system:** Kingspan 5000l tank Kingspanwater [www.kingspanwater.com](http://www.kingspanwater.com)