



March 2009

**All fired up: 6a Architects' Raven Row gallery
Tim Ronalds on Rick Mather at Stowe School**

Rural renaissance? Timothy Brittain-Catlin on planning policy plus houses by Manser, dRMM, LJRH and Hawkes Architecture
Berlin's identity crisis – Stella, Mäckler, Kleihues and Kollhoff in the controversial competition to rebuild the City Palace



Hawkes Architecture

Located on a rural site near Staplehurst in Kent, 'Crossway', a four-bedroom house designed for his own occupation by architect Richard Hawkes, is one of the first to be completed under planning policy PPS7 paragraph 11, and it lays claim to be one of the UK's first zero-carbon homes.

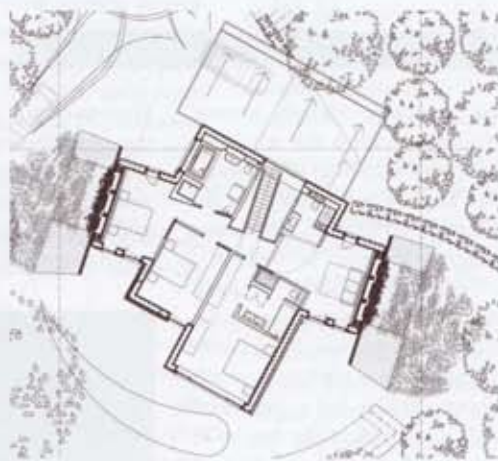
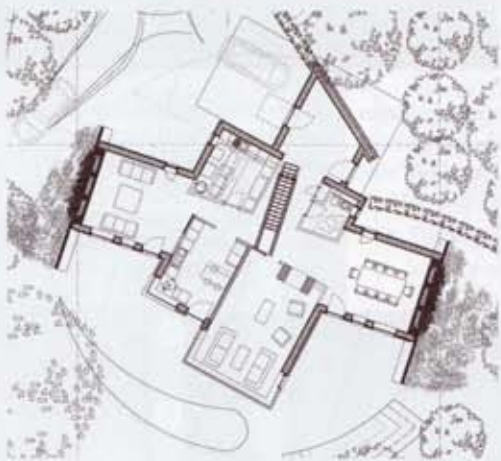
The principal structure is an 8.5 metre wide catenary vault spanning 20 metres, constructed from local hand-made clay tiles. It is covered by a 300mm thick living roof for insulation and camouflage. The vault design is adapted from Mediterranean timber vaulting, which uses thin bricks to form light yet robust structures. Such

vaults were commonly used in Catalonia during the nineteenth century, although the earliest known example, in Valencia, dates

back to 1382. The vaulting obviates the need for high embodied energy materials such as concrete as well as providing thermal mass.

Above Crossway's agricultural context.
Below Ground and first floor plans.

Bottom left The main stair employs a vaulted structure similar to the roof.





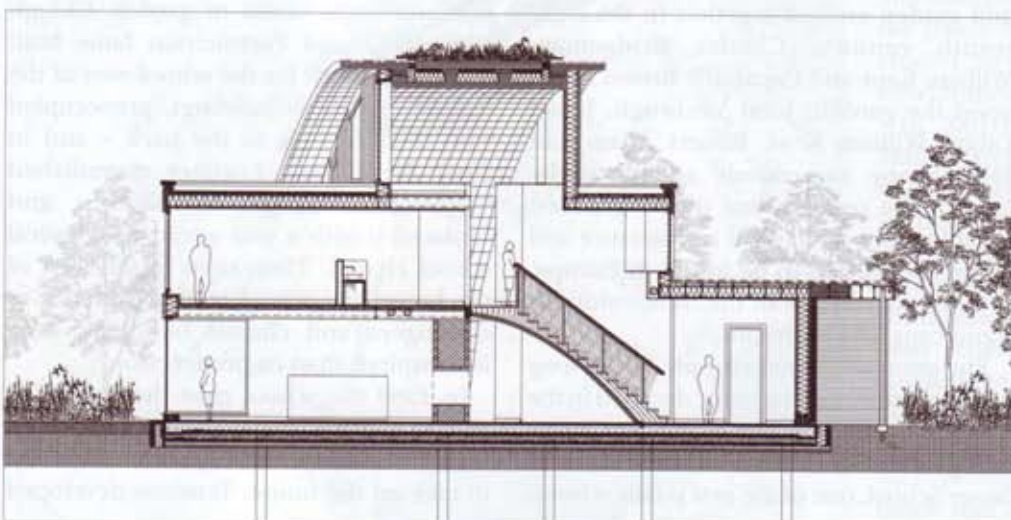
Where possible, locally-sourced materials such as the Kent peg roof tiles were used. Triple-glazed windows, however, are not manufactured in the UK so these were imported from Austria. These wood-aluminium tilt-and-turn windows from Internorm achieve U-values of up to $0.63 \text{ W/m}^2\text{K}$, and sound insulation of 44 dB.

The intention is that the house should generate all its energy on site using a 91 per cent efficient MVHR system with a 4kw heat register. It incorporates the UK's first photovoltaic/thermal (PV-T) system with 26 square metres of combined thermal and PV panels. This is linked to a heat stream phase-change material (PCM)

thermal store (a world first), backed up by an 11kw biomass boiler. Windows are triple-glazed throughout and the front door is vacuum insulated (also a world first), providing insulation equivalent to 500mm of polystyrene. A PCM thermal store board is used in some of the south-facing rooms. Rainwater is harvested

and waste water is treated on-site. The house is insulated throughout using recycled newspaper and internal finishes include polished crushed glass bottle flooring and recycled car tyre matting.

Above Construction of the vault. Three layers of hand-made clay tiles, each laid at 45 degrees to the one below, are adhered with plaster of Paris.



Project team
 Architect: Hawkes Architecture; builder: Ecolibrium Solutions; structural engineer: Scott Wilson; sustainable technologies: Newform Energy; sustainability adviser: Carbon Free Group; electricians, plumbing, media: Weald Technical Services; approved inspector: JHA Innovation; Code for Sustainable Homes assessor: Carbon Plan; windows: Dynamight Internorm; bathrooms: Roca; vacuum insulated doors, airtesting, kitchen: Oakwood Builders; paraffin wax thermal mass board: Dupont; handmade clay tiles: Babylon Tile Works; living roof design: The Green Roof Consultancy; rubber waterproofing: Permaroofing; soil stabilising system: Greenfix UK; monitoring system: Parity Projects; Tires car tyre entrance matting: Interface Flor; external grade plasterboard: Lafarge GTEC Aqua Board; polished recycled glass and resin floor: South East Coatings; LED lighting: Intram Barwell; lighting: Kreon; natural paint: Ecomerchant; timber cladding: Inwood Developments; zinc copings and flashings: All Metal Roofing; sustainable appliances: ISE.

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