

# EARTHLY DELIGHTS

Homes underground are quiet, have more light than you think and are ecologically sound, reports Mark Hughes Morgan

**M**ANY of us dream of building our own home, but it's not often we consider doing it underground.

We may need to think again — because ecology-conscious architects are busy moving earth-sheltered houses from the fringe into the mainstream as low-energy, low-impact alternatives to traditional houses.

Some may call them Hobbit homes, but they are passionately endorsed by their admirers — not all of them Teletubby fans.

Architect Jerry Harrall, founder of SEArch Architects, is probably the most committed advocate of the technique in the UK — both on his own behalf and advising others. He is currently writing a book on the subject.

He built his own earth-sheltered home-office in Lincolnshire and has since completed several similar

projects, including social housing and offices. 'An earth-sheltered building is the only building form that can mitigate CO<sub>2</sub>,' says Harrall, by which he means a house that absorbs CO<sub>2</sub> instead of generating it.

It pulls off this trick using the sun's heat — with plenty of south-facing windows — on a large thermal mass: the body of the building that works like a storage heater, releasing the absorbed heat slowly and keeping a steady warmth in the building.

Over the top is a green roof that both absorbs CO<sub>2</sub> through the plants, and provides superb insulation. With solar panels and other green building add-ons, this can result in a very eco-build indeed.

'Since 1997 all the buildings I have designed have achieved zero heating,' says Harrall.

Surrounded and topped by earth, the house needs a considerable concrete core to withstand the weight. The solidity of the building creates a tranquil environment, according to Harrall,



Roof garden: The headquarters of architects SEArch, designed by Jerry Harrall

Picture: SEArch

because it is super-soundproof. He claims the prize for the largest number of designs of earth-sheltered buildings in the UK, a total of 22, and has a number of projects on the go.

One of Harrall's happy customers is Phil Newby, director of environ-

mental consultancy Green Ventures, who built his single-storey 150 square metre four-bedroom house near Rutland Water in 2008, to a design supplied by Harrall.

'I've always wanted to build a low-impact and environmentally aware house, without being "hair shirt" about it,' says Newby.

The site was a three-acre Victorian walled kitchen garden that he and his wife first fell in love with, saved for and applied to build within in 2008. Permission was granted with some special conditions.

Phil opted for no foundations, to save energy. He had the house built by civil engineers 'on their way to widen the M1', with steel columns that would not disgrace a multi-storey car park holding up the earth-topped roof in the main living space. There is solar-heated hot water and low-grade electric under-floor heating but otherwise, 'it's utterly low-tech,' says Phil.

and saw the underground Space Centre that used to be in Minneapolis. She found a suitable site through the British Earth Sheltering Association ([besa-uk.org](http://besa-uk.org)) in Fulbrook, a Cotswold 'chocolate box village' down the end of a lane cut into the slope.

'It was an in-fill site, but the council wanted to keep the open view to it, so they were only willing to put something in if you couldn't see it,' she says.

Gaining permission had taken the owner about three years, but the developer who bought it decided he didn't want to take on the build. She bought the plot in '98. 'We came up with a different design and a different house,' says Hickey. 'My father decided he wanted a swimming pool and we couldn't talk him out of it.'

They ended up with permission for a four-bedroom, 260 sq m house. The design is 'a rectangle with a circle cut-out' — a curved frontage of glass facing south, bringing in light from all directions. It took 18 months to build — the narrow lane, and the quantity of rock and clay to be removed made progress tortuous at times.

The design was unusual with much of the insulation on top of the build like a thermal 'umbrella' extending three metres past the sides — though it added to the expense of an already expensive build.

As well as the thermal qualities of the structure, there is a ground source heat pump, located in two 35 m bore holes.

'My parents like the house at 23-24c, and there is a pool to heat, so no heating is not an option.' Now they are in their 70s, her parents want to move somewhere where they don't have to drive so much.

'The site cost £40,000, the build and fitting-out cost a lot more than we hoped — about £750,000. We are not going to make huge amounts of money, but we have taken great satisfaction from it.'

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**A**S OPPOSED to the 'space station controls' of some eco-houses, this one depends on a wood-burner and curtains — drawn to keep heat in, open to let it out.

The house has passive ventilation and there are mechanical vents in the bathrooms to help prevent damp. While not self-sufficient, Phil estimates the house probably has a fifth of the energy impact of a normal one.

He is evangelical about its qualities. Which is just as well since the special conditions of planning permission were, firstly, that he gave up any permitted development rights and, secondly, that the Newbys open the house and gardens to the public for a certain number of days a year (they also do B&B — see [barnsdalewalledgarden.co.uk](http://barnsdalewalledgarden.co.uk)).

Architect Sandra Hickey had wanted to build an earth-sheltered home for many years — ever since she visited America

## ON THE MARKET... underground



**Long Sutton, Lincs, £485,000**

A FOUR-bedroom home including master bedroom with ensuite and dressing room. There is a gym, office, separate study and special features such as solar panels. Set in one acre.

■ SEArch architects: 01406 364646, [searcharchitects.co.uk](http://searcharchitects.co.uk)