

DETAILS

What A new two-bed house
Where Dumfries and
Galloway
Architect Kirsty Maguire
Architects Ltd
Structural engineer
David Narro Associates

FOREVER HOME

Building a brand-new eco house on a tight budget? It sounds impossible, but this project is proof of what can be achieved

Photography David Barbour
Words Caroline Ednie

Zoe Roberts met Tony Francis six years ago on the Isle of Mull, where Tony had a hotel. “We were both ready to move on,” recalls Zoe, “and we realised we were looking for the same thing – our absolute dream was to build a new house with environmentally considerate credentials.”

They subsequently relocated to Dumfries and Galloway, and it was here while renting that they found a rural plot up for sale. “It was down a little lane and had stunning views,” says Zoe. “There were neighbours reasonably close by and the nearest town was within walking distance, but it still felt idyllically remote. It was covered in nettles, dock leaves and rosebay willowherb up to our shoulders, but we both looked at it and agreed it was a no-brainer.”

Once they’d bought it, Tony’s daughter recommended speaking to Dundee-based architect Kirsty Maguire, who is a specialist in passivhaus design. “Kirsty was on the same wavelength as us,” says Zoe. “I’ve seldom known anyone with such attention to detail, and she really listened to what we were saying. Our brief at the early stage was just a top ten list – number one was a mud room! We have three Labradors, and managing them on a wet winter’s day had to be easy.” They also wanted a big open-plan kitchen, dining and living room, two bedrooms and two bathrooms.

The architect came up with ideas for an eco-friendly, low-carbon house, built on a modest budget and reflecting the local vernacular such as the metal roofs of the neighbouring farm buildings, in particular a beautifully weathered barn with a rust-red roof in an adjacent field.

“We looked at a few design options, but one stood out,” says Kirsty Maguire. “The shape of the building creates courtyards within the garden which relates to the light at different times of day – it works like a sundial.”

The courtyard garden to the east, opening from the kitchen and dining area, is perfect for morning coffee. As the sun moves around the house, it hits the south side with the pond and vegetable garden, bathing the outdoor dining table in sunlight from late morning until evening. “The design comes from the clients’ love of the outdoors and being in the garden,” explains the architect. “The design is about the site itself, as well as the house.”

It has a generous living space with an open ‘cathedral’ ▶

ALL IN THE DETAILS

THE BUILD

Work commenced in the middle of September 2020 and lasted for 16 weeks – exactly as the contractor had predicted. The plot extends to a third of an acre and the house occupies 107sq.m of space. The total build cost was £260,500.

EXTERIOR SPEC

- The contractor was Broatch Construction, Lockerbie
- Triple-glazed windows: Green Building Store
- Steel roof and cladding: SSAB Greencoat

INTERIOR SPEC

- Kitchen: Hi-line Kitchens, Dumfries
- Flooring: Howdens
- Tiles: Solway Tiles, Dumfries
- Bathrooms: Grahams, Dumfries
- Windowsills, and the shelving in the kitchen-dining room: Philip Wilson of Tools and Timber, Thornhill, Dumfries
- Styling: Yvonne Forsyth, Dumfries

ECO FEATURES

- Guidance on underfloor heating, radiators, domestic hot water and renewables: Luths Services
- MVHR (Ventilation): Paul Heat Recovery Scotland



The house has two ‘wings’ with an entrance link in red as a nod to the surrounding farm buildings. The courtyard provides sheltered outdoor areas



[Above and opposite]

Two views of the open-plan kitchen-dining-sitting room that occupies the 'living' wing of the house. The double-height space is comfortably furnished, with all eyes drawn to the beautifully framed garden views

ceiling in the main barn-like form. The bedroom wing is similar but more private and set back, and there's a welcoming entrance space linking the two. The planners were onside, insisting on one tweak only: a steel standing-seam roof was chosen over the couple's original request for red roofs. "The silver relates to the traditional agricultural roofs and the more dramatic grey skies," says Maguire, "but a splash of red was kept for the link building."

Various materials were considered, all with their environmental impact in mind, as well as performance and cost-effectiveness within the modest budget. The low-energy house that emerged meets the AECB building standard, which uses passivhaus methodology as a basis. The timber-frame structure is clad in untreated larch. It has triple-glazed windows, high levels of woodfibre insulation and is airtight; a mechanical ventilation system extracts stale air and supplies warm fresh air. Infrared space heaters provide what little extra warmth is needed, with hot water produced via an air-source heat pump. "We made sure

there were no thermal bridges so the building doesn't leak much energy," says Maguire. "There are no cold spots or draughts so it's very comfortable, with a constant trickle of warm fresh air all year round."

The build went on site in September 2020, with the couple renting down the road. "We didn't have wriggle room on the budget," says Tony. "But the contractors gave us a timetable and they stuck to it completely. Everything went like clockwork. We respected the fact that they were on a tight schedule and that the site was their place of work. Us turning up too often would be irritating, so instead we always came on a Monday bearing cake – that worked for them and for us!"

Despite the disruption caused by the pandemic – particularly the challenges of procuring materials and the late delivery of the windows – Zoe and Tony moved in exactly when the contractors had promised they would, and they were also within budget.

The couple have named their new house after the site's mature beech trees, with as many of them as possible being retained. One that had to be felled has been made into windowsills and shelving by local craftsman Philip Wilson.

"There isn't a stick of new furniture in the house – it's all things we've had for years," says Zoe, who chose the green on the kitchen wall to complement the seasonal colours of the beech trees that are visible from the window. "Kirsty designed ▶





[Left] The simple, streamlined form was inspired by the shapes and materials of the local agricultural buildings. The plot the house sits in was once farmland

WHAT IS PASSIVHAUS?

Passivhaus is not a brand or product, but a **design and building methodology** that can be adapted to any style of house, to blocks of flats and even to commercial premises. The aim is to build **sustainable, healthy, comfortable and easy-to-heat buildings** with lasting quality and performance.

Since it emerged in Germany in the 1980s, the concept has been tested in more than 30,000 builds around the world. Parameters have been set to ensure certain criteria are met – **minimal energy use and costs, high thermal comfort, a healthy indoor climate**, and so on.

Air-tightness and insulation have a massive impact on the energy efficiency of a building. So does a **clever design** which optimises **solar gain** (and minimises overheating) by carefully choosing the orientation and the window sizes in certain elevations. Efficient **ventilation** is crucial, as is avoiding heat loss through thermal bridging.

The resulting house will not only **cost very little to heat**, but will be **draught-free** with **excellent indoor air quality**.

around our dining table and we managed to position all the furniture before we moved in.” The kitchen came from another local supplier, Hi-Line in Dumfries.

And what of the famous mud room? “It’s the most high-functioning room of the whole house and it’s only two metres square!” smiles Zoe. “It’s got the freezer, the washing machine and our food store in it as well as the air-source heat pump and the ventilation system. It’s lovely and cosy for the dogs too – they sleep under the worktops. It’s a great design.”

Both she and Tony are delighted. “I think that has to do with the proportions and the air quality, and the fact that we can see outside all the time and it’s very light even in winter. It doesn’t feel too big for two people, but nor does it feel too tight with visitors,” she adds.

“The important thing is that this is just a house for an everyday retired couple – it could be for everybody,” concludes Tony. “It is not a mega-spend house, and I think that’s the joy of it. It makes us part of the natural world.” ■