

# Out of the ordinary

**Kevin and Emma Kniveton's** vernacular cottage is anything but traditional, as their self-build has brought passive house design to the Isle of Man, and could help to kickstart many more projects like it

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## THE KNIVETON FILE

**NAMES** Kevin & Emma Kniveton  
**OCCUPATIONS** Electrical engineer & banker  
**LOCATION** Isle of Man  
**TYPE OF PROJECT** Self-build  
**STYLE** Traditional  
**CONSTRUCTION METHOD** Timber frame  
**PLOT SIZE** 1,038m<sup>2</sup>  
**LAND COST** £100,000  
**HOUSE SIZE** 212m<sup>2</sup>  
**PROJECT COST** £240,000  
**PROJECT COST PER M<sup>2</sup>** £1,132  
**TOTAL COST** £340,000  
**BUILDING WORK COMMENCED** September 2014  
**BUILDING WORK TOOK** 40 weeks  
**CURRENT VALUE** £400,000

**W**hen Kevin Kniveton's grandfather stood on the cold windswept hillside and surveyed his land, he probably never thought his own flesh and blood would one day build the most energy-efficient house on the Isle of Man right where he was standing. But that's exactly what Kevin did, as he now lives in a new home designed to withstand the harshest of winters, but built at a minimum cost.

"All my family live in this area so it was quite natural to think about building something permanent on the plot," says Kevin. "The company I approached about the job, Complete Construction Services, had built a traditional property for my parents in 1994, so I trusted them to do a great job. At the beginning I hadn't actually considered an eco design, but as we developed the plans they asked whether I had considered building a passive house."



*“I wanted to make our home as future proof and low cost as possible”*



The house stands on a hill overlooking land that has been in the family for generations



#### WE LEARNED...

**HOLD OUT** for what you want. We spent three years negotiating with the local planners to achieve a house that was as close to our original vision as possible.

**BUT BE PREPARED** to compromise. Aim high from the outset, but keep realistic expectations and bargain with elements you don't mind being flexible over.

**IT'S GOOD** to have a clear idea of what you want from the start, especially in terms of the layout and design – and then stick to it. This frees up time to shop around for the interior fixtures and fittings to make sure you are getting value for money.

**TRY TO PLAN** for any external electrics or water outlets early in the build, so that you can reduce the risk of compromising the building's airtightness.

**TO GET THE FULL BENEFIT** of a passive system, you may need to spend a bit more on energy-efficient features such as appliances and lighting. But once the bills start coming in, you'll see that the extra spend will pay for itself very quickly.

The idea of reducing their heating bills appealed to Kevin and his wife-to-be, Emma, so with a few tweaks and adjustments to the design, they agreed to go ahead. “The big thing for us was that we wouldn't need to heat the house,” says Kevin. “It can get pretty bleak up here in the winter, especially as we're positioned on a hill, so we were putting a lot of faith in the passive system.”

#### Three years in the making

While the couple were happy with the plans, they struggled to convince the local authority that the design would fit well into the landscape. “The planning process took longer than the build because the council was not very keen on the idea at first,” says Kevin. The new house was to replace a stone farm cottage, but the planners wanted the Knivetons to renovate rather than demolish and rebuild. “They felt the property on this site should remain in keeping with other traditional houses on the Isle of Man. However, the cottage was derelict and had no foundations, so it simply wasn't worth restoring.”

Kevin and Emma also aimed to change the orientation of the new house in comparison to the original footprint. “The old cottage faced across the hill, but we preferred the idea of looking over the town,” says Kevin. The wrangling meant it took three years for the couple to get planning permission for what they wanted. “In the end we had to go to appeal to get it through, but were forced to make compromises,” says Kevin. “We wanted to make the most of the fantastic view and have windows as large as possible, but the planners insisted they be smaller in the style of local Manx cottages. After three years of fighting, we didn't want to give up, but in the end we decided to let



The traditional kitchen-diner is spacious and kitted out by local Isle of Man companies

that one go.” One thing the Knivetons did win on was their choice of exterior finish, opting for render rather than stone cladding, which the council would have preferred.

The couple took out a special warranty to help get a mortgage, with the latter releasing funds in stages throughout the build. “The bank was quite hesitant at first because they hadn't come across a property designed to Passivhaus standards before, but thankfully we got the assurances required to go ahead,” says Kevin.

#### A Manx first

Building the new four-bedroom cottage marked a new direction for property design and building firm Complete Construction Services. This is the company's first private residential project in collaboration



with multi-award-winning, passive house experts Beattie Passive and renewable energy specialists SNX.

The first stage of the build – which included pile foundations and the shell construction – took three months. Access was a little tricky, via a narrow lane, which proved a challenge for larger supply vehicles negotiating the steep, winding road to the exposed plot. The build itself was straightforward, though: the house was pieced together like a giant jigsaw, using a largely pre-engineered system. The foreman of the couple's chosen contractor took a course in its construction and assembled the prefab sections on site, with all other materials locally sourced where possible.

"We kept the house square in its design to keep the costs down," says Kevin. "We were hesitant about including an attic space at first



Above: The attic space benefits from natural illumination thanks to several rooflights



Left: A neutral palette features throughout the interior decor



testing monitored sound and noise levels before a dedicated structural survey completed the list of checks.

The house had to achieve the required standard in each instance to gain Beattie Passive's in-house certification, which is only slightly shy of zero carbon. This final step could be achieved via a solar electric installation. In the end the design exceeded Passivhaus standards (although the pair didn't apply for formal accreditation), delivering a home that is so highly insulated, energy efficient and airtight that a traditional central heating system was unnecessary.

The windows posed their own particular challenge. "We wanted triple glazed passive standard units, but they fell just short of spec during the tests, so had to be readjusted," says Kevin. "Fortunately we had a roof over our heads and we were not in a hurry to get the build finished to a particular deadline, so there was no panic."

### The bigger picture

James Vickers, managing director of Complete Construction, believes Kevin and Emma's self-build has opened up new possibilities in the Isle of Man and created a blueprint for future passive house projects on the island. "The adoption of this type of development will benefit the island in so many ways and not just with the vastly reduced running costs and improved comfort levels," he says. "At a time when we are heading to crisis levels of skilled workers in the construction sector, the Beattie Passive system opens up a great opportunity to train and develop a much needed resource of expertise on the island to build energy-efficient houses, which will go a long way to easing this problem."

Kevin is delighted with the results of the collaboration between the three main businesses involved in his home building project. "My experience of constructing a house to Passivhaus standards

but decided it would be cheaper to create a living area up there at this stage, rather than retrospectively, and we are glad we did it."

"I wanted to make our home as future proof and low cost as possible," he continues. "The Beattie Passive system will reduce energy demand by up to 90% and provide a much healthier living environment than a traditionally-built house. It was the biggest attraction for me – and definitely the way forward."

### Energy efficiency testing

The property includes a mechanical ventilation and heat recovery (MVHR) system incorporated into the structure, which changes the air several times an hour. To ensure that the house met stringent requirements for fire safety, soundproofing, thermal efficiency and airtightness, it had to pass a rigorous testing programme. This was done through a thermographic survey to measure thermal efficiency and an airtightness test to gauge air leakage. Acoustic

has surpassed all my expectations," he says. "I knew that my utility bills would be a fraction of what I would ordinarily pay in a traditionally built home, but even I was surprised at how low my quarterly bill over three of the most demanding months of the

year has actually been. Knowing that future payments will decrease much further still when the solar thermal takes over the domestic hot water production and with lower demand generally, I just can't understand why all homes are not built this way."

### closer look

## Airtight front door...

Taking a sustainable, passive-led design approach means paying attention to all the details that you might otherwise take for granted. For instance, Kevin and Emma's front door doesn't have a letterbox, because it would adversely affect the high levels of airtightness required for ultra-energy-efficient builds. An external box is usually the answer to the problem; a further option is to build a front porch, with the letterbox in the outer door.



### Floor plans



Ground floor



First floor

### TOTAL BUILD COST BREAKDOWN

Elements	Cost m <sup>2</sup>	Cost %	Total cost
Design, planning & building control	£118	10%	£25,000
Timber frame manufacture	£142	13%	£30,000
Groundworks & frame erection	£94	8%	£20,000
Timber frame lining & joist installation	£94	8%	£20,000
Roof & windows	£212	19%	£45,000
First fix & plasterboard	£212	19%	£45,000
Second fix	£165	15%	£35,000
Miscellaneous	£94	8%	£20,000
<b>Grand total</b>			<b>£240,000</b>

### Useful contacts

BUILD SYSTEM **Beattie Passive** 0845 644 9003 [www.beatiepassive.com](http://www.beatiepassive.com)  
 DESIGN & MAIN CONTRACT **Complete Construction Services** 01624 852358 [www.ccs-iom.com](http://www.ccs-iom.com) RENEWABLE TECH CONSULTANT & SUPPLIER  
**SNX** 01624 666777 [www.snx.im](http://www.snx.im) STRUCTURAL & BUILD WARRANTY  
**Checkmate** 020 7933 2626 [www.checkmate.co.uk](http://www.checkmate.co.uk) KITCHEN **JNC Interior Design** 01624 675689 [www.jnc.co.im](http://www.jnc.co.im) KITCHEN & BATHROOM TILES **Cu-Plus Callow** 01624 673131 [www.cuplas.co.im](http://www.cuplas.co.im) WOODEN FLOOR **Magic Carpets** 01270 256520 [www.magiccarpetscrew.co.uk](http://www.magiccarpetscrew.co.uk) BATHROOM FITTINGS **Better Bathrooms** 0333 777 4777 [www.betterbathrooms.com](http://www.betterbathrooms.com) LANDSCAPING **Island Landscape** 01624 801114 [www.islandlandscape.co.uk](http://www.islandlandscape.co.uk)