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BUILDING BLOCKS

Vikki and Alex Bruce couldn't move forward with their plans to turn a ruined Fife farm into a new home until a radical eco solution arrived

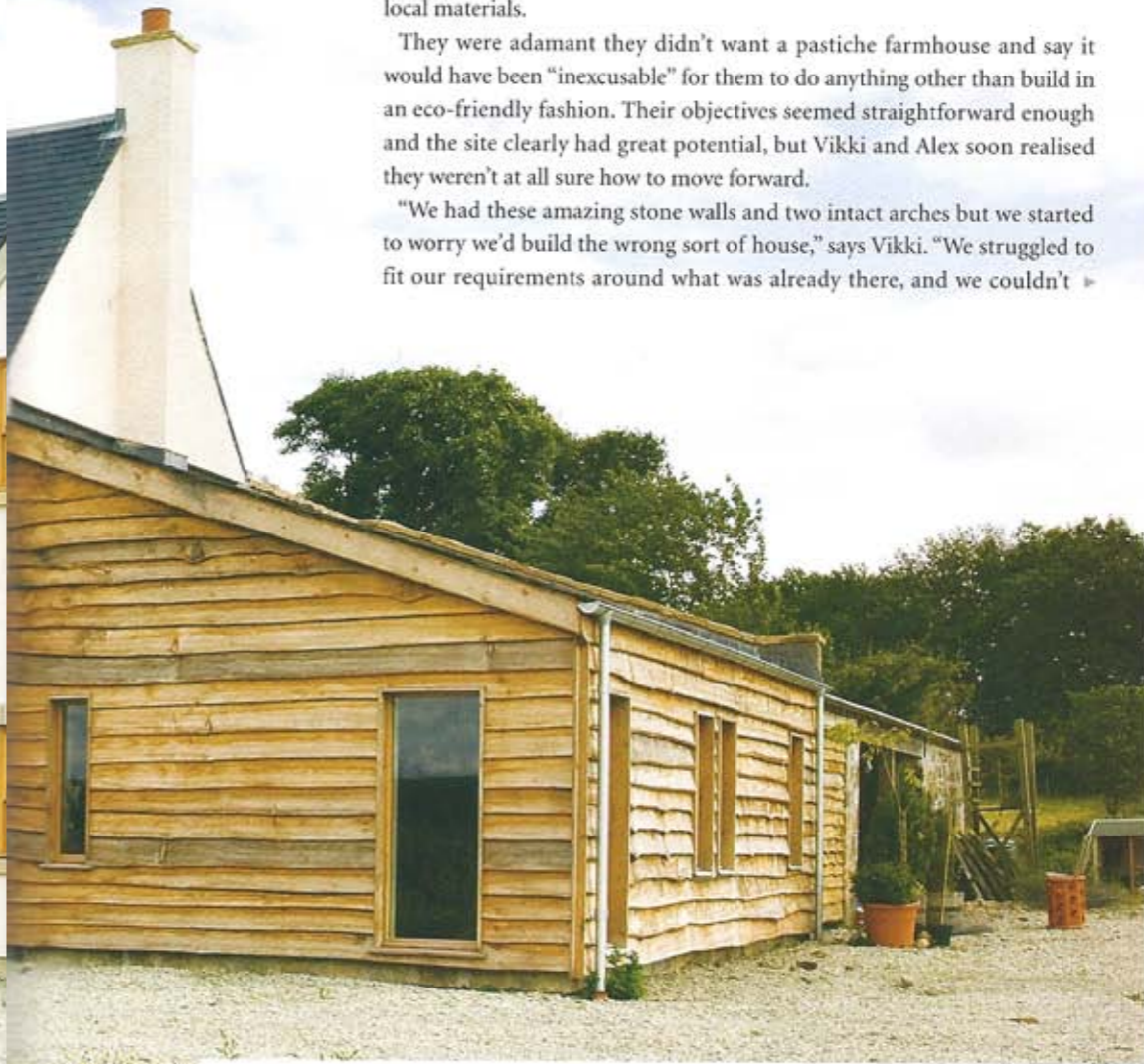
Words Jane Crittenden Photography Douglas Gibb

Sometimes all you need to solve an old problem is a new perspective. That's what Vikki and Alex Bruce discovered after spending years worrying about how to make progress in the building of their home.

Back in 2004, it had all seemed so simple. The couple had acquired a collection of ruined farm buildings near Dunfermline from Alex's family. These solid stone walls, some of them 200 years old, had the makings of an ideal family home, and the Bruces were desperate to salvage as much of them as they could and then build the rest of the structure using natural, local materials.

They were adamant they didn't want a pastiche farmhouse and say it would have been "inexcusable" for them to do anything other than build in an eco-friendly fashion. Their objectives seemed straightforward enough and the site clearly had great potential, but Vikki and Alex soon realised they weren't at all sure how to move forward.

"We had these amazing stone walls and two intact arches but we started to worry we'd build the wrong sort of house," says Vikki. "We struggled to fit our requirements around what was already there, and we couldn't



DETAILS

What A traditional farmhouse constructed from the stone walls of ancient farm buildings and innovative clay blocks
Where Dunfermline, Fife
Building Contractor Craig's Eco Construction
Eco materials Natural Building Technologies
Construction time The project started in June 2009 and took nine months
Project cost £400,000





"WE COULDN'T DECIDE HOW TO BALANCE WHAT WAS BEST FOR THE BUILDING, BEST FOR US AND BEST FOR OUR BUDGET"



[Left] The wonderful stone arches from the original building have been incorporated into the interior of the new house, giving a semi-open-plan feel to the kitchen-diner and the living area. [Above] Stone lintels look great but bumped up the final bill

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The couple asked an architect friend to produce some designs and he worked on their project during his free time. In the meantime, another friend, John Rennie, had recently taken over as the Natural Building Technologies (NBT) technical advisor for Scotland, so they met him to discuss eco-building materials.

This was how the Bruces discovered ThermoPlan Ziegel blocks. They wanted the new walls to be as sturdy as the original stone ones without resorting to concrete. The Ziegel blocks were the perfect solution – strong, but with excellent eco credentials (see box).

John also recommended cladding the clay block work with wood-fibre external insulation to give the building increased thermal mass. Warmth is stored within the fabric so the walls act like a storage heater, keeping the house at a stable temperature all year round.

The plans were tweaked over a period of three years as the Bruces finessed their ideas and waited for their architect friend to have time to make their changes.

In November 2007, when planning approval was finally granted, it was a victorious moment. But when the builders' quotes started to come in, the couple's spirits sank. They admit they hadn't got the plans properly costed beforehand, so they were horrified to be quoted prices far in excess of their £300,000 budget.

It was back to the drawing board to make the design more affordable but, again, their architect friend couldn't move as quickly as they wanted. "We all agreed to hand over to Slorach Wood Architects, who made the necessary changes and submissions," says Vikki. "In hindsight, we really should have kept it on a professional level from the start and paid an architect instead of using a friend and trying to save money."

Planning approval was given again in January 2009 but by then the couple were struggling to find a builder who was

willing to work with the new technology. John Rennie suggested the Bruces contact Michal Sroka and Findlay Erskine from Craig's Eco Construction, as they had used NBT materials before.

The Bruces met the pair and hit it off with them straight away, encouraged to find them as positive and enthusiastic about the eco project as they were themselves. It was also a huge relief to hand over the reins of day-to-day project-management.

"It wasn't until we met Michal and Findlay that we stopped procrastinating," says Vikki. "It seems extraordinary now that it took us five years just to get to this point. We needed someone who knew what they were doing to take control."

Work began in June 2009, while the family continued to rent a nearby farmhouse and visit every day. The site had already been cleared and the few walls that couldn't be saved had been taken down, so by July the foundations were already finished.

Meanwhile, a local green-oak framer, Justin Rose, came on ▶





IN HINDSIGHT

"We'd have paid an architect from the start instead of using a friend to try to save money"

"ALTHOUGH IT WAS FRUSTRATING THAT WE TOOK SO LONG TO GET STARTED, IT WAS WORTH SPENDING TIME PUTTING THE PLANS TOGETHER"



Reclaimed timber has been used to create a striking staircase [top] and can also be seen in the exposed frame [above]

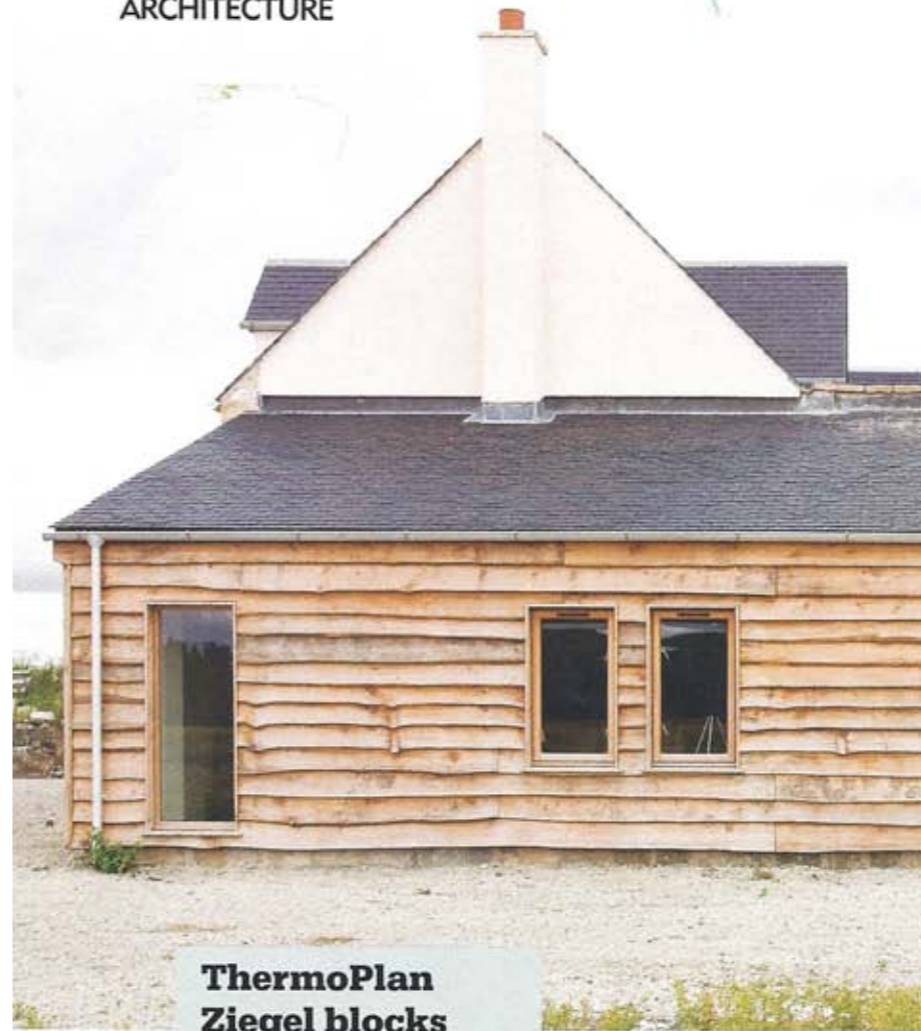
board. Over the years, the Bruces had salvaged 16 fallen trees – oak, larch and beech – from the site and wanted the wood to be made into a timber frame for the kitchen-diner, a staircase, a porch and flooring. Justin got to work with Keith Threadgall from Real Wood Studios, preparing the trees, drying the timber and crafting the wood.

The U-shaped outer walls on the northern façade and the downstairs internal walls were the main areas rebuilt in the clay blocks, and by the end of August the structure was finished and the walls filled with hemp insulation. The roof was erected and slated the following month. NBT's Pavarooof system was used. It consists of a rigid wood-fibre insulation board called Isolair that is both waterproof and breathable. Two layers of hemp batt insulation were laid behind this.

A ground-source heat pump distributes warmth to the underfloor heating pipes and two large storage tanks. The pump provides more than enough water for the family of five, who oversized the system so that a back-up would not be needed.

To the Bruces' delight, the builders went over and above the call of duty. "When the guys suggested we raise the ceiling height in the second bedroom as they didn't think it looked quite right, for example, we were so pleased," says Vikki. "It didn't really matter to them, but they knew it mattered to us."

The builders also surprised Alex one day by handing him £200 cash and a receipt. Findlay told him it was the fee from a scrapyards for the scrap metal they'd found while



ThermoPlan Ziegel blocks

The fired clay building blocks from Germany take around one-third less energy to produce compared to concrete blocks, and use about two-thirds less carbon dioxide. Around 40% of German buildings are built using Ziegel blocks or a similar system.

The honeycomb design is highly vapour permeable and prevents moisture passing into the building. The solid wall 'breathing' construction achieves good u-values and thermal performance so buildings are warm in winter and cool in summer.

The blocks are laid onto a 1mm bed of glue-like mortar and dry interlocked either side. The mortar is applied with a metal machine that runs the length of the course and sets quickly.

Construction time is three to four times faster than cavity walling and blocks can be built up to four storeys without the need for additional support.



"WE JUST NEEDED SOMEONE WHO KNEW WHAT THEY WERE DOING TO TAKE CONTROL"

clearing the site. "I told Findlay to keep the money but he refused, so we used it to throw a thank-you party for the whole team after we moved in," says Alex.

Despite the budget concerns earlier in the project, the final bill ended up being £100,000 over. The Bruces were aware costs were creeping up as they went along, as they improved the spec of some of the materials. For example, they decided against plastic guttering and opted for aluminium instead, feeling it was more in keeping with the house. Stone lintels were used instead of cast concrete, and tongue-and-groove walls went into two of the bathrooms. There were also extra costs for conservation Velux windows, landscaping, and roofing the outbuildings.

The builders' dedication meant the project was in a move-in condition in just nine months, and, looking at it now, it's hard to believe the Bruces had any concerns about the design, so much does the house look part of the landscape.

The original walls hold their own but are also cleverly absorbed into the design and merge seamlessly with the clay, timber, slate, lime and stone used in the build. The modern (yet ancient Egyptian) method of building with clay blocks marries the walls together, as does the timber-frame crafted from trees on the site.

Understandably, the house brings a lot of pleasure to the family. They are so happy with their home there's nothing they would change. "Although it was frustrating that we took so long, it was worth spending time putting the plans together," says Vikki. "We love that our home is sturdy and quite masculine yet feels so safe and welcoming. We feel it really reflects our tastes, our lives and the honesty of its agricultural history." ■

Craig's Eco Construction, www.craigsecoconstruction.co.uk