Home sweet home

Have you ever been tempted to make your dream of your very own grand design a reality by taking on your own self-build? For many, it's a daunting project, but it can be incredibly rewarding if you take the right approach. In the first in a series of features on an exciting self-build project near Stirling, we look at how best to make a start on your own self-build.

The East Lothian architecture practice, Low Carbon Studio, has just started work on a beautiful new property near Stirling, which will feature a timeless timber frame by Alba Green Oak Frames. Owners Colin and Suzanne Clark are doing a self-build, with a budget of £300,000 for land, fees and construction.

"All architectural design projects are interesting in their own way. "Each client is unique, and each design has its own challenges and rewards," says Colin Campbell of Low Carbon Studio. "This one was no different. In this case, the clients are self-builders with a site already secured, something which is definitely not always the case."

Based near Stirling, the site already has planning approval for a new house, which means that the initial hurdle of establishing if the site was viable had already been overcome. However, the owners' design aspirations were different to the design which had planning approval so Colin's task was to prepare a new house design which would meet their brief, the site constraints and budget.

"Before I start designing any project, it's essential to visit the site and get a feel for the land, views, orientation and topography, as well as gaining an understanding of how the owners feel about their new plot," says Colin. "I first met with Colin and Suzanne on site in October and my first task was to put together a brief."

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A brief can sometimes take the form of a scrap book or a simple list of likes and dislikes. It also includes a note of the spaces required and how they will be used. This particular plot has good views out over the landscape towards the south and this was to be an important aspect of the design.

The owners had also been in touch with Alba Green Oak frames, a company outside East Lothian which specialises in the design and build of traditional, structural green oak frames and trusses. Their initial idea was for a house with a Douglas fir frame.

The brief includes the construction budget and an outline of how the project will be financed. Some lenders will release funds in stages while others require self-build insurance. Clients also need to establish how much project management they are willing and able to take on. If you are up to the challenge, there will be significant savings, but it takes a fair bit of effort to project manage the building of a house, and it can take longer to complete the project.

"As silly as it sounds, it's important that the architect and the client get on with each other," says Colin. "There's a lot at stake when building a new house and I understand the responsibility I have in making someone else's dream home a reality and managing a large pot of money. Once

> *Before I start designing any project, it's essential to visit the site and get a feel for the land, views, orientation and topography, as well as gaining an understanding of how the owners feel about their new plot*

I have the brief, have visited the site and have established a rapport and understanding with the owners, the next stage is to prepare some initial ideas and sketch views."

For this property, Colin and Suzanne began with a simple plan layout on the ground floor with an open-plan living room, dining and kitchen, with southerly views out over a deck to the landscape beyond. They also incorporated a utility room, WC and a space which could be used as a bedroom, study or family room.

All the bedrooms are on the upper floor, with the master bedroom and balcony also looking south over the landscape. The main bathroom is also on the upper floor and it's positioned over the WC and kitchen on the ground floor to simplify drains.

At this stage in a project, it's important to co-ordinate services into and out of the new house and to establish access into the site for cars and site traffic during the construction. While the design of the house is the most important element, the house has to function and when the basics are sorted, the architect can concentrate on the internal and external design of the house.

It's also important to start thinking about materials at this stage; how they will impact on the design and budget, and if they fit into the context of the site. For this project, the profile of the roof was

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designed to step down with the site levels and to add some extra height in the roof space, which could be used for storage or a deck for sleeping.

The initial layouts and sketches are used to exchange ideas and to move towards an agreed design but also at this stage the project is still a bit fluid and things can change. It's important for the self-builders to know that they are in control of the design process.

"I always recommend to clients that they take advantage of the pre-application planning advice service offered by most local authority planning departments," says Colin. "It's free and for a small design fee you can establish what the planners are likely to approve."

The planning approval for this project has just been granted and Colin and Suzanne are waiting for the building warrant approval. The aim is to start on site in the next couple of months and you can follow the progress of the project in the next issue. TC

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Safe as houses

This stylish self build is a truly bespoke labour of love. We've been checking in on its progress and it has come on leaps and bounds. We can't wait to see the finished product.

WORDS: LYNN STEWART

For the past few issues, we have been following the progress of an exciting self build project in Stirlingshire, designed by East Lothian architecture practice Low Carbon Studio and featuring a beautiful frame by Alba Green Oak Frames. Since we last visited this project it has moved forward a lot and the building warrant approval has been issued; essential before any work can begin on site.

During the process of securing building warrant approval, owners Colin and Suzanne have been using their proposed technical information such as details, specifications and schedules to obtain and review costs for the various elements of the build. This allows them to firm up the total cost and ensure that it comes within their overall budget. One of the first elements to be priced was the ground works and this work has now started on site.

This covers the foundations and walls as well as timber frame posts and the concrete floor slab. It also includes connections to the drains and ducting for incoming services like electricity and water.

On most projects the ground works are the main area of concern in terms of costs and spending contingency funds. Most projects require a site investigation where trial pits (big holes) are dug on site to check on the type of soil and for any existing underground structures. This can be costly so a few strategically placed pits are dug and occasionally something can be missed. On this project, despite the site investigation, the builder found an old septic tank which had to be concreted up to stabilise it.

"This phase of the build relies on good weather," explains project architect Colin Campbell. "Concrete can't be poured if it's too cold and if it rains when the foundation trenches are waiting for concrete they usually become soft and muddy. If this happens, the trenches need to be scraped out, which takes time and adds to the cost of concrete"

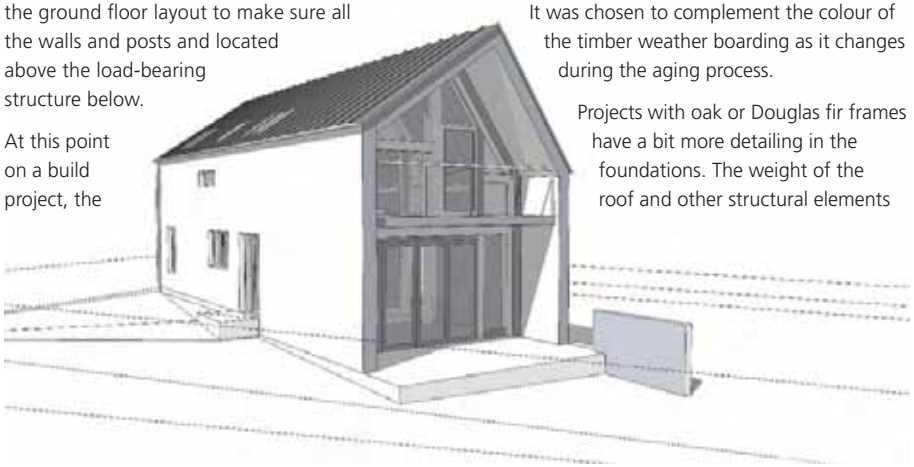
The setting out of the building is done at this point so it's crucial to get things positioned correctly. In some instances digital topographical surveys are carried out using GPS technology but for smaller projects the architects give dimensions to fixed reference points to set the building both in the horizontal and vertical planes.

To ensure that everything is in the correct position, Colin prepares a layout for the builder with dimensions to the walls, foundations and frame. Before this is issued, he overlays it with the ground floor layout to make sure all the walls and posts and located above the load-bearing structure below.

At this point on a build project, the client needs to have made decisions about the type and colour of materials they are looking for, and Low Carbon Studio works closely with them to help them reach these decisions. "If you haven't decided on materials before you start, questions will come thick and fast from the builder," says Colin. "This sometimes happens without much notice so I would always recommend getting this agreed before you start."

The first choice to be made on this project was the colour of the facing brick above ground level. It was chosen to complement the colour of the timber weather boarding as it changes during the aging process.

Projects with oak or Douglas fir frames have a bit more detailing in the foundations. The weight of the roof and other structural elements



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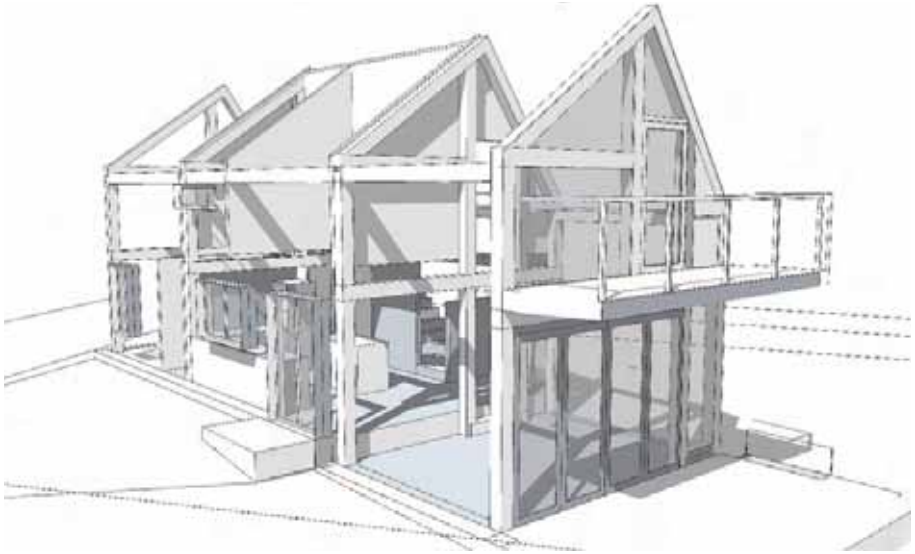

is supported by the frame with the loads carried down through the frame posts to the foundations. This means that the bases for the posts need to be very strong and are usually built using dense blocks, engineering bricks or, in some instances, reinforced concrete.

Colin and Suzanne decided to go for Structural Integrated Panels for the walls and roof. This costs more than building using loose timbers but will mean that their build will be both wind and water tight within a couple of weeks of the panels arriving on site. "The first floor is a composite lattice structure, which really helps when building using an oak or Douglas fir frames," says Colin. "They can be discoloured if the timber is exposed to rain water, particularly so with oak, which can take a bit of remedial work to put right."

Because Structural Integrated Panels provide high levels of air sealing, Colin and Suzanne intend to use a Mechanical Ventilation with Heat Recovery system to ensure a flow of fresh air into the house. TC

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Building the dream

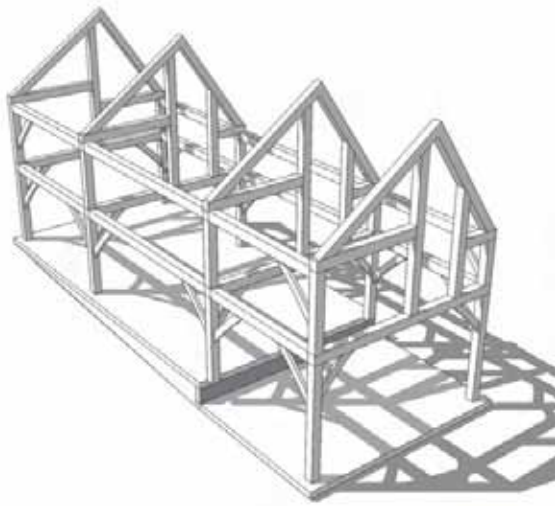
The exciting self-build project in Stirlingshire that we have been following over the last few issues has moved on apace; work has now started on site, the foundations are in and the wooden frames are under construction

WORDS: LYNN STEWART

After the sensible decision to suspend work during the horrendous winter weather, work has now started in earnest on the self-build project in Kippen that we have been featuring in the last few issues. The foundations of the house, designed by East Lothian architecture practice, Low Carbon Studio, have been laid and the SIPs (insulated wall and roof panels) have been ordered. Work has also started on the manufacture of the stunning wooden frame at the workshops of Alba Green Oak Frames.

There is a long tradition of oak framing in the UK; it has been a favoured method of homebuilding for centuries. We dropped in to speak to skilled carpenters, Luke Mallet and Jack Macgregor, to learn more about the manufacture of this integral feature of the property. "There are a number of steps involved in a putting a frame together", explains Jack. "First, the frame starts life as a full-sized chalk outline on the workshop floor. This is a crucial part in the making of the frame, as all the measurements have to be accurate. There can be no margin for error – making a wrong cut can have disastrous consequences as the frame progresses."

Once the lines have been chalked, work can begin on the cross frames. "The house at Kippen is a 3 bay frame, so four cross frames in total", says Jack. "The timbers are placed over the chalk lines on the floor and using a plumb bob are carefully scribed into one another. The jointing techniques we use are hundreds



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of years old and so are well tried and tested. The timber we use is green (fresh sawn) so it is rarely perfectly square and is often bowed as we use fairly long lengths. This means the scribing technique is crucial to account for the un-square nature of the timber and achieve a tight joint. It is not like jointing a square piece of dressed timber simply by using a square and chasing the lines round, there is a fair amount more to it than that. Once the timbers have been finished with in the manufacture of the cross frames, some of them will be used again in the wall and roof frames, as they often share components. These shared timbers are marked with reference points and datum marks, which again is crucial when cutting, as the timbers are not perfectly square and are bowed, the datum marks help us to orientate the timbers accurately as they are jointed into different lay-ups"

"Once the cross frames have been cut, the floor is re-chalked with the measurements of the wall frames", says Luke. "At this point, some of the timbers from the cross frame that are no longer required will be sent off for cleaning, whilst others are used for the wall and roof lay-ups".

When constructing a frame from Douglas fir or Oak, diagonal bracing is required to provide racking strength within the frame. "The house at Kippen will also have stainless steel rods and brackets for the bracing, which will work well with the timber frame," says Luke.

Another small but extremely important detail is the pegs used in the joints of the frame. "We use handmade, tapered, dry oak pegs, which is a traditional method that has been used for hundreds of years", explains Jack. "The peg is tapered because the peg hole in the tenon is slightly offset from the peg hole in the mortise, so when the peg is driven home it acts as a wedge, drawing the joint more tightly, resulting in a more efficient frame." This is just a number of traditional carpentry techniques used by Alba Green Oak Frames.

Luke and Jack use a lot of specialist equipment in putting together wooden frames, such as a chain mortiser. "The chain mortiser works a lot like a chainsaw, in that it's plunged into the wood to form the mortice hole" explains Jack. "The tenons are cut with a large circular saw and finished by hand using chisels and hand planes".

Once the frame has been constructed, it is sanded and cleaned and, once completed, it is marked with carpenter's marks – a traditional identification system based on Roman numerals – which are inscribed into the frame. The frames are then stacked, ready for delivery to the site at Kippen. Bespoke, hand-crafted and uniquely designed, this beautiful, Douglas fir timber frame offers real character, and an aesthetic that many people crave in their homes and which is missing from far too many modern contemporary design. TC

A welcome site

With the arrival of the Douglas fir frame on the site of the new-build in Kippen, it's all systems go for Luke and Jack, of Alba Green Oak Frames

WORDS: LYNN STEWART

For the last few months, we have been following the progress of a new-build project in Kippen, Stirlingshire, the foundations of which have been designed by East Lothian-based architecture practice, Low Carbon Studio, with the centrepiece of the house, an impressive Douglas fir frame, constructed by Alba Green Oak Frames. After the horrendous winter weather forced the build to be delayed, it's full steam ahead for Luke and Jack of Alba Green Oak frames, as the stunning wooden frame of the house is finally ready to be transported to the site.

Whilst the wet weather has ensured that no work at the site at Kippen could take place, the team at Alba Green Oak frames have been far from idle. For the last eight weeks they have been working hard on building the Douglas fir frame at their workshop, cutting, jointing, planning and preparing it for building on site.

Once completed, frames are usually transported to the site within a few days, sometimes the following day. The frame for the house in Kippen was delivered to the site on Monday 9 May, and was more or less in place by the end of the week. The frame was erected using a crane, which was no easy task due to the limited access for such a large piece of equipment. However, Luke from Alba Green Oak Frames had visited the site in December 2014 to make the all-important measurements to ensure that there was sufficient access for the crane.

The frame was fixed to the foundations using a series of steel plates, which were slotted and bolted to the bottom of each post. This was a slightly more complex solution than would normally be used, but it was necessary for structural reasons – due to the sloping ground level. On the day of the arrival of the frame, Alba checked the on-site

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measurements, to ensure that the setting out, and levels, of the bases were correct. This was the second time this had been done, as Luke was on site to measure the dimensions before the frame was started in the workshop. As Luke says, 'Measure twice, cut once.'

The first stage of the construction of the frame on site is to put up the posts at ground floor level, with the tie beam at the first floor level placed on top. This process is repeated for each of the four cross frames. Once this stage is completed, the trusses are put together, or layed up flat, and then lifted on. This is when the carpenter's marks – which were explained in the last issue – are used, to ensure that all of the timbers are in the correct position.

The vast majority of the work on the frame is carried out in the workshop prior to transporting it to site. The exception to this is the posts, which are deliberately left long, and cut on site to match the base levels. The pegs are tapped in, but not hammered home until the whole frame is up and checked. The same applies to the bolts on the base fixing plates.

As the frame goes up, temporary braces are used to make sure that each part of the frame is kept in the correct position during the day and overnight. Some of these temporary braces will be left in place until the SIPs panels go up, to keep the whole structure stable. The SIPs panels arrived on site around a week or so after the frame.

Whilst Luke and Jack did most of the work on the frames at their workshop themselves, they required extra manpower to erect the frame on site to help place the timbers into position. After the frame was up, it was fully inspected, and the handling marks on the timbers were removed by sanding.

The next stage of the build will be to put up the walls and roof, after which the direct glazing system and folding glazed screen, which are fixed to the posts, will be installed. At this point, over the next six to eight weeks, Alba Green Oak frames will be back on site, to carry out this next stage of this exciting project, and, which is now moving on apace. TC

FINAL FLOURISH

It's all systems go at the new-build project in Kippen, and after a year of hard work and some challenging conditions, the house is almost finished

WORDS: LYNN STEWART

It's incredible to believe that a full twelve months has passed since we began documenting the fascinating new-build project in Kippen, Stirlingshire, which is being co-ordinated by Low Carbon Studio and Alba Green Oak Frames. What's more incredible is that a year ago the site was pretty much bare. Now, the house is very close to completion, with owners Colin and Suzanne planning to take up residence in December.

All of the scaffolding has gone, the entrance ramp has been installed and what was once a building site is looking more like a house. The walls have been lined and sealed, and work is well underway on the final joinery work:

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hanging doors, fitting handles, skirtings, sills and decoration. Soon, the balustrading to the stair landing and master bedroom balcony will also be installed – with Colin and Suzanne opting for a contemporary glass balustrade with steel clamp fittings.

The internal features of the house are also coming together nicely. The open plan dining/kitchen area now boasts steps that lead down into the living room, which has a folding glazed screen leading out to a terrace deck, which works really well. The exposed Douglas fir frame detailing looks really modern, and really complements the property's location on the edge of Kippen. The views out over farmland to the woods beyond is stunning.

The main units of the kitchen and bathrooms have been installed, and will be fully operational once the final water and drainage connections have been installed. The tiling, flooring and decoration are in progress, and the whole house is also being painted. There are still a couple details on the frame which need to be completed, including replacing the glazing units for the direct glazing, which were the wrong size. Once this is done the frame will be cleaned.

Another important aspect of the new-build has also been completed: the electrical sockets and lighting have been made live, which means that testing of all the services – heating, water, drainage, ventilation controls – can be carried out. With any new-build, it is crucial that you get manuals for all mechanical equipment, and it is advisable to obtain a warranty for the first three or four years in order to fix any teething problems you might have.

Once the house is fully complete, an air pressure test will be conducted to ascertain how well sealed it is and to minimise heat loss, which will make the house more energy efficient.

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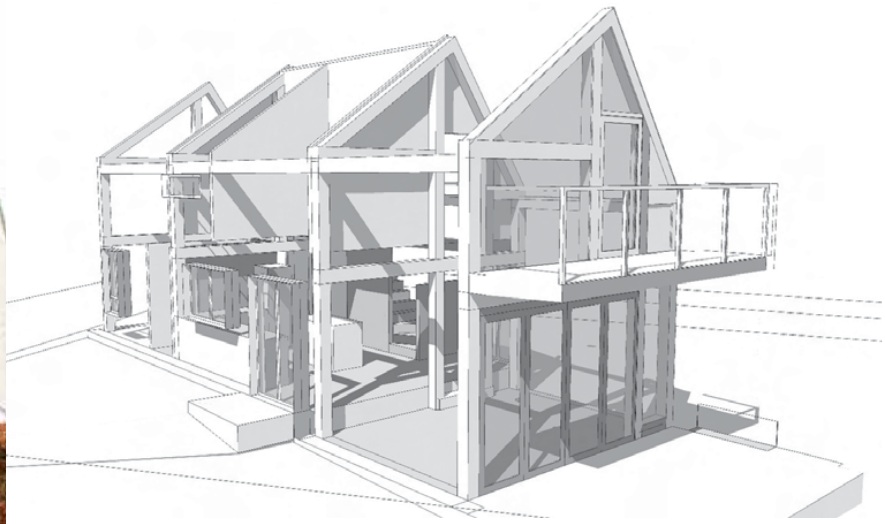

One of the factors that has made this build go so smoothly, in spite of the many challenges, is the fact that the work was carried out using a good set of drawings/information from the architect. As such, it is always sensible to sort out these kinds of details from the start, which will prevent, or at least significantly reduce, problems that occur on site – problems which almost always arise from situations where it's not clear who and/or how something should be built and what the cost should be.

For those tackling a self-build, it is essential to keep focused on the project until the very end.

As the project nears completion, it is easy to take your eye off the ball, at this stage your funds will be low, and there may still be some tough decisions to make to ensure that you get finished within budget. If you find yourself in this position, the best advice is to lower the spec on something that can be upgraded later, particularly if you intend to live in the house for a long time.

With the property in Kippen really beginning to take shape, the owners can now begin to appreciate their new home, which has a total ground and first floor area of 121m^2, or 1300ft^2 (a traditional developer four-bedroom house ranges from between 96m^2 and 130m^2). The house has four bedrooms, a kitchen/dining and living room, a bathroom, WC, utility room, and provision for another shower room.

"I would always encourage people to look at self-build as a way to provide a home for them and their families," says Colin Campbell of Low Carbon Studio. 'On site recently, owners Colin and Suzanne had their young children with them, and it reminded me of our family home, which we built when our children were three and four years old. It struck me that they will grow up knowing that there is a different way of obtaining a new home, and that you don't need to go to a big house builder."

The next time we visit this project it should be completed, and we'll let you know how the owners are enjoying the fruits of their labour. TC

HOME AND DRY

The exciting new-build project in Kippen we have been eagerly following is finally complete – and the finished product has been well worth the wait

WORDS: LYNN STEWART

For a couple of years, readers of the Toun Cryer have been following the progress of a new-build family home in Kippen, Stirlingshire, designed and built by East Lothian-based Low Carbon Studio and Alba Green Oak Frames. The house, which features a stunning Douglas fir timber frame, is now complete, and here Colin Campbell of Low Carbon Studio reflects on the project, describing how they helped to transform their clients' dream home into reality.

"The owners, Colin and Suzanne Clark and their family, contacted me in September 2014," Colin recalls. "Since then I have helped them to design their house, and obtain all the permissions required for planning and building control. I also helped to obtain costs for the various parts of the build and carried out site inspections when they were required."

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The build started in October 2015, and once the foundations were completed the project was put on hold until May 2016, when the timber frame was installed and building re-started. The owners moved into their house during December 2016. "Some self-builders ask a main contractor to carry out the construction, whilst others organise the separate trades themselves," explains Colin. "In this case, Colin and Suzanne decided they would organise the project themselves where possible, carrying out the simpler tasks themselves to save on costs and at times living in a caravan on site.

"I would always encourage people to look at self-build to provide a home for themselves and their families," he adds. "It's a way of getting exactly what you want and, if you are up to the challenge, it can offer significant savings. However, it will take a lot of effort to project-manage the build, and it can take longer. There's a lot at stake when building a new house, everyone has seen the disasters that appear on programmes like Grand Designs, where everyone falls out, projects going way over budget and overrun the completion date."

During the build, the owners had their young children with them, which reminded Colin of his family home, which he built when his children were three and four years old. “It struck me that they will grow up knowing that there is a different way of obtaining a new home, and that you don’t need to go to a big house builder,” he says.

“The layout of the house at Kippen was for a simple ground floor with an open plan living room, dining and kitchen on the south with views out over a deck to the landscape beyond, a utility/WC and a space that could be used as a bedroom/study/family room,” explains Colin. “All the bedrooms are on the upper floor, with the master bedroom and balcony also looking south over the landscape. The main bathroom is also on the upper floor and it’s positioned over the WC/kitchen on the ground floor to simplify drainage. The main feature of their house is a Douglas fir frame supplied an installed by Alba Green Oak Frames.

“The total ground- and first-floor area of the house is 121m^2 (1300ft^2), comprising four bedrooms, a kitchen/dining and living room with a bathroom, WC, utility room and provision for another shower room. A traditional developer four-bedroom house usually ranges from 96m^2 to 130m^2. The form is relatively simple, and the profile of the roof was designed to step down, following the site levels, and to add some extra height in the roof space. External materials of larch weather boarding and slate roof also fit into the context of the site.

“Colin & Suzanne used SIPs (Structural Integrated Panels) for the walls and roof construction,” he continues. “SIPS are pre-manufactured structural wall and roof panels made from a layer of insulation sandwiched between to layers of timber OSB board – a kind of chip board. The panels vary in width (usually 150-200mm) and are fixed to the Douglas fir frame, although they can work without a frame. They were keen to use renewable technologies, such as an air source heat pump to supply heating and hot water and an MVHR ventilation system combined with triple-glazed windows and super-insulated walls and roof which helps to reduce heat loss. They are also looking at installing solar PV panels.

“The house design works really well – the open plan living and dining kitchen is the heart of the family home, and the beautiful Douglas fir frame enhances the internal spaces,” says Colin. “The large areas of glazing provide loads of natural light, and the balcony to the master bedrooms and living room deck on the south of the house offer great views out to the landscape beyond.” TC

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