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- Get the Best From Building Inspectors
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WELCOME SEPTEMBER 2016

Baffled by Builders' Quotes?

Claire Lloyd is the Editor of *Homebuilding & Renovating*

If you've ever been along to one of the Homebuilding & Renovating Shows, held throughout the year across the UK, you may well be familiar with the 'ask the experts' service on offer. In basic terms, visitors book in for a free 15-minute slot and then have the opportunity to fire away their project questions to independent industry experts.

At the Southern Homebuilding & Renovating Show this summer, among the queries regarding underfloor heating, damp, garden design, you name it, an all-too-familiar question was posed — "I'm beginning to receive quotes back from the builders I've asked to tender and they're all way over my budget. Why?" The answer to this question is often dependent upon the project and



unique set of circumstances surrounding it (often difficult to dissect in quarter of an hour). However, there are some key factors which can contribute to quotes which go beyond your anticipated budget, and we've asked chartered surveyor and experienced project manager Bob Branscombe to put pen to paper and get to the bottom of the matter once and for all — read more on page 81.

On the topic of the Southern Homebuilding & Renovating Show, the event took place just 24 hours after the fateful 'leave' vote was announced. The media headlines were perhaps enough to make you want to shut the curtains on the world and hibernate. However, neither Brexit nor a weekend of football matches (served up thanks

to the European Championships) proved a distraction — the Show was packed with 'people with projects', determined to begin or carry on with their self-builds, renovations and extensions. (One such self-builder is our very own David Snell, who documents his build on page 47.)

I think it's fair to say that no one can predict with 100 per cent certainty how Brexit will impact on our housing market in the next couple of years, or coming decades. However, we sit down with Michael Holmes, Chair of NaCSBA (National Custom & Self Build Association) and all-round property sage for his thoughts on the subject (page 19).

One fact remains: the UK needs more houses and more importantly, high-quality homes — the type that self-builders and renovators create each and every year, and the likes of which fill these pages. **H**

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SEPTEMBER 2016

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PETER EADE

Peter Eade has spent a lifetime running his own building business, and specialising in project management and design. He explains the role of building inspectors on page 61



BARBARA JONES

Barbara is the director of Straw Works and the principal of the School of Natural Building, which teaches straw bale building skills and lime and clay plastering. Read her feature on self-building in straw bale on page 52



TIM PULLEN

Tim is *Homebuilding and Renovating's* expert in sustainable building and energy efficiency. He runs the green home consultancy Weather Works. His article on the thermal efficiency of different wall systems is on page 68



Member of the Audit Bureau of Circulation

Jan – Dec 2015: 24,891



Centaur Home Interest

A Centaur Media Company. Sugar Brook Court, Aston Road, Bromsgrove, Worcestershire B60 3EX. Tel: 01527 834400



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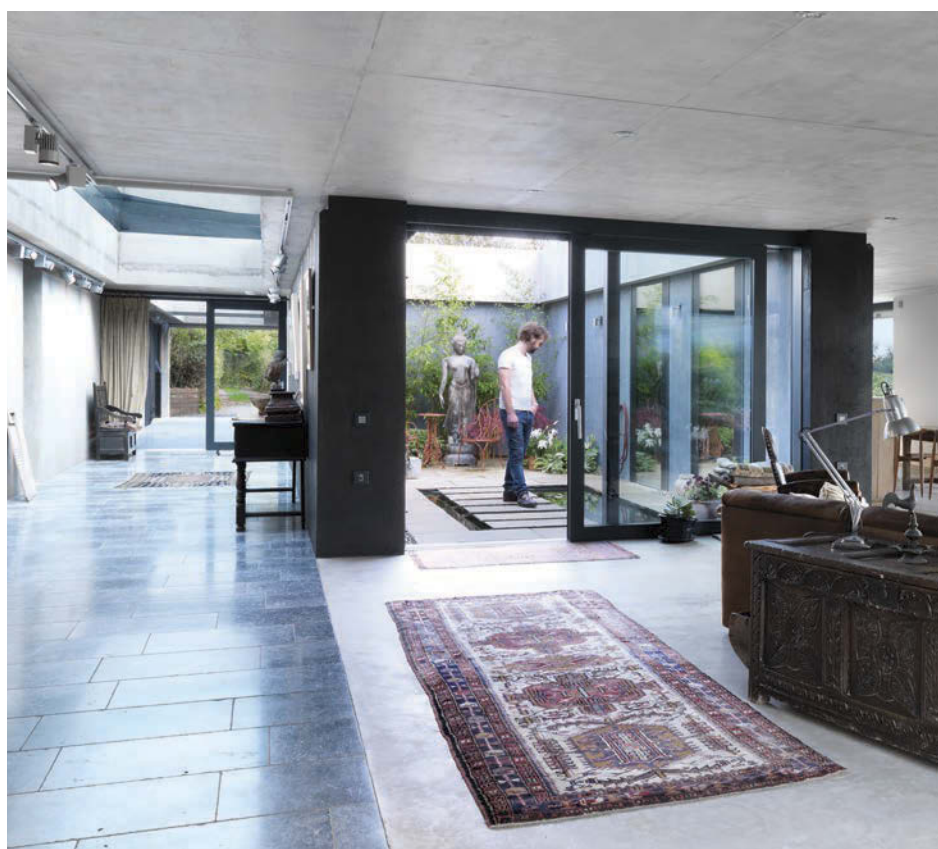
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DIARY OF A SELF-BUILD

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Will Brexit Affect Your Building Project?

We sit down with Chair of the National Custom & Self Build Association (NaCSBA), Michael Holmes, to find out what the 'leave' vote might mean for your project



MICHAEL HOLMES

Michael is Head of Content and Product Development at HB&R. He is also Chair of the National Custom & Self Build Association

Q. What is the immediate impact of Brexit on the housebuilding sector?

This remains to be seen, but as long as there is a period of uncertainty, people are likely to put off making big decisions like house purchases or taking on a major self-build project or an extension.

I suspect those with a project already underway, or very close to starting, will carry on with their plans regardless. The impact is not likely to be felt for a year or two, but until there is some clarity and visibility in terms of the direction in which the economy is going to go and the impact that Brexit will have on the wider economy – and therefore the housing market – I think there will be a pause while people put off major decisions.

Q. What do you think is the long-term impact of Brexit on construction?

The impact will be immediate because a huge amount of British construction materials are imported from Europe, and purchased in Euros. The pound has already devalued post-Brexit, so materials are therefore going to cost more. If you then add in shipping costs, material prices will inevitably increase which will drive up construction costs.

Labour costs will probably pause immediately if people put projects on hold and there is less demand for construction work.

In the longer term, if there are strict rules on immigration which don't allow skilled construction workers to come into this country, there will be less people available to build. This means that labour prices will increase until training programmes and apprenticeships are stepped up and we are able to train enough British workers to undertake the construction work that we need in the housebuilding sector.

Q. What do you think is the impact on the custom and self-build sector?

In the short term, some people will wait to see what happens to the economy and the political direction of the country – certainly until we are given some idea of what Brexit Britain will look like. If it is a fairly minimal change then I suspect things will stabilise fairly quickly, as long as we also retain passporting for financial services.

Q. What should self-builders who are mid-project do following the EU referendum results?

Just after Brexit I was at the Southern Homebuilding and Renovating Show with thousands of people planning self-build and renovation projects. It was interesting to gauge their attitude to Brexit and the response was "why would we change our long-term plans because of this?"

Those who see their home as somewhere to live – a long-term project and not a short-term investment – are carrying on as usual, and that would be my advice if you are considering a custom build, self-build or home improvement project.

People with long-term projects are carrying on as usual. If you are looking to speculate and make a short-term gain, then you might pause to see how Brexit goes and look for more visibility on the direction of the economy and the housing market. Depending on how things pan out, house prices might stay flat or fall slightly and interest rates may have to increase to fight inflation.

For those planning a project for a long-term home, I think short-term fluctuations in house prices are a secondary consideration, so having the right house should come first and foremost over any short-term gain. **H**



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OUT AND ABOUT

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The Open House London event provides a rare opportunity to visit the homes of other renovators and self-builders”

Satisfying the appetites of those keen to see first-hand stunning architect-designed new build and renovation projects (perhaps drawing inspiration for their own projects), Open House London, the capital's annual design and architecture festival, is back once again from 17-18 September 2016.

Created by Open-City over 20 years ago, Open House has become a fixture in London's architectural calendar, and this year welcomes new additions from across the capital. One such project, Wistaston Cottage in Roehampton – a two-storey extension to a Gothic Revival property – was even shortlisted for an *Architect's Journal* Small Projects Award as well as a RIBA Regional Award. Clapton House, meanwhile, is an innovative and dramatic transformation of a terraced home.



A Look Inside London's Homes

From award-winning houses to iconic towers that shape the city skyline, the public can take a look at these buildings for themselves. Above, Clapton House by architect Hugh Strange is one of the festival's highlights, as is Wistaston Cottage (left) which was shortlisted for a RIBA Regional Award

With over 750 homes and buildings opening their doors over the weekend, visitors can get a glimpse into the city's breadth of architectural styles, learn more about the buildings around them and hear from the architects behind the designs. There are also walks, cycle tours and architectural talks and debates — what's more, it's all free. It's the ultimate weekend for the architecture enthusiast.

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BEFORE & AFTER

A 1950s bungalow in Wokingham is the subject of a major remodel



TONY HOLT DESIGN

Before



TONY HOLT

Tony is an architectural designer and architectural technologist, specialising in bespoke property design (tonyholt-design.co.uk)

The original bungalow had been subject to numerous alterations, including a loft conversion. Although the property provided four bedrooms, three were located in the roof space, and felt cramped as a result of the sloping ceilings. The aim was to add a new first floor storey to free up space on the ground floor and create spacious first floor accommodation.

The planning department's conservation officer wanted us to retain the traditional style to the front. However, this requirement was relaxed to the rear, offering the opportunity to create a modern façade, with two duo-pitched roofs with ridges aligned front to back.

The existing front half of the floorplan has remained largely unchanged, with the existing ground floor bedroom becoming a study/guest room. The existing garage and utility have been retained along with the living room. To the rear is a new large open plan kitchen/family space with full-height glazed windows and doors.

Upstairs, the new feature staircase and galleried landing lead to four double bedrooms and a family bathroom. The rear elevation consists of two glazed gables, creating vaulted ceilings to the master en suite bedroom and bedroom two, and providing impressive views over parkland. This project has transformed the existing bungalow into a luxurious and comfortable family home of over 268m². 

NEW PROJECT

“WE DIDN’T WANT A BUNGALOW OR A PROJECT — WE’VE ENDED UP WITH BOTH!”

Paula Douglas and Jerry Sturman are busy working on the renovation of their bungalow in Torquay...

“It’s almost getting to the exciting point of fitting out the interiors and getting the kitchen in,” says Paula Douglas, who with partner Jerry Sturman is mid-way through the renovation of a bungalow in Torquay.

“We’d moved into rented accommodation while waiting for the right property to come along — this bungalow came on the market just metres from where we’d been living. The property was old and dilapidated but had an amazing sea view — it was the view that sold it. Funnily, Jerry said he didn’t want to buy a bungalow and he didn’t want a project — and so we bought both!” laughs Paula.

“The bungalow was pretty uninhabitable: the roof was leaking, it was damp, there was no lighting or heating, and the windows didn’t sit right. We did what we could to make it habitable and lived in the front part of the house for a year in order to get a feel for the place.

“This was one of the best things we could have done as we saw where the light was coming in and worked out where we wanted everything — we’re now knocking down walls and moving rooms around so that we will have open plan spaces, and all of the principal rooms will now have fantastic sea views.”

The project got off to a rocky start, however, when

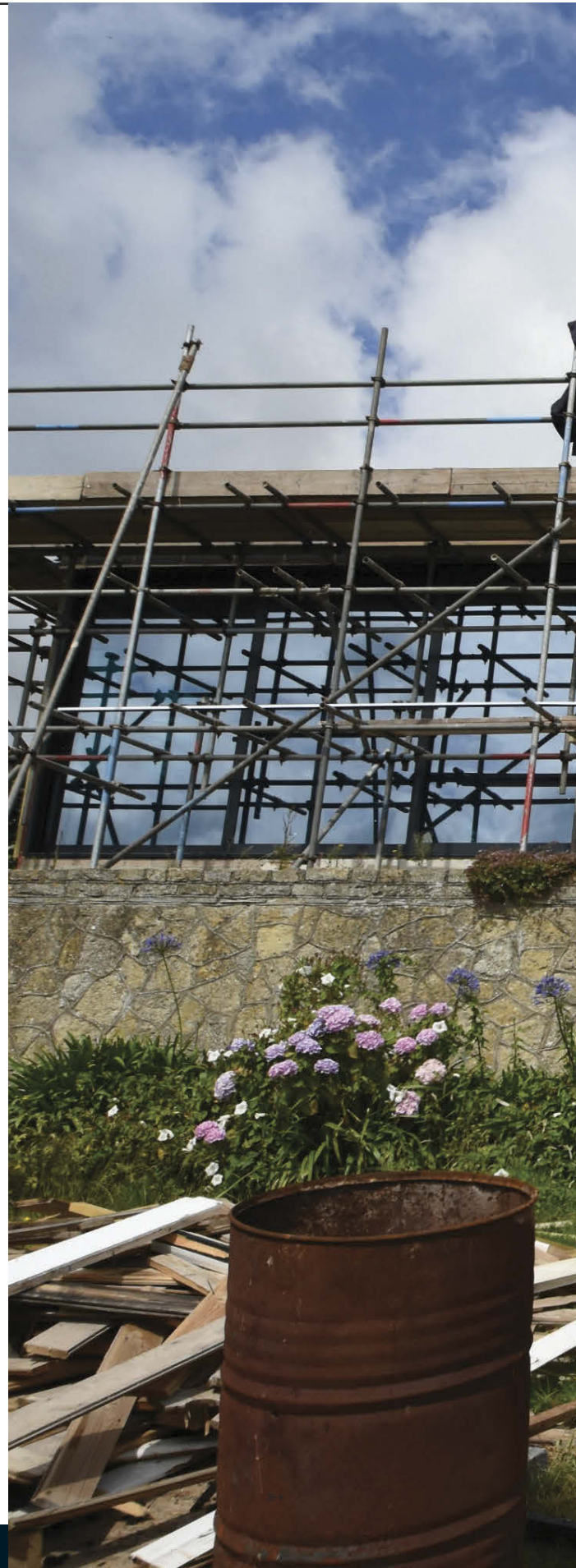
the conservation officer said the couple could only work with the original footprint of the bungalow and couldn’t add another floor. Fortunately, after interviewing several architects, Paula and Jerry found one who could design a forever home that worked perfectly for them. “Our architect came up with a great design for a contemporary roof, which will be topped with a flat, modern tile to complement the new render and western red cedar cladding,” says Paula.

“Once work started on site in April 2015, we moved back into rented accommodation nearby. The existing roof came off and most of the walls were knocked down. We then found asbestos which had to be removed, and this delayed the project by four weeks. The lowest point was when everything was being demolished and I felt like I was in the middle of a war zone,” admits Paula.

“You have to be so organised and one step ahead of the build at all times. When choosing a builder, remember word of mouth is key, and see examples of their work — we found our firm, Lee and Lee, this way and they’ve been fantastic. The finish is excellent.

“We’re hoping to finish at the end of August and move in in September,” concludes Paula. **H**

REBECCA MANLEY





Are You Undertaking a Project?

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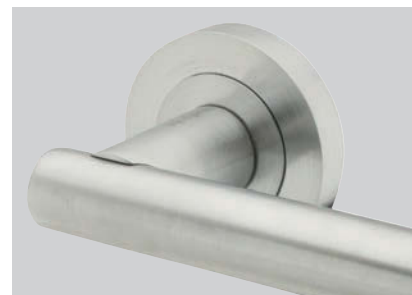
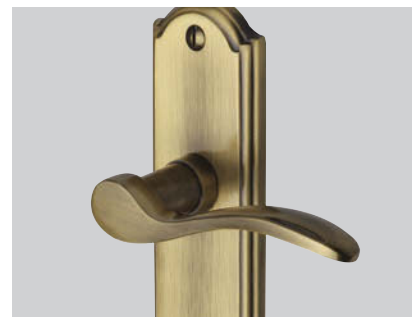
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BLOGS

We catch up with serial renovator Ben Wilson who is renovating a bungalow by the sea on Anglesey, which will become a holiday home.

With the house so close to the Irish Sea that means two things: salt water erosion on any metal fixings, and changeable weather making strict timetables impossible to follow and requiring us to be flexible with timing of works so subcontractors aren't left with nothing to do.

I've read a few articles about galvanic corrosion of metals when installing solar panels on roofs near the sea. The articles state not to use one metal next to a different metal, since the corrosion will immediately attack the 'weaker' metal. I've opted for stainless steel nails for the roof, which cost a fortune and are hard to find in A4 grade, but since it's a bulk item I've shopped around online and found a really helpful supplier.

On the day we started stripping out the house there was such a storm that the sea wall on the beach next to the house broke. We've acknowledged that we can't just expect a tarpaulin to stay still in the wind, so each night everything is nailed down. I've bought a couple of big rolls of damp-proof membrane to cover the roof at night since I don't have 350m² worth of tarp. One of our next jobs is going to be finding windows which can withstand the elements.

For more updates on Ben's project, visit homebuilding.co.uk/blogs

LETTERS

DEAR HB&R,

We are currently renovating and extending a Grade II listed, 17th-century stone rubble cottage. The property has no damp-proof course and we are in the process of raking out 1970s concrete-based pointing and replacing it with lime. Internally, there was significant evidence of damp — such that we have stripped out the concrete 'plastering'. The property has a solid concrete floor that does not appear to have any damp proofing and is not insulated.

We've received advice at both ends of the spectrum regarding taking the renovation forwards, but we are unsure whether to tank internally while allowing the walls to breathe out through the lime pointing, or whether to use lime plaster internally and allow the walls to breathe in both directions.

In addition, we are uncertain about how best to manage the floor and wall/floor interface — whether to seal it with a damp-proof membrane up to above the skirting or cut it away from the walls to allow a breathing space around the room.

The walls appear to be drying out well, now that the concrete facing has been removed, but if we follow the full lime solution I fear we will get mouldy walls behind the furniture and a damp cold floor! **Elizabeth Gilbertson**

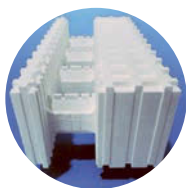
Win a Dremel 3000 Multi-Tool Kit When You Write In!

Dremel is offering *HB&R* readers a best-selling Dremel 3000

Multi-Tool when their letter is published in the magazine. Worth £49.99, the kit comes with a range of accessories for a host of applications, including cutting, polishing, sanding and grinding (dremel.co.uk).



TOP TWEETS



"Looking for a #building plot? The @nacsba Right to Build portal is a great resource for finding a local authority plot"
@BecoWallform



"Work starts on 27 #custombuild plots at Wynyard Park, Stockton on Tees. #NaCSBA "
@HolmesMike



"New stats show architects are mostly white, male and well-to-do. Depressing stats!"
@DbrayArchi

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GETTING TO GRIPS WITH Bricks and Mortar

ANDREW EAGLES IS A LEADING EXPERT ON BRICKS. HERE, HE EXPLAINS THE IMPORTANCE OF MORTAR COLOUR AND JOINTS



When it comes to brickwork, there's more to consider than the colour and size of the brick. While both factors will have a large impact on the overall appearance of a home, the brick bond and mortar joint you specify is also key. What's more, there are many different varieties of brick bond and mortar joint and colour to choose from. But are brick bonds and mortar joints purely about aesthetics, or will your choice have structural implications too?

Selecting Between Brick Bonds

The different bond patterns are created by the systematic arrangement of the bricks (referred to as bonding) to give the brickwork structural integrity.

Each brick overlaps with those adjoining above and below. The horizontal joints (bed joints) are continuous, but vertical joints do not align with vertical joints between the bricks in the rows (courses) above or below. The overlaps serve to spread loads down within the brickwork so that they are distributed and the loads are not concentrated in one area.

Brick walls can also be built in various thicknesses and are, accordingly, described in multiples of brick length. For instance, the thickness of a one brick-thick wall is equal to the length of a brick;

The Importance of Mortar Joints

This award-winning Ash Court project at Girton College in Cambridge has been built in brick using an English bond

a half-brick wall has the thickness of half a brick.

In walls of one brick thickness or more, some bricks are laid lengthways along the wall and some are laid across the wall. This provides bonding along and across the wall. The bricks laid across the wall show their ends (headers) in the face of the brickwork. Bricks laid along the wall, showing their length, are referred to as stretchers.

In modern building, the facing brickwork is generally a half-brick thick outer leaf of a cavity wall. The easiest way to achieve this typically is to lay all the bricks lengthways to show their stretcher faces — this bond is known as stretcher bond. There is no requirement for headers to show in the broad areas of the work, only at corners, piers and window and door openings.

For decorative effect, or to match the appearance of older existing brickwork, a bond pattern normally used for thicker walls can be simulated with the use of half bricks in place of headers. No reinforcement or ties would be required beyond the normal provision of cavity wall ties.



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The Importance of Mortar Joints

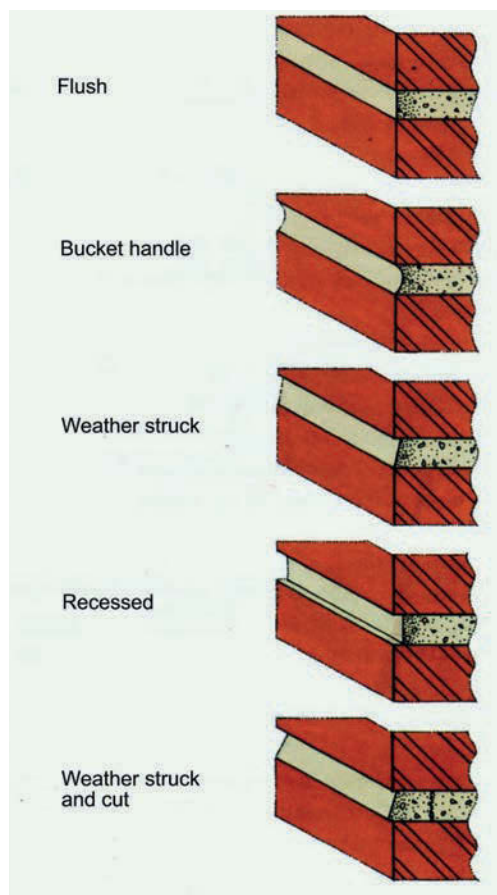
The bricks and the bond patterns in which they are laid are fundamental to the visual character of brickwork, but the colour, texture and profile of the mortar joints also has a profound impact on the overall appearance of the brickwork.

Although mortar joints appear as narrow lines on the face of the brickwork, the total surface area of the mortar is a surprisingly large proportion of the overall brickwork surface. With standard-sized bricks – 225(l) x 112.5(w) x 75(d)mm – laid in stretcher bond, with nominally 10mm wide joints, the number of cross joints (the vertical joints between the bricks in each course) is minimised. Nevertheless, over 17 per cent of the surface area of such brickwork is mortar. When there are headers in a bond pattern there are more cross joints and, as a consequence, the surface area of mortar increases. In English bond (alternate courses of stretchers and headers) almost 20 per cent of the surface area is mortar. In convex curved work using all headers the proportion can be as high as 25 per cent.

These large proportions help to explain the surprising effect mortar colour has on the appearance of the brickwork. A dark-toned mortar will tend to make the bricks themselves appear darker and richer in colour. Conversely, a light-coloured mortar will make the bricks appear lighter, as if some of their colour has been drawn from them. A strong coloured mortar will create a colour bias in the brickwork. For example, a red-coloured mortar will enhance the redness of a red brick, or give a warm tone to a buff one.

Mortar joints should be finished at the surface with a consistently shaped profile. Each profile casts characteristic shadows in sunlight and this again has an effect on appearance. A recessed joint casts dense, bold shadows, darkening the tone of the brickwork and emphasising the form of each brick. A flush joint casts no shadow and gives a more homogeneous appearance to the masonry, particularly if its colour tones with the brick colour. The concave surface of a bucket-handle joint creates a soft shadow at each bed joint.

In most work today, mortar joints are finished as bricklaying proceeds — this technique is referred to as ‘jointing’. However, bricklaying may be undertaken with joints in the mortar face surface



Typical Joint Profiles

There are a variety of different joint profiles available; each will contribute to the overall look of your home

recessed for finishing later with an additional mortar; this is known as ‘pointing’. Many profiles may be completed by either method, but some require more intricate work or special mortars and are only practicable as pointing. Examples include weather struck and cut, tuck pointing and decorative areas of different coloured mortars.

When repairing or extending existing brickwork, any new bricks should match the colour, texture and size of the existing ones as closely as possible. Also the bond pattern of the original work should be followed. But care is also necessary to match the colour, texture, size and profile of the mortar joints if the new work is to match the original.

For all bricklaying work, there must be consistency of the colour and texture of the mortar and the profile of the joint finish throughout the construction process, as variations will cause an unsightly patchy appearance. **H**

Andrew Eagles is CEO of the Brick Development Association (BDA), a leading authority on the use of clay bricks in the UK. Find out more at: brick.org.uk

“The total surface area of the mortar is a surprisingly large proportion of the overall brickwork surface”

A MYTH-BUSTING GUIDE TO *TIMBER WINDOWS*

HB&R: Timber windows used to have a bad reputation — how have things changed in recent years?

Frank Buckley, Mumford & Wood: With the advent of PVCu and aluminium as materials for windows and doors, the rattly, warped and tired timber window soon became a relic unfit for modern, low-maintenance, energy-efficient buildings.

However, timber has come full circle and is now not only a feasible option but a common sense, responsible choice, with a large role to play in the future of the window and door industry. The reason for this is modern engineered timber which sees only the best pieces of wood scanned to ensure they are fault free.

There's often a lot of talk that timber windows can be high maintenance — how true is this? How often do you need to treat the timber frames and what products would you recommend to do so?

Frank Buckley, Mumford & Wood: At least once a year, all coatings should be washed with a mild detergent and water to remove surface pollution. The type of product you have and the finish you have opted for can determine how much maintenance is needed.

If correctly maintained, timber windows made in accordance with the Wood Window Alliance scheme standards have an expected life of between 56-65 years — more than twice that of PVCu.

Do timber window frames warp?

Chris Wood, Lomax + Wood: Timber is a natural product and all timbers, whether they are solid or engineered laminate, will move.

Warping occurs in timber when you have different extremes: traditionally in solid timber windows and doors, where you have cold on the outside and central heating systems providing 20°C consistent heat on the inside, then the tendency of the timber would be to move in one direction. The advancements of timber technology and laminated timbers means that this risk is dramatically reduced.

It's not all about the timber, though — products incorporating multi-point locking systems to hold the timber in several positions and tolerances are now allowed for in the design, and this reduces the stresses and strain on timber.

Should you opt for a factory finish?

Richard Chapman, West Port: It is always better that windows and doors are fully factory finished. With the vagaries of the UK weather, finishing on site can be hit and miss.

What species of timber are used to manufacture timber windows?

Chris Wood, Lomax + Wood: Mainstream, quality window manufacturers use engineered timber designed to offer greater stability, be knot free and have sections designed for maximum performance. The typical species include softwoods such as European redwood and larch, with others exploring the use of Accoya, which is a modified fast-growing softwood treated to create a very durable product. In all cases the customer should ensure the timber is environmentally sourced by a recognised scheme such as the Forest Stewardship Council (FSC) or the Programme for the Endorsement of Forest Certification (PEFC).

How important is the location of a house when specifying timber windows? For instance, are timber windows a bad idea if you live on the coast?

Jason Carey, Totali Solutions: Consideration needs to be given to the location, elevation and accessibility of the windows. Timber windows can be used anywhere — in the main, it's the maintenance intervals that will change. If you live in a coastal location then consideration needs to be given to the timber type chosen and the coating. Coastal environments are harsh, so consider a modified timber along with an opaque coating.

What are composite windows and do they offer the best of both worlds?

Chris Wood, Lomax + Wood: Composite timber windows, such as aluminium clad, offer a contemporary-style appearance, with the beauty of timber internally and aluminium externally. It is a question of choosing the right product for the building design. The architect is looking to create an overall appearance that works in harmony. For instance, timber sash windows will not work for a striking contemporary build with large expanses of glass, and aluminium-clad tilt and turn windows will not work in a Georgian-style property.



UP FRONT



CLOCKWISE FROM TOP LEFT: TOTAL SOLUTIONS; LOMAX + WOOD; MUMFORD & WOOD; SCOTTS OF THRAPSTON; NORRSKEN



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Can you specify timber frame windows with triple-glazed units?

Richard Chapman, West Port: Absolutely, but again, consider the specification you are trying to achieve. A new build project with high insulation in walls, floors and roof areas may well call for a higher specification window, or perhaps you're in an area where the additional soundproofing would prove useful. If you are renovating an older property, you may not get the payback from the additional upfront cost, however.

What are the typical U values homeowners can expect from the frame itself?

Chris Wood, Lomax + Wood: The U values tend to range from 1.4 typically down to 0.8,

though only whole product U values should be considered and the U values quoted are standard test sample sizes. Sizes used in the industry provide a benchmark for comparison, with actual real window and door designs for a property affecting the final outcome.

How long do the warranties and guarantees typically last? Does the glazing also have a separate guarantee/warranty?

Richard Chapman, West Port: Typically, the finish itself will be covered by an eight-year warranty for paint, with slightly less for a stained finish. The engineered timber itself will have a 30-year warranty, with all other elements typically covered by a 10-year guarantee.

Useful Contacts:

Totali Solutions.....totali.uk.com
Mumford & Wood.....mumfordwood.com
Lomax + Wood.....lomaxwood.co.uk
West Port.....west-port.co.uk
George Barnsdale.....georgebarnsdale.co.uk
Norrskén.....norrskén.co.uk
Ventrolla.....ventrolla.co.uk
Innovation Windows.....innovationwindows.co.uk
Sanderson's Fine Furniture.....sandersonsfinefurniture.co.uk
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SCOTTS OF THRAPSTON'S *TIMBER DOOR*

This bespoke front door and frame, supplied by Scotts of Thrapston, is manufactured from Sapele knot-free timber. The glazed units feature a satin finish and the door is finished in Moorland Green microporous paint, with polished brass ironmongery. POA. (scottsofthrapston.co.uk)



KLOEBER'S *FUNKYFRONT* *ENTRANCE DOOR*

The contemporary FunkyFront range of doors from Kloeber are pre-hung for ease of installation and have Part M-compliant thresholds suitable for disabled access. Oak and other hardwoods are available, and a range of RAL colours. FunkyFront doors can be supplied with a full fitting service, if required. POA. (kloeber.co.uk)



URBAN FRONT'S *BRONZE RAW E80* *FRONT DOORSET*

The ultra-modern Raw E80 Doorset from Urban Front comes in a pitted bronze finish with a sleek painted black frame. Here, the Bespoke Option 11 bronze handle has been specified to complete the look. Prices start from £11,900 plus VAT. (urbanfront.com)



KLOEBER'S *KLASSICFRONT* *ENTRANCE DOOR*

Kloeber's Klassicfront traditional timber entrance door system allows you to custom design your own classic front door and create a stylish first impression. Available in a range of panel styles, RAL colours and with a selection of ironmongery, it's possible to create an entrance door unique to your home. POA. (kloeber.co.uk)



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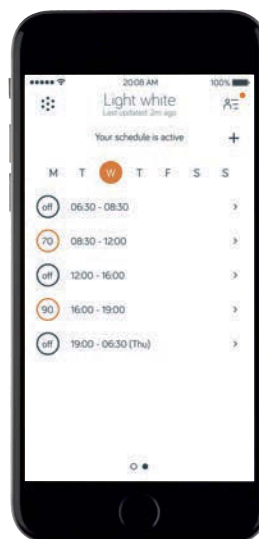
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BRITISH GAS' *HIVE ACTIVE LIGHT™*

British Gas has launched its Hive Active Light™, a smart LED bulb which can be controlled by phone, tablet or laptop via the Hive app. The scheduling tool allows for lights to be dimmed, as well as programmed to turn on and off at certain times — allowing you to schedule lighting to come on just before you arrive home, or when you are away on holiday. Available in both screw-in and bayonet fittings, Hive Active Light™ — part of British Gas' Hive Hub range — is an easy retrofit solution. The bulbs are energy efficient, too. (For those new to Hive, a Hive Hub will be required.) The bulb retails at around £19. (hivehome.com)



MANDARIN STONE'S *FURNACE PORCELAIN TILES*

Perfect for injecting industrial style into your home, the Furnace Porcelain tiles (shown here in Pewter) from Mandarin Stone offer a chic finish. The tiles are available in both Pewter and Bronze tones and come in an array of large-format sizes, from 600x300mm up to 1,500x750mm. The tiles cost from £34.80/m². (mandarinstone.com)



ROPER RHODES' *HENLEY SHOWER KIT*

Oozing traditional charm, Roper Rhodes' Henley showering range is ideal for more classically styled bathrooms and offers a host of stylish, practical and safe showering solutions. The Henley SVSET50 dual-function exposed shower system operates on a minimum pressure of 0.5bar and features a thermostatic sequential shower valve. The height adjustable rigid riser rail provides a separate flow control to the 200mm brass shower head and single-function brass shower handset. Priced around £570, it is also compatible with Roper Rhodes' optional water and energy-saving flow regulators. (roperrhodes.co.uk) 

THE LONDON HOMEBUILDING & RENOVATING SHOW

Whether you are building a new home from scratch, renovating or adding an extension, the London Homebuilding and Renovating Show — which returns to ExCeL between 23-25 September — is the ultimate day out for those undertaking a project, whether you're just starting out or mid-way through. You will have all the information, advice and suppliers you need to make your project a success. Here, we cover the highlights to look out for at this year's Show.

Ticket Giveaway!

We have 1,000 pairs of tickets for the Homebuilding & Renovating Show to ExCeL London, 23-25 September, up for grabs — to get yours simply enter your details at homebuildingshow.co.uk/hbrsept*

*Maximum two free tickets per reader.
Offer expires 3pm 22 September,
or when all 1,000 pairs of tickets
are allocated, whichever is sooner.
Children under 16 go free.





MASTERCLASSES & SEMINARS

Want to get to grips with all manner of home-related topics? Why not come along to any of the Show's masterclasses and seminars. With over 35 masterclasses and 16 daily seminars running throughout the Show, visitors will be able to listen to specialist talks from industry experts on everything from kitchen extensions to renovation projects, self-build, finding land, energy efficiency, dealing with designers, planners and smart home technology, interior design and much more besides. Each masterclass is 20 minutes long and the seminars last 30 minutes. All are designed to leave you brimming with knowledge and ideas.



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SHOW PREVIEW

THE ADVICE CENTRE

The Advice Centre is the go-to area for anyone looking to gain independent expert advice — offering free 15-minute one-to-one sessions with everyone from familiar TV faces, planning consultants, architects, architectural technologists and eco experts to smart home consultants and builders. So make sure you bring your plans along to discuss your project with the people in the know.

Simply visit the Advice Centre and book your free 15-minute consultation when you arrive at the show — and be sure to book early to avoid disappointment as spaces are filled quickly on a first-come, first-served basis.

Ask the Architect: Whether you bring your designs along or simply want to share your ideas for a project, members of the Royal Institute of British Architects (RIBA) and the Chartered Institute of Architectural Technologists (CIAT) will be on hand to give you inspiration for your home.

NEW! Ask the Builder: Want to get some expert building advice from those who carry out the work? Why not book an appointment to speak with a member of the Federation of Master Builders (FMB) on the stand, who will be happy to answer your questions, whether you're after impartial advice or looking for a tradesperson.

The Planning Clinic: Many home projects will require planning permission, which can be a daunting process for some. Bring your plans along and speak to one of the planning consultants from Foxley Tagg, who will be able to offer advice and tips to ensure things run smoothly.



MEET OUR EXPERTS



Charlie Luxton

Charlie specialises in sustainable residential design. He is also the presenter of More4's *Building the Dream*. (Available Saturday only.)



Michael Holmes

Homebuilding & Renovating's Michael Holmes is also Chair of NaCSBA (National Custom & Self Build Association), and author of *Renovating for Profit*.



Julia Kendell

With 20 years' experience, Julia has worked on hundreds of projects. Her passion lies in renovating old homes and eco self-builds. (Available Saturday only.)



Bob Branscombe

A chartered surveyor with over 25 years in construction, Bob is an experienced project manager and has a wealth of experience in the self-build sector.



Tim Pullen

Tim is *Homebuilding & Renovating's* eco expert, and a specialist in energy efficiency and renewable energy.

For a full list of experts visit homebuildingshow.co.uk/experts

DIARY OF A SELF-BUILD



FOLLOW A TRAIL

If it's your first time at a Homebuilding & Renovating Show, or you have a specific brief in mind, why not explore the Show using one of the four dedicated project trails. Each trail is designed to inform you of the best stands to visit, the right suppliers to speak to and the must-see seminars to attend — getting you where you need to be on the day.

The four trails you can expect to find include the beginners' trail, designed for those getting started on a project; extending to create a new kitchen; the eco home trail; and the improving your existing home trail.

TRICKS OF THE TRADE

Want to get hands on with DIY tasks but not sure where to start? The DIY Doctor experts will be holding 45-minute demonstrations running throughout the Show where you can learn everything from how to tile a bathroom and kitchen to hanging doors and dealing with cowboy builders.

DESIGN SERVICES

Want to speak to companies about creating your home?

Among the many exhibitors at the Show, Oakwrights and Potton will be offering a design consultation service — you can meet designers and gain a unique understanding of how the companies can work with you to create your dream home.

After some kitchen advice? in-toto Kitchens will also be offering its popular Kitchen Design and Planning Service, where you can meet the studio owners for a free consultation.

EXPLORE 100s OF EXHIBITORS

With over 350 exhibitors at the Show, you really will be able to find everything you need for your project under one roof. From windows and doors to bathrooms, oak frame companies, architects, kitchens, landscaping services, bricks and other building materials, insulation, and everything in between, you'll be able to see products up close and leave with plenty of ideas and inspiration. **H**

DON'T FORGET: WE HAVE 1,000 PAIRS OF TICKETS FOR THE HOMEBUILDING & RENOVATING SHOW TO EXCEL LONDON, 23-25 SEPTEMBER. UP FOR GRABS — TO GET YOURS SIMPLY ENTER YOUR DETAILS AT HOMEBUILDINGSHOW.CO.UK/HBRSEPT*

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DOES IT ALWAYS RAIN WHEN
Digging Trenches?

WE FOLLOW SERIAL SELF-BUILDER **DAVID SNELL** AS HE EMBARKS ON HIS FOURTEENTH PROJECT — SHARING HIS TIPS ALONG THE WAY



Last month, I explained how my wife Linda and I had received planning approval for our house designs for the two adjacent plots of land in Berry Hill in the Forest of Dean, Gloucestershire — one house for us, and the second for Bruce Bendall, my builder friend from the area, and his wife Kathy, who we sold the second plot to. In return, Bruce agreed to sign a contract to build our new home, contiguously with his own. With approval granted, we began clearing the site, carving out the driveway and creating the level plinths for the two houses ready for the foundations.

STARTING THE FOUNDATIONS

Why does it always rain when one digs foundations? I have lost count of the number of foundations that I have been involved in, and I simply can't remember a trench that wasn't filled full of water.

The actual dig went fine and Simon Drake, our building inspector, came out to see the trenches and both he and the inspecting architect were satisfied. However, later that evening it started to rain and by the next morning there was water sitting in the bottom of the trenches and several

Above: Work Gets Underway

With the concrete poured into the foundation trenches and the blockwork up to damp-proof course level, the level plinths were blinded (sealed) with sand before the concrete oversite

of the sides had fallen in. The day cheered up though, giving Bruce and his two sons time to clear the trenches out and get ready for the concrete lorries, which duly began to arrive by mid morning. Bruce had opted not to use a pump, so the lorries backed up the drive and deposited the concrete straight into both sets of the foundations. It had to be a pretty wet mix, and by heaving it around with rakes both foundations were concreted by the end of the day. My foundations took a total of 19m³ of concrete.

There's almost an audible sigh of relief when the concrete is in for the foundations. It's a major hurdle. Despite all of the planning and all of the investigation, one doesn't completely know what you're going to come across until it's all dug out. Fortunately all proved fine on our plots. From now on we'd be building up and not down and that's a great feeling.

Bricklayers Tom and Sam, who'd worked on our previous two homes, joined us the following day. Unfortunately, the block company let us down and Bruce had to spend much of his



time running backwards and forwards to Jewson picking up packs of blocks, which they let us have at almost the same rate as the full load that turned up a day later.

Within two days, both sites were up to damp-proof course level, ready for oversite.

BUILDING THE OVERSITE

We'd opted for a concrete oversite rather than a beam and block floor — the reason being that we'd carved out level plinths into a substrate mixture of sand, clay and stone that compacted beautifully and, when damped, set almost like concrete itself. Bruce built up the levels before blinding with sand.

We then had another departure from the norm. Both Bruce and I have had problems in the past with self-levelling screeds and difficulty in getting floor tiles to stick to them. So we decided that we'd do away with the need for a screed and that the concrete oversite itself would be our finished floor.

It's controversial, I admit. A good number of people reckon that the underfloor heating won't be as responsive buried in the solid slab as it would be within a lightweight screed. Others, including myself and Bruce, think that underfloor heating relies on the slow release of heat from a thermal mass and that, while it may not be as responsive, that's the whole point: it's what makes it different to the on/off instantaneous heat of radiator systems.

The consolidated and blinded oversite was overlaid with a membrane and then 100mm solid slab flooring insulation laid. Reinforcement mesh was then placed and the underfloor heating loops were wired to it. We were ready for oversite and, this time, Bruce had opted to use a pump.

Came the day for concreting and everything was ready. Six men, plus me in a purely management capacity, were all geared up for it. We had a roller tamper hired in and ready, and a machine to float and polish the concrete to create a finished surface. We waited for the pump to arrive with constant calls going back and forth from the concrete suppliers.

That afternoon, the pump turned up and shortly after the driver had set it up and primed it, the first concrete lorries started to arrive. I always liken the pump to an elephant with a bad cold, but it certainly is an efficient way to get concrete to exactly where you want it. Additionally, the action of standing on the mesh ensured that it ended up centrally in the mix, together with the underfloor heating pipes.

My house took just 6m³ of concrete and Bruce's took a little more as he opted to put in the foundations and oversite for a conservatory. In any event, it was late evening before



both oversites were tamped level and, as one is supposed to leave up to seven hours before using the power float machine, it meant that this would have to wait until morning. In fact, Bruce got there at 5am the following day and tried to use the machine, but by then the concrete had gone off too much. Although we had level oversites, they were not quite the polished glass-like finish that we'd been hoping for. Never mind, we will have to use a levelling compound before we lay the tiles and timber flooring that we're both planning to use.

There's nothing more depressing than a building site that's empty in the daytime. But equally, at the end of a busy day, when everybody's gone home, I find it a magical place. That evening I sat on a pile of blocks and looked out from the site. The birds were singing, the sun was shining and my oversite lay there waiting for the activity of the next day.

"I have waited all my life to live here," I thought. "Everything we have done before has led up to this point."

TOP TIP: A concrete pump may seem a large and unnecessary expense, but I think it is really worthwhile. Ours cost £408 for the day. The driver pitched in and helped with directing the nozzle and the concrete lorries came in quick succession. It allowed us to place the concrete where we needed it and it effectively vibrated it to fill every void. If it had come earlier in the day, as we'd planned, it would have given us the time to deal with and properly float finish the oversites. **H**



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“Don’t Stretch to Your Maximum Budget”

Builders share their words of wisdom for a successful building project



Improving or building a new home is one of the biggest expenses you’ll pay for in your life, so it’s important to do your

research when choosing your team. Go for recommendations from family and friends, and if they don’t know of any builders then search on the Federation of Master Builders (FMB) website. Ask the builders for previous examples of their work and meet former clients to ask how the project went and whether they’re reliable. If you do your homework, it should all run smoothly.

Building homes is not necessarily as simple as it used to be. More homes are built using a lot of steelwork and structural glass which requires a lot more technical support and consideration. Material costs have increased considerably over the years, too.

Communication with neighbours is also key to the success of a project. When I’m working on a job, one of the first things I do is pay a visit to the neighbours on either side to introduce myself and explain what we’re doing. If there’s a problem, don’t let things build up until it’s too late — nip it in the bud immediately and talk.

Don’t stretch to your maximum budget in case there are unforeseen costs. This is not to say there will be unexpected expenses, but it’s better to be safe.

Make a list of any items not mentioned on the plans, too (such as additional sockets, lights, bi-fold doors, etc) and give this to the builders so that they can price everything up and give you a realistic figure. You don’t want to plan for aluminium bi-folds only to find your builder has budgeted for PVCu and you have to make up the extra cost, for instance. Communicate exactly what you want and there will be no nasty surprises. **H**

● **Scott Joyce is owner of Scott Joyce Builders** (024 7644 9685; sjbuilder.co.uk)

● **The Federation of Master Builders operates the Find a Builder service to help you source quality contractors near you at fmb.org.uk**

Time to Consider STRAW BALE?

Barbara Jones, an expert on building with straw bale, explains why this natural, strong and thermally efficient material could be a real contender for your self-build or extension project



BARBARA JONES

Barbara is the director of Straw Works and the principal of the School of Natural Building, which teaches self-builders, architects and others the skills of straw bale building and lime and clay plastering

Building with straw bale makes good sense: no other building material is as easy to build with, provides so much insulation for so little cost or stores as much carbon within itself.

Another advantage of straw bale buildings is their longevity: if designed and built well with appropriate materials, and maintained throughout their lifetime, they should last more than 200 years.

It is also usually a joyful and collaborative experience to build your own house from straw. Straw bale building sites are often full of enthusiastic people who are willing to work hard to achieve quality work.

So why do most people still build with masonry? The answer is simple: lack of knowledge and awareness. Most builders prefer to stick with what they already know. Yet there are hundreds of homes throughout the UK made entirely of straw and other natural materials, and an equal number of extensions and garden offices made from the same materials.

DIFFERENT BUILDING ROUTES

There are different ways of building with straw. The four main ones are:

- The load bearing or Nebraska method, where the straw acts as structure, insulation and surface for plaster — for this type of build, there is no need for a frame.
- The infill or timber frame method, where the straw is only used as insulation and a surface for plaster.
- Hybrid methods, which combine the best of both techniques and are used especially where lots of glazing is required on one wall.
- Using prefabricated timber/straw panels.

Whichever straw bale building method you choose, the largest part of the build is actually carpentry, and the most successful people building with straw for the first time are those with strong skills in this area.

In fact, the straw walls are only a relatively small part of the build (about 18 per cent when plastered) and apart from a few basic design principles that must be followed, the rest of the build is really similar to a build in any other material.

DESIGNING WITH STRAW

Unless you are already an experienced builder, you should keep designs as simple as possible. This will make the build manageable both in time and in cost.

Having said that, very large open spaces ➡



STRAW BALE BUILD IN SOMERSET
Self-builders Anthony Lamb and Andy Andrews found that straw bale walls were relatively easy to construct on a DIY basis. The straw also provides excellent thermal efficiency — the 450mm-thick straw bale walls have U values below 0.15W/m²K. The structure of their award-winning home in Somerset comprises a Douglas fir frame with straw bale walls rendered in lime. A larger than normal roof overhang protects the walls from penetrating rain. Andy plastered the internal walls using clay from the site, water, straw, horsehair and a binding agent.

ADVICE STRAW BALE HOMES



LOAD BEARING STRAW BALE

This timber framed, straw walled guesthouse is one of five straw bale buildings on an eco development at Rock Farm, Slane Castle estate in Ireland; construction training was provided by Strawbuild.

Most of the straw bale buildings at Rock Farm are of load bearing straw bale design, where the small two-string bales from the farm's own barley fields are used as load bearing blocks and take all the loads of the building, without the need for any structural frame.

The first floor of the guesthouse during construction (below) shows the scratch coat in the background and the finish coat in the foreground. The barley straw is visible through the openings, ready for shaping before the clay plaster course.



can be designed with straw — it is the design of the roof trusses that make this work, not whether the walls are straw. Large expanses of glazing can be designed in, using hybrid techniques, as well as two- and three-storey houses without frames. There's no limit to house height or number of storeys if you do use a frame.

Any openings that are too large for true load bearing can be hybridised with a frame. This only requires knowledge and experience of how the rigid (frame) parts interact with the flexible (straw) elements.

Whatever size and complexity you are aiming for, the mantra for straw bale design is the same as for all natural buildings: 'a good hat, a good pair of boots, and an overcoat.' In other words, an overhang of 450mm, a plinth wall of 300-450mm, and a weatherproof but vapour-permeable external plaster.

STRAW BALE EXTENSIONS

When it comes to extensions to existing masonry or timber houses, it's very easy. At Straw Works, we prefer to do extensions in the load bearing style, because we think they're very beautiful, and it keeps the cost down. They attach to the existing house wall with a simple slip joint — a vertical timber attached to the wall around which the straw is notched, and then plastered.

DIY OR SPECIALIST SUBCONTRACTOR FOR YOUR STRAW BALE PROJECT?

All straw buildings and extensions can be self-built, with most self-builders buying in expertise for some aspects of the work such as roofing, plumbing and electrics. They may commission a specialist company to run training courses for the straw, lime and clay, and then do the rest themselves with mentoring.

If you want a cost-effective, thermally efficient home, we recommend having experienced people on site during the straw part of the build. There are quite a few techniques that will make your house more airtight and more thermally efficient, and if you don't know them, you can't apply them.

Quality building takes a little longer, but really pays off in the end in reduced heating and fuel bills. Straw bale houses can achieve Passivhaus standard (airtightness of 0.6 air changes per hour) although standard design with quality work can achieve an airtightness result of 2.6 air changes per hour, which is more than enough for most builds.





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DRY CONDITIONS ARE KEY

One potential difficulty when building with straw, particularly as a self-builder, is the need to keep the straw dry during construction. If the moisture content of the bales gets above 20 per cent, they rot, so the time that the straw is vulnerable to the weather should be kept to a minimum. It's good practice to design the building so that the roof can be in place before the straw is installed, even for load bearing designs, where the roof can be temporarily propped. That said, this does not necessarily protect the straw as wind can bring rain in under any roof. What is also required is prefabrication of all timber elements and installation of the straw elements only when all the carpentry is ready. Ideally, scaffolding should be sheeted in or, for smaller buildings, several tarpaulins can be hung from the eaves.

PLASTERING AND DECORATING

To keep a straw bale house healthy, it must be plastered and decorated with vapour permeable – 'breathable' – materials. These are external lime plasters and internal clay plasters, with limewash or clay-based paints. In more severe weather conditions, timber cladding may be required over the lime plaster to provide additional protection.

Modern cement and gypsum plasters are not suitable for a natural house, as they will create damp in the long term – typically 30 or 40 years after building – and cause condensation in wet areas very quickly. Natural plasters do not do this as they deal with moisture in a different way, by absorbing it when humidity is high and releasing it

BUILDING REGULATIONS AND STATUTORY INSPECTIONS

Most building inspectors know that straw bale buildings are not a fire risk and are extremely strong. It's also possible to work with private Building Control companies for your building inspections, instead of local authorities.

Many of these companies have plenty of experience of natural materials (see page 61 for more on building inspections).



DEVON COMMUNITY STRAW BUILD
Straw bale and timber frame was chosen as the building route for this project, an affordable self-build of six 120m² homes in Devon. The self-builders – all community members of the Broadhempston Community Land Trust – put in much of the labour on the project, including installing the locally sourced straw bales. Build costs are around £70,000-£80,000 per house, with total costs of around £150,000 per house. "Straw bale fitted all of our criteria," says architect Andrew Kirby of LED Architects. "We wanted a low-cost, sustainable and low-risk solution that was easy to build and straw bale met all of those criteria – in fact, the walls achieve U values of 0.1W/m²K, nearly twice as good as that required by Building Regs."



ADVICE STRAW BALE HOMES



ANDY LORD

ABOVE: STRAW BALE SYSTEM IN LEEDS

These eco homes, which form a 20-household co-housing development in Leeds, were constructed using the ModCell straw bale system. The prefabricated building method involves setting up a small factory nearby to build the walls. The walls are covered in a mix of lime render and cedar panelling

BELOW: STRAW BALE PASSIVHAUS IN NORFOLK

This infill straw bale house in Norfolk was built to Passivhaus standards. The architect was Fran Bradshaw of Anne Thorne Architects with specialist design consultancy by Barbara Jones. Straw Works ran training courses for straw and lime plastering, and provided a team for the rest of the straw work

when it lowers. This attribute is another of the benefits of living in a straw bale house — the healthy internal atmosphere, free from toxic off-gassing and free from mould caused by condensation.

Lime plaster should not be applied externally when there is any risk of frost within the three months following application, or it may fail. This means your house should be plastered by mid-September, or left protected over the winter till the following May.

COSTS

Based on experience, we know that it is possible to self-build in straw bale for around £650/m² for a finished home. You can get this price even lower if you spend more time making your own lime plaster. You may lower the cost if you put in more of your own time instead of paying for someone else's.

Given that most people are not able to work full-time on their project, most self-build houses take two years to complete: the structure and weatherproofing goes up in the first year, and the internal work in the second. This cost compares with a contract build price of around £1,200–£1,500/m² not including internal fittings. **H**

USEFUL CONTACTS

STRAW BALE CONSTRUCTION

Huff and Puff Construction

huffpuff.me

ModCell modcell.com

Strawbuild strawbuild.org

Straw Works strawworks.co.uk

STRAW BALE BUILDING TRAINING COURSES

Brighton Permaculture

brightonpermaculture.org.uk

Centre for Alternative

Technology cat.org.uk

Dorset Centre for Rural Skills

dorsetruralskills.co.uk

Ironshirt ironshirt.co.uk

Low Carbon Trust

lowcarbon.co.uk

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schoolofnaturalbuilding.co.uk

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Meet the BUILDING INSPECTOR

Help and advice for your project can come from many different sources — including your building inspector, who will visit your site regularly to check you're on the right side of the Building Regulations. Builder and project manager Peter Eade explains all



PETER EADE

Peter has spent a lifetime running his own building business, specialising in project management and design

Whether you are undertaking a new build, an extension or simply making structural alterations to your home, you'll need Building Regulations approval from your local building inspector.

There is sometimes confusion about the difference between planning and Building Regulations approval. Planning approval relates to receiving permission from the local authority to build an extension or new dwelling. Building Regs approval is a com-

pletely separate process and ensures that the proposed structure will be built in full compliance with the Building Regulations.

An important part of getting approval is having the benefit of a building inspector to carry out regular site visits. Building inspectors are professionals and have a complete working knowledge of the many regulations; their job is to ensure that at completion the project has been built in full compliance with each of them.

Before any work can begin, it will be necessary to decide whether to make a 'Full Plans' Building Regulation application or ➡

STATUTORY INSPECTION 1

At least two days before any work begins, it is a statutory requirement that the building inspector is informed that the work is about to start. The inspector will call at the site once they have been notified — this visit can be useful as he or she can meet the builder and generally check the site conditions. Once the first visit has taken place, a one-off invoice is issued to cover the cost of the first and all subsequent inspections. With a Building Notice, there is just one full up-front payment made at the time of making the application

STATUTORY INSPECTION 2

The next statutory inspection is the excavation before placing the concrete foundations, which allows the inspector to check on ground conditions and look at the following points:

- The bearing capacity of the ground
- Proximity and depth of any drains and manholes
- Depth of the existing foundation (if it's an extension)
- Proximity of any trees or recently removed trees
- Whether the ground is 'made up' (manmade)

STATUTORY INSPECTION 3

The next inspection is the preparation of the oversite. The inspector will determine the suitability of the hardcore, the provision of sand blinding and the damp-proof membrane (DPM). If a sub-floor thermal insulation is specified, this will also be checked



The inspector will check various elements of the oversite, including the suitability of the hardcore and the damp-proof membrane

BUILDING REGULATIONS

Your property will have to comply with the following parts of the Building Regulations:

- Part A** Structure
- Part B** Fire safety
- Part C** Contamination and damp
- Part D** Toxicity
- Part E** Sound
- Part F** Ventilation
- Part G** Hygiene
- Part H** Drainage
- Part J** Fuel
- Part K** On-site safety
- Part L** Conservation of fuel and power
- Part M** Access
- Part N** Glazing
- Part P** Electrical safety
- Part Q** Security in dwellings
- Part R** High speed electronic communications
- Part 7** Materials and workmanship

Building Regulations are updated fairly regularly and updates are published periodically on the Communities and Local Government website (communities.gov.uk)

submit a 'Building Notice'. With a Building Notice, it is possible to carry out the work without prior approval, but the responsibility of ensuring the work is in full compliance is entirely that of the builder.

If you choose a Full Plans application, you will know from the outset that the working drawings have been checked and approved by the building inspector, so that you know the plans fully comply with all

of the Building Regs. These regulations are comprehensive and quite complex and a Full Plans application would need to include a set of plans which demonstrate to the building inspector that what is being proposed conforms fully to the regulations.

The other advantage of this route is that the approved drawings will show everything the builder will need to know in order to provide a fixed quotation. These days, for ➡

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STATUTORY INSPECTION 4

Once the footing walls have been brought up to the damp-proof course (DPC) level this also requires a statutory inspection



new builds – as well as alterations, extensions and loft conversions – you have a choice of either using a local authority inspector or an inspector from a government-approved private building inspection company.

If you require an insurance warranty on the project the work will also need to be regularly inspected by the warranty inspector. (Some warranty providers also offer a private building inspection service too, which can work out as a cost-effective option.)

STATUTORY INSPECTIONS

Once the plans have been approved they become the only ones that are used to build the project. Before starting any work it's not a bad idea to compare the approved Building Regulation plans with the original planning drawings. Should the Building Regs plans deviate in any way from the planning approved drawing this needs to be addressed before any work starts.

There are usually eight statutory inspections, which have to be made during the course of construction, and generally the inspector will want to make quite a few additional visits as the work proceeds.

STATUTORY INSPECTION 5

All new drainage is inspected prior to covering. The items checked will include:

- Suitability of materials used
- The correct falls and line of the drains
- Materials used for the beds and surrounds of the drains
- Inspection chambers and access points

Left: The inspector will check the drains before covering to ensure that they are safe and fit for purpose

STATUTORY INSPECTION 6

Drainage testing – wherever possible the above and below ground drainage will be checked for air- or watertightness



Independent building inspection company Jhai oversaw the plan checking and construction of this replacement house in Bembridge, Isle of Wight

STATUTORY INSPECTION 7

When the building is occupied prior to completion the local authority needs to be notified

STATUTORY INSPECTION 8

This inspection is often overlooked, but it is important that the inspector has a final walk round to check:

- Ventilation to rooms and roof voids
- Roof coverings
- Fire precautions and fire safety
- Safety glazing
- Staircase details and geometry

Right: The safety of staircase will be checked during the final statutory inspection



FURTHER CHECKS

As the job moves forward the building inspector will usually carry out quite a few additional checks:

- They may well need to see the floor and ceiling joists to ensure they are in accordance with the approved drawing.
- They will want to check the size, grade and centres of the joists, together with any herringbone strutting and restraint strapping.
- All of the roof timber/trusses may well be checked for correct size and grade of timbers at the correct spacing.
- They will be interested in both thermal and sound insulation to make sure it is of the correct type and thickness.
- The structural integrity of the building is obviously very important but equally the

fire safety and glazing regulations need to be precisely adhered to.

- The staircase must conform to several important rules; if there are problems they can be expensive to put right.

If the work is being carried out by someone new to construction or who is an enthusiastic DIYer, the inspector will be able to visit the site more often when requested to do so. The approved plans do not always illustrate compliance to every regulation and on-site mistakes can happen.

ADVICE AND GUIDANCE

If in doubt, it is much easier to check a particular regulation before a job is carried out, by asking the inspector. To achieve the smooth running of any project and to

avoid too many delays due to things being incorrect, it makes sense to keep on the right side of the inspector. They are there to help and are usually very willing to offer advice. Any project that has received guidance and advice from the inspector will pay dividends in the long term. **H**

PRIVATE BUILDING INSPECTION

Aedis Regulatory Services

aedisgroup.co.uk

Approved Inspector Services (AI)

approvedinspector.co.uk

BBS Building Control

bbsgroup.co.uk

County Building Control

cbcgroup.co.uk

Jhai jhai.co.uk

NHBC Building Control Services

nhbc.co.uk

OWL Building Control Solutions

owlbcs.co.uk

Quadrant Approved Inspectors

quadrantai.co.uk

A full list of approved inspection companies can be found on the Construction Industry Council website (cic.org.uk)

Right: Building inspectors will visit a site more frequently for DIY self-builders, if requested





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ADVICE

WHICH WALL TYPE IS BEST?

Why Good U Values Could Make All The Difference

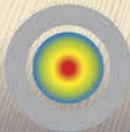
What are the U values of different wall materials? Understand that, and you are well on your way to making your self-build or renovation as thermally efficient as possible, says sustainable building expert Tim Pullen

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ADVICE U VALUES



Left and overleaf: The brick and block walls of Paul and Angela Dallas' stone and timber-faced Passivhaus property in West Yorkshire achieve U values of $0.117\text{W/m}^2\text{K}$. Green Building Store provided technical support and eco products

Below: Richard Baker chose Potton's closed panel timber frame system for his self-build project on the Isle of Man. Using 120mm Kingspan insulation, he achieved U values of $0.15\text{W/m}^2\text{K}$ for the walls. The triple-glazed windows from ecoHaus Internorm provide U values of $0.8\text{W/m}^2\text{K}$



TIM PULLEN

Tim is an expert in sustainable building and energy efficiency. He runs the green home consultancy Weather Works, advising clients on renewables and energy efficiency in the home

What exactly is a U value and why do architects, self-builders and energy-efficiency experts get so excited about it? Put simply, U values measure how easy it is for heat to pass through a structure (or its 'thermal conductivity'), so the lower the number the better. To put it another way: low U values mean that only a small amount of heat is escaping through your walls, windows or floors.

To put that into context: a single-glazed window will have a U value of 5.0, a standard double-glazed window around 1.6 and triple glazed around 0.8. Building Regulations require a wall of no worse than 0.3, roof 0.16, and ground floor 0.22. All of these U values are written as $\text{W/m}^2\text{K}$. That is, Watts (of heat) passing through every square metre (m^2) for each 1°C temperature difference (between the inside and outside of the building). The U value is therefore a measure of thermal efficiency. While that is important, it is only one measure of thermal efficiency and should not be considered on its own.

U VALUES OF DIFFERENT WALL TYPES

Each element of a wall will have an R value — the measure of its thermal resistance. To arrive at a U value we need to consider all the components. Taking a simple wall, and working from the inside to the outside, we might have 12mm plasterboard, 100mm concrete block, 90mm insulation in the cavity with a 110mm brick outer skin. Thickness matters, as the thicker the material the more it resists conducting heat.

If we take the R value of all those materials, at those thicknesses, and do some clever ➡



LEFT: JEREMY PHILLIPS, ABOVE & OVERLEAF: GREEN BUILDING STORE

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BUILDING IN ICF

As well as impressive U values, ICF can also be used to create homes with interesting wall shapes, such as those used in the award-winning 'Curly House' by ICF supplier Nudura in Sussex. The company offers its customers a one-day training course and site visit to witness ICF building in action



maths (there are websites that will do it for us) we get a U value for that wall of $0.3\text{W}/\text{m}^2\text{K}$ — which is Building Regs standard.

● Brick and block cavity wall

The wall described above is the standard for masonry construction, with the 'cavity' filled with mineral wool insulation, giving a wall thickness of 312mm. Clearly, then, this is a solid wall (the cavity is filled, so is no longer a cavity, which is fine with Building Regs).

● Insulating concrete formwork (ICF)

These insulated blocks or panels are assembled on site and filled with reinforced concrete. The insulation is typically expanded polystyrene, and having insulation inside and out gives a U value of at least $0.2\text{W}/\text{m}^2\text{K}$, with a wall thickness of 250mm. Some systems offer the option to increase the internal insulation and can provide a U value as low as $0.11\text{W}/\text{m}^2\text{K}$, with a wall thickness of 335mm.

● Timber frame

In recent years the timber frame industry has moved from a 90mm stud for external walls to a 140mm stud — partly to deliver a better U value. The standard construction includes 140mm mineral wool insulation, giving a U value of $0.29\text{W}/\text{m}^2\text{K}$. With an external skin of timber cladding, brick slips or render installed, the overall wall thickness could be just 225mm.

● Structural insulated panels (SIPs)

SIPs are essentially two sheets of OSB (oriented strand board) sandwiching and bonded to insulation — normally polyurethane, polystyrene or, more rarely, mineral wool. Some SIPs offer hemp or other natural insulation options, but these are expensive and not common. A 140mm standard SIPs panel will give a U value of $0.19\text{W}/\text{m}^2\text{K}$ and an overall wall thickness of 220mm. The reason for the difference between SIPs and timber frame (which are otherwise very similar construction) is the difference between mineral wool and polyurethane. Interestingly, if the SIPs use expanded polystyrene in that same wall, the U value rises to $0.27\text{W}/\text{m}^2\text{K}$.

HOW TO IMPROVE U VALUES

Obviously, the insulation material will improve the U value. The best currently available is the Val-U-Therm system (available from Scotframe) with a U value of $0.09\text{W}/\text{m}^2\text{K}$ from a wall thickness of 235mm, plus the outer skin. Changing the 140mm mineral wool in a timber frame to ➡



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ADVICE U VALUES



STRUCTURAL INSULATED PANELS

Wall thickness was a priority on this SIPs build, which sits on a narrow site. The Kingspan TEK® Building System was specified by the self-builder. The SIPs were sourced from SIPS@Clays, who provided the erection team

140mm polyurethane would give the same U value as a SIPs panel. Similarly, change the concrete block inner skin of a brick and block wall to an aerated block and use polyurethane instead of mineral wool in the cavity, and the U value will improve to $0.21\text{W}/\text{m}^2\text{K}$. In other words, the desired U value can be achieved by a bit of juggling.

OFF-SITE CONSTRUCTION

On-site construction tends to be a less than perfect process. Materials will also have an impact: mineral wool tends to slump in a timber frame, leaving gaps; rigid insulation is seldom cut to be a perfect fit between the studs it is to fill; cavity-fill insulation may not be an airtight fit to the inner block skin. It is impossible for design calculations to take these imperfections into account and houses tend to have a slightly worse U value than anticipated. The more that can be done off-site in a factory, the more likely it is that the design specification will be met, which is where SIPs and ICF score.

U VALUES AND BUILDING REGS

The U values stated as 'Building Regulations standard' are the elemental U values and even if those figures are all met, the building will not pass the SAP (Standard Assessment Procedure) assessment for energy consumption and CO_2 emissions.

The design has to do better than all of these figures to meet SAP requirements and a wall needs to be nearer $0.25\text{W}/\text{m}^2\text{K}$ than $0.3\text{W}/\text{m}^2\text{K}$ to comply. Achieving that in a brick and block wall will increase the wall thickness by at least 50mm, and costs will rise. With all other construction systems, that lower U value is met as standard.

COSTS

Assuming the same outer wall finish, the average costs for different wall types will be:

- Brick and block: around $\pounds 70/\text{m}^2$ with a U value of $0.3\text{W}/\text{m}^2\text{K}$.
- ICF: around $\pounds 65/\text{m}^2$ with a U value of $0.2\text{W}/\text{m}^2\text{K}$.
- Timber frame: around $\pounds 65/\text{m}^2$ with a U

value of $0.24\text{W}/\text{m}^2\text{K}$.

- SIPs: around $\pounds 70/\text{m}^2$ with a U value of $0.19\text{W}/\text{m}^2\text{K}$.

ICF and SIPs give inherently better airtightness, so they give better thermal performance for around the same price as timber frame and brick and block.

U values are important but thermal efficiency – reducing the energy demand and the property's running cost – is becoming increasingly important and means addressing airtightness and thermal bridges as well. A good U value will not compensate for a leaky, poor-quality build. Starting with a construction system that gives a better U value and airtightness, as well as eliminating thermal bridges, makes obvious sense. **H**

CONTACTS

Beco WallForm.....	becowallform.co.uk
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Green Building Store	greenbuildingstore.co.uk
Kingspan	kingspaninsulation.co.uk
Nudura	nudura.com
Potton	potton.co.uk
SIPCO	thesipcompany.com
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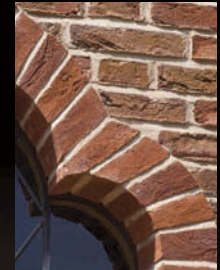
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How to Finance your DREAM HOME

Mortgages for self-builds, custom builds and major home improvement projects work a little differently to 'standard' high street offerings — over to self-build mortgage expert Mary Riley to explain more

Have you identified a plot of land or barn conversion, or perhaps hope to knock down your existing house and build your dream home? Do you want to renovate or extend a property? Or, perhaps, be involved in a group or custom build project?

Before these dreams can be turned into reality, working out how to finance your project is one of the most important (and very first) considerations — after all, inadequate finance can put a halt to your ambitions.

For some, savings will provide sufficient funds to carry out the projects discussed. However, for many self-builders and renovators, using a combination of savings and borrowed finance is the way forward.

Fortunately, if you need to borrow money, there are specialist mortgage products available, and we explore the details here.



MARY RILEY

Mary Riley is director of Mary Riley Custom Build Funding (maryrileycustombuildfunding.co.uk)

STAGE RELEASE MORTGAGES

A mortgage for a self-build, custom build, renovation or conversion project is specially tailored towards the way you 'pay' for your finished project (in several instalments, rather than all at once on completion day), and as a result you typically need a specialist, experienced mortgage provider.

The difference between a 'standard' mortgage and a self-build mortgage is the fact that funding is released at key, identifiable stages during the construction. Some lending institutions lend on the land purchase or existing property and at key stages during and on completion of the build project. This can vary from up to 75-90% of the purchase price or valuation (whichever of the two is the lower), and up to 80-90% of build costs, or up to 75% of the growth in value of your project at key stages during construction. Some lending institutions do not lend on land, but they will lend during the build period.

Products available include: discount from standard variable rate of interest; fixed rate of interest; bank base rate tracker; offset.

Rates of interest are higher than standard house purchase/re-mortgage rates of interest and vary from 4-6.5% per annum. The arrangement fees also vary from lender to ➡

lender. You may be tied into the lender for between one and three years, again lender and product dependent.

Once the property is habitable and this has been confirmed by a RICS' qualified surveyor and issue of the Building Control completion certificate, some lenders permit the borrower to 'switch' to a lower rate of interest during the 'tie-in period' without incurring penalty interest.

Do bear in mind that consultant and/or broker fees vary. Beware, too, of 'hidden' fees that you only become aware of at a later stage of the build.

WHAT YOU NEED TO CONSIDER BEFORE APPLYING

Before you source funding, there are a few very important factors to consider:

● Where Are You Going to Live?

Are you intending to live in your current

home, rented accommodation, a caravan on site, or perhaps live with family? Your answer is very important — where you intend to live while you build will have an impact on your affordability to borrow monies to build your dream home.

For instance, the monthly rental payments or mortgage payments will have an impact on your affordability calculation. Some lenders will accept you making upfront rental payments, which will not have an impact on your monthly income versus expenditure.

● Your Method of Construction

Some lending institutions will not lend on certain types of construction, so do ensure you check with them.

Of course, all your design and construction methods will need to be compliant with the current Building Regulations. Each lender's criteria are different, but you do need to ensure they are aware of your build type and of the payment terms and conditions your supplier has stipulated.

Do not agree any payment schedule with your builder or suppliers until you know how your lender will release funds to you.

● Your Build Cost

Some lenders require that you must work to a fixed build cost budget; others may request that a qualified quantity surveyor provides the information on the build costs. Check with your lender what they require. Also, ensure that you include a minimum of a 20% contingency built into your build cost estimate.

In addition, as part of your full project costs and budget control estimate that you provide your lender with, you'll need to identify (or at the very least estimate) the following costs:

- Land purchase and associated fees
- Project management, including health and safety compliance
- Gaining planning consent, if not already achieved, and associated fees
- Demolition and/or site preparation
- Construction design fees
- Construction costs (preferably estimated against Building Regulations drawings).

You must demonstrate to the lender that you will have sufficient funding ability and competence in place to complete the project.

HOW MUCH CAN YOU BORROW?

As a guide to help you gauge your potential

A typical timescale for processing a stage release mortgage is up to three months

borrowing facility, the income multiplier may be:

- **Single application:** up to 4.5 times the single income.
- **Joint mortgage application:** up to 4.5 times the highest salary, plus second applicant's salary, or 3.5 times joint income.

This is purely a guide, and I prefer to work on the basis of up to four times single income, and up to three times joint income. Banks and building societies apply their own affordability calculation to assess your borrowing limits.

You also need to **check your own affordability**. Would your net monthly disposable income enable you to borrow funds based on a stress test rate of interest of up to 7.5% on a capital and interest basis (repayment)? A mortgage will not be granted if it is deemed not to be affordable.

APPLYING FOR A STAGE RELEASE MORTGAGE

Supporting documentation required is basically the same as a 'standard' mortgage (after all, stage release residential funding is a mortgage from day one, except that funds are released in stages). Additional supporting documentation required will typically include:

- Copy of planning permission
- Copy of construction drawings and specifications
- Copy of total project cost estimate (where possible, fixed-price contracts)
- Copy of Building Regulations approval
- Copy of site insurance and structural warranty
- Architect's professional indemnity cover (if required)
- SAP calculation (this will be in the Building Regulations package)
- Experian credit report.

An initial valuation will be carried out to establish current value and anticipated end

INDICATIVE RELEASE STAGES

SELF-BUILD:

- Land (with the minimum of outline planning consent)
- Substructure
- Wallplate/eaves height (just before the roof trusses go on)
- Wind and watertight roof tiled
- First fix
- Second fix
- Certified completion

RENOVATION OR CONVERSION:

- Purchase of existing structure
- Inspected completion of structural survey and cost estimate of necessary works
- Completion of load bearing elements
- First fix
- Second fix
- Certified completion

CUSTOM BUILD OR GROUP SELF-BUILD:

- Purchase of land
- Associated preliminary costs and substructure
- Construction to wind and watertight stage
- First fix
- Second fix and completion

ADVICE MORTGAGES



value, too. You will be required to pay the valuation fees. Interim and final valuations will also be requested and carried out by a RICS valuer. The reports will be presented to the lender to evidence the increase of the interim value(s) prior to interim and final release of funds from the lender. Again, you, the client, will pay the valuation fees.

TIMESCALES

A typical timescale for processing a stage release mortgage is up to three months. Consultants, brokers, banks and building societies will carry out a 'forensic' analysis of all supporting documents, in particular income and expenditure cross checked with the bank statements.

TYPES OF STAGE RELEASE MORTGAGE

There are two main types of stage release mortgage. **Arrears stage payment** mortgages see funds released in arrears of work being completed. However, specialist self-build mortgage brokers have also developed products that allow payments to be made before stages are commenced. This type of mortgage is described as an **advance stage payment mortgage**. The obvious advantage of an advance stage payment mortgage is that it assists cash flow to meet payment

terms of suppliers if sufficient liquid cash or suitable assets are not available.

In this current economic climate, it is becoming more difficult to have funding in advance of each of the stages of your build project. However, providing you are upfront and discuss your funding with your suppliers and other contributors they are generally willing to negotiate payment terms with you.

To provide additional security, in some instances, a lender may take a charge on your existing property; this may facilitate funding in advance. If you already own the land or existing structure and it is unencumbered (i.e. there is no loan secured against it), the lender may secure funds against the land or existing property title.

The disadvantage of an advance stage payment mortgage, however, is that the cost of borrowing is generally higher than other arrangements due to the level of 'risk'. Only a very few lenders offer this facility too, so you have limited access to lender products. In addition, currently advance funding may only be secured on a Single Premium Policy, which provides additional security to the lender. The cost of this premium is, however, high.

It's also important to note that 10% of total borrowing will be retained until Build-

ing Control has issued a completion certificate. Remember to take this into account when addressing 'cash flow' during and on conclusion of the build project.

Have an open dialogue with all of your contributors to ensure the lender's stage release funding model is compatible with their payment terms. Cash flow management is critical.

DUE DILLIGENCE

Another key factor to bear in mind is that a bank or building society will not release initial funds until you can demonstrate that you have adequate site insurance and a 10-year structural warranty policy (such as those offered by Q Assure Build, Protek, Self Build Zone, NHBC Solo, Premier Guarantee and LABC). In my opinion, anyone undertaking a build project, whether borrowing or not, should have both in place prior to starting work on site.

In conclusion, subject to affordability, banks and building societies have a healthy appetite to lend on residential construction projects, providing due diligence has been carried out by you, the client, on ensuring you engage the appropriate team(s) to achieve the successful construction of your new home. **H**

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WHY ARE MY BUILDERS' QUOTES Beyond Budget?

It's a familiar story — you've gone out to tender and the quotes received back are way over budget. Step in project manager Bob Branscombe who explains why this has happened, and advises on how to avoid this unhappy situation from the off



BOB BRANSCOMBE

Bob is a chartered surveyor with almost 30 years' experience running a mix of residential and commercial projects. He has particular expertise in cost estimation and project scheduling

1



ENSURE THE TENDER INFORMATION IS NEITHER FLAKY NOR AMBIGUOUS

When you go out to tender, chances are that you are intimately familiar with what you expect from your finished job. You might need to pick a colour or two, but generally you will understand exactly what you want. It stands to reason then that your builder will also need to know this. However, if the information you provide (the 'inputs') is flaky, ambiguous or contradictory, then your builder is left with three choices when pricing the work:

- Price the cheapest option and look for extras and changes later.
- Raise numerous queries and questions throughout the tender process.

- Price based on their assumptions and allowances to make sure they have an easy run of the works.

The latter, I would suggest, is as prevalent as the other two approaches combined: the builder looks at the work, makes allowances which may be in excess of requirements or over-specified, and the price is correspondingly higher. In times when building work is in abundant supply, builders want jobs which they anticipate will run smoothly, not those that will be fraught with problems. Better to price the work high and minimise trouble along the line; that is a builder's general approach in times of booming workloads. ➡

We all know the scenario — armed with our drawings, designs and cost plans we go out to tender, eagerly await our quotes, and then struggle to understand why the prices we receive are way above our expectations. Our first (and understandably human) reaction is one of disappointment, shock and then simple incredulity — why are the prices so high? Obviously the builders have got it wrong, and frankly need to realise what an opportunity our job is for them...

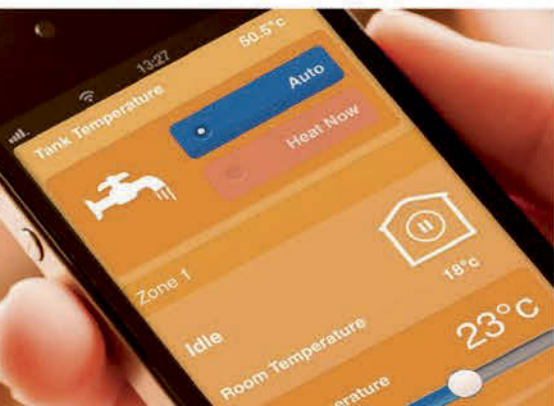
Sound familiar? There are several factors which commonly contribute — some of which are our fault, others less so. Here we explore them in detail.

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2 AVOID PUTTING IN UNNECESSARY OR OVER-COMPLEX INFORMATION

This is a tricky one. I preach time and time again that the inputs affect the contract, so it could be inferred that the more information the better. In the main this is not a bad thing, but I would suggest that appropriate information is the overarching requirement. Repetitive or overly complicated sets of documents can often cause tendering builders to assume a level of complexity that is not necessarily there, and the prices tend to creep up as a consequence; the builder does not wish to have missed something or be caught out.

Providing engineering, landscaping, geotechnical and construction drawings is a good plan generally, if you have them. However, if all you want is the superstructure quote from the builder to get you to shell stage, sending them the internal fit-out details runs the risk of over considering the works and pricing potentially more work than expected. The secret is to go out to tender with the correct, coordinated and relevant information to fully understand and price the works required — no more, no less.

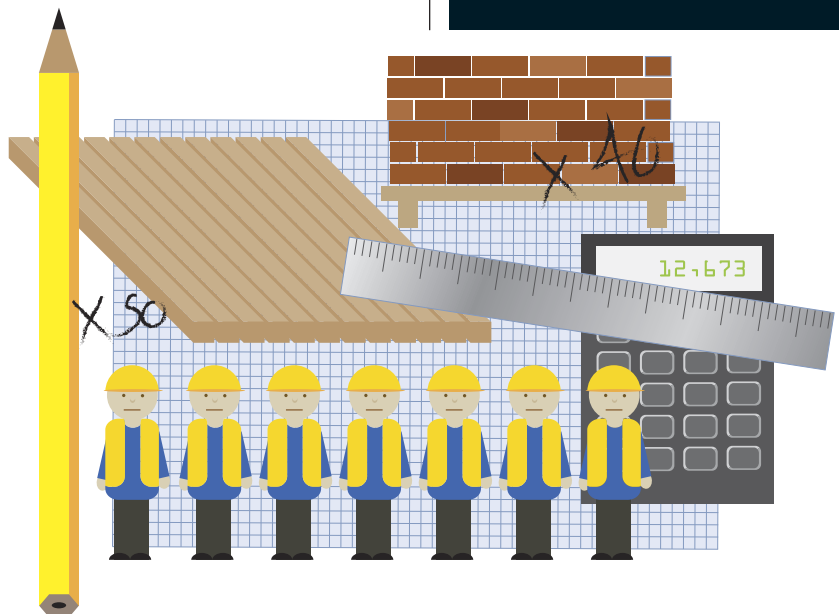
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DON'T LEAVE ROOM FOR ASSUMPTION

Your tendering process should, above all, seek to eliminate any scope for assumption. As soon as you say the words 'I thought that', the opposing party in the building contract can counter with 'well, I thought differently' — neither party is wrong, both are simply victims of reliance on assumption.

Assumption only breeds confusion and/or misinterpretation, and in most cases, when pricing the work, the builder will by nature assume the worst-case scenario if they cannot understand from the documents what is required. The result? More contingency money is built into their price — and you receive a price which is higher than it needs to be.

"We tend to assume that the builder has overpriced the job, not that our budget is perhaps no longer contemporary to the project"



3 INADEQUATE INFORMATION OFTEN LEADS TO OVERPRICING

This is the counterpoint to point two. Remember that you are asking your builder to price and build the works as per your requirements. If your drawings only show four walls and a roof, with no constructional information, you run the risk of them over-specifying or assuming details that may or may not be there.

If the builder is conscientious, and you are expecting a fixed-price 'turnkey' quotation, then they will have to make a great number of assumptions when pricing the work. The less information there is on the drawings and specification, the more they have to guess what you really want. While some items will be forgotten, it is more likely that they will overprice the work to make sure they have covered everything.

In some cases, the work may end up in dispute. Where the information is inadequate, it is very challenging to forensically dissect the works to understand what was expected and what was included in the tenders and contracts.

In buoyant times no builder wants the heartache and hassle of disputes, so they tend to overprice.

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“3D Visual Estimating consists of PlansXpress and EstimatorXpress – the programmes work seamlessly together, making it very easy for me to produce the plans and costs.

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And whether I use the prices direct from my merchant account or the ‘standard’ price list I know the estimate will reflect the material costs of that day. The software shows the true and accurate cost of the project.”

Tony James, Bristol

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5 HAS YOUR DESIGNER TAKEN THEIR EYE OFF THE BUDGET?

Your design team are rightly concerned with coming up with a design which meets your dreams and expectations, fits within the plot and planning regime, and is buildable. Often (in fact more often than not, in my experience) they take their eye off the budget. When you commission a home, you tend to focus from day one on the maximum budget, but then all parties tend to forget this as the excitement and challenges of the design process commence. I would stress that development of the budget is as important as the design, and should be an evolving process which is carried out and checked every day as the design evolves. Every decision or change to the design affects budget in some way, and the design team should be advising you on this.

When you appoint your designer or architect, make sure that budget considerations are part of the scope of service; they must be able to advise and design within your budget. They should advise you from the outset whether your plans are realistically achievable within your available funds and keep a watching brief on this prior to receipt of tenders. Otherwise the first indication of budget challenges is when the tenders are opened and the prices are too high. At this point, despite the potential of value engineering, it is often impossible to revisit and fundamentally change the design without wasting time and effort already expended (and paid for), and so you are in reality fiddling while Rome burns. Keep an eye on budget every single time you think about your project. Tracking the costs as the design evolves is the best way to ensure you fully understand the scope and design of the building — much more effective than looking at drawings alone and wondering about furniture placement...

6

BUSY TIMES MEAN BUILDERS CAN PICK AND CHOOSE WORK

Builders are currently very busy. In today's economic climate, there is a shortage of builders and technicians, and a surfeit of demand for building work, home improvement and maintenance. This inevitably means that good builders (and in the current market if someone is desperate for work you should wonder why...) will consider their commitments and work over the next few months, and their pricing levels will creep up accordingly.

If builders have to find a way of fitting more work in, they will need to find more resources, stretch themselves in terms of management and cash flow, and as such, they will price to try to cover this. Market forces dictate that if a builder does not need the work, why should they offer a cut-price bargain to you?

It is also worth considering the builder's approach and view of your project. If they have several schemes to 'choose from' when

pricing, they will view them not just in terms of potential earnings and turnover, but also in terms of the likely smoothness and ease of execution.

A new build on a clear site, with ample on-street parking, easy access for cranes and heavy equipment and a payment regime clearly set out and defined will be far more attractive than a remodelling job in an inner city area with parking permits and road closure challenges.

Even assuming identical costs, the more challenging project will be less attractive and the builder will therefore price it higher to accommodate the idiosyncrasies attached to the job. Consider if you can ease these pressures and make your scheme attractive to the supply chain. Equally, a restrictive and overly 'client-focussed' regime of management and administration can put off builders. I am not advocating relaxing correct contract administration processes, but in my view, in a busy market, the builder will price 'the buggeration factor' into a job...

7

ENSURE YOUR BUDGET REMAINS CONTEMPORARY

The main reason that the price is higher than expected when you receive the tenders could be simply that your budget was too low. Our first reaction may be: 'I don't like that'. The trick here is to try to understand why it is not the news we wanted. The science behind the price is the key to successful pricing and budgeting — the factors listed in this article are all influences over and above the practical elements, such as the number of bricks, hours worked, cost of windows, etc. You and your design team can cover these off reasonably accurately, but the aspects that get forgotten or ignored are the factors I have briefly touched on above: those intangibles that make our job more expensive than others, or more expensive than we had expected.

Your budget is a 'live' and evolving aspect of the scheme. When you start out, the first bit of science you can bring to the scheme is the gross amount of money you can get hold of. This is the first 'control factor' and should be sacrosanct. If the design team then ignores this, you don't track it, the design changes and evolves, and the level of fit-out gets higher, then obviously the budget is now inadequate. However, because we set

the budget in stone at the outset, we tend to assume that the builder has overpriced the job, not that our budget is perhaps no longer contemporary to the project. The lesson here is to keep ownership of the budget, have it at the top of the agenda when every design and construction detail is discussed or tweaked, and get the design team to buy in to this number. As a footnote, consider the time factor: you probably set your budget prior to even getting planning permission, several months will have passed, and inflation becomes a real presence in the pricing levels your builder is experiencing.

In conclusion, you have several easy wins: be concise but accurate in your documentation, make your design team play a proactive part in budget compliance, and factor into your budget all the 'soft' and intangible costs you can think of. While no one can predict the whims of builders, perhaps we can understand why they are not necessarily overcharging us! H

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FROM CLOCKWISE TOP: ALISTAIR NICHOLLS; DELTA MEMBRANES; JEREMY PHILLIPS; SIMON MAXWELL

GOING UNDERGROUND: ALL YOU NEED TO KNOW ABOUT BASEMENTS

Basements are a surprisingly versatile choice for self-builders and renovators looking for extra living, sleeping or entertainment accommodation. We speak to three experts about creating your perfect below-ground space ➡

BASEMENT OPTIONS

You have three main routes:

1. Creating a basement as part of a new build
2. Renovating an existing basement/cellar
3. Creating a new basement in an existing home, either directly underneath the property or extending out into the garden, or to the front or side of the house

WHY ARE PEOPLE CHOOSING BASEMENTS, AND WHAT ARE THEY USING THEM FOR?

Anthony Spinney, Glatthaar Fertiggeller:

People are looking for more living space — particularly in urban areas where they can't go wider, longer or higher, so for more room they need to go down. Interestingly, the UK doesn't have a 'basement mentality' — in France and Germany about 80 per cent of homes have a basement; here the figure is about three per cent.

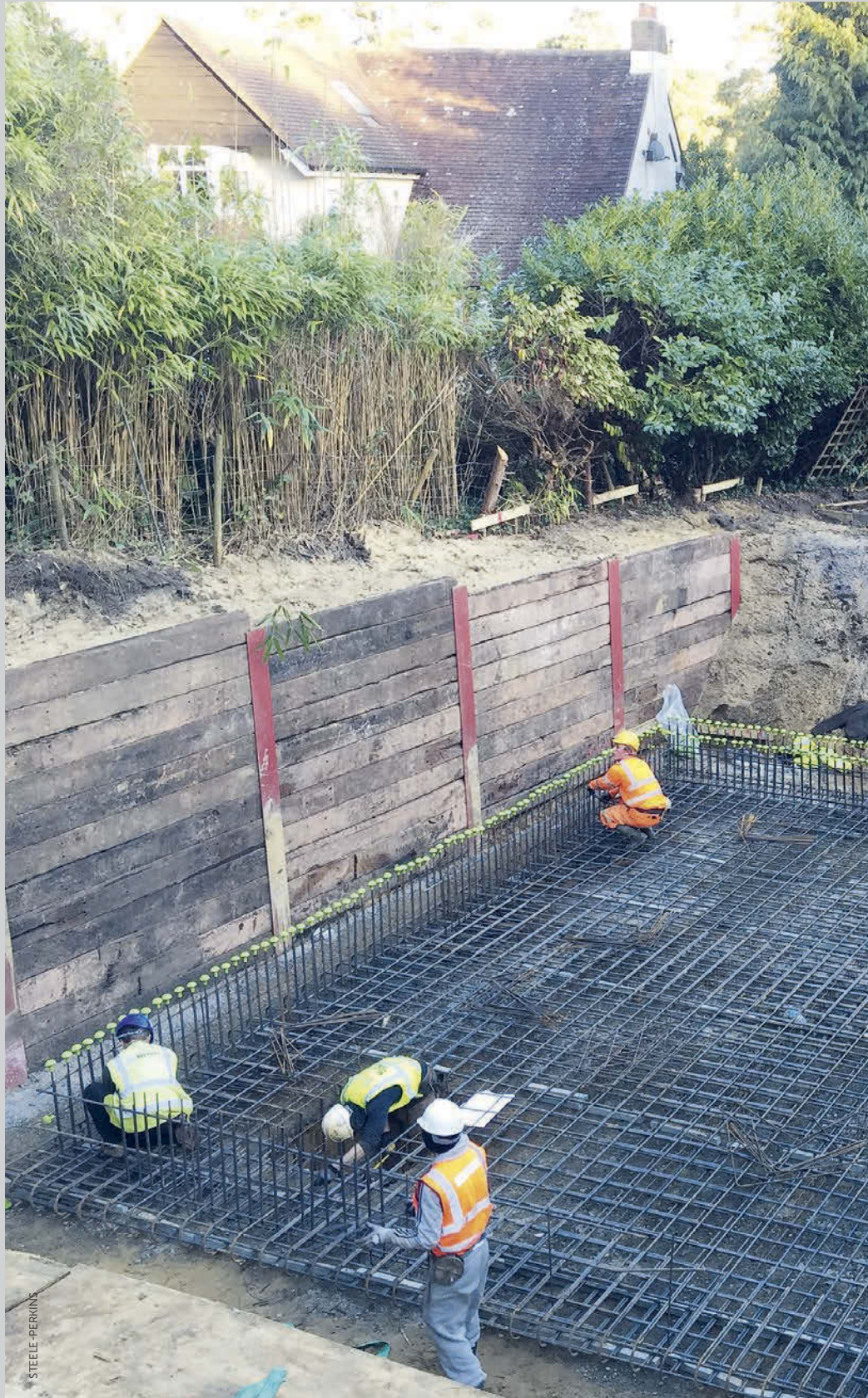
Andrew Edwards, Revolution Homes:

People often choose to use their basement as a plant room and for storage, but in my view the benefits are when people use the area as a real living space and as a 'wow-factor' feature that, done well, can really add value to the property.

Michael Holmes, Head of Content,

HB&R: A basement can be used for any residential purpose, except for use as an independent separate dwelling (unless you have express consent). So, for instance, if you lived in a terraced house and wanted to create a granny flat, or a flat for teenagers, you could do that as part of your main dwelling, even using Permitted Development rights.

Other than that, basements lend themselves brilliantly to additional bedroom accommodation and use for home leisure facilities.



A NEW BUILD BASEMENT

Project managed by Steele-Perkins, this basement is part of a new timber frame house on a restricted and sloping site. The basement, constructed from reinforced concrete pumped on site, forms around one third of the building footprint. The structure of the wall is waterproofed with a Pudlo waterproof concrete mix. An additional secondary membrane directs any condensation, or water if the wall fails, into an internal sump that is fitted with dual pumps to extract water away from the basement



WHAT CONSTRUCTION METHODS ARE BEST SUITED TO BASEMENTS?

Andrew Edwards: There are several different systems and you need to choose the right one for your budget, soil and conditions. We consider that the 'Rolls Royce' of systems is precast waterproof concrete panels manufactured off-site and lifted into place. You can also build your basement with brick and blockwork, or ICF (insulating concrete formwork), or a precast basement constructed on site, where concrete is poured on site.

Regardless of what construction method you use, you need to get a soil report before you go ahead — it's something that we always insist on. For soil that crumbles, or for soil with a high water content, we'd want to know what will happen to that soil when we dig a large hole and what level of waterproofing system would be best.

Anthony Spinney: Our approach for a new build is to provide a complete basement system, including all the components — we plan, design, manufacture ➡

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Andrew Edwards,
Director,
Revolution Homes
Specialists in
turnkey self-build
packages including
basements



Michael Holmes,
Head of
Content
and Product
Development,
HB&R
and property
expert



Anthony Spinney,
technical sales
manager,
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and install a twin wall system, as well as offering a warranty. Prefabricating the basement off-site in a controlled factory environment means that we can guarantee the quality; in our view, it isn't possible to reach this quality on site.

HOW CAN I BRING LIGHT INTO THE BASEMENT?

Andrew Edwards: You could use lightwells [an open area or vertical shaft which can help bring natural light to the lower floors] or sun tunnels; sometimes people will use a courtyard basement. Creating a basement on a sloping site is a good option because you effectively create a semi-basement, with light coming in either at the front or back, and possibly also the sides.

Anthony Spinney: There are different ways of doing this. You can install a functional window into the basement with a lightwell construction, which can also be used as an emergency exit. If there is no clay in the area and there is not a very high water table, that lightwell could be reinforced plastic; if there is clay, you will need a concrete lightwell.

Also, a lot of people think that a basement is always totally underground, but it doesn't have to be; you could create a basement in a new build that was partially above ground and that allows you to bring in natural light.

If you have a basement on a sloping site, you can position your living or office space at the naturally light end, and

put your store room, plant room or home cinema at the darker end.

Michael Holmes: In terms of light, the best solutions are lightwells. At the back of the property that lightwell might be big enough to create a sunken garden, so you can actually have external doors or bi-fold doors going on to that garden.

If you have a big plot, you can introduce lightwells on the side as well and have side-facing windows too — bringing in light from as many different directions as possible will improve the quality of your basement space.

For spaces that don't have windows you've got to use borrowed light, so an open plan design that allows that light to come in would be a very good idea. Having a minimal structure in the basement is also a good idea, so the staircase might have a glass railing or a very delicate balustrade; similarly, the treads of the stairs may have an open tread or be made of glass, so you're allowing light to permeate throughout the whole space as much as possible. The only rooms that really work well without natural light are wine cellars, home cinemas and entertainment rooms, utility rooms, storage, and perhaps a bathroom.

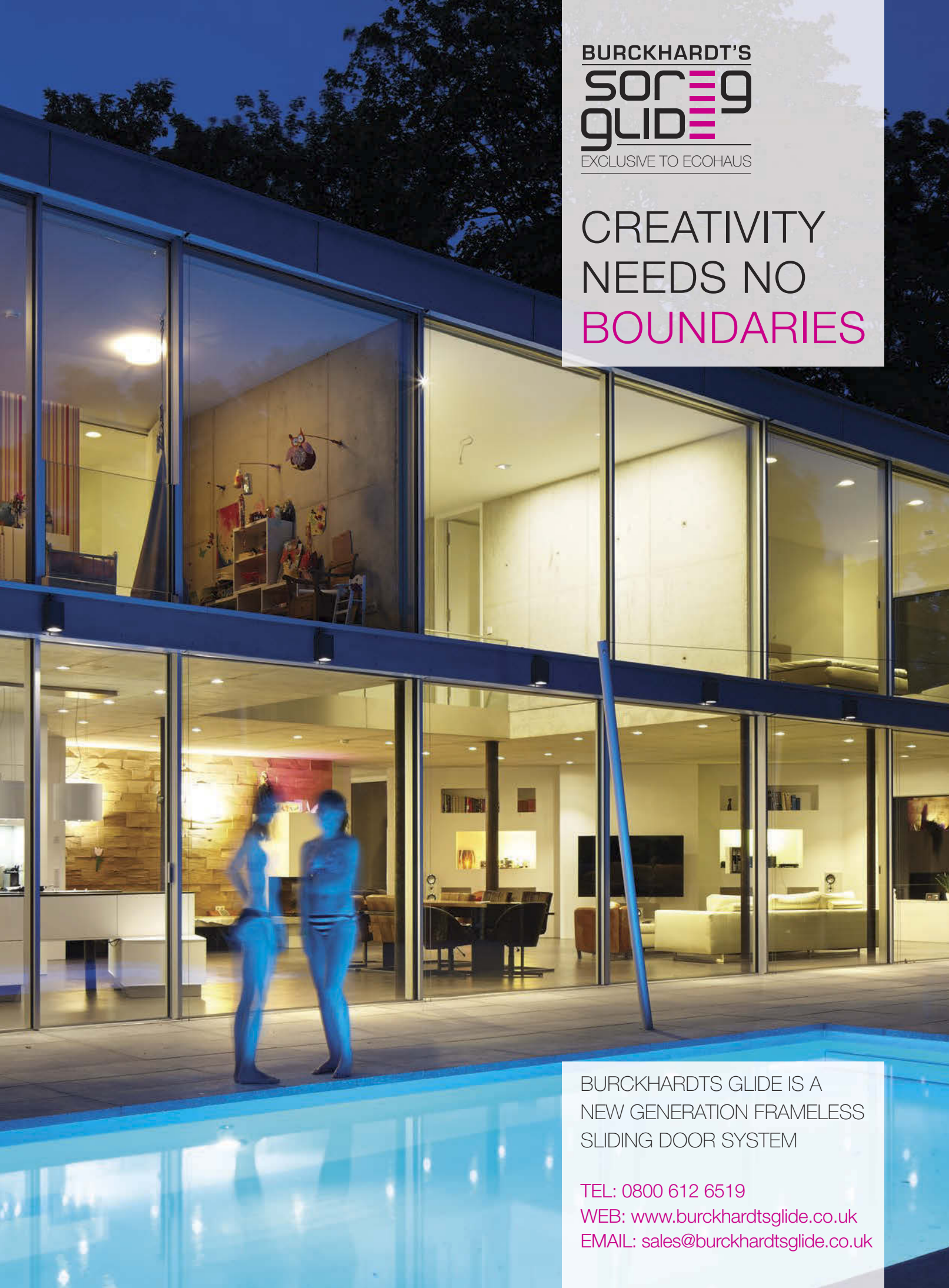
HOW DO I AVOID DAMP AND WATER INGRESS?

Andrew Edwards: I would recommend using a proper company that knows how to build a basement, and get a proper waterproof guarantee, and then make ➡

THE SEMI-BASEMENT

A lightwell, rooflights and a glass wall installed alongside the staircase all help to bring natural light into this semi-basement, which was created as part of the restoration and extension of a Victorian property in Oxford. One of the homeowners, Jeanne Flynn, grew up in Miami, so she was familiar with the American trend of using basements as a hang-out space and bedroom for teenagers and children. A brise soleil within the zinc roof overhang (BELOW) allows further light to filter through to the lightest part of the semi-basement, which houses the kitchen/dining area





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sure that the basement has been designed properly. Sites that are on poor draining soil or on damp soil will need more robust waterproofing and that will add to the costs.

The other thing to remember is that once you're using your basement space, you mustn't put screws through the waterproofing system. Most basements have an external and internal waterproofing system and it's the internal system that can be damaged by someone striking a hole in it.

Anthony Spinney: One of the most fundamental decisions with a basement is deciding whether you want a water management system, with a sump and pump, or a watertight system, like ours, which means that the water is kept out.

Because our system is totally watertight, we can even install a basement in a flood plain. I would avoid developing basements with curved walls, though, as they are very hard to make watertight.

WHAT ELSE SHOULD YOU CONSIDER IN TERMS OF DESIGN?

Anthony Spinney: Lots of people think that a basement should be the same size as the building, but you could have one half of the footprint or even smaller. The minimum size that we deliver, for instance, is 4.80m² because that allows us to bring in four wall panels and two ceiling panels. It's still quite a large box — you could put all of your plant room, fridges, freezers and so on in there. ➔

ENTERTAINMENT SPACE

The controlled environment of a basement provides the perfect space for a home cinema (this one was designed and installed by Bespoke Home Cinemas), where managing lighting and acoustics is paramount

A PLACE TO WORK FROM HOME?

Renovator Debbie Statham converted the dark and damp cellar in her Brighton ground floor flat into her home hairdressing salon. The cellar conversion has added an additional habitable 25m² to the property





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Michael Holmes: Anything that's a habitable room or a bedroom needs to have egress windows (fire escape windows) or the ability for the fire brigade to come in and rescue you in the event of a fire, and you also need to think about escape routes as well. For this reason, the basement needs to have a staircase that leads directly outside or a second staircase that leads directly outside. Alternatively, the main staircase down into the basement needs to go up into a protected hallway which has a door leading outside.

CAN YOU REDUCE COSTS WITHOUT LOSING QUALITY?

Michael Holmes: Basement costs vary enormously according to ground conditions, build route and quality of the specification, but what you can't compromise on in terms of cost is making sure that ➤

A LUXURY ADDITION
The converted cellar of this Victorian property in London can be found beneath trap doors underneath the living room floor — and has been utilised as a wine cellar (BELOW). The wine cellar is reached via a spiral staircase (RIGHT)



ALISON HAMMOND X2





A CLEVER WAY TO INTRODUCE LIGHT
An ingeniously designed lightwell (below) brings light (and a backdrop of greenery — thanks to the living wall) into the lower floor of this self-build in Devon, built on a sloping site. Bi-fold doors allow this bedroom to take full advantage of the natural light

the basement is structurally stable and able to support the weight of the house above and making sure that your basement is watertight.

In terms of design, make sure that you build a simple rectangular shape, because every time you build a corner into a basement it adds cost. The best shape would be a square because that optimises the amount of floor area for the minimum amount of basement wall and floor. The longer and narrower the basement gets, or the more complex the shape becomes, the more expensive costs become per square metre (m^2), so keep it simple. If you're building a new basement, try to design and build a basement that sits immediately underneath the house, so that the basement structure becomes the foundations for the house above so you do not have to create extra footings elsewhere.

The other cost you can make a difference on is specification, and again, keeping it simple and avoiding bespoke items will drive down costs.

Finally, if you oversee the construction of the basement itself rather than handing it over to a design and build contractor there are potential savings to be made, but you need to be confident that your builders are really competent. Basement construction is one of those areas where you don't want to compromise; if it goes wrong it goes wrong in a big way and you end up with an underground swimming

pool instead of a habitable space.

When it comes to DIY, some of the tasks involved aren't hugely skilled or technical, but again, the waterproofing is something you absolutely have to get right and you only really have one shot at it. I would definitely bring in specialists at the very least for this stage.

HOW DO BASEMENTS COMPARE COST-WISE WITH USING OR CONVERTING THE LOFT SPACE?

Michael Holmes: For a straightforward loft conversion, the costs range from £1,150-£1,350/ m^2 plus VAT; for a more complicated loft conversion, the costs are £1,400-£1,600/ m^2 , plus VAT. Building a basement from scratch is likely to cost you anywhere from £2,000-£4,000/ m^2 , depending on the area, access and how easy it is to excavate the soil and remove it from the site. The costs are almost double for a basement per m^2 than for a loft conversion, so basements tend to make sense in high value areas where the space you're creating exceeds that cost of £2,000-£4,000/ m^2 .

Andrew Edwards: Often on a new build, clients will go for both a new loft space and a basement. If you are tight on budget, or indeed space, a basement will always give a very open wide space, whereas a loft conversion has restricted space because of the sloping roof. **H**



NIGEL RIGDEN

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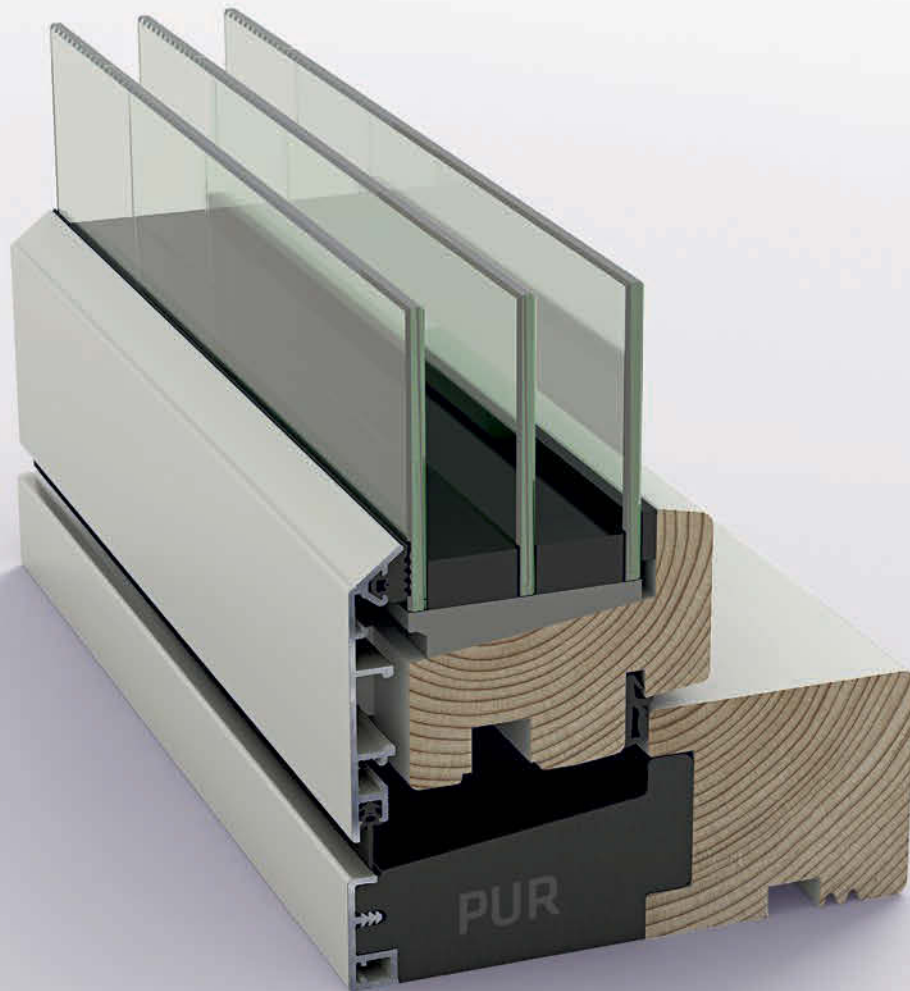
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HOMES CONTEMPORARY-STYLE SELF-BUILD

All Hands on Deck

Ben Warren has managed to build a stunning contemporary home in Devon on a tight budget by carrying out much of the work on a DIY basis

Words: Natasha Brinsmead Photography: Nigel Rigden





PROJECT NOTES

Project:

Contemporary
self-build

Location:

East Devon

Build time:

18 months

Size: 217m²

Land cost:

£300,000
(in 2004)

Build cost:

Approx. £300,000
(£1,382/m²)

Value: £950,000

Front Elevation

The house – designed by Stan Bolt: Architect – is made up of three main sections. Two concrete block rendered sections flank the central timber framed, cedar-clad two storey section, which is linked to the taller of the two blocks by a fully glazed section. The timber and glass pivot door, chunky chimney stack and variety of shapes used for the glazed openings all bring extra character to the exterior



THE QUICK READ

⇒ Ben Warren has built a three bedroom contemporary home in Devon that takes full advantage of its location, all for a budget of around £1,380/m² in total

⇒ Ben took a very hands-on approach to the build, using a local builder and project manager to get the house to shell and fix stage before taking over, saving up for each stage

⇒ The resulting house has recently been valued at £950,000 and features open plan, free-flowing space, plenty of glazing, including a glass walkway, and a combination of timber frame and concrete block construction



BEFORE



HOMES CONTEMPORARY-STYLE SELF-BUILD

Nestling deep in the east Devon countryside and enjoying views out over the valley beyond and woodland to the rear, Ben Warren's new contemporary home has taken the concept of a plain white box and reinvented it, resulting in a house that combines different materials as well as varying levels of scale and mass. "I had always had a burning desire to build something," Ben begins. "It was just always an interest — this feeling of leaving a little legacy behind."

Demolish or Refurbish?

"I was living and working in Exeter at the time," says Ben. "I really like east Devon as it is a little bit more off the beaten track. I have friends in the village who knew I was looking for a project and told me about this bungalow."

The bungalow in question was run-down, built around 1930 and had stood empty for 10 years. With a limited budget, Ben's initial plan was to refurbish the bungalow and work with what was there. "However, it made more sense to knock it down and start again," he says. "I was always in half a mind to do a new build anyway." Prepared to get his hands dirty by taking on much of the work ➔



The Exterior

The flat roof, covered in a single-ply membrane, was chosen to help the new building blend into its environment. Despite being very different to the original bungalow (BOTTOM LEFT), the layout and design of the new home aimed to replicate some of the bungalow's features





himself and lucky enough to be long-standing friends with Nick Elkins of architectural practice Stan Bolt: Architect, Ben set about building a contemporary home on a tight budget — no easy task.

Contemporary Design on a Budget

When it came to finding an architect for the project, Ben was spared the usual search faced by most self-builders. Having been friends since school, Ben turned to Nick for inspirational advice. “Nick brought Stan up to see the site,” says Ben. “I didn’t really think he’d be interested in taking it on as it was rather a modest plot — at the most I was hoping for some free advice! But he was really enthusiastic and keen to come up with a design.”

While Ben was renting nearby in the village, a design was developed that would both satisfy Ben’s keen interest in contemporary design as well as keeping within his budget.

“One of the key points within the brief was that we should not overbuild on the site,” explains Ben. “We didn’t want it to take over the site and were keen that the design should settle into the valley beyond and woodland behind.”

“The new dwelling was really based on the layout of the old bungalow,” comments architect Nick. “Obviously we have gone up a storey, but this is very much a design that resonates with the original dwelling.”

Planning was passed without any issues, with neighbours and the district council showing support for the new design. “The design has remained exactly as it was originally conceived and as was submitted to planning,” says Nick.

The design in question needed to satisfy Ben’s desire to build something contemporary, while doing justice to the plot, which stands within an Area of Outstanding Natural Beauty — and be doable for Ben’s limited budget of £150,000 for the shell stage.

The design comprises a series of boxes linked together by glazed sections. A cedar-clad, two-storey central section of timber frame construction houses the open plan living, dining and kitchen spaces, with the master bedroom suite above, and softens the rendered block-built sections either side, while also tying the design into its



HOMES CONTEMPORARY-STYLE SELF-BUILD



Top Left: Rear Elevation

On the ground floor, two bedrooms lead out on to the patio, while the open plan kitchen/dining/living space also has access to the garden via a wall of sliding doors

Far Left: Staircase

Made of pre-cast white concrete, the staircase has been built into the masonry wall and is separated from the glass balustrade by a tiny gap

Left: Living Spaces

With a suspended 'timber box' containing the master bedroom above the first floor, part of the living space is double height. A combination of limestone flooring and natural oak has been used to give a sense of warmth, while a change in floor levels takes you into the more private spaces



Kitchen/Diner

The kitchen, from Alno, was ex-display and is made up of ash and beech units topped with granite worktops. Ben was keen that each of these sociable spaces flowed into one another. The limestone tiles work well with the underfloor heating

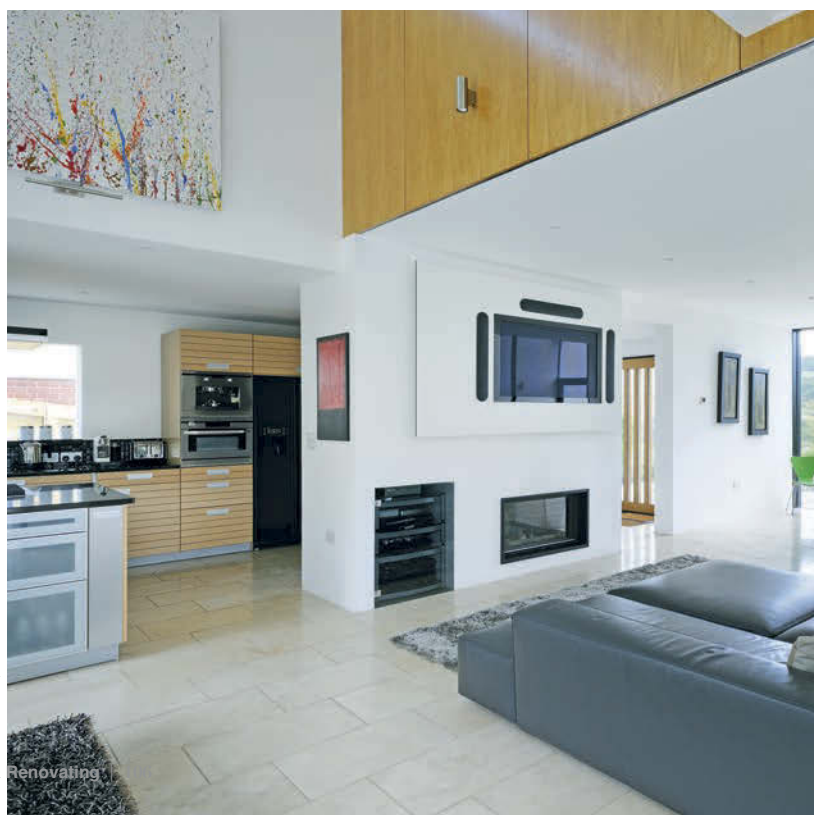
Through Views

The living and dining spaces both have large glazed openings, giving views out to the valley beyond and the woodland. The oak veneered cladding in the kitchen reflects the cedar cladding used externally

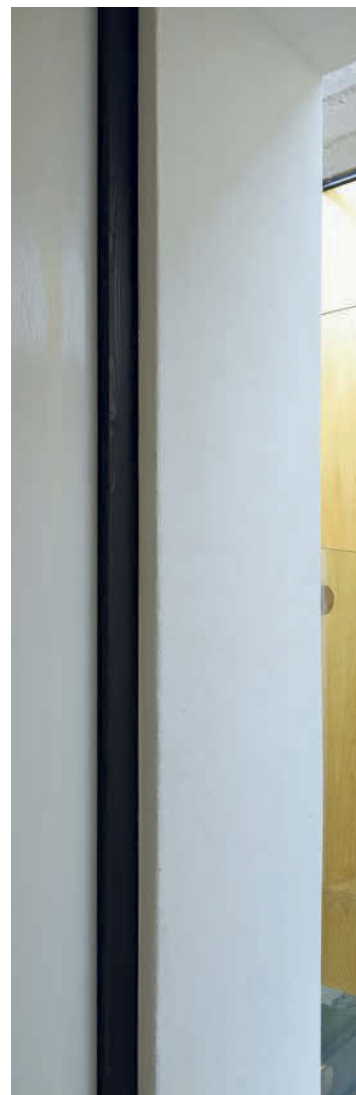
environment. Expanses of glazing, both internally and externally, ensure light flows throughout the house and give glimpses to the outside spaces — while the combination of wraparound windows, swathes of sliding doors and narrow horizontal and vertical glazed sections all work together to ensure the house has character in abundance. Adding to the dynamics of the exterior design of the house is the chimney, which serves the woodburning stove in the living space. This is no subtle steel pipe. “This was an architectural statement,” explains Nick. “It has a certain mass to it and works to knit the design together.”

The Build

With planning permission proving something of a doddle to gain, Ben set about looking for a builder who could bring his project in on his strict budget. “I started getting quotes in for between £550,000 and £650,000 — way beyond my initial budget of £150,000,” says ➤







Master Bedroom

The master bedroom is contained within the oak veneered floating pod. From here, a glass walkway takes you through to an en suite and dressing room. A balcony leads from the master bedroom bringing in light and affording spectacular views



Ben. "I actually really began to panic as the diggers were due in to demolish the bungalow the next day.

"Luckily, I found a builder who was willing to work on a labour-only basis, with me providing the materials. The project manager we ended up using made it his personal mission to get the build to shell and fix stage completed within my means."

The shell took around nine months to finish, at which stage Ben, with the help of Nick, got to work on doing the rest themselves. "It was a case of begging, borrowing and stealing," admits Ben. "I just had to save up for each stage and get it done as and when I could afford it."

Ben and Nick fitted the bathrooms and kitchens, the timber frames for the windows and doors and pretty much anything else they could manage. "We worked on the house almost every weekend for about a year," says Nick.

Internal Spaces

Ben was keen that the internal layout was largely open plan and with this in mind the main living areas – kitchen, dining and living spaces – all flow into one another. Two bedrooms, each with access out on to the terrace, and a bathroom also sit on the ground floor.

The first floor is reached by the stunning white pre-cast concrete staircase that has been built into the masonry walling for a cantilevered design and features a separate glass balustrade in keeping with the light, free-flowing feel of the house. Taking up much of the floorplan of this upper storey is the master bedroom suite, which sits within a suspended 'timber box' clad in oak-veneered plywood, cleverly reflecting the external cedar cladding which can be glimpsed through the large picture window sitting at the top of the staircase.

From the master bedroom, a glazed link with glass-floored walkway takes you through into an en suite bathroom and dressing room, housed in what Ben calls the "concrete tower" section of the house. ➡➡

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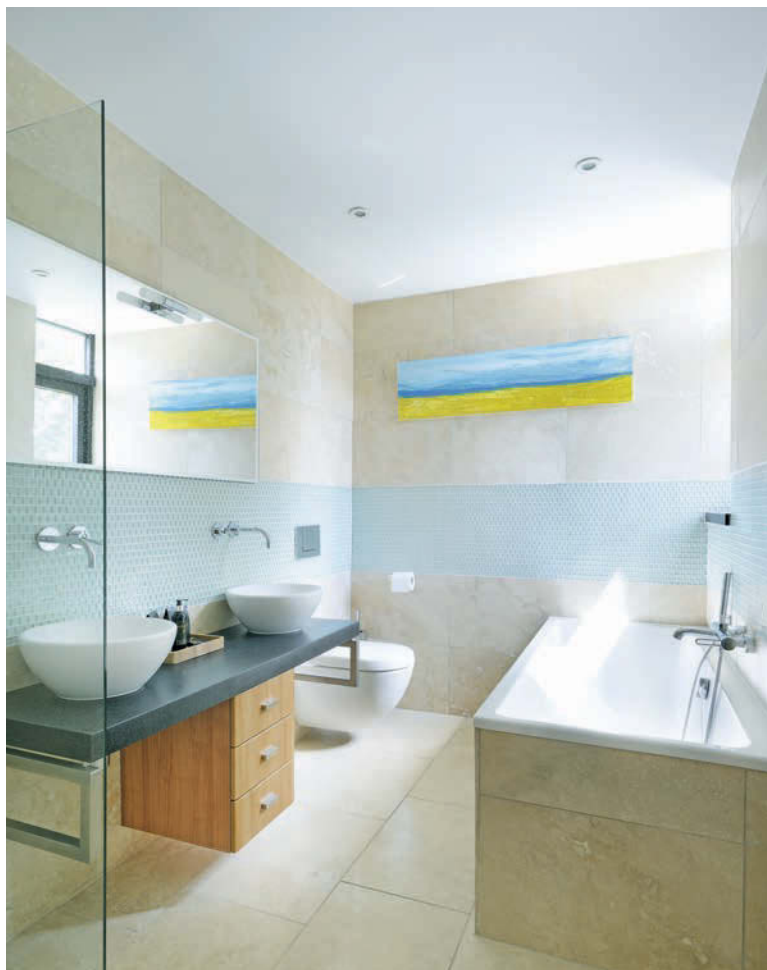


Ground Floor Bedrooms

Both of the bedrooms on the ground floor have access to external spaces and feature fun coloured glass 'walls'

Bathrooms

All the sanitaryware was ex-display, with Ben and Nick taking on the fitting themselves



Ben searched around to get the best deals wherever he could, sourcing ex-display sanitaryware. Even the high-end kitchen from Alno was bought ex-display. "If I knew I would need something in, say, six months' time, I'd visit showrooms and ask when they were planning on changing their displays," explains Ben.

A Sense of Achievement

"Despite the budget constraints and the stress that this brought with it, with the support of family and friends I am extremely proud of this build," says Ben. "I guess if I could go back with more money I'd have liked to build in a basement though."

"I am so pleased with the way the house works," he continues. "It is a great space for entertaining, but it also works well when we have family with children to stay. It is also really comfortable to live in, thanks to really high levels of insulation."

And it is testament to Ben's determination and willingness to take on the practical side of the build, as well as Nick's contribution, that this striking new build was completed for such an impressive figure. Having had the house recently valued at £950,000, the work has certainly paid off.

"I'd definitely build again — I've learnt so much, it would seem a bit of a shame not to," says Ben. 

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HOMES CONTEMPORARY-STYLE SELF-BUILD

The Project

THE ARCHITECT'S VIEW

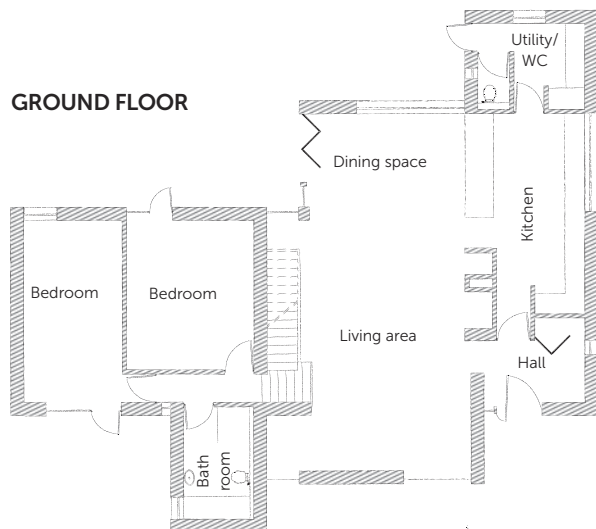
Nick Elkins of Stan Bolt: Architect

This is a very pure self-build, using simple materials. The rendered concrete block sections are off-set by the lightweight cedar-clad elements. With light being such an important part of the brief, the 'bedroom box' has been slung forward to the south to catch the light, while the vertical and horizontal glazing brings east light into the bedroom.

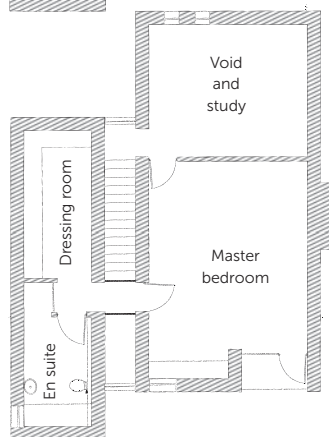
The pivot door is something we incorporate into almost all of the practice's schemes and it works well here, while the glazed link creates an intervention between the two different elements of the design. Many of the design decisions were actually economic ones — for example, designing the staircase in the way we did was cheaper than going for something elaborate in steel, timber and glass.

Working with Ben on the build was a great experience — as an architect it was nice to see things from the other side.

GROUND FLOOR



FIRST FLOOR



SELECTED COSTS

Preliminaries	£30,188
Substructure	£17,110
Superstructure	£24,922
Pre-cast treads/sills	£3,120
Timber frame	£13,792
Architectural/structural steelwork	£10,910
Roof covering and structure	£16,853
Glazed rooflight	£7,190

SUPPLIERS

Architect

Nick Elkins of Stan Bolt: Architect
.....01803 852588; stanboltarchitect.com

Structural engineer

Nicholls Basker
Partners 01626 776121

Main contractor

Complete Building
Services 01395 223810

Glazing

Mackenzie Glass01392 364364

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The Folding Sliding Door Co
.....0845 644 6630

Timber framed windows

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ARCHITECT'S Q&A

A PIVOTAL DESIGN



Alma-Nac's Tristan Wigfall, the architect behind this ingenious solution to a formerly space-limited terrace, explains how playing around with perspective and working with the space available resulted in this most striking extension (alma-nac.com)

HB&R: What was the original house like?

Tristan Wigfall: The property was what is known as a 'half house'. The house was paired with the neighbouring property with a central entrance used by both; a shared hallway, that was dark and small, led to both properties. There was an unused out-ri-gger at the rear of the property too containing an old bathroom, and very little connection between the house and garden, an outdated dormer extension and a tight lobby and stairwell.

What was your brief for the project?

The owners, a young couple, wanted an open living space for entertaining. They also wanted the kitchen to become a central part of the house and to create a dining space that would lead to the garden — which is south-west facing. At just 85m² the house is quite small, so getting the most from the existing space was important, as was pulling in more natural light.

Tell us about the extension?

Planning stated that the new extension should follow the slope of the neighbouring extension so we had to think of ways to introduce more height and light. The solution was an oversized (3.2m-high) pivot door. The lightweight extension has been clad in fibre cement for a monolithic element — we wanted a material that would work for the roof and the walls.

Gutters have been concealed and a glazed 'slot' runs the width of the extension, addressing the problem of how to deal with the junction between the old and new sections of the house, as well as drawing in lots of light.

What has been done to the rest of the house?

The old dormer has been reworked to tie in with the new extension and we widened the old staircase too. For flexibility, concealed sliding doors have been fitted between the kitchen and living space, and a downstairs WC has been fitted into the under-stair space. Existing timber floors were lifted, insulated and relayed then oiled.

In the new dining space, polished concrete flooring has been laid with underfloor heating beneath. Where steps once led down to the garden there is now a level threshold — concrete steps between the kitchen and dining space internally overcome the change in level.





HOMES CONTEMPORARY EXTENSION & REMODEL

Left: A Monolithic Addition

The new extension to the ground floor and the existing dormer to the upper storey have been clad in fibre cement to tie in with one another. They also feature large expanses of glazing

Right: Dining Space

Issues with ceiling height (the local planning authority required that the new extension needed to follow the slope of the neighbouring extension — right of shot above) has been overcome by the addition of an oversized pivot door, which adds a sense of drama to this new space





How does the new space work?

It is far more energy efficient, thanks to high levels of insulation. There are lots of gadgets in there too, such as the smart NEST thermostat and boiling water tap, for example. Although the new ground floor extension is only 10m², it has totally transformed the space.

On the first floor there is now a master bedroom, bathroom and study, while on the top there is another bedroom, with far-reaching views thanks to the extensive glazing.

The owners moved out while the work took place and the whole project took just five months to complete. In total the work came to £137,500, despite the matter of the huge steel beams that were required to open up the new dormer extension and the fact that access to the house was so tight. There is no rear access to the property so all materials had to be brought in through the living room bay window.

The result shows just what can be done with a small space. **H**





Innovative Design

Left: The sleek new kitchen – with polished concrete worktops to tie in with the concrete floor in the dining space – can be closed off from the living room by a sliding pocket door when required; Below: The majority of the extension roof has been glazed to pull in maximum light; Bottom: Before the extension, there were steps down to the rear garden – now a level threshold from the dining room ties the spaces together



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HOMES TRADITIONAL-STYLE SELF-BUILD

A Dream Realised

A long-held desire to build from scratch, as well as the hope of a low-maintenance home, led Simon and Linda Kay to self-build — with stunning results

Words: **Natasha Brinsmead** Photography: **c/o Oakwrights**

PROJECT NOTES

Project: Oak frame self-build

Location: Exmouth

Dates: Sep 2012 – Aug 2013

Size: 232m²

Plot cost: £315,000

Build cost: £500,000
(£2,155/m²)
including the triple garage

Value: £875,000



The Exterior

A combination of handmade bricks and tile hanging, along with timber windows, give the house a very traditional feel, while the feature chimneys add character. The front elevation (far right) features two very distinctive glazed three-sided bays. The new house was built just behind the original bungalow on the site (below)



HOMES TRADITIONAL-STYLE SELF-BUILD

Standing on an impressive plot in Devon, Simon and Linda Kay's beautiful oak-framed home is the result of something of a long-held dream for the couple, and in particular Simon, a GP. "This was my passion really," he reveals. "Building a house was something I had always wanted to do, although Linda did take a bit of convincing."

Having previously lived at the top of the Pennines in a house that was hard to keep warm, Simon was taken by the idea of building a new house that would be well insulated and full of natural light — plus, as an avid gardener he was keen to have a large garden.

Having moved to Devon some years before, it was by chance that Linda and Simon came to acquire the plot. "I had been aware of an old 1920s bungalow, which stood on a plot of around three quarters of an acre, as it belonged to one of my patients at the time,"

begins Simon. "I had been interested in buying it, but it wasn't until later that I became aware that it had come on to the market. Our cleaner, who also works in one of the local estate agents, saw me reading a copy of *Homebuilding & Renovating* and mentioned that the agents had a plot for sale that would be ideal for a self-build project — and it turned out to be the plot that had belonged to my patient, who had sadly passed away."

Linda and Simon decided to live in the three bedroom bungalow on site while the building work was carried out; the new house was to be built around eight feet behind. This meant they could keep an eye on the progress on site, although they admit that at times living on a building site with all the associated mess was a little stressful.

Linda was keen on the idea of an oak-framed house and having seen Oakwrights at the National Homebuilding & Renovating Show chose them to supply the frame for their new home. ➡



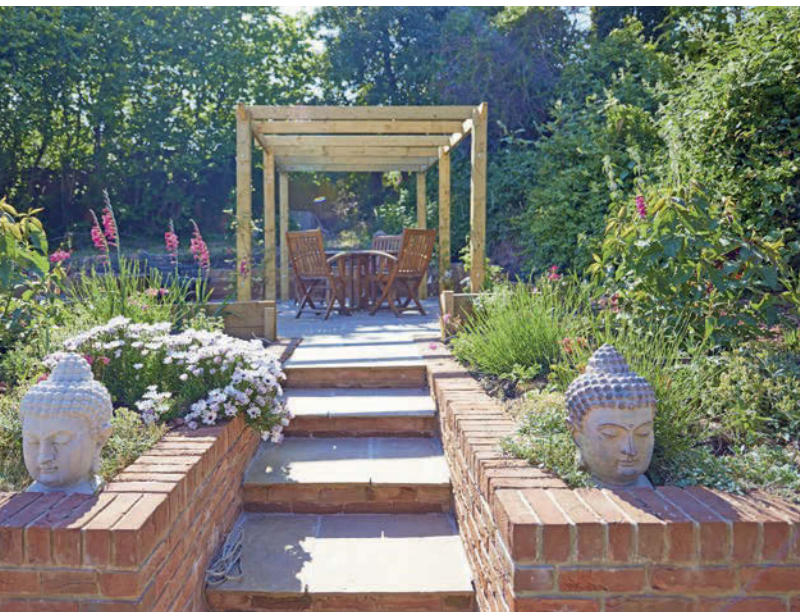
BEFORE





Free-Flowing Layout

Central to the internal layout is the timber staircase, built by a local joiner. Spaces were designed to flow into one another, with glazed doors allowing for a full through-view from one end of the house to the other



Breezing Through the Planning Process

The couple got in touch with architect Jeremy Rawlings, who suggested they put together a scrapbook of their ideas. Together, they came up with a design for a three bedroom house that was passed by the local planning department in just four weeks.

"We made sure we visited all the neighbours to let them know our plans for the site, too," says Simon. This proved to be a useful exercise and all the neighbours seemed happy with the design, particularly as there had been interest prior to Simon and Linda purchasing the plot from buyers who wanted to use it as a development site.

Designs were drawn up for an oak frame house clad with bricks, timber windows and clay roof tiles. "The house is almost modular in its design," says Simon. Two large rectangular bays define the front elevation and are balanced out by the projecting section of the house containing the kitchen. The three-sided bays also play an important role in creating more space and light in the sitting room and hallway — plus, being south facing, they catch the sun and help to heat the house.

"Between us, Linda and I have six children," says Simon. "It was important to us that we would have the space for them all to come and stay." The internal layout was something of a collaboration ➔



The Sunroom

Simon and Linda originally planned for the sunroom to have a glazed roof but are now glad that they went for a tiled design instead, saying that they can enjoy sitting in this space all year round without it overheating. The sunroom leads out to steps up to a pergola (above)





Front Elevation

The design of the house is carefully balanced — the two full-height bays to one side of the timber porch are matched nicely on the other side by the projecting full-height gabled section. Despite its very traditional appearance, the extensive glazing means the house is flooded with light internally

HOMES TRADITIONAL-STYLE SELF-BUILD

Kitchen Diner

The large kitchen diner is a hugely sociable space and can be opened up to outside. The kitchen area, with granite topped breakfast bar and Aga, features stone flooring, while the dining space has oak flooring — both benefitting from underfloor heating



between the family, architect Jeremy Rawlings and builder Chris Cox, with each taking on board one another's ideas.

Linda's son James is an interior architect and, along with Jeremy, advised Linda and Simon that a sense of flow would be integral to ensuring the new internal layout worked well. As such, the ground floor is very open, with a central oak staircase – designed by Jeremy Rawlings – and an open plan kitchen diner, living room, large hallway and a more separate sunroom. “Standing at one end of the ground floor you can pretty much see right the way to the other end,” says Simon.

In the new kitchen, bi-fold doors lead out on to a terrace. “We have managed to fit 12 round the table in the dining area,” says Simon. “It works brilliantly. The Shaker kitchen was designed by a local kitchen designer who Linda went to school with and has been handpainted so that we can touch it up when needed.”

The sunroom is a little more separate and features a tiled roof rather than the glass roof the couple had originally envisaged. “This was a good idea,” says Simon. “The room doesn't overheat and we use it a lot — particularly in spring and autumn.”

On the first floor there are three good-sized bedrooms, two of which benefit from the full-height bay windows, one features an en suite. There's also a separate family bathroom on this floor. Simon and Linda were keen that rather than squeeze in as many bedrooms as they could they have just three bedrooms of a good size instead.

The house has a predominantly traditional appearance, with exposed oak beams throughout, stone flooring in the kitchen, sunroom and pantry and engineered oak flooring in the dining space and hallway. There are also homely touches such as the woodburning stove (Simon and Linda are still burning wood left over from the demolition of the bungalow and the building work), ➡



Fine Details

Simon and Linda paid a local lighting company for a lighting design and then set about finding fittings that would come in on budget



HOMES TRADITIONAL-STYLE SELF-BUILD



stone fireplace and vaulted ceilings on the first floor — and yet the house fully benefits from modern technology too.

Solar thermal panels, hidden from view by being located on the separate garage roof, are linked to an Ecocat thermal store and provide hot water for the ground floor underfloor heating system; the system is operated via smart touchscreen controls. “We have found that we don’t require any heating after mid-March until around November,” says Simon, whose dream of a house that requires minimal heating and runs efficiently has clearly come true. ➡

Master Bedroom

The master bedroom benefits from vaulted ceilings and plenty of glazing, meaning it is full of both character and light



Bathrooms

A combination of the exposed oak frame, stone floor and wall tiles, and walk-in shower means the bathrooms have a high-end, luxurious feel



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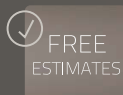


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Words of Wisdom

With a new home that sits so well in its setting, that blends traditional building techniques with extensive glazing (adding a more contemporary touch) – and that was built in just one year with no major hiccups – Simon and Linda are well placed to offer sage advice to other self-builders.

“I think the main reason things ran so smoothly and came in on budget was that we were very willing to talk to people, to search out opinions and to look around for the best prices,” explains Simon. “Once we had seen a product we liked we made sure we had researched all the available options rather than just go with the first thing we saw, and this paid off.

“We didn’t have any idea just how many decisions we would have to make, right down to the smaller details such as the switches and sockets. For example, when it came to the lighting design we didn’t know where to start so we went to a local lighting store and paid £500 for a design. Our electrician then gave us the name of a good supplier and they were able to get everything they needed within their budget of £5,000.”

While the landscaping is a work in progress at present, it is clear that the site, described by Simon as just a “plain field with a bungalow on it,” is blossoming into a space fit for a keen gardener such as he. “My cousin is a horticultural lecturer and has designed the garden,” he explains.

“Every time we come home we still get that ‘ooh’ moment,” says Simon. “We really enjoyed the build, but would we do it again? Only if it burns down!” **H**



Dressing Room

Spaces such as the walk-in dressing room show the thought that has gone into tailoring this design for Simon and Linda’s lifestyle – they wanted spaces that they would use rather than lots of bedrooms

Landing

The landing is partially situated within one of the three-sided, double-height bay windows, adding to its sense of space



The Project

THE ARCHITECT'S VIEW



Jeremy Rawlings
Architect

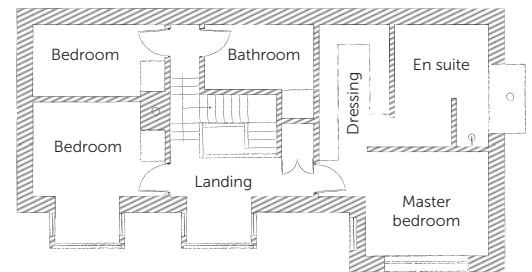
Simon and Linda presented a concise brief for replacing the existing bungalow with the proviso that they live in the existing dwelling until the new house was built. The siting of the new build was determined by the existing bungalow and a particularly large oak tree at the top of the plot.

The brief included the use of the Oakwrights WrightWall System, and the need to create a light, sunny home with open plan areas. The WrightWall System allows an internal oak frame that gives a spacious feeling and defines the shape of the rooms, while maintaining high insulation values.

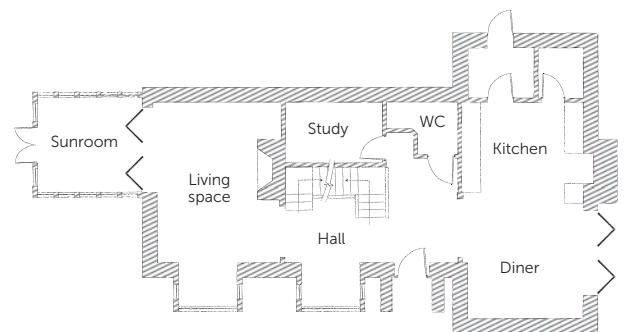
The finished product presents a contemporary look to the house while maintaining a traditional feeling emphasised by the use of handmade bricks to the ground floor, tile hanging to the first floor and plain tiled roof with feature chimneys. The two-storey bay windows create interest, light and room to take in the views, as does the voluminous ceiling to the master bedroom and the west-facing sunroom off the living room.

Initially a topographical survey was carried out and a concept package was produced that was presented to the local planning authority at a pre-application meeting. This resulted in positive feedback and an application was submitted. This application was able to be determined in one month allowing Chris Cox Limited, the builder, to make an early start.

FIRST FLOOR



GROUND FLOOR



SUPPLIERS

Oak frame Oakwrights..... 01432 353353; oakwrights.co.uk
Architect Jeremy Rawlings..... 01884 266444; periodhome.net
Main contractor Chris Cox Limited. 07970 481150
Bricks York Handmade Brick 01347 838881
Roof tiles Heritage Clay Tiles 01708 853953
Kitchen/larder/utility Panache Interiors 01395 239200
Stone flooring Devon Stone/JAM Interiors, Exmouth 01395 222525

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Total Turnaround

Chris and Kate Archibald have transformed an uninspiring house in West Sussex into a striking contemporary family home designed to make the most of the stunning views

Words: Matthew Henderson

Photography: Richard Chivers c/o CDMS Architects





BEFORE

PROJECT NOTES

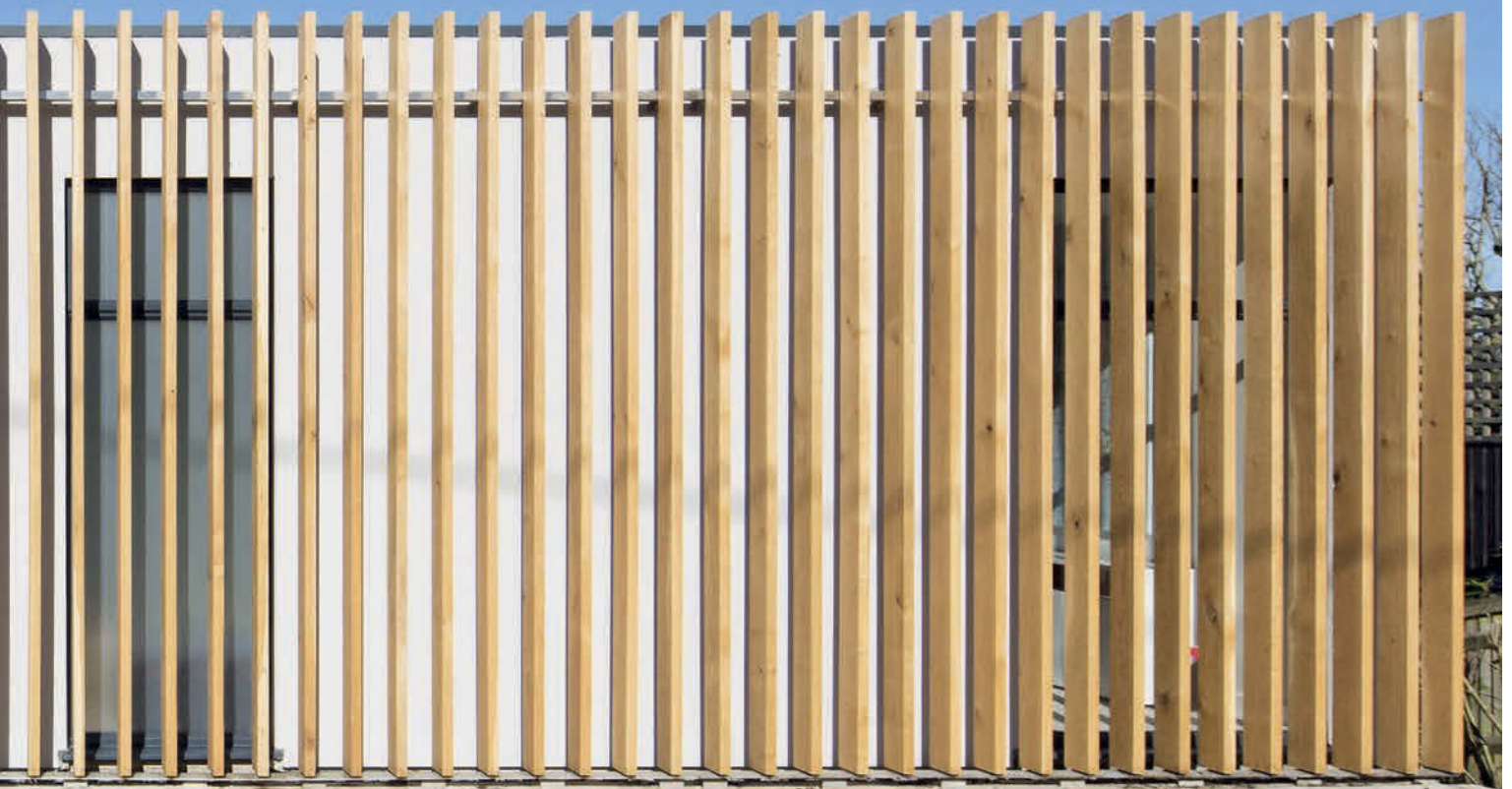
Project:
Contemporary renovation

Location:
West Sussex

Dates: Jun 2014
– Feb 2015

Size: 240m²

Build cost:
£259,000
(£1,079/m²)

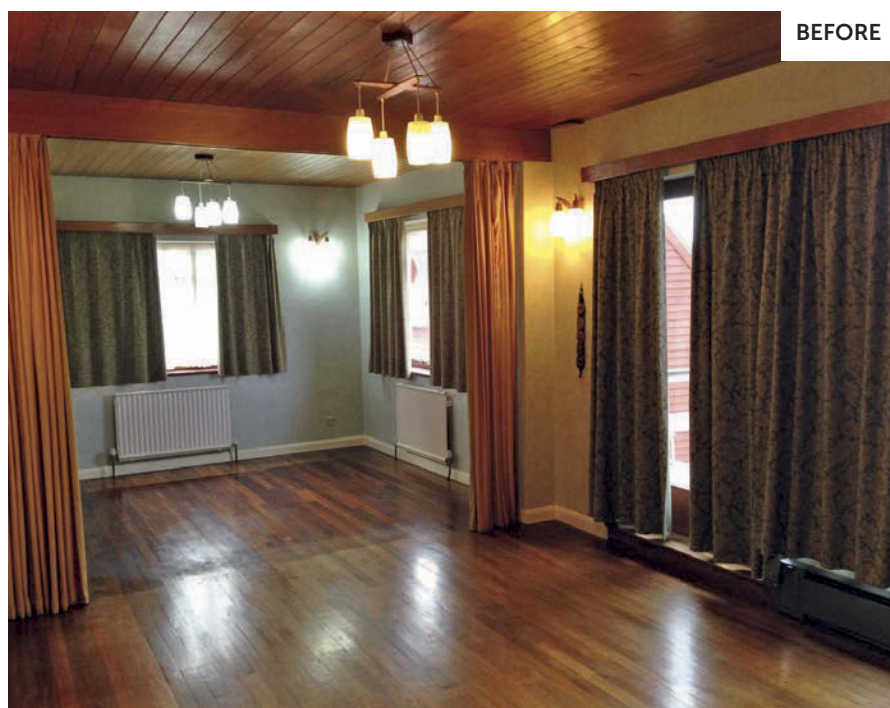


Front Elevation

The façade of the house is virtually unrecognisable from its former incarnation (ABOVE). Unattractive brickwork has been rendered, the old garages have been demolished and replaced with a single storey extension and new timber 'fins' added to soften the design and offer privacy. The old roof has been covered with a steel roofing material



BEFORE



BEFORE



THE QUICK READ

⇒ Chris and Katie Archibald set out to renovate and remodel a run-down house set on a spectacular plot in order to make the most of the stunning views

⇒ A double garage was demolished and replaced with a contemporary extension to the front of the property

⇒ Although the positioning of the window and door openings remains largely unchanged, they have been replaced with modern aluminium fittings and bi-fold doors, meaning the house is now full of natural light





HOMES EXTENSION & REMODEL

When Chris and Katie Archibald began planning their repatriation to the UK after a number of years working in the Middle East, they decided the picturesque village of Balcombe in West Sussex was the perfect place to establish their family home.

The 'Upside Down House' fitted the bill. It was close to the station and local amenities and although structurally sound, it was tired and needed updating, allowing the couple to make their mark and create a home more suited to their contemporary lifestyle and tastes. But, above all, it had views. "We're very fortunate to have such an unobstructed view," says Chris. "There aren't many places, if anywhere, in the village, where you can see as much as we can."

The house nestles into the rolling landscape, appearing as a

single-storey dwelling from road level but opening out into a two-storey house at the rear as the back garden slopes down. "The view to the rear, down into the valley, across farmland and over the railway line to the woodland beyond is captivating; we wanted to make the most of this," says Katie.

Balcombe is located just outside an Area of Outstanding Natural Beauty but its rural setting warranted a sympathetic approach without simply copying the aesthetic vernacular of the village setting. The design, although contemporary, was well received by both the local planning authority and the parish council. Despite this, the application sat with the planners for over three and a half months. Not only was this frustrating for Katie and Chris, but it also had an economical impact on the project, as mortgage payments had to be made and alternative accommodation found. ➔



Bringing in Light

While the positioning of the windows at the rear remains largely unchanged, the grey aluminium frames have transformed the appearance of the house. Bi-fold doors take the place of old-fashioned openings and a glass balustrade on the first floor living area (RIGHT) means the views can be fully appreciated. The old living room (ABOVE LEFT) was previously dark and gloomy — a far cry from the light open spaces that have now been created

HOMES EXTENSION & REMODEL

All these costs came out of the budget, and the longer the council took, the less the couple could build. In order to save time and maintain continuity, all the architect's drawings and specifications were prepared during the time it took the planners to come to a decision.

Design Brief

The couple had a very clear idea of what they wanted the house to be, but were also open to suggestions, giving CDMS Architects – who they chose because of their online portfolio and experience of similar projects – free rein to propose ideas. “From the very outset, it was always about how to make the most of the views and how to make the internal spaces feel part of those views, as opposed to simply looking out at them,” says architect Corin Morton.

Transparency is another major theme throughout the design. On entry you can see all the way through the house to the view beyond — a feature that makes the building light, delicate and less obtrusive within the landscape.

“This idea of transparency was exemplified by the rearrangement of the plan of the house, particularly at the upper ground floor level,” says Corin. “It was always intended that much of the original arrangement of the house would be retained, with the bedrooms remaining on the lower ground floor and the living accommodation at the upper floor. The new design maximised an open plan layout, allowing all the living areas to flow into each other.”

The relationship with the landscape was further enhanced by the introduction of a large balcony to the rear elevation. “The frameless glazed balustrade was an extra cost but the uninterrupted views it provides were worth it,” he adds.

Existing garages to the front of the house were a dominant feature that made for an uninviting façade, as well as restricting vehicular access into the site. These were demolished and a new single-storey timber frame extension erected in its place. The extension was designed to create a new, somewhat grander entrance to the house as well as providing new guest accommodation.

Huge windows were installed in the extension to maximise views to the rear, while windows to the front, partially hidden behind a screen of vertical oak louvres, provide an element of privacy. They also soften the design and connect it with the landscape beyond.

Construction

Brickhurst Construction was appointed to carry out the building works and demolition started in June 2014. It took eight months for the works to be completed, longer than expected due to some unforeseen problems.

Upon digging out for the extension's foundations, the contractors found that the ground was not compacted enough to support the concrete foundations, which necessitated digging until more solid ground was found. In the end, foundations that were intended to be 1m deep became 2.5m, delaying the start of the construction of the extension.

Chris and Katie, meanwhile, were still overseas for most of the build phase, which kept them somewhat disconnected from the construction process. “It was always frustrating being so far away from it all, only seeing progress through photographs,” says Chris.

The build included a rewire and replumb throughout and all the windows and roof coverings were replaced. The house was gutted: stripped back to its primary structure and rebuilt, with almost every

The Kitchen/Diner

An open plan layout was important to Chris and Katie, who were keen to create a home that would work for their family. The sleek kitchen/diner on the first floor has a slightly retro theme and leads out into the dining space beyond



surface refinished. Although Brickhurst Construction retained and restored as many of the original features as possible, most of what is visible now is brand new.

The lower ground floor now comprises a new master suite with en suite bathroom and walk-in wardrobe, along with three further bedrooms and a family bathroom. Upstairs, walls were demolished to create the open plan arrangement. Access to a snug room was achieved by removing a wall and replacing it with a full-height door. A large utility room was also created.

The exterior of the existing structure was transformed, with the clay tiled roof replaced with a new Tata Steel roof material, which has a dark grey finish to match the new window frames. The heavy brickwork was also entirely rendered with a light grey colour to soften the exterior.

Costs

The couple had an initial budget of £120,000, but having obtained a cost estimate from a quantity surveyor, it became apparent that to accommodate all the ‘nice-to-haves’ the budget needed to be



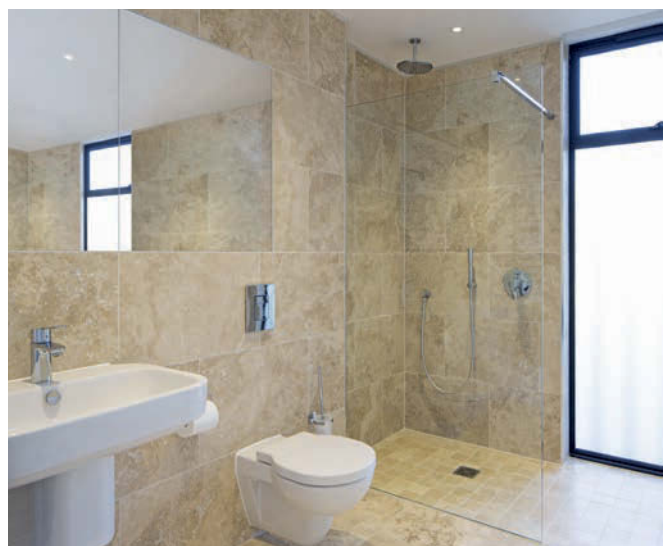
increased. A few items were reluctantly omitted from the scope of works, notably the carport to the front and a fire pit planned for the bottom of the garden. “We have planning permission for these structures, so we’ll get around to building them one day,” says Chris.

Even with all the omissions, the lowest tender came back at £309,000 — much more than Chris and Katie wanted to spend. This kick-started a period of ‘value engineering’, bringing the build cost down to £240,000.

The final cost came in at £259,000, as there were a few unforeseen issues that arose during construction. For example, there were no lintels above the existing windows, which was not only concerning from a structural viewpoint, but an expensive fix to make sure the brickwork wouldn’t collapse when the windows were replaced.

Some items, particularly the timber fins to the front elevation and the steel balustrade, were more expensive than expected, too.

“These were features that formed the appearance of the house, and it was important to us that they were of the best quality,” says Chris. “We spent more than we had hoped on the project, but we are very happy with our home and feel that it was money well spent.” **H**



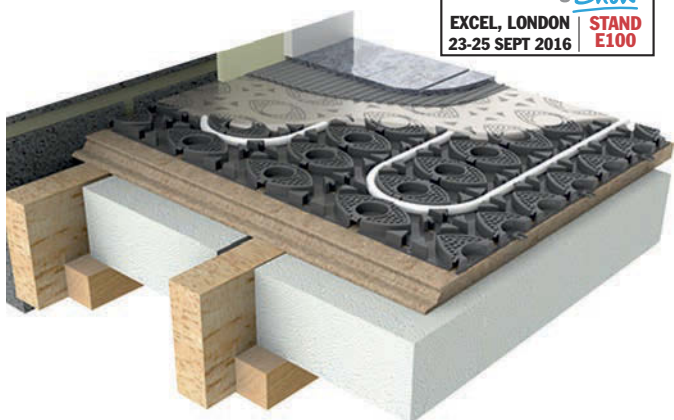
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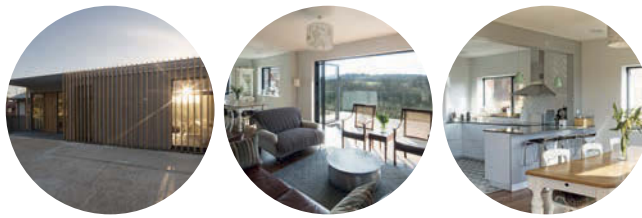


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HOMES REMODEL & EXTENSION

The Project



Corin Morton
CDMS Architects

THE ARCHITECT'S VIEW

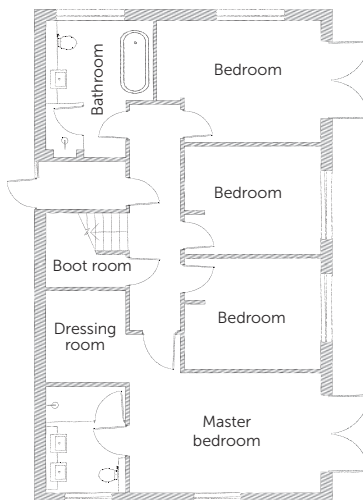
The house is situated on a steep slope, appearing as a single-storey dwelling from road level and double storey from the rear garden. The updated ground floor now includes a large entrance hall, kitchen, living/dining room, study, utility and new guest suite. The lower ground floor has four bedrooms, family bathroom and master en suite with walk-in wardrobe.

The new internal layouts retain the essence of the original building combined with a more open-plan setting to cater for the clients' more contemporary lifestyle. The fixtures, fittings and finishes used in all rooms aim to modernise the interior but still create a homely environment for the owners and their family.

Delicate timber elements have been added to the front elevation, and this modern, yet sensitive structure has already become popular with local residents in the rural village.



GROUND FLOOR



SUPPLIERS

Architect CDMS Architects
.....cdmsarchitects.com; 01273 220407
Structural engineer BLB Engineers.....
.....01273 301888
Cost consultant Robinson Low Francis
.....01273 325781
Contractor Brickhurst Construction
.....01323 811610
Kitchen IKEA.....ikea.com
Windows and bi-fold doors
Smart Systems01934 876100
Steel roof Steel Roof Installers UK.....
.....07960 994462

FIRST FLOOR



COST BREAKDOWN

Demolition	£16,500
Slab/foundations	£7,500
Timber frame	£9,000
Render	£9,000
Main roof	£19,000
Flat roof	£9,500
Doors/windows	£33,000
Electrics	£23,000
Plumbing	£19,500
Internal decoration	£12,000
External decoration	£14,000
Kitchen/larder	£13,500
Balcony	£11,500
Bathrooms	£12,500
Internal walls	£8,000
Contractor overheads	£24,500
Misc	£17,000
Total	£259,000

QUICK GLIMPSE

FORWARD THINKING





IMAGES: MARTIN GARDNER C/O OB ARCHITECTURE



The Wrap House in Kent, designed by OB Architecture, has been built to replace a tired bungalow and was only achieved after a lengthy planning battle — the resulting house was built on a relatively modest budget considering its striking design (obarchitecture.co.uk)

Located on an unassuming narrow plot within the Metropolitan Green Belt south of London, The Wrap House is a 200m², two-storey family home that overlooks the open fields to the rear.

The new house — the design of which was up against some pretty stringent planning stipulations — comprises two long ‘wrapping’ elements that stretch down the narrow site. The house replaces a small, tired 1950s bungalow which originally sat among a row of equally undistinguished single-storey properties. This posed the first of many problems in that the local planning authority would only allow for a 10 per cent increase in size over the existing house. After much negotiation, permission was eventually granted for a 40 per cent increase by using a hypothetical Permitted Development exercise showing how the existing house could be extended without planning permission.

The replacement house also had to respect the heights of the surrounding bungalows. In order to do this, the levels have been manipulated and the building stepped down. ➡

Front Elevation

Despite its flat roof and linear design, this is a house which has managed to fit in well with the street scene without compromising on materials or design — the oversized pivot front door, double-height glazing and combination of render and timber cladding all make for one very striking house





Light Interiors

Glass plays a huge role in the design, both externally and internally. Swathes of double-height glazing flood the interior spaces with light and add real wow to the already impressive double-height spaces, while the glass ceiling in the linking section is complemented by the large picture window at the end of the first floor landing

In spite of being a storey higher than the neighbouring properties, the flat roof parapet levels sit below the ridge lines of the adjoining houses.

These white rendered and cedar-clad elements house the living and sleeping accommodation and feature large expanses of glazing at each end. A study and kitchen is located at the front of the house with the dining area and a large double-height living room at the rear overlooking the garden. At first floor level, two bedrooms are located at the front, with the master bedroom and en suite to the rear.

Set between the 'wrapping' elements is a double-height glazed circulation atrium that runs through the entire length of the house. It links all the spaces together and creates a visual connection between the front and the back of the house. The glazed atrium brings light deep into the home and mitigates against the east-west orientation of the plot, ensuring the living spaces are filled with natural light throughout the day.

Perhaps one of the most surprising things about this striking new contemporary home is that it was constructed for a relatively modest £1,500/m², challenging the notion that bespoke modern houses cost more like £2,000/m² to build — particularly those of such a high quality, with such extensive glazing and some pretty impressive design features, such as the glazed sections of roof and soaring double-height spaces. **H**



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HOMES ECO SELF-BUILD

Green Living

Andy Baylis and Rachael Alexander have built a new straw bale and timber frame home on a large plot in Worcester, with the aim of one day being self-sufficient

Words: **Daisy Jeffery**

Photography: **Jeremy Phillips**





PROJECT NOTES

Project: Eco
self-build

Location:
Worcester

Dates: Mar 2013
– Mar 2014

Size: 223m²

Land cost:
£185,000

Build cost:
£375,000
(£1,682/m²)

Value: Unknown



HOMES ECO SELF-BUILD

THE QUICK READ

⇒ Andy Baylis and Rachael Alexander have built an eco home on a large plot within a Conservation Area on the outskirts of Worcester city centre

⇒ After researching sustainable methods of construction, the couple chose to build half of the property using straw bale — bought for just £300. The rest of the house is timber frame

⇒ The home boasts plenty of eco technologies, including solar thermal and photovoltaic (PV) panels, rainwater harvesting, a composting toilet, a biomass boiler and a mechanical ventilation heat recovery unit — the couple's aim is to one day be fully self-sufficient



The saying goes that if you're going to do something, do it right. This kind of thinking was certainly applied when Andy Baylis and his partner Rachael Alexander decided to build their energy-efficient home on the outskirts of Worcester, with the ambition of being self-sufficient and zero carbon.

Driving through busy commuter traffic on a sunny morning to visit the property, it is difficult to believe that such a large site — which looks more like open countryside than an urban plot — exists so close to city life. The house sits on almost an acre of land, with a long gravel driveway, between a large period property and a former independent girls' school, hidden from view of the main road.

"We came across this site on Plotfinder.net," begins Andy. "We already lived in the area in a semi-detached Victorian house and were close to buying a plot in nearby Malvern. We came up with a design which was discussed with the local planners but it fell through due to issues with access. We then found this site which was up for auction and we put in the winning bid — it had been on the market for a few weeks!"

Navigating Planning

The site had planning permission for an underground eco house as it sits within a Conservation Area and is part of Worcester's Green Network (a series of corridors for wildlife and flora in the city). The original scheme specified that the house should have minimum ecological impact on the site by being set partially below ground. Fortunately Rachael's father is a local planning consultant and proved helpful during the pre-application stage with the planners.

"We involved the planners as much as possible from the beginning, given the sensitive nature of the site. They were more interested in the ecology than the house, and we had to have certain things to appease them, including specific indigenous species of trees." ⇒

The Exterior

Divided into living and bedroom accommodation, the sleeping quarters are built in straw bales set within a timber frame, clad in lime render with a living wildflower meadow roof, while the living 'pavilion' is clad in western red cedar which will weather to a silver grey. A glazed link between the two acts as an entrance hall. Outside, the grounds have been sown with wildflower seeds to help the home nestle into its surroundings



HOMES ECO SELF-BUILD



The Living Pavilion

The open plan living/kitchen/dining area boasts voluminous ceilings with clerestory windows for plenty of light and to achieve passive solar gain. Acoustic panels on the ceiling reduce echo.

The worktop in the kitchen is manufactured from recycled glass and, as Andy points out, helps to disguise any food spills from the children eating their cereal at the breakfast bar. A woodburning boiler stove acts as a focal point for the space as well as providing heat in the cooler months



Building with Straw Bales

"I'm an engineer and with projects I take a close look at how everything works; everything is done for a reason," says Andy. After considerable research, he chose to build the bedroom wing of the house in straw bales set into the timber frame, while selecting timber frame for the living 'pavilion' — housing the open plan kitchen/dining/living area, home office, utility and TV snug.

"Using straw made more sense to us than building an earthship as it provides insulation, is airtight and allows the rooms to keep cool in summer. We never feel cold in the straw bale-built part of the house," explains Andy. "If we'd had more time we would have liked to have built straw bales into more of the house." The construction method proved cost-effective too, with all of the straw for the house bought for a total of £300.

"Taylor Lane in Hereford fabricated an open panel frame to my structural design using standard timber studs and oriented strand board (OSB) sheathing," explains Andy. "Adaptations were made with longer stud centres and no sheathing in the bedroom wing to accommodate the straw bale walls."

The straw bales are 450mm thick and achieve a U value of around 0.12W/m²/hr. They provide a breathable fabric to the building, which moderates the humidity inside, as well as providing an attractive appearance once finished with lime render and natural earth plaster. "Straw bales in a fire act like timber, so if you tried to set fire to it, it would just char," says Andy. "It's well compacted and studies have shown that it's at least as fireproof as normal construction. We decided to use the very old traditional technique of rough casting to finish the lime render, which was undertaken by a local specialist John Byrne."

The foundations are simple strip footings poured from low-energy concrete and the house sits on a low-level handmade brick plinth, constructed around the house to support the timber frame. The timber frame section is clad in western red cedar which is weathering nicely to a silver grey, with a shingle roof, and the straw bale section has been topped with a living wildflower meadow roof. The triple-glazed windows are from ecoHaus Internorm.





Above: Entrance Hall

The entrance to the house is situated in the centre of the building. Glazed doors with a rooflight above allow in plenty of natural light. This space also acts as the divide between the living and bedroom accommodation

Right: Bespoke Staircase

Off the kitchen, a study space/music room provides a useful area for the children, while a mezzanine home office above is accessed via a plywood staircase designed by Andy

An Energy-Efficient Design

With energy efficiency the driving force behind the project, Andy looked at the initial design and decided to orientate the structure so it faced south – on the opposite side of the plot to where the house was originally due to be situated – so that the solar thermal and photovoltaic (PV) panels on the roof would gain the maximum amount of light. “The house really was designed around the panels,” says Andy.

“While I didn’t have an architect for the project, I asked different architects I work with in my day job for their opinion. The house, for instance, is naturally very light inside and after analysis of the solar shading to the house we employed the overhang on the roof to give us shade in the summer months but allowing sun to enter during the winter.

“Some of the water goes to the rainwater harvesting tank and some from the green roof goes to the ponds. The surrounding wildlife garden is already a meadow. Five hundred trees have been planted that will eventually become a mature woodland wildlife corridor. The wood we burn and the sun are our only sources of heat.



is a boiler stove — bought from Stoves Online.”

Other eco technologies employed can be found in the large utility, hidden behind birch-faced plywood cupboard doors. Here, there’s a mechanical ventilation heat recovery unit, a large water tank providing a thermal store and the control centre for the solar thermal panels which links to the stove and hot water. Off the utility, a WC houses a Separette composting toilet complete with Separette Ejektor tank for the liquids, which get diluted and are then used to water the garden. The solids are composted on site in large containers to eventually be used on the garden as fertiliser. A rainwater harvesting tank is used to serve the washing machine and toilets in the straw bale section of the house.

Glazing and Materials Choice

Inside, the house is light thanks to the voluminous double-height living ‘pavilion’ and plenty of glazing, including clerestory windows to provide plenty of light facing south. The floor in this area is polished concrete, while reclaimed timber is the flooring of choice in the bedroom wing, providing a pleasing, warm aesthetic. All ➡



Above: TV Snug

Off the kitchen – concealed by white doors which are almost invisible in the walls – is a private TV snug, which features high ceilings



HOMES ECO SELF-BUILD

Below: Straw Bale Section

In the bedroom wing, the internal walls have been plastered with natural earth plaster made from clay excavated from the site by hand to emulate the straw bale exterior. In the master bedroom, parts of the straw bale fabric have been 'framed' with truth windows



the floors, skirting boards, architraves, window boards, stairs and bathroom furniture is made from reclaimed timber. "We knew we didn't want any wasted circulation space, and the entrance door is in the middle of the house with the living section to one side and the bedrooms at the other," says Andy. "We wanted to build a house to suit our lifestyle.

"We moved into the house in December 2013; although the cladding and internal work wasn't complete at the time, we knew we didn't want to still be in a caravan in the middle of winter," adds Andy, who lived in the caravan on site with Rachael and their two children throughout the project. "If I'd had more time to be on site and had time to do more research then there are certain things I could have improved on. I worked out that I spent around 3,000 hours on this project but would have liked to spend 5,000. It's our family home, though, and we love it." **H**



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HOMES ECO SELF-BUILD

The Project



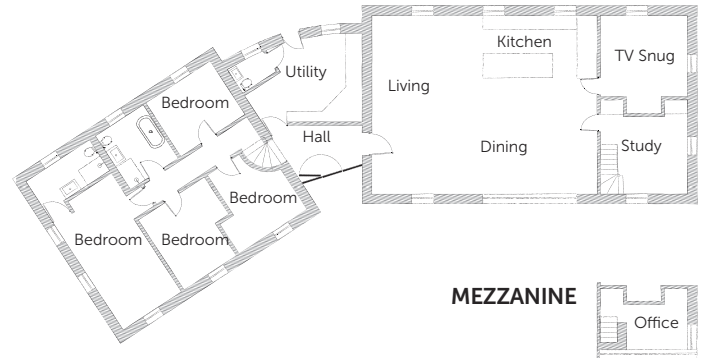
Andy Baylis and Rachael Alexander
Homeowners

THE HOMEOWNERS' VIEW

The house is set on two main levels with just a few steps between the bedroom wing and the living pavilion. This allows easy access to all parts of the house and accords with Lifetime Homes Standard principles. If necessary, there is space allowed for a small lift to be provided for a disabled inhabitant. The change of level matches the slope in the ground so that the house nestles into the landscape and privacy between the bedrooms and the living areas is achieved.

The kitchen, lounge and dining rooms are combined in one open plan space. The space is large and multifunctional and can be used in different ways. Snooker, pool, table tennis and even badminton can be played. It is excellent for entertaining and parties, having been used for bouncy castles and discos to date! In winter the lounge area next to the log stove is a cosy area to relax in.

GROUND FLOOR



MEZZANINE



SELECTED COSTS

Fees and design costs	£5,000
Straw bale materials	£2,500
Main contractor prelims	£35,000
Groundworks and landscaping	£65,000
Timber and steel frame	£51,500
Building envelope, carpentry and roofing	£38,500
Timber cladding, shingles and decking	£20,000
Fibreglass roof	£8,000
Plasterboard	£5,000
Windows, doors and rooflights	£40,000
Mechanical ventilation heat recovery unit	£5,000
Renewables and thermal store	£21,000
Woodburning stove	£3,500
Polished concrete floor	£12,500
Kitchen	£22,500
Bathrooms and WC	£7,500

SUPPLIERS

Design, project management and straw bale building Andy Baylis ...07966 234984
Main contractor Mark Pavey Design and Build01905 454829
Reclaimed timber and furniture David Venn Antiques Warehouse01905 27493
Kitchen worktops Glass Eco01293 535003
Rough casting John Byrne..01237 420668
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Windows and external doors ecoHaus Internorm0800 612 6519
Timber frame Taylor Lane01432 271912
Insulation above ground supply and dewpoint calculations Thermafleecce01768 486285
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Natural paint supply Earthborn01928 734171
Auro01452 772020

PROJECT TIMELINE

May 12 Plot purchased
Oct 12 Planning application submitted
Dec 12 Planning permission approved

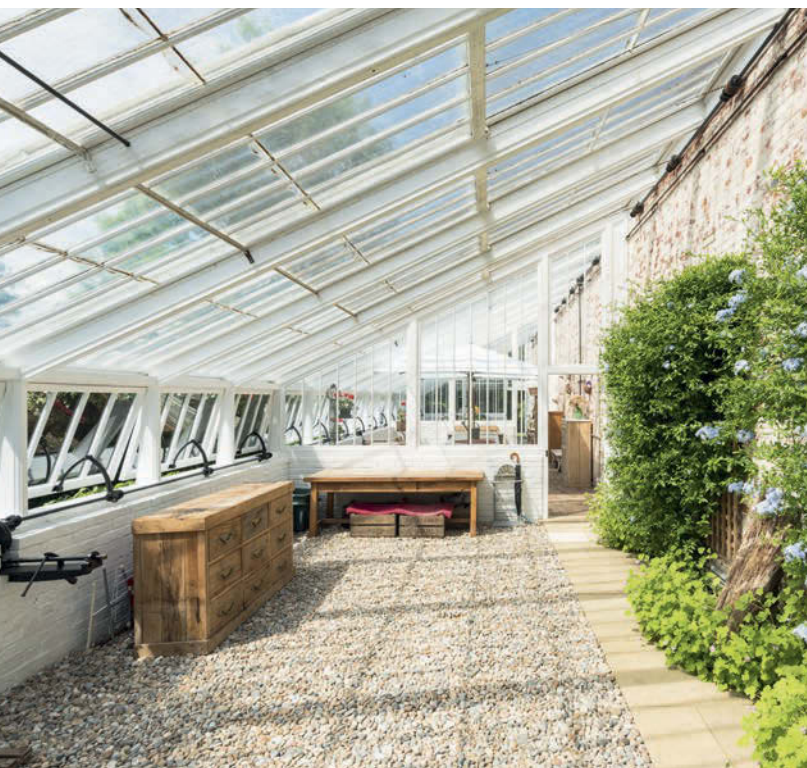
Jun 13 Foundations completed
Aug 13 Shell of the house made watertight
Sep 13 First fix complete

Dec 13 Second fix complete
Dec 13 Moved into the house early
Mar 14 Final decoration



QUICK GLIMPSE

ONE OF A KIND



While a greenhouse might not be an immediate candidate for conversion into living quarters, that is exactly what has been done here — resulting in a striking and unique home.

Located in a pretty Kent village, this remarkable conversion has seen a substantial greenhouse transformed into a home. Originally built in the 19th century, the greenhouse has been transformed into a two bedroom home arranged over two levels, with a separate studio/store room.

The scheme, which was designed by Peter Leonard, sees much of the original greenhouse retained. Entered via a pretty courtyard, an entrance hall now leads into a bedroom with en suite bathroom and the kitchen/dining room. The stylish kitchen, complete with composite Corian worktops, features large-format slate flooring over underfloor heating — the contemporary design sits in beautiful contrast to the original features, such as the sloping ceiling and exposed painted timbers.

Steps lead up to a living room, which is entirely glazed at one end, making it a light, sociable space, with fresh limed oak floors. ➡➡



A Unique Design

While one half of the 19th-century building is still given over to the original greenhouse, the other has been transformed into a two bedroom, split-level home



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Greenhouse

This 19th-century building was formerly the principal greenhouse of the Lillesden Estate. The glazed space has been retained as an area in which to sit back and relax

The second bedroom, also with en suite, is reached via steps leading down to this space and features full-height glazed doors leading to a sunken garden.

The south-facing side of this cleverly designed property is still given over to the original greenhouse. This is an elegant wood, brick and glass structure which has been designed with industrial lighting and a reclaimed brick floor.

The property is surrounded by gardens and is located in a Conservation Area and an Area of Outstanding Natural Beauty. 

● The house is currently on the market for £675,000 through The Modern House: [themodernhouse.com](https://www.themodernhouse.com)



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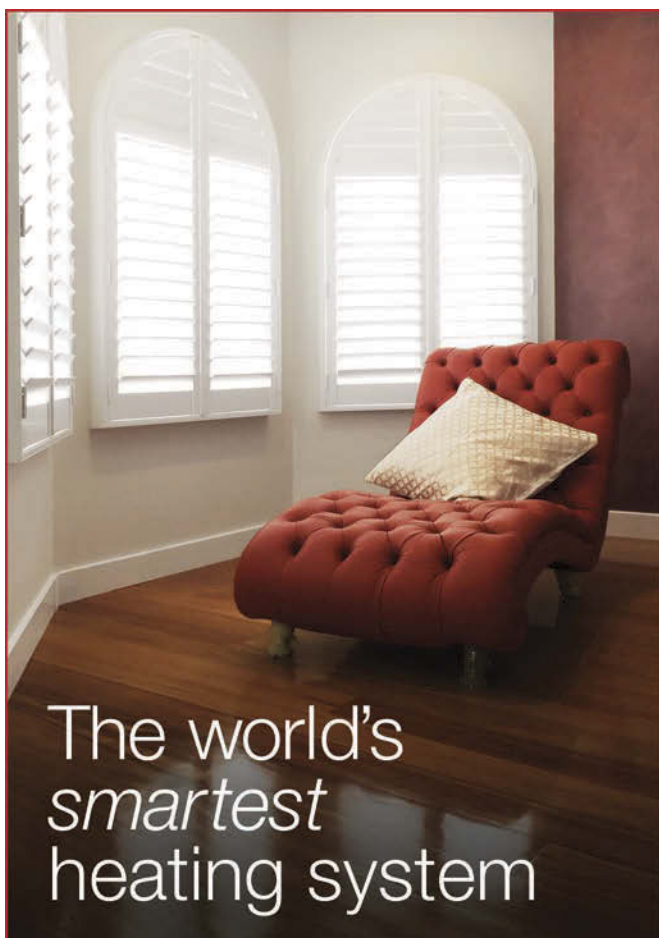
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SELF BUILD LIVE

PART 5



Forming a complete step-by-step guide to building a home, we follow leading package company Potton as it constructs a new Passivhaus home. The final instalment looks at the importance of considering the interior design and finishing touches from the outset

In a UK industry first, self-build specialist Potton is giving aspiring self-builders an opportunity to watch, stage-by-stage, the construction of its fifth and most contemporary showhome.

Self Build Live is a series of events – held at Potton's Self Build Show Centre in St Neots, Cambridgeshire – designed to offer potential self-builders an 'access all areas' insight into the construction of a fully certified Passivhaus and learn first-hand how to build their own home – the highlights of which are showcased over the following pages.

Potton, together with its build partners, is hosting 16 Self Build Live events at key stages of the build – from laying the slab, installing insulation and skimming the walls to fitting the bathrooms, interior design and decoration. Each event will provide essential self-build information and an unprecedented insight into building a Potton home.

For course dates, videos of the build and more information, visit selfbuildlive.com



BUILDING A PASSIVHAUS: THE ALL-IMPORTANT FINISHING TOUCHES

With the finishing line in sight, Dr Paul Newman explains the key decisions behind the final touches to Potton's Passivhaus and passes on his words of wisdom



DR PAUL NEWMAN
Potton's self-build director Paul Newman has worked in timber-based construction industries for over 18 years

Constructing a new home involves many decisions. We tried to make all the key ones before we started work on site, which is particularly essential when building a Passivhaus, and we have mostly been successful in this. But lots of small decisions remain to be made on site, and to keep things moving they have to be made quickly.

Finishing the Plasterboard

We have just finished installing the plasterboard (we've used Gyproc Habito from British Gypsum). By the time you read this, we will be pushing on towards completion. However, before we started fixing the plasterboard we had another major decision to make — to skim, or tape and joint? Finishing plasterboard with a skim coat of plaster takes longer and introduces a wet trade into the project. However, it arguably gives a better finish for decorating. Taping and jointing plasterboard is quicker and suits a dry build system. But it is messier.

In the end, we decided to tape and joint; it's what we've done in all our other show-homes, and it's also what we recommend our customers do.

To make sure we are ready for the exclusive *Homebuilding & Renovating* Readers' Day on 14 September (see more on page 179), we have multiple trades working alongside each other for the first time. The tiling, for instance, is being shortly followed by decorating the following week. The kitchen installation is taking place at the same time. Once the ceilings are finished then second fix electrics work will begin too, and we can think about installing the stairs. There's plenty going on!

Bringing the Interior Scheme Together

Designing the interior of your own home is hard enough — creating the design for a showhome that will be visited by several thousand people every year is even more daunting and is something that needs careful thought and reflection. So we opted to create, coordinate and curate the scheme using Terry Mahoney, a member of the Potton team. Terry retired many years ago as our national sales manager but continues to live and breathe self-build, and now works as a consultant to the business. The design he has pulled together is simple, stylish and sophisticated with some fun twists thrown in for good measure. I think he's managed to pull off something that is simultaneously timeless and contemporary.

The interior design of the house is anchored by a few key feature elements, particularly the stairs and the central flexible 'courtyard' space. A decade ago we offered our customers a limited choice of staircase design. Things have moved on somewhat since then and both Potton and our long-term supply partners at David Smith St Ives ➡



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are much more flexible and ambitious. The staircase in the showhome will move things on another step and will feature closed solid timber treads with glass balustrading. It will be constructed from American dark walnut. Walnut is more variable in figure and colour than oak or pine, and we believe that the completed assembly will provide a focal point for the rest of the interior design.

From a very early point in the design process I told everyone who wanted to listen, and probably plenty who didn't, that the central 'courtyard' space under the large rooflight is the most important part of the design. The finished space will introduce great flexibility into how the ground floor of the house could be used and reconfigured on a daily basis — it could be used variously as a dining space, cleared of furniture for parties, but most importantly kitted out with an Eames chair for me to relax in at the end of a long day with a book and a glass of wine. (The Eames chair has been purchased and it won't be too long before I get to try it out.)

Another of the key features is the large 3x8m feature window and doorset supplied by Kloeber — it will create a strong link between the interior and exterior. We have also strengthened this connection through our choice of materials. For instance, the external brick will also be used to create a feature wall inside the lounge area.

Our finished house will not lack for daylight with this large feature window to the rear, the substantial rooflight above the courtyard and the taller-than-average first floor windows. Indeed, one of the challenges throughout the design process was to manage the shading, size and specification of the windows and doors to prevent excessive solar gain and subsequent overheating in this airtight home. The PHPP (Passive House Planning Package) calculations have enabled us to achieve this successfully.

However, we have been guilty in the past, as have many others, of forgetting the artificial lighting design scheme and leaving it as an afterthought to be agreed on site between the electrician and project manager and/or customer. While these individuals invariably have many admirable qualities and experience, the ability to create a good lighting scheme design is not always one of them. Clearly, there are specialist businesses that can design and install fabulous systems

"Kitchen design should be considered from an early stage of the design process — particularly in a Passivhaus"

that will create a lighting mood appropriate to any occasion and setting, but these installations are frequently beyond the means and aspirations of many of our customers. So what we wanted to achieve within the Passivhaus was a low-energy design that had been thought about properly before the building was constructed, rather than being forced into an overly simple design revolving around picking the number and location of downlights.

Specifying Wall and Floor Finishes

Interestingly, Terry's interior design calls for large areas of ceramic tiled floor. There are a few reasons for this beyond the aesthetic ones of following the general trend towards harder floor finishes; reflecting the contemporary external design of the property in the internal floor finish; and maintaining the stylish appearance of the rest of the design.

From a technical perspective, the hard flooring maintains the thermal mass provided by the screed beneath, which can be helpful in a building envelope that is otherwise lightweight in nature (built, as it is, in structural insulated panels, or SIPs). Tiled floors are also durable and easy to clean and great for those who suffer from asthma.

Our partners at British Ceramic Tile have supplied the products we have chosen; we've mostly selected tiles from their HD Technology range. The company is the largest manufacturer of ceramic and glass tiles in the UK and has a state-of-the-art factory situated on the edge of Dartmoor in Devon.

The interior design scheme is pulled together with feature walls of stunning wallpaper from Mockbee & Co and paint finishes provided by Brewers. These independently owned UK businesses have both been extremely helpful in guiding our selections and then matching specific paint colours within those selections.

Anchoring the design around a small number of key elements and pieces was deliberate. The house has interesting spaces that we want visitors to recognise and appre-

ciate and we also wanted to develop a design that wasn't reliant on expensive technology and fittings. One key element of this is the simple audio and media installation. Another is the kitchen...

Kitchen and Bathrooms Installation

Over the past few years we have developed an increasingly strong partnership with Callerton and Cambridge Kitchens and Bathrooms. Callerton is a kitchen system manufacturer based in the UK, and Cambridge Kitchens and Bathrooms is their retail partner closest to Potton's Self Build Show Centre. For the Passivhaus showhome, we agreed a design brief which required that the new kitchen would be simple, with materials selected to be stylish yet cost-effective. Callerton responded with a sleek handleless design incorporating its new Monza matt cabinetry, Blum's award-winning Legrabox drawer systems, Dekton's innovative XGloss worksurfaces, and the very latest Bosch appliances.

The kitchen is regularly described as the heart of the home and while for many this is undoubtedly true, not everyone has the desire or inclination to spend an arguably disproportionate amount of their budget on the kitchen. Callerton wanted to make a clear statement that great kitchens don't have to be monstrously expensive.

We also wanted to highlight that kitchen design should not be an afterthought and should instead be considered from an early stage of the design process. This is to ensure that the finished article properly meets the requirements of the occupiers. It is also particularly important when designing a kitchen for a Passivhaus, as the interface between the mechanical ventilation heat recovery (MVHR) system in the house and the kitchen extract system is critical and the performance of the fittings will impact on the energy consumed by the house and therefore the PHPP analysis.

I stressed earlier that the interior design for the house is intended to be simple, ➡

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POTTON'S SELF-BUILD LIVE



stylish and sophisticated. We carried this through into the kitchen design and the next challenge was to make sure that the three bathrooms followed suit. The Passivhaus has two en suite bathrooms and a ground floor family bathroom. Each has been designed by the team at our partners Sottini to showcase its latest products and complement the other elements of the interior design. Sottini believes that function dictates form and the best designs are those that are clean and simple. This was reflected in the brief that we gave to them and the designs that the company has created for us — as the stylish computer generated images on this page show. Sottini has been at the forefront of water-efficient technologies since the business started over 40 years ago and continuously strives to minimise waste and improve efficiency in its products,

something that was again key in the building of this Passivhaus.

The Importance of Landscaping

A self-build is ultimately not finished until the landscaping work is complete and the garden planted out. We are delighted to be working with Brett Landscaping and Building Products to provide that crucial link between inside and outside. The rear feature windows open on to a paved area on a level threshold, which is substantially covered by the projecting shade. The paved area will step down on to the minimalist-designed garden and then carry on around via an accessible ramp to the front door.

And Finally...

Much of this article has been about the lighter side of life, a long way away from the

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heavyweight technicalities of designing and constructing a Passivhaus. But the realities of constructing such a high-performance building are never that far from the surface and before we finally open up the house for business we will need to complete second fix plumbing and electrics, and ensure that the MVHR and hot water systems are properly commissioned. This is essential if we are to get the full performance benefits from the systems we have selected and installed.

Finally, we will need to carry out just one more airtightness test to ensure that we have at least maintained the level of performance already achieved. 



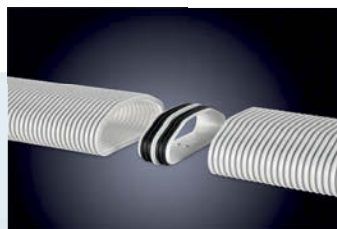
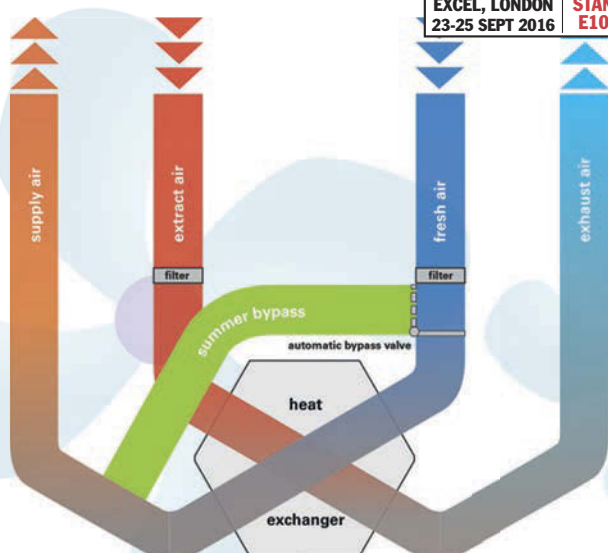
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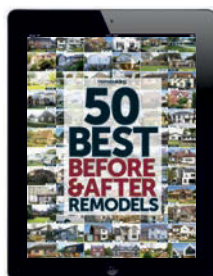
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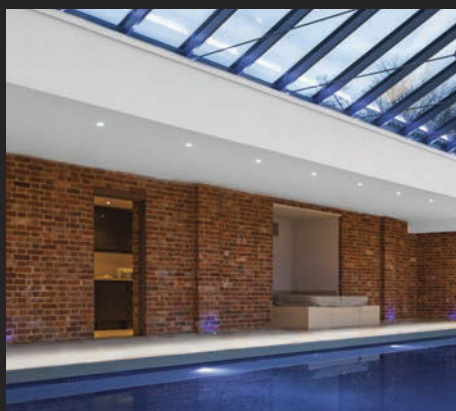
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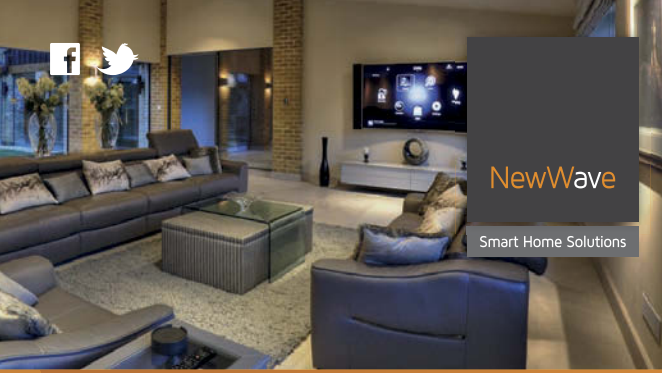

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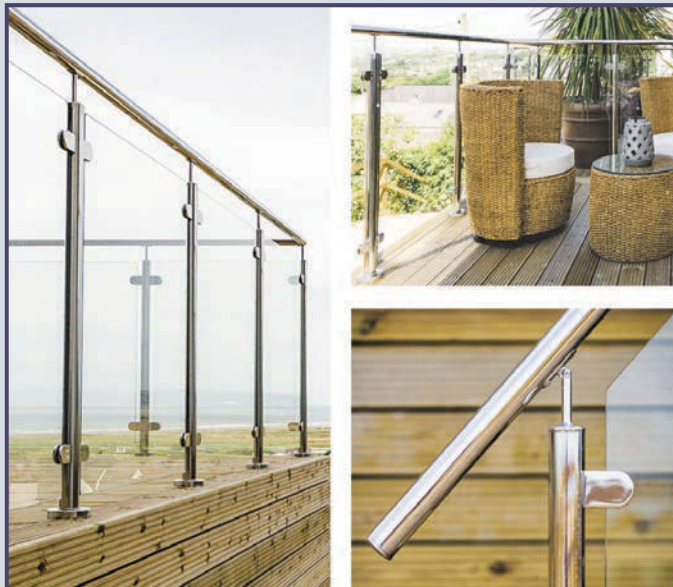
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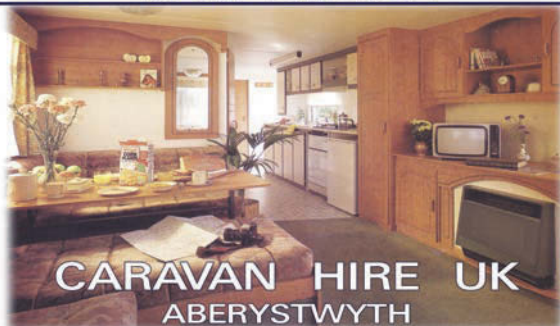
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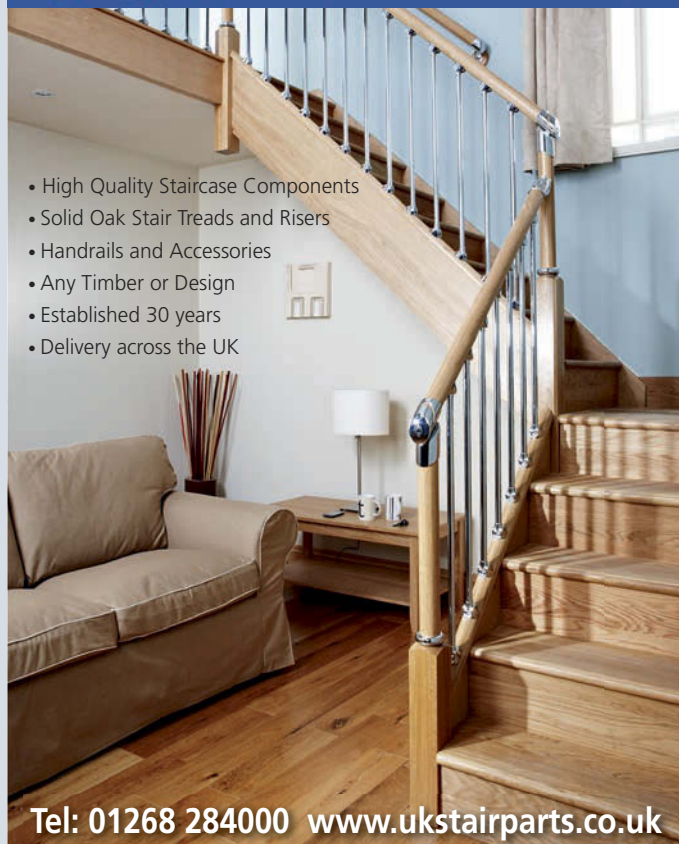
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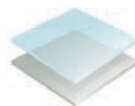


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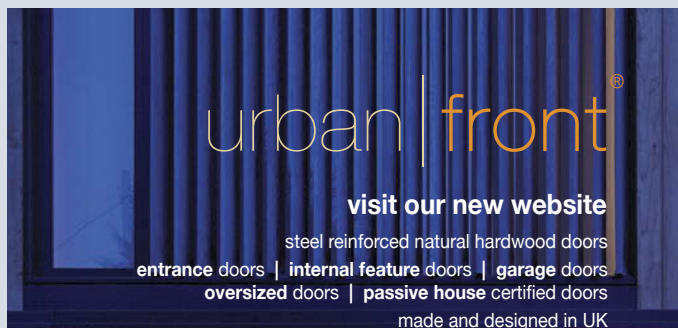
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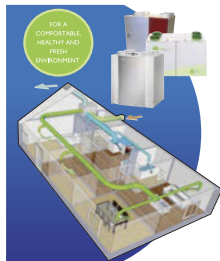
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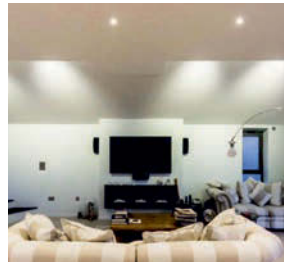
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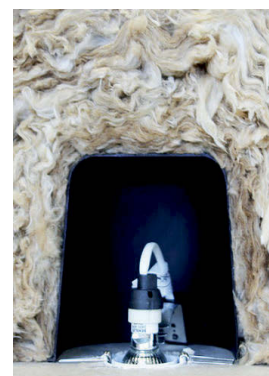
1 The Spectra SP458 Hinged Door with Inline Panel is a contemporary frameless corner option from Aqata. Created from the finest quality materials, 8mm clear toughened glass and featuring beautifully designed chrome handle and hinges, the Spectra SP458 is suitable for both shower tray and wetroom applications. Every Aqata shower enclosure and screen comes with a life time guarantee and is supplied with ClearShield ECO-GLASS™ protection as standard. www.aqata.co.uk



2 Crittall Windows' new HomelightPlus range of residential windows is the 21st Century enhanced version of its successful Homelight window it first made during the 1920s. It brings new-look styling and window profiling, plus higher energy-savings, performance, and enhanced security. www.crittall-windows.co.uk



3 The Loft Lid is a simple solution for the safe installation of downlights in a loft space. The Loft Lid creates a protective barrier around downlights to prevent overheating and house fires. The design ensures loft insulation does not directly contact downlights and that there is sufficient ventilation around the light for heat dissipation. www.loftleg.com



4 Homeowners can now see exactly how a stylish extractor fan will look in their kitchen or bathroom, thanks to an innovative new app released by EnviroVent. AugVent (www.augvent.com) makes use of Augmented Reality to enable you to clearly visualise what an extract fan or other ventilation system will look like in the home. Download the free AugVent App by visiting www.augvent.com or find it on the App store or Google Play. For more information visit www.envirovent.com



5 The new Woodland stove from Mendip Stoves is an award-winning design, voted 'Best Stove Under 5kW' at June's Hearth & Home Show in Harrogate. It won top marks for the high quality of its design, in particular the large viewing window, which, for a stove with a low output of 4.5kW, is rather unusual. It was also praised for having 100mm to combustibles on both sides and rear of the stove, a feature of most Mendip Stoves which enables them to be placed closer to combustible walls at the rear. www.mendipstoves.co.uk



6 British Spirals & Castings was chosen to supply the staircase for a Stockholm Wine Bar. The staircase was completed in a traditional black finish with three balusters per tread. This stylish configuration reduces the gaps between the balusters to less than 100 mm, making it compliant with UK and Swedish Building Regulations. www.britishsc.co.uk



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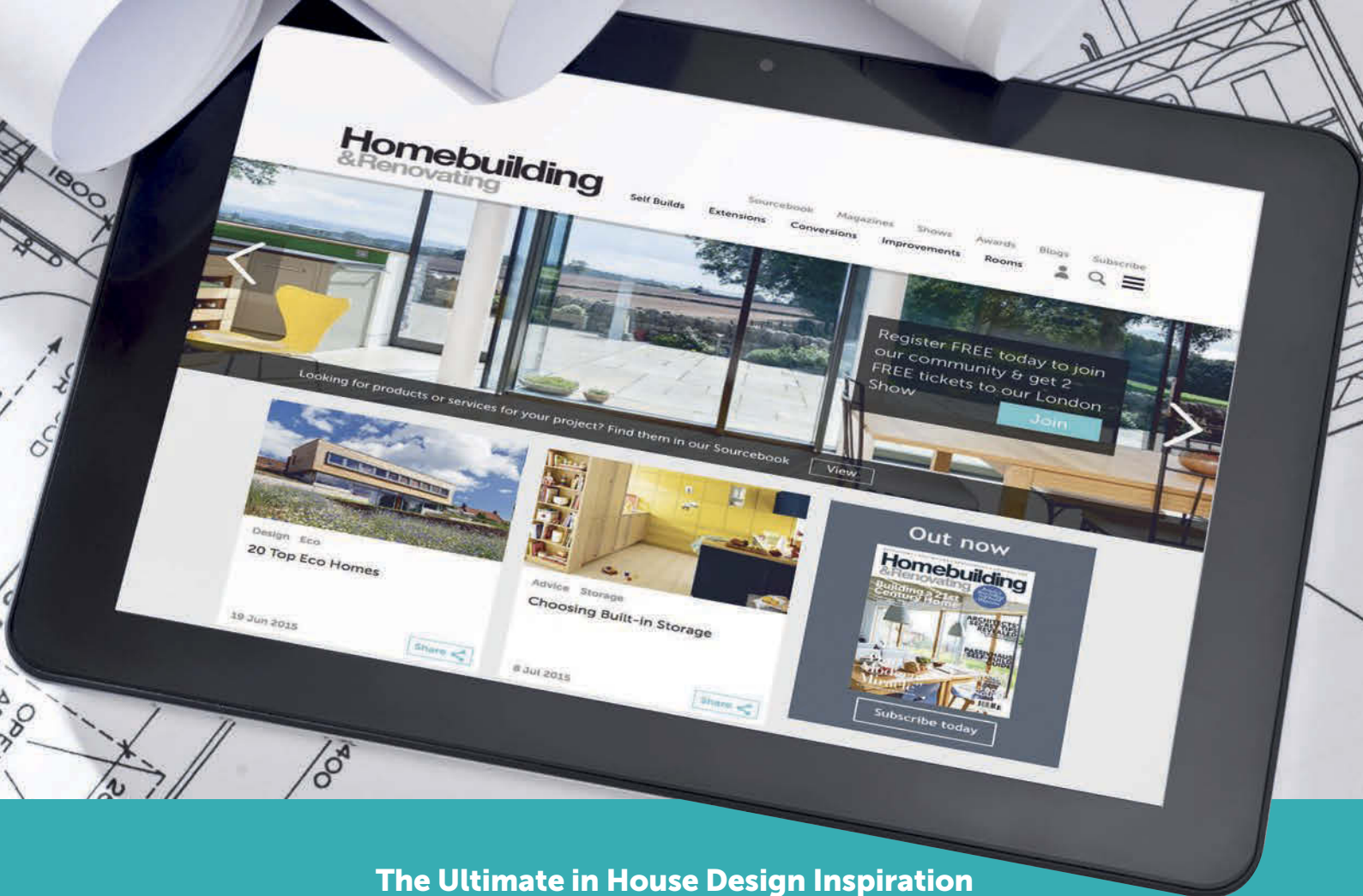
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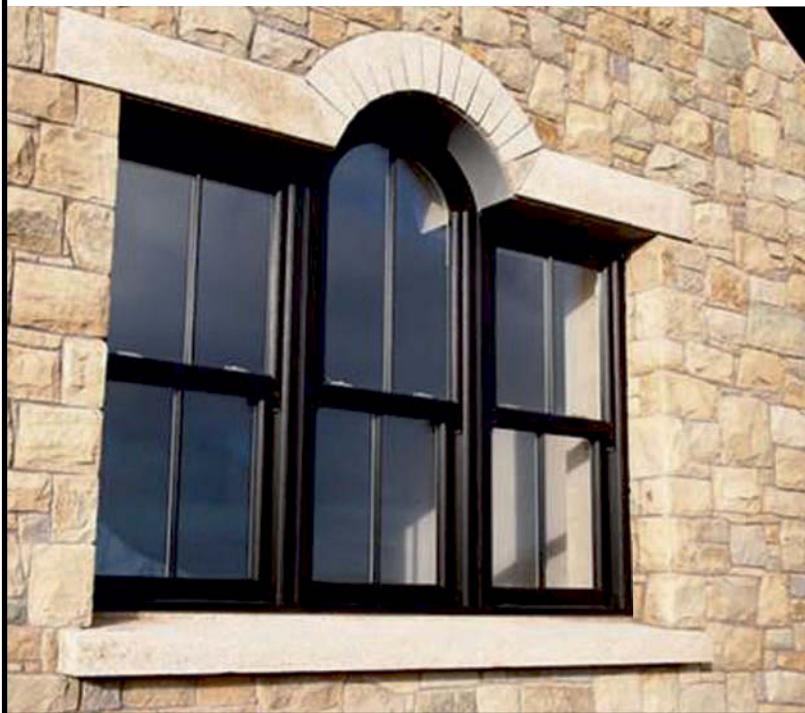
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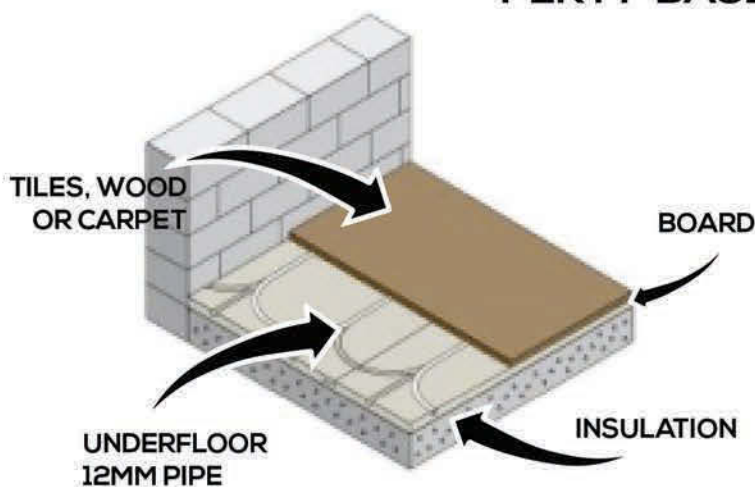
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MY BIG IDEA NO. 15

The Feature Fireplace

Designer Allen Halcomb shares one of his favourite design tricks

Years ago homeowners abandoned their fireplaces – often closing them off – as central heating took over. Now, they're celebrating them. The fireplace is that relaxing, mood-altering icon in a house, so why not enjoy and make the most of it?

When we interview clients and they discuss how they imagine their home to be, they always say it needs a great fireplace. We stress that you can only have one main focal point in a room (more than one will cause chaos) and a feature fireplace is incredibly powerful, whether you go for a rustic stone centerpiece which has an untamed wildness about it or a contemporary setting which is very on-trend right now.

Positioning is key. Very often clients will ask us to place a fireplace on a wall with a view, but once we walk them through

how this will obstruct the view and sit between the glazing they then choose to position the fireplace on the side wall, allowing them to enjoy both fire and view. The side wall position works well for open plan rooms, too, for instance in the dining room leading through to the kitchen — allowing those in both spaces to benefit from it.



Allen Halcomb is designer and president of Tennessee-based practice Moss Creek (moss creek.net)

In this project (above) in North Carolina in the United States, the home is very traditional on the outside but inside we had an interior designer from Miami create a contemporary theme. There are two feature fireplaces in this home — one double-height fireplace in the great room, the other in snug (above). Both feature rows of kiln-dried logs either side, purely there to set the stage for the fireplace. It's very effective, and being positioned on the side wall allows the owners to enjoy the mountain views outside. **H**



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