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Welcome

Ever get the feeling the powers that be aren't exactly working together to solve Britain's housing issues? Last month, I reported that support for self build has been surging among local authorities (LAs), with one in five now working to establish demand for plots. Fast forward a few weeks and things aren't looking so rosy, as the high court has ratified a challenge by West Berkshire and Reading borough councils against the Section 106 exemption for self builders.

In November 2014, the government issued new guidance excluding sites of 10 units or less from the Section 106 tariff. Faced with a revenue cut (these levies can run to £30,000+ for some one-off projects) it's no surprise some LAs resisted the move. The mini positive is that the government intends to appeal. But for the time being, the exemption has been suspended and some of you will be in limbo about charges that could impact the viability of your scheme. Let us know whether your build has been affected via our website at www.self-build.co.uk/section106 where we'll also be tracking the latest developments on this issue.

In cheerier news, there's plenty to inspire in this month's edition, including one home that was unlucky to miss the deadline for consideration as Best Self Build or Renovation in 2015's *Build It Awards* (pick a winner at www.self-build.co.uk/vote). The Spillanes' project (page 28) is a masterclass in how to use a heritage material like oak to create an architecturally-ambitious living space. Elsewhere you'll find timely tips on how to specify the right heating system for your self build (page 74), the design considerations you need to account for when converting a loft (page 105) and the latest instalment of the ever-popular *Build It House* series, focusing on the kitchen, staircase and internal joinery (page 100). Finally, if you fancy taking your council out of the equation, check out Mike Dade's tips on the projects you can do without having to make a planning application (page 119).

Chris

CHRIS BATES, EDITOR

MEET THE TEAM

IFEOLUWA ADEDEJI is *Build It*'s homes & design editor. With an avid interest in architecture, she has a keen eye for the details that can make or break a project. She explores the next generation of slim-fit underfloor heating systems for renovators on page 95.

REBECCA FOSTER is *Build It*'s assistant editor. Each month, she tracks down the latest news, products and inspiring projects for self builders and renovators (page 11). Read her advice on the pros and cons of stone and timber flooring on page 85.

TIM DOHERTY was the founding MD of the NSBRC and is the acting chief executive of NaCSBA. He advises on a range of issues, including finance and budgeting. On page 100, he looks at the major internal joinery elements for the *Build It House*.

MIKE DADE is a planning specialist and *Build It*'s plot guru. He's the author of several must-read books on land and planning. This month he advises on permitted development rights (page 119) and assesses a project that could turn a profit (page 131).

JULIAN OWEN is *Build It*'s design doctor and architecture expert. He is a self build architect and the chairman of the Association of Self Build Architects. Read his tips on how to add space and value to your home with a stylish loft conversion on page 105.

ALAN TIERNEY is a heritage buildings consultant. He runs Picketts Historic Building Conservation, offering hands-on advice to period property owners. On page 112 he explains the golden rules you should follow when extending a listed building.

MIKE HARDWICK is a consultant and project management specialist. He was elected as the self build representative on NaCSBA's executive committee in 2014. This month he gives us an update on the latest safety regulations (page 13) and answers your home building queries (page 125).

EDITOR'S FAVOURITE FEATURES

78


How to create a *bespoke bathroom*

119


23 projects you can do **without planning permission**

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October 2015 issue

READERS' HOMES

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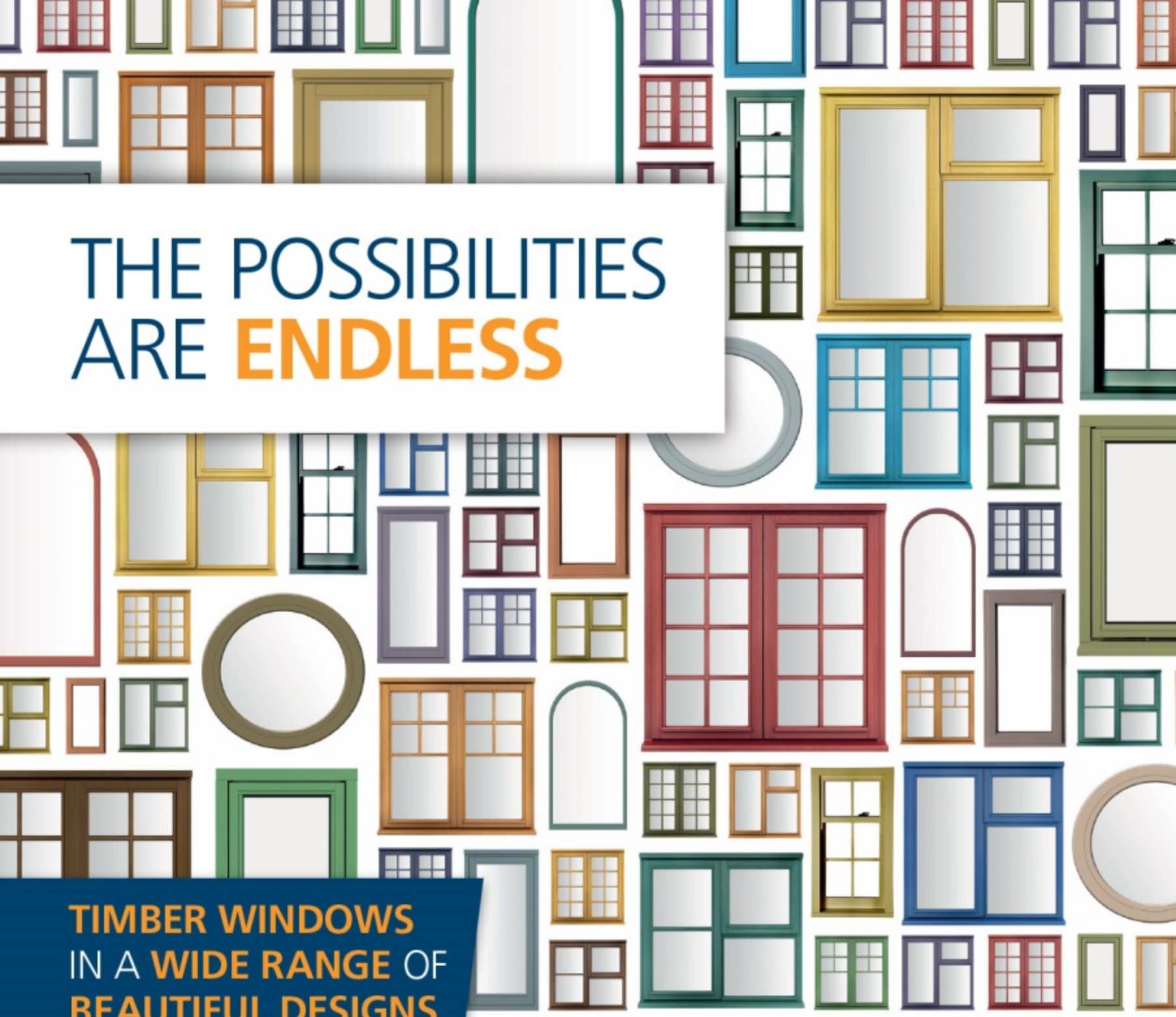

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inspiration

The beauty of brick

Satish Jassal Architects created this contemporary one-bedroom home on a small plot in London, situated upon the site of what was once a derelict garage at the end of a row of Victorian terraces. The vertical windows and recessed entrance draw on the design elements of neighbouring period properties without directly imitating them.

For more information visit satishjassal.co.uk

Oak panels and anodised aluminium railings are incorporated between the stretcher bond brickwork, which is laid in both vertical and horizontal patterns to give the house its unique character. Internally, bespoke timber joinery and furniture, including an open riser staircase, have been tailored to the structure to make the most of the space.

PROJECT OF THE MONTH

A cook's kitchen
by Fraher Architects

The lower ground floor flat in this three-storey Victorian terraced house in London has been transformed by Fraher Architects, who refurbished the space and added a full width rear extension. The client, a keen cook, wanted a light, open-plan living area that linked the kitchen to the garden, enhancing the connection between internal and external zones. To achieve this, Fraher opened up the back of the building by introducing frameless glazing and modern French doors, flooding the extension with natural light and maximising interplay with the back yard.

Made from recycled scaffold boards, the black-stained timber rainscreen cladding establishes a striking contrast to the pale concrete, brick and plywood used in the interior. A ribbon of glass bisects the asymmetric roof, bathing the galley kitchen in sunlight. The culinary space itself is delineated by a concrete worksurface, which folds down to merge with the floor finish. White-painted brick provides a textured backdrop for floating birch plywood shelving, which displays the essential utensils, giving the food preparation zone a practical, dynamic feel.

For more information call 020 8291 6947 or log on to www.fraher.co

Goodbye to the Green Deal

The government has ended funding for the Green Deal, its flagship domestic energy efficiency programme, following poor results. Under the scheme homeowners were entitled to low-cost loans for upgrades such as double glazing, insulation and boilers – but take-up was limited. Individuals who've already received funding packages under the initiative will continue to pay for any upgrades they've commissioned via their utility bills, but new applications aren't being accepted.

80 plots

have been released by Sheffield City Council, one of the 11 vanguard local authorities participating in the Right to Build initiative. The available land is spread across nine zones, with 36 opportunities located in the Wincobank area halfway between the city centre and Rotherham. Many of the sites are large enough to accommodate several properties, which could open the door for group custom build or cohousing schemes.

New Building Regs come into force

As some self builders and renovators will already know, updated Building Regulations take effect from 1 October 2015. Changes have been made to Parts E, G, H and M of the current standards, while a new document concerning security – Part Q – will be added. The old rules pertain to applications made before this date, provided work begins before 1 October 2016. Schemes approved from that date onwards should adhere to the latest guidelines. For more information visit www.planningportal.gov.uk.

What's on?

MAKING THE MOST OF YOUR PLOT
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BEDFORDSHIRE
selfbuildacademy.co.uk

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POWYS, WALES
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SUPERHOMES TOUR
3RD OCT
FREE
MALVERN, WORCESTERSHIRE
superhomes.org.uk

INTRODUCTION TO WOODWORK
3RD OCT
£175
LONDON
thegoodlifecentre.co.uk

TIMBER FRAME JOINTS
4TH OCT
£80
POWYS, WALES
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ECO SHOWCASE
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FREE
EDGBASTON, BIRMINGHAM
ecoshowcase.co.uk

GRAND DESIGNS LIVE
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granddesignslive.com

BRICKLAYING
12TH - 16TH OCT
£350
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thebtc.co.uk

THE OFF-SITE CONSTRUCTION SHOW
14TH - 15TH OCT
FREE
EXCEL, LONDON
off-siteshow.co.uk

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BDC, LONDON
ukpassivhausconference.org.uk

RHS SHADES OF AUTUMN
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Boost your home's character with the warm tones of this luxurious European oak flooring. Sanded and oiled, the boards are available in six colours (shown here in Natural Habitat) and as engineered or solid planks.
Woodland range in solid oak, £79.94 per m², or engineered oak, £69.95 per m², firedearth.com

£20 per m²

This engineered wood flooring offers a stylish and cost-effective solution for your home's interiors. The thin-strip oak veneer features a unique grain and knot pattern for a striking result, while the click fitting system makes the planks a doddle to install.
B&Q oak real wood top layer flooring, £20 per m², diy.com

product news

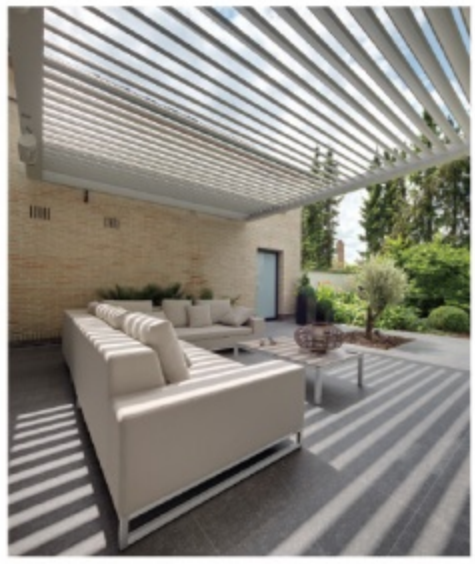
Great shopping ideas for your custom home project

COOKING UP A STORM

Whipping up a culinary masterpiece will be a breeze with the new dual fuel cooker from Bertazzoni's Professional Series. The appliance strikes a balance between style and functionality, offering the user flexibility to switch between a gas or electrically operated oven. **Hybrid range cooker, from £3,299, uk.bertazzoni.com**

COME RAIN OR SHINE

Extend your living space outdoors with this all-weather patio roof system, which is made to bespoke dimensions. Integrated automated controls can alter how the aluminium louvres sit; either interlocking to provide a watertight roof on a rainy day or opening to offer a sunny space on warmer days. **Umbris louvre patio roof, £POA, umbris.uk**



COVER UP

Shield your cladding against the worst the British climate can throw at it with Sadolin's wood protection range. The sealant, which is available in over 40 shades, absorbs deeply into the timber to provide a defensive barrier against the weather. **Antique pine classic wood protection, £16.99 per l, sadolin.co.uk**

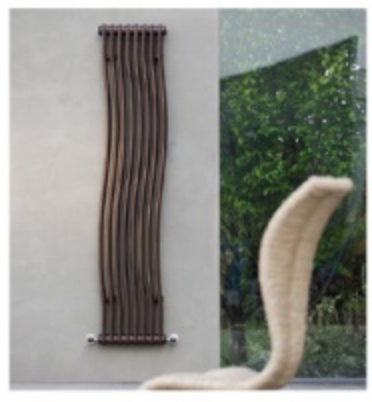
A QUICK FIX

Complete your DIY projects with ease using this limited edition cordless combi drill. Released to mark Makita's 100-year anniversary, the runtime of the device is enhanced by the battery's extreme protection technology (XPT) and a brushless motor. **Metallic Blue Anniversary combi drill, £280, toolstop.co.uk**

3 of the best STATEMENT RADIATORS

1 *Blade vertical radiator,* **from £1,551, iconicradiators.co.uk**

2 *Seta round,* **from £462, theradiatorcompany.co.uk**

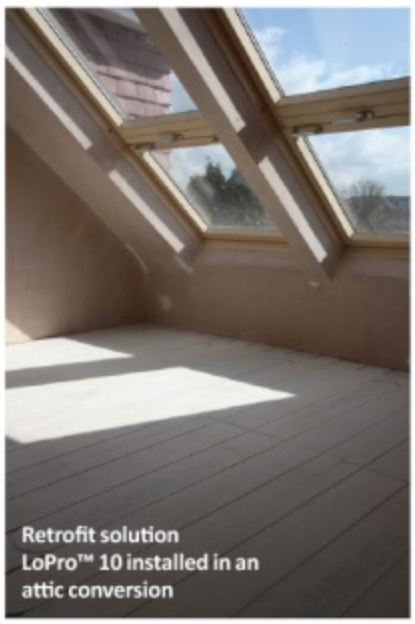


3 *Designer Tesi Runner,* **from £561, mhsradiators.co.uk**

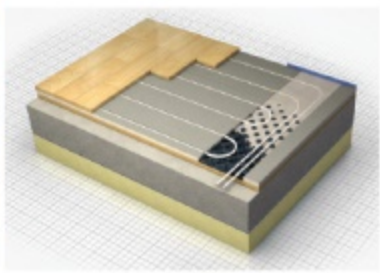
Underfloor Heating
choosing the right solution

Warm water underfloor heating (UFH) is now so versatile it can be installed in virtually any property. It is fast becoming one of the most desirable heating systems as it offers a discreet solution with a comfortable heating profile.

Whether you're building or renovating Nu-Heat will be helpful and honest, giving you all of the information and advice you need to decide on an UFH solution that will work for you and your home.



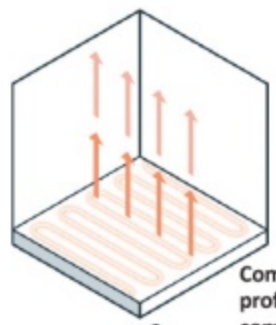
Retrofit solution
LoPro™ 10 installed in an attic conversion

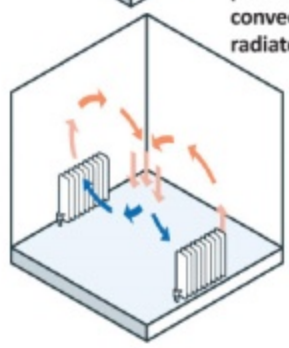


LoPro™10 over a concrete floor

Liquid screed being poured over UFH pipe installation

Underfloor heating installation





Comfortable heat profile of UFH vs. convection of radiators

How does underfloor heating work?

UFH is an 'invisible' heating system that works by pumping a controlled flow of warm water from any heat source, such as a boiler or heat pump, through tubing hidden beneath or laid in panels directly on top of the existing floor.

It is a very flexible solution that can be installed either throughout the whole house, on just one floor level or in a single room.

Because the surface area of the floor is so much larger than that of a radiator, UFH can run at a lower flow temperature and is therefore cheaper to run – up to 25% cheaper than a radiator system when used with a boiler and 40% with a heat pump*

UFH – the pros

- A comfortable heating profile: UFH gives a 'luxury' warmth. There are no cold patches or draughts and because there are few dust movements, it's also a great solution for allergy sufferers
- Efficient = low running costs: UFH works particularly well with condensing boilers and heat pumps because it uses far lower water temperatures than a radiator system, so the heat source doesn't have to work as hard
- Design freedom: As it's hidden beneath the floor, UFH allows you to place furniture wherever you like
- Floor coverings: UFH is compatible with a wide range of floor coverings – from carpet to Amtico
- An affordable luxury: With solutions for every project, UFH is surprisingly affordable

Not just for new build

It's not just new builds that can take advantage of UFH, older properties can benefit too, thanks to retrofit solutions. These low profile, higher heat output systems are ideal for older properties, where UFH would not previously have been an option. The solutions can be laid directly on top of the existing floor, on any floor level, with minimal disruption to fixtures and fittings.

With the introduction of these innovative new UFH floor constructions, the possibilities for hybrid systems are also increasing. So, UFH and radiators can both be successfully installed to create a flexible, efficient system.

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Every design that Nu-Heat provides is bespoke; they work with you to provide an energy efficient, cost effective system that matches your exact requirements. Offering on-site installation support through to post installation customer service – you can expect more with Nu-Heat's Know-How.

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*Source EuRay 2005

Nu-Heat
UNDERFLOOR & RENEWABLES

interiors notebook

It's never too early to start looking for the finishing touches for your self build

Shopping list

1 *Crafted from solid mango wood, the colourful drawers on this sideboard feature handles made of iron, bone and cut glass.* **Milligan retro sideboard, £398, atkinandthyme.co.uk**

2 *With their gloss finish, these ceramic tiles could help you establish a dramatic autumnal colour scheme in your kitchen.* **Classic field range, £129.95 per m², winchestertiles.com**

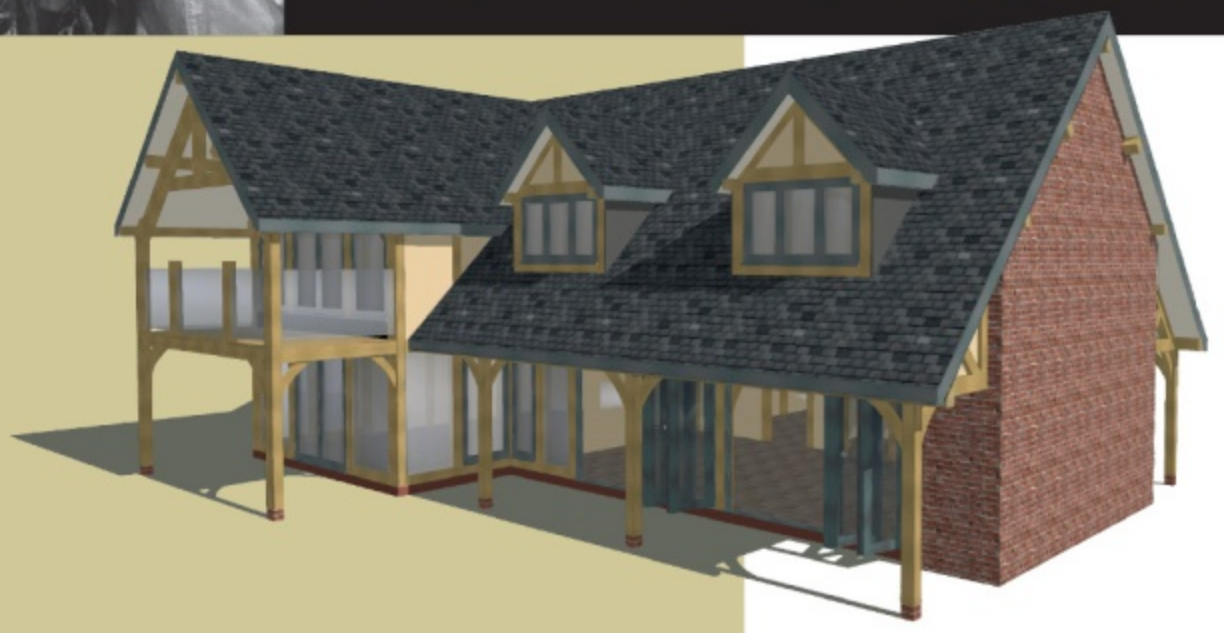
3 *Available in a selection of striking hues, these handmade ceiling pendants will add flair to your home's decor.* **Flock collection quadric ceiling light, £310 each, limelace.co.uk**

4 *Give your home rustic appeal with this stylish occasional table, which is made from reclaimed pine and finished with a water-based sealant.* **Nevada side table, £349, fishpools.co.uk**

5 *Add luxury to your living space with this elegant armchair, which is available in a range of fabulous fabrics.* **Cambridge upholstered button back chair, from £900, lauraashley.com**

An oak frame BUILD DIARY

NAMES Mark & Julia Jones
LOCATION Shropshire
PROJECT Oak frame self build
HOUSE SIZE 235m²
PLOT COST £150,000
PROJECT COST circa £400,000
WORK BEGAN November 2014



Mark and Julia work through the all-important task of creating a well-insulated home

The main utility services (water and electricity) are in and the trenches covered. I have a permanent electricity supply now that's fully metered and unique to our house.

Severn Trent has given me a date in late September to get the permanent water supply in place, as the existing one we're using needs to be upgraded to a 32mm pipe. Unfortunately this will mean another road closure and dig; no doubt we will be in the dog house with the neighbours again. It's such a shame the providers cannot liaise and work alongside each other to ensure that there's only one road closure and one level of disruption and cost to all.

The only thing left to consider is how the BT broadband line will get to the house. I am not keen on having overhead cables, so I dare say that I will need to be digging yet another trench soon! I believe the BT post is on our side of the road so at least there won't be any more closures. I am feeling a bit nervy about all the services and drains running underground. I'll need to map out the location of each run (as far as is practicable) so I don't accidentally break through any pipes – it's a bit of a rabbit warren down there.

Our home emerges

I am really pleased with the full effect of the contemporary windows and doors; I think the grey tone is going to look great against the beamwork, especially once it starts to silver down. My obsession with the notion of combining oak, an age old building material, with modern fabrics and finishes is coming together nicely. I get comments from people saying that the emerging look is great.

Along with the design of our home, the thermal efficiency and air tightness were key elements that dictated the overall ethos and specification of the build. As Julia and I have experienced living in an old house where there's always something to repair or make good, it was very important to us for the property to be as low maintenance as possible. I was determined that the new house would be trouble free, simple to look after and straightforward to keep clean and tidy – so we have no unnecessary nooks and crannies, just wide open spaces to live in and enjoy.

I have used Marley Eternit's Cedral Lap weatherboard in several places; it has a grey hue and requires no maintenance because it is made of fibre cement. It will never rot and

comes pre-painted, too. For the balcony decking, I managed to source a recycled extruded plastic product from Eco Systems, which has a wood grain effect to it on one side and a more traditional grooved finish on the other. It was really simple to fit with a rather nifty T-shaped section that creates an even gap, allowing for simple screw fittings. This is also maintenance free and is quite easy on the eye.

The balconies coming off all three bedrooms are made from durable stainless steel posts and brackets with toughened glass panels in-between. We've named one of them the 'G&T balcony' in eager anticipation of our lifestyle to come.

Fitting the insulation

We are now at the point in time that I have been dreading since day one: the insulation phase. I have been anxious about it for two reasons: the first is the cost outlay; the second is the pure drudgery of the installation process.

I shopped around very hard for the best value product to meet the initial design-stage performance set out in the Standard Assessment Procedure (SAP). I chose Xtratherm, who gave me fantastic support and advice about their range and managed to break down in simple English the various benefits of their product.

Julia and I also kicked off the unbelievably tedious work of cutting and fitting the insulation in mid-July. It's dirty, messy, smelly and even wearing masks and goggles, the dust that comes off during cutting is horrible stuff. When it gets in your eyes it is agony. I am slightly asthmatic and also suffer from hay fever, so it plays havoc with my allergies. By far the worst are the ceilings, where I've needed to fit 120mm-thick insulation into the gaps between the rafters. The entire second floor is vaulted to show off the oak detail, so there is effectively no flat ceiling anywhere. There are four major valleys in the roof, which means a horrendous amount of angles and compound cuts to make in the insulation. I then have to try to make it fit snugly between the rafters.

I am obviously working at a fair height up at the ridgeline and in the middle of summer the heat in that area of the house is intense. You can probably imagine the sweating, a runny nose and dust floating in the air is not pleasant at all. The real killer is actually the sheer amount of time it takes. I can be at it solidly for a day up and down the ladder and I won't feel there is any progress being made, so it's quite demoralising stuff. I can't wait to at least get the ceilings done; the straight walls and flooring

household waste so we can't just take it down to the local refuse depot. I apparently need a special licence or I will have to pay a registered waste disposal operator to take the offcuts away for me.

I really think it's time that the insulation manufacturers get to grips with dealing with the reuse or recycling of the offcuts. It's an astounding waste of money and I just cannot believe there is no other use for this material. I understand Kingspan has announced a scheme for taking the remnants back, but I have no idea how it could work

after this lot will be a doddle. I reckon with another three weeks of hard graft it will all be over.

A tight seal

Alongside this nasty element of work comes the task of getting the build as airtight as possible. This is also painfully slow and requires a great deal of care and attention. You only have one chance to get this right so it has to be done well. Under normal conditions it would probably be correct to have a full air tightness test carried out at this stage of the process so we can detect any leaks and fix them. The problem is I have not had the glass fitted to the doors yet and I don't want to put the panes in at the front or back in case they get damaged. So there's no point in testing this element now.

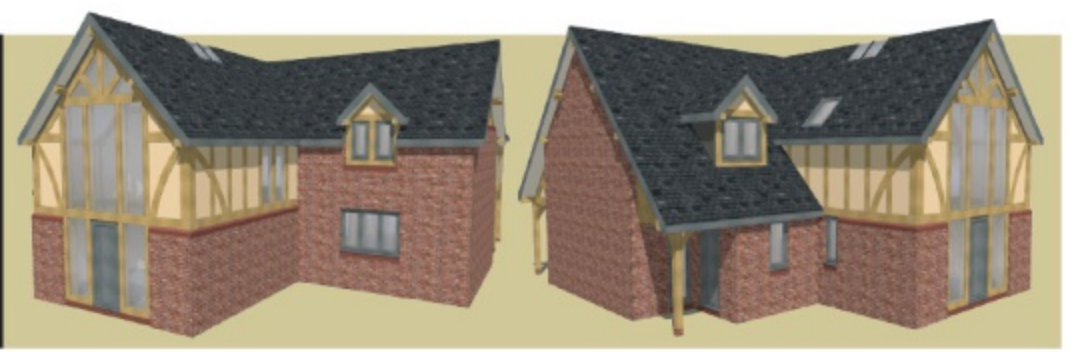
Julia's been getting stuck into the job of installing and taping up the specialised breathable membrane supplied by Pro Clima. I told her it's just like wrapping up my birthday present, only from the inside out, and I do keep reminding her of the money we'll save on the heating bills.

One very upsetting aspect of this work is that there's an unbelievable amount of wastage. It is estimated that as much as 30% of the material can be lost. We've spent £10,000 on our insulation so if this is correct I am going to throw £3,000 away. And that's not all, it cannot be considered economically – unless they are going to make a charge for this service. Either way it's an area of great concern; if this amount is wasted on our house build alone, I can't imagine what happens on a nationwide scale.

Julia and I are looking forward to the next phase; which is the first fix electrical and plumbing work. It will be at this stage we start to make the internals our own. I haven't even put up the stud walls yet, so we are still imagining the room spaces, but we can't wait to get on with it.

NEXT MONTH

MARK AND JULIA PREPARE FOR THE FIRST FIX PHASE AND START TO IMAGINE HOW THEY WILL LIVE IN THEIR BRAND NEW HOME



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Gone are the days when kitchens focused purely on food preparation. For the modern family, this space is the central hub of the home where cooking, dining and socialising all take place. So whether you're building a house from scratch or renovating an existing property, it's likely that a stylish and multi-functional culinary zone is right at the top of your wish list.

Build It has teamed up with Franke to help you establish a dynamic and practical kitchen. We're offering three readers the chance to win a stainless steel Hydros sink paired with a Bern tap, which are both part of the company's Specialist range. Each set has a combined value of at least £715.

The Hydros 1.5 bowl premium stainless steel sink has been engineered to meet the requirements of multi-purpose workspaces and comprises different zones for various food preparation tasks. The linear styling of the Hydros offers a crisp edge that's a great complement to contemporary kitchens, while Franke's unique push-button pop-up waste – mounted on the sink surround – allows dirty water to drain away without the need to reach in and unplug anything.

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Available in either chrome or SilkSteel, the L-shaped Bern tap makes a striking design statement. It's a good fit for a modern kitchen scheme and an ideal partner for the contemporary Hydros sink range.

For more details visit www.franke.co.uk

HOW TO ENTER THE COMPETITION

Enter instantly by following the instructions online at **www.self-build.co.uk/competitions**

Terms and conditions

Three readers will win a Hydros sink and Bern tap combination from Franke, each worth £715 or more (Hydros sink £460.50, Bern tap £254.50 in chrome or £288.50 in SilkSteel). The prize includes delivery, but not installation. No cash alternative will be offered. Entry is only open to consumers who are aged 18 years or over and who are resident in mainland UK. Castle Media and other companies involved in the competition may use your details to let you know about other products and services we think may be of interest to you. Occasionally we make names and addresses known to vetted companies. Please state clearly on your entry if you would NOT like your details passed on by ticking the checkbox on the online entry form. Castle Media will use your information for administration and analysis. Please state clearly on your entry if you would NOT like to be contacted by ticking the checkbox on the online entry form. All winners will be picked at random. Names and counties of winners from all the competitions in this issue are available by sending a SAE to: Winners October 2015, Build It, Castle Media, 7 King Street Cloisters, Clifton Walk, off King Street, Hammersmith, London W6 0GY. The competition closes on 1 October 2015. If you enter after the advertised closing date you will not be entered into the competition.

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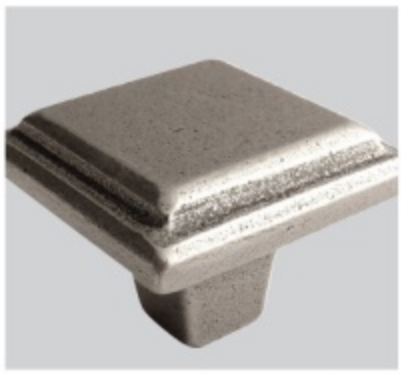

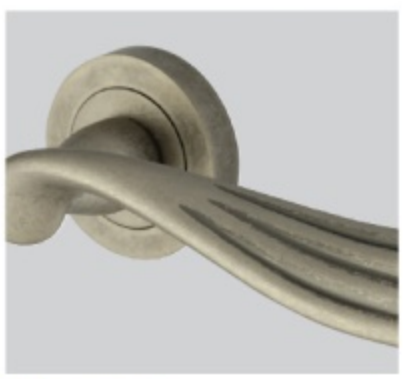

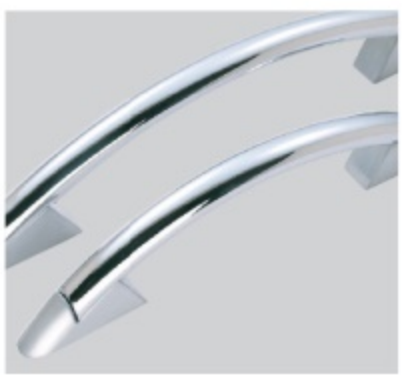


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star letter

We're planning to build a contemporary extension

The star letter writer wins an Einhell cordless drill, worth £119.99

I've been a regular visitor to your website since I started seeking inspiration for the renovation and expansion of my Victorian terraced family dwelling. I recently came across Tim and Fiona Johnson's house in your readers' homes section, and admired how they were able to pair such a modern, open-plan extension with a traditional Arts & Crafts property. They've given me some fantastic ideas for how to zone the new space and create the right balance between shared family life, entertaining and practicality. I especially love that raised study area!

Sarah Cross, via email

Editor's reply: *We're delighted to hear the house tours on our website have inspired you. The Johnsons' scheme is just one of the readers' homes that's in the running to be crowned this year's Best Self Build or Renovation Project in the* Build It Awards 2015*, in association with BuildStore. Voting doesn't close until 7 September, so you still have time to have your say at self-build.co.uk/vote*

We want to use an eco-friendly structural system for our project

It was great to read about Damian Helliwell's straw bale home in the September issue. What an inspiring article! My wife and I had been dallying over the construction system for our own self build for some time. We're intrigued by Damian's environmentally-friendly approach and would like to learn more about the system. Can you offer any advice?

Derick O'Neill, via email

Editor's reply: *Damian's project is a great example of how natural materials, thorough research and a little elbow grease can yield stunning results. Straw bale homes do have a low environmental impact, providing superb levels of insulation. You can find out more about how this building method works at self-build.co.uk/straw-bale*

HAVE YOUR SAY

Build It magazine wants to hear from you. Whether you have advice, a self build story or simply want to make us laugh, write to us with your name and address, at **Letters, *Build It*, Castle Media, 7 King Street Cloisters, Clifton Walk off King Street, Hammersmith, London, W6 0GY or you can email us on buildit@castlemedia.co.uk. We reserve the right to edit and publish all correspondence**

Following the rules

The planning consent for my self build stipulates that no work should commence until a scheme for foul and surface water drainage is approved and installed. My contractor had a design accepted for a crated soakaway with a void area of around 90%, but a much smaller version was used.

To my surprise, the building inspector informed me that he doesn't investigate whether the approved drainage system is installed. If I hadn't checked the wrong setup would have been passed, and it's only on my insistence that the correct one will be fitted. It seems odd that the regulations don't make it compulsory for the building inspector to verify the work against the original approval.

Stephen Mulloy, via email

Editor's reply: *The planning and building control departments are separate entities, subject to different rules and regulations. They rarely have cause to speak to each other, but both can apply conditions that the other might not be aware of. The lesson here is to follow the stipulations to the letter, because if an omission is spotted later, it can be awkward and expensive to rectify. Well done for insisting on compliance from your builder.*

Readers' homes

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THE MODERN

The **Spillanes'** innovative take on oak frame has given them a light-filled home that effortlessly balances natural materials, energy efficiency and contemporary living

WORDS **RICHARD WEBBER** PHOTOS **COLIN POOLE**

David and Jennifer Spillane have long been admirers of natural products. So when they decided to build their dream home on the Northamptonshire orchard adjacent to their existing house, it was no surprise that they were keen to put a characterful oak frame at the heart of their plans. "We'd visited a number of self build shows and were always drawn to the oak suppliers," says David. "Just being able to smell and touch the timber made us realise what a wonderful material it is."

The couple had a clear vision of what they wanted to achieve. "We weren't interested in traditional framing methods as they tend to create very square-looking internal structures," says David. "So it was with great excitement we discovered that Carpenter Oak had developed a more modern technique using industrial elements such as steel, which could be left exposed inside the house."

It was a landmark moment for the Spillanes' scheme – but they soon learned that moving forward with a self build is about more than having a great idea. Initially, they'd hoped to work with a local architect – but it soon became clear that the practice's knowledge of oak structures was limited and they didn't have enough experience to develop a design that would make effective use of the material. On the basis of a recommendation from Carpenter Oak, the couple switched to Roderick James Architects, who they felt really understood what they were hoping to achieve. A new design was put together and sent through for the local council's approval.

Planning challenge

As anyone who's navigated the somewhat subjective process of seeking approval for a building project from their local authority will know, getting what you want isn't always easy. It was no different for David and Jennifer, who endured an agonising eight-month wait before consent was finally granted.

For a time, it looked like their application might even be rejected. "It was a very frustrating process," says David. "One of the local authority's objections concerned our use of dry stone walling on the property's exterior. The houses in our street have been built using an eclectic range of materials, so we weren't expecting anyone to object to this. The product is used in various nearby villages and even features in the town's own council offices – so I ended up sending in photos of their own building in support of our design!"

The Spillanes hired a planning consultant to help them weed through the myriad rules and regulations, as well as secure the backing of local influencers. "Our ward councillor took the time

THE SPILLANE FILE

NAMES David & Jennifer Spillane

OCCUPATIONS Company director & homemaker

LOCATION Northamptonshire

TYPE OF PROJECT Self build

STYLE Contemporary

CONSTRUCTION METHOD Oak frame and structural insulated panels (SIPs)

PLOT SIZE 956m²

LAND COST Already owned

BOUGHT March 2010

HOUSE SIZE 200m²

BUILD COST £488,000

COST PER M² £2,440

VAT RECLAIM £9,000

BUILDING WORK COMMENCED February 2014

BUILDING WORK TOOK 47 weeks

CURRENT VALUE £650,000

to come round to have a look at what we wanted to achieve," says David. "Thankfully, he liked our vision and was prepared to stand up to the committee. We're grateful to both of them as we may not have won permission without their support.

The protracted process has taught the couple that it's rarely a good idea to simply submit a planning application in hope, without doing your research first. In particular, they highly recommend attending meetings with the local planning officer before pressing ahead. "This gives you a chance to understand what's involved and check what kind of applications – or elements within them – are likely to be refused or approved," says David. "It's a great way to gain awareness of trends and local feeling."

Design flair

Despite the planners' initial resistance, the dry stone walling has become a striking feature. Sourced from a local quarry, the Northamptonshire limestone took several weeks to lay, but was definitely worth the effort. "It's one of the main aspects of the property that gets commented on – and everyone loves it," says Jennifer, who project managed the build in conjunction with David.

Although traditional materials have been used to clad the exterior, taken together they make a clever contemporary statement. The recessed masonry elements are complemented by red cedar, creating a colourful and texture-rich finish. The Spillanes were anxious to prevent the wood weathering to a grey tone, so they researched numerous products to help maintain its pristine original state. They eventually settled on a sealer from specialist timber

Visible from the raised street, the living roof adds another natural element to the clever blend of cladding options

WE LEARNED...

BE ON SITE regularly to keep an eye on progress. This way, you can identify and resolve any issues speedily – before too much time and money is wasted. Daily visits are best, but as a minimum be sure to attend at least once a week.

COMMUNICATION IS KEY so organise regular site meetings and be sure to provide written summaries of these, complete with actions and outcomes, to ensure that everyone involved stays on track.

DON'T FORGET this 'Six P' mnemonic: proper planning and preparation prevents poor performance. If you leave things too late, you'll be forced into making bad decisions and compromises. In particular, look around and get good referrals before hiring anyone on your project.

GET TO KNOW your planning officer and ward councillor, as well as the Local Plan for development in your area. All of these – and more – could be significant boons for your planning application.

coating company, Rystix. The product deepens the wood's natural hues and protects against ageing. "Our main contractor mocked up the different options by fixing panels of cedar onto the house so we could see it in situ," says David. "Each was stained with a different treatment to allow us to assess the finish. It added time and cost to this phase of the build, but it's made all the difference."

The couple's desire to introduce a modern edge to the architecture is also reflected in their choice of a blue zinc roof. This complements the Lindab steel guttering and anthracite grey aluminium windows, while sitting comfortably alongside the blue-grey tones of the stonework. "The zinc's long-term durability was a key selling point for us; and of course we love the look of it," says David. "It feels as though it was made for this kind of building."

Opening up

Internally, the goal was to create a light, airy and inviting living space. Vaulted ceilings, double-height voids and atrium areas all make excellent use of the sunshine streaming through large, triple-glazed windows. Upstairs, a lounge area looks out across an underlying sedum roof, which appears to blend seamlessly with the landscape beyond. "The layout is designed to allow for a modern lifestyle, with plenty of circulation space and room for entertaining guests," says David. The couple felt the traditional floorplan of their previous home, where individual rooms were demarcated with solid walls, was claustrophobic. So when it came to discussing the design with Roderick James Architects, an open-plan configuration was a top priority. "The new house allows you to cook and entertain in the same space, so nobody misses out on conversation," says Jennifer.

The lack of partitions did throw up some practical considerations, however. "You have to recognise that an open-plan arrangement leaves little scope for rows of kitchen units, other storage options and artwork, as there's simply less wall surface available," says David. "You also need to be careful about where you locate electrical sockets and light fittings, because they might get in the way of precious space for essential furniture."

Living on site

During the build, the Spillanes continued to live on the grounds in their renovated cottage, which has since been rented out. This meant that, on a daily basis, the couple could easily liaise with their contractors – who they appointed only after visiting several projects to check out the standard of work.

Left: The Devol kitchen mixes freestanding pieces, including a large central island unit, to fit neatly within the oak frame

"If you want your outcome to be realised, rather than the scheme others interpret for you – or try to get away with delivering – then you have to get involved," says David, who admits managing the work was stressful at times. "Our main contractor was very proactive, and even performed snagging as the project developed. The firm took pride in the build and achieved a great finish. Carpenter Oak was excellent, too, but working with some of the other parties was frustrating. Getting the water supply hooked up was especially long-winded, with prospective connection dates missed several times – even though we'd had to pay for it up front. We do look back and wonder why we got so flustered about things like this, as it didn't help resolve anything. But a self build is such a personal project and you have to keep reminding yourself that if you don't battle for what you want, you'll regret it later when you're stuck with second best."

Juggling delivery dates for products was a particular challenge, and had a significant impact on the build schedule. The blue hue they specified for the zinc roof, for example, was an unusual colour for what was already a non-standard product – resulting in a 12-week lead time. They're quick to point out, though, that it was worth the wait.

Maintaining the books

The Spillanes set a budget of £466,000 for their project, but overspent by just shy of 5%. Most of this was accounted for by

At once structural and decorative, the internal oak frame sits on steel supports and vaults right up through the space to support the roof

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the fact that they didn't allocate enough funds for the hard and soft landscaping. "One of our planning conditions meant that we had to submit a new design to ensure the house would interact well with its surroundings," says David, who originally estimated that £20,000 would cover this outdoor work. "We now realise we should have allowed more like 10%-15% of the total build cost."

For Jennifer, it was a crucial part of the project. "At the end of the day, we wanted the house to flow into the garden and were keen to create a raised deck for entertaining," she says. "It wouldn't make sense to build a home like this and then have a flat, boring outdoor space. It had to be properly landscaped to really do the place justice – and it costs money to achieve that."

Self building has certainly been a learning curve for David and Jennifer, but they've grown in confidence as a result of overcoming the various challenges along the way. So much so that they're already in the midst of another project, which is being built alongside this house. "We're creating her bigger and better sister, putting into practice all the things we learnt first time around. For example, we don't want to get caught out again with a three-month lead time on the roof covering, so we've already bought it way before it's due to go on," says David. "There's definitely no substitute for experience."

The Spillanes' eclectic taste continues into this ensuite bathroom, where a mishmash of patterned tiles makes a pleasing contrast against the natural oak

closer look

A unique oak frame...

In response to the couple's brief for a cutting-edge but characterful home, Carpenter Oak came up with the idea of a floating frame, where the material is adeptly kept to a minimum with none of the usual diagonal bracing, joists or sole and head plates. The skeleton instead sits inside a shell of structural insulated panels, with the timber elements rising to support the roof and first floor.

Three principal cross-frames provide an eye-catching internal feature, with the main posts slanting inwards to form strong A-shaped structures. These members end 600mm above floor level, landing on stainless steel feet that provide a wonderfully contemporary juxtaposition against the timber. Traditional mortise and tenon joints are scarcely to be seen. Instead, stainless steel flitch plates are bolted to the adjoining timber – with an industrial effect achieved by keeping the pig nuts and bolt heads exposed. The result is a freestanding frame that sits within the shell of the house, creating unusual angles and beam connections that provide a dramatic finish.

Floor plans

Ground floor

First floor

TOTAL BUILD COST BREAKDOWN

Elements	Cost m²	Cost %	Total cost
Fees	£150	6%	£30,000
Site preparation	£150	6%	£30,000
Foundations	£180	7%	£36,000
Drainage & utility trench works	£125	5%	£25,000
External walls & windows	£680	28%	£136,000
Roof structure & covering	£170	7%	£34,000
Internal walls	£40	2%	£8,000
Floor, wall & ceiling finishes	£80	3%	£16,000
Joinery & fittings	£130	5%	£25,000
Plumbing & heating	£260	11%	£52,000
Electrics	£145	6%	£28,000
Decorating	£50	2%	£10,000
External works	£290	12%	£58,000
Grand total			**£488,000**

Useful contacts

ARCHITECT **Roderick James Architects** 01803 868000 www.rjarchitects.co.uk OAK FRAME **Carpenter Oak** 01803 732900 www.carpenteroak.com STRUCTURAL INSULATED PANELS **Glosford Timber Solutions** 01432 842999 www.glosford.com STRUCTURAL ENGINEERS **Ballantine Arnold** 07593 664936 / 07516 538610 www.ballantinearnold.co.uk BUILDING CONTROL **JHAI** 01308 428020 www.jhai.co.uk BUILDING WORK, ELECTRICS & PLUMBING **Westcott Developments** 0844 4127460 www.westcott-developments.co.uk LIGHTING **Lightmaster Direct** 01608 682115 www.lightmaster-direct.co.uk ELECTRICAL EQUIPMENT **Retrotouch** 01293 279426 www.retrotouch.co.uk HEATING **Total Home Environment** 0345 260 0123 www.totalhome.co.uk WINDOWS **Luxal** 0118 995 2004 www.luxal.co.uk ZINC ROOF **RFL Metal Roofing** 01462 819246 GUTTERING **Lindab** 01604 788350 www.lindab.com/uk STAIRS **Stairplan** 01952 608853 www.stairplan.com DOORS **Scotts of Thrapston** 01832 732366 www.scottsofthrapston.co.uk FLOORING **Floors of Stone** 01509 234000 www.floorsofstone.com KITCHEN UNITS **Devol** 01509 261000 www.devolkitchens.co.uk LANDSCAPE DESIGNERS **Gardencare Landscape** 01933 312528 www.gardencarelandscape.co.uk GARAGES **Hormann** 01530 513000 www.hormann.co.uk

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Ahead of the game

Steve and Rhonda Bruce paired resourcefulness with hard graft to get not just one, but two homes out of the ground

WORDS **ALEXANDRA PRATT** PHOTOS **NIGEL RIGDEN**

It wasn't until the recession hit that Steve and Rhonda Bruce, who had lived in the same house for 15 years with their son Gordon, thought they could actually make their dream of building a bespoke home a reality. The plot of land that ultimately tempted the couple was a third of an acre on the edge of Dundee, with coastal views. It had originally been on the market at offers over £240,000, but as the recession advanced, the price dropped – and Steve eventually secured the plot, which came with detailed planning permission, for £130,000. The existing design was for a contemporary 240m² home, but Steve and Rhonda

THE BRUCE FILE

NAMES Steve & Rhonda Bruce
OCCUPATIONS Engineer & housewife
LOCATION Dundee
TYPE OF PROJECT Self build
STYLE Contemporary
CONSTRUCTION METHOD Structural insulated panels (SIPs)
PLOT SIZE 0.3 acres
LAND COST £130,000
BOUGHT February 2011
HOUSE SIZE 360m²
PROJECT COST £530,000
COST PER M² £1,472
TOTAL COST £660,000
BUILDING WORK COMMENCED March 2012
BUILDING WORK TOOK 17 months

wanted more space, so went back to the local council and gained an amendment granting them an additional 100m². "We took a punt on this plot and the ground conditions," says Steve. "The site was sloping and there are a few trees on the land. It was only after purchase that we dug test holes for the ground information survey and hit the jackpot by finding rock. If we hadn't, we would have had to pile the foundations, which would have cost us more money."

Taking charge

The architect who sold the Bruces their plot had also owned that of their new neighbours, who had finally succeeded in gaining planning permission for their own scheme after five years. Both plots had planning consent for houses that were identical in design. Steve decided to use this to his family's advantage. He and son Gordon made a presentation to their neighbours, who agreed to allow them to project manage both builds simultaneously.

The arrangement had several benefits, the most obvious being volume discounts when ordering materials. It also gave Gordon formal project management experience, which has opened up a career path for him. While most of the tasks on site were carried out by subcontractors, when it came to the non-skilled labourers, Steve and Gordon worked on their own home and their neighbours hired their trades directly. "It worked really well," says Steve. "I left Gordon to manage most things, while we both got hands-on."

When it came to contracts, Steve pulled small works versions off the internet and adapted them for his needs. These documents saved the Bruces money when one contractor tried to add extras onto their agreed price. Steve and Gordon also sourced materials and took on

various jobs, including tiling, installing internal glazing, fitting the security cameras and laying the flooring. "If I got stuck, I asked our joiners for advice," says Steve. Aside from that, his other guide was YouTube. "It has the answer to almost everything," he says.

Most of the subcontractors were individuals and small firms who Steve had employed previously. The groundworks were principally carried out by a local company, but Steve and Rhonda also got involved here – this time by fixing steel ties and pouring concrete. Rhonda worked on site every day during the build and her approach proved particularly invaluable for persuading drivers of huge delivery lorries to venture down the tight access road. "You shouldn't underestimate how the female touch can lower testosterone in a predominately male industry," says Steve.

Thinking smart

The foundations and other substructure works were without doubt the biggest and most expensive aspect of this project. To hold back the weight of earth caused by the site's slope, the job started with a huge, 300mm thick retaining wall. Once out of the ground, they craned in a steel frame – essential due to some of the spans of the structure, which also includes a cantilevered cube that projects out to the front. Once the frame was up, the build raced forward thanks to Steve's choice of structural insulated panels (SIPs) as a thermal wraparound. "A friend of mine built with SIPs," says Steve. "It was paint by numbers – so fast and simple."

Extensive glazing is also central to the success of this sharp-edged contemporary design. Steve, however, was not prepared to pay the prices quoted to him by local suppliers. He knew glass was cheaper in Europe and negotiated the costs, securing the triple-glazed, aluminium-clad PVCu windows and front door on a supply-and-install basis. All together this aspect of the build cost Steve just £29,000 for 110m^2 of high-quality products.

Another feature of the house to which Steve applied some creative thinking was the striking staircase. This has chunky oak treads and a glass-wall balustrade. Initial quotes for this had originally come in at around £16,000-£18,000. "I couldn't work out why it was so

The open-plan living area benefits from copious amounts of light via storey-height windows. Glazed balustrades on the first floor allow the brightness to filter into the space

WE LEARNED...

CHOOSE YOUR TEAM wisely and they can help with far more than just the design. Our architect Neil Sutherland and building firm Makar made our project a smooth and pleasant process.

USING A LOT OF GLASS means you can really unify your house with the views. However, if you use extensive glazing, you must make sure your windows are all as thermally efficient as possible – otherwise your heating bills will go through the roof.

PROTECT YOURSELF from the rise in fossil fuel prices by taking a fabric first approach, keeping solar gain in mind and using renewable energy. We're extremely pleased with our mechanical ventilation and heat recovery (MVHR) system.

Below: A set of glazed folding sliding doors provides inspiring views of the Scottish countryside from the modern dining area

expensive," says Steve. Instead of ordering the whole item from a specialist supplier, he set to work designing the staircase himself and ordered the individual components separately. The steelwork for the stringer cost just £1,500; the oak treads were made in Arbroath for £2,000; and the glass balustrade came in at £1,000. Steve then used his on-site joiners to assemble it.

The only problem was that the stringer arrived in the wrong configuration to attach the treads. Rather than have it re-made, Steve simply employed a welder to join them to the other side. This is just one of several examples of Steve's approach to problem solving. His careful research, engineering know-how and practical sense has helped him to achieve a stunning property for a fraction of what he would have paid if he had used a main contractor.

Heating the home

Steve's creativity has enabled him to cut costs, not corners. This came to the fore when he was looking at how to heat the substantial home. He considered all the available options for several months, including green technology such as solar panels. These he ruled out because the house is located in a conservation area, which would have meant making a new planning application to gain consent. The fact the property features a roof garden would also have made it difficult to allocate space to solar energy.

This is a large house on the exposed east coast of Scotland, so getting the heating right was imperative. Surprisingly perhaps, Steve did not fit underfloor heating – mostly due to the costs. He settled instead on packing in lots of insulation, a gas boiler, a mechanical ventilation and heat recovery (MVHR) system and radiators. These complement the warmth the home naturally amasses thanks to its south-facing aspect and swathes of glazing, which encourage passive solar heat gain. "We avoid using the radiators and rely on the MVHR to move the heat around," says Steve.

A technical focus

Other innovative solutions in the house include a central vacuum setup and a sound system that's specially designed to be operated using an iPhone. Lighting is another area where the Bruces have pushed the boat out – the couple hired a consultant, who suggested high-quality Italian fittings that have been plastered into the walls.

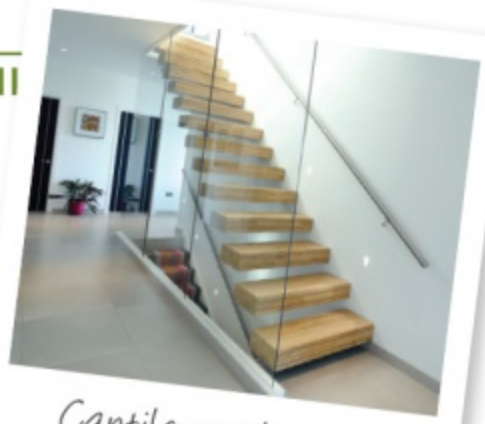
In such a substantial build, it would be unusual if everything went to plan, yet the family faced very few problems. "It went smoother than most people would imagine," says Steve. The only issue that remains something of a thorn in his side is the external render, which is cracking. This is the subject of an ongoing dispute between Steve, the supplier and the contractor. He believes that it is not the product that is at fault, but the application, which in this case was applied directly onto the render boards.

While the family has moved in, there are still a few elements left to finish – a situation many self builders will be familiar with. In the Bruces' case, this is the construction of a garden wall in stone, which, true to character, Steve and Rhonda are tackling themselves. So far, they have completed several metres, including the tricky section around the gate and its control panel. Their collaborative efforts are a fitting conclusion to what has been a very successful build. Not only has it set son Gordon off to a flying start with his career in London, but the Bruce family have a beautiful, spacious home, which they intend to enjoy for many more years to come. So, would they consider doing it all again? "If the right plot comes along," says Steve. "But this time I'd employ a full-time labourer!"

closer look

Floating in air...

Steve, an engineer, designed his own minimalist cantilevered flight, which appears to float in space and presents an inspiring focal point upon entry to the hallway. Each of the 14 treads is made out of oak and has been secured, with the help of steel pins and bolts, to a metal stringer embedded into the wall. A triple glazed wall combines with this unique feature to help keep the space feeling bright and open. Cantilever steps should be designed by a structural engineer or specialist stair firm so that they remain horizontal and rigid with use over time.



Cantilevered stairs

Floor plans

Ground floor

First floor

Second floor

TOTAL BUILD COST BREAKDOWN

Elements	Cost m²	Cost %	Total cost
Preliminaries	£63	4%	£22,600
Groundworks & boundary walls	£347	24%	£125,000
SIPs Kit & steelwork	£250	17%	£90,000
Windows	£8	5%	£29,000
Single ply membrane	£22	2%	£8,000
Scaffold hire	£22	2%	£8,000
Crane Hire	£11	<1%	£4,000
External balustrades & capping	£44	3%	£16,000
Gutters, soffits & fascias	£18	1%	£6,500
Rendering & cedar cladding	£47	3%	£17,000
Plumbing incl bathrooms & boiler	£69	5%	£25,000
Electricals	£56	4%	£20,000
MVHR	£17	1%	£6,000
Joinery	£111	8%	£40,000
Internal doors	£14	<1%	£5,000
Kitchen	£69	5%	£25,000
Design lighting	£56	4%	£20,000
Insulation	£28	2%	£10,000
Landscaping	£17	1%	£6,000
Vacuum system	£2	<1%	£800
Home automation	£3	<1%	£1,000
Tiles and wet wall	£11	<1%	£4,000
Misc	£114	8%	£41,100
Grand total			**£530,000**

Useful contacts

BRICKLAYER **Eddie Stewart** 07713 760147 CENTRAL VACUUM SYSTEM **Total Home Environment** 0345 260 0123 www.totalhome.co.uk EXTERNAL HANDRAILS **S3i Harworth** 01302 752504 www.s3i.co.uk **FH Brundle** 0131 335 5999 www.fhbrundle.com EXTERNAL STONE **Denfind Stone** 01382 370220 www.denfindstone.co.uk GRANITE HOUSE SIGN **Bruce Walker** 01575 575252 www.brucewalkersculptor.co.uk HOUSE KIT **Creative Space** 01752 547611 www.urcreativespace.co.uk INTERNAL DOORS **Pronto Doors** www.prontodoors.com INTERNAL & EXTERNAL GLASS **Forsyth Glazing** 0141 554 0011 www.forsythglazing.co.uk JOINERS **N&P Joiners** 07970 066817 KITCHEN & TILES **Designers Kitchen & Bathroom Studio** 01382 828100 www.kitchendesignersdundee.co.uk LIGHTING **Design Lighting Services** 0141 314 3684 www.dls-lighting.co.uk MECHANICAL VENTILATION & HEAT RECOVERY **PAUL Heat Recovery** 0845 388 5123 www.paulheatrecovery.co.uk STAIR TREADS **Seaton Joinery** 01241 875265 www.seatonjoinery.co.uk HANDRAIL **Stainless Handrail Systems** 0800 0686363 www.stainlesshandrailsystems.co.uk WINDOWS & EXTERNAL DOORS **Uniwin** 0131 448 1552 www.uniwin.co.uk

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DIGGING DEEP

Simon and Jo Cochrane have taken a quirky 1950s property and turned it into a stunning contemporary home

WORDS **DEBBIE JEFFERY**
PHOTOS **MARTINE HAMILTON KNIGHT/ARCAID IMAGES**

Simon and Jo Cochrane spent 18 months renting a house in Nottingham while they hunted for a family home in the vicinity. They really wanted to get onto the local area's housing ladder, and even got as far as making offers on a couple of properties. "The sellers kept pulling out at the last minute," says Simon. "It was all a bit fraught." Taking on a major project was not something the couple had seriously considered until they viewed a 1950s detached house in the conservation area of Mapperley Park. The location was ideal – close to schools and work – but the brick-built property was tired and dated. Externally it featured sections of unappealing dark-stained timber boarding, the PVCu windows and concrete tiled roof had seen better days and the garden was an overgrown jungle. Internally the kitchen was cramped, the layout was awkward and the whole house needed upgrading. "It had been on the market for a while, and when we put in an offer of £350,000 in 2009 it was accepted quite quickly," says Simon.

THE COCHRANE FILE

NAMES Simon & Jo Cochrane
OCCUPATIONS Human resources manager & IT project manager
LOCATION Nottingham
TYPE OF PROJECT Renovation & extension
STYLE Contemporary
CONSTRUCTION METHOD Brick and block & structural steelwork
PLOT SIZE 850m²
HOUSE COST £350,000
BOUGHT 2009
HOUSE SIZE 242m²
PROJECT COST £237,529
PROJECT COST PER M² £982
TOTAL COST £567,529
BUILDING WORK COMMENCED April 2011
BUILDING WORK TOOK 12 months
CURRENT VALUE £650,000+

A new format

The couple knew that they wanted a more contemporary-looking home, with a bright and spacious kitchen. "We invited a few architects to visit, including Boyd McAfee of McAfee Design. He's a friend of a friend and lives locally," says Jo. "His tastes mirrored our own and we liked his ideas. From the start we told him that this wouldn't be a show home and that it needed to be somewhere we could enjoy living together as a family."

Boyd's design cleverly merges the old and new parts of the house. Upstairs the four bedrooms and master ensuite remain unchanged in size and shape, while the bathroom has been enlarged and combined with a neighbouring WC and airing cupboard. The ground floor is now totally unrecognisable, however, and has been extended by 3m to the rear, with a further 5m addition to one side.

Before the transformation

"We loved the idea of an open-plan kitchen with glass doors leading out onto the patio"

The former integral double garage has been converted into a gym, which also doubles as a guest bedroom with an ensuite – providing flexible accommodation. This lower ground floor space is accessed via a staircase in the kitchen. A new brick and block garage has been constructed to the front of the house. The foundations for this were partially excavated into the ground to reduce its height, enabling the garage roof to serve as an external terrace. But the key aspect of the transformation is at the rear. "Boyd's design gave us all the space we

The contemporary kitchen space features a wall of recessed units, which house two ovens

wanted without eating into too much of the back garden," says Simon. "We loved the idea of having an open-plan kitchen with glass doors leading out onto the patio. We've added plenty of storage to keep the area free of clutter. Our study and sitting room have remained in the same positions downstairs, but all the zones in the house have been given complete makeovers."

Planning permission was required for the alterations, which involved swapping the concrete roof tiles for Welsh slate, covering the brick walls with insulated render and exchanging all the windows for aluminium-framed double-glazed units (except for one set at the facade, which is timber to match the entrance door). "There were no objections to our application, although all external materials needed to be approved by the council's conservation officer, including the locally-quarried Bulwell stone for our front boundary wall and gate posts," says Simon. "Everything was done and dusted in just over a month, and work began in April 2011."

Jo and Simon employed a main contractor to undertake the project following a tender process. "We invited four companies to quote and chose the second cheapest, who seemed like a good fit," says Simon. "We funded most of the work privately and topped up our mortgage by £100,000 to pay for the rest."

Taking shape

The excavation works for the garage meant the front door was raised 3m above ground level for part of project, so the builders needed to make a temporary wooden external staircase by which to enter the front of the house. "The drive was covered with rubble and living in the property over the course of the scheme wasn't a great experience; in fact it was probably a big mistake," says Simon. "We basically camped out in the reception room, and the only running water downstairs was in the toilet. Our son Alex was seven and Jo was pregnant at the time. We wanted to make sure that everything was finished before our second son, Dawson was born."

A ramshackle outhouse and external steps were also demolished to make way for the striking new single-storey kitchen extension, which wraps around the side and back of the property. The sloping rear garden has also benefitted from major excavation and landscaping, partly to form the extension's reinforced concrete foundations, in addition to the tiered terraces and steps. "The builders used a mini digger and fortunately the weather conditions weren't too bad, so work progressed fairly smoothly," says Simon.

Brick and block walls were constructed and an enormous steel joist was craned over the roof to support the rear glass wall, which runs across the back of the extension and culminates in two sets of bifold doors in the dining area. These concertina out to completely open up one corner of the new space to the paved patio beyond.

In addition to the extension, the aesthetics of the existing house were given a significant upgrade. "It only took a couple of days to re-slate the main pitched roof, which has made a huge difference," says Jo. "Covering the old brickwork with white insulated render gave the exterior a much cleaner, more contemporary look, which is emphasised by the new grey windows. These were all major changes, which make the house seem more like a new build rather than a refurbished property."

WE LEARNED...

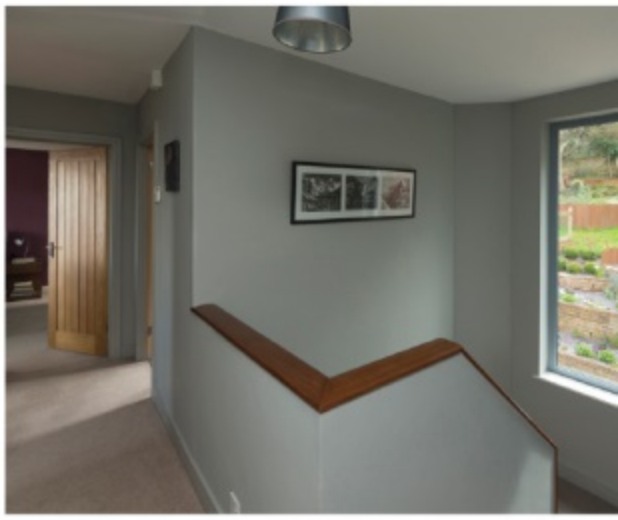
WE SHOULD HAVE moved out during the building work – the combination of the dust and noise was really awful and the garden was non-existent.

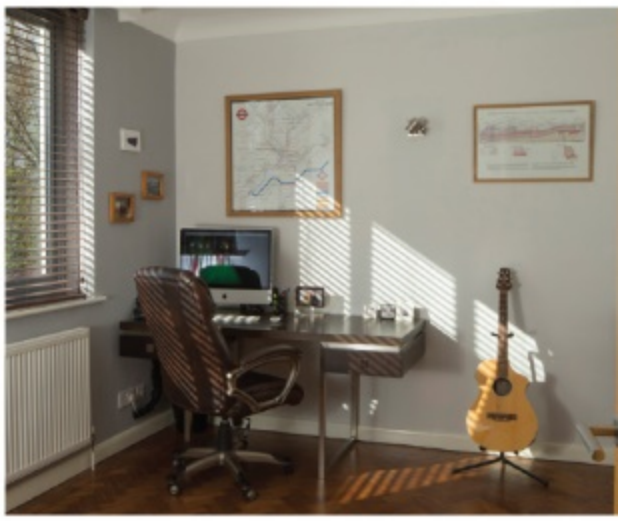
ASK TO SEE examples of potential subcontractors' work and personally interview them if possible, as they are often responsible for the final finishes that will be on show throughout the house.

DON'T OVERLOOK dated properties because they can be totally transformed. We now live in a great area and in a home we couldn't have afforded to buy.

CONTEMPORARY PROPERTIES can still have traditional features. We love the old banisters and the hallway's refurbished parquet flooring, which add character and have saved us money.

Thermally efficient aluminium-framed bifold doors offer clear access between home and garden





An efficient scheme

Not only has the look of the house improved enormously, but the addition of insulation – both internally and externally – plus the high performance aluminium windows has dramatically increased its thermal efficiency and reduced fuel bills.

The entire property has been rewired and re-plumbed, with underfloor heating laid in the extension and radiators used elsewhere. "We also installed solar thermal panels on the rear slope of the roof to heat our water, although as it happens these have been a big disappointment," says Simon. "They've never worked properly and I'm actually thinking of having them removed."

Architect Boyd McAfee designed the layout of the new streamlined kitchen. Deep 9m lengths of compartmentalised storage drawers have been installed below the rear windows, and one wall of the room is dedicated to full-height recessed cabinets, which also house two ovens. The central island unit accommodates the sink, dishwasher and induction hob. It's finished in a graphite hue and is topped with a striking frosted glass worktop.

The staircase down to the converted garage forms a partial divide between the kitchen/living room and the adjacent open-plan dining area, where bifolds open onto the new terrace. Ceramic floor tiles have been laid here, with the original parquet restored in the entrance hallway and study. Work was carried out by a local specialist company to carefully bring the wood covering back to life.

Throughout the house, the walls have been skim plastered and the internal doors replaced. New sanitaryware has been installed in

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What I really enjoy when designing is to create a blend of influences and styles which will give a building rhythm and movement and ultimately its own character.

the bathrooms and bespoke fitted wardrobes and storage crafted to suit the family's needs. The existing reception room is now used as a play area and TV den by the children, and is lined with shelves for books and DVDs. This allows the new kitchen/living/dining space to remain a pared back, minimal and clutter-free zone.

A new home

Overall the project took a year to complete, and during this time Simon also found time to organise the landscaping. "We didn't get too hands on, although I oversaw the construction of the deck and block paving," he explains. "We used reclaimed sleepers to create a raised bed and installed a contemporary pod-style garden room, which was great for escaping from the house in the summer."

Seeing the modern design come to fruition was exciting for the Cochranes, who had always previously lived in traditional homes. Having such an open-plan living space suits the family's lifestyle, and the connection to the garden is ideal for sons Alex, now 10, and two-year old Dawson. The house was shortlisted for the prestigious RIBA East Midlands Regional Awards in 2014. "We did push our budget to the extreme to get the level of finish that we wanted, such as the bespoke kitchen," says Jo. "Not everything went smoothly, and the work took longer than expected because some of the plastering and rendering needed to be redone."

QUICK GUIDE: EXTERNAL WALL INSULATION

Around 30% of the energy used to heat a typical home is lost through its external walls. Applying insulated render to the exterior of a property is an efficient way to upgrade its energy performance without reducing the amount of interior living space available or disrupting the household.

This type of external wall insulation (EWI) involves fixing a layer of insulating material to the facade, then covering it with a flexible render. Not only does this renew the appearance of property, but it also improves weatherproofing and sound resistance, too. The render serves to protect the walls and provides a sealed envelope that will reduce draughts.

For more information about EWI and to track down an installer in your area, check out The Insulated Render and Cladding Association website at www.inca-ltd.org.uk.

It's been worthwhile despite the cost and disruption, and the couple believe it cost less than demolishing the house and starting again would have. "Many people think it's a new build, but our renovation has given us a home designed to our needs in a lovely location, which makes the most of the sloping garden and gives us a fantastic open living space where we spend most of our time," says Jo.

closer look

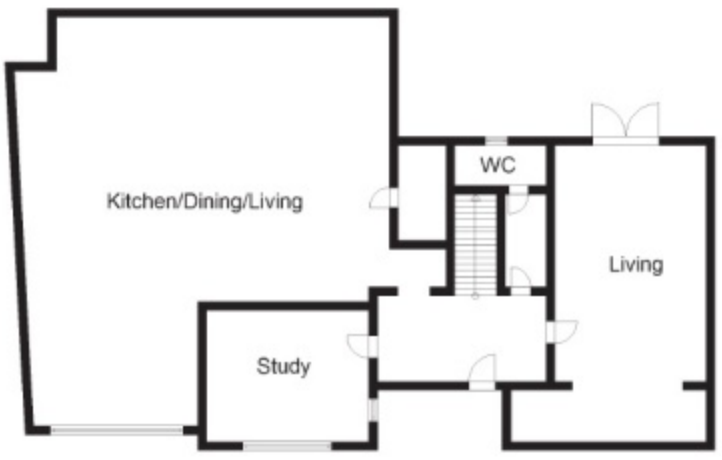
Aluminium windows...


Modern glazing

Aluminium is a durable, lightweight and high strength metal offering excellent resistance to corrosion. Windows framed in this material tend to have a sleek look and are therefore often chosen for modern homes or to introduce character into art deco properties. The metal profile offers slimmer sightlines and larger glass areas in comparison to PVCu or timber, which allows maximum light into the house – so it's a popular choice among renovators. It is available in a variety of colour options, plus the frames can provide good thermal performance when insulated with a thermal break.

Floor plans

Ground floor



First floor

Elecosoft® House plans re-created using ARCON 3D Architect Home Designer Software. **www.3darchitect.co.uk** **Tel: 01252 267788 Email: arconsales@eleco.com**

TOTAL BUILD COST BREAKDOWN

Elements	Cost m²	Cost %	Total cost
Preliminaries	£89	9%	£21,550
Demolitions & alterations	£41	4%	£9,885
Foundations & ground floors	£130	13%	£31,451
Structural frame	£18	2%	£4,250
External walls (incl upgrade to existing)	£142	14%	£34,261
Internal walls (incl upgrades to existing)	£13	1%	£3,175
Roof	£77	8%	£18,587
Windows, external doors & extension balustrading	£163	17%	£39,570
Mechanical services (heating, drainage, plumbing etc)	£75	8%	£18,200
Electrical services	£27	3%	£6,500
External works	£78	8%	£18,950
Internal doors, stairs & balustrading	£11	1%	£2,600
Fixtures and fittings	£45	5%	£11,000
Decorations & finishes	£25	3%	£6,050
Professional & local authority fees	£48	5%	£11,500
Grand total			**£237,529**

Useful contacts

ARCHITECT **McAfee Design** 0115 837 2732 www.mcafeedesign.co.uk STRUCTURAL ENGINEER **Andy Mann Structural Design** 0115 985 9386 www.amsd.co.uk ALUMINIUM WINDOWS & DOORS **Olsen Windows** 01777 874510 www.olsenuk.com TIMBER WINDOWS AND DOORS **FA Nanorth** 0115 987 2339 www.fanorth.co.uk PLUMBING, HEATING & SOLAR THERMAL PANELS **JL Phillips** 01636 642790 www.jlphillips.co.uk INSULATED RENDER **Edwards Plastering** 0115 930 7984 KELLER KITCHEN & WORKTOP SUPPLY **DFM Kitchens** 0115 986 6868 www.dfmkitchens.co.uk PLASTERING **MacDougall Plastering Services** 0115 822137 FLOORING **Brightwood Flooring** 07814 919436

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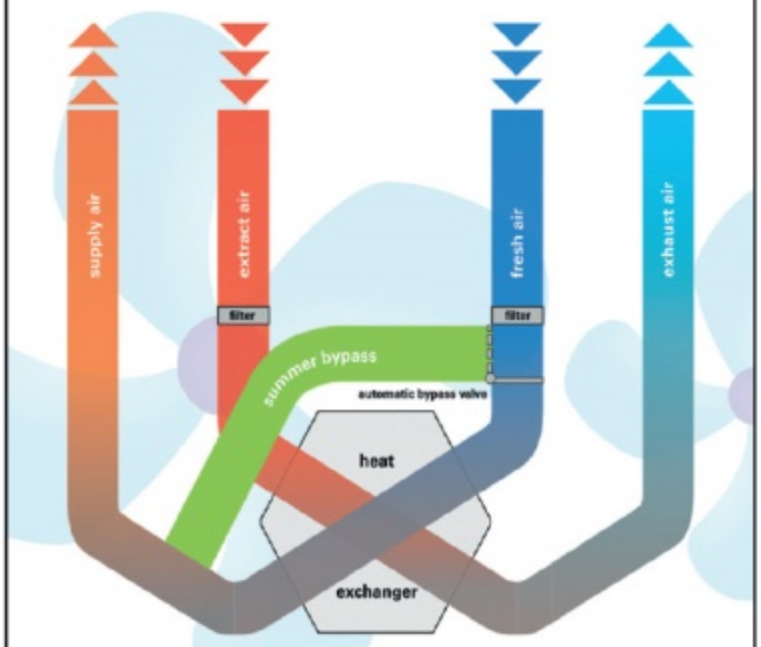

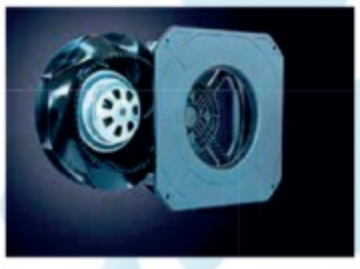

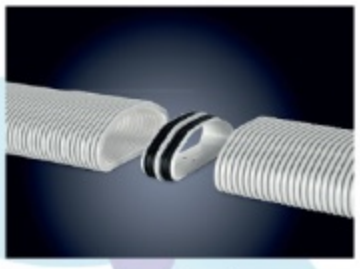

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THE GOSPEL FILE

NAMES Trevor & Judith Gospel
OCCUPATIONS Farmers
LOCATION Hexham, Northumberland
TYPE OF PROJECT Self build
STYLE Contemporary vernacular
CONSTRUCTION METHOD Masonry
PLOT SIZE 0.5 acres
LAND COST £1,615
BOUGHT 2008
HOUSE SIZE 166m²
BUILD COST £307,350
COST PER M² £1,852
TOTAL COST £308,965
BUILDING WORK COMMENCED June 2012
BUILDING WORK TOOK Seven months

Trevor and Judith Gospel were keen to trade in years of residing in inefficient, draughty houses for a low-energy home. So they built one of the first Passivhauses in the north east of England

WORDS **CAROLINE EDNIE** PHOTOS **JEREMY PHILLIPS**

Above: This stone-clad self build combines traditional and modern materials to create a highly efficient home

Trevor and Judith Gospel weren't prepared to settle for anything less than a sustainable home to live and run their farm from – and once they saw that it would be possible to achieve Passivhaus standards, they knew there was no option but to forge ahead. The couple wanted to ensure the house would be more comfortable than the bothy they lived in previously, which got so cold in the winter of 2010 that it was literally warmer in their fridge.

The Gospels, who own the 150-acre farm specialising in organic livestock, are delighted with their new super-efficient home – the first bespoke cavity wall Passivhaus to be constructed in north east

Light floods the hallway via the glazed front door and windows on the half landing

England. "It's a very comfortable house, and all the rooms have the same temperature. This is in contrast to previous properties we've owned, where we've had to squat around the Aga and even sleep with hats and coats on to stay warm," says Trevor.

The transition from cold to cosy didn't happen overnight for the Gospels, however. "When we bought the farm, there was nothing on the site – services were close, 100m away, but there was nowhere to live," says Trevor. "We sought outline planning permission for a new home, but due to it being our very first build, our inexperience meant this took us around three years to obtain."

Dreaming up a farmhouse

During the wait for outline consent, the couple lived close by and ruminated on ideas for the design of their new home. "We had previously owned a farm in rural Aberdeenshire, and in that area of Scotland the houses on smallholdings tend to be one-and-a-half storey and set low into the landscape," says Trevor. "We liked this idea, but the planning authority in Hexham identified a traditional two-storey structure as being more appropriate to the context. They also proposed traditional slate for the roof and stone wall cladding. We were happy with this suggestion as we also had a similar cottage style in mind and we didn't want to build something and board it in timber. We also knew we wanted a Passivhaus. Judith put down in her initial notes that if we were going to build a new property, then we should aim for the best we could."

Word of mouth led the couple to architect and Passivhaus specialist Mark Siddall of LEAP (Low Energy Architectural Practice), who helped take the simple sketch they had submitted

The open-plan design maximises the space available. The zones are cleverly separated using a fitted kitchen unit that also functions as a book shelf

for outline planning permission to a completely different level. "Trevor and Judith were already familiar with my work and we met up to discuss their ideas on site," says Mark. "As organic farmers they both have an appreciation of sustainability and I wanted to reflect that in the design. The basic idea was for a practical three-bedroom farmhouse."

During their initial meeting, Mark brought along a tailored version of the Passivhaus Planning Package (PHPP) software, and was able to tell Trevor and Judith how close they might be able to get to achieving this low-energy standard in their new home. "It looked like it was possible to go the whole way, despite being on a very exposed site," says Mark. That turned out to be the case; Steel Farm received official certification in February 2015 and has since won a Passivhaus Trust award.

A winning plan

Mark's main idea for the form of the building began to evolve as he drove around Northumberland looking at traditional houses. "Our Victorian forefathers were ingenious, and I asked myself: what would they have built if they had been able to use up-to-date Passivhaus technology?" he says.

The simple design of a two-storey dwelling clad in locally-quarried blonde stone cladding, with slate roof, was on the whole a pleasing proposition to the planners. "The council initially specified two chimneys, however to put in a functioning stack would have cost a lot of money, as well as compromising the Passivhaus credentials. It would also have led to higher energy use," says Mark. "But we were able to demonstrate that we were creating new skills in building the region's first masonry Passivhaus home, and they found that a persuasive argument. In the end this was a little fly in the ointment that was easily scooped out."

Keen to make the most of the surrounding views, Mark positioned the windows to maximise passive solar gain while also ensuring they'd frame specific aspects in order to help make the house more open-plan. "The kitchen/living/dining area doesn't have any artwork or photos on the wall, because they're not needed. The timber window reveals act like picture frames and allow the couple to keep an eye on their livestock," he says.

WE LEARNED...

IT TOOK US three years to gain outline planning consent. This was all because of small bureaucratic details that we weren't familiar with, such as paying particular application fees in advance.

WE MADE a big saving by choosing a glazed main door. A designer unit would have cost us £2,000, whereas the triple-glazed version that we installed was half the price at £1,000 and it increases the solar gain on that elevation.

POURING CONCRETE can be tricky. The only thing that didn't go to plan was the concrete shower tray in the wetroom, which ended up being too high. We discovered this as the floor in that room was higher at the point of entry and lower at the farthest corner. It was only an inch taller, but enough to have to rectify it.

The seven-month construction process was straightforward, despite some challenging logistics. The couple had to navigate materials across a low bridge to one side and over a steep hill at the other end before reaching the farm road, but this was all accounted for in the schedule. Trevor made the initial arrangements for the groundworks, which involved hiring a local contractor colleague to dig trenches and drains. Living nearby meant he was able to visit the site every morning to check that all was going to plan.

Where there's muck, there's mess

Practicality was built into the design from the start. "A farmhouse is different from a family home," says Mark. "There are several considerations, such as how you stop mud from dirty footwear getting into the house. We discussed different degrees of segregation to avoid this. And that's the idea behind the large garage, which not only accommodates the car but includes a muddy boot area with a workbench and sink, too. This links directly through to a utility and wetroom with a shower and WC."

A south-facing doorway functions as the formal main entrance for the Gospels' visitors and clients. This leads directly through to

Neutral wall colours and light timber joinery combine with glazed elements to help keep the house feeling bright and airy

the office space, which could be easily converted to a bedroom if accessibility becomes an issue in the future. Elsewhere on the ground floor, a free-flowing north-facing kitchen and dining zone culminates in a living area – all taking advantage of the country views. The upper storey includes a further private lounge, three bedrooms, one with ensuite, and the main family bathroom.

"The layout of the house works really well for us," says Trevor. "We always come in through the garage and take our outdoor gear off. Judith hangs her coat in the plant room as it's nice and warm. The wetroom is located behind the utility, where I can get washed up, and go straight to my office or into the kitchen."

Fabric first

Trevor and Judith are truly satisfied with their new home. "The building process went rather smoothly, including the installation of non-standard, load-bearing insulating polystyrene for the ground floor, plus the addition of 229mm of concrete above it. The masonry cavity wall construction features 300mm-thick Rockwool insulation and in the roof there's 500mm of recycled paper," says Trevor. The only setback was a very wet summer, where the contractors lost two or three days as they couldn't continue on site – but ultimately there was no change in the schedule. "The project was finished by Christmas, but we decided to move in at the end of February as some of the plaster was still drying," says Trevor.

Although the couple considered a range of renewable heating technologies, including wind turbines, their preferred option was to install an LPG boiler and harness the sun's energy with solar thermal panels. This is backed up with a mechanical ventilation and heat recovery unit (MVHR). Mark joined forces with Alan Clarke, a leading Passivhaus services engineer, to ensure that these elements would work seamlessly together. Performance-wise, they estimate the annual cost for heating, hot water and cooking in Steel Farm is £395. "Everything is functioning really well," says Trevor. "The design of the house has allowed us to benefit a lot from solar gain, particularly on the south-facing side."

Much thought also went into protecting the building from the elements. "The wind can really pick up here, so we have had to locate the main door on the west elevation to avoid it taking too much of a bashing," says Mark. There's another entrance for guests on the southern side. The couple chose to install glazed external doors, which worked out to be cost effective. "The solid front door we were looking at was £2,000, whereas our triple-glazed solid unit was half that price," says Trevor.

Now that the couple have had time to settle into their first self build home, they admit that it is also destined to be their last. "That's not because we didn't enjoy the process – it was on schedule and budget, plus we didn't dip into our contingency. Everything was costed down to the last screw," says Trevor. "There's nothing at all that we'd change about the house because we got exactly what we wanted: a super-efficient property. It's just that now we're finally living in a cosy home, we're not going anywhere!"

closer look

A low-energy home for life...

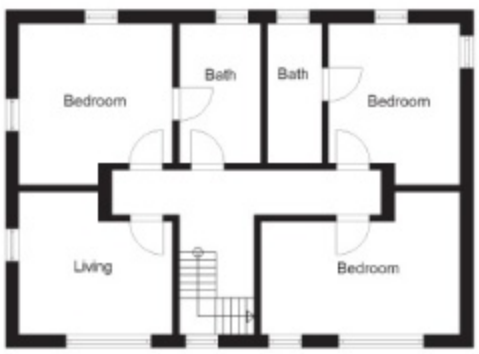

MVHR unit

Trevor and Judith were keen to future proof the farmhouse, as they want to stay here for the long term. Architect Mark Siddall paid great care and attention to how it meets their current requirements and how it can be adapted over time. Creative features include: level access into the home; an oversized garage to allow easier access to and from the car; rooms proportioned for wheelchair usage; and space provision for a lift (should it be needed). The ground floor office can be converted into a bedroom with access to a WC and shower on the same level. Switches and ironmongery are placed at a height that is accessible for wheelchair users and all key equipment, such as the boiler and the mechanical ventilation and heat recovery (MVHR) unit, is positioned to be easy to access.

Floor plans

Ground floor

First floor



TOTAL BUILD COST BREAKDOWN

Elements	Cost m²	Cost %	Total cost
Preliminaries	£155	8%	£25,730
Substructure (below DPC)	£56	3%	£9,350
Superstructure (above DPC)	£383	21%	£63,515
External doors, windows	£161	9%	£26,730
Roofs (house & garage)	£88	5%	£14,670
Internal walls and partitions	£158	9%	£26,225
First floor structure	£49	3%	£8,185
Airtightness	£28	2%	£4,695
Kitchen & joinery	£86	5%	£14,320
Finishes	£89	5%	£14,755
Bathrooms	£39	2%	£6,520
Services	£142	8%	£23,565
MVHR unit	£50	3%	£8,240
External drainage	£59	3%	£9,865
Reed bed system	£16	<1%	£2,600
Garage	£94	5%	£15,535
Landscaping & external works	£28	1%	£4,700
Fees	£170	9%	£28,150
Grand total			**£307,350**

Useful contacts

ARCHITECT AND PASSIVHAUS CONSULTANT **LEAP** 0191 375 7702 www.leap4.it/www.passivhaussecrets.co.uk AIRTIGHTNESS TESTING **Apex Acoustics** 0191 423 6272 www.apexacoustics.co.uk BOILER **Broag Remeha** 0118 978 3434 www.remeha.co.uk BUILDER'S MERCHANT **JT Dove** 01434 600062 www.jtdove.co.uk **Jewson** 0191 284 6011 www.jewson.co.uk ELECTRICIAN **K&M Electrical** 0191 234 4591 ENTRANCE DOORS, WINDOWS & MVHR **Green Building Store** 01484 461705 www.greenbuildingstore.co.uk INSULATION (CAVITY WALL & FLOOR) **Knauf** 01795 424499 www.knauf.co.uk NATURAL STONE **Alston Natural Stone** 01434 381361 www.alstonnaturalstone.com PLUMBING & SERVICES **Oakes Energy** 01429 837662 www.oakesenergy.co.uk CAVITY WALL TIES **Ancon** 0114 275 5224 www.ancon.co.uk HEATING & VENTILATION DESIGN **Alan Clarke** 01594 563356 SOLAR THERMAL PANELS **Viridian Solar** 01480 831501 www.viridiansolar.co.uk

Fast Track Self Build Success

Looking for a Self Build Plot? Are you about to make this costly mistake?

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NORTH EAST ENGLAND - With suitable land in short supply one of the greatest challenges is finding a self build plot. It's not just a case of identifying a site from an online search or peering through an estate agents window. It's a complex instinctive decision making process that's reinforced by logic.

You picture it all. Cost vs. value. Whether it's a lush garden big enough for kids to play, an area for dining and the occasional glass of wine, a cool shaded spot to shelter from the baking sun, or even the reassuring satisfaction of stepping into the warmth of your home on a bitterly cold winter's day.

These are the kinds of moments you can picture after sleuthing for land days, weeks, perhaps years on end. Consider how it feels to have your dream ripped from you. Losing your plot to an anonymous individual ready to pounce because they had an action plan, knew their budget and had the finances.

Not being prepared is a painful and costly mistake. But it need not be this way. What if you could find your plot and make a purchase within the next 90 days?

Each week this month I'm offering a limited number of Built It readers a FREE 30 Minute Hot Seat Consultation (value £100) to celebrate Steel Farm being nominated for THREE Built It Awards - - Best Value, Best Eco Home, Best Masonry Home. I will help you, create a roadmap, find a plot, get to grips with your budget and arrange finance. At end of our meeting you will have an actionable agenda you can use to progress your project. PLUS, I'll direct you to relevant people and resources.

The right plot could save you £18,000. If you go on to make intelligent use of your budget during the design phase it's possible to save a further £26,000 over the course of your mortgage, PLUS £3000 more in build costs. Minimise your exposure to financial risk during construction and save thousands. Using this entire strategy it's possible to increase the lifetime value of your investment by over £47,000.

These are the benefits Trevor and Judith Gospel, the owners of Steel Farm, enjoy every day. If they can do it, so can you.

Don't miss out. To get your FREE 30 Minute Hot Seat Consultation go to SelfBuildSecrets.co.uk AND when you resister your interest, receive a FREE bonus copy of the "Self Build Formula".
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Mark Siddall, from LEAP, is architect of Steel Farm. To further the growth of self build in North East England he created SelfBuildSecrets.co.uk.

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A welcoming *front*

Fed up with cold and damp houses, **Vivienne and Stephen Brayzier** decided to build a home that would be comfortable to live in and allow them to take advantage of green technology

WORDS & PHOTOS **ALEXANDRA PRATT**

By the time the Brayziers made up their mind to create their own home, they knew exactly how they wanted to live and who would help them achieve their goal. "The main reason we decided to self build a sustainable property was our ethics. We were living in an old cottage on a farm and spending so much on wood fuel for heating – we needed a wheelbarrow load each day," says Vivienne. "We did look at improving the properties on the farm, but they just weren't suitable," adds Stephen. Not only was the couple's home damp and mouldy, but it also didn't provide the working space artist Vivienne and electrician Stephen needed.

So, when a friend offered them a piece of her garden in the coastal village of Porthcothan Bay in north Cornwall, they jumped at the chance. Vivienne was thrilled to move back to the place where she had lived when her son, Aaron, was a child.

Following pre-application consultations with the local council, the couple submitted their plans for a live/work home with three

Photovoltaic panels provide electricity and extra shading for the bedroom and sun space

"Mark, our architect, was brilliant in designing the house to fit. It is really tucked into the landscape"

THE BRAYZIER FILE

NAMES Vivienne & Stephen Brayzier
OCCUPATIONS Artist & electrician
LOCATION Cornwall
TYPE OF PROJECT Self build
STYLE Contemporary
CONSTRUCTION METHOD Brick & block and steel
PLOT SIZE 0.5 acres
LAND COST £150,000
BOUGHT March 2010
HOUSE SIZE 234m²
BUILD COST £320,000
COST PER M² £1,368
TOTAL COST £470,000
BUILDING WORK COMMENCED October 2010
BUILDING WORK TOOK 12 months
CURRENT VALUE £800,000

bedrooms, plus an integral studio and a workshop. The previous owner of the land spoke in favour of the development and the couple's scheme faced no objections. The success of their application was helped, Vivienne believes, by the sensitivity of the proposal developed by architect Mark Innes, who is an eco specialist. "Mark was brilliant in designing the house to fit its surroundings. It really is tucked into the landscape," says Vivienne.

But the plot wasn't without its challenges. Not only is the plot located on a steep slope, but it is triangular in shape and set within both an area of outstanding natural beauty (AONB) and is a site of special scientific interest (SSSI). In addition an historic packhorse route runs across the back of the new property.

The site banks so much that the house is accessed from the most level aspect – the large rear garden – via a bridge that is connected to the first floor. The couple had to remove 2,000 tonnes of earth to create a flat foundation for the build, which equated to 21 lorry loads of spoil being taken off site. Cornwall can be a wet place, especially in winter, and protecting against rainfall became something of an obsession for Stephen, who installed comprehensive drainage, including land drains that run off into a neighbouring pond.

Fabric first approach

This handsome home presents different faces to the world. At the front it is sharp, modern and stylish, while the rear, which is south facing, makes the most of the natural light and warmth available from the sun's rays with a curtain wall of glass and 10 solar panels.

The structure of the property is an unusual mix of innovative blockwork on the ground level and highly insulated timber frame on the first floor, with some additional steel incorporated at the rear – this avoids the need for thick block piers to support all the glazing. The ground floor is shielded behind a 2.5m high retaining wall built of concrete-filled, steel reinforced pot blocks. This level is constructed from a single skin of 150mm of masonry, which spring off a course of Foamglas Perinsul HL, an insulating block made from recycled glass, blown with bubbles. It has good load-bearing strength, so can be used for footings. A high density, foam tongue and groove block system, finished with acrylic render by Stotherm, is bonded to the external walls and abuts the Perinsul. This creates a continuous insulated envelope, which eliminates structural thermal bridging. "It really works," says Stephen. "We hardly lose any heat from the building at all."

The first storey has a conventional beam and block floor, on which the timber frame sits. The walls here include 230mm of insulation made from recycled plastic bottles. On the exterior, Pavatherm recycled wood boards provide a complete wraparound for the building and overlap the lower level. The external walls have been finished using cedar cladding, which has now silvered with exposure to the elements, and traditional hung slate.

The green roof is made up of native species that Vivienne, Stephen and Aaron planted and propagated themselves in the field, which forms part of their plot. In conjunction with the mono-pitch and the low ridgeline, this ensures the roof completely disappears into the wider landscape. A network of 240mm insulated posi-joists supports the 100mm-thick layer of light soil.

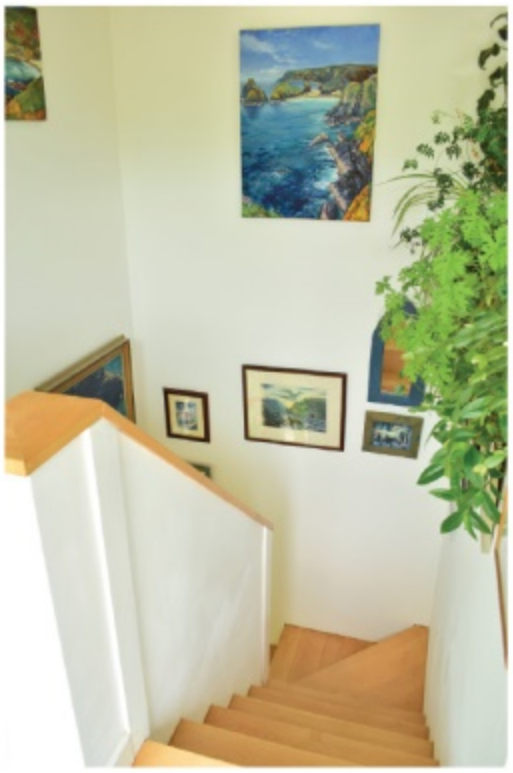
A green scheme

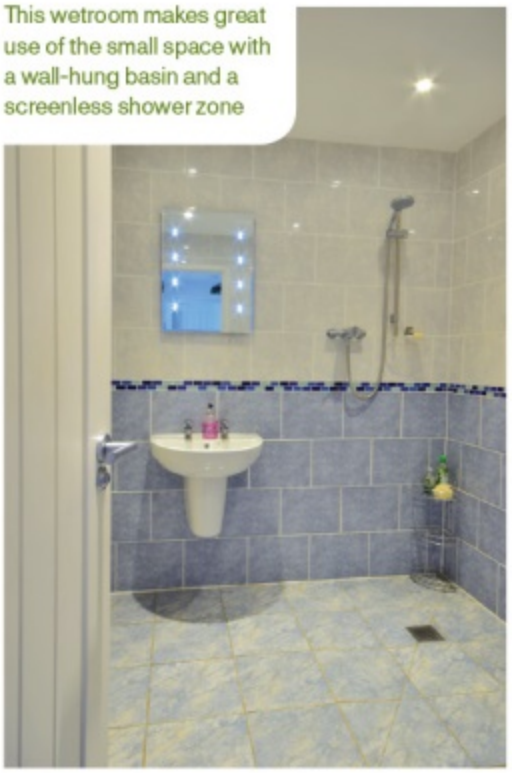
With the high levels of insulation, the curtain wall of glass and the sun space on the south-facing elevation, the Brayziers' new home feels nice and cosy and their days of barrowing in bucketfuls of fuel are long behind them. Only in the depths of winter do they use one of their main forms of heating – a Westfires 1 woodburning stove. The 4.8kw model is 84% efficient and with access to 12 acres of woodland for coppicing etc, the couple has free heating year round.

The Brayziers' focus on efficient systems goes even further, with some familiar add-ons. The first of these is an air source heat pump, which was something their plumber recommended. With a 6.5kw max output, it supplies them with sustainable hot water and warms two towel rails and a single radiator in Stephen's workshop.

This is complemented by a 2.5kW array of 10 solar photovoltaic panels, which fill all the space available on the upper edge of the roof. The units form a clever, if unconventional, type of brise soleil, shading the upper storey from the sun at the height of summer.

The Brayziers' eco home features a Westfires woodburner, which is hardly ever used due to the high levels of insulation within the property





This wetroom makes great use of the small space with a wall-hung basin and a screenless shower zone

WE LEARNED...

WE WISH that we had chosen to have a wider sun space – ours is a little too narrow so you can't have too many people in there at the same time.

YOU MUST find the right contractor – you need someone you can trust as they'll be helping to make your dream come true.

ALWAYS PLAN in a decent contingency when you budget because it's more than likely that you'll need it.

ENSURE you spend money in the right places, particularly on your insulation and glazing. This is especially important if you're self building because it's the best route to a warm, cosy home.

BE PREPARED for delays you can't control, but use the time to get some other tasks completed instead.

Although the payback the Brayziers receive for their electricity via the Feed-In-Tariff has dropped significantly since the panels were installed, it remains effective. "We still generate more energy annually than we use," says Stephen. One further addition to their range of green tech is a mechanical ventilation and heat recovery (MVHR) system. "This is necessary in an airtight building as it helps to feed in the fresh air," says Stephen.

A good collaboration

The Brayziers' self build experience has been a very positive one. That's partly down to Vivienne's experience, as she had previously completed a project back in 1989. Stephen is an electrician and Aaron now works in the building trade, too. In fact both father and son are employed by local firm Keybuild, who became the main contractors on this project. "The company was the obvious choice for this house and we really worked well together, very much like a team," says Stephen. "I knew some of the lads from when they were kids," adds Vivienne. "It was a really lovely build, it ran on music, laughter and fun. There was no pressure, nor any angst."

When it came to finishing the interior of the house, simplicity was the watchword. "We wanted to spend money on the structure of the building and the idea of green living is simple, after all," says Vivienne. The light-filled kitchen features white units from Howdens that work perfectly with the scheme, as do the main bathroom and ground floor wetroom. In fact, Vivienne and Stephen made sure they specified good quality fittings throughout, which they're very pleased with.

For the floor coverings, the couple chose a mix of hardwearing laminate and slate. The latter contributes to the thermal mass of the structure, sucking in heat that passes through the glazing on the south wall. All the internal doors are painted softwood and the windows are high performance, argon-filled double glazing. These have been cleverly positioned and set directly into the stud walls.

After eight months of living in a caravan, the Brayziers moved in just before Christmas and immediately noticed a difference in their quality of life compared to when they were in their previous cottage. The three bedrooms provide plenty of space when family visit from overseas. Having their own workzones within the building itself has also been a huge benefit to the couple. "The quirky layout suits us and it's been great getting a studio and workshop after years of having to compromise," says Stephen. "It's a much better space. We don't feel hemmed in on rainy days," adds Vivienne. "Its warm and dry, and the heating is just brilliant. In winter the house feels pleasant in the evening, even without the burner on. It's just fantastic."

closer look

Let light in...

A key design aspect of this eco house is the sun corridor on the southern elevation. This is essentially a curtain wall of glazing framed in locally-grown Douglas fir. It is set a few feet away from the external wall of the house, which itself contains a great deal of glass elements. This system creates an insulating layer of warm air, acting as a buffer to the outside while also offering a pleasant living area. The heat generated by the sun space warms up the thermal mass in the house, which is contained mainly in the ground floor blockwork. This is recycled into the zone during the night as temperatures drop, creating an even climate. The arrangement also floods the property with light, making it bright and warm year round.

Sun space

TOTAL BUILD COST BREAKDOWN

Elements	Cost m²	Cost %	Total cost
Main contractor	£833	61%	£195,000
Architect	£85	6%	£20,000
Roof	£85	6%	£20,000
Steel work & solar brackets	£64	5%	£15,000
Plumbing & heating	£43	3%	£10,000
Glazing	£51	4%	£12,000
Electrics	£51	4%	£12,000
Solar panels	£33	2%	£7,800
Plastering	£17	1%	£4,000
Structural engineer	£5	<1%	£1,200
Kitchen	£27	2%	£6,000
Slate tiles	£27	2%	£6,000
Hanging slate	£10	<1%	£2,250
Mechanical ventilation & heat recovery (MVHR) System	£8	<1%	£1,850
Woodburner & flue	£5	<1	£1,250
Misc (insurance survey, building control etc)	£24	2%	£5,650
Grand total			**£320,000**

Useful contacts

BUILDER **Keybuild** 01841 520664 www.keybuild.info DESIGN **Innes Architects** 01208 813131 www.innesarchitects.co.uk ELECTRICS **Stephen Brayzier** 0184 152 9177 JOINER **Neil Carter at Woodwise** 07977 180933 METAL FABRICATION **Mid Cornwall Metal Fabrications** 01637 879392 www.mcmf.co.uk PLUMBER **Kevin Pengelly** 01726 822961 ROOFER **Dean Canfield** 07855 797011 SOLAR ARRAY **Blue Sky Power** 01403 822701 STRUCTURAL ENGINEER **Michael Foulkes** 01503 263082 www.michaelfoulkesstructengineering.com

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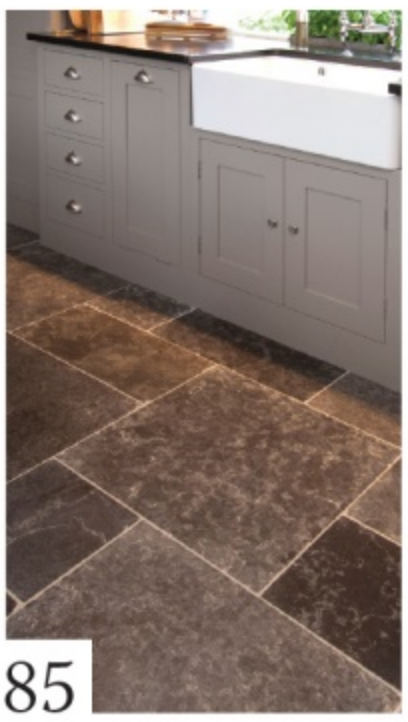
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PLUS: BATHROOM INSPIRATION (PAGE 82) & CONSUMER UNITS EXPLAINED (PAGE 89) »

THE ESSENTIAL

SELF BUILD GUIDE

Part 7 Heating your home

Creating a warm, cosy living environment that doesn't cost the earth to heat is likely to be a top priority for your project. Chris Bates explains the basics of choosing a system to suit

Getting the central heating system right is a critical consideration for many self builders; but very few actually arrive at the drawing board with a specific setup in mind. Instead, they'll usually set a goal for the kind of living environment they want to achieve.

"Most people want to create an eco-friendly house with low running costs," says Tom Allen, self build consultant at Potton. "Normally, I advise them to take a fabric first approach. Getting high levels of insulation and air tightness in place means you can reduce your heating requirement. Having a good starting point gives you more options when you come to specify the system, as it opens the door to renewables as an alternative to conventional boilers."

Initial planning

A lot rests on the early phases, when your architect or designer will look to dovetail your ambitions for your home's performance with the demands of the Standard Assessment Procedure (SAP). The SAP process sets out how the major structural elements – such as the floors, walls, roof and glazing – will work together with the primary and secondary heating to attain the required energy performance. Ultimately, this will establish whether the design is capable of passing the Building Regulations standards for CO_2 emission rates; although most self builders aim to exceed the minimum threshold.

One of the first things to check is whether your plot has access to mains gas, as this remains the most affordable option for many households. "You'll struggle to score a pass on the SAP with oil or LPG gas unless you invest in a lot of other, relatively costly upgrades to the building's fabric," says Tom. "Most people aim to use conventional gas boilers if they can – but if the supply isn't available, it makes sense to look at renewable options. As a result, air and ground source heat pumps are becoming more mainstream."

Your architect or package house provider will usually do the calculations on your behalf. "We control the design and insulation levels according to your brief, so we can ensure the house achieves the right performance," says Tom. The finished SAP report gives an overall score as well as a breakdown of the elements involved, including details such as which boiler or solar thermal panels have been specified.

Detailed design

Once the fundamentals have been set out and your design achieves at least a pass on its SAP – or more likely reaches the higher rating you're aiming for – you can start thinking about the detail of your system. In most cases, you'll need to commission a heating engineer or plumber to help you determine the particulars.

"By this stage we'll have checked the design and advised the client on the main elements of the setup, so most people won't consult their specialist tradesperson until the project starts on site – although it can be useful to engage them earlier," says Tom.

As a rule, you should ask your engineer to provide floorplans with schematics for the pipework, outlet and emitter locations clearly set out. Armed with this, you can ensure all the trades know where they stand during the first and second fix stages (the former being when the infrastructure is fitted prior to plastering; the latter when radiators, taps and other surface fittings are installed). They should also supply a detailed breakdown of the appliances and material quantities required, along with the relevant costs, plus a schedule of works and a quote for labour.

Your engineer should double-check the appropriate output for your boiler or renewable system to meet space heating and hot water requirements. This is measured in kilowatts (kW) and should be indicated in the SAP report. This is a crucial part of the specification process – if the unit is too powerful, it won't run efficiently and will cost more up front. Too small and the appliance simply won't keep up with demand. The engineer will usually also need to size a cylinder to satisfy your household's hot water requirements. The average person uses between 35 and 45 litres per day. Factor in a contingency and a family of four would likely need at least a 200 litre tank. This should be factory-insulated to retain warmth and underpin the system's efficiency.

Programmable controls are a must, whatever tech you install. As a minimum, look for a product that allows you to set timings and temperatures for weekdays and weekends. If possible, go for a seven-day programmable timer. "Depending on the size of the appliance and its heating load, the operating efficiency of a condensing boiler can be significantly enhanced by up to 13% when installed with the correct controls," says Martyn Bridges, director of marketing and technical support at Worcester, Bosch Group.

Boiler-fuelled systems

Provided it's properly specified and installed, using a modern boiler can be a cost-effective way to supply heat and hot water to a well-insulated custom home. Building Regulations require the use of condensing appliances for all new installations. These units capture and re-use latent warmth from exhaust gases to offer improved performance in comparison to older models.

There are three main types to choose from. System and regular boilers both work in tandem with a suitably-sized hot water cylinder – but the latter appliance hogs more space as it also requires a header tank in the loft. System models are a little dearer, but are quicker to install, with more components built into the box. They also deliver domestic hot water (DHW) at mains pressure. So they're a great choice for most new homes. The alternative is a combi boiler. This two-in-one appliance responds on demand to power your central heating or supply mains-pressure hot water. This means you pay only for what you use – but standard versions can only provide maximum flow through one tap or showerhead at a time, so combis tend to work best in small homes.

When it comes to prices, as a guide a typical 30kW gas system boiler for a four-bedroom house is likely to cost around £900. You can expect to pay a premium of around £500 for oil-fuelled versions. Add in pipework, emitters, flues, controls and at least 10 days labour over the course of first and second fix, and the total price can easily rise to £6,000-£10,000 for a complete central heating system.

Renewable tech

If you're aiming for an ultra-efficient build – with excellent levels of insulation and air tightness – or your plot sits off the mains gas network, then it makes sense to explore sustainable sources. The main options for domestic energy generation are biomass boilers, heat pumps (both air and ground source) and solar thermal panels.

The government's Renewable Heat Incentive (RHI) – which offers quarterly cashback payments on this kind of installation for seven years – has made these products much more affordable, with greater uptake driving lower costs for the kit. To qualify, you need to ensure both the product and the installer are approved by the Microgeneration Certification Scheme (MCS).

Large-scale domestic biomass appliances burn wood pellets, chips or logs to generate warmth for central heating and hot water. The units are fairly bulky and, in the case of pellet models, typically feature an even larger automated feeder (hopper) and store – so they're best sited in a utility, plant room or outbuilding. "These days it's

1 The Greenstar CDi Classic system boiler from Worcester, Bosch Group is available in 30kW and 35kW outputs.
2 Originally designed for retrofit applications, Nu-Heat's LoPro Max underfloor heating system is attractive for self builders, too, as its slim 22mm profile helps to maximise floor-to-ceiling heights.
3 The OctoPlus 22kW wood pellet boiler from Solar Focus includes an integral thermal store and a buffer with a dedicated coil, allowing it to be used in conjunction with solar panels.
4 Viridian Solar's Clearline V30 in-roof thermal panels, shown here as a 6m² array, are designed to discreetly preserve a roof's pitch with minimal height build up

Quick guide: Finding a heating engineer

- It's vital that you use a suitably-qualified professional to design, specify and install your central heating.
- Ask for recommendations from friends, family, fellow self builders or other experts working on your scheme.
- Failing that, go through one of the associations (see below) or try some of the more reputable online resources, such as ratedpeople.com.
- Ensure your pro is suitable qualified: those working with gas should be accredited by the Gas Safe Register, while those fitting oil appliances should be members of the Oil Firing Technical Association (OFTEC).
- If you want to take advantage of the Renewable Heat Incentive, be certain you're using someone registered with the Microgeneration Certification Scheme (MCS).

quite common for self builders to include a utility, especially if they intend to stay in the house for the long-term," says Tom. Currently, RHI payments for biomass installations are set at 7.14 pence per kilowatt-hour (p/kWh), which according to the Energy Saving Trust (EST) can result in annual cashback of up to around £2,000. The downside to this tech – besides the need to regularly fill up the fuel store and empty the ashbin – is that the total cost for the boiler, hopper and installation can easily run to £20,000 or more.

Heat pumps are clever appliances that extract and concentrate low-level warmth from their surroundings, transforming it into useful energy for the home. They work particularly well in conjunction with underfloor heating (UFH), although low-temperature radiators can also be used. Ground source versions (GSHPs) harness heat from the ground via a loop of buried pipework – which requires a decent sized garden (the loop can also be fitted into a borehole, but this increases costs). Prices can range from £11,000-£20,000+ for a typical system, with potential RHI payments (19.10p/kWh) of around £2,500-£4,000 per year, according to the Energy Saving Trust.

Air source heat pumps (ASHPs) absorb warmth from the air rather than the ground. They're cheaper and less disruptive to fit than GSHPs, but not as efficient. Nevertheless, they're proving popular due to their reliable results. "You can almost guarantee that a standard timber frame home with an air source heat pump will pass the SAP test," says Tom. Only air-to-water versions feeding into central heating qualify for the RHI, with the EST estimating annual payments of around £1,000 at 7.42p/kWh. A complete ASHP installation will cost around £7,000-£11,000.

Solar thermal panels make for an excellent partner to both boiler- and renewable-based setups. To qualify for the RHI, which pays out at 19.51 p/kWh for this tech, it must be used for hot water only. Available as either flat plates or evacuated tubes (the latter is slightly more efficient but also more expensive), these systems are best roof-mounted on south-facing elevations. They can provide most of your DHW during summer and make a significant contribution during the colder months, too. The panels must be plumbed into a twin-coil hot water cylinder, so consider investing in one of these even if you're not planning to install solar thermal immediately. The EST reckons a typical four-person household with a 4m² array will net £335 per year through the RHI, as well as £65 in fuel savings. Costs range between £3,000 and £5,000 for a standard system.

Other options

New homes are designed to be extremely airtight, which means there's very little leakage of heat via gaps in the structural fabric. In most cases, these highly-sealed buildings will need some form of mechanical ventilation to support a healthy internal environment. Mechanical ventilation and heat recovery (MVHR) goes a step further by extracting warmth from the outgoing stale air from kitchens and bathrooms and using this to pre-heat the incoming supply, which is distributed throughout the house via ducting. Systems are usually specified alongside a conventional heat source, but in some ultra-efficient homes, such as those built to Passivhaus standards, it's possible to maintain a comfortable climate using only the MVHR.

Another consideration is individual room heaters. Known as secondary heaters for the purposes of the SAP, these can have an impact on the overall performance rating. A range of options is available, from gas fires through to open hearths, but the most efficient – and for many the most visually appealing – are woodburning stoves.

Underfloor heating vs radiators

Offering comfortable, gentle warmth, underfloor heating (UFH) is a self build favourite that transforms the entire floor surface into a low-temperature heat emitter. Water-based versions can offer minimal running costs and excellent efficiency, working particularly well in tandem with renewable heat sources. For best results, wet UFH is usually installed as flexible pipework bedded in screed – although slimline versions mounted on metal plates are also available. The discreet emitter also frees up wall space for fitted furniture. The slight downside is the cost, which can easily reach about £30 per m² of heated internal space.

"Nearly all of the self builders I've dealt with have fitted UFH downstairs," says Potton's Tom Allen. "It's probably about 50:50 as to whether they use it upstairs, though, and if the basic thermal performance is there it won't really affect efficiency. Some people just like the idea of having a radiator in the bedroom – somewhere they can hang their clothes or towels to dry."

The main advantage of radiators over UFH is that they tend to offer a much faster response time; so they're able to heat a room up more quickly. This makes them a great choice in spaces where you only need short bursts of warmth, such as bedrooms and bathrooms. Style-wise, there's plenty of choice to be had, and designer versions can actually make a great contribution to your home's decor, even if they do take up wall space. Costs are low, too – a standard twin-wall steel model can be had for as little as £50-£100.

The essential guide to self build

To lead you through the process of creating a bespoke home, this 10-part series will cover everything you need to know to carry out a successful project. Here's a list of what to expect in the coming months:

1 Steps to self build success
2 Budgets & finance
3 Finding the ideal location
4 Designing your dream home
5 Timber structural systems
6 Masonry structural systems
7 Heating options
8 Project management
9 Final checks
10 Troubleshooting

CONTACTS

Easy Fit Floor Heating 0800 5420 816 www.easyfitfloorheating.co.uk **Ice Energy** 080 8145 2340 www.iceenergy.co.uk **Jotul UK** www.jotuluk.com **NIBE** 0845 095 1200 www.nibe.co.uk **Nuaire** 029 2085 8200 www.nuaire.co.uk **Nu-Heat** 01404 549770 www.nu-heat.co.uk **Solar Focus** www.solarfocus.com **Stovax** 01392 474000 www.stovax.com **Total Home Environment** 0345 260 0123 www.totalhome.co.uk **Vaillant** 0845 602 0262 www.vaillant.co.uk **Worcester, Bosch Group** 0330 123 9339 www.worcester-bosch.co.uk

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How to create a

Whether you're devising a scheme for a spacious family bathroom or you're looking to create a chic ensuite, it's important to deliver on form and function. Rebecca Foster gives her tips on how to get this zone right

For a contemporary edge, the enamelled crystal vanity units from CP Hart's Artelinea Domino range can be tailored to your exact specifications. Prices start at £832

If you're renovating or building a property from scratch, striking the right balance between practicality and aesthetics in the bathroom can be challenging, particularly with such a wide array of fittings and materials on the market. Whether a stylish, low-maintenance wetroom or an eco-friendly suite is at the top of your wish list, careful planning is vital if you want to ensure your ideas evolve into a dynamic space that suits your family's lifestyle.

The basics

Designer furniture, spacious walk-in showers and handcrafted brassware are just a few of the elements that could transform your bathroom from a basic, utilitarian space into a relaxing oasis.

But before you start fantasizing about enjoying opulent hour-long soaks, it's crucial to think practically about the space you have to work with, who will use it and how they'll be interacting with the zone. "Whether it's a small ensuite for a professional couple or a family bathroom that includes a freestanding tub and walk-in shower, it's essential to get it right from the start," says Angela Ortmann-Torbett, sales director at Kaldewei.

Online planning tools are useful for devising a well-executed layout; or if you prefer to do things the old-fashioned way, graph paper and a pencil will do the trick. When creating your scaled mock-up, don't forget to accommodate ventilation, plumbing and electrics into the scheme as well as the suite itself. Plan adequate room for each fixture and function, allowing at least 700mm of space for drying around baths and showers.

While self builders have a clean slate when it comes to deciding on the bathroom's size and configuration, renovators may be limited by the pre-existing space. "Think about what products you want in your suite and how you're going to use the floorplan effectively," advises Louisa Bradshaw from Better Bathrooms.

If you're working with a fixed layout (eg in an existing house), wall-hung toilets and sink units can help the zone seem larger. Floating cabinets allow flooring to stretch all the way to the walls, which will also create the illusion of more room. A folding shower door that doesn't encroach into the area could be another space-saving option.

The drawing board

Contemporary bathroom designs combine functionality with flair and extravagance, and an increasing number of homeowners are seizing the opportunity to install their own indulgent spa-like sanctuaries.

bespoke bathroom

Left: The clean lines of Duravit's L-Cube bathroom suite help establish a contemporary feel. Shown here in Apricot Pearl high gloss, the console (from £478) and vanity unit (from £839) are also available in jade. The Axor Starck Organic basin mixer (from £828) from Hansgrohe features an attractive rose gold finish

"There's an ever-growing demand for freestanding pieces, such as vanity units, consoles and baths that can be mixed and matched to create an eclectic and personal space," explains Leila Roberts, product development manager at Fired Earth.

Muted colours and natural, textured materials such as wood and stone are top choices for those looking to evoke a sense of luxury. Sculptural baths and walk-in showers that feature rainfall heads will establish a focal point, giving the room a plush, boutique hotel feel.

"Advances in technology are allowing consumers to add a touch of opulence. Examples include digital operating panels for baths and showers that control the temperature and inflow of water. Concealed sound systems connected by Bluetooth also help create a personal oasis," says Angela.

When it comes to flooring, it's essential to choose a material that looks good and will stand the test of time. If you're installing underfloor heating (UFH), ceramic tiles and natural slate have the best thermal conductivity. However, bear in mind that a screeded construction will expand and contract with heat, so tiles should be laid with a suitable gap around the perimeter to accommodate movement and prevent cracking. Thanks to their watertight finish, non-slip porcelain and ceramic units are a wise choice in wet zones, while smaller tiles with more grouting in between also increased grip underfoot.

Marble, granite and sandstone look spectacular, however, they come with a hefty price tag and will need to be re-sealed at regular intervals to keep moisture out. If you do opt for stone underfoot, the floor joists might need to be reinforced to take the extra weight. The same may be true when you're specifying luxury bathroom fittings, such as heavy cast-iron tubs.

Vinyl is a popular flooring option for those working to a smaller budget, and printed designs introduce a splash of colour. However, it may not be suitable for UFH, so it's best to check with your supplier and your chosen underfloor heating manufacturer.

Practical considerations

Regardless of the bathroom suite you opt for, prolonged contact with moisture can cause damp to take hold, so adequate ventilation is required to minimise condensation.

Building Regulations stipulate that bathrooms must be ventilated by either a window or an exhaust fan. Self builders working from scratch will usually position the fan on an exterior wall so that waste air is expelled directly outside the building. Where this isn't possible, the alternative is to install a ducted fan on the bathroom's ceiling. An undercut door will also help facilitate continual airflow throughout the zone.

This part of the design process is particularly important for owners of energy-efficient homes. "While well-insulated, airtight structures keep draughts out, they also have hidden threats since 'green' buildings tend to be more susceptible to trapping humid air. As such, well-maintained and efficient mechanical ventilation is

LET THERE BE LIGHT

From a bracing morning shower to a relaxing soak before bed, the bathroom moves through a multitude of moods throughout the day. A layered approach to your lighting scheme will incorporate task and ambient lamps to suit all of your needs. "Design in the lighting from the beginning, but be aware that all electrical installations need to comply with zoning regulations, especially in and around wet areas," says Yvonne Orgill, chief executive at the Bathroom Manufacturer's Association.

The mirror is one of the most important areas to introduce task lighting; family members should be able to shave or put on makeup with ease. Good accent sources will transform your bathroom from a utilitarian space into a relaxing oasis, and an eye-catching fitting in the centre of the room will soften the crisp lines of contemporary furniture.

"Illuminate storage recesses, feature walls and your centrepiece product," says Dan Cook, a designer at CP Hart. "Use several lighting circuits with individual controls to dim and brighten the room. This will help create the perfect atmosphere to suit your mood. If you have the budget, look into home automation systems that can run your lighting scheme effectively." For example, you can remove the need for a pull-cord or switch outside the room by installing motion or door sensors.

SLEEK AND STYLISH

The elegant, minimal look of a wetroom is attractive to many homeowners. Put simply, this is an open plan zone in which the shower area is a continuation of the tiled flooring. Because the concept is about freedom of movement rather than size, you don't need a large area to create one. "A wetroom can be any size or shape – you're not restricted by standard shower tray dimensions because the underfloor element that dictates the water flow to the drain can be made totally bespoke to suit the project," explains Phil Clark, managing director at On the Level.

Walk-in shower enclosures with multiple water outlets and jets are synonymous with the lavish spa-style experience. "Overhead showers may be accompanied by handsets to provide a multi-functional bathing experience, with additional body jets sometimes making an appearance as well," says Fraser Holmes, commercial manager at Simpsons. "Soak showerheads are also a great choice for recreating the spa experience. With an indulgent pressure and waterfall style flow, this will transform routine bathing."

Above: For an elegant finish in your wetroom, the Conoflat shower bay, from £755 from Kaldewei, is available in 29 tray sizes and a selection of matt shades. Right: CP Hart's Neutra range unites fine Italian craftsmanship with Chinese and Scandinavian design influences, utilising natural materials such as wood and stone to establish a luxurious effect

essential," explains Yvonne Orgill, chief executive at the Bathroom Manufacturers Association.

Once the ventilation is in hand, it's time to consider how to heat your bathroom. A designer radiator will introduce a decorative flourish, while a heated towel rail may be ideal if you're looking to save space. UFH is the smartest option if you're planning a wetroom, as the even distribution of heat will warm the room from the floor upwards. This has the added bonus of increasing the speed at which it will dry out.

"You need to consider the plumbing system carefully," says Yvonne. "This is especially important when you are refurbishing an existing bathroom. Pipework diameters can be different in older properties, which may affect the compatibility of the new products," she explains.

If your pipe system was installed before the mid-1970s, it will almost certainly be of imperial dimensions, so convertors will be needed if you're fitting a modern suite. Adaptors are available in both soldered and push-fit formats. The room will need to be adequate in terms of drainage and waste pipe sizes must comply with Part H of the Building Regulations. The drainage system should also be adequately ventilated and allow for access to clear blockages. If you're unsure whether your new bathroom complies with UK regulations, consider seeking advice from a professional installation company.

Price the job

As with any major project, budgeting is crucial when planning your bathroom. You may be tempted to go all out for a striking design, but you should always apportion your funds to the necessities first. A professional design, supply and fit service can appear costly up front, but offers the advantage of a bespoke service, often with payment options included. If you have a limited budget, you can still incorporate luxurious flourishes by mixing inexpensive sanitaryware with high quality fittings, such as a statement bath mixer or showerhead.

CONTACTS **Albion Bath Company** 01255 831605 www.albionbathco.com **Better Bathrooms** 0333 777 4777 www.betterbathrooms.co.uk **CP Hart** 0845 873 1121 www.cphart.co.uk **Fired Earth** 0113 243 0748 www.firedearth.com **Hansgrohe** 01372 465655 www.hansgrohe.co.uk **Kaldewei** 01480 498053 www.kaldewei.co.uk **On the Level** 0845 346 0846 www.onthelevel.co.uk **Simpsons** 01322 475 800 www.simpsons-enclosures.co.uk **The Bathroom Manufacturer's Association** 01782 631619 www.bathroom-association.org **Victoria Plum** 0344 804 4848 www.victoriaplum.com

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Style ideas: bathroom sanctuary

Add the finishing touches to your tranquil bathroom oasis with these must-have pieces

A decorative wall panel such as this hand-painted Botanical Garden illustration from Fired Earth adds a pop of colour to the bathroom. Featuring glazed ceramic tiles, the panel comes in two, four, 25 and 36-piece designs. **From £19.96 per 13cm x 13cm unit, firedearth.com**

Make a splash with Crosswater's waterfall fixed showerhead in chrome. **£439, crosswater.co.uk**

A low or level-access shower tray will help you re-create the seamless appeal of a wetroom. Made from acrylstone, a stone and acrylic composite, this textured white design also comes in grey and black. **From £465 for a 1,200mm x 800mm x 38mm version, simpsons-enclosures.co.uk**

Complete with its own essence holder (the white compartment) for your essential oils, the Zero adds a touch of spa-like luxury. This eye-catching aluminium radiator is made to order in a range of colours. **From £3,520, iconicradiators.co.uk**

Create a striking focal point with the timeless Copo bath. Inspired by the simple shape of a coffee cup, Copo is made from hardy iso-enamel, a high-quality insulator that is able to keep water hotter for longer. **£3,747, albionbathco.com**

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In the independent laboratory tests, AirX was also found to be quieter than its rivals, enabling it to more easily meet permitted development regulations. Being inverter driven, the low-power compressor automatically adjusts heat production for your home's heat demand. So, when the house needs more heat the compressor works harder but when it's warm outside, the compressor speed reduces to a minimum, thereby increasing your savings.

A further benefit of the AirX is that its fan is speed controlled so defrost cycles start as late as possible, but without compromising reliability. This means that no energy is wasted trying to defrost when the temperature is more than 5°C outside.

In addition to its superior efficiencies, the AirX also qualifies for the Renewable Heat Incentive (RHI). Launched in April 2014, the RHI is a financial support scheme for renewable heat. Administered by the energy regulator Ofgem, the purpose of the RHI is to support and reward households who move away from fossil fuels for heating their homes.

Working in a similar way to the Feed-in-Tariff for solar PV, owners of heat pumps will be paid according to the total heat load of the property in kilowatt hours. The amount of money you can receive under the scheme will be dependent on a number of factors such as the technology installed i.e. air or ground source heat pumps, and the deemed heat load of the property. Once in place, these tax-free, index-linked payments will be made on a quarterly basis direct to your bank account for a period of seven years.

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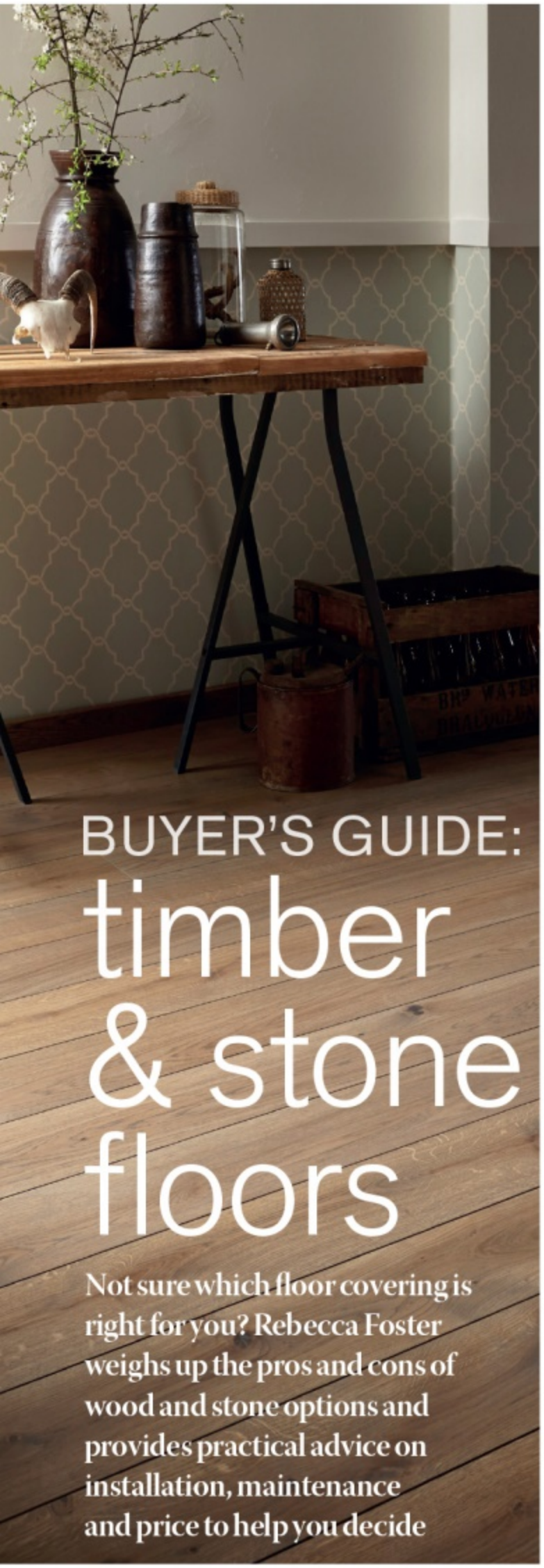


BUYER'S GUIDE: timber & stone floors

Not sure which floor covering is right for you? Rebecca Foster weighs up the pros and cons of wood and stone options and provides practical advice on installation, maintenance and price to help you decide

Nothing enhances the character of a home's interiors like stone or wood flooring. Thanks to a winning combination of hardiness and striking aesthetics, these materials end up on the wish lists of many self builders and renovators. With an abundance of finishes on offer, they can complement both traditional and contemporary properties. There's no doubt, however, that these coverings often come with hefty price tags – so before reaching for your wallet it's important to consider the practicalities.

For instance, zones that are likely to encounter heavy footfall, such as hallways and kitchens, will require highly durable flooring. A guest bedroom, meanwhile, might benefit from a plusher finish that will be softer underfoot. Furthermore, wood and stone are prized as forever floors that require minimal maintenance, but some specialist care is required if you want yours to last. Heating systems may also influence your decision, particularly if you're tempted by underfloor heating (UFH) – the perpetual self builders' favourite. With its impressive thermal mass, stone in particular can be a great partner for UFH – but some products perform better than others.

Wonderful wood

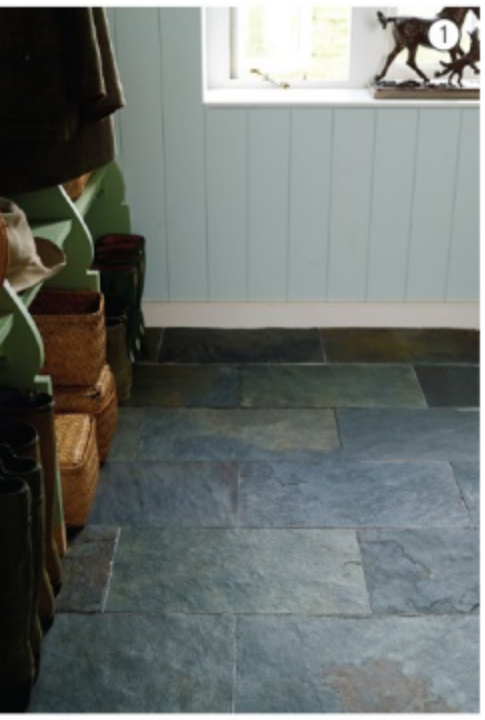
Your first instinct may be to splash out on solid boards, and for good reason – with its unique graining and profusion of natural colours, wood provides warmth and character, and can be extremely durable. "A solid board is constructed using one piece of timber, so there is scope to refurbish if the floor becomes damaged by sanding down and refinishing. In the worst cases, a section can be removed and replaced when necessary as glue is not used when fitting," explains Peter Keane, director at the Natural Wood Floor Company. Dense hardwoods such as oak, walnut and maple are recommended for high traffic areas, while rustic finishes offer natural camouflage for dirty marks and imperfections.

Depending on your favoured wood species and chosen heating method, engineered timber may be a better option for your project. These man-made boards typically comprise several layers of cross-laminated softwood or ply with a high quality strip (usually 2mm-6mm thick) of your chosen timber on top, known as the wear layer. "Engineered versions work well alongside UFH because the construction method provides greater stability," says Harvey Booth, UK & Ireland manager at Kahrs. Wood expands and contracts depending on its moisture content, so cross-lamination helps to minimise this effect. This also explains why engineered floors tend to be a better fit in damp zones, such as bathrooms, as they can cope better with increased moisture levels.

Most multi-layered designs come pre-finished, which removes the need for oiling, lacquering and waxing. They're usually laid as a floating system over an underlay, while solid timber planks are typically glued or nailed to the subfloor. Click-fit versions are a big hit with DIYers as they're easy to lay, offering the opportunity to save money on professional installation.

While everyday wear and tear can actually improve the character of timber, re-sanding and finishing is nevertheless recommended every seven years for solid boards and every 10 years for engineered products.

Left: The Woodland collection of European oak comes in a selection of warm hues and is available as solid or engineered boards. **Solid Woodland oak in autumn leaf, £79.94 per m², or engineered oak, £69.95 per m², Fired Earth**



1 Add textural appeal to your home's interiors with this riven slate flooring. **Classic grey riven, from £13.56 per m², Mandarin Stone.** **2** If you're tempted to install solid timber flooring, walnut offers an opulent alternative to oak. The knots, bevelled edge and satin lacquer finish imbue the planks with a characterful appeal. **Walnut Vermont, £112.80 per m², Kahrs.** **3** This tumbled limestone is ideal for use in the kitchen as the dark shade of the tiles will hide dust and dirt between cleans. **Imperial limestone, from £62 per m², Indigenous.** **4** Brighten up your living space with this engineered timber floor, which features a 3mm oak top layer. **Castello whitewashed oak matt, £58.99 per m², Quick-Step**

QUICK GUIDE: TYPES OF NATURAL STONE

- Highly versatile for indoor and outdoor use, slate has a rustic allure and the natural undulations on its surface improve slip resistance.
- Marble brings classic elegance, but a polished finish will be unsuitable for the bathroom as it may be slippery when wet. Tumbled marble tiles and mosaics could be a better choice for this type of zone.
- The ivory and golden brown hues of limestone can offer a characterful, understated effect; although this more porous stone may be unsuitable for use in a damp bathroom atmosphere.
- Travertine is considered a wallet-friendly alternative to limestone.
- If you have cash to splash then granite is a luxurious option and second only to diamond in terms of its resistance to scratches and chips.

The latter can usually only be treated two or three times, depending on the thickness of the wood veneer. Check your manufacturer's advice on this point.

In terms of cost, you can expect to pay upwards of £20 per m^2 for engineered flooring and at least £30 per m^2 for solid boards. High quality options or products in exotic species may set you back as much as £100 per m^2. If you're working to a smaller budget, upmarket laminates provide a cost-effective alternative to timber and are improving in terms of their practicality and aesthetics.

Sensational stone

These robust floors are tried and trusted coverings that can be used to infuse the home with timeless elegance. The wide assortment of natural hues and finishes available gives self builders freedom to select a hard-wearing material to complement a range of home interiors. A well-sealed stone floor will resist damp and stains, and the material's innate thermal qualities make it an ideal partner for UFH.

As with any big ticket item, it's important to carefully consider which material will suit your house best, and rooms with heavy foot traffic need a durable product that will endure concentrated wear. Stones with low porosity, such as slate, are also a smart choice for people who want to continue their flooring through to the garden. "Spaces such as bathrooms and outdoor areas will also need stone with increased slip resistance," says Becky Birch from Mrs Stone Store.

Correct installation is vital so many homeowners opt for professional fitting. One major consideration is the strength of the subfloor. Before investing in stone flooring, it's important that structural implications are also taken into account. "Ensure the floor your stone is to be fixed on is suitably rigid and adequately load-bearing," says Louisa Morgan from Mandarin Stone. Timber joists may need strengthening and a flexible adhesive may be required to prevent tiles from cracking.

"Providing products are sealed correctly after installation, minimal maintenance is needed," says Joss Thomas, managing director at Indigenous. A high quality sealant impregnates the stone and provides a protective layer that helps prevent staining and repels moisture. Once applied, only general maintenance such as regular sweeping and mopping is required. On average, a natural stone floor will need resealing every seven to 10 years depending on the type, finish and where it is laid.

Expect to pay anything in the region of £35 to £100 per m^2 for this type of floor, with higher quality options reaching as much as £150 per m^2. The price depends on where the raw material is quarried, as well as its thickness, texture, quality of colour and individual characteristics. Cheaper alternatives include terracotta, ceramic and porcelain tiles – but you'll miss out on the characterful variations of natural stone.

CONTACTS **Indigenous** 01993 824200 www.indigenous.co.uk **Kahrs** 023 9245 3045 www.kahrs.com **Mandarin Stone** 01600 715444 www.mandarinstone.com **Mrs Stone Store** 01283 730388 www.mrs-stone-store.com **Natural Wood Floor Company** 020 8871 9771 www.naturalwoodfloor.co.uk **Quick-Step** 0844 811 8287 www.quick-step.co.uk

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materials spotlight:

Consumer units

Formerly known as fuse boxes, these essential hubs safely control electricity distribution throughout the home

The consumer unit (CU) acts as a junction diverting electricity to different circuits around the home. It's also a key safety measure, ready to shut down live wiring the instant a fault is detected in order to reduce the risk of fire or electrocution. If you're building a new home, your mains electricity connection will feed into the house and be hooked up to the consumer unit, where a meter will monitor your usage. Aim to fit the CU in an easy-to-reach but out-of-sight location. Many self builders position the unit in a plant room or utility area – although in existing properties it's often found in the hallway or under the stairs.

What are the main elements of the consumer unit?

The main switch, also known as the isolator, controls the entire board. When turned off this device separates the incoming live and incoming neutral current – effectively cutting off the electrical supply completely. So it can be operated to deactivate the power when major electrical improvements take place, allowing you to ensure the working area is safe.

Miniature circuit breakers (MCBs) are each allocated an electrical circuit to monitor and protect. They will detect faults such as loose wires and overloads. Whether they're looking after your ground floor sockets or the upper storey lighting, each MCB will have a maximum load capacity and rating. They are designed to trip (interrupt the current flow) when this level is exceeded. This can occur if you connect and run too many high-consumption electrical appliances at the same time, for instance. To avoid circuit overloads, electricians will usually connect larger items such as showers, boilers and cookers to their own 32, 40 or 45 amp version, lighting circuits to a 6 amp MCB and sockets to a 16 amp or 32 amp rated supply. For minor works, such as changing a switch, the circuit's MCB can be turned off so the job can proceed safely.

A residual current device (RCD) is a safety switch that cuts off the electricity to the circuits it monitors if it identifies a dangerous situation, such as an imbalance between the live and neutral currents. This indicates an earth fault (where the electricity flows down an unintended path, such as through a person who has touched a live part) and will trip the breaker. Most new or rewired circuits should be fitted with RCDs – with the notable exception of heavy-load items that need their own supply, such as cookers. New consumer units tend to be provided with at least two RCDs out of the box, each of which acts across several MCB circuits.

An RCD test button is usually marked with a 'T'. Once you push this button, it triggers the RCD to shut off the electricity. If this action does not trip the circuits then the RCD is faulty and you should contact an electrician. Manufacturers advise you to test your system every three months.

A residual current breaker with overcurrent (RCBO) is a combination MCB and RCD. It's designed to monitor earth leakage and overload protection in one compact unit.

Note that should one of your MCBs or RCDs trip, you should be able to turn it back on. If it immediately switches off again, there could be a serious fault and you may need to consult an electrician.

How can I specify the right unit?

Your electrician will help you select the most suitable product, but it's often a good idea to select an oversized consumer unit. This will give you spare capacity for any changes, such as supplying future extensions, garden buildings or garage conversions.

You should not usually need more than one CU, however, multiple devices might be required if you want to supply a separate building with high demand, such as a pool house or workshop, in addition to the main dwelling. If you max out your existing

board you can add another to increase the number of available circuit slots. However, be careful that you don't try to draw more power than your supply, or everything will just trip out. Heavy users with multiple power-intensive circuits can pay their power company to upgrade a standard single-phase, 100 amp supply to three-phase.

How much does it cost?

The consumer unit itself will cost anywhere between £50 and £100, RCDs/RCBOs £20-£40 each and MCBs £4-£5 each. An electrician can charge anything from £350 for parts and labour, and the works can take between two or three hours to complete – plus any time required for running any new cables.

Left: Available from Screwfix, the Wylex Hi Integrity Dual RCD Board and Devices (£75) features two RCDs and an RCBO

CONTACTS

Electrical Safety First 020 3463 5100 www.electricalsafetyfirst.org.uk **Screwfix** 01935 385685 www.screwfix.co.uk **Toolstation** 080 8100 7211 www.toolstation.com **Wickes** 0330 123 4123 www.wickes.co.uk

Choosing rainwater goods

Find out how to specify a robust guttering system that will suit the style of your home and protect it from the elements

Above: This PVCu product from Brett Martin replicates the aesthetics of traditional cast iron. Prices start from £1.60 per m of guttering in the 112mm Roundstyle profile. Right: The initial sheen of copper rainwater goods will mature to a patinated finish over time. Coppa Gutta's range starts from £16 per m for the profiled sheets

It may not be the most glamorous part of your project, but guttering has a vital practical role to play in safeguarding your property's structural fabric. What's more, in some cases it can make a surprising difference to a building's aesthetic. Here's how you can choose products to complement your scheme.

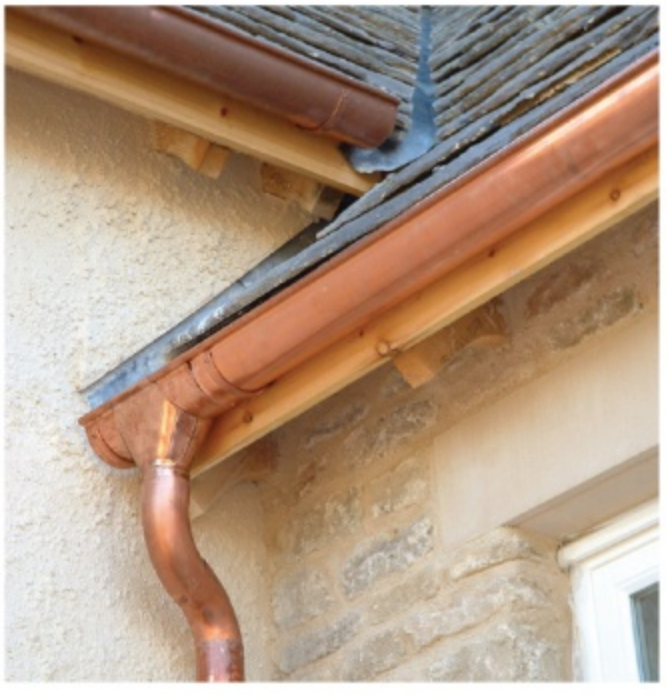
Planning the setup

Your home's gutters and downpipes must be designed to offer sufficient capacity to deal with local levels of precipitation – which should be discharged well away from the house. Patterns differ across the UK, but generally systems should be able to accommodate a heavy rainfall intensity of 75mm of standing water per hour. This equates to 0.021 litres per second (l/s) per m^2 of roof area – and this standard rainfall factor can be used to work out the overall flow rate your rainwater system needs to be capable of dealing with.

Part H of the Building Regulations offers some general advice on specification for different roof sizes and pitches, but your designer, roofer or supplier will be able to offer more specific guidance. One way to calculate the required capacity is to multiply what's known as the effective roof area (ERA) by 0.021. You can calculate the ERA by adding the width of a given section of roof to half of its height, and multiplying this figure by the length of the structure.

For example, if a roof section is 8m long, 3.5m wide and 2.5m high, the calculation would be: (3.5 + 2.5/2) x 8, which gives an ERA of 38m^2. Multiplying this figure by the rainfall factor of 0.021 yields a required flow rate capacity for the rainwater system of just under 0.8l/s. This result will inform elements such as the guttering profile as well as the size, location and number of downpipes required for your project. Things get a little trickier with complex roofscapes – for example, your designer may need to account for the impact of dormer roofs, porches and the like on flow rates.

The gutters should be laid at a slight fall towards the nearest outlet. Generally, downpipes are best located near the corners of the building to minimise their visual impact – but this does mean they



end up dealing with a high flow rate from the gutter, so a more central position is sometimes necessary. They need to discharge to a suitable soakaway, watercourse or sewer.

If you're building a new home, you'll need to agree the aesthetics of your rainwater drainage with the local planning office. For extensions and renovations, the work is generally considered permitted development (provided you match materials). The main exceptions are listed buildings and houses in conservation areas, where you may need specific consent.

Main options

Eaves guttering is the classic format, where the collecting conduits line the bottom edge of a pitched roof. It's available in a range of metals and plastics (see the 'materials' section for more on this) and is usually surface-mounted to the fascia boards using brackets. The downpipes are fixed to the walls in the same way. The major advantage of this setup is that it's relatively easy to install and maintain, with a vast array of standard products available. However, you do need to select your materials carefully to ensure that they complement your property's architecture.

This type of guttering is available in a range of profiles, each offering its own advantages. Half-round types are a common choice, featuring a semi-circular section delivering sufficient capacity for most UK homes at an affordable price. Where this shallow profile doesn't suit, deep-flow versions have a similar aesthetic and can handle more water – but are pricier.

Square (or box) sections can look great in contemporary settings, as their sleek lines tend to blend in well. They provide great flow rates and the shape is ultra-resistant to twisting or sagging – but can require more regular clearing out than half-round types. At the other end of the spectrum, the ogee profile (which features a bevelled front that looks like an elongated 'S') is a classic choice for heritage-style homes.

The alternative to eaves treatments is to use a hidden system (sometimes known as secret or box guttering). With this setup the rainwater goods appear integrated into the building, and given the right detailing it can be used on both flat and pitched roofs.

Above: Stainless steel guttering, such as this version from Yeoman Rainguard, is highly resistant to corrosion, making it a robust choice for homes subject to the worst of the British weather

The traditional option is to hide the conduits behind parapet walls, which rise above the eaves. An overflow must be planned into the design in case the outlet becomes blocked. Modern versions allow for a near-seamless, in-roof effect through the use of versatile materials such as metal or glass reinforced plastic. In both cases, careful attention to detail is required to ensure access for repairs and maintenance.

Alutec's aluminium rainwater goods are available in a range of styles, including the traditional 113mm system shown here. Choose from 21 standard colours or opt for a bespoke hue

Materials

Plastic clip-and-fit guttering is the go-to choice for many projects. It's inexpensive, easy to fit, low-maintenance and available in a wide range of colours – with white, grey, brown and black being the standard choices for PVCu.

The main drawback is that it can suffer from greater thermal expansion and contraction than other materials, although there shouldn't be any issue if you choose a high-quality product and have it correctly installed (good lapping and jointing is crucial). Get it right and you can expect the guttering to last around 30 years.

Glass-reinforced plastic (GRP) pairs the low-maintenance qualities of

RE-USING RAINWATER

If you're undertaking a major project, it may make sense to install a rainwater harvesting (RWH) system alongside your guttering. These products repurpose precipitation for use around the home – and can offer savings of up to 50% on mains consumption.

The harvesting kits usually include a tank, filtration system and a pump to send the water where it's needed (a direct setup). Indirect versions require a header tank in the loft. The storage vessel, which is usually buried underground, is fed from the main house's downpipes. The water isn't potable (it's not refined enough for drinking) but can be used for purposes such as irrigating the garden, flushing toilets and washing clothes.

A typical RWH system costs between £2,000-£3,000, with the price difference largely coming down to the size of tank needed to fulfil your family's requirements.

Above: Downpipe shoes, such as this PVCu version from Brett Martin, can be used to direct water flow into drains

PVCu with a longer lifespan and greater design opportunities. It can be moulded to replicate more expensive systems, such as cast-iron, and is therefore gaining traction in the conservation market for use on period properties. GRP can also be formed into linings for box gutters and valleys.

Aluminium and galvanised steel are the most popular metal options. The former is available either in its natural state (which will oxidise to form a protective finish) or powder-coated in both contemporary and heritage styles. Aluminium products have a typical service life of over 40 years, with galvanised steel not far behind. Stainless versions are also available, and sometimes preferred for homes in coastal locations or otherwise exposed environments. Some lightweight metal systems come with rubberised seals that allow them to rival plastic for ease of installation.

Cast-iron offers an authentic traditional appearance that's difficult to match, and can last for decades if properly cared for. However, the upkeep requirements are significant – after the factory finish has worn through, the guttering will need recoating inside and out every five years or so. Installation is also more involved, usually requiring joints to be sealed with silicone (although Alumasc offers a version that uses hydrostatic strips) and bolted.

If you're after a highly individual look, consider switching to zinc or copper – both of which develop a beautiful, highly-durable patina as they weather over time. These are ultra-low maintenance options with lifespans in excess of 50 years, but they're premium products and do come with price tags to match.

Build It readers the Wheelers opted for an invisible guttering system for their self build project on the Cornish coast. This kind of setup usually requires bespoke design and installation

ALEX PRATT

JARGON BUSTER

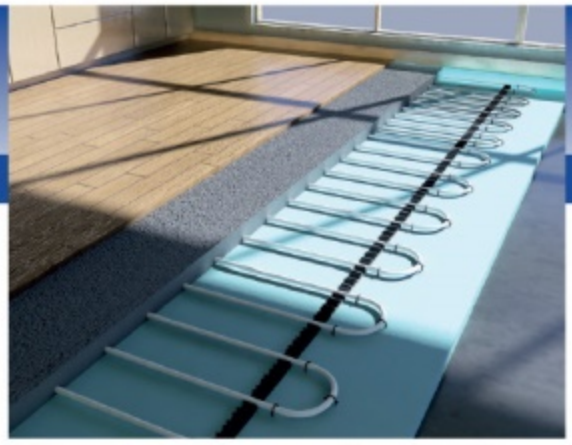
Downpipe The conduit carrying rainwater from the gutter to the drain or soakaway.
Elbow fittings Attached to the downspout to change the direction, usually as a 'shoe' to reach ground level drains.
Fascia The flat board nailed to the end of the roof's rafters. It provides a protective and decorative finish, as well as a fixing point for guttering.
Flashing A strip of waterproofing – usually either metal or GRP – that's applied at key junctions in a roof, such as at valleys (the low points where two slopes join) or around chimneys.
Gutter The main trough fixed along the underside of the eaves to catch rainwater.
Hanger The fastener that's used to hang gutters to the fascia.
Offset bend Can be fitted to connect the running outlet to the downpipe where required.
Running outlet A pre-formed 'T' section of gutter that outputs to the downpipe.
Stop-end A watertight cap that's applied to the end of a run of guttering.
Strap bracket used to fix downpipes to the wall.

Costs

Your outlay will vary widely depending on the material you choose. While a complete PVCu system (including fittings) can start from as little as £10 per m of guttering, standard metals such as steel and aluminium will cost upwards of £15 per m and GRP around £30 per m. Zinc and copper prices fluctuate according to the international markets, but tend to be in the same ballpark as cast-iron at around £40+ per m. You'll need to account for installation on top, which will typically start from around £600 for a clip-fit installation on a three-bedroom home with easy access.

CONTACTS

Alumasc Rainwater 01744 648400 www.alumascrainwater.co.uk **Alutec** 01234 359438 www.marleyalutec.co.uk **Aquatite by Tata Steel** 01724 405060 www.aquatite.co.uk **Brett Martin** 01246 280000 www.brettmartin.com **Coppa Gutta** 01489 797774 www.coppagutta.co.uk **Kayflow** 01827 317269 www.kayflow.co.uk **Lindab** 0121 585 2780 www.lindab.co.uk **Rainclear Systems** 0800 644 4426 www.rainclear.co.uk **Swish Building Products** 01827 317238 www.swishbp.co.uk **VMZinc** 01992 822288 www.vmzinc.co.uk **Yeoman Rainguard** 0113 2795854 www.rainguard.co.uk



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Retrofitting underfloor heating

Slim-fit setups are making it easier to incorporate energy efficient underfloor heating in existing properties, says Ifeoluwa Adedeji

Key to creating a comfortable home with low running costs is having a practical heating system that provides you with the opportunity to zone and control your scheme.

Gone are the days when radiators were considered the primary source of warmth; now you can choose from a variety of emitters, which will intelligently respond to your household's needs. One of the most attractive options is underfloor heating (UFH), which has been a self build favourite for several years. Many renovators are also keen to install the hidden system, which offers an even distribution of heat, alongside traditional radiators. What's more, it can be used with most types of floors and coverings, throughout the home, on one level only or in individual rooms.

The issue for renovators is that traditional UFH is extremely thick – so it raises floor heights significantly, which can have an effect on door thresholds and other internal elements. But a new generation of water-based and electric systems is changing the landscape for retrofit projects.

How does it work?

Underfloor heating covers the entire floor, servicing a larger zone than radiators would and offering a uniform spread of warmth. The system is available in a wet (central heating) or dry (electric) format.

Also known as hydronic systems, wet types work by circulating warm water through a series of continuous pipe loops, usually made from cross-linked polyethylene, fitted underneath your chosen flooring. This creates a large radiant surface, which will heat your home from the floor upwards. It can easily be connected to an existing boiler or combined with renewables, such as heat pumps, and requires a low flow temperature, which aids efficiency.

The electric version is made up of a network of wired heating elements. It's commonly sold as either mats that can be rolled out in large areas, or individual wires that you can custom-install to achieve better coverage in slightly trickier-shaped zones.

Above: Schluter's Ditra-Heat-E setup is an electric underfloor system that's easy to install, making it perfect for home renovation projects

Above: Available from Underfloor Heating Supply, the Reliance control system is a sleek touchscreen seven-day programmer that can be recessed into the wall. Prices start from £40

The pipes or cables are usually laid beneath a layer of screed and floor insulation – and it's the resulting build-up of height that can sometimes be an obstacle in retrofit scenarios.

Electric installations have historically been the go-to system for renovations, because the wires are fairly thin so the floor height should not be dramatically

The Floortec wet system uses highly stable, solvent-free Purmo PEXpipe to guarantee durability for years to come

increased. Keen DIYers also find it easier and cheaper to fit. Prices start from approximately £20 per m^2 for the mats or £16 per m^2 for the loose cables (plus installation), as opposed to around £30 per m^2 for a hydro system. They are, however, dearer to run as they operate at a higher output than water-based versions. As a result, electric UFH tends to be reserved for small-scale installations, such as in bathrooms or modest extensions.

Below: The LoPro Max system from Nu-Heat offers a high heat output in a thin profile, and uses a self-levelling screed that dries in just 72 hours

Manufacturers are constantly improving wet UFH technology to help make it more suitable more for retrofit installations. "Depending on your project, a number of low profile systems might work for you," says Heather Oliver, Product Development Manager at Nu-Heat. "If time is of the essence you should consider a dry-fit hydronic system, as you won't have to wait for a thick screed to cure, so you can fit your chosen floor covering immediately. If you need a higher heat output and have a perfectly level surface and a build-up of just 22mm, look at our LoPro Max system. This uses a fast-drying, self-levelling screed so that the floor is ready for your chosen covering after just 72 hours."

A Robben Systems' water-based UFH setup has been installed with the screed poured and levelled on top. The pipework runs off a manifold (shown here in a recess) where the cold and hot feeds mix

Warmup's Total-16 low profile setup has also been specifically designed to meet the needs of renovators. With this setup, lightweight modular boards are applied on top of insulation. The pipework is inserted into the boards, with no need for screed – so your floor finish can be fitted directly on top. As the name suggests, this option offers a total height build up of 16mm.

Things to consider

If you are renovating your property or would like to add underfloor heating to a new extension, it's important to scrutinise which type of setup will best suit the space. Working at lower flow temperatures means that a wet underfloor heating system may take longer to heat a room, so it is vital to combine it with an advanced programmable timer. Pairing your UFH with thermostats will help establish controllable heat, and you can make each room a separate zone varying its output according to your location within the house and the time of day. Advanced controls offer features such as weather compensation, too, which can improve efficiency.

Water-based underfloor heating works particularly well with heat pumps, which operate efficiently at a low temperature of 35°C-45°C, whereas a traditional boiler system typically heats water at 60°C. So the former's output is conveniently aligned to the required level for the UFH to function well (around 30°C-35°C). If you want to combine electric UFH with renewable tech, the strongest option will be solar photovoltaic (PV) panels.

Remember to choose your flooring carefully as some coverings are known to work better with this system than others. For example, engineered wooden boards will be less likely to warp than solid timber, while stone makes sense as it's a great conductor of heat. If you want the feeling of soft carpet underfoot, ensure the tog rating of the underlay and carpet combined is no higher than 2.5 – otherwise it will be too insulating, reducing the warmth that is available to the room.

CONTACTS

Begetube 01463 246600 www.begetube.co.uk **Nu-Heat** 01404 549770 www.nu-heat.co.uk **JG Speedfit** 01895 449233 www.speedfit.co.uk **Myson** 0845 4023434 www.myson.co.uk **Purmo** 0845 070 1090 www.purmo.com **Robbens Systems** 01424 851111 www.underfloorheating.co.uk **The Underfloor Heating Store** 0844 077 3396 www.theunderfloorheatingstore.com **Underfloor Heating Supply** 01302 802122 www.underfloorheatingsupply.co.uk **Warmup** 0845 345 2288 www.warmup.co.uk **Wunda** 0800 5420 816 www.wundagroup.com

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THE Build It HOUSE

PROJECT: Four-bedroom family home
CONSTRUCTION METHOD: Timber frame
NUMBER OF STOREYS: Two (with potential for a loft conversion)
HOUSE SIZE: 155m² (internal floorspace)
BUILD BUDGET: £240,000
COST PER M²: £1,548

12: Staircase, kitchen & joinery

Work on decorating our model home continues, as this month **Tim Doherty** gets to grips with what's involved in specifying the internal joinery

We're nearing the end of our virtual project, with the next two articles in the series focusing on the interior fit-out. This is a stage where many self builders are sorely tested; unless you've set aside a contingency fund, you may begin to feel the pinch and that can make it difficult to attain the level of quality you want.

Conversely, it's also a time when you might consider increasing the specification, with items such as bespoke kitchens and designer staircases in rare solid hardwoods suddenly infinitely more appealing. If these are part of the original plan, then you should absolutely make the effort to retain them – but upgrading to such products during the build phase can double or even treble your spend. For *The Build It House*, we're aiming to stick firmly to our original principles and are therefore opting for good quality, attractive products that also offer value for money – such as composite doors finished in natural wood veneers.

Kitchen

To keep costs in check while still achieving a robust, attractive result, this space will be kitted out with a suite of standard melamine carcasses that will be finished with Shaker-style laminate doors. This type of budget-friendly setup is readily available from a range of reputable national manufacturers, all of whom offer a vast selection of sizes and configurations – and the quality can be very good.

The plans for this kitchen show there will be 11.4m of base units (which typically cost around £410 per m), along with 5m of wall units (from £165 per m). These are just guide prices: simple sink bases will be significantly cheaper, while drawer packs will be the most expensive. To ensure we stay on budget, we'll be specifying 40mm-thick worksurfaces in square-edged laminated chipboard, which will be jointed with special strips. The sink and hob will be inset, while the island unit will feature an overhang towards the dining room to allow for a small breakfast bar.

AN OVERVIEW OF THE BUILD IT HOUSE

This virtual project intends to provide a reliable model that self builders can refer back to when planning their own home. We've based the project around a young family, but it's flexible enough to be shaped to other schemes. The accompanying articles are an in-depth guide to the processes and materials that would go into our benchmark home.

We've set a construction budget of £240,000 for *The Build It House* (excluding design fees and preliminaries) on the basis that our self builders have decided to project manage the scheme themselves. This means they'll be hiring in subcontractors, as well as dealing with certain suppliers directly. Some trades will bring their own materials, while some products will be specifically obtained on a supply-and-fit basis – but our self builders will not undertake any of the physical site work themselves. For advice on how different management options affect costs, visit www.self-build.co.uk/which-building-route.

Our budget exercise works on gross internal area (GIA) rather than gross external area (GEA). It's important to clarify this with suppliers, as the difference between the two can be quite staggering. Our two-storey model house, for example, has a GIA of 155m² (the figure we'll be using for costing purposes). But the GEA would be at least 180m² after accounting for the thickness of the walls. The GIA rate for *The Build It House* works out at £1,548 per m², while the GEA rate is £1,333 per m². It's always wise to include a contingency to cope with unforeseen issues or delays, normally around 10%-15% (so our maximum budget for the project is £276,000).

The Build It House **was developed by the magazine's editorial team and designed by Opinder Liddar from Lapd Architects. Log on to www.lapdarchitects.co.uk for more about this award-winning practice.**

What is *The Build It House*?

This virtual project is intended as a benchmark to help you better understand the self build process and get a realistic grip on what it costs to create your own home

Good-quality 40mm-thick laminates can look great, but the worksurface does offer an easy opportunity for upgrading the aesthetic. Materials such as granite or composite stone typically cost around £300-£400 per m, which would treble our budget for this part of the work. Another area you might consider increasing the spec is for the doors: natural wood versions are only marginally more expensive than the laminates we plan to use.

As we're ordering pre-assembled carcasses, installation will be fairly quick; but don't underestimate how long it can take. We expect around seven working days to fit our units, worktops and appliances – but this may rise considerably for more complicated setups or bespoke designs.

Above: The Milbourne Chalk range from Second Nature (www.sncollection.co.uk) features doors with an over-painted foil finish with a subtle grained effect, creating the impression of real timber. Full kitchens start from £11,000

Above: Utility rooms are multi-functional spaces, often hosting the noisier appliances while also supplementing the way families interact with the kitchen. This zone contains household items in addition to a Danesmoor oil-fired boiler from Worcester, Bosch Group (www.worcester-bosch.co.uk)

Utility

This zone houses our consumer unit (CU), boiler and other major plant – but will also provide some extra working space and a boot room-style link between house and garden. It will broadly follow the same specification as the main kitchen. We're allowing for one sink base unit with bowl and tap, two drawer packs and a 600mm space for a washing machine. To ensure clear access to the boiler and CU, there won't be any wall cabinets – although these could be added at a later date if required.

Given how compact these zones are, it often makes sense to opt for outward-opening doors, as this can free up wall space for coat racks and similar accessories. Some

KITCHEN & UTILITY

Building element	Quantity	Cost	Cost per m² (of floorplan)
Kitchen			
Base & wall units	11.4m	£6,078	
Worktops	11.4m	£1,231	
Steel sink & mixer tap	1	£431	
Appliances (oven, hob, fan, fridge-freezer and dishwasher)		£2,400	
Installation (seven days)		£1,400	
Subtotal for kitchen		**£11,540**	**£74.45**
Utility			
Base & wall units	2.4m	£743	
Worktops	2.4m	£259	
Steel sink & mixer tap	1	£431	
Washing machine	1	£300	
Installation (one day)		£200	
Subtotal for utility		**£1,933**	**£12.47**
Total for kitchen & utility		**£13,473**	**£86.92**

Above: Simple staircases, such as this version by Econoloft (www.econoloft.co.uk) leading up to a converted attic, can suit both traditional and contemporary-style homes

homeowners will include retractable laundry airers in the utility.

Staircase

Our model house's flight has been designed as a double winder, which means it turns through 180° as it rises using tapered steps, rather than a quarter-turn or half-turn landing. This arrangement makes economical use of space, while still creating an impressive feature. Our virtual self builders may want to kit the loft out as a habitable room at some point in the future. The location and design of the staircase means there's scope to cost-effectively extend it into the attic without much structural alteration.

In terms of the specification, our flight will be supplied as a standard kit. The treads, risers, strings (side pieces) and other major materials will all be of softwood and will be pre-cut for easy assembly on site. The same manufacturer will provide the central newel post (a supporting pillar), while half newels will be fitted at the bottom and top, with the handrail and balusters running in between. Building Regulations require that each step is consistent in terms of its height (rise) and depth (going). So in order to produce the correct components, the supplier just needs to know the total rise (height from ground to first floor), plus the overall width and depth of the stairwell. It's critical that floor thicknesses, including the structural deck and covering, are properly thought through before ordering to avoid awkward adjustment at the top or bottom step.

Assembly on site is like a giant 3D jigsaw puzzle, and will be completed either by our joiner or the supplier's team using hidden fixings and plenty of wood glue. Because we're opting for softwood we can either stain, polish or paint the staircase to suit. We've decided on the latter, with carpet over the full width of the treads and risers (we'll be costing our floor coverings in the next issue).

Internal doors

For speedy installation, it's possible to buy factory-finished doorsets, which come pre-fitted in their frames and with locks already installed. While they minimise time on site for the carpenter and decorator, they are fairly expensive up front – with prices ranging from £300-£600 per doorset depending on the manufacturer and specification.

In our case, it will work out cheaper to buy the units as individual components and pay our contractors a little more. We're opting for flush doors with a natural wood veneer finish. These will reflect the minimalistic, Shaker-style feel of the kitchen. They come in a variety of standard sizes – which we'll be sticking to in order to rationalise costs – and will be provided as blanks to be hung and decorated on site. The frames and mouldings surrounding each leaf will also be painted in situ.

STAIRCASE OPTIONS

For many self builders, the staircase is a key part of the interior architecture; something that can deliver an impressive design statement as well as operate as a functional walkway. There are various ways to upgrade beyond the standard budget version we've specified.

The simplest step up would be to switch to an attractive hardwood for the stringer, treads and risers. Ash, European oak and American oak are all popular choices in solid or engineered formats, and can be polished or lacquered to bring out the timber's natural beauty. Another option is to go for a more decorative balustrade. Turned wood can add interest, for example, while you could also consider using steel rather than timber for the individual balusters. Taken together, this kind of staircase would likely increase costs from the £2,000 we've allocated to somewhere in the region of £2,000-£3,000.

For a really impressive contemporary look, we could have opted for a flight with open, free-floating treads, glass balustrades and stainless steel detailing. Style-wise, this would be a fantastic fit for *The Build It House* – creating a dramatic feature that would be framed by the extensive glazing, as well as allowing more natural light to filter into the hallway. This kind of staircase would cost between £5,000 and £10,000. At the top end of the scale, bespoke designs such as freestanding curved flights can easily come in at around £15,000-£25,000 – and sometimes even more.

Above: This four-panel, veneered Shaker door from Jeld-Wen (www.jeld-wen.co.uk) features a particle board core that's wrapped with an attractive layer of American white oak

The frame will be supplied as two pre-moulded sides, where the hinges and catch will be fitted, with a head above. If needed, timber thresholds will be provided. Most internal doors require two hinges, but heavier units – such as fire-rated versions – will usually need three. The locks will be morticed into the leading edge of the door leaf to correspond with the latch in the frame. Typically, a good carpenter will be able to hang three or four doors in a day.

Once the blank units are in place, they'll need to be decorated. We've decided to leave them with their natural veneered finish on display, but they still need protection so our decorator will apply a satin varnish. This will help them stand out well against the white eggshell paint of the walls.

Downstairs, we're using glazed units for the double doors between the hallway and kitchen-diner, as well as pocket sliding versions through to the sitting room. These will all feature matching wood veneer surrounds with toughened, factory-installed glazing. These can be clear or contain etched patterns for privacy. The sliding mechanisms are designed to be hidden at the top of the doors, with a track included along the bottom, too. The leaves will slip into the walls, so some of the timber studs must be removed and replaced with slim steel versions.

Mouldings

To maintain the contemporary look our virtual self builders are going for, we're using simple architrave and skirting with matching thicknesses and square-edge profiles. The leading edge will be very slightly eased (rounded off) to soften its appearance. These mouldings will be of natural softwood, and will be finished in a satin paint to provide a sheen that marks them out from the wall surfaces, but still complements the rest of the internal joinery.

Typically the carpenter would run the architrave (the moulding surrounding the door) right down to the floor and butt it against the skirting. This will work well for our model house's clean-lined look, but a neat alternative detail can be achieved by using a plinth block – a slightly oversized section of wood that the skirting and architrave can run into. Although we're not using this method, it's worthy of consideration as it's not particularly expensive and is much more forgiving during installation and decoration.

An area of frequent debate when dealing with natural timber mouldings is how to fix them. The easiest option is to use narrow stainless steel or galvanised pins, recess the heads (knock them beneath the surface of the wood) and fill over the top. An alternative is to screw the joinery in place and then install a timber plug to hide the fixing. However, this is much more work for the carpenter and totally unnecessary for our choice of mouldings.

INTERNAL JOINERY

Building element	Quantity	Cost	Cost per m² (of floorplan)
Staircase			
Strings, treads & risers		£694	
Balustrade & handrails		£462	
Installation (four days)		£800	
Subtotal for staircase		**£1,956**	**£12.62**
Internal doors			
Frames	11	£275	
Doors	9	£810	
Glazed doors	4	£440	
Sliding door mechanisms	2	£290	
Ironmongery	13	£293	
Installation (five days)		£1,000	
Subtotal for internal doors		**£3,108**	**£20.05**
Mouldings			
Architrave (19mm x 75mm bullnose)	160m	£162	
Skirting (19mm x 100mm bullnose)	230m	£319	
Installation (eight days)		£1,600	
Subtotal for mouldings		**£2,081**	**£13.43**
Total for internal joinery		**£7,145**	**£46.10**

TIM DOHERTY

Tim Doherty was the founding MD of the National Self Build & Renovation Centre and a founding member of NaCSBA. He now runs Dobanti Property Consultants (www.dobanti.com), a specialist surveying & building consultancy providing support to both the residential and commercial sectors, including surveys, site appraisals, project procurement, project management, dispute resolution and custom build solutions

NEXT MONTH Tim specifies the bathroom, ensuite, tiling and floor coverings for *The Build It House*

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Converting a loft can be one of the most effective ways to add space and value to your home. Architect Julian Owen explains how you should tackle this type of project

Room at the top

If your property is lacking internal space and you cannot add a ground floor extension, then a loft conversion could be a great option. This kind of project often proves an economical way to increase the floor area of your home.

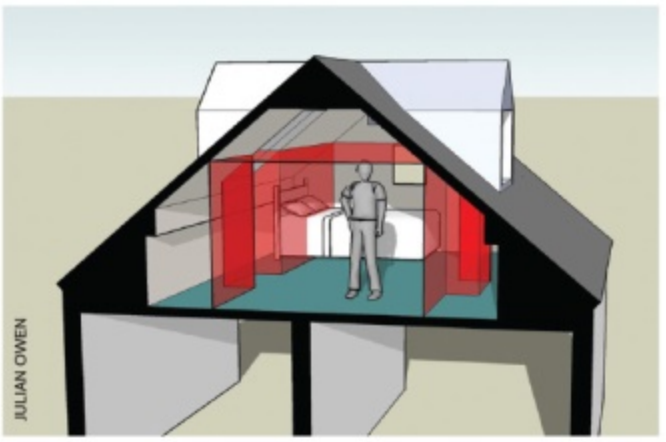
With much of the structure already in place, it should be easy to visualise the size and shape of room you could created. You can usually add up to 30% to the floor area of a two-storey house, which can work out cheaper than establishing an extension, as well as being relatively quick and less disruptive. However, the cost of doing it properly is often underestimated. The space must be insulated, the floor strengthened and a safe staircase with adequate headroom created.

Some lofts seem to cry out to be converted, but others offer little return for a lot of effort. A successful attic conversion can, however, add anything between 10% and 20% to the value of a property.

Assessing the space

The first simple test for the feasibility of a project is to go up into the loft and see how much room there is above your head. If there is very little then a conversion is unlikely to be cost effective, as you will either have to rebuild the entire roof structure or lower the ceiling of the floor below to get enough space.

A stronger floor structure – in the form of deeper joists – is usually required and will raise the floor level. The roof will also need to be insulated, which will lower the ceiling height. As a result, the space that you see in the loft before the conversion will shrink significantly once the work is complete. There are various ways you can increase the available floor area, such as by adding dormer windows, but if the roof is too low in the first place this will not help.



The typical minimum height that you need from the top of the existing upper storey ceiling joists to the underside of the ridge (the highest point of the roof) is approximately 2.3m. In most cases this will allow just enough room to move around in the finished space under the ridge, and dormer windows can be used to increase the volume of the area. Building Regulations require that

Top: A white polyurethane, mould-resistant centre pivot roof window floods this bathroom with light. From £258, Velux (www.velux.co.uk) Above: This diagram shows how to test whether a loft space is suitable for conversion

WHEN DOES A LOFT CONVERSION MAKE SENSE

- If there is a large existing roof void with plenty of room to stand up in.
- Where there is limited space around the house to add an extension.
- Other people in the area have already done it so it won't be contentious.
- You would like a slightly unusual room with lots of natural daylight.
- The cost of moving to gain additional rooms is higher than that of a loft conversion scheme.
- There is a lot of space on the ground floor compared to the first floor so this would balance things out, or the building is a bungalow.
- Planning restrictions limiting the addition of ground floor extension are difficult and complex to negotiate.
- If the extra space is needed quickly.

THE KEY QUESTIONS TO ASK WHEN CONSIDERING A LOFT CONVERSION

- Is there enough headroom?
- Where will the staircase be located?
- Where will the windows go?
- Is the roof structure suitable?
- Do any services need to be moved or altered (eg electrical wiring, water tank)?
- How easily can it be insulated?
- What will happen to all of the contents currently stored in the loft?

Right: This telescopic system by Telebeam (www.telebeam.co.uk) has been placed alongside the original trusses to offer additional load-bearing support. Below: This dormer features large sliding glass doors and a frameless glass balustrade from IQ Glass (iqglassuk.com)

there is at least 2m clear headroom over most of the top of the new staircase (down to an absolute minimum of1.8m for lofts). If this is impossible then the roof space will not be suitable for conversion.

In addition to how much room is available within the attic, the current condition and standard of the existing structure will be equally important. If there are problems, such as rot in the timbers, any defective roof slates or undersized rafters, then these will have to be put right to make the project worthwhile.

Siting the stairs

Assuming that there is adequate headroom, the next step is to make a decision on the location of the staircase. For a house with two storeys or more this should ideally be directly over the existing flight – because this avoids the need to cobble space from any rooms. With many properties the stairs are sited at the side of the house, by the eaves where the roof is at its lowest, so a dormer window is needed to provide the extra headroom. If this is not possible, space is often taken from one or two of the bedrooms, and in the worst case scenario a whole bedroom can be lost. When deciding the location of the staircase, it can be helpful to start by identifying where the top step could go in order to attain 2m of headroom.

Structural considerations

Two principal methods of roof construction are used for houses in the UK: a traditional or cut version; and the newer trussed rafter roof. Which of these has been used for your property will determine how easy it is to convert, as each style requires a different approach to alter the structure successfully.

Traditional roofs have plenty of open space in the loft and the props and purlins typically found can be easily replaced with steel beams

resting on the main walls of the house. Trussed rafters, however, fill the space with a criss-cross of timber and when these are removed a lot more support is needed. The easiest way to convert this type of structure is to use a proprietary system of telescopic beams that are inserted from the eaves.

Applying the rules

Loft conversions are usually covered by the permitted development (PD) rules, so don't require specific planning consent. In conservation areas, however, permission may be necessary to alter the external appearance of the property.

Additions to the roof space, such as dormers, are typically allowed on the rear and side elevations – but if one is put on the principal street-facing frontage, a planning application will be required. Quite significant enlargements can be allowed under PD. For instance, a full flat-roofed extension at the rear of a semi-detached house would normally be permitted, provided no more than 50m^3 of volume is added. For more on PD rights visit www.planningportal.gov.uk or see page 119.

Most dormers are conceived during the design of the internal plan, but it is important to consider the effect they could have on the external aesthetics of the house and how they will look in the context of neighbouring properties. Even if you are not concerned about the resulting appearance yourself, you should note that a poorly-planned, ugly conversion can wipe thousands of pounds off the value of a property.

The simplest, least intrusive way to bring natural light into an attic is to fit rooflights that follow the pitch line of the covering. But once external features such as dormer windows are added, the character of the house is affected – so occasionally, the obvious way to get the desired space can ruin the appearance of the building. If in doubt the best thing to do is to consult an architect and get an opinion as to whether the end result will be acceptable. It may be that a professional can suggest a more visually pleasing design.

If bats are roosting in the roof void then you'll need to have a survey conducted – this can only take place between the months of May and September. Bats are a protected species and disturbing them without permission is a criminal offence.

Making safe

Building Regulations have some very specific requirements that cover aspects of the design and build, such as: the method of escape in case of a fire; the spread of fire throughout the building; minimum headroom requirements; limitation of heat loss; and ensuring that structural alterations are sound. These elements should be assessed as early as possible in the planning stages of the project because if there is something about the condition of the existing loft space that makes it impossible or very difficult to satisfy the regs, the project may have to be abandoned.

Above: Two lofts have been combined by Camarim Arquitectos (www.camarim.pt) to create a more flexible and intimate space. And they have fulfilled their client's wish for a zone with an ensuite and hammam to the bedroom

TYPICAL STAGES OF A LOFT CONVERSION

1. Identify the budget
2. Discuss and agree your requirements for the project (eg to add new bedroom)
3. Measure and draw the existing building
4. Sketch out ideas and discuss with your designer
5. Have outline plans drawn up
6. Have construction drawings and specifications prepared and submit for Building Regs approval
7. Put the work out to tender and obtain prices from at least three sets of builder
8. Choose your contractor and monitor the construction on site until completion

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DESIGN IDEAS

Lofty outlook

Draw inspiration from this collection of creative transformations to help you develop your own attic conversion scheme

Glazed and glorious

The existing roof structure has been removed to make way for this highly contemporary loft conversion, which was constructed using frameless glazing and opens out into a terrace. **www.iqglassuk.com**

Room to grow

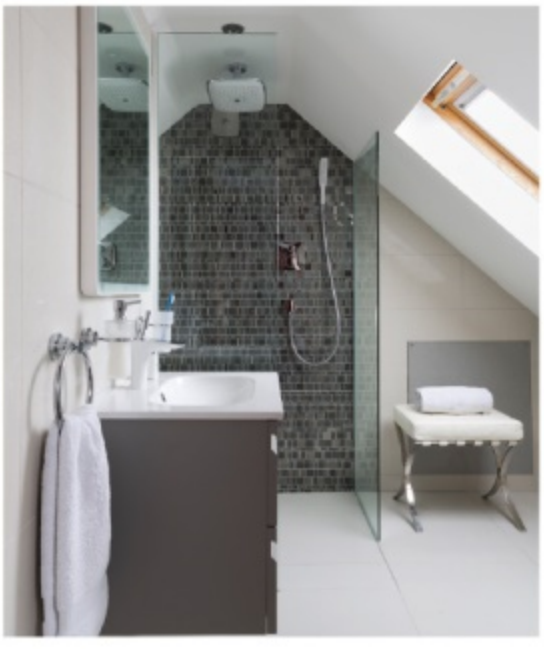
Creating a larger property was high on the priority list for the owners of this stunning new habitable attic. Their wish for more space has provided them with a beautiful light-filled master ensuite and resulted in an increase in the value of their home. **www.jcjconstruction.co.uk**

From on high

The conversion of the substantial roof space in this Victorian vicarage has resulted in the creation of a brand new guest suite that offers a seperate living-sleeping and dining area, too. **www.atticlife.co.uk**

Sea of changes

Ripples worked through the structural obstacles of slanted walls and low ceilings by incorporating made-to-measure shower screens and a Velux roof window to draw plenty of light into this new wetroom. **www.ripplesltd.uk**

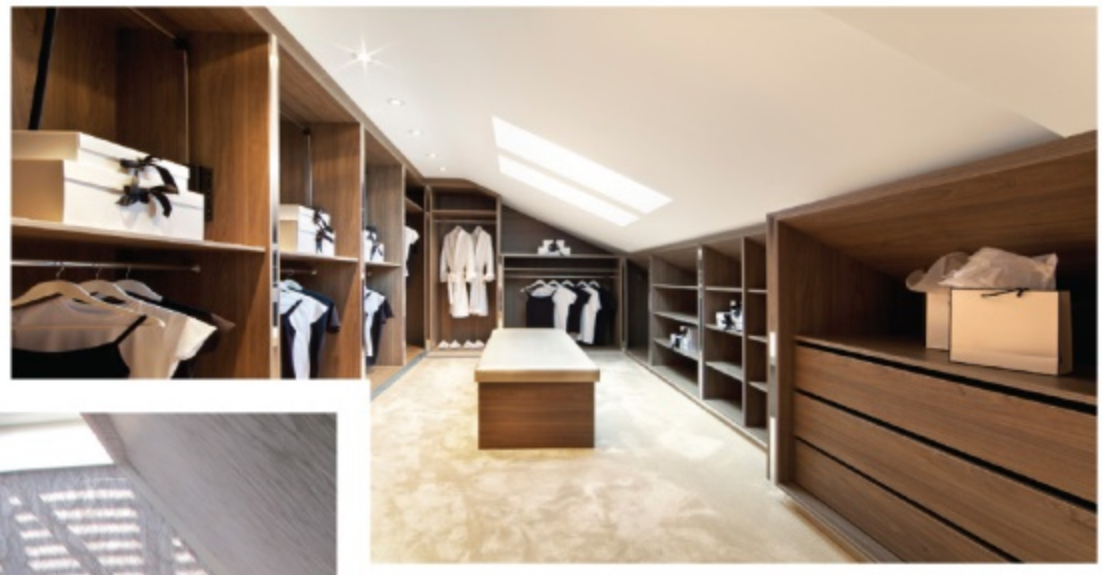


A clear vision

The Grimshaws wanted to establish a studio retreat that would take advantage of stunning countryside views. The new zone offers direct access to the garden, which is quirkily positioned at the top of the sloping site above the house. **www.adp-architects.com**

A good fit →

Bespoke shelves and wardrobes have been installed in this attic conversion to help establish a luxurious walk-in closet and dressing space. The MDF-wrapped fittings provide ample storage in an appealing form. The zone helps keep clutter to a minimum within the other areas of the home. **www.customcreations.furniture**

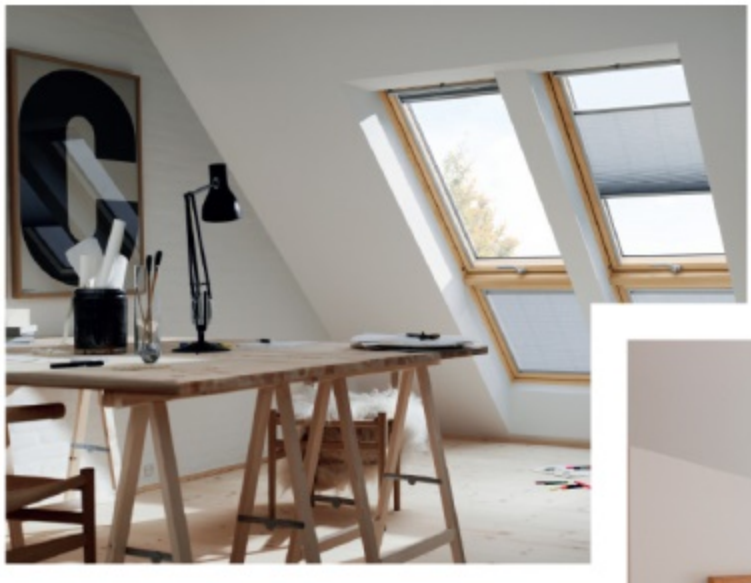


Smooth transitions ↓

A redundant loft space has been repurposed as a functional guest suite complete with a practical study. **www.amarchitects.co.uk**

Change of place ↑

Gary Richmond and Elaine Walker completely transformed their 1970s house. One of the best features is the loft conversion, with its large glazed apex. The entire project increased the home's market value by over 25%.



← All worked out

A light and bright study has been established with the help of these top-hung pine roof windows, fitted with laminated safety and noise reduction glass (from £448). **www.velux.co.uk**

Added value →

This traditional loft conversion project provides an additional light-filled bedroom. Sunshine streams into the attic space via angled rooflights and heritage-style windows, which help create a bright zone to relax in. **www.buildteam.com**

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3 Extending a listed building

Adding a sensitive extension could transform an historic house into a home for the future. Alan Tierney explains how to make a success of your project


NIGEL RIGDEN

Above: After nearly two decades in their listed four-storey Georgian home, Robert and Joanne Young were keen to extend. With the help of Edinburgh-based Beecher Architects (www.beecherarchitect.com), they've added an honest, modern glazed structure at the rear – rather than aping the style of the original building. A simultaneous internal remodel has opened up the couple's home, inviting in swathes of natural light

Adding more space to a listed building can be a contentious undertaking, because any new element will inevitably affect the house's appearance – so is bound to have an impact on its historic or architectural interest. Unlike some refurbishment projects, extensions to this type of property will always require listed building consent. If you want to enjoy a successful scheme, careful research, planning and design is therefore essential.

Know your building

A good place to start is to develop a detailed understanding of the existing property. In particular, it's important to establish what's special about it – and therefore what needs to be protected.

If this relates to elements of the interior decoration or an association with an historic figure or event, additions to the exterior aren't likely to be considered particularly sensitive. Conversely, if the building is seen as an archetype of an admired style or has an especially noteworthy floorplan, it may be difficult or even impossible to secure permission for an appropriate extension.

How the house has developed over time is also important. If a succession of additions has already been made, the building's significance might have been gradually eroded. In such circumstances, an extension could contribute to a combined effect of harming its character – even if it is unobjectionable in isolation. It might be better to replace an earlier unsatisfactory addition rather than attempt to enlarge the house again.

At the other end of the spectrum, a property may be a very rare, unaltered example of its type – rendering its form more significant than it would be otherwise and making it difficult to gain consent for expansion.

By taking these issues into account, you can firstly decide whether an extension might be viable, and secondly establish a route forward that will give your application the best chance of success.

Size and scale

One crucial rule to follow is that any addition should be subservient to the original building. While a listed property can usually retain much of its character with a smaller modern addition, a large new structure attached to the lesser remnant of an old building will tend to overwhelm it – which won't go down well with your local building control officer.

Fundamentally, then, an extension should be smaller than the main house. Generally this rule relates to individual dimensions as well as the overall mass of the building. Height, in particular, should be restricted. It's often also best to reduce the depth of a planned addition (eg at the side of a house) to create a step in the building line that delineates old and new.

The aesthetics of the extension should be subservient, too, so the architectural style and detailing should be devised to avoid drawing attention away from the character of the original property.

Avoid confusion

To achieve a sense of deference, as a rule somebody looking at the building should be able to easily distinguish between the addition and the main structure. Throughout history, homes have been extended in the prevalent contemporaneous style. This has created many houses of great interest with elements in different architectural forms, ranging from medieval to Georgian and Victorian.

It's only in recent times that attempts have been made to add to old buildings invisibly by imitating the style and materials of the original. This approach is almost never appropriate, as it's likely to result in little more than a pastiche. It is now generally accepted that new work to historic homes should be of its time.

This is sometimes interpreted as a requirement for radical modern design and materials to be used when extending to listed buildings. While this route can be successful, if it's poorly executed it does risk creating a jarring contrast between different parts of the property and may tend to defeat the need for the extension to be subservient. A more nuanced plan will be most effective.

Work with what's there

The best design approach is to use the original structure as a starting point. Thought should be given to how the size, orientation, location and style of the extension will impact on the house as it stands.

Some listed buildings cannot accept a fully-attached extension without suffering too much loss of character. One potential solution can be to separate the addition from the house and join the two spaces with a low-impact link. This could be glazed to emphasise the apparent visual separation. You can still reference the original in the new work, for example by choosing a similar palette of materials, reflecting selected details or using similar construction methods.

Older houses were usually built from locally sourced materials. As a result, each region of the UK has a distinctive pattern of architectural details and components. Successful design of extensions to vernacular buildings tends to employ these materials and styles in a sensitive way. A very effective method of subtly differentiating new from old is to incorporate details from the local vernacular tradition that do not feature in the original building.

Conservation principles

There are some basic tenets that apply to all alterations to historic houses, including extensions, and can help to ensure you get a result that suits both you and the planners:

1 Reversibility Even if your team makes a concerted effort to design well and respect the structure and character of the listed building, future owners may feel the need to undo your work. You should therefore use construction methods that aim to enable future removal of an extension, leaving the building as close to its original state as possible.

2 Minimum intervention Your addition should have as little impact as possible on the existing structure. This will mean minimising the loss of any historic fabric or original elements during the work. This is of particular concern when making new openings for access and circulation.

CLOSER LOOK: GRADE C LISTED VICTORIAN LODGE

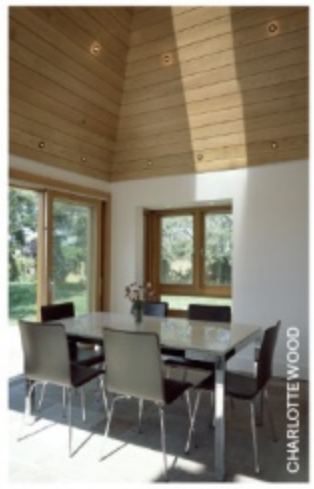
When they decided to relocate to the countryside, Grainne and David Paton were keen to live in a home packed with character – and they were immediately captivated by this lodge in Aberdeenshire.

Soon after moving in, the couple began investigating the history of the house to inform their renovation plans. Built in 1823 for Masonic gatherings, it was turned into a farmhouse towards the end of the 19th century – at which time an L-shaped outbuilding was tacked onto it, part of which has since been lost.

Louise Hunter from Acanthus Architects (www.acanthus.co.uk) suggested sensitively reinstating the late Victorian floorplan, proposing a contemporary extension in timber, glass and stone to elongate the building, with a perpendicular timber-clad annexe. The materials may be used in a modern way, but they nevertheless blend beautifully with the setting, while the new configuration creates a full U-shaped enclosure around a central courtyard.


MARGARET BIORAVA

CLOSER LOOK: GRADE II LISTED COTTAGE



Jasmine Heaps appointed architect Jeremy King (www.jeremykingarchitects.com) to extend her idyllic 500-year-old timber frame cottage in Hertfordshire. Visually, the contemporary oak-clad garden room stands apart from the rest of the listed house – but the squared-off conical roof is a deliberate attempt to echo the gablet design of the original building. "My goal was to create a shape resonant of vernacular countryside structures, such as granaries and oast houses," says Jeremy. "The space has been given a modern twist to reflect its function as a contemporary living area. A stainless steel-roofed, rendered link connects old and new, providing an aesthetic transition while also delivering useful space in the form of a utility zone.

3 Honesty This refers to ensuring the extension can be seen as new work; don't try to fake the aesthetics to look like part of the original.

4 Utility For changes to be justified, they must have a clear objective; ideally one that contributes to its long-term viability. Good examples might be provision of more accommodation or enhancing the kitchen. Your goal must be delivered through careful design and project management.

Using these principles as an initial checklist should result in a scheme that is successful, appropriate to the setting and likely to gain listed building consent.

Technical considerations

Period houses can be sensitive to the impact of alterations – especially if these have an effect on the path of structural loads, rainwater management or moisture control. The loadings in an historic building tend to be complex and develop equilibrium over time. Altering this can have serious and unpredictable consequences. Extensions should therefore be designed to be self-supporting, so they do not apply extra load onto the original building.

Due to the inherent qualities of historic construction materials, older properties tend to be quite flexible and subject to a surprising degree of movement. A modern extension could lock up the adjacent part of the main house, preventing this movement. This can result in serious structural issues, either at the join or elsewhere within the building.

Traditional homes incorporate breathable materials and usually don't feature a damp proof course (DPC), membranes or vapour barriers. Instead they rely on any absorbed moisture evaporating out of the fabric to prevent damp. A modern extension – complete with solid floor, membrane and DPC – can concentrate moisture in the adjoining wall of the existing building, which could potentially lead to damp problems.

Poor detailing, particularly at roof junctions, can direct large volumes of rainfall into the fabric of the building – which will inevitably lead to serious issues with damp and decay. As a result, intersections between the extension and the main house must be carefully designed to ensure good management of rainwater runoff.

ALAN TIERNEY

Alan Tierney is a historic building consultant and conservation specialist. He runs Picketts Historic Building Conservation (pickettsconservation.co.uk), which offers hands-on advice to period property owners.

5 KEY POINTS

- Make an effort to understand what is special about the listed building and design the addition accordingly.
- Ensure the extension is subservient to the main building.
- Always make certain that the new elements can be distinguished from the old – and avoid creating a pastiche.
- Apply the principles of reversibility, minimum intervention, honesty and utility throughout your project.
- Be particularly careful about the technical aspects of design, as it's important to protect the structure of the listed building.

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23 projects you can do **without planning permission**


COLIN POOLE

Build It readers the Karchmars took advantage of permitted development rights to add a full-width kitchen-diner extension at the rear of their home

Permitted development rights allow you to undertake some significant building works without having to apply for planning consent, says Mike Dade

For those of you looking to refurbish an existing building, it might come as a pleasant surprise to discover just how much you can achieve without having to go through the planning approval process. The permitted development (PD) regime allows you to embark on a whole host of home improvements, from extensions through to adding solar panels or other renewable technologies.

The crux of permitted development rights is that the government has granted blanket consent for a range of works, provided they meet certain criteria and that the local authority accepts your scheme adheres to them. This is a complex area of planning regulation, taking in numerous classes of development – each with its own detailed rules. In this article we'll principally be focusing on the English PD scheme, but Scotland, Wales and Northern Ireland all administer their own versions. They each follow the same basic principles but have subtle differences, so check the guidance that applies to your part of the country via the relevant government website.

The rules are both complex and open to an element of interpretation, which can make it tricky to decide whether a building project counts as permitted development or not. So it's often a wise move to engage with an architect, planning consultant or the local council before you start work to ensure it's safe to proceed. Check the boxes on lawful development certificates and exceptions later in this feature for more on this.

Now you're in the know about the background of PD rights, let's take a look at some of the work you can do to your property without making a formal planning application:

1 Remodel the interiors

Reconfiguring rooms is a quick and easy way to update a space, and you won't need permission for internal changes such as moving walls, adjusting floor heights, rejigging a kitchen or creating a new bathroom. This only applies to a completed and occupied house, however; not to a new-build or conversion under construction, where the approved plans must be followed. Bear in mind that you may need listed building consent if your home carries this status.

2 Single-storey extensions

You can build storey-height additions to the back and sides of your house under PD rights. Generally the limits for rear extensions are that you can stretch 4m out from the original dwelling on detached homes, and 3m in other cases. Larger versions up to 8m and 6m respectively are currently allowable in England, subject to a notification procedure. Side expansions can be up to half the width of the original building.

You will be restricted in terms of ridge height (4m) and the amount of garden amenity you can cover (no more than 50%) if you want to qualify for PD. Proximity to plot boundaries also has an impact, while the materials must match the existing house as far as practicable.

3 Add a conservatory

For planning purposes, these glazed rooms are treated as extensions – with the main difference being that the requirement for matching materials doesn't apply. To qualify as permitted development, your conservatory must attach to the original dwelling and not a subsequent extension.

4 Multi-storey extensions

Two-storey rear additions are permitted development provided they don't extend out by more than 3m and they are located less than 7m from the rear boundary. If the side of the extension is within 2m of the flank boundary, then the eaves can't be more than 3m high.

5 Repair, replace or add windows

You won't need consent for this kind of alteration provided that, as a result of the change, the appearance of the

Above: This stone-clad traditional home has been retrofitted with QuickSlide's double-glazed PVCu sliding sashes, which offer a heritage-style aesthetic. From £234 for a 600mm x 1,000mm unit, www.quickslide.co.uk. Below: Adding new cladding, such as this HardieLinea fibre cement boarding in Boothbay Blue, can transform an otherwise standard -looking facade

house isn't materially altered (so some change is permissible). You can even enlarge existing fenestration under PD – although take note that bay windows are considered to be extensions. Special rules intended to protect neighbours' privacy apply to side windows, which should be fitted with obscured glazing. It's quite common to see conditions on previous planning consents preventing alterations to windows in houses and conversions – so always check this before proceeding.

6 Convert a loft

Transforming an attic into a habitable zone can be a cost-effective route to more space. This kind of project tends to largely rest on internal work, so there's usually no need for planning permission. You can expand available space either with dormer windows or similar alterations, such as changing a hipped roof to a gable – subject to the proviso that the works don't extend beyond the plane of the existing slope on the front elevation. Volume limits apply, too: you can add up to 40m^3 to terraced houses; or up to 50m^3 to detached properties and semis. Turn to page 105 for more detailed advice on this type of project.

7 Re-roof

You won't need formal consent to change the roof finish – including jobs such as repairing sections of the covering or replacing it with the same or another material. Any alterations must project no more than 150mm from the existing plane, which is just enough room to add a layer of external insulation if you choose to take this route for an attic conversion. More comprehensive changes to the roof shape are covered above.

8 Install rooflights

Fitting roof windows can offer a fantastic opportunity to filtering in top-down natural light. They're generally permitted development, but mustn't stick out by more than 150mm from the plane of the roof.

9 Add a porch

You can update any external door to your home by adding a small porch, up to 3m high and 3m^2 in floor area (measured externally). It must be at least 2m away from any boundary with a highway.

10 Change external cladding

You're allowed to paint, repair or replace the external cladding of your house, but the new finish must broadly match the original in appearance. There are strong restrictions in place to protect designated zones. So in conservation areas, national parks, areas of outstanding natural beauty (AONBs) and the Broads you will need to apply for planning permission to clad in stone, artificial stone, pebbledash, render, timber, plastic or tiles.

11 Upgrade insulation

Unless a layer of thermal protection is being applied to the building's exterior in a way that would affect its appearance, then fitting insulation is classed as internal work that doesn't require permission. Where you're adding it as part of an external cladding, such as insulated render, it will still count as PD unless it increases the height of the building or moves the front wall closer to the highway.

HUNDVEN-CLEMENTS PHOTOGRAPHY

12 Fit solar panels

The government's bid to reduce carbon emissions means that homeowners are now free to add solar thermal or photovoltaic (PV) panels on roofs or walls, provided the units don't protrude more than 200mm beyond the roof plane and are installed below the highest part of the covering. The general rule is that these renewables should be sited to minimise visual impact on the dwelling and the locale – and there are specific restrictions in place for conservation areas, world heritage sites and listed buildings. Panels can also be installed on outbuildings or in your garden, but there are strict size limitations for the latter.

13 Install heat pumps

You can fit a ground or water source heat pump in your garden as permitted development. The only potential snag may be local rules for listed buildings and conservation areas. There are strict size and location limits for air source versions – and only your first installation is allowed under PD.

14 Dig a basement

Currently, adding an underground living space falls into the extension category. However, in some urban areas – especially those where so-called mega basements are popular – councils are removing permitted development rights via Article 4 Directions (see the extensions & provisos box, overleaf, for more on this). The status of these additions is under review and a special permitted development class to cover them has been suggested, but not yet adopted.

This roof-mounted array of PV and thermal panels by Southern Solar (www.southernsolar.co.uk) would be classed as permitted development – provided the building isn't listed or in a designated area

15 Underpin a house

This type of maintenance on foundations – which is usually designed to stabilise a structure – won't normally require planning permission, although a formal application could be necessary when underpinning a listed building or a property in a designated area.

QUICK GUIDE: LAWFUL DEVELOPMENT CERTIFICATES

If you're spending a large sum of money on a home building project, then you'll want to be sure the works fall within the rules – even if you believe it to be permitted development. You can do this by applying to the council for a lawful development certificate (LDC).

Although the mechanics of this are very similar to making a planning application (you need to submit plans, forms and a fee), the decision-making process is fundamentally different. You can check what charges apply via www.planningportal.gov.uk.

The council has only two options with LDC: to confirm that your works would be lawful (because they're permitted development or don't need permission at all); or say that they won't be lawful unless you obtain full planning consent. Whether neighbours object or the planning officer dislikes the design or materials will have no bearing on the decision, and no conditions can be attached to the scheme. Once granted, an LDC has similar status to full planning permission.

16 Outbuildings

Erecting new single-storey structures – including summerhouses, garages and sheds – is allowed under PD provided their use is incidental to that of the main dwelling (eg for a gym rather than an extra bedroom). The building must be behind the principal elevation of the house, and you cannot cover more than 50% of the garden with such structures. Height limits also apply. There are no PD rights for outbuildings in the grounds of listed properties, while in AONBs, conservation areas and national parks, they must not be larger than 10m² if they are more than 20m from the house – among other restrictions.

Above: This oak frame garden room by Round Wood of Mayfield (www.roundwood.com) is used as an artist's studio

Right: Paving sections of your garden can be a great way to create definition between different zones – and can usually be done without a planning application. Kalahari tiles, from £120 per m², www.sacw.co.uk

17 Convert a garage

Planning permission is not normally required to repurpose a garage for residential use, providing that the work is exclusively internal and does not involve enlarging the building in any way (including the addition of dormers in the roof). Check with your local authority that the right to convert has not been removed. This is a particularly common issue with new developments and conservation areas.

18 Build a swimming pool

Pools come under the same class as outbuildings, so if you're planning one in a small garden you should check whether it will fall within the 50% limit on coverage of grounds by buildings.

19 Install decking

An external deck can be laid provided it isn't over 300mm above ground level. It's subject to the same provisos about garden coverage (so counts towards the 50% threshold) and floorplan size in protected areas as apply to outbuildings.

20 Gates, fencing & walls

You can build new boundary treatments provided they fall within allotted height restrictions. Those fronting a highway must be a maximum of 1m tall, while a 2m threshold applies elsewhere. This right does not extend to listed buildings.

21 Patios & driveways

Laying or replacing hardstanding is considered permitted development across most parts of a property's grounds. However, if you're planning to treat more than 5m² of front garden you must either use a porous surface, such as gravel or permeable block paving. Alternatively, you should direct the rainwater to a lawn or flower bed where it can drain naturally.

22 Soft landscaping

While most garden work is clearly permitted, including major changes such as planting hedges, there are a number of restrictions. The most significant is that many trees are protected by preservation orders, so you may need the council's consent to prune or fell them.

23 Change the use

PD allows you to convert a range of agricultural and commercial buildings – such as shops, offices and storage units – to domestic use. For example, in England only you can change the use of up to three farm buildings on the same tranche of land, up to a maximum combined footprint of 405m². The rules around these projects are complex and, while full planning may not be required, separate prior approval applications do need to be made to the overseeing council.

MAJOR EXCEPTIONS & PROVISOS

- Many permitted development rights vary depending on whether your house is detached or attached.
- The PD regime is typically less generous in designated zones, such as areas of outstanding natural beauty, conservation areas and national parks – as well as for listed properties (which also require separate listed building consent).
- Rights to develop a property can be reduced or removed by conditions attached to planning consents. It's also possible for a council to completely remove PD by means of an Article 4 Direction – which is a common move in conservation areas.
- Even if your scheme counts as permitted development, it will still need to follow the minimum standards laid out in the Building Regulations (although some projects are also exempt from the regs – check www.planningportal.gov.uk for more details).
- Many of the rights attached to houses do not apply to flats and maisonettes. For example, you should not require full consent to replace windows like-for-like, but any new units will need planning permission.

MIKE DADE

Mike Dade is a land and planning specialist, and *Build It*'s plot guru. He's one half of Speer Dade Planning Consultants (www.speerdade.co.uk) and the author of several must-read books on plots and planning.

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PLANNING
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CONSERVATION
Alan Tierney is a historic building consultant and conservation specialist. He runs Picketts Historic Building Conservation (www.pickettsconservation.co.uk), which offers hands on advice to period property owners.

UNDERFLOOR HEATING
Heather Oliver is the product development manager at Nu-Heat (www.nu-heat.co.uk). Prior to working with the UFH specialists, she spent 15 years working in civil engineering on both infrastructure projects and domestic housing schemes.

BUDGETS
Tim Doherty was the founding MD of the National Self Build & Renovation Centre and a founding member of NaCSBA. He runs Dobanti Property Consultants (www.dobanti.com), a specialist consultancy for the residential and commercial sectors, offering surveys and site appraisals, project management and custom build solutions.

STRUCTURAL ISSUES
Mike Hardwick is a self build consultant, project management specialist and NaCSBA's self build representative, Mike Hardwick has first hand experience of the process involved and helps to deliver a three-day course at Swindon's National Self Build and Renovation Centre (www.nsbrc.co.uk).

DESIGN
Opinder Liddar is a director at Lapd Architects (www.lapdarchitects.co.uk). The practice specialises in residential projects from extensions to new build, making him the ideal person to answer all your home design questions.

DESIGN

How can I create a layout that is family-friendly?

We recently started planning the design of our own self build house, which will be a four-bedroom family residence for me, my wife and our three young children. How can we configure the rooms to suit all the occupants so that us adults can enjoy our own space while being able to keep an eye on the kids?

There are lots of options here, and it really depends on the size of your project. Often, families with children will go for sectionable spaces that can be subdivided. Sometimes, architects will also suggest using grey screens or pocket doors (which slide into recesses in the internal walls) so parents can hear kids playing but not necessarily see them. A playroom off an open-plan kitchen diner area is another option, especially when children are very small. That way they're part of the space, but aren't wandering into a potentially dangerous zone like the kitchen. For older children there is also the possibility of a mezzanine level, which can be accommodated in a double height space so kids can be on a deck area above where the parents are relaxing.

STRUCTURAL ISSUES

Should I choose slate or concrete roofing?

QUESTION OF THE MONTH

My wife and I are partway through our self build project, and due to budget constraints we're thinking of using concrete tiles for our roof covering as opposed to slate. However, before going forward, we want to find out what kind of quality difference we can expect between these two products and whether it's worth using money from our contingency fund to invest in a higher specification material. Is the property likely to be better insulated if we do decide to opt for a costlier fitting, for instance?

A roof is something you only plan once during a self build, so it's worth getting right. Kitchens and bathrooms, for example, go in and out of fashion and can be changed fairly easily, unlike a roof covering which is usually there for life. I'd say spend the extra money to get something you will want to live with, providing the planners are happy for you to do so.

There's nothing wrong with using concrete tiles; they're very popular, mainly because they offer a cost effective solution. They're cheap to buy, easy to lay and cover large areas quickly without the need for specialist skills. However, they rarely have the wow factor that many self builders seek.

Your other suggested option, slate, offers a timeless look that works with a number of external treatments from brick to render. Done well, this kind of roof will add natural quality to your build. For me, Welsh slate is the best option because it's durable, free of impurities and can be sliced very thinly. However, it also comes at a price. If the budget demands something a bit cheaper, opt for imported versions from Spain, Brazil or even China. Personally, I believe a higher spec roof covering is worth the extra money because the quality will probably be reflected in the finished valuation of the property. As for thermal performance, there's negligible difference between the two materials so it's not a major factor – and certainly of far less importance than the level of insulation you specify.

PLANNING

Can I get planning consent on a friend's land?

I've been searching for a plot on which to self build – I want to create a simple two-storey, four-bedroom home to accommodate my growing family. However, ideally-sized plots are scarce in the area where I want to build. A friend recently approached me to discuss the possibility of buying a two-acre patch to the rear of his parents' home. Due to their advancing age they are finding it increasingly difficult to maintain the area, and are interested in selling it. The land slopes down from the main property and backs onto a road. It certainly has the scope to develop the kind of dwelling I would like. What is the likelihood that I will be able to get planning permission, including the construction of a driveway and entrance that connects to the road at the back of the plot?

The site's viability depends fundamentally on whether the plot is in an area where local planning policy allows new housing. You'll need to look at your council's website for information on planning policy and, in particular, study the maps that accompany the relevant documents. These are likely to show the boundaries around settlements, which distinguish between areas considered to be within those defined zones and the surrounding countryside where constraint policies apply. If the position isn't clear cut, consider taking pre-application advice from the planning office. Again, details of how to do this will be on your council's website. Some local authorities have a duty planning officer who you can speak to and if yours does, that might be a good place to start.

STRUCTURAL ISSUES

What do I need to consider when building an indoor swimming pool?

I've recently renovated a five-bedroom property in Surrey. I'm keen to extend so I can install a small swimming pool inside. I've already been granted planning permission to expand the building into the back garden to accommodate new space for it. What do I need to be aware of in terms of Building Regs for indoor swimming zones?

As well as the obvious structural requirements, this kind of indoor leisure area is covered under Part L (conservation of heat and power) and Part F (ventilation) of the regs. The extension housing the swimming zone will have to adhere to the same guidelines as for any other domestic expansion, but the pool shell will need to be insulated to achieve a U-value (a measure of heat loss) of 0.25 W/m²K or better.

To fulfil Part L, building control will require a commissioning plan, which should include drawings and calculations that demonstrate how the design will achieve compliance. They will also want a copy of operating manuals that explain, in layman's terms, how to use the pool controls. Be aware of restrictions on certain types of heating plant which are designed to ensure that condensing boilers operate efficiently.

To satisfy Part F of the guidelines, a commissioning certificate showing adequate dehumidification, air heating and ventilation is needed. Using a reputable pool installation company that is fully conversant with the regulations is a simple way to make sure that you meet the requirements, as not many general builders will be familiar with the policies.

ANY QUESTIONS? Send all your self build, renovation and conversion questions to buildit@castlemedia.co.uk for our panel of experts to answer. Please note all correspondence may be published in the magazine

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MAB 7259

Self build mortgages

The right self build mortgage for you will depend on your individual circumstances and whether you need to borrow money in advance or in arrears. For an idea of what funding you can access, take a look at our mortgage table below

For more self build mortgage options visit: **www.self-build.co.uk/self-build-mortgages**

LENDER'S NAME	Lends on land	% of end value of property	No. of stage payments	Minimum works completed for 1st stage payment	Mortgage types available	National or local	Telephone
GUARANTEED ADVANCE STAGE PAYMENT MORTGAGES (available from www.buildstore.co.uk)							
Bath Building Society (Accelerator)	85% (OPP)	80%	Six	DPP & Building Regs granted	4.99%	England/Wales	0345 223 4647
Hanley Economic (Accelerator)	85% (OPP)	80%	Six	DPP & Building Regs granted	5.79%	England/Wales	0345 223 4647
Hanley Economic (Accelerator)	85% (OPP)	60%	Six	DPP & Building Regs granted	4.69%	England/Wales	0345 223 4647
Melton Mowbray (Accelerator)	85% (OPP)	75%	Six	DPP & Building Regs granted	4.89%	England/Wales	0345 223 4647
Penrith Building Society	85% (OPP)	75%	six	DPP & Building Regs granted	5.50%	England/Wales	0345 223 4647
ARREAR STAGE PAYMENT MORTGAGES							
Cumberland Building Society	75% (DPP)	75%	Flexible	Flexible	Call branch	Branch operating area	0845 601 8396
Dudley Building Society	50% (DPP)	75%	Six	Damp proof course	4.99%	Postcode restricted	01384 231414
Ecology Building Society	85% (OPP)	85%	Flexible	Flexible	4.90%	National	0845 674 5566
Furness Building Society	66% (DPP)	80%	Eight	Excavation	5.99%	Local	0800 781 4311
Hinckley & Rugby BS	No	80%	Four	Footings	5.64%	England/Wales	01455 894083
Loughborough Building Society	75% (OPP)	75%	Six	Foundations	4.99%	England/Wales	01509 631950
Newbury Building Society	66% (DPP)	75%	Flexible	Foundations	4.95%	Postcode restricted	Contact local branch
Norwich & Peterborough BS	80% (DPP)	80%	Seven	Foundations	4.89%	England/Wales	0845 300 2522
Progressive Building Society	No	75%	Four	Wall plate	Depends on scheme	Northern Ireland	Contact local branch
Scottish Building Society	80% (DPP)	80%	Flexible	Foundations	5.99%	Scotland	0131 313 7700
Vernon	75% (DPP)	80%	Four	Wall plate	4.95%	England/Wales	0161 429 6262
ARREAR STAGE PAYMENT MORTGAGES (exclusives available from www.buildstore.co.uk)							
Chorley Building Society	85% (OPP)	80%	Six	Foundations	5.99	England/Wales	0345 223 4647
Darlington Building Society	80% (OPP)	80%	Six	Foundations	4.99%	England/Wales	0345 223 4647
Furness Building Society	75% (OPP)	80%	Six	Wind & watertight	4.99%	England/Wales	0345 223 4647
Furness Building Society	75% (OPP)	75%	Six	Foundations	5.20%	Mainland Scotland only	0345 223 4647
Holmesdale Building Society	85% (OPP)	80%	Six	Foundations	5.29%	England/Wales	0345 223 4647
Ipswich Building Society	75% (OPP)	75%	Six	Foundations	4.89%	England/Wales	0345 223 4647
Loughborough Building Society	75% (OPP)	75%	Six	Foundations	4.99%	Central England	0345 223 4647
Mansfield Building Society	80% (OPP)	80%	Six	Foundations	4.99%	England/Wales	0345 223 4647
Newcastle Building Society	80% (OPP)	80%	Six	Foundations	4.99%	Eng/Wales/Mainland Scot	0345 223 4647

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PLOT WATCH: Mike Dade *investigates*

Two's company

With planning already in place to convert this brick and flint building, could there be an alterative route that will give one reader the opportunity to create a home for himself and another house to sell on? Mike Dade investigates

WHO Phil Martin

WHAT A former village hall with planning permission for a change of use to create one or four houses. Could Phil's preferred scheme of two homes – one of which he'd sell on for a profit – gain the requisite planning and listed building consents?

WHERE Hampshire

For more planning advice visit www.speerdade.co.uk

YOUR TURN

If you'd like Mike Dade to cast his expert eye over a plot you're considering for your build, and flag up any potential problems, send your details and those of your potential site to buildit@castlemedia.co.uk

Phil Martin is looking for an opportunity that will double up as accommodation for himself as well as additional development with potential for profit. He's converted and lived in a barn in the past, so feels confident that he can manage a scheme that would deliver for his own needs as well as create an extra unit to sell on. A large brick-and-flint building in a village setting has caught his eye: could it offer an opportunity for conversion into two new homes?

The basics

This building appears to have last been used as a village hall – although it's obviously of some considerable age and is unlikely to have been constructed for that purpose originally. It's long in plan and located hard onto the pavement of the main road that runs through the settlement. At one end there's a side street, which offers access to a large rear garden.

The structure features brick-and-flint walls and is topped with an attractive clay tile roof. It's two-storey, but there's a rooflight in the front covering and a dormer at the rear, suggesting additional accommodation might be achievable in the loft. Overall, it appears to be in good condition.

Planning background

Local amenities such as pubs and shops can often be fiercely protected by the community. They're also generally highly safeguarded under Local Plan policies. Phil tells me, however, that a new village hall has been built nearby – which could make changing the use of this one far less contentious.

He's also done some research on the council's website and discovered that planning permission was granted several years ago to convert the building into a terrace of four homes. Interestingly, there's also another, more recent consent in place to allow the property to be transformed into a single house, with a new garage to the rear that would be accessed from the lane. Phil's sleuthing has also unearthed the fact that the building is grade II listed.

Development potential

Phil would ideally like to create two well-proportioned family homes; one for him to live in and the other to sell on. Currently there's no permission in place for this type of configuration – but as it does have consent for both single- and four-unit schemes, it seems likely that a two-house split would be accepted by the local planning department.

Similarly, as listed building consent (LBC) has been granted for the significant internal alterations necessary to carve out four dwellings, it's almost inconceivable that an arrangement of two homes couldn't be devised that would have even less impact on the historic fabric of the building. Externally, if

subdivision of the garden space into four is acceptable, then two must also be workable.

The setting of a listed building must be carefully considered and with plenty of space for gardens and parking, there shouldn't be a problem here. There's a large tree to contend with but it wouldn't be in the way of any development work and adds character to the site. So in principle, Phil's ideas look sound.

First steps

Despite the property's obvious potential, Phil would still be taking a risk should he decide to buy it without the permission he wants in place. One way to reduce that uncertainty would be to seek pre-application advice from the council. The problem with that route is that he would have to get plans drawn up and then wait while the local authority considered the scheme. There's no guarantee the property wouldn't sell during that time.

An alternative would be for Phil to try to speak to the planning officer that dealt with the most recent application and informally ask whether they foresee any particular problems with a scheme for two homes. While this kind of informal advice isn't binding, the chat might nevertheless prove helpful.

Failing this, Phil should read the reports on each of the planning and LBC applications, which should be available from the council. These will reveal the thoughts of the planning department and the listed building officer, as well as any local issues raised by neighbours. The previous submissions will also show how drainage was to be dealt with. This is an important point, as anything other than a convenient main sewer connection could have significant budget ramifications.

Adding value

With consent for two different options already granted, it's unlikely the owners of the hall will be prepared to accept any offer made 'subject to planning' for Phil's preferred scheme. It may be that he has little choice other than to buy and take a chance on securing the permission he wants. Normally this isn't a wise move, but here the risk appears minimal.

What will prove difficult is accurately estimating the costs of conversion – a common issue when dealing with listed buildings. Phil will need to get some preliminary sketch ideas together quickly and then inspect the property with an architect or a builder. To improve his chances of making a successful application, it's essential he ensures that whoever he takes guidance from is experienced in working with heritage properties. It may also be helpful if his advisor knows the local conservation officer, as their particular likes, dislikes and whims could have a bearing on project costs.

Whatever estimate Phil is given for the scheme, he should add a healthy contingency of at least 15%, or even as much as 25% to give him a good cushion. There's greater uncertainty in conversions as opposed to new builds, as you can never be too sure what you'll find until the project gets well underway and the structural fabric has been revealed.

The selling agents should be able to give a value for the two finished houses. The more detail Phil can give them about his intended layouts and finishes, the more accurate their appraisal will be. He could talk to one or two external agents, too, in order to ensure the figures are realistic. Broadly speaking, the value of the finished houses less the build costs would represent the uplift in value that can be achieved. Phil would also need to factor in his planning and design fees, as well as the costs of buying, selling and borrowing to see how these affect his profit margin. Once he's considered everything, he can see how close the figures he's calculated come to the asking price.

The brick and flint walls are in good condition

As this is the first project that Phil has embarked on where making money is a key consideration, he would be wise to get sound financial advice from an accountant on the tax situation for this kind of scheme. He's considering doing up half of the building and moving in before taking on the second part. He would then sell the first house and move next door. He's hoping that this will enable him to avoid Capital Gains Tax (CGT). Given the project will effectively be his full-time job and main source of income, specialist advice is essential as there could be both CGT and income tax implications.

Conclusions

This property offers great potential for Phil to undertake the kind of project he's interested in, where he'd live in one house and sell the other. But accurate costing of conversions is difficult and even more so in cases where the building is listed. He therefore needs to be wary with his budgeting if he is to turn a profit. That caution should be reflected in the price he offers for the property, but too low a figure is unlikely to be accepted. An early-stage cost estimate and reality check of the asking price could save Phil time and trouble if the numbers don't stack up for his plans.

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Land FOR SALE

Location
Essex
Price
£500,000
Plot number
127110
Description
Detailed planning permission has been granted for the demolition and replacement of a fire-damaged dwelling that still occupies this site. The land is accessed from the lane and approached via a private gated drive. A yard area, menage and purpose-built stable block are also situated on the plot to the south and west of the proposed house.

Agent
Fenn Wright

Location
North Yorkshire
Price
£160,000
Plot number
127525
Description
This site, which features attractive countryside views to the north, comes with outline planning permission for the development of a three-bedroom bungalow or cottage. The land is positioned behind two renovated listed buildings, and as the plot in question is within their curtilage any development will be subject to listed building consent.

Agent
Rounthwaite & Woodhead

Location
Dyfed
Price
£80,000
Plot number
127666
Description
This site has been granted outline planning permission for the construction of a single detached dwelling. Located on the Mynydd Griffiths residential estate, which is home to a selection of bespoke properties, this pocket of land is a short distance from the quaint market town of Machynlleth and affords pleasant views of the Dyfi Valley.

Agent
Lloyd Herbert & Jones

Location
Northumberland
Price
£95,000
Plot number
127685
Description
Measuring approximately 0.27 acres in size, this plot comes with outline planning permission for the construction of a four-bedroom detached house with a double garage. Situated a short drive from an array of local amenities in the coastal village of Coldingham, the land is also just two miles from the A1 which makes it suitable for commutes to Edinburgh and Berwick-upon-Tweed.

Agent
Tyne & Tweed

Location
Merseyside
Price
£450,000
Plot number
127949
Description
This plot comes with detailed planning permission for the creation of a detached house. Tucked away on a quiet lane, the site is located within walking distance of local amenities in the village of Willaston, including shops and a primary school. A wide range of facilities is just a short drive away in the nearby towns of Heswall, Neston and Bromborough.

Agent
Village Properties

Location
Devon
Price
£130,000
Plot number
127976
Description
Outline planning permission has been granted for the construction of a four-bedroom property on this generous sloping site, which also offers a garden to the rear and parking space for two cars. Set in the desirable village of Sticklepath, the plot is within walking distance of Barnstaple town centre. It also benefits from views of the Taw Estuary.

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FG3005	2.8	7	£239.98	£287.98
FG3050	3	8	£359.00	£430.80
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Tiger3000	200/2900	6.5	£329.98	£395.98
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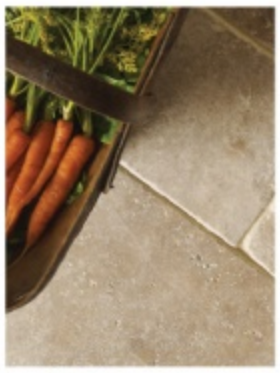

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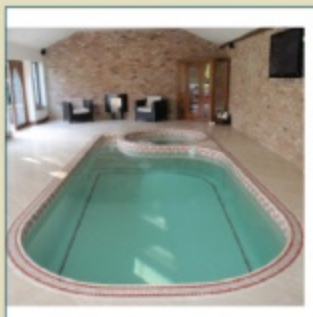

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focus on:

Professor Phillip Jones from Cardiff University explains how The Solcer House integrates good design and energy efficiency to create an affordable home that could be replicated by self builders

How did the concept for the Solcer House come about?

We've been developing the idea of low carbon buildings that export more energy than they use for some time, and the design work for the project started about a year ago. We used a combination of renewable technology supply (for heating and electricity) and reduced energy demand to achieve our goals.

What makes this scheme different to other low carbon building projects?

The innovation wasn't really in the technical aspects of the project, because the individual components already exist. What's new is the way we have incorporated the technologies into the architecture so they work as one. Rather than employ a bolt-on method, we designed a house that uses energy-saving systems as building elements. Major industries like the idea of a joined up approach towards creating an affordable building that has a reduced energy demand, renewable power supply and battery storage.

What key energy-saving features are included in the structure?

One of the main aims was to reduce the demand for central heating through the architecture itself. To achieve this, the house was constructed with high levels of insulation and reduced air leakage. It was also designed to be near Passivhaus standards, however it's not certified because we wanted to use local suppliers – not all of whom are on the Passivhaus Institute's approved component database. The energy systems we've employed combine solar generation and battery storage to power the heating, ventilation, hot water and electrics. The house has been fitted with an integrated solar photovoltaic (PV) roof system in addition to wall panels that collect and store both thermal and electrical energy.

What method of construction did you use?

The shell is made of structural insulated panels (SIPs), a quick and highly-engineered option for creating an airtight house. Most of the components were manufactured in the factory and were swiftly slotted together on site, so the build only took 16 weeks.

How were you able to economise on energy-saving features to build the house for a budget of £1,000 per m²?

We used a PV system for the entire roof which meant we didn't have the cost of an additional roof covering. Also, because the heat demand is so low there was no need for radiators and the pipe network that would usually be required in a traditional house.

How will you test the property to see whether it functions as you have designed it to with people living in it?

The house is being surveyed intensely, and there are temperature sensors and energy monitors throughout the building. It will be studied for at least a year to ensure the energy-efficient features run as they should while the property is occupied.

Who helped you build the house?

The project has had some big industry partners, including: Tata Steel, who worked on the solar air collectors and steel elements; BASF, who manufactured the insulation material; and NSG Pilkington who supplied the high performance glazing which encapsulates the PV system. We also used local supply chains where possible, and it's been great to see that the local trades we employed are now getting work in the area as a result.

Would self builders be able to achieve a similar result?

Absolutely – we've already had plenty of interest from individuals since completing the construction of the house, and a number attended the launch event. I believe the integration of architecture and energy-efficient components holds the greatest attraction for people who want to create their own homes. For example, the low carbon systems have been designed to be economical and replicable, and importantly, it's not 'wow' architecture that seems to excite people. The true appeal is the prospect of building an affordable property that uses energy efficiently.

For more information visit www.solcer.org

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