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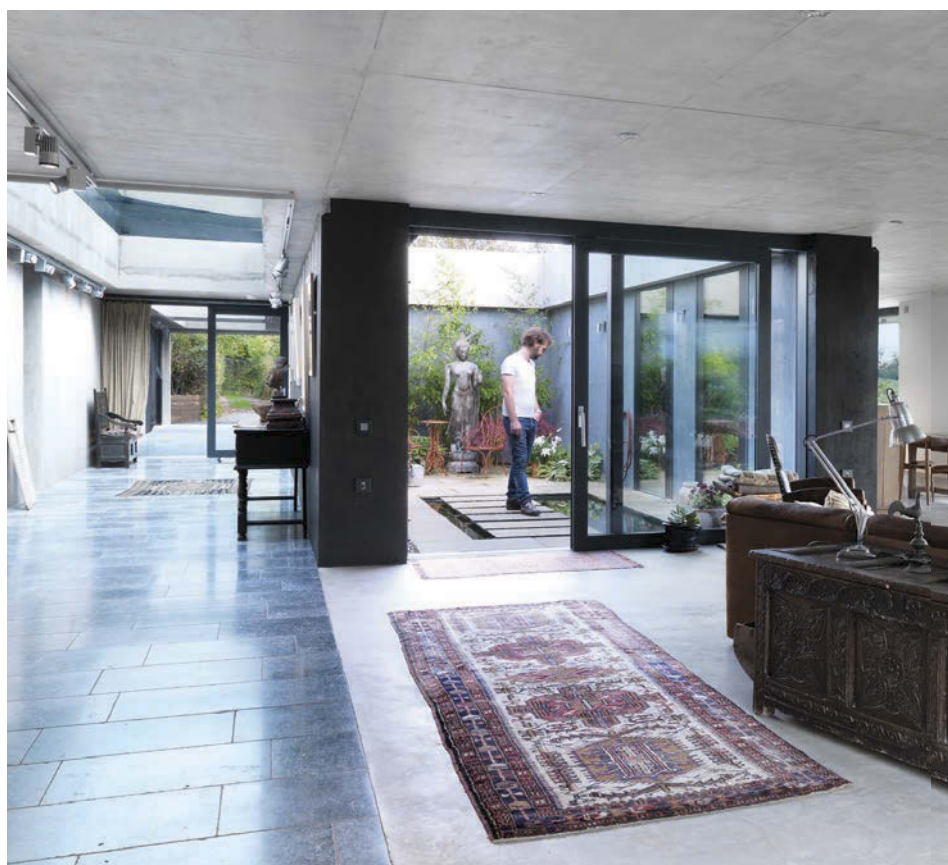
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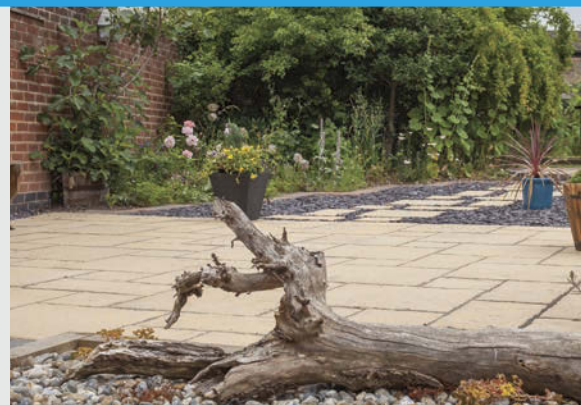
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Editor's Letter

It's been an interesting month for self-build. First, to the good news: Right to Build has stepped up a gear. From 31 October, local authorities have a legal duty to grant sufficient planning permissions for serviced plots to meet the demand for self-build and custom build in their area. Right to Build was introduced by government to enable more people to build their own homes. The first phase was launched in April 2016, with local authorities in England required to set up and maintain registers of those who'd like to self or custom build.

The Homebuilding team are wholeheartedly in support of Right to Build. It's a big step in the right direction, and one which sees government taking self-build and custom build – and one of the biggest hurdles faced, the availability of affordable land – seriously. Read more on page 23.

On a less positive note, the Section 106 'saga' continues to rumble on; these planning obligations imposed by local councils could set you back thousands when you receive the green light to build your new home. Planning consultant Sally Tagg and NaSCBA chair Michael Holmes (who has been instrumental in the campaign for a Section 106 exemption for

self-builders) get to bottom of the latest developments on page 27 – and explain why there could be light at the end of the tunnel soon.

Elsewhere, Mark Brinkley considers the pros and cons of building to Passivhaus standard (a dilemma he's recently faced on his own build); architect Neil Turner provides his 10 golden rules for extending; we explain how to renovate for profit; plus there's more design ideas than you can shake a stick at. **H**

“It's been a big month for self-builders”

**DON'T FORGET
TO CHECK OUT OUR
LATEST SUBSCRIPTION
OFFER ON
PAGE 47**



Claire Lloyd

has been a member of the *Homebuilding & Renovating* team for almost a decade. She's currently in the midst of renovating an old stone cottage with her partner Ed, a builder, aided by their two dogs, Bruce (shown) and George (who wouldn't stand still for the photo)

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Meet the EXPERTS



Bob Branscombe

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



Chris Reeves

Former builder Chris Reeves is now a construction solicitor and chartered building consultant. He also acts as a specialist mediator in construction disputes.



Jason Orme

The former Editor of *Homebuilding & Renovating* magazine, Jason is an experienced self-builder and is currently renovating a 1960s home.



Sally Tagg

Planning consultant Sally Tagg is MD of Foxley Tagg Ltd. She specialises in self-build issues and advises the Department for Communities and Local Government on policy.



David Snell

The author of *Building Your Own Home*, David is a serial self-builder and has been building homes for 50 years. He's currently building his fourteenth home.



Tim Pullen

Tim is *Homebuilding & Renovating's* expert in sustainable building and energy efficiency. He runs the green home consultancy Weather Works.



Ian Rock

Chartered surveyor Ian Rock MRICS is the author of eight popular Haynes House Manuals, and is a director of Rightsurvey.co.uk.



Mark Brinkley

Mark is the author of the ever-popular *The Housebuilder's Bible* and an experienced builder. He's just about to embark on another self-build.



Michael Holmes

Michael is HB&R's Head of Content and Product Development. He also chairs NaCSBA (National Custom and Self Build Association).



Paul Hymers

Paul Hymers is a building control officer and has written eight books on home improvements and developing, including the best-selling *Home Extensions*.



Neil Turner

Neil Turner is director at Howarth Litchfield Partnership and specialises in residential design. Read his 10 golden design rules for extending on page 80.



David Hilton

David is an expert in sustainable building and energy efficiency and is a director of Heat and Energy Ltd. Read his feature on ventilation on page 63.

Homebuilding & RENOVATING SHOW

Meet the Experts in Person

Want a free 15-minute consultation with an expert? Visit The Advice Centre at the Harrogate Homebuilding & Renovating Show, from 4-6 November, or Somerset Homebuilding & Renovating Show, from 19-20 November.* homebuildingshow.co.uk

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First Plots on Sale at Graven Hill

Oxfordshire's Graven Hill, set to become the largest self-building village in the UK (see above), has put its first 10 'Golden Brick' self-build plots on the market. All 10 plots are detached (five three-bed and five five-bed) and come with a 'plot passport' to help buyers get planning permission quickly. This first phase is aimed at people who live or work in Cherwell in Oxfordshire.

The 'Golden Brick' purchase price, which starts at £148,000, includes the plot, foundations designed and built to the self-builder's requirements, and a 10-year structural warranty. "This marks the start of a 10-year programme to create 1,900 new homes at Graven Hill," says Adrian Unitt, operations director at Graven Hill Village Development Company. "We are releasing plots gradually, gaining momentum over the coming months and years as the roads and other infrastructure for the new village are constructed. I believe the excellent response from local people during the priority period reflects a recognition of the potential at Graven Hill."

POST BREXIT, SELF-BUILDERS WILL "GO AHEAD REGARDLESS"

"The true effects of Brexit for self and custom builders will not be felt until Article 50 is triggered and Britain really is on the road to leaving the EU," says Michael Holmes, chairman of NaCSBA, the National Custom and Self Build Association. He predicts that the weaker pound will lead to imported building materials becoming more expensive, as well as a shortage of construction skills as many workers from the EU decide to go home. He adds

that concerns about rising interest rates may also have an impact: "Rate rises to combat inflation and a weak pound may affect confidence among those considering building their own home," he says. "However, even if there is an economic slowdown, the majority of people building their own homes see their project as somewhere to live and not just an investment decision, and will go ahead regardless, because the time is right for them." 



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'Right To Build' Set To Boost Land Availability



Michael Holmes

Michael is HB&R's Head of Content and Product Development. He also chairs NaCSBA (National Custom and Self Build Association)

Right to Build legislation puts a new duty on councils to meet demand for self-build and custom build homes in their area. We speak to Michael Holmes, HB&R's Head of Content and Product Development and chair of NaCSBA (National Custom and Self Build Association) about the latest developments

What exactly is the Right to Build?

The Government is keen to boost housebuilding and improve affordability, and has passed legislation to make more individual and serviced building plots available. Known as 'The Right to Build', the first part of this was the introduction of demand registers in England in April 2016.

What is the latest development on Right to Build?

The Act came into force at the end of October, which means that local authorities in England have a new legal duty to make enough serviced plots available to meet the demand on their Right to Build register. Some councils are already embracing this, but if yours is not, you need to put pressure on them to meet their legal obligations.

Why is this new initiative so important?

Research commissioned by the National Custom

**1 MILLION:
THE NUMBER OF
PEOPLE WHO WANT TO
START A SELF-BUILD
IN THE NEXT 12
MONTHS**

and Self build Association (NaCSBA) shows that 53 per cent of people would like to build their own home at some stage in life, and one million would like to get started in the next 12 months.

Providing local authorities comply, the new Right to Build scheme could solve the biggest issue faced by those who want an individually designed home — finding a building plot.

Councils will also make opportunities available in urban areas, including cities. Expect to see more custom build apartments and flats with bespoke layouts too, and the option to self-finish to bring down the cost.

How can I get onto my local register?

Anyone looking for a plot in England can register with their council, via righttobuildportal.org.

What is the situation in Wales, Northern Ireland and Scotland?

NaCSBA has recently visited the Welsh Government to encourage them to adopt the same Right to Build policy, and work is underway with the Scottish Government to bring forward more opportunities for custom and self-build. In Northern Ireland, land supply has always been much less of an issue and 15 per cent of all new homes are commissioned by their owners, compared with eight per cent or so across the UK. **H**

"Overall, the future for anyone who wants to create an individual home is looking more positive than ever, largely because those who govern us are at last beginning to recognise that the best people to decide how and where homes are going to be built, and how they should be designed, are those who are going to live in them."

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The construction industry is responsible for nearly a third of all waste which makes its way into landfill in the UK — it's a shocking figure by anyone's books. One company is striving to provide a more sustainable solution, while also providing a few freebies and bargains for self-builders and renovators in the process. EnviroMate (enviromate.co.uk) is a dedicated construction marketplace which

The construction industry is responsible for **32%** of all landfill waste

allows users to search for free or reduced-priced building materials in their area — with the aim of finding a home for leftover, unwanted and/or unused materials rather than seeing them go to landfill. You can also sign up to post details of your own unwanted materials.

Admittedly, those in the south are in for richer pickings on this relatively fledgling site. However, for those with one eye on the environment and the other on the build budget, it's well worth a look. **H**

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PLANNING

Obligations Explained

Puzzling over your Section 106 or CIL charges? Planning expert Sally Tagg explains what they both mean for the self and custom builder and how to successfully navigate the complex - and changing - world of local authority planning charges



Sally Tagg

Sally is the managing director of Foxley Tagg Planning Ltd and *Homebuilding & Renovating's* planning expert

There are many advantages to self or custom build projects; potential financial savings being one of the most attractive. A self-build project should by its very nature be more affordable to develop than an equivalent house on the market.

However, when considering a self-build mortgage and calculating project finances you need to make sure that costs relating to possible planning obligations are carefully considered so that they do not scupper the scheme.

When planning applications are approved for housing, local authorities have the right to apply a planning charge in order to generate 'planning gain' which they can use to help deliver community infrastructure in the area. Planning gain is most often used to pay towards affordable housing and local infrastructure such as roads, schools and community facilities.

Unfortunately, planning obligations could reasonably be described as a 'postcode lottery' as each council has a different set of policies

relating to two possible charges:

- Section 106 (S.106)
- Community Infrastructure Levy (CIL).

The extent of such costs differing wildly even within a council area.

'Planning obligation' is a catch-all term used to refer to any sort of contribution that in many but not all cases will be financial. The legal mechanisms for securing these obligations relate to Section 106 of the Town and Country Planning Act (1990 as amended) and via a Community Infrastructure Levy (CIL).

A S.106 agreement would be used to secure contributions for such things as education, sustainable travel, affordable housing, public open space and so on, where the addition of any new dwelling is considered to have an impact on local services or infrastructure.

In most cases a council would base the requirements on the number of bedrooms and so the liability on a four bedroom dwelling would be greater than on a two-bed dwelling. However, the exact nature and level of these costs relate directly to the policies of the council and

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local needs. For example, whether a local school has available places or not would impact on a requirement for an education contribution.

The process should entail the council setting out its justification for each contribution, with this written into a legal agreement that specifies triggers necessary for payment, for example: 'Education contribution of £5,000 to be paid to St John's Primary School prior to occupation of the dwelling.' To add to the load, in many cases you must also cover your own and the council's legal fees.

Different Planning Obligations

CIL is often confused with S.106 and self-builders believe them to be the same, but this is not the case. The CIL is a separate tariff-based system established by the Planning Act (2008) for England, but nearly a decade later some councils have still not established and adopted a CIL charging schedule. In instances where councils do not have a CIL structure in place, a S.106 agreement would still be used. However, where a council has an adopted CIL you could be liable for payments as part of the levy and potentially a S.106 contribution to cover site-specific issues such as drainage and/or access.

To explain more clearly the difference, S.106 payments are based on the impacts of a specific development on local infrastructure while CIL is designed to cover the costs of all local infrastructure needs. Such needs might include transport, flood defences, schools, hospitals, health and social care. In order to calculate a CIL tariff, a council will consider the total costs of delivering these services against the total scope of development expected in the area. Unlike S.106, CIL is calculated on the total floor space of a development, not bed spaces, so the bigger the dwelling the greater the charge. To make matters worse, in general CIL monies are required to be paid before work commences, although some councils will allow payments to be made in instalments.

CIL Exemptions

It is worth noting that in most London Boroughs there is a Mayoral CIL as well as a local CIL charge. From experience, we have seen CIL charges from £5,000 to £150,000 but the light at the end of the tunnel is that there is scope for self-builders to apply for a CIL exemption.

This exemption 'is applicable to homes built or

commissioned by individuals for their own use'. The correct part of an 'Assumption of Liability' form should be completed to refer to self-build and a 'Self-Build Exemption Claim — Part 1' form must be submitted to certify among other things that the new property will be occupied by the applicant as their principal residence for a period of three years from completion.

A 'Commencement Notice' must then be submitted before work begins with 'Part 2' of the 'Exemption Claim Form' then submitted within six months of completion. This form needs to be supported by specific evidence to prove the self-build use, e.g. title deed, Council Tax details plus other finance-based records as set out in the guidance.

While there is a clear process for a self-build CIL exemption, the same is not true with regard to S.106 contributions. Although S.106 contributions are often lower than those relating to CIL, there are instances where councils require contributions for such things as affordable housing even with the development of a single dwelling. I have come across significant affordable housing contribution requests, i.e. 20 per cent of the final property value. In such cases, it may be possible to demonstrate to a council that as a consequence of the S.106 charge a scheme is not viable and so some S.106 costs may be reduced or offset. As was widely reported at the time, to recognise the unique nature of self-build and to encourage this sector, in 2014 the government established a mechanism whereby schemes of under 10 units and 1,000m² gross floorspace would be exempt from these payments. This, however, was challenged in the courts by two local authorities, with the government winning out on appeal.

Despite the court victory this mechanism is still not enshrined in planning law and therefore many councils are choosing to disregard it. As such, there are once again variations based on where your development is located. Unfortunately, I believe that it is likely that this situation will rumble on for some time until new legislation is made law or where appeal decisions establish a robust position (see page 30). So for self-builders, CIL and S.106 are still important but complex areas which can greatly impact upon the affordability of a scheme. It is therefore critical that the implications of the contributions are fully assessed and understood at an early stage. ➤



Michael Holmes

Michael is HB&R's Head of Content and Product Development. He also chairs NaCSBA (National Custom and Self Build Association)

Finally, Some Good News on Section 106

NaCSBA Chairman Michael Holmes has this advice for self-builders concerned about Section 106 charges

For councils to levy sizeable contributions for affordable housing and infrastructure on single plots and small sites, without any recognition of the disproportionately high cost of building on such sites, always seemed unfair. This is never more so than placing such charges on those building their own one-off home.

It was a perverse outcome of planning policy that many custom and self-builders who chose to go down this route largely to improve affordability ended up being charged an average of £15,000, and often far more, to subsidise housing and infrastructure for others — sometimes rendering their own project unviable.

This served as a huge disincentive, especially for the many who work very hard managing the project themselves or undertaking work on a DIY basis in order to reduce costs.

NaCSBA, the National Custom and Self Build Association, put this issue to government and proposed the introduction of an exemption for custom and self-build homes. The government listened, and on 28 November 2014 the then Minister for Housing and Planning, Brandon Lewis, introduced a Written Ministerial Statement (WMS), exempting sites of 10 units and under from Section 106 (S.106) planning obligations, up to a combined gross floorspace of 1,000m², reduced to five units in rural areas, Areas of Outstanding Natural Beauty and National Parks. Local authorities started observing the exemption straight away, creating a positive surge in planning applications.

Concerned about losing the revenue, however, two local authorities, Reading and West Berkshire, challenged the WMS's validity in the High Court, and on 31 July 2015, only eight months after its introduction, the exemption was quashed. Local authorities started applying S.106 planning obligations to new planning

permissions with immediate effect, catching many applicants out with £1,000s in unexpected charges. Unhappy to see its intentions to support custom and self-build frustrated, government appealed and on 11 May 2016, the Court of Appeal overturned the High Court and upheld the lawfulness of the WMS, reintroducing the exemption with immediate effect.

You'd think that would be the end of the matter; however, two planning appeals decisions — one in South Cambridgeshire and one in Elmbridge — have since found that where a new Local Plan has been adopted after 28 November 2014, the date of the WMS, a decision made locally to levy S.106 contributions on small sites should be given greater weight than the WMS — thereby overturning the exemption once again in such areas.

So where does this leave you if you are planning on making a planning application for a new home right now?

What this Means for Your Build

I suggest you contact your local authority and investigate their approach to S.106 contributions. The majority of local authorities are taking the WMS into account and applying the exemption, but following the recent inspectors' decisions, some with a recently adopted Local Plan may take a different view.

If you find you are facing the prospect of having a S.106 planning obligation applied as a condition of consent, I would seriously consider delaying your application, or withdrawing it until the National Planning Policy Framework has been updated (this was due summer 2016) and Paragraph 159 amended to take the WMS into account.

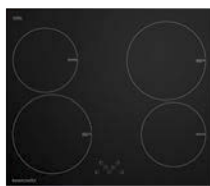
Once the exemption is incorporated within legislation, it will have more weight than Local Plan policy and the exemption will be in place, once and for all. **H**

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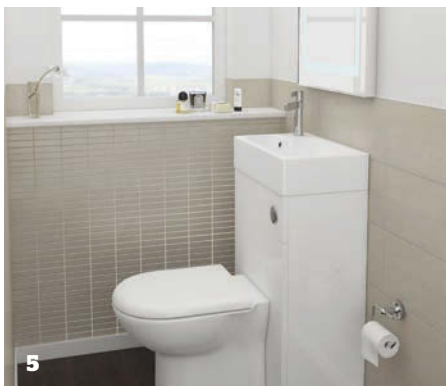
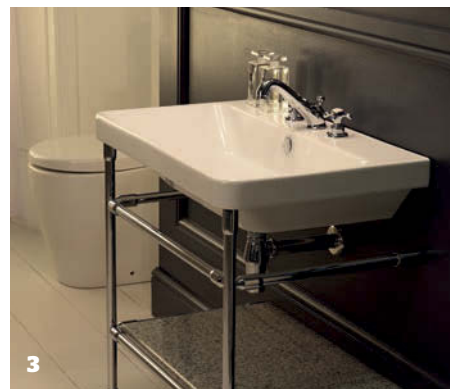
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Bathroom Basins

A great basin can make a bathroom. We've selected our favourite models – including compact solutions for small bathrooms and family-friendly ideas



1. Kaldewei's CONO built-in washbasin is made from enamelled steel, measures 1,200x500mm and costs £972 incl VAT. (kaldewei.co.uk)

2. Duravit's Durastyle vanity, available from Alternative Bathrooms, can be specified in four widths: 650mm (£234), 800mm (£329), 1,000mm (£433) and 1,200mm (£526). The basin stand with shelf in American walnut starts from £292 incl VAT. (alternativebathrooms.com)

3. Albion Bath Company's classic Arrezzi Basin is made from vitreous china and can be wall-hung or mounted on the basin stand, which is finished in either chrome or bright nickel. The basin starts at £1,522. (albionbathco.com)

4. TOTO Neorest white ceramic washbasin with CeFiONtect glaze – a long-lasting finish that prevents the build-up of mould, limescale and dirt – costs £505 incl VAT. (gbtoto.com)

5. The ideal solution for space-limited bathrooms and compact en suites, the Alaska Combined Two-in-One Washbasin and Toilet costs £259.95 from Victorian Plumbing. (victorianplumbing.co.uk)

6. Utopia's cloakroom washbasin unit in Black Linear from the YOU modular collection costs £395. (utopiagroup.com)

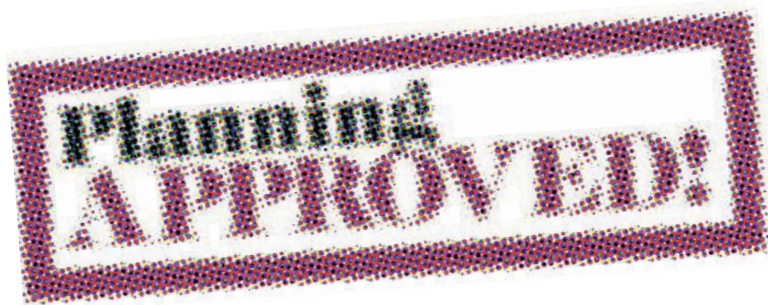
7. London Basin Company's Madeline porcelain basin, £650. (londonbasincompany.com)

8. Cooke & Lewis' Kiddie Step Gloss White vanity unit and basin costs £145. (diy.com)

9. Victoria Plum's Ontario countertop basin costs £69.99, providing an inexpensive way of making a design statement in an en suite or cloakroom. (victoriaplum.com) **H**

Additional Contacts

Bathrooms.com; Bathstore: bathstore.com; Better Bathrooms: betterbathrooms.com; DesignSpace London: designspacelondon.com; Duravit: duravit.co.uk; Frontline Bathrooms: frontlinebathrooms.co.uk; Pure Bathrooms: purebathroomcollection.co.uk



proposed south elevation

proposed east elevation



proposed west elevation

proposed north elevation



Paul Testa

Paul is founder of Paul Testa Architecture and specialises in sustainable design (paultestaarchitecture.co.uk)

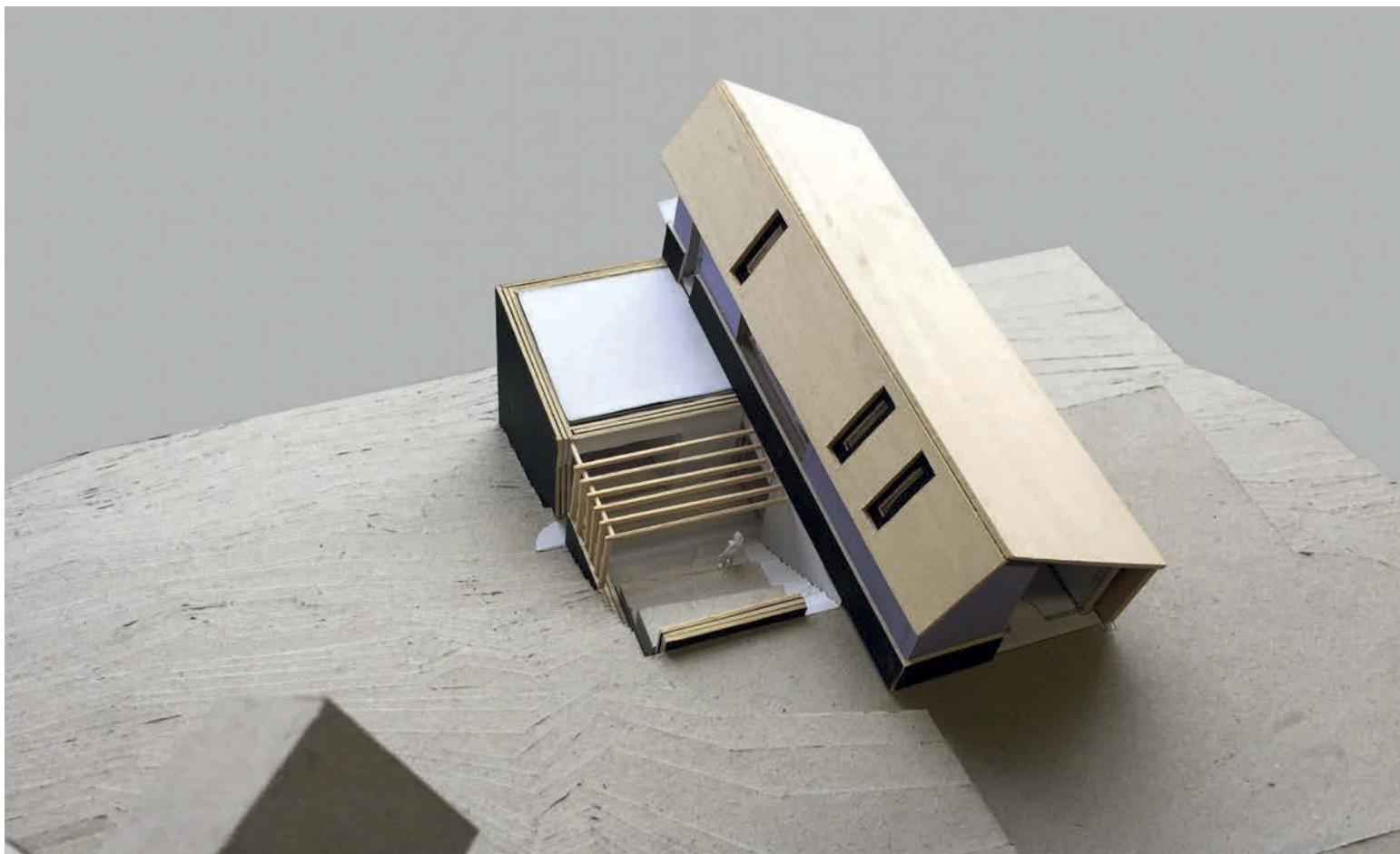
“There Had Been Four Unsuccessful Previous Applications on the Site”

Architect Paul Testa explains how he gained approval for an eco-friendly home on a difficult, sensitive site in Sheffield

The site is a tough one; it's a steep, wooded plot, steeper than normal, even for Sheffield. A large proportion of the site area is covered by a tree protection order for the woodland's landscape value, and there are significant overlooking issues into or from the existing dwelling, depending on where a new building is sited.

We're always very cautious when approaching sites with potentially very difficult planning contexts, such as in this case. We don't like to spend lots of our clients' money on design fees when the planning constraints and the related risks haven't been fully identified and explained to them.

For this reason we almost always recommend the very early involvement of a planning con-



“We recommend the very early involvement of a planning consultant... to let the client make an informed decision”

sultant (in this case, Susan Crowley of Crowley Associates) to flesh out the planning position and to let the client make an informed decision about whether or not to proceed.

This site in particular had a chequered planning history; there had been four previous applications for much larger developments of between 10 and 15 dwelling units. These had all been either refused or withdrawn. However, the refusals were on the basis of appearance rather than the principle of residential development.

Susan's opinion was that, while there were previous refusals, the proposal of a sensitively designed single dwelling could potentially be welcomed by the local authority as it would remove the opportunity for these larger scale proposals that had gone before.

This gave us the confidence to start developing a proposal for the clients. Access, the extent of the trees and overlooking to and from the existing house were all significant constraints that had an impact on the design, along with Sheffield's characteristically steep topography. Our plans looked to exploit the site levels, keeping the building low and hugging the hillside, while still offering extensive landscape views

to the west. This use of the levels means that overlooking towards the existing house is eliminated and careful window placement and reveal design keeps any overlooking into the proposed dwelling to a minimum while still allowing for some passive solar gain.

The pre-application response supported Susan's view that the principle of a new dwelling on this site was acceptable. Furthermore, the response appeared to welcome the form, character and massing of the proposal.

Following further design development and discussion with our very engaged and interested clients, we submitted the full application with final drawings and documentation for consideration. The planning officer was very impressed with the proposals and recommended it for approval, which we received in February 2016.

The project is now being developed for construction. The contractor, Terry Huggett Developments, has been agreed based on their ability to work within the high demands that Passivhaus buildings put on workmanship.

An early appointment of the contractor has allowed us to develop the project with a view to starting on site in the summer of 2017. **H**

Site-Specific Solutions

While the project has changed significantly over the design process, the primary ideas have remained. Firstly, to create a solid masonry base that belongs to, and accommodates, the steep site slope starting as a slim plinth at driveway level and ending at 1.5 storeys high at its peak. This contains the bedrooms and other support spaces, while the main daytime living accommodation sits within a lighter weight timber framed and clad enclosure sat on top. Secondly, the building is oriented towards the west and the amazing views; this allows the windows to the north and south to be minimal and less about views than daylight. Slim rooflights set between the internally exposed timber structure complete a light, spacious volume.

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1 STATEMENT LIGHTING
In addition to playing a functional role in the home, a good lighting scheme should enhance the aesthetics. In some instances, lighting can be used to make a bold statement — a striking pendant hanging delicately above a staircase being one example. In this extension and renovation scheme to a period home, three Tom Dixon copper pendants help to make the dining area, set beneath high ceilings, feel more intimate and bring a contemporary touch to the interiors.

10 Clever LIGHTING DESIGN IDEAS

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2 NEW LOOKS FOR BEDTIME READING

Ordinarily, a couple of lamps placed on bedside cabinets are the default option when it comes to bedroom lighting. Planning your lighting scheme from the outset of a self-build or renovation project provides the ideal opportunity to do something a little different. Here, this bespoke bed and headboard, by Rousseau Design, is framed by LED lighting (left), while hanging stylish pendants either side of the bed (below) is another interesting idea (it goes to show that planning where your furniture is likely to be placed before starting first fix is important). In this scheme by John Cullen (above), low glare LED Polespring downlights light up the headboard, pin spot the end of the bed and wash light down the front of the cupboards to create a cosy bedroom. ➤

3 BACKLIT SPLASHBACKS

The eye-catching splashback is a real talking point in this Second Nature in-frame slab and Shaker kitchen; the Mediterraneo quartz splashback is backlit with LED lighting to stunning yet subtle effect.



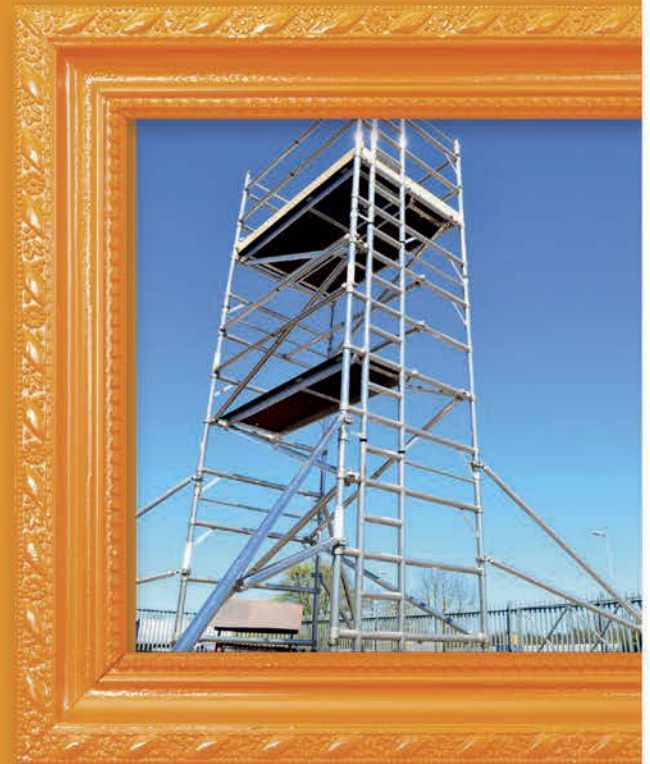
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4 SHEDDING LIGHT ON HIGH CEILINGS

Spaces with high and/or vaulted ceilings can be difficult to light. Often pendant lights fail to direct light upwards towards the ceiling. Uplights are a good solution, as this example goes to show — warm LED strip lighting casts a soft glow and makes a feature of the space above.



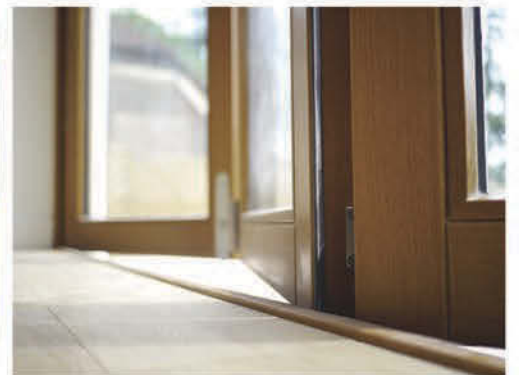
5 CLEVER ACCENT LIGHTING

A clever lighting scheme brings real warmth to the interiors of this new home — in particular, the eye is drawn along the length of this open plan space and towards the colourful artwork, illuminated by accent lighting. Accent lighting also brings attention to the built-in shelving.



6 LAYERING LIGHT

A good lighting scheme will include layers of light: task, accent (used to highlight features) and ambient (general) lighting. Nowhere is this perhaps more important than in the kitchen diner — as this scheme by John Cullen goes to show. Here, at low level, Cazalla floor washers light the floor, Minos Spotlights on the beams provide task lighting to the kitchen island and a Contour HD24 LED strip provides uplight above the kitchen units to emphasise the ceiling. ➤



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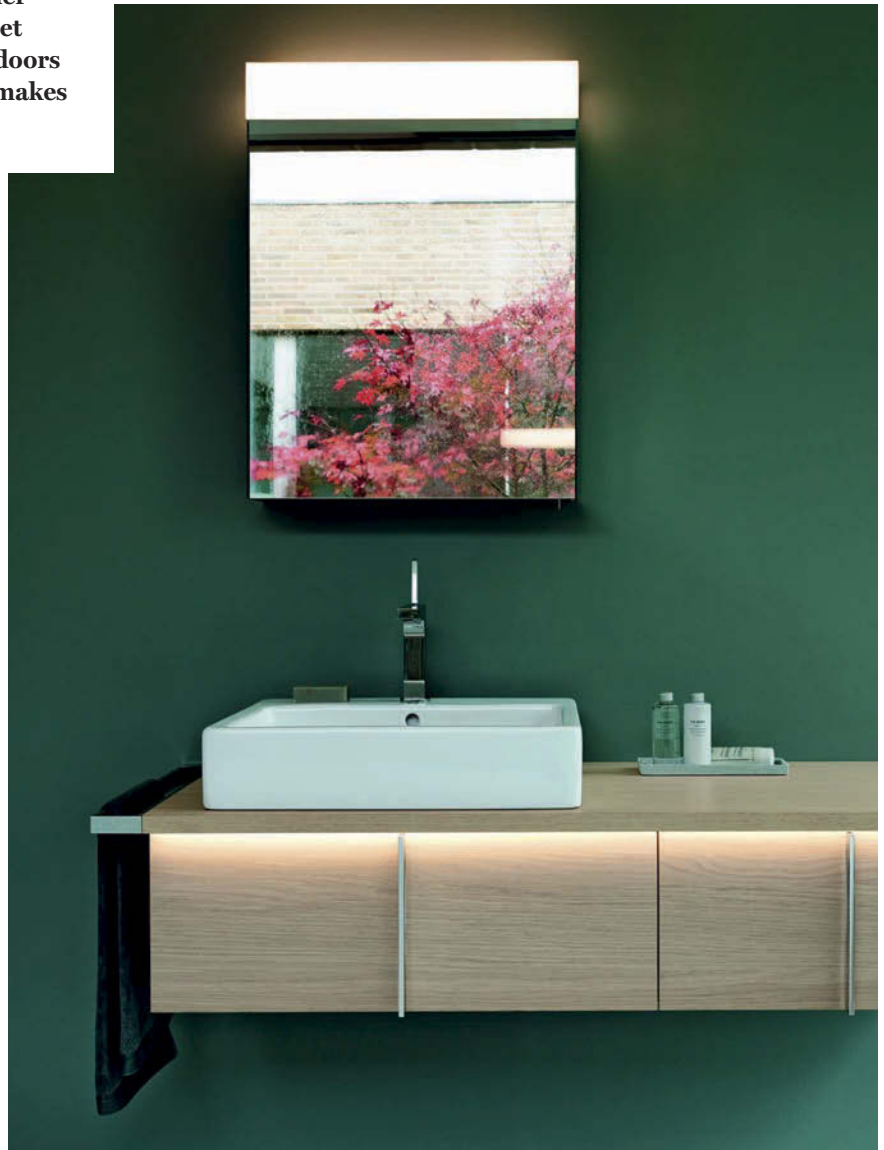


7 INTEGRATED LIGHTING

Integrated lighting has been big news in the kitchen for some time, but the latest generation of bathroom cabinets have also followed suit. The Duravit New Vero illuminated vanity unit and mirror (below right), for instance, lends a soft glow for an ambient dip. Another clever idea is showcased above — lighting set within built-in cabinets with semi-opaque doors not only illuminates the dark corners, but makes a feature of the books stacked inside.

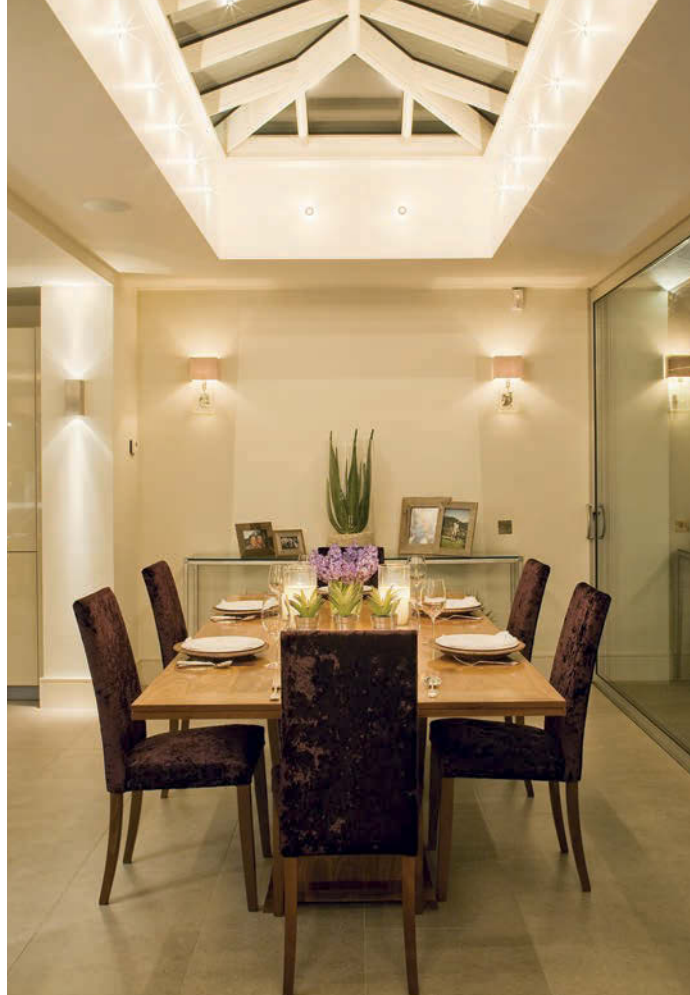
8 ILLUMINATED TREADS

Staircases and the surrounding circulation space can be difficult to light. Spotlights, positioned above each tread, can be a good option, particularly for nocturnal visits to the kitchen. Another option is to illuminate the treads themselves — it's one way to make a statement of your new staircase (this one is by Bisca). ➤



9 A SOLUTION FOR DAY AND NIGHT

Large roof lanterns or rooflights are a great addition above dining tables — bringing natural light flooding in (great for working from home or weekend lunches); the arrangement also brings a pleasing symmetry. But how do you introduce light when the sun goes down? A ceiling-mounted pendant is not always an option — or is it? In this extension project (below), John Lewis pendants have been suspended from the rooflight frames — an ingenious solution. Meanwhile, this scheme by John Cullen (right) proves that pendants aren't the only lighting solution for dining spaces; the John Cullen Lighting Wall lights provide a soft glow and Mini Starlights light up the rooflight above.



10 RECESSED LIGHT

Wall lights can be fussy additions to minimalist schemes. An alternative for more contemporary interiors is recessed LED strips. In this living space, warm LED lighting is recessed within insets (specifically designed for this purpose), bringing swashes of soft light to this space. **H**



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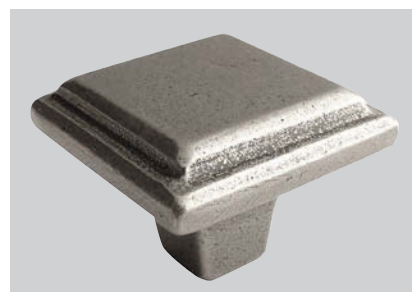
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Mark Brinkley

Mark Brinkley is the author of *The Homebuilders' Bible* and an experienced builder; he's just about to start another self-build project

Modified Wood: The Answer to Timber Woes?

Durable, sustainable, quick growing: there's a wide range of modified timber products on the market and one of these could be just what you need for your project, says Mark Brinkley

In many ways, timber is the best building material in the world. It's attractive, it's strong, it's easily workable and there's lots of it. It also embodies the essence of sustainability in that it is renewable and, far from consuming carbon dioxide in production as most building materials do in manufacture, it absorbs it during the growth phase. If you are looking for a sustainable building material, it's hard to beat timber.

But timber is not without its issues and the biggest of these is that, because it is an organic material, it can break down and eventually rot away. Fire and water are the enemies of timber preservation and one of the arts of building well is to eliminate contact with them. Repeated contact with water makes timber distort, discolour, eventually grow mould and become vulnerable to attack by insects and fungi.

Some timbers are more durable than others. Generally hardwoods are slower growing and denser than coniferous softwoods, and as a rule they perform better in buildings. Oak, in particular, has a marvellous reputation for longevity and seems to be able to withstand centuries of weathering. But oak is expensive and it's so hard that machining it is difficult, which is why it is normally built with in its green state.

What the world of building would ideally like is a source of timber that grows quickly like most softwoods and yet performs like oak. Welcome to the world of timber modification.

Modifying the performance of timber is nothing new. The most basic way of doing this is to give it a durable surface coating, otherwise known as painting. You've only got to look at the well-preserved Georgian squares of central London (think of No. 10 Downing Street) to realise that softwood sash windows can be preserved for centuries if they are well maintained. But painting

is time consuming and expensive and if you factor in the time and money spent on regularly repainting softwood windows, they don't look very cheap at all.

Another popular technique is to bathe the timber in a chemical preservative. British practice was to treat construction grade softwoods with toxic chemicals like arsenic, chromium and lindane, either using tanalisation (which is water-based) or protimisation (which is solvent based). The idea was that these chemicals would improve the lifespan of the timber and they would reduce the likelihood of insect attack. However, the use of these chemicals was always somewhat questionable and many of them have now been phased out on health grounds. This has led to a burgeoning interest in more fundamental ways of improving the performance of timber — and this means changing the chemical structure of timber itself. Experiments have been underway since the 1960s and there are now a number of products available that prom- ➤

Modified Timber

This low-cost self-build, designed by architectural technologist and owner Gordon Aitken, was one of the first homes in the UK to use Accoya cladding in 2008. "Its beauty is that it's maintenance free. And it doesn't shrink or expand so I was able to keep tight joints," says Gordon.



ise hardwood-like performance from modified softwoods.

Techniques of modification have in fact evolved down two distinct pathways. One is to heat treat timber, causing the lignin naturally present in the timber to melt and become impervious. This is known as thermally modified timber or TMT. The other is to add chemicals to the timber, which change the physical structure and colour of the timber. The easiest way to understand this is to compare it to pickling conkers in vinegar.

Accoya is the best known of these chemically altered timbers. It uses acetic anhydride to change the nature of the timbers and it produces an exceptionally durable timber, which is mostly used for manufacturing joinery. Hull-based Batty Joinery has been using it for making windows for many years and the company is a keen advocate of the product. I spoke to the company's Ashgar Hoque, who commented: "Accoya is very easy to work with, yet unlike softwoods the durability is excellent. There is no movement, no shrinkage after manufacture and we are really pleased with the results. It compares well with species like oak, but it's much cheaper. We are finding many discerning private clients are now specifying it, and the demand for it is growing all the time."

Behind the success of Accoya is a British company Accsys Technologies run by Nick Clegg's elder brother. The original technology was developed in New Zealand in order to find a way of adding value to the country's abundant radiata pine which was deemed to be too far from global markets to have any value. It has taken decades of research and development to get to commercialisation but Accoya sales now appear to be going from strength to strength as customers begin to appreciate just how dimensionally stable the product is. Accsys has also developed another new product, an improved MDF board called Tricoya, which is designed for external use.

Other chemically altered timber products are also making headway, notably Norwegian-based Kebony and another system originating from New Zealand called Lignia, which specialises in through-coloured timber, primarily used internally for applications like worktops and floors.

Of the thermally modified timbers (TMTs), ThermoWood has achieved significant commercial traction. It has found a niche as an



alternative to western red cedar as a cladding material. Vincent Timber, suppliers of decking and timber claddings, sells ThermoWood at just over £20/m², less than half the cost of cedar and about 15 per cent less than Siberian larch, which has also become popular as a cedar alternative.

There are several other suppliers of TMTs but one that is worth highlighting is Vastern Timber's Brimstone, which stems from the fruits of a project set up to start using neglected British timbers such as ash and poplar. After heat treatment, these turn an attractive deep brown colour, similar to walnut. However, unlike many natural wood species the colour is relatively consistent and as such it weathers evenly when used untreated outside. Whereas ThermoWood is usually knotty, the Brimstone range gives a clean and contemporary appearance at a price similar to western red cedar.

While there are lots of options in the world of modified timber, their overall market share is still very small. Turning neglected softwoods into hardwood, which is essentially what all of them are trying to do, has a production cost and it is not always apparent that this makes them any cheaper than the timbers they are hoping to replace. And because their use is relatively new, modified timbers lack the in-use history that would establish just how well they weather.

But, all the indications are that the performance of these modified timbers is excellent and they may even surpass the timbers they are designed to replicate. As the market develops, expect both performance to improve and prices to fall. **H**

Kebony Cladding

Kebony timber cladding is used on this project – the Invisible House on the south coast of the Isle of Wight. Kebony is a Norwegian-based chemically altered timber product.

Contacts

Accsys Technologies

accsysplc.com

Batty Joinery

battyjoinery.co.uk

Kebony kebony.com

Lignia lignia.com

Lunawood

lunawood.fi/en/

Silva Timber Products

silvatimber.co.uk

ThermoWood

thermowood.fi

Totali Timber

totaliuk.com

Tricoya tricoya.com

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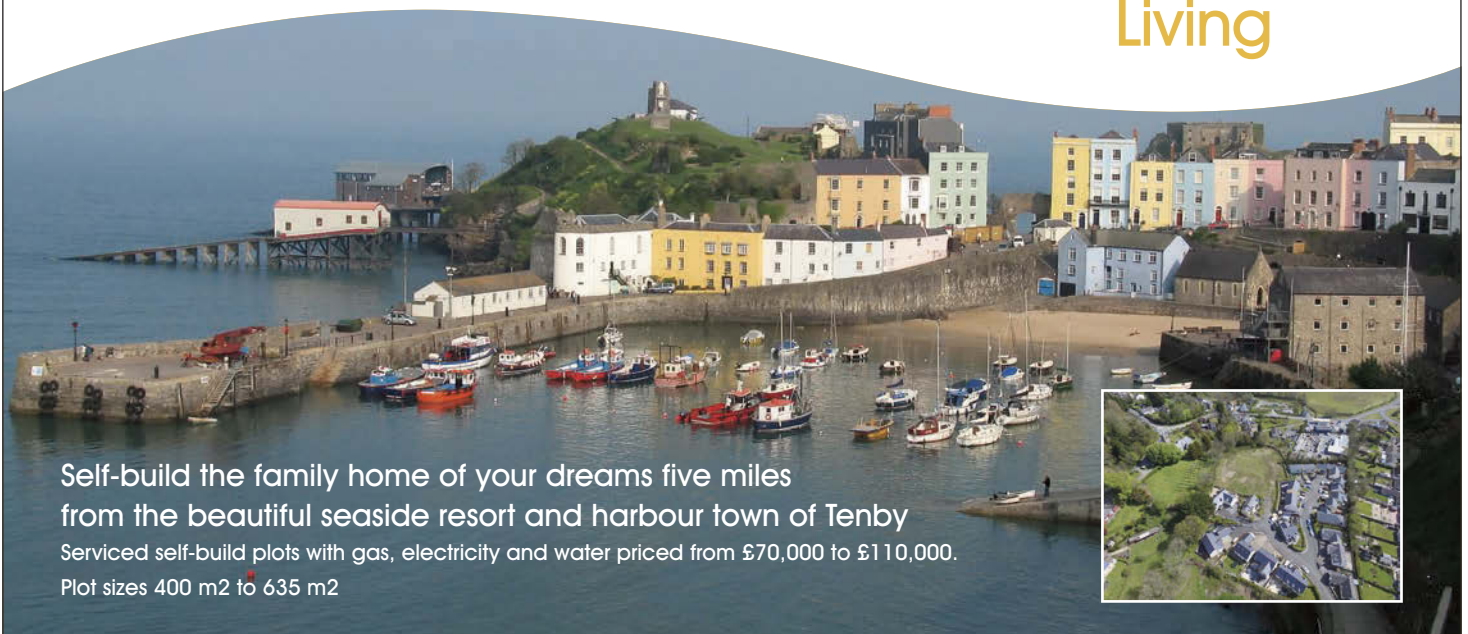
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From Derelict Cottage to Characterful Home

Kevin Shaw and Jessica Marco-Wadey have extended a run-down rural property to create a large family home

Words: **Jo Messenger**
Photography: **Richard Gadsby**

“It was perfect. It had so much potential and was in an amazing countryside location. I didn’t hesitate to put in an offer,” begins Kevin Shaw. What followed was a project so extensive that only one bedroom has remained in the same place.

“Uninhabitable” is the word used by former estate agent Kevin, who now runs Exclusive Rooms, to describe the condition of the house when he received the keys. His first task was to clear the whole site, hiring a digger to remove all the brambles. “You couldn’t see more than a metre or so in front of you in the garden,” he says. Kevin then demolished a dilapidated garage and carport before installing a new sewage treatment plant in the garden.

“I basically did everything I could that didn’t need planning approval,” he says. “I wanted to see what I had to work with.”

Kevin asked Sara Rudkin, an architect recommended by a friend, to work with him on the project. “She was very patient and able to translate my rough sketches into reality,” he says.

His brief to Sara was to transform the two-bed cottage into a four bedroom family home without it looking or feeling as though it had been extended. Kevin also wanted to reclaim as many of the original materials as possible. “We didn’t waste anything; even the flagstones from the old path that led up to the house have now been used in the area around the front door.”

In addition to reconfiguring the interior, the





house was extended in two phases. Kevin project managed the entire process himself, hiring the various tradespeople as and when he needed them rather than using one main contractor.

The first phase took nine months and created a large kitchen/dining space downstairs and a new master bedroom with balcony above, both with bifold doors to make the most of the stunning rural views.

Shortly after work started, Kevin met Jessica Marco-Wadey and she eventually moved into the house, becoming involved with the project. A second extension, added a year after the first, created a bay in the living room with space for a woodburning stove. At the same time, Kevin also gained permission for a two-storey garage

and carport. "The original plan was to have a separate two-storey double garage but the planning department didn't like this idea as they felt that it could be turned into a separate dwelling later," says Jessica. "So we amended our plans and linked it to the house instead. This gave us space for the dressing room and en suite above, so in the end it was the best decision for us."

The entrance was also repositioned and there is now a stunning vaulted hallway where the kitchen used to be. **H**

Next month

A dated bungalow is transformed into a light-filled contemporary home.

Transformed Exterior

Extensions to the rear and side have transformed the exterior of this once run-down cottage; the project was undertaken by homeowner Kevin Shaw, who now runs a property investment company, Exclusive Rooms. The cladding on the new garage is from Timberstore and the hanging tiles are from Tudor Tiles, while NR Jupp Landscapes supplied and fitted the balcony. Mark Antony made the bifold doors, which lead on to the patio of Indian sandstone from Global Stone.



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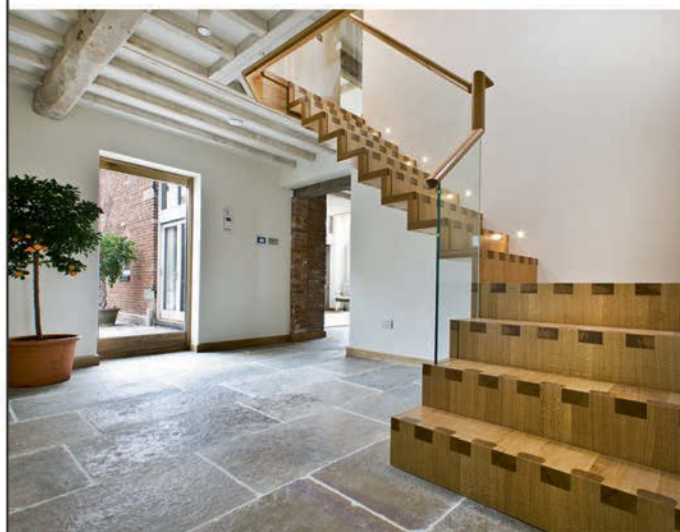


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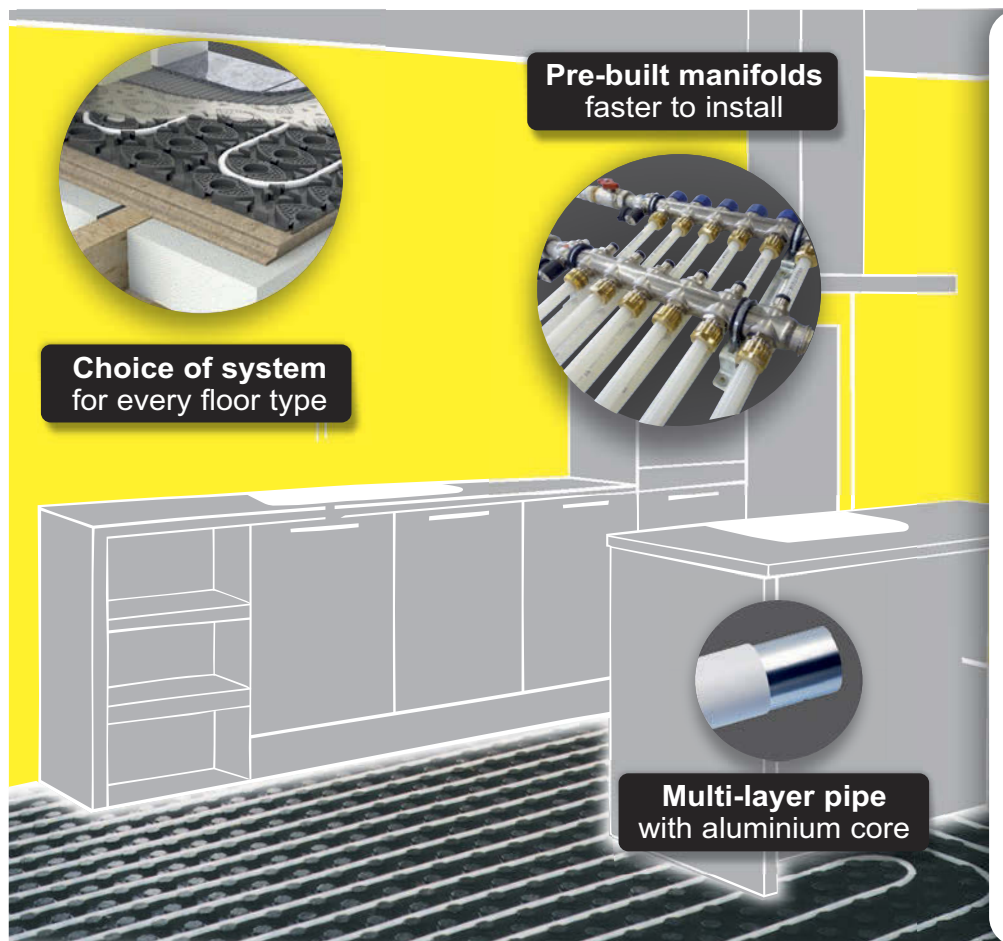
With fixing being this easy, changing your room around is no longer a hassle; you can change your fittings and relocate items for a new room layout as often as you like. (All that's left is a small screw hole which is easy to fill and repair.) It is also inevitable that walls will be subjected to a bit of wear and tear, particularly in family homes, but Gyproc Habito has a great

resistance to these everyday knocks, thanks to its strength and durability.

"People want a flexible home and living space and that's exactly what Gyproc Habito offers," says Paul Howard, British Gypsum's innovation manager. "It makes it quicker and easier to attach anything from picture hooks to televisions to the wall, meaning homeowners can get more creative in their homes. It's also extremely hardwearing, so it's the perfect choice for a family home."

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HOW TO HEAT A New Build



Tim Pullen

Tim is an expert in sustainable building and energy efficiency.

He runs the green home consultancy Weather Works, advising clients on renewables and thermal performance

Tim Pullen investigates how to improve the energy efficiency and reduce the running costs of a new five bedroom brick and block home

The clients are building a new home in a rural location with splendid south-facing views. The house will have a 308m² floor area over two floors and provide five bedrooms, four bathrooms (one on the ground floor), lounge, dining, snug, kitchen/family room and utility room. The property is to use brick and block cavity construction. The roof is to use attic trusses to provide the potential to add further rooms. As designed, the house is to meet Building Regulations standard and therefore meets the U values outlined on page 60. This gives a peak space heating load of 13kW and annual space heating consumption of 17,373kWh per year.

Projected Running Cost

The plot is off the mains gas grid and the anticipation is that an oil-fired boiler will be used, with mains electricity. There will be four people living in the house with a typical work/school occupation pattern. Running costs are likely to be:

- Space heating: 17,373kWh @ 3.6p/kWh = £625
- Hot water: 3,600kWh @ 3.6p/kWh = £129
- Electricity, assume: 7,000kWh @ 14p/kWh = £980

This brings the total spend to £1,734 p.a.

Remit

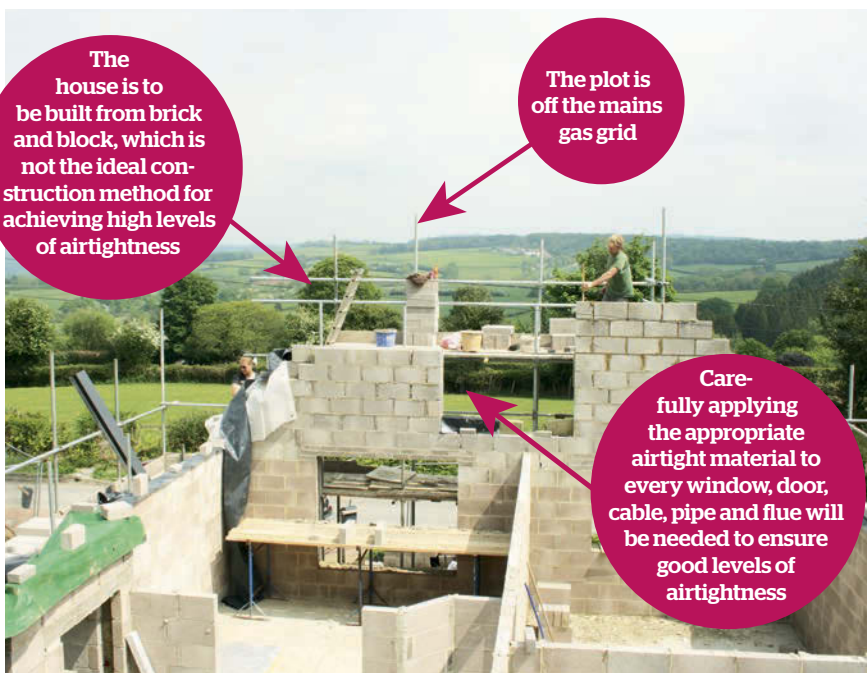
The clients recognise that, in terms of thermal efficiency, a new build may not always meet the design and so the actual heat demand may exceed the anticipated demand. They also recognise that the price of heating oil is about half its 2012 price and is likely to reach, or exceed, those prices in the near future. The clients see this as their 'forever home', and want to minimise running costs, now and in the future. They want a thermally efficient brick and block house and an energy strategy that sets out the best investment possible.

It is value for money, rather than an explicit budget, that is the major issue. The clients are willing to invest in their 'forever home' but need to see real benefit from that investment.

Achieving a thermally efficient house requires two things: insulation and airtightness. In this case it is airtightness that presents the bigger problem, as brick and block construction is not ideally suited to this.

Solution Suggested

- **Walls** The plan is to have 100mm concrete block inner skin with 90mm expanded polystyrene insulation in a 140mm cavity, with a brick outer skin. It is suggested that this is changed to 100mm thermal block (Celcon, Thermalite or similar) and rigid foam insulation (Kingspan, Celotex or similar) used. This reduces the U value from 0.3 to 0.2W/m² and keeps the wall thickness as designed. The extra cost would be £2.15/m².



Element	Existing U Values	Proposed U Values
Walls	0.30W/m ²	0.20W/m ²
Floor	0.20W/m ²	0.20W/m ²
Roof	0.16W/m ²	0.13W/m ²
Windows	1.40W/m ²	1.40W/m ²
Doors	1.40W/m ²	1.40W/m ²
Airtightness	<10m ³ /m ² /hr	<3m ³ /m ² /hr

● **Roof Insulation** The plan is to install 270mm mineral wool horizontally at first floor ceiling level (the minimum necessary to comply with Building Regulations), but this would be problematic if the decision were taken to use the available space in the attic. The suggestion is to split the insulation between the first floor ceiling and the rafters, installing 100mm of rigid foam insulation at ceiling level, with 50mm between the rafters and roof tiles and a further 50mm between rafters. This would reduce the U value to 0.13W/m², but keep the roof space warmer and reduce the problems of making that space useful. The extra cost would be £10.60/m².

● **Ground Floor Insulation** The plan is for a block and beam floor with 100mm rigid foam insulation on top and underfloor heating, with either engineered timber or a tile floor covering. This gives a U value of 0.20W/m².

● **Windows and Doors** Double-glazed windows in hardwood frames are to be installed throughout, with a U value of 1.4W/m². There will be three bifold doors installed to the rear south-facing elevation, which take advantage of the views but will overheat the lounge and snug. The house style does not lend itself to a brise soleil. One option is to install double-glazed units with integrated blinds, but the extra cost was seen as prohibitive. A retractable awning is cheaper and will effectively prevent overheating.

● **Airtightness and Ventilation** Airtightness is a key issue in establishing an energy-efficient house. In this case, the planned airtightness is to be less than 10m³/hr, i.e. Building Regulations standard. Achieving high levels of airtightness is largely a matter of attention to detail and the Energy Saving Trust provides a set of Accredited Construction Details to help with this. In broad terms, it means using wet plaster rather than plasterboard and addressing every window, door, cable, pipe and flue with the appropriate airtight material. It is recommended that these detailed drawings are passed to the contractor

and that a target of 3m³/hr be set. With that level of airtightness, a ventilation system will be needed and it is suggested that heat recovery is added to the system. Much of the airtightness work is the result of attention to detail rather than direct cost, although allow £5,000 for direct works, and an additional £5,000 for the heat recovery ventilation (although arguably this should be included in the original build).

● **Heating System** Implementing the suggested insulation and airtightness regime reduces the peak heat load from 13kW to 7kW, with energy demand of 10,100kWh for space heating and 3,600kWh for domestic hot water. The options are therefore an oil-fired boiler, a ground-source heat pump, air-source heat pump and/or solar thermal. The clients discounted biomass heating on the grounds of capital cost and inconvenience. An oil-fired boiler will cost around £5,000-£6,000 to install, including the oil storage tank, delivery pipe, etc. Running costs, at today's prices, would be around £500 per year. A ground-source heat pump will cost around £9,500 installed and will cost around £400 per year to run. An air-source heat pump would cost around £6,000 installed and £650 to run. On this basis, the oil-fired boiler would seem the most financially sensible thing to do, assuming that oil prices do not rise. In 2012, running costs would have been over £1,000 per year and we can expect prices to rise to at least that level. Having taken this into account, the clients decided to install an oil-fired boiler with a large solar thermal array. Given the thermal efficiency of the house as now planned, the solar thermal array (at £3,500) will meet the total hot water and heating demands of the house in the spring and summer, reduce the running cost to under £400 per year and provide a Renewable Heat Incentive return of around £300 per year.

● Electricity Consumption

The plan is to install 100 per cent LED lighting; no other change is needed.

Conclusion

The thermal efficiency strategy reduced the peak heat load from 13kW to 7kW. It is not practically possible to improve thermal efficiency beyond this level without significant changes to the construction method and design of the house. It was considered that the planned upgrade represented good value for money and provided a degree of future-proofing. **H**

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10 Things You Need to Know About...

VENTILATION



David Hilton

David is an expert in sustainable building and energy efficiency and is a director of Heat and Energy Ltd, providing consultancy and training to end users and trades. He also delivers courses and seminars at the National Self Build and Renovation Centre

Ventilation may not be the first thing you think about when planning a new build or renovation project, but if you want a healthy and fresh home and a discreet and noise-free installation it helps to consider it fairly early on, says energy efficiency expert David Hilton

1

Have an airtightness champion

Airtightness does not happen by itself. If you are looking to achieve good levels of airtightness you will need to appoint an airtightness 'champion' to take ownership of how the airtightness will be achieved in the project. This is often your architect but in the case of some modern construction methods, such as timber frame, structural insulated panel systems (SIPs) or insulating concrete formwork (ICF), it could also be the materials provider. Without an airtightness champion it is unlikely that the targets will be met.

Initially the subject of ventilation may seem like a minefield of conflicting information. To guide you through, here are my top 10 tips to help you narrow down the choices and make informed decisions about the right solution for you.

2

Determine the airtightness of the property

Airtightness is simply a term to describe, in a measurable manner, the amount of draught-proofing the property has, and can be described in two ways:

- Air changes per hour (ACH), which is the number of times the volume of the room will change in one hour
- Permeability, which is the number of cubic meters (m³) of air that will permeate through the average of one m² of surface area such as walls.

ACH is favoured by Passivhaus but UK Building Regulations use the permeability factor. However, current Building Regulations standards are not always achieved, as gains can be made elsewhere on energy performance calculations to compensate for losses due to lower airtightness levels. It is imperative to avoid this if you want a well-controlled ventilation regime.

In projects where airtightness to these levels is not possible or feasible, a balanced ventilation system may not be a good solution and it is worth exploring other options. Bear in mind, too, that energy assessment calculators often show a drop in efficiency when ventilation systems are installed, but if they are listed on SAP Appendix Q [a database of validated brand performance] then real data can be used and these errors avoided.



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3

Do you only need basic ventilation?

One aspect of your early design considerations will be to decide if you only need plain ventilation to comply with Building Regulations. Do you want mechanical ventilation, possibly with heat recovery, for a whole-house balanced and controlled ventilation regime, or are you also looking to introduce heating and cooling through the ventilation system? Plain ventilation could be as simple as trickle vents in the windows and extractor fans in the wet rooms and kitchen. If you over-ventilate, you will lose heat and your home running costs will escalate. If you under-ventilate, there will be moisture build up and stale air that could lead to mould growth, uncomfortable living conditions and deterioration of the fabric of the building.

4

Is mechanical ventilation right for my home?

Mechanical ventilation adds more control to the amount of air that moves through the property and where it moves to and from, but it uses energy. (Passive systems rely on prevailing wind or air buoyancy and so require very careful design and management.) Many mechanical ventilation systems have a heat recovery matrix to recover at least 75 per cent of the heat in the exhaust air, which should offset the energy used to run the system. This is a whole house balanced system that relies on a minimum airtightness as set by current Building Regulations to perform. Where this is not guaranteed, or it is not possible to run adequate ducting, you could explore positive input ventilation (PIV) or mechanical extract ventilation (MEV) or a combination of the two. These systems rely on a fan in the home either blowing air into the home (PIV) or blowing air out of the home (MEV) and the replacement air either entering (or leaving) the home through trickle vents or the natural permeability of the building fabric. There are pros and cons to both systems and heat recovery is not an option unless you use a micro heat pump system to act as the MEV and recover the exhaust air into the hot water.

A good zone control system might cost £1,200, which will be more than repaid in energy saving and increased comfort

5

Where will the unit and ducting go?

Ducting is intrusive. Larger ducting has less resistance and therefore has less noise but it is not always easy to install large bore ducts discreetly (rigid ducts can be up to 160mm diameter and 260mm if insulation is required). Early planning is essential to avoid duct runs clashing with structural beams, making sure they will fit in joisted areas and accommodating design features such as vaulted ceilings.

It would also be prudent to plan for open web joists and an adequate plant room (which could be the loft if there is one) to house the actual unit, which could be about the size of a small fridge. You will also need access to the unit to periodically change the filters.

6

Is the ventilation supplying comfort heating or cooling?

In many high-performance homes that are near to, or as good as, Passivhaus standards you could eliminate radiators and underfloor heating in favour of heating supplied through your ventilation ducting. Many ducted ventilation units have a small heat pump in them to supply heating or cooling to the property as the air flows. (This must not be confused with air-conditioning as the air is always fresh incoming and is not recirculated.) Another heating option is to include a direct electric heater in the room terminal. However, there are a few design features to be aware of: it is critical that the heat requirement of the property can be met with the amount of energy that is in the supply air (heated to no more than 50°C) needed for the health and comfort of the occupants or you will over-ventilate the home. This usually results in the property needing a heat load of around 10W/m². Current Building Regulations is around 50W/m², so this requires the equivalent of Passivhaus standards and can be a tough ask depending on the design and orientation of the building. Supplying heat through the constant ventilation system can also make heating zone control very difficult and will not be enough to quickly reheat the home after a period of non-occupation. ➤

7

Project management

Who is going to install the system? It may seem to make sense to get a specialist to design the system, supply all the parts and

fully install the system, and in many cases this is true. But it may also be an option to allow the specialist to design the system and supply the materials along with good drawings so that your main contractor can install the ducting as the works programme progresses so that the third party installers do not need to return to site on multiple occasions to install short lengths of duct. The specialist company can then return to site after it has all been installed to check the work and commission the system.

8

Controls

Ventilation units are actually fairly simple bits of kit, unless you are supplying heating or cooling, and as such the controls do not need to be over-complicated. That said, it is good to make sure that an MVHR unit has an automatic summer bypass feature so that you only recover heat in the heating season and you then don't forget to turn the recovery matrix back on in winter and waste a lot of heat. You may also look for a unit that has a memory card to record the running conditions, which will help an engineer in the event of a breakdown. This is especially important if the unit provides heating and cooling.

Do your homework and set your expectations early on: once the ducting is installed it can be very disruptive to change

9

Condensate drain

In most heat exchangers you expect condensation and this condensate needs to be run off. The condensate drain is very often not included in the quote and also not detailed in the drawings. If you are running the condensate on to a roof or gutter then make sure that it is not metal, as condensate is slightly corrosive and could damage or discolour the material. If you are running it into a soil pipe then an air trap is required and it is prudent to include a dry type air trap as the wet one will dry out in summer and you may then get smells coming back to the unit and potentially entering the air stream.

10

Cooker hoods and bathroom fans

If you install a ducted system you will need to install your cooker hood in recirculation mode with charcoal filters. The cooker hood does not need to move the air to outside but instead the MVHR unit will be wired to turn on every time you use the cooker hood and the excess moisture will be extracted by the MVHR unit and in winter the heat can then be recovered.

Bathroom extract units are also not required as long as the MVHR unit is wired to the light switch in the same way as an extractor fan. In the case where you do not have a MVHR unit you could still use a single room heat recovery unit that replaces the standard extractor fan.

Contacts

Beam Vacuum & Ventilation: beamcentralsystems.com

Domestic Ventilation Services: dvs.me.uk

Envirovent: envirovent.com

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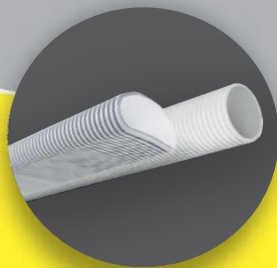
SUMMARY

The biggest advantage of these systems is a healthy fresh home. Good advice, design and quality products are essential if you want a successful project that meets your expectations. It is important to do your homework and set your expectations to get the design right early on; once the ducting is installed it can be very disruptive to change. **H**

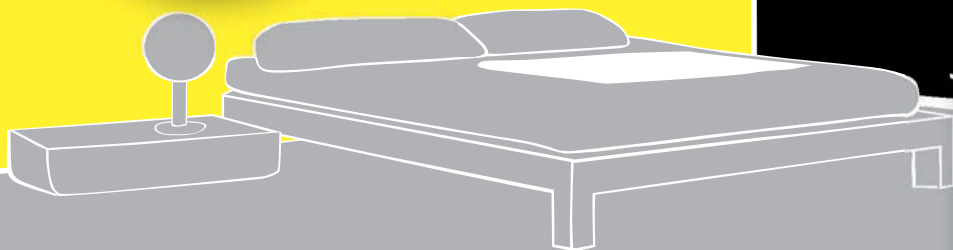
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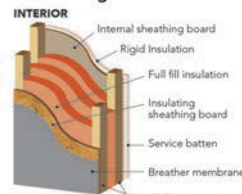


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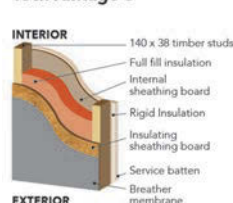


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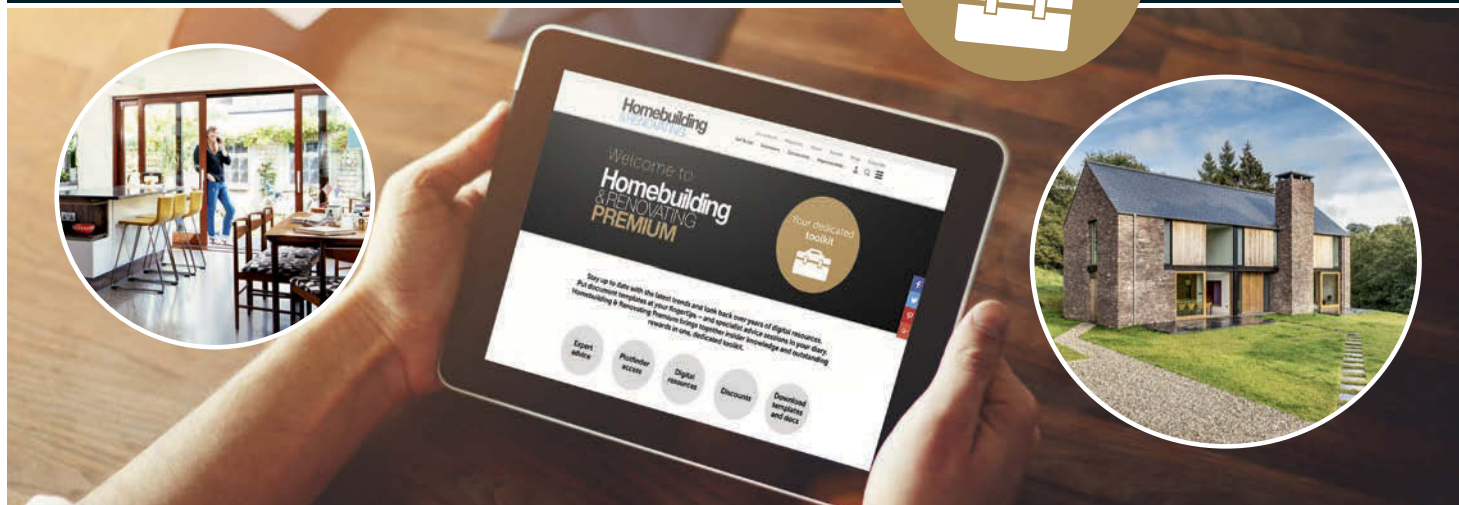


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How to Enhance Your Brickwork

There are a myriad of opportunities to enhance the brickwork of your home says Keith Aldis, CEO of the Brick Development Association

Brick has been the mainstay of domestic construction for decades. Although its popularity means that it is sometimes taken for granted, a recent resurgence of interest in the material among architects and designers is again showcasing the ability of brick to enhance our built environment. So, what should you consider when seeking to enhance your own brickwork? Depending on the look you're after, bricks can be made and cut in different ways. A brick can be made by throwing clay into a wooden mould, often called the soft-mud process; pressing it into a steel mould; or extruding it as a column of clay that is wire-cut into brick shapes.

Consider How the Brick is Made

These different processes produce bricks with different attributes. A 'thrown' brick has trademark creases on its surface which give it a distinct character. There is likely to be variation in size which the bricklayer will accommodate as the bricks are laid. A pressed brick is subject to a greater degree of precision which facilitates consistency in size. Additionally, if the pressed brick has been removed from the mould by water, it will have the distinctive edges of a water-struck brick. An extruded brick also offers consistency, both in reference to dimensions and the wide range of surface texture and colour that can be applied to the column of clay before it is wire-cut.

Choose Mortar Carefully

Mortar – an essential component of bricklaying – has a significant influence on the appearance of the finished brick assembly. This is not surprising when one considers that mortar makes up 18 per cent of a brick wall surface. The colour of the mortar will influence the perceived colour

of the brick: a dark mortar tones it down, a light mortar lightens it. The finish of the joint is also important: a flush mortar joint gives the wall solidity while a recessed mortar in both bed and perpend (vertical joint) focuses attention on individual bricks. One way of enhancing the horizontal nature of a wall is to fully fill three courses and then recess the joints to the fourth course. Repeated, this will emphasise the wall's horizontal bearing.

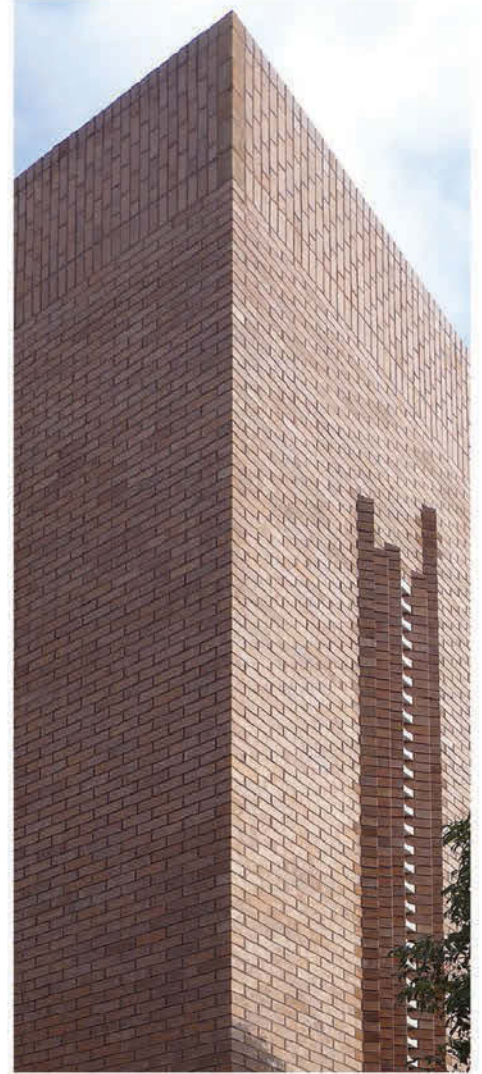
Play Around with Bonds

The pattern of bricks in a wall is determined by the chosen 'bond'. Stretcher bond is commonly used but one can add interest and variety by selecting a bond that introduces headers, such as English garden wall bond or Flemish bond. The contrast achieved by displaying different facets of brick adds to the overall aesthetic. There are also many examples of 'decorative' brickwork; 'hit and miss' patterning and brickwork that is projected and recessed to add to a home's individuality.

Size Matters

While you could opt for standard brick sizes – 102.5mm(w)x215mm(l)x65mm(d) – bricks of a different format are available, such as those measuring 102.5mm(w)x500mm(l)x50mm(d), or those from the 'standard special' range. These bricks allow the designer to use squints to form angles other than 90°, chamfered bricks and those with a radius to form corners, and plinth bricks to change the plane of a wall.

There exists a myriad of opportunities to enhance brickwork. The skills to exploit these opportunities exist, as does the range to cater for a variety of tastes. The only limitation is one's imagination. If you're seeking to enhance your brickwork, the BDA website (brick.org.uk) is a good place to start. **H**



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A Burst Water Main Puts a Damper on the Build

We follow serial self-builder David Snell as he embarks on his fourteenth project – sharing his tips along the way. This month, utilities are proving a headache (again)

With the new roof to my wife Linda and I's self-build taking shape, the slating followed in quick succession. All went fairly quickly, with the exception of one large triangular area to the front. This couldn't be finished because our neighbour's telephone line ran across the site in such a position and height that it found itself enmeshed with our new roof structure.

We'd realised early on that this would happen. How the line didn't get broken while we were craning the roof trusses into position, goodness knows. So, Bruce's wife Kath (Kath and Bruce, our builder, are building their own home on the adjacent plot), volunteered to deal with BT regarding the removal of the line and re-routing via a new pole in my front garden.

I'd ducked out of this one. I've documented in the past the 'red mist' that descends upon me whenever I deal with utility companies and statutory bodies and, in particular, my *bête noire* BT. (In my experience, the exception is Western Power Distribution; they have always done exactly what they said they would do at the time and date they said they would.)

At first everything went well. A chap came out to survey the site and we discussed where the new pole would go. Then things went quiet. Once the trusses were erected we began ringing on a daily basis. Kath logged over 30 calls before somebody finally said that we needed to make a payment. Why hadn't they stated that before? So we made the payment of nearly £800 expecting action. Again, we waited...

Never have I been so pleased to see something so ugly as the new pole that now adorns my front garden. After finally being erected it isn't that bad; it gets lost against the background of a holly tree on the other side of the lane. ➤



Moving the Telegraph Pole

The existing telephone line to the neighbouring property (owned by the vendor of the plot) needed to be moved before work to the roof of David's self-build (above) could be completed. A new pole has been erected to the front of David's plot (right).



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Digging Trenches for the Utilities

With solicitors instructed regarding the ransoms to the Forestry Commission (which we were required to pay in order to bring services across the adjacent forest), they duly issued us with a licence to carry out works on their land. This, in turn, enabled us to contact Western Power Distribution to set up a date for them to provide power to a temporary meter box. Two days before said date they delivered a huge cable; the following day we finished excavating the trench across the forest and laid the cable ready for inspection and connection.

On the agreed date the Western Power Distribution engineers turned up and connected the cable to the overhead power lines in the forest. The cable was then split into two smaller cables at our boundary, and ran into what were going to be temporary meter boxes positioned where our garages will be built. (We've now decided to leave the meters in the soon-to-be built garages, in the knowledge that we'll eventually have smart meters and won't, therefore, require access for manual reading.)

An Unexpected Setback

At the same time we dug another parallel trench for the water supplies, and here we ran into a problem. The chap from the water board had pointed out the rough position of the water main. But we hit it some 10m closer — and it was a gusher. It flooded the whole site and the water ran into the road; it flowed down the open trench in a torrent. Bruce waited on site until 10.30pm for the emergency engineers to turn up and then finally went home exhausted. They arrived at 2.30am but, four hours later, as they'd allowed air into the pipe, the pressure caused a burst some 6m down the line. By this time we were losing any popularity contests with the neighbours. The engineers returned and fixed it — but again the main burst, this time, further back up the line.

In any event, by the end of the next day we had our trench in and the water pipe laid to two standpipes, ready for inspection. We now await a date for connection.

The other trial has been obtaining a meter in the temporary electricity meter boxes. Western Power Distribution had done their bit and we now had to arrange an actual supply. I rang all of the major utility suppliers and all told me that they didn't provide the meters. I seemed



to be going around in circles until I rang Utility Warehouse, who supply my gas, electricity and telephone at our temporary home. It took quite a bit of explaining before they could understand that I wanted to arrange supplies for two separate properties in my ownership without compromising the supply to each, but they were able to help.

With this in mind, I made moves to get the telephone/broadband lines organised, even though we're not quite ready for it. Once again I went through Utility Warehouse. Hopefully this long saga is the final chapter in the provision of services to our new home.

In the meantime, there's been a period of relative slowness on the house since the roof slating was finished. Bruce and I agreed to build both houses contiguously, which means that he takes mine to a certain point and then brings his to the same point. And that's what he's been doing, getting his roof finished.

Top Tips for Success

Don't wait to apply for services. Get them organised as soon as possible and keep on to them. At times it may feel like charging head first at a brick wall without a crash helmet, but it's got to be done. Set aside a whole morning or afternoon to deal with each — you'll likely need it! **H**

Digging Trenches Across Forestry Commission Land

With a licence finally granted by the Forestry Commission, a mini digger was used to dig a trench — required to lay a power cable to bring electricity to David and Bruce's new homes — on adjacent forestry land.

Next month

Next month, first fix gets underway and David begins to specify some of the key elements of the interior.



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RENOVATING FOR PROFIT: 7 TOP TIPS

Thinking about renovating for profit?
Property developer Michael Holmes
explains how to get it right



Michael Holmes

Michael is HB&R's Head of Content and Product Development. He chairs NaCSBA (National Custom and Self Build Association) and is the author of *Renovating for Profit*

“Most of the profit is made in the purchase rather than what you do with it, so the price you pay is critical”

1 Buy the worst house on the best street

My advice is to buy the worst house you can find in the best street that you can afford, as that gives you maximum scope to add value. In its current condition, the property is likely to put a lot of people off, and so the price should reflect that. As an individual renovator you can't influence an area or change the street, but you can completely transform the house and totally rebuild it if necessary.

Most of the profit is made in the purchase rather than what you do to it, so the price you pay is absolutely critical. What you want to do is buy a property that has potential that others haven't yet spotted and so you aren't paying a premium for the house. The chances are unless you are buying a big property, the potential margin for profit is relatively narrow, so you've really got to think about what you are doing.

through those superficial things and look at the property itself.

So if you are working to a limited budget, I would always ring fence the money for the essentials first, to make sure the building is warm, dry and free of damp, and is a secure property. Do any mainstream maintenance work to the roof, along with any underpinning or stabilisation work, and if the property needs a rewire, make sure you get the rewiring done then. The last thing you want is to find the property needs rewiring throughout after you've just completely redecorated it.

3 Don't get carried away

If you are renovating for the first time for profit, the biggest risk is thinking that this is fun, getting carried away with the project and starting to treat it as an interior design scheme and thinking about your own wishes and requirements rather than about the person that is going to be buying it.

You really need to be disciplined and think: who is going to buy this and what are they looking for? So do your research, go and look at what other developers are doing in your area, be very clear about who is likely to be buying properties in the area and make sure you design the property for them and not for you.

2 Get the essentials right first

In terms of prioritising your budget, it's tempting to think that it's worth spending money on the kitchen, the bathroom, the decorating and the cosmetic finishes, but as soon as a valuer comes to the property they will see straight

4 Add central heating

Adding or updating the central heating system will always add more to the value of a property than it costs. It is considered an

“Small defects do not directly affect the value of a property, but cumulatively they will prevent it selling at the optimum price”

essential by most buyers and mortgage valuers. Using a plumber to add central heating to an average three bedroom Victorian or Edwardian house will cost £3,000 to £4,000. Remember, too, that updating the heating system needs to be done alongside improving the general energy efficiency of the building.

Consider sealing any draughts around doors and windows (but not airbricks), replacing windows that are beyond repair with double glazing and adding insulation into the loft space.

If the existing boiler is in reasonable working order and has adequate output for the heat requirement of the building, try to make use of it, with the exception of boilers that draw their air intake from inside the house. If the boiler has sufficient capacity, you could add new radiators and a heated towel rail, or underfloor heating to the existing system.

5 Consider remodelling

Once you’ve looked after the basics of fixing the house and making sure it’s structurally warm, dry and damp-proof, then focus on making the best use of your space. I always advise people to think about adding space in order of cost-effectiveness.

First of all, think about remodelling the space that you have already got. Can you achieve what you are looking for just by making better use of the space you have — recycling the space, and putting it to better use?

After that, I always advise people to try to convert space that has not been converted, perhaps the loft, a garage attached to the property, or a cellar that can be turned into living space.

Next, think about the possibilities of extending up because that’s always cheaper than extending out, and you don’t lose garden space. Then think about extending out the back, because that’s most likely to be an opportunity with the property, or the sides. Very rarely, you can extend out the front.

The final two options, if you’ve explored everything else, are:

- Extend down and create a basement, but that is expensive and is only likely to make sense if

you live in a very high value area such as London or the south east

- If nothing else works, you can usually add extra space at the bottom of the garden.

6 Fix superficial defects

Small defects do not directly affect the value of a property. However, cumulatively they will prevent it selling at the optimum price. The following are typical defects that will put many buyers off, yet can be fixed by any competent DIYer:

- Peeling paint
- Squeaking or sticking doors and windows
- Door latches that don’t work
- Mouldy sealants in kitchens and bathrooms
- Dripping taps
- Loose tiles
- Sewer smells
- Broken or damaged windows
- Squeaky floors and stairs
- Cracks to ceilings and plasterwork
- Lifting flooring.

7 Work within your budget and remember the ‘ceiling value’

In terms of the scope of the work you take on, it really has to depend on what budget you have available. If you are really working to a limited budget then get the basic work done to fix the property and then whatever you’ve got left can be spent on making cosmetic improvements. If your budget is bigger then you could consider adding more space, but bear in mind that there is a ‘ceiling value’ – a maximum value that any property can achieve – so you can’t just go on adding space. At some stage you will be spending money that you will never get back.

The best way to identify the ceiling is to look at what other people have managed to get for their homes when they’ve sold and that information is freely available online; you just have to look at Rightmove or Zoopla. You can probably break the last highest price achieved by a little bit, but you are unlikely to get substantially more in the same street. **H**



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10 GOLDEN RULES

When Extending Your House

Should you extend or move? How large should your extension be? How best to cope when your home becomes a building site? Architect Neil Turner reveals his top 10 tips that answer all these questions, and more



Move or Improve?

Deciding whether to extend or move was crucial for Dean and Ann Furlong, who agonised over the choice before finally taking the plunge and transforming their dated 1930s dormer bungalow into a contemporary home, with a single-storey side and a two-sto-

rey rear extension (above).

"We spent a lot of time deciding whether to stay or go," says Dean. The existing property had barely any insulation and the roof was near the end of its useful life. The final straw came when the couple and their daughter spent one of the

coldest winters in recent years there without heating. On the plus side, the house stands in the centre of a large established garden and has lovely views of fields and paddocks – in the end, the garden and the home's location drove their decision to improve rather than move.

PAUL ARTHUR



Neil Turner

Neil is a director of architectural practice Howarth Litchfield Partnership and specialises in residential design (howarthlitchfield.com)

People extend their houses for many reasons and to achieve many aspirations. Invariably the desire to extend is a need for more space to accommodate a family or to create a work zone in the home as work/living arrangements become more fused.

Extensions can be exciting and inspiring if done well. My parents built an extension 40 years ago when I was a child and the architect (and build) excited me so much that I became an architect myself. I have loved designing extensions ever since.

So what are the key points to ensure success? And what can go wrong? If you've never undertaken an extension before, or want to learn how to make your next one a success, these 10 key points will help steer you to the right solution.

1 Extend or Move

Some clients seem amazed when I visit them and conclude that they should move and not extend. Do you not want the work? I hear them say. In reality, some houses look best as they are and could be spoilt. It's also possible to over-develop a house, making the extension not economic. I am often asked: "Will I get my money back on the build?" So if the result is not worth adding, then one option is to sell up and find a better house to develop, extend and enjoy.

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A Contemporary Addition

Ruth McDonald and her husband Donald had a very particular brief for their extension. Ruth is an artist and was working in a cramped rented studio, just 7m², so part of the brief was to add a new art studio with additional living space above to their Grade II*-listed home. "My idea was to somehow create a large, bright studio space at home," explains Ruth. Belsize Architects took up the brief and this new glass box (above) is the result. "The light is wonderful for painting and for displaying art," says Ruth. "My studio serves as a mini gallery and we've hung other artists' work in the glass box extension, which is always comfortably warm and relaxing."

2 Getting the Brief Right

Start by defining what the new space should achieve and what problems the extension should solve. Unless you can tell your architect what is missing, then they won't be able to make the extension more than a simple addition of rooms. This description should be more than 'add a bedroom and bathroom' or 'make the ground floor bigger'. These statements are not incorrect but it helps to think more about the added benefits, for example if you are extending a kitchen: Where does the light come in? Can I eat my breakfast with the morning sun? Do I want to sit and enjoy a view or see my garden? The architect will solve and come up with ideas, but the best solutions come from being set the best questions from a client with challenging thoughts.

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Room to Grow

This two-storey extension in the West Midlands is stepped back and built using matching brick and tile, to allow the 1930s property to retain its character. Rachel and Matt Vallis decided to demolish the old outbuildings to the side of the house and replace them with a two-storey side extension that would house a garage, utility room and WC on the ground floor and en suite master bedroom above.



3 Materials

Sometimes the materials to be used are obvious and the existing house demands the extension should follow suit with a subservient extension. If the house has no overriding character or style, then a contrast can improve both parts. The skill and challenge of the architect is to decide, with you as their client, what will work best.

If you are going to contrast an existing house with materials that vary, then the solution has to be of high quality and well thought through. A bland extension on an ordinary house is simply bland; if it also stands out because the materials look wrong, then the whole effect is ruined.

The materials are an intrinsic part of the architectural style so don't pick materials at the end as an afterthought, or because they were 'on offer'. Remember, you have to live with this for many years.

4 Size

Getting the right size for an extension is probably the biggest challenge to the owner and the designer. There is no set rule, but many times I have seen extensions added to buildings that have spoilt the original house and it's invariably because they are too big and dominant. The pressure comes when too much accommodation is added. Think about the additional spaces and how they can combine or improve existing spaces, rather than simply adding more.

5 Architectural Style

Every house has a style, built in a certain period or with particular materials. So the architectural style that the extension takes on is important to the combined result. A Georgian house can have an extension that matches or contrasts. If you are going to match a building, then the proportions, details and materials must be very good to make it work. The challenge for

the designer and builder is to create authenticity and make the new building work for its function.

So is a contrast easier? Not necessarily so. A contrast to a Georgian house requires different ideas and the need for the new extension to be sensitive to the existing house rather than dominant or spoil it. If you want a modern extension on an older property, the same rules of proportion apply but the new extension must add something. This could be more glass in contrast to a solid form, or a flash of colour in contrast to a neutral palette.

6 Relationship to Neighbouring Buildings

One of the biggest questions on a semi or a terrace property is the effect that the extension or alteration has on its neighbour's property. Try to design your new extension with respect and awareness to neighbouring houses. Can you avoid overlooking or overcrowding? Many extensions become so large that they appear to join up separate houses, creating terraces where they were never intended.

7 Quality vs. Quantity

So, how much will it cost to build? It is always better to build with better materials and better design than build more space of less quality. If you are going to build large and can't afford everything, then plan to fit out the space later rather than cheapen everything. ➤

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8 Extend or Replace

Many people now alter a house so significantly that the question is not "Should we extend?" but "Should we knock it down and replace?" There is a point when you are extending when it might be easier. However, I find that reusing existing buildings, where possible, is more environmentally friendly and can provide a great base to create the dream home. Bear in mind, though, that an extension attracts VAT at 20 per cent whereas a new build is 0 per cent, so do the sums on the costs at the beginning when you can make the right choice.

9 Prepare to Live Through the Mess

If you are extending and living in the house then prepare for disruption, mess and dust. It sounds obvious, doesn't it? But many a client has said they will live in the house and come to regret it. If you can move out and leave the builders to get on, there are real advantages. The build can be faster and a shorter programme also saves money. The builders can turn power, water and heat off. They don't have to tidy up all the time, and there are fewer arguments over the toilet.

Most people have to stay while building goes on, so agree ground rules on access and use of the toilet. Seal up as many rooms as possible and invest in dustsheets to protect furniture, as plaster dust seems to get everywhere.

Above all, keep smiling throughout the process and think about why you started. Supply tea and biscuits constantly and remember it will be worth it at the end. When the builders have left and you can sit, sleep and live in your new space, just think what an improvement you have made to your home and lifestyle.

Extension Cost Calculator

Do you want to find out how much your extension may cost? Log on to homebuilding.co.uk/extension-cost-calculator to use our free extension cost calculator tool.

10 Cost/Value
When you are planning your build, work through the costs at the beginning. Only you can decide what constitutes good value. The cost can be determined by the quantity surveyor or the builder but only you, the client, can say if that is worth it in monetary, enjoyment or usefulness terms. **H**

Investing in the Future

Penny and Douglas Dawson decided to make their open plan kitchen, dining and living space somewhere they would want to spend most of their time in as a family – and so chose high-end fittings including Morado wood flooring, polished granite and walnut kitchen worktops, a Sonas wireless multi-room audio system and automated lighting throughout the property. "There are, of course, areas we could have saved on," say the couple, who estimate that the total cost of the extension was around £120,000. "We could have saved on the home automation system, and on the construction of the extension if we'd gone for a flat rather than pitched roof – we would have saved a lot on all the steels required. But we are not planning on moving, and these are the things that make the house such a pleasure to live in. In fact, our heating bills have dramatically reduced as we all congregate in the kitchen so we don't need to heat the rest of the house."

PAUL ARTHUR



Why I am NOT Building a PASSIV

Experienced self-builder Mark Brinkley is a fan of Passivhaus, the gold standard of energy-efficient construction, but on his latest build he's chosen to move to a slightly less demanding standard. Here, he explains his thinking behind the decision



Mark Brinkley

Mark is the author of the ever-popular *The Housebuilder's Bible* and an experienced builder. He's just about to embark on another self-build

I have been interested in low-energy building since the 1970s, and have been delighted by the growing interest in Passivhaus in recent years. It's a formula, a recipe for creating genuinely energy-efficient homes that has been proven to work in many different countries, in all manner of climate zones. It is internationally recognised and there is an ever-expanding pool of suppliers and consultants who can help you get a Passivhaus built. These include my architect who has already designed several, my house supplier, Potton, who has just completed a Passivhaus showhome and my energy consultant, who is fully up to speed with the Passivhaus Planning Package (PHPP), the software engine behind it all.

So why am I planning to stop short of the Passivhaus standard on my up-and-coming new build? What is it that has given us all pause for thought and a reason to aim for something a little less demanding?

The decision to aim a little lower came about following a Wednesday morning meeting in September, when all the interested parties met at the architect's office in Cambridge to determine the energy target for this house and it was

unanimously decided that it would be just too troublesome to make it a Passivhaus.

Our project involves demolishing a 1930s warehouse, the only commercial building on an otherwise Victorian residential street, and building a contemporary-style house in its place. While the planners and the many neighbours have generally been very supportive, the fact that the neighbourhood has recently become a Conservation Area has meant that our plans have been through a few modifications during the 18-month planning process. What we have ended up with is a really interesting design, but energy efficient it isn't. At each turn in the planning process, the size diminishes and the shape became a little more interesting and a little harder to build.

Now, the further you get away from a rectangular box, the harder it gets to build in an energy efficient way and we now have a design which mixes single with double storey, and includes no less than 14 surface planes, about double the ideal Passivhaus number.

Passivhaus can cope with this. The software, PHPP, dictates that you have to increase the thickness of insulation to compensate for all

HAUS



the leaky bits you have introduced around the edges. But this not only adds to cost but also to wall thickness and on a narrow site, which of course we have, wall thickness is a critical factor. 50mm here and there is the difference between getting a wardrobe that works and one that is an annoying waste of space. I'm afraid that we are balancing conflicting desires here and energy efficiency is losing out.

To my surprise, it's our energy consultant, Andrew Fisher of Whole House Energy, who says that, with our design, his greatest concern is not keeping warm, but overheating in summer. "You have a problem here," he says. "Your west-facing glazing will cause you to get too hot on summer evenings and Passivhaus design won't help you

here very much." He points out that the extra money we would need to get the full Passivhaus standard would be better spent on uprating the glazing to reduce the impact of summer sun and possibly introducing solar blinds as well.

Now you might argue that we are over-glazing on the west side and that we should simply have smaller windows there, but the house can't have windows to the north and south, and the east side is the street frontage, so west it is. We have to work around the restrictions that the site imposes.

As for construction systems, we are steering towards SIPs (structural insulated panels) because they are not only a super-efficient build system, but they are also relatively thin. SIPs ►

Mark's Latest Self-build

Mark Brinkley and his design and build team have chosen not to go down the Passivhaus route for his latest self-build in Cambridge (see plans, model and CGI rendering above). Instead, Mark is planning to follow the new, slightly less exacting, Low Energy Building Standard, also from the Passivhaus Institute in Germany.

A Low-Energy Coastal Home

Oyster Falls in north Devon was built by Point6 Projects using Passivhaus principles and to Passivhaus standards (although the homeowners chose not to go for Passivhaus certification). A block and steel-framed home, it has 300mm of insulation wrapped around the first floor and floor-to-ceiling triple glazing on three sides. There is no heating system in the property; instead, the home houses a Paul Novus MVHR system along with a Vanvex 285 air-source heat pump.





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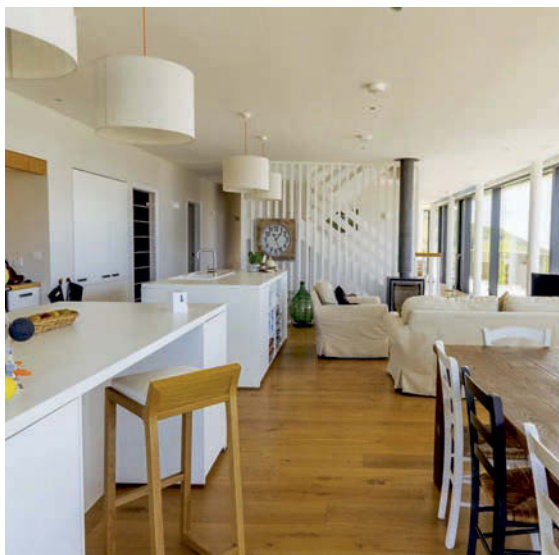
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provide a very good level of insulation but to make it all the way to Passivhaus standard on our design is so taxing that it would involve adding over 100mm of phenolic foam insulation to the outside of the SIPs. Potton specialises in this sort of design, but the company's MD Paul Newman starts looking worried about fixing this level of extra insulation. "It's asking an awful lot," he says quietly. "I'd be happier with 50mm or even 75mm extra, but this is pushing the envelope a bit far." I swear I hear him sucking his teeth as he speaks.

If it's wall width we are worried about, then could we incorporate thicker insulation within a thinner wall? "How about using brick slips?" suggests Andrew Fisher. Up pops our project architect, Mole Architects' Sasha Edmonds, who points out that we have been there already and have dismissed brick slips as an option because they don't work with our chosen Cambridge-style white brick, as agreed with the conservation officer. Anyway, brick slips may be thin but they are a good deal more expensive than 'normal' bricks. Another idea hits the bin.

So where are we heading? If we can't sensibly hit the Passivhaus standard, what level should we build to? I am keen to have some target to aim for. Without a target, I feel the project to build a low-energy house will slip. I am guilty of having done this before on a refurbishment less than half a mile away from the new house and I want to feel I have learned something from my

Passivhaus in The City

The architect of this three bedroom contemporary home, built on the site of a former garage in London, suggested Passivhaus accreditation for his clients. "Oliver and Holly Smallman were looking to downsize after their children left home. They wanted a smaller, contemporary and more manageable energy-efficient home," says architect Richard Dudzicki (rdauk.com). The house had to be extremely airtight to achieve Passivhaus accreditation, and needed

careful management during the build. Richard explains: "As an architect, I go on site a little more when I am managing a Passivhaus. It's not rocket science but a lot more rigour is required – for example, we carry out three air tests during the build to check levels of airtightness. You also need to make sure that you are using the right suppliers (we work a lot with the Green Building Store) and the builders are doing things correctly. I've worked on several Passivhaus projects now and none of the builders had ever worked on this sort of project before."

previous mistakes. Paul Newman suggests that we might look at the new Low Energy Building Standard, which hails from the Passivhaus Institute in Germany, and which is aimed specifically at houses which struggle to get to the regular standard for one reason or another.

"That sounds like an interesting idea," I pipe up, "although the name is a bit uninspiring. Shall we refer to it as LEBS for short?" I suggest. A collective groan goes around the round table. So LEBShaus it is!

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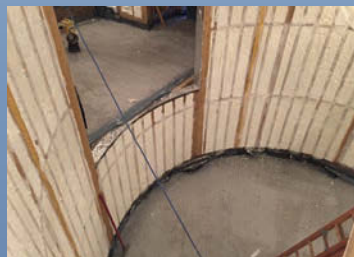


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Timber Framed Passivhaus in Somerset

Architect Graham Bizley and his wife, interior designer Emily, chose to build their house, a timber framed and timber-clad property in Somerset, to Passivhaus standards for environmental and energy efficiency reasons. Another major attraction of designing using Passivhaus principles was the air quality and comfort of the internal environment, says Graham of Prewett Bizley Architects (prewettbizley.com). The extremely airtight building is fitted with a mechanical ventilation heat recovery system (MVHR) and in the winter, the house gets constant fresh air at around 18°C, compared to a 'normal' house where very cold air leaks in or is allowed in through trickle vents from outside. "Our decision to build a Passivhaus was something of an experiment and we're very pleased we did it," says Graham. "It isn't the only way of building a low-energy building but it offers a sensible standard based on building physics that actually means something in terms of energy performance." At the same time, Passivhaus should not be an excuse for poor architectural design, he says. "Our new home had to stand on its own as a strong piece of architecture, whatever its environmental credentials."



Energy-Efficient Principles

Passivhaus consultant Philip Newbold (newbold-design.co.uk) was keen to self-build his own low-energy home and office, Greendale Cottage in County Durham, to Passivhaus certification standards, but local planning officers had a different agenda. "The conservation planning officer in particular was not interested in the government's energy conservation agenda at all, just conservation of the local vernacular building style, including an L-shaped plan form and sliding sash windows. Thanks to draconian planning restrictions, out went any hope of being able to build a certified Passivhaus," says Philip. Nevertheless, while not Passivhaus-certified, the energy-efficient (Band A) home uses Passivhaus design principles, including high levels of thermal performance and airtightness and MVHR, and has a SAP energy rating of 97. ➤

GRAHAM BIZLEY (ABOVE); JEREMY PHILLIPS (BELOW)



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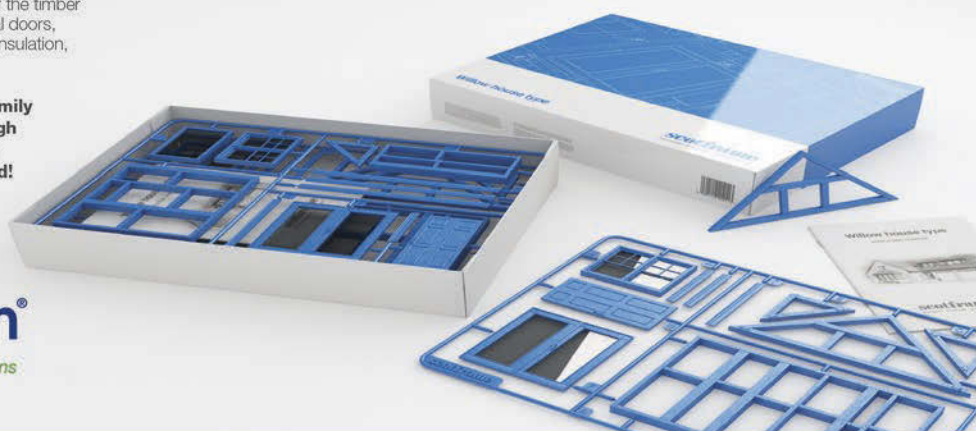
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is twice that of Passivhaus, which sounds like it might be easy to achieve but it is still pretty exacting. In terms of gas central heating costs, the Passivhaus version of our 150m² house would cost around £100/annum to heat, while the 'LEBShaus' version will be roughly double. That is still not very much in the great scheme of things and I'd be very happy to achieve a result like this on a home like the one we have designed. Our proposed LEBShaus will still be the third most energy-efficient house in Cambridge (there are two Passivhauses already) and will be much easier (and cheaper) to build because of the more relaxed standard. Just how much cheaper is hard to say at this stage because we didn't get as far as costing the two options.

Exacting Target

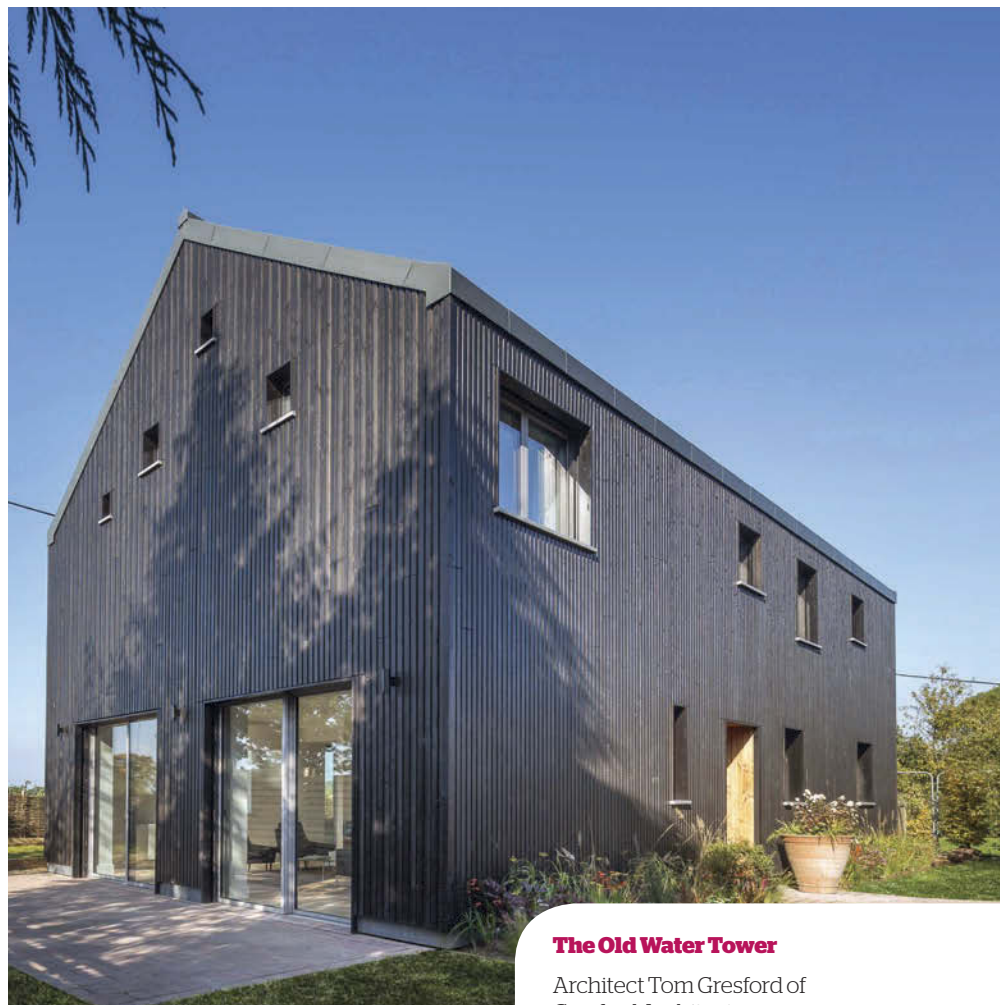
Anyway, the meeting ends with an instruction to Andrew to dust off his PHPP spreadsheet and come up with some figures to deliver the house to LEBS, which my architect Sasha will then use as a basis to get on with the working drawings which, in turn, Potton will hopefully turn into SIPs in the new year.

As a footnote, we may be persuaded by the potential cost savings we will be making here to go for solar PV (photovoltaics) on the roof. For around £6,000, we can get a system up and running which will produce 3,500kWh of electricity each year, almost double the power we would save by switching from LEBS to Passivhaus.

Passivhaus is the most exacting target you can sensibly aim for in the world of energy-efficient building, but it's not a perfect target. Some people argue that it discriminates against small buildings and, in particular, single-storey buildings or those with complex shapes.

Not so; Passivhaus doesn't discriminate, but it does adhere to the laws of physics and these make it much harder for small detached houses to achieve Passivhaus standard. This is because the surrounding envelope of a small awkwardly shaped building is much greater, as a proportion of the heated internal space, than it would be on a simple box-shaped building.

This critical ratio is known as the form factor. On our design, we have 150m² of internal floor area enclosed by 475m² walls, floor and roof, a ratio of over 3:1. In an ideal Passivhaus design, this ratio should be down at around 2.5:1. Because our form factor ratio is 20% higher than the ideal, we would have to do everything 20%



The Old Water Tower

Architect Tom Gresford of Gresford Architects (gresfordarchitects.co.uk) was keen to create a house that was on the cutting edge of sustainable design while, he says, avoiding "the 'hairshirt' approach to sustainable living that many people think of when considering environmentally friendly homes". The Passivhaus-certified Old Water Tower, a new four bedroom house in West Berkshire, is "as easy to live in as any 'normal' home, yet costs virtually nothing to run and could be entirely self-reliant if a suitable number of photovoltaic and solar thermal panels were fitted to the roof," says Tom. The house has triple-glazed windows, which are openable ("this debunks another 'Passivhaus' myth that the house must also be closed," he points out). External blinds on the east, south and west elevations are automatically deployed when the internal temperature of the house reaches 21°C, to reduce the chance of overheating.

better to get the house to Passivhaus standard. That's expensive, difficult to achieve and involves significantly wider walls.

One unintended consequence of the way form factor works is that you can sometimes reach the Passivhaus standard simply by making a house bigger. The first Passivhaus I ever visited in Hanover, Germany, in 2007 had been built with a basement partly to get the structure across the Passivhaus hurdle. This qualified the new house for a reduced mortgage, which the German Government has long encouraged. The architect-owner commented to us that it would have been much harder to achieve the standard had it simply been a two-storey house, but the addition of a rectangular basement had brought the whole structure well within the 15kWh/m²/annum space heating target without having to add more insulation above ground. In terms of overall energy use, the smaller house without the basement would have used a lot less energy but its energy footprint per m² would look worse. That is because Passivhaus looks at the relative performance of each m², and doesn't take house size into account.

In reality, absolute savings are more important than relative ones, but that will never be a targetable goal. **H**



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1 Built-in Dining

One of the big trends in kitchen design at the moment is to incorporate some additional built-in functionality, particularly around dining space — perhaps, for instance, by including a built-in seating section on the back of a peninsula that gathers around a table. Not only does this give a better sense of coherent design, but it is highly space efficient. It's not too difficult to imagine informal family suppers cosily gathered in a space like this — whether it then creates the need for another, more formal dining option is the only issue.



MAIN IMAGE: RICHARD GOODING (MARK WILKINSON FURNITURE); TOP RIGHT: SMEG; BOTTOM RIGHT: SECOND NATURE

10 Practical Ways to the PERFECT KITCHEN

Choosing a kitchen should be based on more than just visuals, says Jason Orme. Here are the best tips for ensuring it works for you in the long run



2 INTRODUCTION TEXTURE
Reflecting the current trend for introducing greater texture to the home both inside and out (whether it be internal timber cladding or stonework), there is a movement for kitchens to become more personalised and less sleek. This might involve commissioning heavily grained and patterned 'rustic' oak doors on a basic carcass (built by a local joiner, a very cheap way to get a bespoke look) or it might mean looking out for ranges emerging from the nationwide suppliers. We want our kitchens to be tactile and while there are obvious practicalities in terms of worksurfaces, the overall look should provide interest rather than neutrality if you want your kitchen to be part of a 'warmer' interior style.

3 GET THE LIGHTING RIGHT
Lighting – both natural and artificial – is a complicated decision. Based on the assumption that you want both bags of lovely natural light while at the same time being able to create a warm, cosy feel when required, maximising window openings is critical on as many aspects as possible. Think carefully about the position of the sun at different times of day, at different times of year. Morning sun is particularly conducive to a pleasant feeling in the kitchen at breakfast time, so try and plan your window openings accordingly.

But it is with artificial lighting that you are likely to have the most options and where, therefore, things can most easily go badly wrong. The main mistake is over-specification, either through over-flashy LED strips and innovations that, over-used, can turn the kitchen into something out of a Star Trek movie; the other mistake is to get too enthusiastic with downlights, and end up opting for 20 when really only a handful would suffice as part of a more measured approach. Ideally a lighting designer would be used – but if not, then at least interrogate your electrician to come up with a design that you have both spent some time on. The usual recipe for success involves a mix of pendant lighting over islands or peninsulas, downlights for task lighting near the kitchen units, under-cupboard LED lighting for background effect and some wall lights for a balance of uses. The point is, give it some serious thought – most people don't. ➤

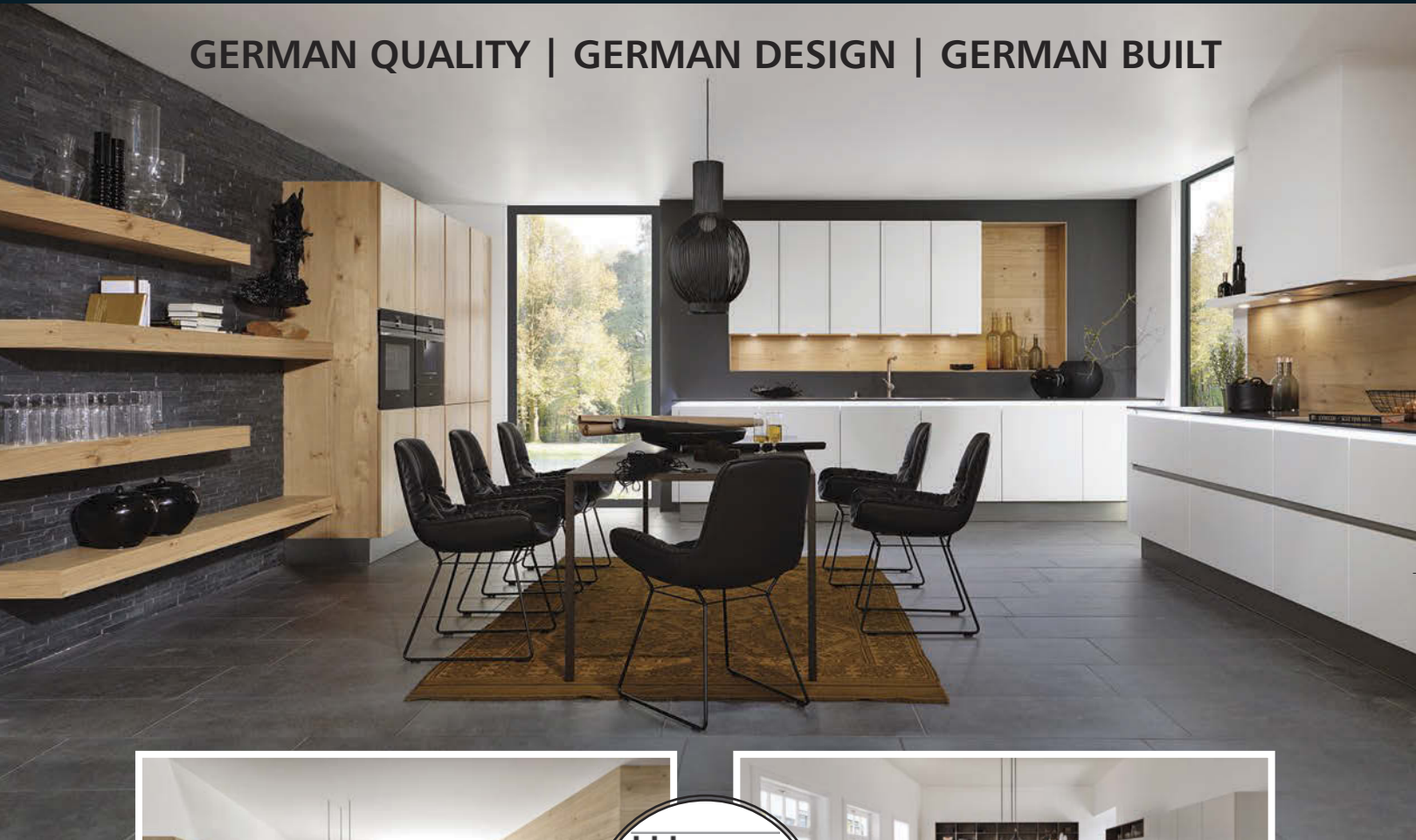


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4 Curves Are Both Beautiful and Practical

“Curves offer a touch of individuality, softening the lines in the interior to create a much more welcoming space,” comments Graeme Smith, senior designer at Second Nature and 1909 Kitchens. “They bring a number of benefits to the kitchen layout. In design terms, curves offer the designer more freedom of expression, a palette of features to create inspirational schemes. From an ergonomic perspective, curves can create zones in the kitchen for specific activities, such as a shaped breakfast bar to sit around. From a safety point of view, curves reduce the risk of small children knocking into sharp and angular edges so for a family with young children, introducing curves can be a strong consideration.”



5

MATCH YOUR KITCHEN TO YOUR PERSONALITY

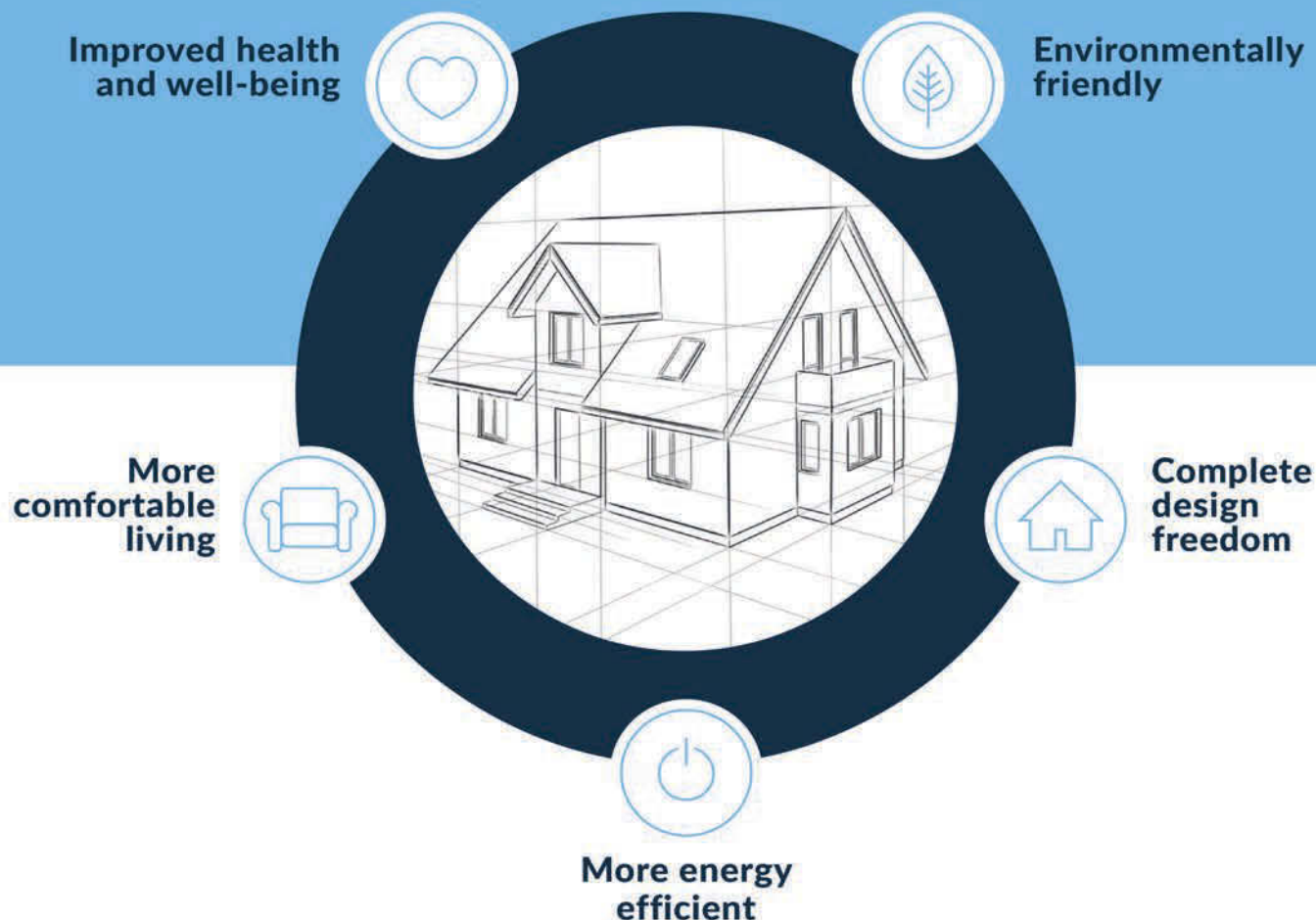
For all the talk about the ‘kitchen as an entertaining space’, ask yourself two key questions: Firstly, and perhaps rather churlishly, how many of these dinner parties are you really hosting every year? Enough to base your whole kitchen design around? The element of cook as central star of the show is part of the story of kitchen design these days — but are you sure it’s right for you? Be honest — would you rather no one see you as you try and defrost last-minute vol-au-vents in the microwave? Are you less Nigella, more Nigel Lawson? That’s OK — but get a kitchen to suit.

On the other hand, if you truly are channeling Jamie or Delia and want to be able to talk to your guests and family at the same time as cooking (and drinking) then make sure your kitchen is planned accordingly. And that means paying careful attention to positioning of the main functions. So for the social cook the positioning of the hob, the main chopping and slicing worksurfaces and even the sink against the perimeter wall means that for the bulk of the cooking time you’ll end up with your back to the guests. Islands and peninsulas can really help in this respect.

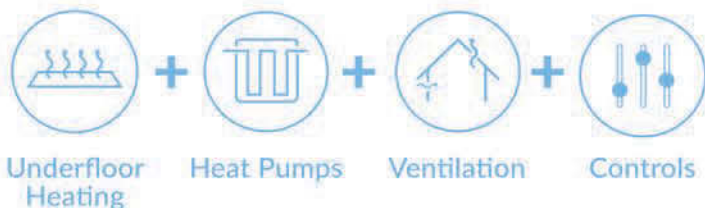
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6 Outsource Kitchen Functions

The kitchen is asked to do a lot of things and, given its new billing these days as a multi-functional, all-singing, all-dancing centre of the house, the fewer things it needs to accommodate, the more space you have for leaning against units and drinking wine. So outsource as many of the tasks to other areas. There are two obvious solutions in particular – the utility, which of course will take away the need for a washing machine, etc, in the kitchen; and a larder or pantry (i.e. a dedicated storage area, preferably walk-in) to take the strain off the kitchen units (and ideally reduce the need for so many).



THE PRACTICALITIES OF OPEN PLAN

We all want our kitchens to be ‘open plan’ these days. But it’s important to define what that actually means. Most people interpret it as a kitchen that’s open to a dining and/or living space. However, when it becomes truly open plan – in that the kitchen is actually totally centred in the house and open onto all or most other downstairs rooms – then it becomes more problematic.

There are the potential regulatory implications around fire safety, for a start. Then there are the practical livability issues around whether we actually want to have our kitchens on display, central to the home, all the time. It’s all very well when it’s nice and tidy, but when it comes to the more mundane kitchen moments – persisting kitchen smells; never-ending bombardment of children’s plates and cups left out; rotting chicken carcasses, etc – then you’re either going to have to live around the mess or become an excessive kitchen cleaner. So think carefully about the tough times of a kitchen as well as the good. ➤



8 In-Frame or Not In-Frame?

If you aspire to the traditional painted style look that is somehow both timeless and fashionable at the moment, then in-frame units are probably the choice for you. And it’s a ‘probably’ rather than ‘definitely’ because some kitchen designers take a view that there is a balance between the aesthetic benefits of the style (essentially with exposed framing into which the units and drawer fronts sit flush, rather than hiding completely) and the issue of the frame reducing the opening size of the drawer or cupboard. This reduces access to the space, but most experts agree that it isn’t really a major issue.

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9 Go Easy on Wall Units

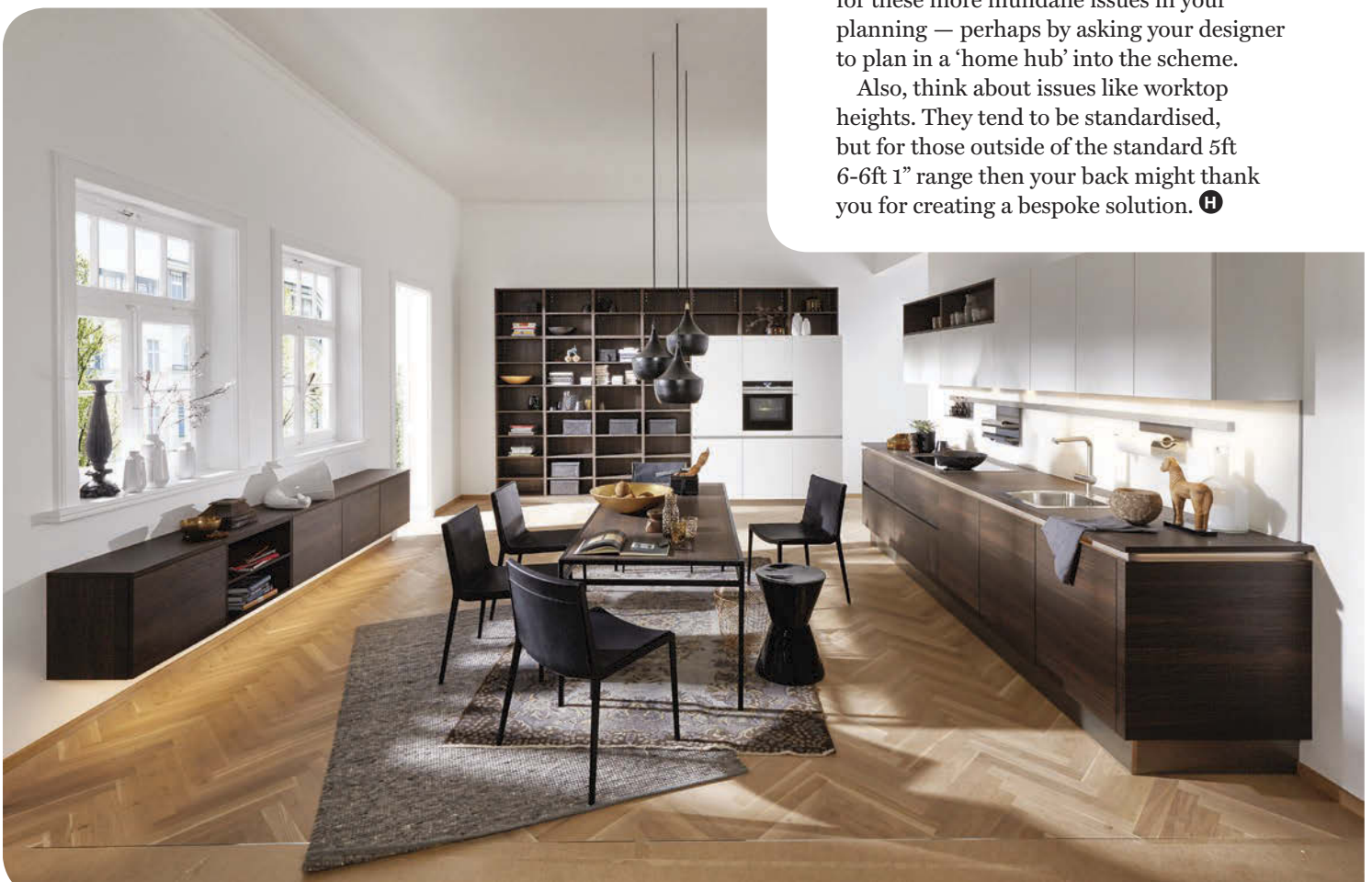
Increasingly we want our kitchens to double up as informal living spaces, and nothing spoils the laid-back vibe more than walls cluttered with units, cooker hoods and so on. Keeping the walls as free as possible – helped by the overall principle of reducing strain on the kitchen itself – means more space for wall lights, art and blank space, all of which encourages a more integrated feel for living as well as cooking.

10 Design 'in' Practical

Aesthetics are a primary factor in deciding on how to choose a kitchen. We like our door styles, our lovely worktops, our fancy appliances, and quite rightly so. Yet considering the amount of time you spend in the kitchen, the amount of interaction you actually have with it – opening drawers, using the worksurface, perhaps even washing up – over the course of a typical kitchen lifespan of at least a decade, then a design can only be considered a success if it works well on a practical level.

Some elements of practicality have become part of the standard offering from kitchen suppliers (e.g. soft-close drawers, corner storage, etc), but to achieve true kitchen heaven you'll need to go a bit further. For example, in the rush to make our kitchen the heart of our homes, we have asked it to act well beyond the duties of simply cooking. It is, for instance, the first port of storage for handbags, car keys, school bags, mobile phone charging, digital radios or speakers, and so on. Your kitchen will look and perform a lot better on a day-to-day basis if you can account for these more mundane issues in your planning – perhaps by asking your designer to plan in a 'home hub' into the scheme.

Also, think about issues like worktop heights. They tend to be standardised, but for those outside of the standard 5ft 6-6ft 1" range then your back might thank you for creating a bespoke solution. **H**



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Neil Turner

Neil is a director of architectural practice Howarth Litchfield Partnership and specialises in residential design (howarthlitchfield.com)

Is Digital Modelling the Future for Self-build?

Building professionals are turning to building information modelling (BIM) as never before, so it's worth finding out what all the fuss is about, says architect Neil Turner

So what is BIM? Well, if we believe all the hype, it's going to revolutionise the way architects, engineers and builders put together your dream house. It stands for Building Information Modelling (BIM) and according to the government: "BIM embeds key product and asset data and a three-dimensional (3D) computer model that can be used for effective management of information throughout a project lifecycle — from earliest concept through to operation."

That's a lot to digest. What does it actually mean? The industry is experiencing a huge change from the days when CAD-2D packages first arrived and replaced the drawing board. The latest changes are more than just 3D packages but a way of linking all the consultants, products and costings into a true digitisation of

the industry. It's an incredibly complex subject and it's also full of horrible jargon. At my own practice, we have been investing in and learning about this new technology. Each software licence cost us thousands of pounds, so in an office of 30 that is a big investment. Firstly, we want to remain on top of new methods and practices, but equally we have no choice, as from April 2016 all tenders for government funds must show they are using BIM level 2. (There are a series of levels in BIM and you will hear architectural practices saying that they work with level 1 or 2, but not yet 3.)

The key question is: what is its effect on your house design and the process of getting it built?

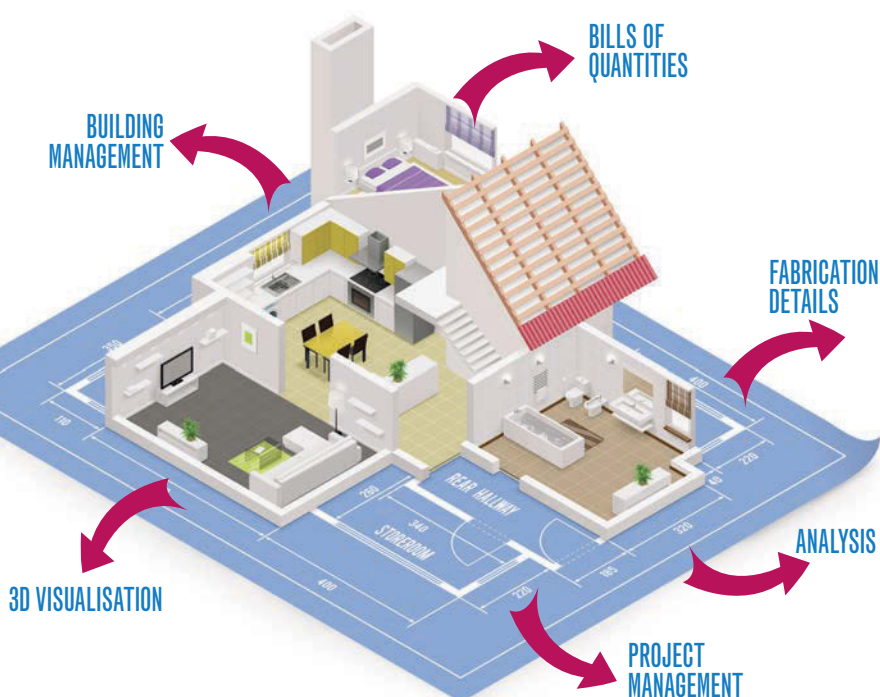
I can see clear advantages. The simplest way to describe it is that it allows architects to use a 3D model which can exchange information between engineers, incorporate products and even detects clashes such as pipes through walls. Sounds great, doesn't it?

So when you are designing your house, it will create very accurate 3D images that are more than presentation drawings. These images can then produce the sections, details and quantities that the team needs to cost and build from. The designer can then quickly alter the design so you can see all the changes and approve them. All the schedules and details are altered together, avoiding errors across several other drawings.

We already use 3D packages such as SketchUp that can create great images to help you visualise your wonderful new extension or new build, but this 3D image is more than just a static image. The model is 'live' and can be accessed by other consultants to add their elements. This 'federated' model is the key to the future of BIM.

When we work on 2D, we are constantly sharing our CAD files to make sure everyone is on the same base plan or reference file. Now with a live model, no one in the team can be behind or unaware of the latest changes. This brings with it new problems of how to control change. ➤

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You don't want someone simply altering things without permission. All members of the design team have to agree rules on access, layers and file names. If it all works well, the coordination becomes much easier and reduces the risk of errors. So does this mean that the architect simply presses a few buttons on his or her PC and out pops the design? I don't think so, but worryingly even in the industry I have heard comments like this.

New Ways of Working

Architects have always worked in 3D, whether in pen and paper or models, or simply thinking about the spaces they are creating — that is their core skill. We are employed to have the vision. BIM is not a replacement for these skills. If your architect has skills you like and the ability to create your dream house, then great — that is the first question to establish. I would say BIM should be some way down the list of essentials. Much higher up the list will be vision, technical ability, job running skills and a person you can get on with.

We have been using BIM on recent domestic projects as we want to see if it can assist the process, help the client and also make us more efficient. I am an architect and also a businessman and so need to generate a profit from my projects. That may sound awful to some people, but if BIM can speed up the technical stages then it will help my design studio's efficiency. BIM has primarily been used so far on larger projects and we have used it on schools and hospitals. The efficiencies and logic make it ideal for complex serviced and structurally difficult buildings. Another reason is that you need a team of consultants who are all working on it and can operate the new systems together.

We are finding that on smaller projects, the smaller consultants don't use it. We can either employ larger companies or partially use the system. This can affect the costs and fees that clients have to pay. So it's a transition period and I think within the next three years many in the industry should be capable of using it.

So should you, as the client, demand its use on your project? I still think that on smaller projects it's not really required for its full capabilities. However, I do think that the future is BIM.

So how should we design? I believe that the process will still start with a pencil and paper and the architect sketching out ideas. My sketch

pad contains ideas and doodles from all sorts of projects and a sketch can convey the emotion and energy of the initial ideas. No computer, however good, can possibly replicate this process.

After the initial sketches are done, I still like to do hand drawing and axonometric (3D drawings), giving options and thoughts to help the client. We often find that a hard-line computer image can look too finished and clients feel inhibited from commenting, instead of enjoying the ability to draw/scribble on top of a freehand drawing.

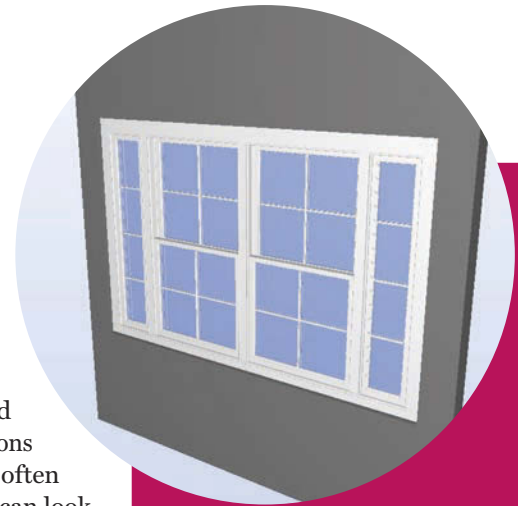
We also find that the staff, when training to use it, find it hard to create certain shapes or replicate accurate details and this can lead to a temptation to draw something because it's easier rather than appropriate. The system encourages you to create a library of details and forms. This can be advantageous but needs careful watching to make sure the right detail is used.

Predicting Energy Use

So when I am asked if BIM is the future of house design, then the answer is both yes and no. BIM is not a replacement for design or architects; it's a great new tool to help architects and designers and assist them when designing. The real excitement comes with the way it can help us develop the design and its ability to fully coordinate information — making the build easier and more accurate, too.

BIM will open up new ways of working beyond the design stage. If we can calculate all the materials quantities and schedule those out, then the quantity surveyor could become a thing of the past. Ultimately BIM should allow us to predict energy use too. This should be constantly updated through the life of a building; when the building changes you could alter the model and test the alterations beforehand. Its ability to assess the future use of a building when built is the really revolutionary part — and that is still the future. It will encourage sustainable buildings as we will be able to see how much a house uses in energy over a lifetime and make informed decisions (not guesses) over what to add or build in.

It's an exciting future, one that is close and getting closer. BIM is definitely going to influence design and construction — but I will still keep my pencil! **H**



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Best Conversion

Exterior Elevations

Unsympathetic features from earlier conversions have been removed and replaced with materials more in keeping with the setting and agricultural nature of the buildings. The original proportions of the single-storey stable block have been restored and, from the exterior, the block housing the new guest bedrooms now resembles the stabling it was originally intended to house.



THE MISSING LINK

A collection of derelict stables and barns has been brought back to life to create a home that respects the traditional nature of the buildings, while giving a nod to contemporary architecture

Words: **Natasha Brinsmead** Photography: **Simon Maxwell**





Project Notes



Homeowners

Anne Kirmond and husband

Project

Barn and stables conversion

Location Gloucestershire

Build time

Sep 2009 - June 2014

Size 1,830m²

House cost £500,000

Build cost £800,000

Current value Unknown

ARCHITECT'S VIEW

Daniel Gore of Tyack Architects:

"The development has reinvented an unattractive courtyard cluster of farm buildings, turning them into a contemporary new dwelling.

"A group of listed stone barns and stables had become unrecognisable following the piecemeal addition of modern extensions and unsympathetic changes. The stripping away of the previous extensions along with the careful insertion of three new linking elements enable the reinstated historic structures to be connected.

"The glazed links have created both the visual separation demanded from the conservation officer as well as the transitional spaces that tie the various contrasting volumes together successfully.

"A consistent approach to the detail design and choice of finishing materials unifies the series of contrasting internal spaces. The historic barn interiors leave natural stone walls exposed and express the pegs and jointing of traditional oak-frame roof construction; similarly, I-beams, bespoke metal cleats and tie-rod connectors have been fully expressed in the structure of the modern roofs – the industrial character of the buildings is echoed in the use of a polished concrete floor finish."

SUPPLIERS

Planning consultants

Hunter Page: 01242 230066

Architects

Tyack Architects:
01608 650490

Main contractor

Sporn Construction:
01869 277222

Glass link and most glazing

Apropos Conservatories:
0161 342 8200

Oak doors and timber windows

Conifer Joinery:
01865 371800

Chestnut cladding and oak

Vastern Timber: 01793 853281

Kitchen

Sebastian Sellers: 01451 861864

Woodburning stove

Stovax: stovax.com

Floors and tiles

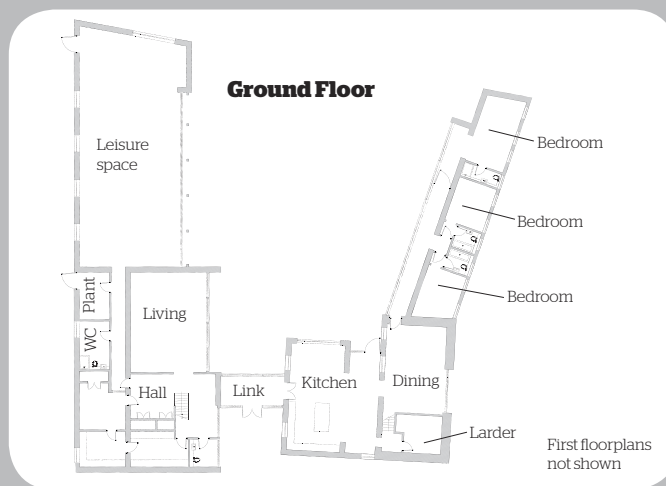
Mandarin Stone:
mandarinstone.com

Oak floors, door frames and skirting

Broadleaf timber:
01242 252202

Shower

Matki Showers: matki.co.uk



Sanitaryware

Duravit: duravit.co.uk

Taps

Crosswater: crosswater.co.uk

Electrical installation

Wave Electrical:
01242 698566

Underfloor heating and plumbing

Day Wellington:
daywellington.co.uk
07717 886384

Tiling

SWC Flooring:
01895 255552

Concrete floor

Lazenbys: 01935 700306

Staircase

Armstrong Vinton Furniture:
armstrongvintonfurniture.co.uk

Carpentry (including cladding and barn kitchen)

Mike Pearse Carpentry:
0744 6191573

Linking the Elements

The barns and stabling have been brought together using a clever design that both respects the buildings' original uses and introduces more contemporary design elements. Now, an aluminium-framed glazed link unites the two barns, while timber cladding sits alongside the original stone. Anne wanted to replace concrete roof tiles with Cotswold stone, but this was refused by the planners as they were keen to see the 'organic ageing' of the buildings.



Kitchen

The Shaker-style kitchen features a range cooker and a combination of granite and timber worktops – and lots of curves, as Anne wanted nothing to be square in this room. The kitchen leads into a utility room with a second range cooker – the 'turkey oven' – and also into a dining space. From the kitchen a fully glazed link takes you into the double-height entrance hall.







Nestled away in the idyllic historic village of Lower Slaughter in the Cotswolds, Anne Kirmond's barn conversion is an outstanding achievement both in terms of its ingenious design as well as the various hurdles she and her chosen architectural practice (Tyack Architects) have had to overcome in order to actually execute it.

The barns and various stable blocks that now make up Anne's home were originally part of the farm belonging to the neighbouring manor house, but had since been sold off to a local hotel who had planned on turning them into a spa retreat. "I had been looking for ages for somewhere that I could keep my horses," explains Anne, who, along with her husband and son, was living nearby when she became aware that the barns had come on to the market.

Located in a Conservation Area and an Area of Outstanding Natural Beauty, the family went through three planning consultants and ran into various planning issues along the way. Finally their neighbours recommended the consultants they went on to use — they were local and understood the area. The property comprised three barns, along with various stable blocks. While the barns had seen some level of conversion work over the years, they had also been subject to some pretty unsympathetic and rather

The new conversion has made sense of the previous jumble of buildings by bringing together two of the barns, with two stable blocks. Despite the very strict planning stipulations that were put in place, inventive solutions have been developed at every turn.

Although the glazed link connecting the kitchen to the two-storey barn is now one of the most striking parts of the project, this was actually a response to the planners' wish that this new link should be transparent in nature.

Agricultural Roots Retained

At the heart of this new home lies a large, homely kitchen, sited in a stone building, which is now connected to two barns on either side. To one side of the kitchen lies the old threshing barn, now home to a cosy living space, along with a handy utility (complete with an oven reserved almost exclusively for the Christmas turkey!). The first floor of the old threshing barn is now an annexe for Anne's son, Tom, and has a bedroom, living space and bathroom. The old stables which are attached to this barn have been transformed into three en suite guest bedrooms.

Meanwhile, the aforementioned glazed link to the other side leads to an impressive, double-height hall space, flooded with light thanks to the fully glazed full-height opening, and dominated by the contemporary cantilevered staircase which leads up to a master bedroom suite occupying the entire upper level of this

section of the house.

"We had to put the steel frame into the main barn to support the second floor and the front of the building," says Anne. "We oversized the specification of the visible beams to make them into a feature."

But surely the most impressive element of the whole conversion has to be the 'party room' once occupied by 12 stables (six to either side of the space). A concrete floor and larch cladding define the room and a steel frame supports the roof.

The result is a stunning conversion that has made the most of the building's agricultural roots, keeping all the original stone walls exposed and intact. At the same time, the barn is comfortable and succeeds in incorporating modern design features. "It is amazing — we love it," says Anne. "The house makes me smile!" ➤

The new conversion has made sense of the jumble of buildings

hotch-potch additions and alterations, and the stables were in a bad state of repair. "A couple of ramshackle bedsits had been made within the existing structure but we gutted the inside of the barns and started from scratch," explains Anne.

The plan was to bring the barns and stables together into one cohesive dwelling, removing the less than desirable and very much out-of-keeping additions that had been tacked on over the years by previous owners.

The planning department was keen that the conversion should respect both the local architecture as well as the agricultural nature of the buildings and as such it took two years for Anne to gain planning approval. During this time the family were able to live on site in a cottage which, along with several separate stable blocks (now used as Anne's home gym and offices), formed part of the plot.

Glazed Link

The link was fully supported by the conservation officer, who had specified that the new link connecting the barn to the kitchen should be glazed. It features aluminium frames and gives a sense of being out in the open.



Living Area

One of two living spaces, this welcoming space leads directly off the kitchen and features exposed sections of original stone walling and rustic slate flooring, which is carried through to the glazed link (above).



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Party Room

Once 12 stables, this jaw-dropping space combines original stone walls with Scandi-style cladding and a poured concrete floor. Although the steel ties add architectural interest, they also perform a structural role in holding the roof together. At the far end of this room is a convenient small kitchen and a pizza oven.

Bat Surveys and Solutions

One of the many planning and conservation-related hurdles that Anne faced was the matter of bats roosting in the roof of the old threshing barn. This is a common issue faced by those converting old agricultural buildings — and one that can cause untimely delays.

Should the planning department have reason to suspect that there is a reasonable likelihood of bats being present in your property, you will be required to commission a preliminary bat survey (approx £300). Unless this survey pretty much rules out the presence of bats, you will then be required to commission a full bat survey (typically upwards of £1,000) and then come up with a scheme that is seen as acceptable. This may involve including a roost for the bats and will almost certainly require you to include entry points (such as access tiles), perhaps a flying area and sometimes insulation to avoid temperature fluctuations. For more information visit bats.org.uk. **H**

Central Courtyard

The collection of barns and stables on site have now been connected to form one spacious home. At the centre is a zen-like courtyard; floor-to-ceiling glazing and large glazed doors make the most of views over this space.





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Master Bedroom

The master suite occupies the whole upper level. Dominated by new, huge steel beams, a gas fire makes it feel cosy, while a vent from the woodburner in the living room below also helps to heat the room.



Master Bathroom

The master bathroom has a low-level 'slit' window for privacy, with a freestanding bath and a walk-in shower.



BACK TO THE FUTURE

Karen and Nial Stewart have radically improved and extended their 1980s property to create a unique 21st-century family home

Words: **Caroline Ednie** Photography: **David Barbour**





Project Notes

Homeowners

Nial and Karen Stewart

Project

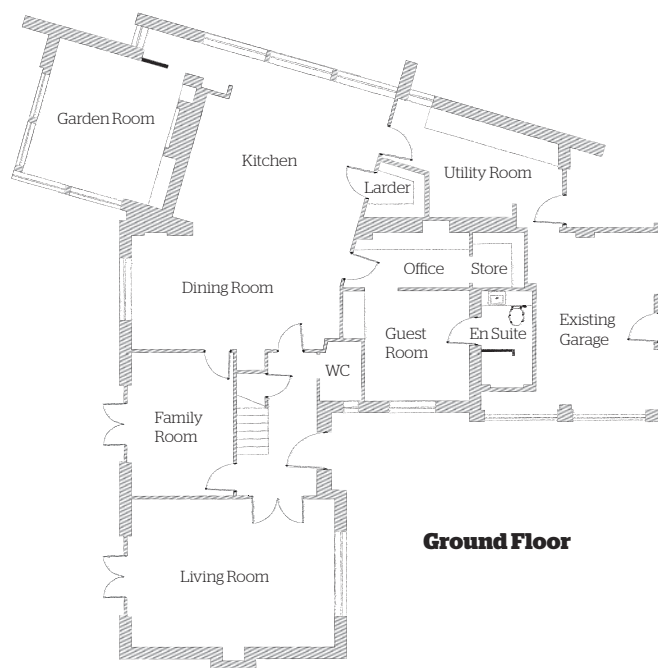
Contemporary extension

Location Dalkeith, Scotland

Build time Aug 2014 - Feb 2015

House Cost Undisclosed

Build Cost Approximately
£1,000/m² for renovation work
and £2,000/m² for the extension



Before



SUPPLIERS

Architect Craig Amy Architect:

craigamy.com; 07890 304680

Structural engineer McColl Associates
(Consulting Engineers): 0131 555 0721

Main contractor

M-Pact Building Services: 0131 440 4797

Timber and steel supplier

Hepburn Fabrication Services: 0131 551 5611

Interior designer Acanthus Interiors:

acanthusinteriors.com

Specialist joinery (feature wall) Platform

Interior Solutions: 0131 272 2712

Lighting designer/supplier

Ottimo Lighting: 0131 226 4750

Western red cedar cladding

Russwood: 01540 673648

Slate cladding Mrs Stone Store: 01283 730388

Plumbing and heating Andrew Innes

Plumbing And Heating: 01875 613 999

Windows UniWin: 0131 440 8099

Sanitaryware Graham: The Plumbers'

Merchant: 0131 656 9950

Kitchen and appliances

Cameron Interiors: 0131 556 2233

Paving slabs Bradstone: bradstone.com

Gas fire Stonecraft: 01316 521464

Rooflight Skylight International: skylight.co.uk

Utility units Howdens Joinery: howdens.com



DESIGNER'S VIEW

Craig Amy of Craig Amy Architect:

"Karen and Nial came to me looking for similar solutions to the problems that I addressed in the neighbouring extension; both houses are identical. But the garden plot on this occasion offered so much scope. It's a corner plot, benefiting from a large L-shaped garden that wraps around two elevations of the house. The site also features an original 4m-high brick boundary wall of the former walled gardens and glasshouses of a neighbouring abbey, formerly a Cistercian monastery."

Exterior Cladding

The slate wall is a continuation of the wall inside – it creates a break within the zones internally and externally. Karen sourced the slate tiles from Mrs Stone Store. Long planks of western red cedar from Russwood have been arranged lengthways along the new structure, too.



Kitchen

The handleless kitchen, which sits at the heart of the extension, was sourced through Cameron Interiors. "I wanted something simple and light; the simpler the better as I didn't want it to age," says Karen of the kitchen design. The new extension benefits from underfloor heating throughout. ➤



K

aren and Nial Stewart had a dilemma — stay put and ring in the changes, or move. In collaboration with architect Craig Amy, the couple have remained and radically improved and extended their 1980s developer-built house, which they share with their two teenage daughters, in the town of Dalkeith, near Edinburgh. The result is a unique family-friendly home.

“Our design discussions probably took around two years, from 2012 to 2014, and our architect Craig Amy must have worked on over 20 plans during this period,” begins Karen Stewart. “I was coming up with so many ideas I think I was speaking more to Craig than I was to my husband at one point! But Craig was so patient and understood that we wanted to really push the project and max out on it to get the best results. I knew that I was only going to do this once, so I wanted to do it right, and had the right architect to take me on this journey.”

That journey began when the limitations of their current home, which they’ve lived in for nearly 17 years, were becoming more insurmountable as their daughters were getting older. “Overall, we found that we needed more space. The kitchen was dark and pokey and the utility area was tight and awkward — I really craved a bigger utility area, I wanted more order in my life!” says Karen. “We had ideas about extend-

a shower room attached. “It was quite an ambitious brief, but as there were no issues with the available space, which meant that we could design a 59m² extension without creating too much of an impact on the garden, which is big enough to soak it all up,” says architect Craig.

“I didn’t want a box slung on the side of the building,” adds Karen. “We were keen to have an elegant addition. We spent lots of time discussing the exterior materials. Although it did take a lot of discussion and tweaking to come up with the final design, by the time we put everything in for planning it was exactly what we wanted.”

Consequently, what was presented to local planners was an extension set off the house at an angle with a new kitchen at its heart, culminating in a new garden room lounge opening out to the main garden. The extension narrows to only 2m at the utility and back door end, which reduces any impact on neighbouring properties. The angle also has the effect of setting the new kitchen towards the morning sun, while the garden room benefits from the afternoon and evening sun for longer.

Performance-wise the new addition has been a boon to the existing house. The extension is heavily insulated and also benefits from triple-glazed windows, doors and rooflights; the latter are set within the single-ply membrane roof. The extension has also

“I didn’t want a box slung on the side of the house; I wanted an elegant addition”

been future-proofed with CAT 6 wiring throughout and a light-

ing the house out into the garden, and to bring in more light. I also wanted a little snug that I could escape to, unwind and watch TV when I came home from work. I knew the direction I wanted the house to move in.”

The Design

The catalyst in terms of taking the project forward arrived in the form of an extension that the Stewarts admired, which had recently been completed in the same street. They found out from their neighbour that the architect behind the project was Edinburgh-based Craig Amy and they decided to take the plunge.

Essentially the Stewarts were looking for a larger kitchen and dining room, as well as a larger utility, a larder, a new garden room and a self-enclosed home office/guest bedroom with

ing system in the main spaces.

The Stewarts stayed on site during the six-month construction of the extension but, according to Karen, the build team made sure that the process wasn’t too onerous for the family. “We had a great foreman and builder and they were careful to build the schedule around us. It was over winter — thankfully the weather was OK.

“I think it’s important to go with the flow, go in with the mindset to be laid back, even be prepared for a few hiccups. We had a couple of little problems: we couldn’t find the water to turn it off so we had to dig up the driveway; and the glazing got damaged on the way here. But overall I really enjoyed the project. The design stage was really quite exciting and doing it this way now means that there’s nothing I wish I had done differently,” concludes Karen.



Kitchen

The kitchen and new dining room are the main focal point, with a large rooflight at the junction with the existing house and triple-glazed sliding doors flooding the once dark space with light. Designing the kitchen around two islands (instead of around the walls) allowed the back wall to be fully glazed to the side garden.

Feature Wall

The bespoke kitchen feature wall provides access to the utility (where each member of the family has a dedicated locker by way of storage for shoes and outdoor clothes), larder and the new office/guest bedroom. It also conceals a small seating recess for reading. The flush doors are barely visible. "Originally we had timber panels in mind, and then I looked at a variety of veneers, but these looked more like wallpaper, an effect I wasn't keen on," says Karen, who came up with the concept with her interior designer, Rebecca at Acanthus Interiors, and architect, Craig. Rebecca sketched the Japanese blossom design which architect Craig then transferred on to CAD. The design was passed to a shop fitter to laser cut and spray paint. ➤







Garden Room

One of the highlights of the family's newly extended house is the garden room, which is hidden around the corner from the kitchen. This room can be completely closed off with a sliding pocket door and has large corner sliding doors leading out to the main rear garden. "I really wanted a little snug area where I could have time to unwind," says Karen. "I don't normally sit down until after 9pm following work and I wanted to be able to retreat with the remote control! It's so cosy. We originally looked at having a woodburner in the garden room but the flues were huge." The family opted for a gas fire; the flue could be concealed from view more readily.



The Knowledge: A Stealth Extension

Although the extension is sizeable, the majority of the new structure isn't visible from the main garden, which gives the impression of a much smaller add-on. And to the side, the extension provides a much more open and inviting elevation to the side garden than the existing house did, giving a much better and more welcoming connection to the previously forgotten part of the grounds.

Unsurprisingly planning was open to this site-sympathetic approach. "Planning was straightforward, as the design has no impact on the neighbours. It's completely hidden from the street, you wouldn't know it was there," says Craig. Indeed, since the project was completed, planners have held up the project as a best practice exemplar in terms of its ambitious design.

Internally, the extension is broken down into a series of spaces that, although connected, are designed to feel smaller and more homely than a single open plan space.

The two years spent discussing the minutiae of the materials has paid off considerably, too. Externally, long horizontal strips of FSC western red cedar, vacuum treated for longevity, are arranged lengthways along the new structure. "I didn't want a timber that weathered and greyed, we wanted a crisp finish," says Karen. The colour of the hardwood was also carefully chosen to blend in with the red brick of the main house. "It was important that the new addition worked with the existing house. I liked the idea of the extension folding around the house – embracing it."

Slate clad spine walls anchor the extension while also breaking up the long elevation to the side. Karen sourced this material from Mrs Stone Store. **H**



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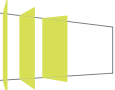
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BENEFITS RECLAIMED

Pippa Mundy's renovated and extended Cardiff terraced home is now a characterful space packed with industrial style

Words: **Laura Crombie** Photography: **Brett Charles**



A New Kitchen Space

The rear and side return extension, combined with internal remodelling, has allowed for a spacious kitchen/living/dining space to be created. The remarkable kitchen island was built from reclaimed hospital wall cladding by Pippa's joiner, who also created the kitchen units (which are painted in RAL Anthracite Grey). The shelves and worktops are made from old church pews. The island is topped with a stainless steel worktop, made by a local fabricator; it adds industrial flair.



Project Notes

Homeowners Pippa Mundy
Project Renovation and extension

Location Cardiff

Build time

Nov 2014 - June 2015

House cost £390,000 (in 2012)

Build cost £85,000

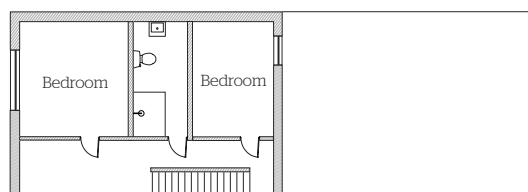
Value £650,000

DESIGNER'S VIEW

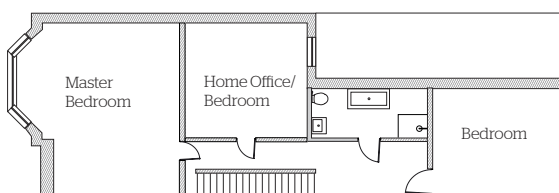
Mark Taylor of MT Surveyors:

"Pippa was looking for an open plan living area. The brief being to get rid of as many of the internal walls as possible and to fill in the alleyway alongside the rear annexe, but without compromising providing light through to the back of the house."

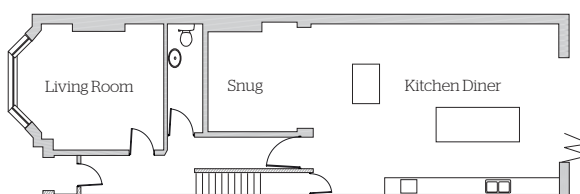
"Rather than use a traditional lean-to structure, which would have created problems with the rainwater run off along the boundary, we opted for a more modern approach – a flat roof with a large proportion cut away, providing a continuous glass atrium which gives the impression of open living space."



Second Floor



First Floor



Ground Floor

SUPPLIERS

Provision of plans for planning permission

Mark Taylor: marktaylor-
mtsurveyors.co.uk

Builders Martin O'Connor
and Glyn White:

glynwhite18@live.co.uk

Plumber Adrian Attwell:
adrianattwell@live.com

**Kitchen units, windows
and carpentry**

Phil Forse: forsejoinery@
googlemail.com

Structural engineer Ceri
Jenkins: jenkinsporch.com

Sanitaryware B&Q: diy.com

Rooflights

Denval Co: denval.co.uk

HOMEOWNER'S VIEW

Pippa Mundy: "I acted as the designer and project manager – a thrilling and demanding experience which I would never have changed. And I think it's why there's such coherence and flow in the house as opposed to a building with a couple of striking features."

"I learnt many things but perhaps the most central was that design is more than drawings and specifications; it is a dynamic process which interacts closely with the tasks of building and construction. I had never done anything like this before but it made complete sense – working with the building, its environment, the people that will use the space and those involved with working in it, too."

The Extension

The new steel pier and RSJ have been painted and left deliberately exposed by Pippa to add to the industrial feel of the space. An array of fixed rooflights (from Denval Co) helps the side return to enjoy plenty of light.



M

ost people who take on a major renovation project spend months researching and planning every last detail before getting started. Not so for Pippa Mundy, whose unconventional approach to transforming her Cardiff terraced house was more of an ever-evolving journey.

"I knew there were certain aspects of the project I had to get finalised in advance, like the construction plans for the kitchen extension, and I had an overall vision based on using materials in their most honest form, but I wanted to allow the detail to evolve," she begins. "I thought once we'd stripped it back to its bare bones, things would reveal themselves that would shape the direction of the project."

Pippa bought the house in November 2013. "It had retained many of its original features, and I loved its large, elegant rooms with their high ceilings, but PVCu windows had replaced the wooden sashes and thick red carpets were covering up the original floorboards," she says.

Understanding the House

The first phase of the renovation involved clearing the space and replacing the plumbing, heating and electrics. With the help of her eldest son, George, and his friends, Pippa ripped out the carpets, took layers of wallpaper off the walls and ceilings, and removed various built-in

all of the floors were at different heights, which impeded the flow. Pippa wanted to extend into the side return to create a kitchen/dining/living space, plus a new cloakroom and utility, so she found an architect to draw up plans, then set about securing planning permission.

"I had very clear ideas of what I wanted and could never have worked with somebody telling me what I should do with the house," laughs Pippa, who project managed the build herself. "I wanted a glass-roofed extension and bifold doors to bring in as much light as possible, plus exposed pipework and wiring to give it an industrial feel."

Assembling the Team

Work on the extension began in November 2014, using directly employed contractors. "I had wanted it to be completely open plan but needed to keep a load-bearing pier between the original sitting room and extension," explains Pippa. "It was actually a blessing in disguise. I discovered an original safe in that section of wall, which I've made a feature of — and it means I have a snug area where I can curl up."

When it came to the kitchen units, Pippa went to Theodore Sons & Daughters, a local reclamation and salvage yard, and sourced timber that once clad the walls of Merthyr Tydfil Hospital.

Joiner Phil Forse turned it into a bespoke island with a steel surface made by a local fabricator. The reclaimed wood used for the pine worktops and open shelving came

from old church pews.

Pippa also relied upon the team she accumulated via word-of-mouth during the course of the project. "I started off with weekend builders, then gained a plasterer, Jimmy, who introduced me to his uncle Glyn, who became my full-time builder, and who in turn introduced me to other members of his family," she says. "They helped shape the way the house developed."

With work complete, Pippa and her sons moved into the house in June 2015. "I'm not sure the house will ever be finished," she muses when asked how she feels about the renovation coming to an end. "Life is an ever-changing journey and our homes should be, too. It's only a matter of time until I spot something else in a reclamation yard and work out a way to add it into the house."

"We discovered that there were no floor joists in one of the bedrooms"

cupboards. While stripping the wallpaper, the second floor ceiling collapsed. Pippa turned this misfortune into an opportunity, creating a vaulted ceiling. She then applied for planning permission for a large rooflight, which now floods the entire staircase with light.

On the floor below, Pippa added Juliette balconies to the two bedrooms at the rear of the house, introducing even more daylight. "The previous windows didn't fit the frames and had gaps around them, so they had to go," she says. "We had another potential drama when we discovered that there were no floor joists in one of the bedrooms but the builders were great and just got on with installing some."

When Pippa moved in, there was a living room, sitting room and combined kitchen/breakfast room on the ground floor. However,

Living Room

Period features take centre stage in the living room, which features a new Mendip woodburning stove and stripped, painted floorboards.







Beautifully Restored

The house's size and period features attracted Pippa, who recognised that the Victorian terrace's ground floor layout was the significant problem. The new extension has helped Pippa to create a spacious kitchen/dining/living space. ➤

Cosy Snug

The snug in the new extension features a wall clad in the same timber as the kitchen island.





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Master Bedroom

In the master bedroom, Pippa has replaced the PVCu frames in the bay window with replica wooden sashes. The floorboards have been exposed and painted in Sail White from Crown with Ronseal Diamond Hard matt varnish.



The Knowledge: Project Management

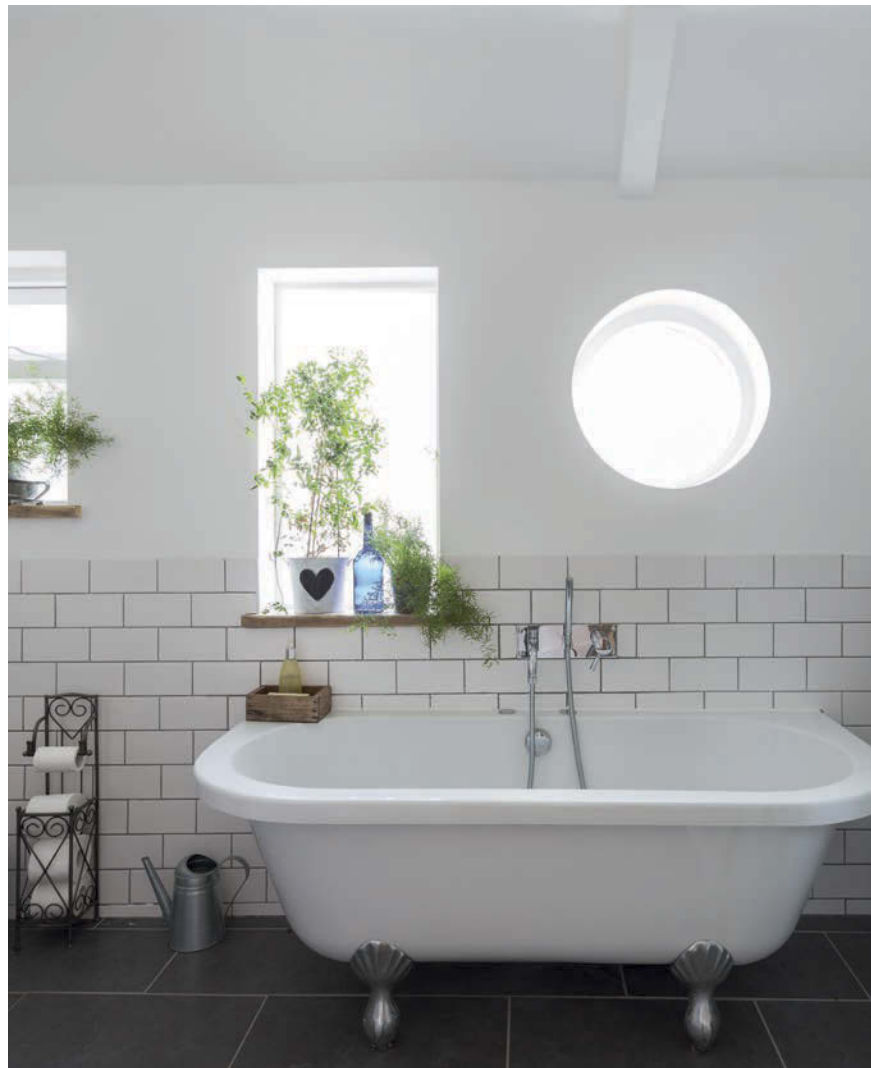
Running your own team of contractors is not for the faint-hearted, and although Pippa enjoyed considerable success – and cost savings – by managing all the trades directly, it needs careful consideration. “Whether it’s a good idea or not depends largely on the scale of the project and the individual circumstances of the homeowner,” says Jason Orme, Editorial Director at *Homebuilding & Renovating*. “If elements of the project, particularly early on, involve complicated critical paths, then the novice can come unstuck and the project can quickly fall apart. For example, brickworks can’t start until the groundworks are complete; and in extension work some of the plumbing and electrical work will be quite short burst jobs requiring several quick visits (e.g. to make safe existing work) – which are difficult to coordinate. Clearly, if you have a job that doesn’t allow you to be on site to take a delivery or to nip out and phone up the plasterer to be on site tomorrow, then it’s not for you. My advice would be to package up the main structural elements to, perhaps, skimmed stage and take it on from there.”

The benefits are obvious, as Pippa found, with the usual 10-20 per cent uplift on contract prices going straight to the homeowner. There is also a greater sense of control over the details of the project, as the end results on these pages show. **H**



The Staircase

Dated carpet was ripped up and the original floorboards and bannisters were sanded down on both staircases in the property. The pendant light was an eBay find.



Extended Space

Pippa added Juliette balconies to the two bedrooms at the rear of the house, introducing even more daylight. "The previous windows didn't fit the frames and had gaps around them, so they had to go," she says.

Bathrooms

Pippa removed a partition wall between the bathroom and WC to open up the space. The sanitaryware is from B&Q, the floor tiles from Wickes and the Metro tiles from Tons of Tiles.





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CIRCLE TIME

Peter and Chard Berkin have turned to traditional forms and materials for their first self-build, the gently spiralling Round House

Words **Alison Wall** Photography **Simon Maxwell**





ARCHITECT'S VIEW

Andrew Armes of Architecture AA

"We had lots of ideas at the beginning of the project – the roundhouse concept grew out of the idea of having two pavilions based on Thai houses," says Andrew. That original idea would have resulted in more than one building on site, and with the couple's grandchildren regularly coming to stay (at the time of the build, they had eight grandchildren between them) having separate sleeping quarters for the children was impractical.

Figuring out how the circular structure would work was the next key decision, he says. "The spiralling timber structure we arrived at is quite beautiful and simple, and every frame is slightly higher than the other. With this type of structure, it helps, like Peter, to have the skills and time to really understand how the building works. Peter was very hands on – he made models and we drew the frame in 3D."

Designing a circular house is not necessarily much more expensive than building a more traditional linear house, adds Andrew. "Using ICF [insulating concrete formwork] helped, because concrete is a fluid material, and we were lucky with the foundations because we had very good ground, with a lot of stone, so we could go for shallow foundations."

Project Notes

Homeowners

Peter and Chard Berkin

Project

Eco self-build

Location

Northamptonshire

Build time

May 2013 – Jul 2014

Size

270m²

Plot cost

£40,000

Build cost

£420,000 (£1,555/m²)

Value

£900,000

SELECTED COSTS

Engineering £3,018

Groundworks £1,400

Foundations £54,841

Timber frame £82,750

Timber cladding £8,699

Insulation £5,522

Ventilation £3,980

Boarding and plastering £6,088

Plumbing £5,500

Solar £2,500

Floor polishing £3,500

Jewsons supplies £3,755

TOTAL £420,000

SUPPLIERS

Architect

Architecture AA:

07921 855380

Ground and environment

Trendrevel Services:

trendrevel.co.uk

Foundations

Advanced Foundation

Technology:

advancedfoundation

technologylimited.co.uk

Timber frame

Touchwood Homes:

touchwoodhomes.co.uk

Roof

DF Roofing:

dfroofing.com

Windows and doors

Venturi UK:

venturiuk.com

Cladding timber

Bennetts Timber:

bennettstimber.co.uk

Insulation

Passivhaus Store:

phstore.co.uk

Ventilation

Aereco Ventilation:

aereco.com

Internal doors

Howdens Joinery:

howdens.com

Concrete floor polishing

Carr Restoration: 0115 822 0602

Kitchen

Magnet Kitchens:

magnet.co.uk

Ground Floor



Timber Structure

The precision-engineered circular structure of The Round House forms a dramatic timber beamed ceiling in the open plan living/dining/kitchen space. I-beams sit between the main timber frames, creating a 300mm insulation gap. "Chard did some research and found Thermafleece Eco Roll," says Peter. "We simply stapled the fleece into place before the insulated plasterboard was fixed over the top. The whole family spent weeks putting 100 fleece rolls in."



M

any a self-build has been inspired by the owners' individual dreams. But it's a fair bet that first-time self-builder Peter Berkin's starting point is unique. The retired GP was building a light aircraft and his workshop was too narrow. Could he build a bigger workshop, he wondered — and build a new house at the same time?

Peter's motivation may be unusual but he shares many of the traits familiar to other self-builders: tenacity, a willingness to learn new DIY skills and a desire to build 'out of the box'. The result is a striking contemporary self-build known as 'The Round House', on the outskirts of a Northamptonshire village.

Early plans for the project were stalled by the unexpected bad news that 72 new homes were to be built next to the rural plot owned by Peter and his wife Chard — a blow that put the project back two years. Undaunted, Peter and his architect, Andrew Armes of Architecture AA, reorientated the property so that the main views would face open country on the east side. And when the project became the subject of the TV programme *Grand Designs*, the race was on to complete within a tight filming schedule.

The initial idea for a circular house came from Andrew. "We were both fired up with the idea," says Peter. "From there, we pulled in the idea of making this an eco house — we knew it needed to be highly insulated and airtight and to be as

the project announced that the circular building could only be built in steel, a view shared by the architect. Peter researched timber alternatives and found a willing supplier, Touchwood Homes. "The owner was a lovely old boy," remembers Peter. "He was intrigued and said 'leave it with me.'" Two companies in Germany were tracked down that could do the job and one was duly commissioned. Once Touchwood had designed and engineered the frame, the company sent Peter a 3D computer frame ("it looked fabulous", he says). "That Christmas I made the frame out of balsa wood, so that I could understand it — the structure is a real work of art," he enthuses. It's also extremely complex.

Each joint dovetails at different angles, with the overall pattern repeating for each section, rather like the segments of an orange. After being precision-engineered in a German factory, the frame, looking like a large hut, arrived on two large lorries with each piece carefully labelled. A team of three took six days to erect the frame, with Peter watching from the sidelines.

Family Input

Peter and his friends and family carried out much of the other work, including cladding the stone-clad plinth and installing 100 rolls of wool fleece insulation. Peter even created the bespoke circular trunking for the services,

drawing on his light aircraft building skills. Chard, who acted as financial manager during the build, encouraged

him to bring in trades when progress slowed — which meant the whole build took just 14 months from start to finish.

For other self-builders, Peter provides the following advice: "The most important thing is: simply don't take no for an answer; if someone says something can't be done, don't believe them. You do need to do your research, but there is probably a way if you look hard enough. You've also got to know when you need professionals to do something, such as with the electrics and plumbing."

Now that he has completed his self-build, what brings him most pleasure? "The courtyard space outside," Peter says. "Last Christmas, I was sitting in the hot tub, with a glass of champagne looking out over the views — I love this space." ➤

"That Christmas I made the frame out of balsa wood, so I could understand it"

near to Passivhaus standards as possible."

The result is a gently spiralling circular timber structure on a stone-clad plinth with Siberian larch cladding above, topped by a green roof. The building sits on a shallow bed of shingle with insulating concrete formwork providing a base for the precision-engineered timber frame — at almost £83,000, the most expensive part of the project. The frame rises to 4m at its highest point, where it houses the master en suite bedroom. At the heart of this 270m² house is a huge open plan living/dining/kitchen space, leading to three other bedrooms, a generous utility/mud room and the light aircraft workspace — the only linear structure in the house.

Keeping to an eco brief tested Peter's resolve from day one. Early on, the structural engineer on



Kitchen and Living Space

The kitchen cabinetry and quartz worktops were engineered to follow the curves of the house exactly. "We were delighted with the contours – they follow the circumference of the house beautifully," says Peter. Leading off from this space, (to the right of the entrance) is the workshop that will eventually be converted into a quiet room when Peter has finished building his light aircraft.

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The Knowledge: Demand Control Ventilation System

Peter chose a 'demand control' ventilation system from Aereco that relies on mechanical movement and works only when humidity levels rise, rather than a mechanical ventilation heat recovery system (MVHR), which requires constant power and insulated ducting to operate but is the more usual choice for homes at or around Passivhaus levels of airtightness.

"The Aereco system fitted my criteria. Is it something I could do myself? Is it inexpensive? Is it eco friendly?" says Peter. "With this system, we only lose 10 per cent of heat efficiency, which would have made a nonsense of installing MVHR [such systems work by constantly extracting stale air from indoors and bringing in pre-heated fresh air from outside]. It would have taken a long time to install a MVHR system and we would have had to incorporate pipes and electric motors. The system was also very cheap — I spent no more than £4,000 to £5,000 on the equipment." The French system is unobtrusive, with small inlet vents placed around the house 2,400mm from the floor and outlet vents through the roof above humid areas such as bathrooms and the kitchen. "When the humidity rises, a flap pops open and cold air flows in," explains Peter. "In the middle of winter, you can hear 'click, click, click' down the room as the vents open; the system acts like a chimney and humid air is drawn gently through the roof."



Master Bedroom

The master bedroom sits at the highest point of the house and enjoys rural views across fields. The extra height at this end of the house allowed for a split level en suite with storage space underneath, although Peter admits that the ceiling height of the underfloor storage space is rather low and makes access tricky. ➤

The Courtyard

Initially, the courtyard was to be a partially glazed winter garden (the couple have their own extensive veggie patch and several bee hives in their garden), with the glulam beams extending to the centre. But budget restrictions meant that the idea was infeasible, so instead Peter decided to truncate and taper the beams to form what he jokingly refers to as "flying glulams". ➤







Green Roof

The Round House's green roof changes dramatically with the seasons: according to Peter, springtime is when it can be seen at its best. The living roof of sedum, chives and assorted grasses also muffles the sound of heavy rain and acts like a sponge. "We can't hear the rain on the roof or windows, and because of the growing medium, we can get a tremendous downpour and the water comes off the roof in just a trickle over several days," says Peter. The rainwater finds its way along the spiralling slope of the roof to one downpipe at the lowest point of the house. **H**



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Jessica and Rob Scott used a turnkey package to realise their dream of building a contemporary home for their family which would not only be kind to the environment, but also to its inhabitants

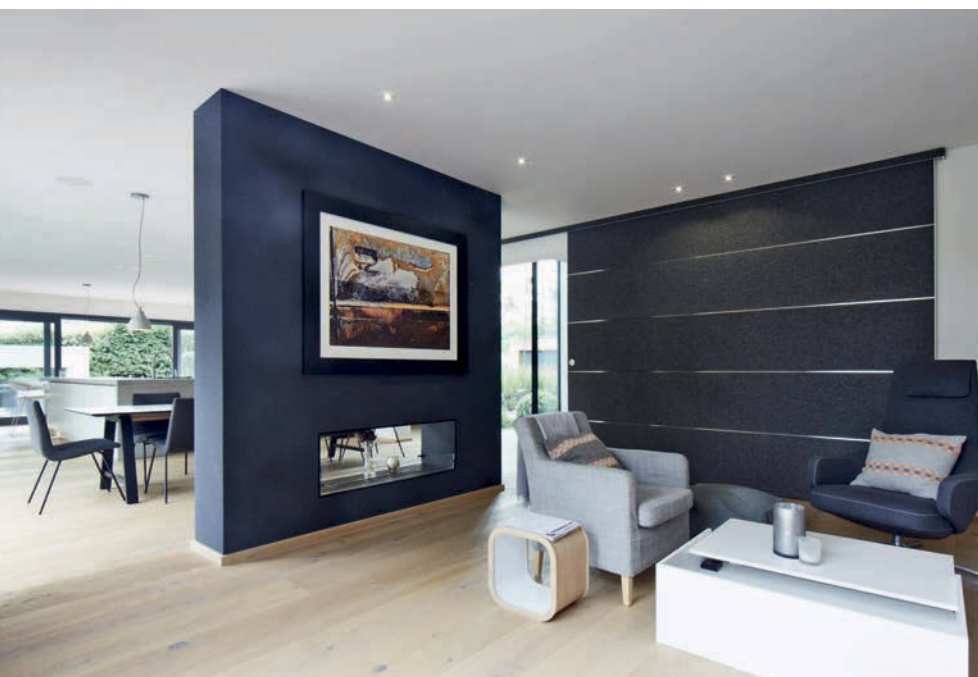
Words: **Natasha Brinsmead** Photography: **Joakim Boren c/o Baufritz**



Front Exterior

A combination of larch cladding and off-white render (visible on page 171) has been used for the exterior finishes of the L-shaped house. "It is a bit like a book," explains homeowner Jessica. "With the larch cladding as the book's cover and the render as the pages inside."





Living Room

Jessica and Rob were keen that the interiors were visually linked and that there was a sense of flow, so the same shade of blue/grey has been used in small amounts throughout the house, such as on the double-sided fireplace with its bio-ethanol fire, on the painted timber frames of the windows and the doors, and also for the felt-covered internal sliding doors.

SUPPLIERS

House design, frame supply, kit including doors, floors, glazing and bathrooms

Baufritz: 01223 235632; baufritz.com

Kitchen (including concrete worktop, utility room etc) Sutherland Furniture:

sutherlandfurniture.co.uk

Project manager Rob Middleton of RM Construction & Developments Ltd: rob@rmcad.co.uk

Lighting design Kate Beard Lighting: katebeardlighting.com

Garden/landscape design

Greencube Garden and Landscape Design: greencubelandscapes.co.uk

Paints Auro: auro.co.uk

Project Notes

Homeowners

Jessica and Rob Scott

Project Eco-friendly self-build

Location Kent

Build time

Jan 2013 – Jan 2014

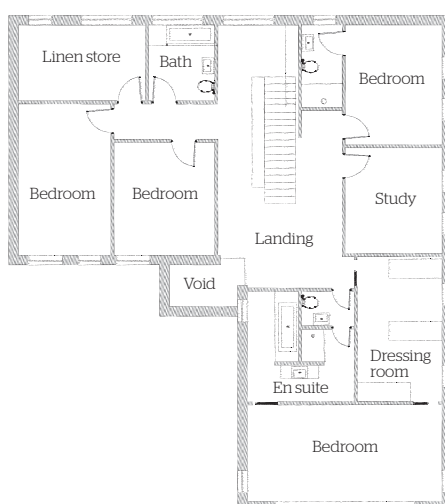
Size 392m²

Cost Undisclosed

Ground Floor



First Floor



DESIGNERS' VIEW

Baufritz: "The modern design blends harmoniously with its surroundings by means of the use of simple building materials (mainly light render and natural larch cladding) which can weather naturally. The fenestration is determined by the functions of different rooms which are located in a way that allows the best possible protection of the occupants' privacy, and prevents overlooking of the neighbouring properties. The north and west façades are kept simple with modest fenestration for service rooms, some with semi-opaque glazing to avoid overlooking. The east and south aspect comprise a greater amount of glazing to take advantage of the outstanding views and to provide a direct connection to the approach and garden side."

Flexible Open Plan Layout

Internal sliding doors, which have been covered using blue/ grey felt interspersed with aluminium strips, allow the individual spaces to be closed off when required. The same felt covering, attached using eco-friendly glue, has been used on the internal doors on the first floor too, adding texture and warmth to the contemporary interiors.



N

ot all eco-friendly homes are built equal. Some offer just a small nod to the principles of eco-friendly living by including the odd solar panel, while others take it more seriously, built to a set of standards designed to ensure they have a minimal impact on the environment. And then there are those which do all of the above and more, offering benefits not only for the immediate surroundings, but also to their inhabitants — and this is what Jessica and Rob Scott have built.

Having been living and working abroad, and with some very firm ideas about the type of house they wanted to live in, the couple came across a plot in an idyllic part of rural Kent. The plot came with planning permission, but Jessica and Rob set about changing the design and resubmitting. “We were very definite about wanting a contemporary design,” explains Jessica. “We were keen on the idea of an eco-friendly prefabricated house too.”

The couple came across Baufritz and, following a visit to their factory and show homes in Germany, were taken with their bespoke service and eco-friendly ethics. Baufritz uses non-chemically treated building materials, natural products and building methods that ensure good ventilation and protection from electromagnetic radiation. What’s more, the materials used are 100 per cent biodegradable.

The New Design

The house for which permission had already been granted was huge at 500m², swamping the two thirds of an acre plot. “We wanted a garden for the children and to make better use of the site,” explains Jessica.

Planning required that the house should sit on the existing footprint of the old house, and that it should be an L-shape. “The house really designed itself,” says Jessica. Happily, despite having to negotiate the design regarding the overall height, consent was granted in November 2012.

On the ground floor, a large open plan area containing the kitchen/dining/living spaces is broken up through the clever use of a double-sided feature fireplace with a bio-ethanol fire. These sociable spaces open out on to a private terrace, through three sets of expansive sliding doors.

To the other side of the ground floor, separated by a stunning staircase which has been

enclosed within a glass atrium — that allows light to flow from one side of the house to the other — lie the ‘service’ areas of the house, such as the utility and plant room, as well as a playroom. “We’re so pleased with the staircase — it gives an incredible sense of space and creates prisms of light,” says Jessica.

The staircase rises to the first floor where four bedrooms, two with en suites, a bathroom and study can be found, before rising to the pièce de résistance — the ‘penthouse’-style roof terrace. Jessica calls this the “adult space”. “There is a gym up there, a yoga space and it is just somewhere we can relax with the Sunday papers. The playroom is on the ground floor,” she adds.

Interior finishes have been kept fresh and, importantly for the family, chemical-free finishes, materials and furniture have been used throughout.

Externally, the house was designed to blend with its surroundings, with a combination of off-white render and larch cladding. Glazing is positioned in order to both take advantage of the views as well as protecting the family’s privacy, in addition to avoiding any overlooking.

The Build

The demolition of the small Victorian cottage which still stood on the plot was quickly carried out before work began on the groundworks for the new prefabricated structure. Arriving on a truck in May 2013, the new timber frame, which uses off-site prefabricated closed wall and roof panels, and is insulated with natural wood shaving insulation, was erected in a matter of days — and the family were able to move into their new home in January 2014. “This is going to be our home for a long time,” says Jessica. “Baufritz offer fixtures and fittings that fall into three different price categories. We were happy to spend a bit more on the things we really wanted.”

The heating and hot water supply comes from solar panels, supplemented by a highly efficient gas boiler. Rainwater harvesting has also been included in the design, while bat boxes have been incorporated for wildlife protection — a first for Baufritz.

“The house is exactly as we imagined it,” says Jessica. “It feels so fresh and has a lovely woody smell. We still pinch ourselves every time we come home.” ➤



Kitchen/Diner

The 4.5m-long concrete island worktop in the kitchen was poured and shuttered on site. The sleek units are finished in a matt off-white, using low chemical paints. The sleek look is continued through the eye-level ovens and glass splashback, while a walk-in larder ensures the space is kept clutter-free. The wide brushed and oiled oak flooring, fitted over underfloor heating, gives the space a warm feel.



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Master Bedroom

Located within the southern projection of the building, the master bedroom has sliding doors - providing a nice symmetry with the matching doors to the kitchen directly below - which allow it to be opened up to take advantage of the garden and open fields beyond.



Landscaping

Planting has been carefully chosen to complement the clean lines of the building, while the garden wall with its rectangular cut out and raised beds work as a reflection of the shapes and lines of the architecture of the house.



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Roof Terrace

Set back in order to minimise its impact on the site, the roof terrace looks out over open fields beyond and is very much an 'adult space' where Jessica and Rob can relax. They have a telescope up there for stargazing on a clear evening.

The Knowledge: Chemical-Free Sustainable Living

Jessica and Rob were adamant that they wanted to create a home for themselves and their family which not only had a minimal impact on the environment, but also on its occupants. This was a driving force behind their decision to use Baufritz, a company which has pioneered a number of environmentally friendly building materials and fittings, ranging from 100 per cent natural wood shaving insulation to low-energy light fittings, all of which come as standard in all their homes.

All building materials used were non-chemically treated and the timber is from sustainable forests – all the materials are also 100 per cent biodegradable, meaning that the house could be completely returned to nature at some point in the future if required.

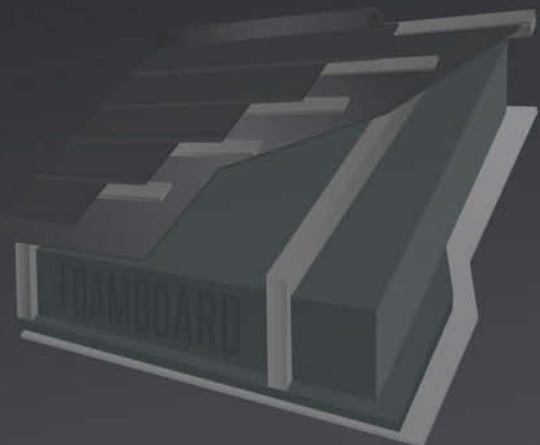
From an energy-efficient perspective, all windows are triple glazed, and the southerly aspect of the house comprises sufficient glazing to make use of passive solar gain for heating purposes.

Jessica and Rob have been careful to choose only chemical-free and low-chemical finishes internally too – having low-chemical paints specially mixed to their specifications and sourcing furniture made with little or no chemicals.

While this route may not be the cheapest, simplest or most convenient (Jessica admits that the low-chemical paints required more coats than standard, for example) this is a price that many people are willing to pay for a sustainable and healthy home, free from potentially harmful chemicals such as volatile organic compounds (VOCs). **H**

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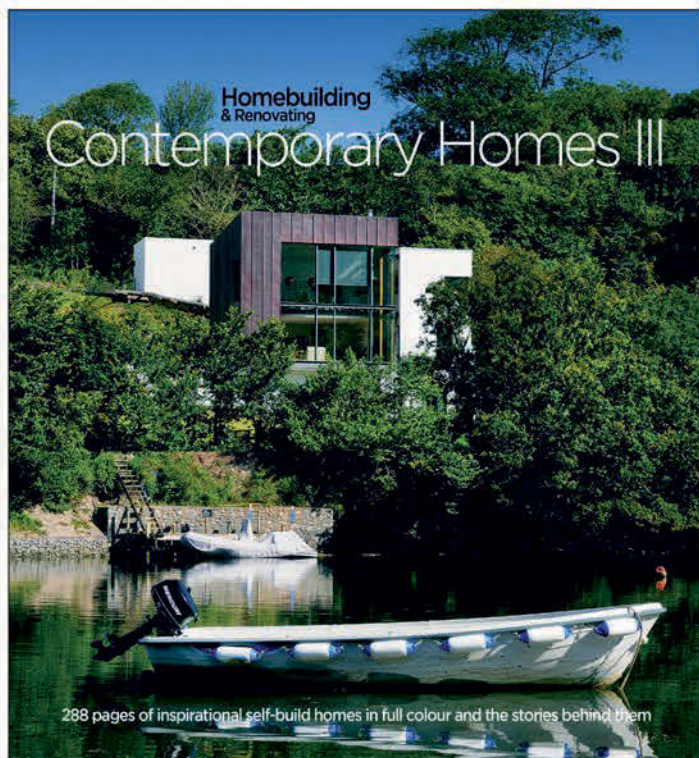
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HOW TO GET PLUMBING RIGHT

PLUMBING KNOW-HOW: THE BASICS

Knowing how plumbing work fits into the first and second fix stages of your self-build or renovation project could help you avoid inefficient, costly and unsightly pipework, says building control officer Paul Hymers



Paul Hymers

Paul Hymers has been a building control officer in Kent since 1984 and has written eight books on home improvements and developing, including the best-selling *Home Extensions – The Complete Handbook*, now in its fourth edition

When it comes to plumbing work, you don't have to be building a new home or an extension to find you need a Building Regulation application lodged. Installing plumbing is usually enough by itself. Here, we explore what you need to consider at first and second fix stage, and pick out some of the issues that frequently cause problems.

FIRST FIX

Planning where to run pipes and locate appliances is often left to plumbers during a build project, but you can end up having to alter things later when kitchens are fitted, doors are hung and walls are plastered. Far better to work with plumbers on the first fix, with thought and care to the layout rather than making things up as the project goes along. The latter approach tends to result in wandering pipes that will be in the way or visible, cross each other or burrow through whatever structure happens to be in the way. In other words, planning the layout of your bathroom(s), utility and kitchen at an early stage is key to success.

This is a good place to begin, as there are limits not just on the length of pipes based on their size but also on the size of holes that can be cut through joists and beams without weakening them. For instance, notching timber joists no more than 1/8th of their depth to let in water pipes must be done within the 'safe zone', measured between 1/14th and 1/4th of the joist span from its bearing. Larger wastewater pipes, meanwhile, should run between solid joists rather than through them. If that isn't possible, up to 40mm diameter pipes can pass through joists of 200mm depth or more if the hole is drilled through the centre

at between a quarter and a third of the span in from the bearing.

For above ground wastewater to drain away without foul smells, the system must be ventilated to ensure those traps remain intact while the water flows. That limits the length of unvented pipes (see table below).

To exceed these limits, add branch vent pipes or air-admittance valves (AAVs) to

APPLIANCE	WASTE PIPE SIZE	MAX LENGTH OF WASTE	FALL PER METRE
WC (single)	100mm	6m	18mm
Bath	40mm	3m	18-90mm
Shower	40mm	3m	18-90mm
Basin	32mm	1.7m	20-120mm*
Sink or combined	50mm	4m	18-90mm

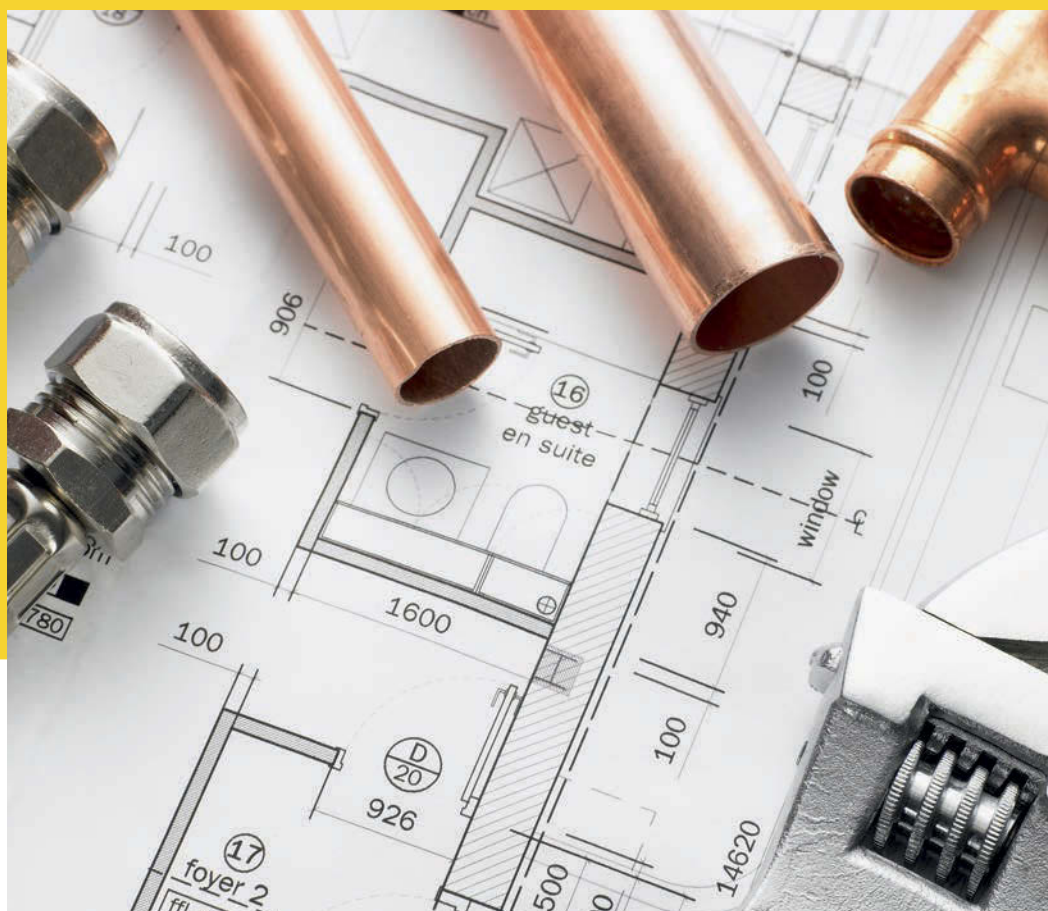
* DEPENDING ON LENGTH OF PIPE RUN

protect traps. AAVs draw air into the system when it's needed to aid the flow of water and should be accessible for maintenance.

Stacks themselves need to be ventilated to open air at least 900mm above any window opening within 3m to the side of them.

Cloakroom WCs

A required feature of any new dwelling is an accessible WC at the entrance level, which is why even the smallest new homes have them today. But along with water consumption, access is another 'optional standard' for new dwellings with three different levels of access that can be applied. At the basic 'visitor' level, accessible means 750mm or more of leg room between the WC pan and the wall or basin pedestal opposite and a doorway wide



ISTOCK

enough to get out of a positioned wheelchair and on to the WC.

Before the 1980s, ventilated lobbies had to be placed between kitchens and WCs but it hasn't been a requirement for decades under the Building Regulations. All that is needed is a basin with the WC and a door.

To connect a WC into a stack, it has to be at least 450mm above the invert of the drain at its base, and if it's a stub stack, no more than 1.3m.

SECOND FIX Boilers and Cylinders

For most boilers the flue can be extended vertically or horizontally or a mixture of both to find a suitable outlet position. Distances of maybe 5m for the flue length aren't unusual and so the boiler itself doesn't even have to be located on an outside wall, but it is the flue termination that often decides where the boiler will be sited and it isn't always easy to find the right place. They can't discharge beneath windows, under roofs, in corners, near extractor fan vents or within 600mm of opposite boundaries.

Some additional considerations come with today's condensing boilers, because they also have to be connected to the drains so the condensate can be removed. The small plastic pipe that carries the condensate away

can be plumbed into the waste pipe under the sink but it can equally connect to a pipe outside the wall or, if drains aren't nearby, into a mini-soakaway fitted with a carbon filter to neutralise the slightly acidic discharge.

The safety discharge pipework with unvented cylinders and combi-boilers can ➤

FIRST & SECOND FIX EXPLAINED

It is likely that the plumbing and central heating engineer will work on a supply-and-fix basis, either wholly or in part. Most self-builders will not want to be involved in the purchase of minor items, but may wish to provide major items such as the boiler and underfloor heating for the plumbers to fit on a labour-only basis.

The trade is divided into two stages: first fix (laying pipework, installing the underfloor heating, etc) and second fix (which includes fitting and plumbing in the sanitaryware, commissioning and testing of the systems). Payment is often made as each stage is completed. (For a comprehensive list of first and second fix tasks, see page 186.)

The first arrival of the plumber on site may be to fix the standpipe for the building water supply. The next time the plumber comes on site will be just before the roof is tiled in order to set up the soil vent pipes. If the plumber is to be responsible for the lead flashing instead of the roofer, they will then stay to attend to that. If they are fitting the guttering and downpipes, they may well fix the guttering from the scaffold before it comes down but leave the downpipes until later.

The plumber will work closely with the electrician in the wiring up of the boiler and control systems, and their testing and firing.

HOW TO GET PLUMBING RIGHT

be terminated in an external gully below a grating, or at low level (under 100mm) or into a high-level metal hopper and pipework or roof, but bear in mind this discharge is superheated water and steam and can damage soft materials as well as people.

Hot Water

Since 2010, we have had a requirement for fittings that limit bath water temperature in new dwellings to 48°C to avoid accidental scalding. Some taps are thermostatically controlled to achieve this, but the alternative is to fit a TMV (thermostatic mixer valve) under the bath where it is out of sight.

Storing hot water under pressure is the preferred option today, since you can run more showers and have it delivered at mains pressure to the taps in a sealed system. Unvented cylinders can deliver a mixer shower with plenty of hot water under pressure, but most homes will need one of the large floor-standing

units up to 500ltrs. They can be heated by electricity, gas or oil-fired boiler. Because the water is stored perhaps as high as 80°C inside, a lot of insulation is needed and the factory fitted lagging isn't always enough.

I've known cylinders be fitted into the bedroom cupboards and the heat given off by them can make it difficult to sleep. To avoid this problem, check that the hot supply pipes are insulated within 1m of any hot water store to prevent heat loss.

The plumbing is dramatically reduced if you choose an unvented system so no loft tanks are required, just space enough for what usually is a large cylinder with an expansion vessel.

Water Consumption

Again, for new homes only, limitations on water consumption are part of the Building Regulations. The requirements are now part of the new 'optional standards' introduced last year to allow planning authorities in 'water-stressed areas' such as south-east England to impose the more onerous standard of 110 litres/person/day if they want to. So, check your planning conditions. The standard is a maximum of 125 litres/person/day proved by calculations or the fittings table below.

Fittings Approach Schedule

WC	6/4ltrs dual flush or 4.5ltrs single flush
Shower	10ltrs/min
Bath size	185ltrs
Basin taps	6ltrs/min
Sink taps	8ltrs/min
Dishwasher	1.25ltrs/place setting
Washing machine	8.17ltrs/kg

Testing

With all the appliances plumbed in, the system should be checked for leaks with an air pressure test. Sealed off by inflatable bags or plugs at the vent terminal and the base of the soil vent pipe (SVP) or inspection point, the pipework air pressure is monitored on a U-gauge (otherwise known as a manometer) for at least 38mm difference over three minutes

Below

1. Primary pipework with insulation; **2.** WC branch first fix to cloakroom WC; **3.** Plumber laying the pipework for Nu-Heat underfloor heating system; **4.** Service isolation valve





Richard Smith

Richard Smith is technical director at LABC Warranty and has over 20 years of industry experience. He trained at North Warwickshire Borough Council and his background is in building control. His team are responsible for investigating all claims and providing remediation solutions to defective buildings and providing training to surveyors (labcwarranty.co.uk)

HOT WATER SAFETY

Hot water safety is a serious issue: nearly 600 people experience a severe scald injury in the UK each year. Three quarters of the victims are under the age of five and in 2007, 21 people died in the UK after contact with hot tap water. In light of these accident figures, it was clear that something needed to be done and an amendment to the Building Regulations was made in 2010.

Section G3 of the Building Regulations' approved document G covers 'sanitation, hot water safety and water efficiency'. For water safety specifically, the amendment meant that all new-build homes across England and Wales are required to have devices fitted to baths to limit the temperature of the water to 48°C. If intermittent use of the bath is anticipated, provisions should also be made for high temperature flushing to allow for pasteurisation of pipes and outlet fittings.

Section G3 also covers the safety of unvented hot water systems which in recent years have become very popular.

Factors to Consider

Unvented hot water systems are a lot more complicated and have many more parts to them. It is imperative that all unvented hot water systems must:

- Have a minimum of two independent safety devices
- Have a thermostat to control the desired temperature of the stored water.

It is important to consider whether the safety devices have access to suitable external areas to allow them to vent outside. Suitable approaches to this requirement include:

- A non self-resetting emergency cut out to disconnect the supply of heat
- A temperature and/or pressure relief valve to safely discharge water
- Temperature and pressure relief valves must discharge into a tundish which must be visible
- The discharge pipe from the tundish should be made of metal or another suitable material and vent externally where there is no risk to persons in the vicinity
- All unvented pressurised systems with hot water storage capacity must have some form of third party accreditation
- All unvented boiler and hot water storage systems must be installed and commissioned by a person registered with a competent person scheme.

For more information, please see the LABC Warranty Technical Manual, available at labcwarranty.co.uk.

to reveal if any air leaks (and hence water leaks) are present from unsealed connections or fittings. Air tests can be performed more crudely by carefully filling appliances like WCs and basins with water and monitoring the water level to ensure it doesn't drop. If the system is airtight, the air pressure in the pipe should prevent the water draining away as it normally would in a vented system. Do not be tempted to water fill plumbing above ground floor level, as the pressure may damage joints.

Your building control surveyor may wish to witness the test.

Space Heating Controls

For any boiler-fed heating system to comply with the Building Regulations it must include

an interlock. This is not a device you could pick up from the plumbers merchants – in fact it isn't a part at all but a function of the system that shuts down the boiler when it isn't in demand. For example, a combi-boiler could be shut down by a roomstat when the room temperature is reached, but not by thermostatic radiator valves (TRVs) that shut off the radiators individually rather than the boiler itself.

Be sure you receive a commissioning certificate for your heating and hot water system, duly completed and signed by the installing and commissioning plumber or heating and plumbing engineer. This document may be needed for your Building Regulations completion. **H**

HOW TO GET PLUMBING RIGHT



Michael Holmes

Michael is HB&R's Head of Content and Product Development. He also chairs NaCSBA (National Custom and Self Build Association)

RENOVATIONS AND EXTENSION PLUMBING PROBLEMS FIXED

Renovation and extension works will inevitably involve stripping out old pipework to update or redirect plumbing runs, making it a good time to fix niggling concerns. Here we look at some common plumbing problems and how to solve them.

Exposed Surface-Mounted Pipework

Concealing the pipework will usually involve completely removing the existing system and replacing it with new runs beneath the floorboards and within the walls. If walls cannot be chased out (for instance, because the building is listed or of traditional construction such as lathe and plaster) pipe drops can be concealed within cupboards or boxed in within the new service ducts.

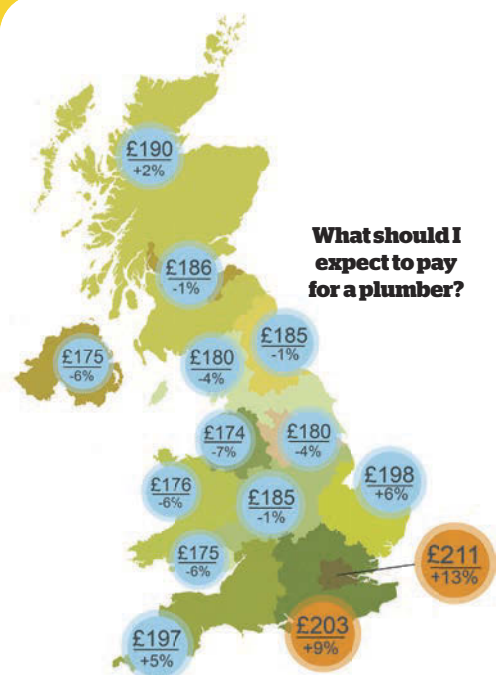
Plastic plumbing can be easier to work with than rigid copper, as it is flexible and so can be threaded through joists and around obstacles without needing joints at every turn.

Poor Hot Water Supply

If the problem is low hot water pressure because the system is gravity fed (from a header tank) this could be improved by adding a pump to the system. A better option is to fit a pressurised hot water system, using either an unvented cylinder or a combi-boiler. Even if local mains pressure is low, this can be overcome using a pump or accumulator vessel. If the problem is poor hot water flow rate, it is likely that there is an undersized combination boiler – a common problem where a new bathroom has just been fitted, adding to hot water demand. The solution is to upgrade the boiler to a higher output model sized to match the demand, or to switch to a boiler and unvented cylinder.

Low Cold Pressure

If your rising mains pressure is low (at the kitchen tap) consider upgrading the size of connection into the property from the mains to improve the flow and reduce pressure loss. Properties built before 1970 that have not



Labour rate comparison of plumbers' day rates across the UK, provided by Estimators Limited (estimators-online.com)

been updated since may still be connected to the mains by lead piping, and it is a good idea to replace this with plastic.

Taps Take Forever to Run Hot

With a combi-boiler, there is little you can do to improve the time that hot water takes to reach a remote bathroom other than fit a separate water heater or perhaps an electric shower. Where there is a store of hot water (a cylinder or thermal store) it is possible to get almost instant hot water at every tap, no matter how far from the cylinder, by connecting them all into a loop, with hot water circulating around it continually, powered by a bronze pump. To reduce heat loss, put the pump on a timer.

Drain Smells Escape from Waste

If the fall from a basin is too great immediately after the waste trap, self-siphonage can occur, draining the water air lock in the trap, allowing drain smells to be released. To solve the problem, the fall should be reduced. If a vacuum forms within the waste pipes because insufficient displacement air is being drawn in via the vent pipe, this can also pull traps dry and release foul smells. This can occur if several fittings (basins, shower and bath) flow into the same waste pipe before it reaches the soil stack, and the pipe becomes full (especially on long, shallow pipe runs). The solution is to fit anti-siphon traps. **H**

FURTHER CONTACTS

Come Home To Copper
come-home-to-copper.co.uk

Elson
elsonhotwater.co.uk

Heatrae Sadia
heatraesadia.com

JG Speedfit johnguest.com
MKM Building Supplies
mkmbs.co.uk

Plumb Center
plumbcenter.co.uk

Plumbing Systems UFW
flogas.co.uk

Jewson
jewson.co.uk

Vaillant
vaillant.co.uk

Worcester Bosch
worcester-bosch.co.uk

BEWARE POOR BUDGET ADVICE

Although it's tempting, it may not be the best option to take advice on budgets from architects, says Steve Whitby



Steve Whitby

is managing director of Estimators Ltd (estimators-online.com), the UK's leading building estimating service

You might be surprised to learn that architects don't escape criticism from self-builders. We find self-builders are given poor advice by some architects about build costs and a few even give outdated square metre rates just to be awarded a fee to draft a scheme. My advice is not to take pricing advice from architects. They're not building estimators or quantity surveyors. You wouldn't ask your bricklayer for advice on heating boilers, or your carpenter about LED lighting. Why do self-builders ask architects how much something will cost and then use that advice as a cast in stone budget?

Many projects never move beyond the costing phase, when they turn out to be over budget. Some self-builders and renovators go back to the architect to revise or completely downscale the scheme to suit affordability and some take it no further.

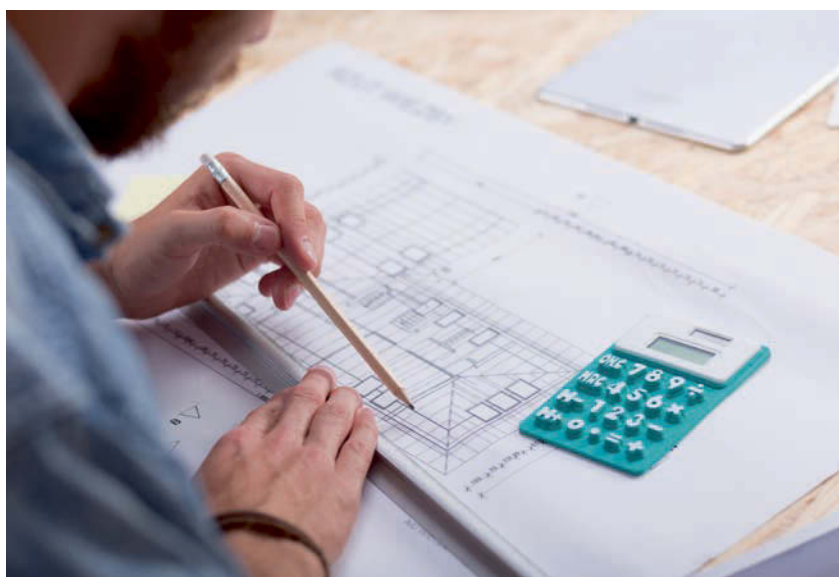
Nevertheless, the vast majority of architects and architectural technologists provide exemplary services. The goal is to find one that specialises in your type of project.

Provide your architect with a strict brief to design a scheme that is affordable. Never stretch the purse strings, steadfastly stick to a number and you will be surprised what you can achieve by self-building.

Ensure your architect earns their fee. Long before you see the first draft, a good architect will draw a scheme to your brief. Then check the cost by using an estimating service like ours, for instance. Architects should, if required, revise the scheme as part of the design process. Architects can easily absorb estimating fees and even provide the self-builder with a detailed estimate as evidence of affordability.

I was asked recently: having completed over 40,000 self-build estimates, what is the best advice you can offer self-builders? It's simple really: budgets always seem to get stretched and we see it all the time on TV programmes, when at the end of a build the host asks the self-builder how much the project costs. How many times have we seen participants max out credit cards, take out additional loans and still see the job stopped part way through because they ran out of money? Affordability is affordability, so stick to what you can afford. If it becomes unaffordable, you have defeated the object of self-building. Done properly, you can save thousands.

Most unaffordable projects started at the design stage. Architects play a key role here – and sticking to a strict affordable design brief is an art. Self-builders should demand that the designer provides quantified evidence of affordability as part of the brief. **H**



SELF-BUILD PROJECT PLANNER

However you're getting it built, you'll need to know how a house is constructed. Here is our definitive guide to each stage of the process

PREPARE SITE

- Groundworkers create site access
- Clear site and strip vegetable soil; stacking material to be retained out of the way
- Set up site hut and equip with drawings and safety equipment
- Set up toilet
- Secure lock-up/lorry container (hired in or purchased) to be positioned
- Water board to bring supply to stopcock on boundary
- Plumber to connect water standpipe
- Surveyor marks out building on cleared site and transfers the lines to profiles well clear of any construction work
- Bring in bricks and blocks and stack clear of future construction
- Set up mixer station close to cement store and sand heap

FOUNDATIONS/OVERSITE

- Groundworkers excavate foundations
- Wait for approval of building control and warranty inspectors
- Position any reinforcement bars, mesh or cages in the trenches
- Position any compressible

- material or slip membranes required within the trenches
- Lay ducts for services to enter through the foundations
- Arrange foot scaffold if necessary and shutter for any steps in the foundations
- Pour concrete footings and tamp to level
- Obtain approval from building/warranty inspectors to proceed
- Bricklayers build up foundation blockwork to damp-proof course
- Install cranked air vents
- Install drainage exit lintels
- Fill cavities with lean-mix concrete to level with external ground level
- Bed and lay damp-proof courses, linking these with any radon membranes or barriers

START THE SUPERSTRUCTURE

- Groundworkers to dig service trenches and lay pipes and ducts to proposed stopcock/meter positions
- Load out concrete floor beams to each bay and position
- Install drainage and vent pipes, proud of the oversite
- Infill floor beams with blocks
- Lay coursing blocks and

- position ventilator grilles
- Brush grout
- Arrange for building control/warranty inspection
- Commence building superstructure
- Install templates for future windows and doors, etc.
- First lift of scaffolding required

SUPERSTRUCTURE

- Bricklayers continue superstructure brickwork and blockwork including work on any chimneys
- Install and bed lintels including fireplace lintels
- Install flue liners as work proceeds
- Build in meter boxes for gas and electricity
- Electrician to install temporary consumer unit within electricity meter box
- Service suppliers to carry out their work to the boundary
- Plumber to reroute water supply to stopcock position
- Electricity providers to install meter and connect
- Second scaffolding lift required
- Arrange crane to lift first floor beams onto each bay and position
- Position plasterboard batten clips

- Lay infill blocks
- Brush grout

SUPERSTRUCTURE CONTINUED

- Continue building superstructure to wallplate
- Third and then fourth lift of scaffolding required
- Wallplate to be scarfed, bedded and tied down with proprietary wallplate straps
- Warranty inspection sometimes required
- Carpenters to build end trusses as templates
- Continue building up gable ends and chimney
- Additional lifts of scaffolding required at the gable ends
- Plumber to fit lead flashings, trays and skirts to chimney
- Plumber to install vent pipes and flashing skirts as they come through the roof
- Bricklayers to top out and fit chimney pot
- Bricklayers to point chimney flashings

CONSTRUCT ROOF

- Carpenters to sling roof trusses, and trusses to be fixed down to wallplate
- All binders and bracing to be fixed at node points
- Layboards to be fixed to valleys

- Dormers to be constructed at this point
- Fascia and soffit to be fixed together with any necessary ventilation grilles or strips
- Warranty inspection sometimes required
- Any roof tanks must be installed at this point

ROOF COVERING

- Roofers begin to cut and lay underclanking to the verges
- Roofers to felt and batten
- Tiles/slates to be laid
- Ridge/hip tiles to be laid and bedded
- Valley tiles to be laid, or fibreglass or lead valleys to be laid
- Plumber to dress down flashings and skirtings
- Decorators to paint/stain facias, soffits and barge

EXTERIOR & INTERIOR FITTINGS

- Plumbers to fix guttering
- Window suppliers to fit external joinery
- Plasterers to carry out any external rendering
- Scaffolding to come down
- Plumbers to fit downpipes and connect to drainage upstands/gullies
- External decoration
- Carpenters to commence first fix by fitting door linings, building any studwork partitioning and fixing window boards
- Carpenters to fix plasterboard noggins and box in vent pipes
- Plumber and carpenter to liaise with building of any necessary stands in roof
- Carpenter to fix loft trap

FIRST FIX

- Plumbers to lay flooring membrane and insulation, taping all joints and sealing up to the damp-proof course
- Underfloor heating (UFH) loops to be laid and fixed

- All first fix plumbing for hot and cold and waste within floor zones to be laid
- Internal gas pipework installed
- UFH pipework to be brought to manifolds and outlet positions
- Supply and fix company to pump in and lay level floor screed and leave for three days
- Protective hardboard/cardboard to be laid on screed
- Electrician to fix carcass wiring for lighting and power circuits together with all backplates
- Consumer unit/units to be positioned
- Wiring taken to external lighting points
- TV aerial/satellite cables to be installed to required positions
- Internal telephone wiring to be installed to required positions
- Home entertainment/smart systems/alarms to be carcassed

DRAINAGE/EXTERNAL

- Ground-workers to begin digging the trenches for drainage runs
- Trenches backfilled to 150mm with pea shingle
- Drains laid to required falls
- Brick/concrete section manholes constructed, or purpose-made manholes, rodding eyes and gullies set in runs
- Building inspector to approve laid drains
- Drains haunched over with pea shingle
- Drainage trenches backfilled
- Work to connect to main sewer in road to be carried out by approved contractors
- Carpenter to finish boxings and noggings ready for plasterer
- Groundworkers to commence driveways

- and pathways
- Bricklayer to build any fireplaces and hearths
- Gas meter to be installed and connected
- Plumbers and electricians to liaise on all cross bonding and earthing

CEILINGS/ DRY LINING

- Main staircase to be fitted by the carpenter and protectively covered
- Dryliners/plasterers tack ceilings
- All external and blockwork walls lined with plasterboard on dots and dabs
- All studwork walls and pipe boxings tacked with plasterboard
- All joints and angles filled and scrim taped
- All abutments of differential materials jointed with mesh
- All joinery to be sealed internally and externally with mastic
- Dryliners/plasterers to skim coat all walls and ceilings
- Decorator to paint/treat backs of all skirting and architraves
- All roofing insulation to be installed

SECOND FIX CARPENTRY

- Carpenters hang internal doors
- Skirting and architrave to be fitted by carpenters
- Bottom tread of staircase to be fitted, balustrading and handrails to be fitted, as well as linen cupboard shelving
- Fit of loft door and ladder
- Timber floors to be laid by carpenters or specialists and protected
- Ceramic floor tiles to be laid by specialist tilers and protected
- Carpenters/specialist suppliers to fit/build built-in bedroom and bathroom furniture
- Kitchen units to be fitted

SECOND FIX

- All wiring connected to consumer unit
- Boiler to be positioned, plumbed and then wired in
- Sink units to be plumbed in, earthed and cross bonded
- All sanitaryware to be fitted and plumbed in
- Radiators and towel rails to be fitted and plumbed in
- Underfloor heating loops to be connected to manifolds
- Electrician to check cross bonding and earthing to all sanitaryware, sinks, radiators, etc.
- Boiler to be wired in; control systems and room thermostats to be wired in
- Plumber and electrician to attend firing up and commissioning of boiler
- All pipework and connections to be flushed through and pressure tested
- Central heating to be left on 'test'

DECORATING

- Worktops, made from the previously taken templates, to be fitted
- House to be thoroughly cleaned with all debris and dust removed to outside
- Decorators to snag any holes, blemishes or rough patches on walls, making good
- Internal timber to be sanded smooth or rubbed down with wire wool
- Decorators to paint all walls and ceilings, mist plus two coats of emulsion
- Internal timber to be knotted, painted, primed, undercoated and top coat glazed, or internal timber to be two-coat stained
- Specialist tilers to fix ceramic wall tiles to kitchen and utility rooms
- Baths to be filled, in order to settle, before tilers fix any wall/splashback tiles
- Water meter to be installed ➤

LANDSCAPING

- ⇒ Groundworkers or landscape gardeners to level the ground and prepare
- ⇒ Topsoil from storage to be placed where required, with extra shipped if necessary
- ⇒ Site hut to be removed or re-sited if intended for use as a garden shed
- ⇒ Secure site storage to be sold off or returned to hirers
- ⇒ Groundworkers to complete driveway surface
- ⇒ Patio slabs to be laid
- ⇒ Bricklayers to build any required dwarf/decorative walling
- ⇒ Lawned areas to be levelled ready for seeding or turfed
- ⇒ Approved contractors to complete any bellmouth and kerbing to road

COMPLETION

- ⇒ Whole house to be thoroughly cleaned out
- ⇒ All windows polished and all labels removed from glass and appliances
- ⇒ All polystyrene packing to be removed from cookers
- ⇒ All stabilising bolts to be removed from washing machines/driers
- ⇒ Site toilet and any remaining plant on hire to be off-hired
- ⇒ Readings to be taken on all meters
- ⇒ Central heating switched to 'run'
- ⇒ Telephone company to connect
- ⇒ Contractors to install TV aerials and/or satellite dishes
- ⇒ All trades return for any snags
- ⇒ Carpets to be laid
- ⇒ Local authority to be advised of completion to arrange for council tax valuation
- ⇒ Energy Performance Certificate to be prepared and sent to building control
- ⇒ Building control final inspection and issuing of Completion Certificate
- ⇒ Warranty inspector's final inspection and issuing of warranty
- ⇒ Arrange protective covering for floor surfaces prior to delivery of furniture
- ⇒ Switch self-build site insurance policy to homeowners' policy

HOW IT WORKS

1 Identify your build route from the four options

Your level of involvement in the project will influence the build costs. For simplicity, the four most common build routes have been identified below:

● Build Route A: DIY + Subbies

Building on a largely DIY basis, substituting around 30% of labour costs with DIY, and employing help with the rest of the building work. Materials purchased directly.

● Build Route B: Subbies

Building using tradespeople hired directly – you will be project managing, but there is minimal DIY involvement. Most or all materials purchased directly.

● Build Route C: Builders/subbies

Building using a main contractor or package supplier to complete the structure to a weathertight stage, with the remaining work undertaken by subcontractors with most materials purchased by self-builder direct from suppliers.

● Build Route D: Main contractor

Building using a main contractor. Building in this way requires the least involvement from the self-builder.

2 Identify your expected level of specification

The standard of specification that you choose will have an enormous influence on your build cost. For estimating purposes, three general categories of quality have been identified:

● **Standard:** This represents a basic build quality equivalent to that offered by most speculative developers. A house may include standard softwood joinery, studwork partitions, a contract kitchen, basic sanitaryware and radiator central heating.

● **Good:** This is equivalent to that offered by quality developers. Features may include high-end off-the-shelf softwood joinery, blockwork partition walls, contract quality kitchen and sanitaryware and underfloor heating (UFH) downstairs.

● **Excellent:** A very high standard. This house may include hardwood joinery, blockwork partition walls, a bespoke kitchen and quality sanitaryware, and UFH, for instance.

3 Multiply the figure by your house size

We use gross internal floor area as a measure (it's the most common in the industry). It's the area of a building measured to the internal face of each perimeter wall for each floor level. It includes areas occupied by internal walls and partitions.

CALCULATING YOUR BUILD COSTS

A simple cost-estimating guide for people building their own home

One of the most important aspects when planning your self-build or home renovation/extension project is working out how much it is going to cost.

This figure will depend on the size and shape of the house, the level of your own involvement, where in the country you intend to build, and the materials you're going to use. If you can make even rough decisions about these factors, then you can begin to work out how much it is going to cost.

As a very general rule of thumb, expect a building plot to cost between a third and a half of the end value of the finished house. The costs of building a house will then depend on the variables listed above. All building work is usually quoted on a cost/m² basis. For example, a typical new four bedroom self-built home is around 200m² (with 100m² on two storeys) and usually varies

between £900-£1,500/m² (although self-builders achieve costs between £300-£3,000/m²).

Renovation costs are more difficult to establish as they involve many variables, but allow at the very least £1,000-£1,300/m² for work. This, added to the cost of the plot/house and with a 10-30 per cent contingency, should result in less than the final end value of the house.

The table below, based on information from the Building Cost Information Service (part of RICS, the Royal Institution of Chartered Surveyors), is updated monthly to help you work out a more accurate estimate (note, however, that these figures are for build costs only and do not account for VAT, which is not charged for self-build projects). There is a free interactive online version at homebuilding.co.uk/calculator. 

		BUILD ROUTE A (DIY + Subbies)			BUILD ROUTE B (Subbies)			BUILD ROUTE C (Builder/Subbies)			BUILD ROUTE D (Main Contractor)		
		Standard	Good	Excellent	Standard	Good	Excellent	Standard	Good	Excellent	Standard	Good	Excellent
SINGLE STOREY													
>90m ²	Greater London	1248	1444	1736	1322	1529	1839	1395	1614	1941	1468	1699	2043
	South-East	1094	1267	1523	1159	1341	1613	1223	1416	1703	1288	1490	1792
	NW, SW, East & Scotland	995	1153	1386	1054	1221	1467	1112	1288	1549	1171	1356	1630
	Mids, Yorks, NE & Wales	952	1102	1325	1008	1167	1403	1064	1232	1481	1120	1296	1559
91-160m ²	Greater London	1143	1387	1802	1210	1469	1908	1277	1550	2014	1344	1632	2120
	South-East	1003	1216	1580	1062	1287	1673	1121	1359	1766	1180	1430	1859
	NW, SW, East & Scotland	912	1107	1439	966	1172	1524	1020	1237	1608	1073	1302	1693
	Mids, Yorks, NE & Wales	873	1059	1376	924	1121	1457	975	1183	1538	1027	1245	1619
161m ² +	Greater London	1018	1335	1675	1077	1413	1773	1137	1492	1872	1197	1570	1970
	South-East	892	1170	1469	945	1239	1555	997	1308	1642	1050	1377	1728
	NW, SW, East & Scotland	812	1065	1337	860	1127	1416	907	1190	1495	955	1253	1573
	Mids, Yorks, NE & Wales	776	1019	1278	822	1079	1353	867	1139	1428	913	1199	1503
TWO STOREY													
90-130m ²	Greater London	1201	1389	1707	1272	1471	1807	1342	1553	1908	1413	1635	2008
	South-East	1054	1218	1497	1116	1290	1585	1177	1362	1673	1239	1433	1762
	NW, SW, East & Scotland	958	1109	1363	1014	1175	1444	1071	1240	1524	1127	1305	1604
	Mids, Yorks, NE & Wales	916	1061	1303	970	1123	1379	1024	1186	1456	1078	1248	1533
131-220m ²	Greater London	1011	1225	1553	1071	1297	1644	1130	1369	1736	1190	1441	1827
	South-East	887	1075	1362	940	1138	1442	992	1201	1522	1044	1264	1603
	NW, SW, East & Scotland	807	978	1239	854	1035	1312	902	1093	1385	949	1151	1458
	Mids, Yorks, NE & Wales	772	935	1185	818	990	1255	863	1045	1324	908	1099	1394
221m ² +	Greater London	933	1195	1500	988	1265	1588	1043	1335	1676	1098	1406	1764
	South-East	819	1047	1316	867	1109	1394	916	1171	1471	964	1232	1549
	NW, SW, East & Scotland	745	953	1197	789	1009	1268	833	1065	1338	876	1121	1409
	Mids, Yorks, NE & Wales	713	911	1145	755	965	1213	797	1018	1280	838	1072	1347

TOOLS FOR THE JOB

“Multi-Cutters are Good Multifunctional Tools for Remedial and Renovation Work”



Ed Parry

Ed Parry is a builder specialising in the restoration of old homes and building domestic extensions. In this new series, he explains the key tools which could save you time and money on site, and reviews the latest products (edwardparry.co.uk)



Makita's
DTM51
Multi-tool

Most power tools have a single purpose and are sometimes restricted to use with one material, be it wood, metal, ceramic, plastic, laminate, etc. This can make them expensive to buy for one-off jobs. Step in multi-cutters – otherwise known as multi-tools or oscillating cutters.

Due to their compact design and offset blade, they are able to offer flush cuts and plunge cuts to a variety of materials. For example, if you needed to remove a section of flooring using a multi-cutter, you'd simply need to cut the board by plunging the tool straight down. If you used a circular saw for the same task, you'd need to cut into the neighbouring boards. This is just one example of many as to why a multi-cutter is invaluable on site.

Again, reciprocating tools such as jigsaws and reciprocating saws are perfect for side entry cuts to most materials and serve a great purpose, but are limited in tight spaces. Multi-cutters come into their own in this instance.

A single power tool that is capable of cutting, filing, trimming and sanding almost any building material certainly got my attention; albeit a little later than some of my fellow tradesmen. At first I simply didn't believe that one tool could achieve all this, especially after investing thousands of pounds in tools and equipment needed to run a building operation.

Needless to say, as a tool enthusiast I finally succumbed and bought a Bosch GOP 250CE Cutter with the basic accessory kit, well over a year ago – I haven't looked back since. How did I survive without one before? I will admit that they have a limited use for larger tasks on new build sites, but for restoration, reme-

dial and finishing work, they are a must-have. Today alone I used my multi-cutter for three different applications on site: installing 2-gang plug boxes to drywall, detail sanding to an old bathroom cabinet prior to fitting, and trimming existing skirting ready to fit the new.

Choosing the Right Model

Most market-leading brands now offer multi-cutters as part of their range, with both corded (240V and 110V – HSE suggests 110V), and cordless 18V models available. Each brand has its own drawbacks and advantages. The aforementioned Bosch cutter I personally own is a fantastic tool, has stood the test of time, is accurate, precise, and offers a fixed variable speed setting for detailed work. On the downside, blade changing is slow; it relies on an alum bolt to fix the blade in place, which has to be manually released each time.

Other big brands offer 'quick release' tool-free change, but generally they operate on a trigger-sensitive speed control to increase the tooling speed. Personally I prefer the Bosch fixed variable speed set-up (regardless of the lack of tool-free change); I believe it gives you a more precise and controlled cut over trigger-sensitive speed control.

Most multi-cutters are all reasonably priced, too. 'Bare' 240V models from the big names start from around £100; bare 18V cordless models can be bought for a fraction more. Kits, however, provide a great start-up package. I bought a kit which came with standard blades and sanding pads; I paid around £200. They also tend to come complete with a solid carry case, enabling you to safely store a variety of blades.

A word of caution: branded blades are not cheap at the best of times. They will offer you excellent performance without a doubt, but at a cost. All it takes is hitting a foreign item that your blade cannot handle and it will be ruined in seconds. Cheaper blades might not last as long but it doesn't 'hurt' as much when one is destroyed by a small nail! **H**

ACCESSORY OPTIONS

The uses are endless once you acquire the appropriate blade for the task. A few blade/accessory options are listed below:

- Grout removal
- Flexible scrapper blades
- Detail plunge cut blades
- Rigid scrapper blades
- Carbide rasps
- Wood, nail and plastic plunge cutting
- Wood, nail and plastic segmented blades
- Adhesives, lacquerers and
- sealant removing blades
- Softwood plunge blades
- Hardwood plunge blades
- Detail sander plate and multiple grade sanding pads
- Metal and bi-metal flush cutters
- Laminate cutters
- Tile cutters
- Mortar removal blades

QUICK GUIDE TO INSTALLING PLASTERBOARD

Paul D'Arcy, senior innovation project leader at British Gypsum, guides self-builders and renovators through the installation of Gyproc Habito plasterboard

Gyproc Habito is extremely durable and damage resistant. Once installed, you can fix 15kg directly to your wall using only a standard wood screw.

Cutting Plasterboard

Once a board has been measured to size, there are several ways to cut it. For cutting strips of less than 150mm, or for smaller off-cuts for around door or window details, we recommend the use of a fine-toothed saw or jigsaw. (For cutting multiple boards, we recommend an electric plunge saw with guide rails linked to a dust extraction system.) For sections above 150mm, the board can be scored and snapped by using a standard retractable knife, as shown.



Step 1

For cuts between 150mm and 600mm wide, measure and mark out the section to be cut, then score down the board using a retractable knife (you could use your measuring stick as a guide), applying sufficient pressure to cut through the paper liner.

Step 2

Position the board so the section to be removed is overhanging the pallet or trestle bench. (We recommend you score and snap with the boards on the pallet or off a trestled work area; this allows you to apply the required downward pressure.) Push down on the area



to be snapped off and then snap it upwards to remove the section. Once the board starts to break, fold the board downwards and finally snap the board back up on itself. (The traditional method of scoring one side of the plasterboard, folding the cut section and scoring the second side can also be used.)



Step 3

A single pass with a surform should be sufficient to provide the perfect finish to the edge of the board.



Fixing to the Wall

Step 4

Fix boards with decorative side out (ready for scrim taping the joints and/or a skim plaster finish). Lightly butt boards together. Never force boards into position. Screw 600mm apart into studwork and 400mm at end of partitions or around door/window openings. Install fixings no closer than 13mm from cut edges and 10mm from bound edges. Position cut edges to internal angles whenever possible, removing paper burrs with fine sandpaper.



Socket and Pipe Detailing

Step 5

When making space for a plug socket or

Selecting the right tools

Pencil * Spirit level * Retractable knife
Surform * Tape measure * Multitool
Measuring stick * Handsaw

Impact driver Impact drivers are best suited for fixing Gyproc Habito to both timber and metal frames, as limited pressure is needed to fix through the board to the background frame. Standard drill drivers and high speed drywall screw guns can also be used.

Performance screws Due to the dense nature of the core, a range of high-performance plasterboard fixings especially designed for installing Gyproc Habito need to be used. They feature a slight lip around the head, and are designed to capture any of the board core that is removed while you are fixing the board into position. This ensures a flush finish. The fixings are available in four sizes to cover single and double layer systems on both timber and metal stud framework.

pipe work, mark out the area that needs cutting, e.g., when marking an outline for a single socket, drill a hole wide enough for a jigsaw blade to penetrate.

Step 6

Insert blade and cut upwards then across, allowing the blade to cut through the board (don't force the tool, as this could damage the blades). Cut up into the corner of the box, then slowly rotate 90° to cut along the socket length. Remove blade and repeat the process along the bottom and other side of the opening.



Step 7

Circular cutting for pipes and other openings can be done by using a holesaw. Both tools and techniques provide a smooth finish and do not require re-work. **H**



ASK THE EXPERTS

Looking for impartial, expert advice on your project? Our team of experts answer your need-to-know questions



Q: Should we re-do our cavity wall insulation or opt for another option?

Our house was built in the 1970s with cavity walls; reportedly, it had cavity wall insulation carried out on it. However, any holes we've made into the cavity reveals little in the way of foam insulation and what there is crumbles away to dust when touched. A neighbour recently mentioned they had tried to get their cavity insulation re-done but nobody was prepared to touch it, as trying to re-do it would cause problems. Presumably this leaves us with little alternative other than to look at some other form of external wall insulation?

A: TIM PULLEN Cavity wall insulation is one of the more recent bandwagons that ill-qualified people have jumped on to make an easy pound. As such it is very difficult to sort the good installers from the, well, less good.

What you need to do is:

1. Find out exactly what insulation (if any) is in the cavity; what thickness and what state it is in.
2. Find out if the cavity is suitable for insulation. That is, is it clean, dry and free from mortar dobs on cavity ties bridging the cavity.
3. If that is the case, and there is existing insulation that is 'crumbling to dust' then it will need to be extracted before any more can be installed.
4. If the cavity is not suitable for insulation then any existing insulation is probably doing no harm, but you will need to install external insulation.

A company like Homeworks Energy (homeworksenergy.co.uk) would be a good candidate as they will inspect, extract any

existing insulation and recommend the right insulation to install. However, this is unlikely to be cheap, by anybody's standards.

It may well prove more cost-effective to go straight to external or internal insulation and leave the cavity alone.

Q: Where can we get independent advice on how to choose a heating system for our self-build project?

We are planning a new build and although we have done much research on heating and ventilation systems, we think that we would benefit from expert help. Our architect has given us his advice but he is not an expert. How do we find a qualified engineer who could give us independent advice (i.e. not someone interested in selling us their products)? How do we identify the best person/company for our self-build project?

A: MALCOLM FARROW Choosing which heating system to install in a new property is a big decision so you want to make sure you receive the best advice.

The first place to start is to look for a heating installer who is registered with a Competent Person Scheme such as OFTEC for oil, solid fuel and renewable heating systems, or GasSafe for gas. Registered technicians should follow Building Regulations and industry guidelines, and adhere to best practice at all times.

Both OFTEC and GasSafe have a search function on their website to help you find a registered technician in your local area. It is also worth speaking to friends, family and contacts to ask if they can recommend anyone. If not, your neighbours might be able to suggest a reliable technician.

In your case, for such a big project, it would be a good idea to speak with more than one

*PLEASE NOTE THAT WE MAY NOT BE ABLE TO ANSWER ALL QUESTIONS. IMAGE: ISTOCK

technician to get several different ideas for solutions and quotes. Remember, make sure you check their ID badge to confirm they are registered with a Competent Person Scheme and ask them what heating systems they are qualified to install. You can then do additional research online before making a final decision.

Q: How can I best protect my timber frame while my project is delayed?

Due to financial issues, I am being forced to delay the hempcreting of my timber frame. This may be up to 12 months. I am therefore looking for something to protect the timber frame. Can you offer any suggestions for a temporary plastic sheeting, or similar, to offer cheap weather protection for the frame?

A: IAN MACCARTHY If a timber structure is left exposed for hempcreting later, it will be important to leave the structure in a stable condition, due to imposed loads from wind and weather (and site safety), and to protect it from excessive moisture penetration, as the timber frame will need drying out before it becomes encased in hempcrete. The efficacy of any sheathing or diagonal bracing on that structure must be maintained.

If there is a breather membrane to keep the worst of the weather off, then strictly speaking it would need to be an external façade membrane with UV testing for 12-plus months, but these are quite expensive.

As a standard TF200 (or similar) breather probably only has UV certified for three months or so, it may have to be replaced twice (this would probably be cheaper than building with the extended UV-compliant material but less satisfactory).

We would also point out that depending on the sheathing board being used, this could still be quite vulnerable. Overall, we do not recommend this discontinuous route to a completed home.

Q: Do I need to apply for planning permission for my rear extension?

We're planning to extend the back of our house and have heard you don't have to apply for planning permission if it falls under Permitted Development (PD). What does this mean?

A: MICHAEL HOLMES Under current PD rules relating to single-storey extensions, you can plan and build a structure up to 6m from the original rear wall of a semi-detached house (8m on a detached property) and up to 4m in height, as long as it is completed before 30 May 2019. These new relaxed planning laws are great news if you hope to improve the size, layout and value of your home.

These PD rights apply to houses, not flats, and may be restricted or removed by the local authority by planning conditions that were applied by a previous appeal, or because the property is located within a Conservation Area, Area of Outstanding Natural Beauty, World Heritage Site or Site of Special Scientific Interest (SSSI).

Bear in mind that the back of a property is taken as the original rear wall, or as the building stood on 1 July 1948, so this could affect the size of extension allowed. No part must be more than 4m in height and the eaves no more than 3m within 2m of any boundary, and all extensions and outbuildings must not cover more than 50 per cent of the original garden.

While a formal planning application is not needed if the extension is within the size restrictions, if you plan to take advantage of the extended PD rights - by adding an extension over 3m from the original rear wall for an attached house, or 4m for a detached - then 'prior approval' must be sought.

This process allows neighbours to be consulted and if they do not object within the 21-day period, the council will issue an approval notice. There is no application fee and the local authority has 42 days to respond from the date received. If neighbours do object, the council will consider the impact on the amenity of their property. If the application is refused, there you can appeal. (See planning portal.gov.uk for full conditions.) **H**

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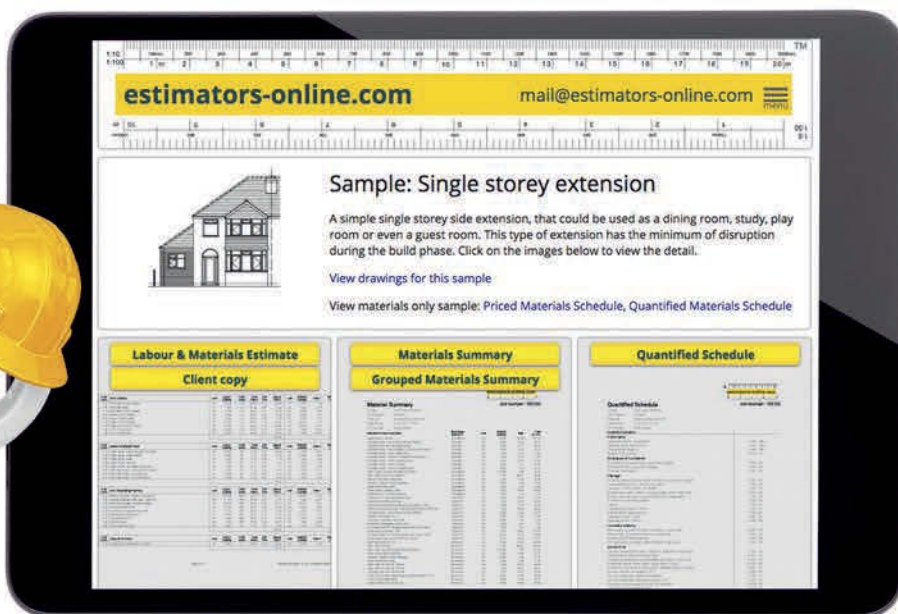
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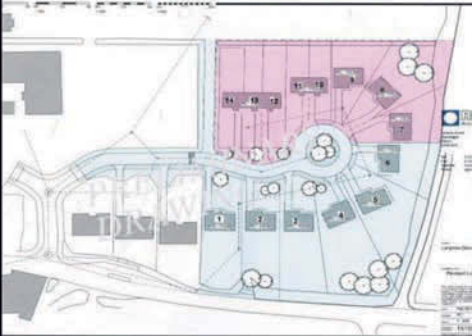
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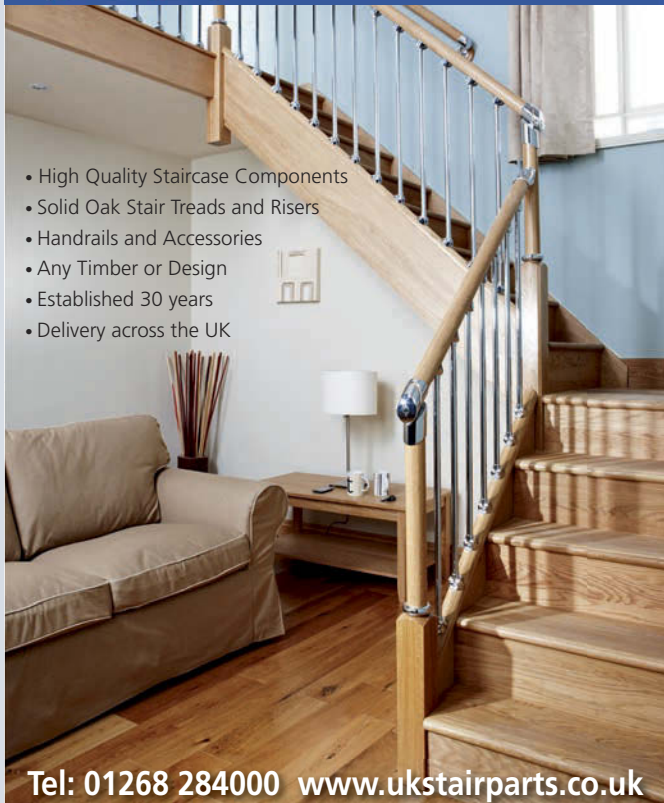
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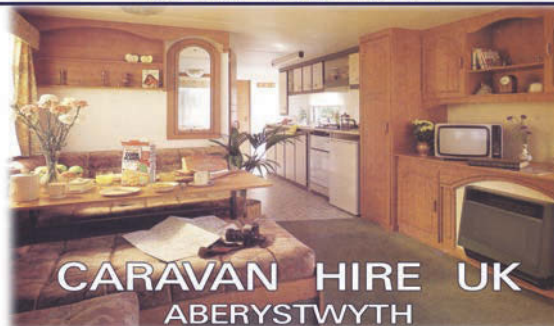


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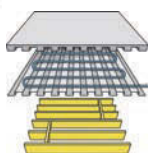
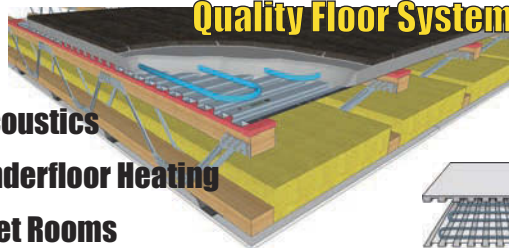
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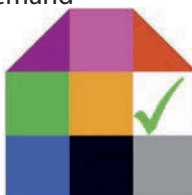
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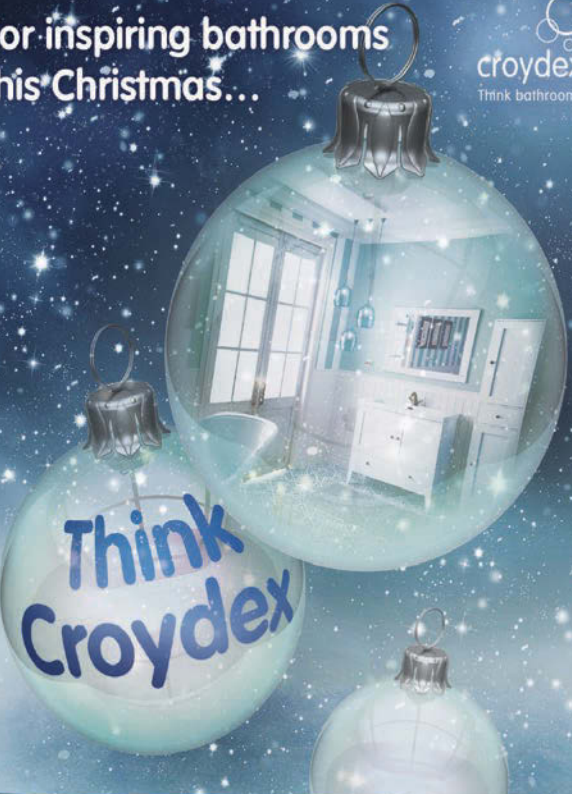


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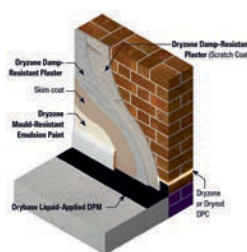
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The Glass Floor (or Ceiling)

Architect Shahriar Nasser of Belsize Architects shares one of his favourite design ideas



Shahriar Nasser

Shahriar Nasser is founder and director of London-based practice Belsize Architects (belsizearchitects.com)

Creating a new basement can be a good way of making the most of available space, but light can be an issue. A glazed floor (or ceiling) is one solution. In this London project, the newly excavated basement studio benefits from natural light passing through the etched glass floor to the living space above — creating the perfect conditions for the homeowner to paint and display her artwork. Adding to the sense of light and space, this provides a strong contrast with the more traditional interiors of the existing house.

I grew up in Iran and as such, I'm used to a lot of very strong sunlight, and although light is not always strong in the UK, technology is moving so

fast that glazing offers all kinds of possibilities. There are always associated problems when you use so much glass, but designing them out is all part of the fun.

The original design had included a structural glass-floored patio outside, with a solid floor inside the living area. But the planners preferred this to be reversed, so that the glass is indoors only. The non-slip etched floor stops part way across the living room, where a glass balustrade overlooks the studio below through a double-height void.

It really doesn't feel like a basement because of the light. What's more, the studio below looks on to a lightwell through glass doors which provide natural ventilation. **H**



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