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Compasso chair by Studio Dorigo Design for Quadrifoglio wins the Furniture category at Chicago Athenaeum Museum of Architecture and Design Awards. www.quadrifoglio.com

The Eye of PiP

Salvo's Pocket Guide, just reissued, is a resource to help architects and specifiers find salvage suppliers – and design their buildings with what's already out there! Download from: futureuse.co.uk/the-salvo-pocket-guide
PiP editor Jan-Carlos Kucharek

12 'A structure of LVL beams is built up across four intersecting layers... each beam is made using five layer of LVL boards and sent to site in flatpacks'
Extreme spec reveals how Sweden's 12m tall, 22m-diameter freestanding timber Wisdome was built

07↑ Redemption on the prom: 47,000 pieces of glass helped restore Michael Trainor's Death Star mirror ball at Blackpool

← Seen/Green:
COAT claims to be the first climate positive certified pant company.
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- Curated palette: consciously the smallest of any premium paint companies
- Zero to landfill: customers can return excess paint and tins for 100% recycling

30→ 'The college said it wanted a building that promoted student wellbeing as well as embracing tenets of sustainability, so we obviously pushed to make it a Passivhaus'

NICK GUTTRIDGE

Cover image: Featherstone Building, London, by Morris+Company. Photograph: Jack Hobhouse

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*The review for implementation of Schedule 3 to The Flood and Water Management Act 2010, January 2023

The Forge, Upton Park, uses an innovative Blue40 Roof System that restricts and delays runoff from the site, equating to 60% of the equivalent green field flow rate.

ARCHITECT | RM_A

Photo: Ben Luxemore

Compendium

Wave hello, save goodbyes
For architects the name Kvadrat might be long-associated with high-end soft furnishings; but in challenging times, even they are moving out of their comfort zone to investigate opportunities present in diversification. The firm's Soft Cells acoustic panels are one such result, here specified at Salmon Eye, a new exhibition gallery that emerges from the waters of the Hardanger fjord in south west Norway. Exploring the sustainable potential of aquaculture globally to avert further climate disaster, the gallery has a continuous surface of panels on the walls and ceilings of its ellipsoid interior, moving from darker coloured lower floors to lighter upper levels. With a perfect 3mm gap between them to ease demounting, they are set on a bespoke rail-based sub-frame. Which all ensures that water's famous acoustic transmissivity stays firmly on the outside of the gallery's underwater walls.

ROEL VON TOUR

Sitting in judgement
Much like the infamous east London eatery Bistrotheque two decades before it, there's a hushed 'only-those-in-the-know'-ness about London's Old Sessions House. But being in the heart of design enclave Clerkenwell, PiP assumes that most architects have already cottoned on enough to ensure they're on the waitlist for a table at its trendy restaurant. Meanwhile Knotel, the US owner of the building's entrepreneurial 'workclub', is busy getting bums on seats in another way, not least with its super-comfy, plump Bollo armchairs by Fogia, which look like something artist Louise Bourgeois rustled-up on a break from the day job.

GREG HARDING

The march of time
This month sees the launch of Velux's Heritage conservation roof window, its slim profile and flush fit designed to integrate with original roofing materials and give the benefits of natural daylight with its glass-to-edge technology. The unit's aesthetics mimic old cast iron windows and PiP's interest is piqued by its original 'hand-winder' for natural ventilation. With guaranteed thermal efficiency of Uw 1.3, and other glazing features such as safety lamination, toughened outer glass, easy-to-clean coating, UV filter and rain noise reduction, it makes for 'a high-quality and durable roof window at a competitive price point'.

Finally looking up
Too bright, too dim, too stark – just what is it about downlights? Add to that the paraphernalia of your standard domestic ceiling – fire alarms, vents or CO monitors – and the last thing you'll be wanting to do is look up. Thankfully, lighting firm Lumi-Plugin was bothered enough to do something about it, creating its range of fire-rated LED lighting that allows all those safety systems to be elegantly hidden away inside the unit itself, making all of that kit, if not totally invisible, then certainly beautifully streamlined. And with a small plastic diffuser ring around it, there's no glare!

TOM D MORGAN

The 'B' of bag
Oscar Acoustics insisted we couldn't name the brand at one of its latest central London designer shop fit-outs, but the clue's in the bags' tiny closer clasps – and the grid-like suspended ceiling hanging above them. And at least one thing the company and the brand has in common is that they spend time and energy creating a sharp look. Oscar Acoustics' Evo-Blade product is a patented ceiling razor-edge aluminium profile that's been developed to overcome cracking, air filtration and limitations on lighting types by allowing plasterboard to run all the way to the ceiling edge, to give what the firm calls their 'flawless finish'. It's easily cut and mitred using proprietary steel shims and just like the brand's signature check, it's all designed and manufactured in the UK.

ALEX BAXTER

Tall order
Dutch architect Flip Wentink Architecten has been busy at its A-Hof project – the renovation of a heritage barn complex in Holland. Its aim is to make the 1885 complex net zero through intensive use of energy-efficient technologies and renewable energy. Its location in a remote area well known for its religious communities might explain the asceticism of Julia van Beuningen's interior design, especially her lovely curved ply pine staircase by local fabricator EeStairs. Indulgently, the firm is not only over there but also over here – even though it is in far less God-fearing Eastbourne.

Sound barrier
Bespoke timber window manufacturer Hugo Carter follows up its brand name with 'Silent Windows.' But how silent is that? Well, apparently lab testing showed a 50dB noise reduction. That could be due to the five layers of triple-glazed laminated glass – 24mm thick in total not including the two voids. And each layer has a different thickness to deal with different frequencies, goddammit. On top of that, a multi-point locking mechanism will give potential burglars pause for thought too. A perfect fit, it seems, for your average Daily Mail reader's noise-addled, crime-riddled UK urban centre.

Disco never dies
Things start off normally enough but fast descend into a nightmarish alternative reality with no redemption for the protagonists. Yes, that's the standard playbook of Charlie Brooker's Netflix series Black Mirror – though it could just as easily be a Blackpool stag or hen weekend. But there's redemption on its promenade for artist Michael Trainor's 20-year-old, 6m diameter Mirror Ball – a long-overdue facelift. More than 47,000 pieces of Pilkington Mirropane Chrome glass helped restore the disco Death Star's dark, lustrous glory.

Sett in stone

Matera in Italy's Basilicata region is, like Taormina in Sicily after White Lotus series 2, becoming one of Europe's hottest tickets, locals are getting the ancient Unesco town more ready than ever for the tourist hordes. Casa MATERiA is an old stone cave house in its famous Sassi quarter, which architect owner Michele Barberio has turned into an exclusive B&B as well as his home and atelier. Seemingly, the local Tufo stone from which it is hewn proved insufficient on walls and floors, so Barberio specified Iris Ceramica's Ariostea in some areas for added impact. The Teknostone porcelain stoneware panels come in sizes up to 300cm by 100cm, bringing a veneer of high-end luxury to these former workers' caves.

Forever blowing bubbles

If you think the word 'Hadeland' sounds Scandinavian, you'd be right; over 250-year-old Nordic to be precise. Hadeland Glasswerk has been creating stemware – and more recently glass lighting – for centuries, and with all its original design moulds, can turn out a bespoke classic at short notice. Its Archive Lighting collection picks up on the original mid-20th century designs of Jonas Hidle and Arnulf Bjørshol, with the company running through their old design catalogues and bringing them into the 21st century with tweaks and new pigment colours. Big smoked glass bubbles? Try Hadeland's 'Bespoke Archive 4014 arrangement'. It's 'POA'; but then again, this is Norway.

JOSÉ HEVIA

Reign in Spain

After 21 years, ASCER's Tile of Spain Awards still rewards well-designed projects that showcase the use of Spanish tiles at the highest level. This year's €15,000 winner was a social housing project in Ibiza by Mallorca and Castellón-based firm Ripoll-Tizón. The 2,300m² project has exterior communal spaces and access corridors with richly-coloured stoneware on walls and forming seating areas, giving what the judges called 'a coastal vibe.' And as social housing, it's nice to know that not everyone must spend £1500 a week to be resident on the famous party island.

SENIOR ARCHITECTURAL SYSTEMS

Putting the fun into funicular

The last time PiP was in Southend its infamous 'Car Cruise' still tore up the seafront of a weekend, and the five-year injunction that stopped it ends in April. In other circumstances, that might worry residents of the western Esplanade's new Art Deco-influenced Clifftown Shore, but luckily its old style glazing doesn't mean old school problems. While Senior Architectural Systems picked up on building curves with slim lines and its thermally-efficient SF52 aluminium curtain wall system for the restaurant and bar, PURe doors and windows in the flats also provide acoustic benefits. It was never an issue when the most disruptive form of transport was the century-old Cliff Lift funicular, but it will be music to the ears of residents when it's a revving 4L Ford Mustang.

Researchers close in on net zero cement

Steel slag waste and low-energy alkali fusion processes could combine to create a net zero emissions concrete. Stephen Cousins reports

A £7.6million project to develop and mass produce a concrete with net zero embodied carbon is under way in the UK.

The three-year 'Mevocrete' project will see academics at Teesside University work with Middlesbrough-based company Material Evolution to develop and optimise its low carbon geopolymer cement technology for production at scale.

Material Evolution's existing low carbon cement emits up to 85% less embodied CO_2 than traditional Portland Cement, and now researchers aim to further boost its performance to net zero emissions by using local steel slag waste that can sequester carbon.

According to David Hughes, associate dean and co-lead of the project, the plan is to tap into large volumes of historic waste from the region's steel production.

'The Teesworks site is one of Europe's largest industrial development zones and is covered in steel slag from the old steelworks,' Hughes says. 'There are millions of metric tonnes there, [as well as] all the other key areas within the UK with similar slag deposits.'

The Mevocrete project is a key element of Teesside University's £13.1m Net Zero Industry Innovation Centre, part of Tees Valley Combined Authority's regional innovation strategy.

Material Evolution's patented technology avoids the emissions associated with traditional cement, which relies on energy-intensive calcination to activate and bind materials, producing CO_2 as a by-product. Instead, waste materials are activated through a solid state chemical reaction using 'ultra-low energy alkali-fusion' that doesn't require heat or release CO_2.

According to Hughes, the Mevocrete project is the 'next stage' of the product's evolution, integrating waste materials, including steel slag, that can sequester CO_2 to further cut emissions and ultimately create a net zero cement.

'It's about the ability to sequester carbon in the cement, either during the alkali fusion stage, during the curing stage, or in use, so for example, a bench could be carbonating as you sit on it,' said Hughes.

Researchers from the School of Computing, Engineering & Digital Technologies will analyse steel slag and its chemical composition and measure how efficient it is at sequestering carbon.

Also within the scope of research are plans to examine the entire supply chain, from feedstock to end user, and create an independently tested and verified net zero emissions product by the end of the project, in October 2025. Furthermore, there are plans to build a full scale on-site facility for cement production, using waste steel slag from Teesworks.

Sina Rezaei Gomari, Mevocrete project principal investigator at Teesside University, said: 'For the UK to meet its net zero targets it is imperative that new ways to decarbonise the construction industry are found, and this project has the potential to have a major impact in reducing greenhouse gas (GHG) emissions.'

Several other organisations worldwide are working to cut the emissions profile of concrete, for example a project incorporating waste plastic into the material mix. Swiss researchers recently made a bridge from reused concrete blocks with comparable embodied CO_2 to glulam.

The global concrete market is worth around £500 billion annually, yet it is one of the world's single biggest polluters, accounting for up to 8% of GHGs. ●

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TEESSIDE UNIVERSITY

Optimising geopolymer cement: Sina Rezaei Gomari (right) showcasing the facilities at Teesside University to Elizabeth Gilligan and Sam Clark from Material Evolution.

Are we heading for a triple glazed future?

As the UK government's net zero target of 2025 nears, specifiers will inevitably turn to triple glazing rather than double in order to meet the energy-efficiency requirements of the Future Homes Standard

THE ACRES, ALTRINCHAM
Triple glazed units were specified to ensure excellent thermal performance at this exclusive development of four-bedroom homes. 'While buyers may not be aware of technical details such as U-values, when buying a newbuild property they expect low energy performance,' explains Masoud Gaffarain, managing director of Pavilion Property Holdings Ltd and principal contractor of The Acres. 'Triple glazing was therefore a real selling a point when we were marketing The Acres, and the acoustic control that triple-glazing provides is an added advantage'.

Already standard in much of northern Europe, triple glazing is fast becoming the default choice for residential building projects across the UK. Triple glazing supports the need for greater energy efficiency in the building sector, a shift made even more compelling by recent rises in energy costs. It also plays an important role in the UK government's aim to achieve net zero emissions by 2025, the year that minimum U-values will be reduced to 0.8W/m²K as part of the government's Future Homes Standard (FHS). Triple glazing easily meets these lower U-values but double does not and, as a result, housebuilders and residential developers are already starting to specify triple glazing, a trend which will accelerate as the 2025 deadline approaches.

The advantages of 'Scandinavian style' triple glazing
Current 'Scandinavian style' triple glazed composite windows are increasingly cited as role models for future window design and Velfac – founded in Denmark over 50 years ago – is the archetypal 'Scandi-window' manufacturer. Velfac has the products and expertise to enable specifiers to comply with the FHS, as its bespoke triple glazed windows already meet the 0.8W/m²K U-value target. But regulatory compliance is not the only benefit. With demand for triple glazing set to rise significantly it's vital to source from a reliable manufacturer such as Velfac, as our continuous investment in triple glazing supply brings a range of additional advantages:

- Triple glazing costs are only marginally higher than double glazed equivalents thanks to significant economies of scale generated by large scale manufacture
- Reliable supply from factories across Europe already manufacturing triple glazed units
- Specialised accessories and ironmongery are available as standard, proven to carry the weight of triple glazed units and deliver long term, trouble free performance
- Access to our network of approved installers – trained to install triple glazing to guaranteed levels of quality.

PAVILION HOUSE, SUFFOLK
At this minimalist 'inside out' home, designed by renowned Danish architect Jonas Bjerre-Poulson of Norm Architects, the extensive front elevation, and narrow sides, are entirely glazed in Velfac fixed triple glazed units and large sliding doors, with additional doors on the rear elevation set between walls clad in local larch. Bjerre-Poulsen specified Velfac windows to sustain the minimalist aesthetic and deliver the insulation and air tightness required to ensure a 'glass house' would be both comfortable to live in and energy efficient.

COLINDALE GARDENS, LONDON
The Velfac system's excellent thermal insulation make an important contribution to the low energy design of Colindale Gardens, built by award-winning developer Redrow. A strategic mix of double and triple glazed Velfac units deliver optimal acoustic performance across a site which borders a railway line, all achieved without interruption to the facade finish thanks to uniform frame sightlines. The Velfac system's environmental credentials also support Redrow's sustainability strategy – for example, all timber used in Velfac frames is FSC-certified, and every window and door is 93% recyclable.

VELFAC®

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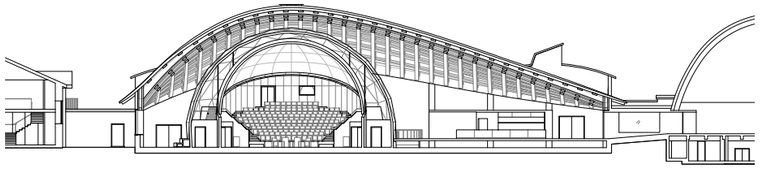
Double curvature roof

Left Interior visualisation showing gridshell roof and CLT block Wisdome. **Below** Long section showing the dome and parabolic roof. **Bottom left** View of the exterior, showing the courtyard site and shake tile roof. **Bottom right** The LVL gridshell roof under construction.

What Wisdome, National Museum of Science and Technology
Where Stockholm, Sweden



Wisdome is a Swedish national project to build five interactive visualisation dome theatres that promote interest in science among the public and specialists. The third, in Stockholm, is under now construction at the National Museum of Science and Technology.

Elding Oscarson won the invited competition to design it in 2019. The dome came with a fixed shape and size; 12m tall with a diameter of 22m. Elding Oscarson's task was to design its outer shell, the fit-out and the space that would contain it. The congested museum also wanted to use the former car park site to create a circulation and meeting hub with café.

In terms of its design, the practice wanted to make the dome free-standing, enclosed by the building but free from it structurally to ensure future flexibility. The first experiment placed the dome in a box which resulted in a huge volume. However in the ultimate design the roof drapes over the dome, dropping down to single storey at the building's perimeter. The dome is at one end, creating an asymmetric form externally which signals that there is something special within.

Sponsored by timber company Stora Enso, the brief also stipulated that the building must be constructed using its LVL and CLT products. The challenge was how to design this 48m by 25m double-curvature roof. The vaulted gridshell, a collaboration with structural engineer Florian Kosche, became something that would demonstrate the technical possibilities of timber, inspired by Frei Otto's 1975 Multihalle Mannheim.

'There are plenty of cars, machines and aeroplanes in the museum,' explains architect Johan Oscarson, 'but there is little about construction.'

Stora Enso's systems are used for almost everything. The roof is supported by a perimeter of LVL columns at 6m intervals to maximise ground floor openings to the courtyard terrace. To prevent the building succumbing the roof's weight, column centres are drilled through with steel tension bars.

On top of the columns sits a three-sided box beam that supports the free-form gridshell. The most complex aspect of the design, this comprises a structure of LVL beams built up across four intersecting layers in 1.5-1.8m sections. Each beam is made using five layers of 30mm-thick LVL boards constructed in pre-shaped, 10-12m long segments sent to site in flatpacks. The boards and lathes are connected by huge dowels and bolts. Each layer is slightly staggered for rigidity, but there are no rods or reinforcements. The four layers of beams are cloaked in a solid layer of LVL that forms the outer shape of the roof and contains the insulation. The roof covering is again timber; hard pine shakes. Inside, the outer shell of the Wisdome is made using CLT blocks, as is the small block containing the café bar and WC, and the floor. Only the bar is stainless steel.

Unable to find an appropriate domestic contractor, Swiss firm Blumer Lehmann was brought on board with its own team of structural engineers and a firm specialising in 3D production. Foundations started early in 2022 and the structure is due to open this autumn.

Featherstone Building, central London

Changing market priorities saw Morris+Company shift to a unitised facade system for its Featherstone Building, but respect for complex local context was constant

Words: Pamela Buxton Photographs: Jack Hobhouse

When Morris+Company designed The Featherstone Building, a multi-tenant workplace near London's Old Street, it drew direct inspiration from the many Victorian warehouse buildings in the locality.

Through extensive photographic research and drawing studies, the practice sought to define the essence of the type, from the nuances of the composition of base, body and crown to the range of materials and the crafted detailing. The aim was to abstract these elements to come up with a contemporary reinterpretation that was very much of its place. At the same time, the design needed to mediate between the bustling City Road with its tech-industries hinterland, and the adjacent grade I listed Bunhill Fields – resting place of William Blake and many other illustrious figures – which it overlooks to the rear.

The plan had been to build the facade traditionally using hand-laid bricks and precast concrete components on a steel frame system backing wall. However, with the exception of the ground floor, the facade instead ended up being manufactured 2400 miles away in Latvia as a unitised system of brick slips and glass fibre reinforced concrete (GRC), with just under 900 unitised panels craned into place in a carefully marshalled just-in-time installation sequence. This shift in approach reflects changes in the procurement market over the long duration of the project, for developer Derwent London, which began in 2013

Tenants are now starting to populate the 15,938m² building, a redevelopment of two 1960s buildings which increases the floor area by 81%. Rising to 11 storeys on City Road, it steps down in height to 10 and then five storeys in a series of

Far left The Featherstone Building rises to 11 storeys on London's City Road.

Left The site stretches 80m back from City Road, overlooking Bunhill Fields at the rear.

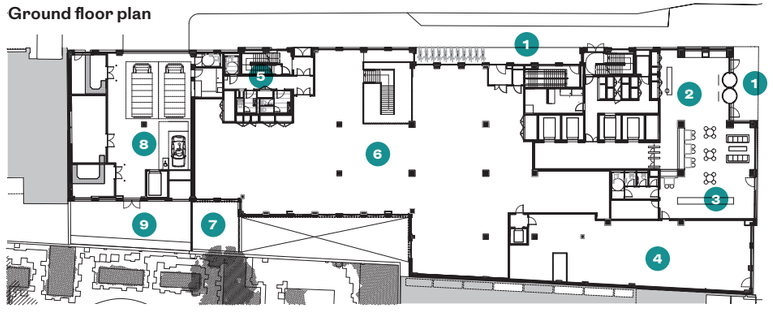
Right Two different colours of brick are used to distinguish the various volumes of the Featherstone Building, viewed here from Bunhill Fields.

volumes that are staggered in plan as well as height. Its mass is further mitigated by the use of two colours of brick so the scheme reads as four main adjoining buildings rather than one, 80m-long, tapering development. The double-height corner main entrance is recessed to create a sheltering portico.

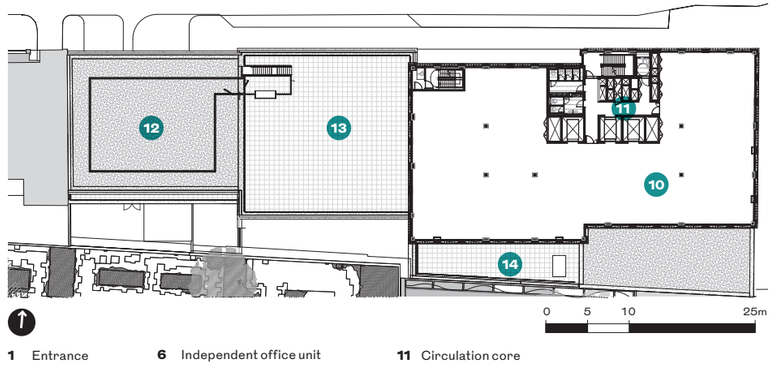
According to Morris+Company director David Storring, the Featherstone Building is conceived as loose-fit and long life with 3.125m floor to ceiling heights and built-in 'hard soft spots' to enable future flexibility for linking floors. The heating and cooling strategy utilises the exposed concrete frame for thermal mass and employs concrete core cooling, trialled previously by the developer at Allford Hall Monaghan Morris' nearby White Collar Factory. Sensors are incorporated to maximise operational efficiencies and minimise energy use. Supply air is delivered through the floor plenum. Oak detailing in the lofty reception and common areas combine with glimpses of the exposed concrete frame.

The warehouse-inspired facade composition was finalised following what Storring describes as 'a journey of model-making and craft' that continued from 2013-18. This included extensive physical

Ground floor plan



Upper office floor plan

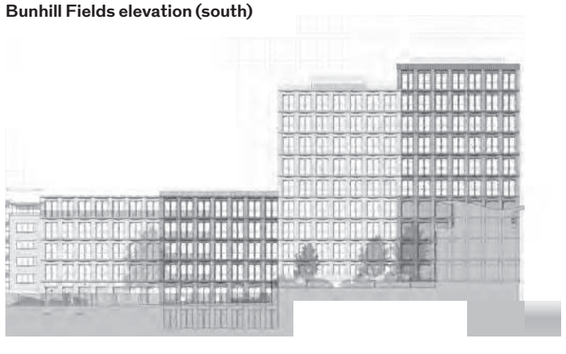


1 Entrance
2 Reception
3 Café
4 Retail unit
5 Circulation core
6 Independent office unit
7 Terrace
8 Loading bay / accessible parking
9 Plant equipment
10 Office accommodation
11 Circulation core
12 Green roof (below)
13 Terrace (below)
14 Roof (below)

Opposite top The facade combines brick slip piers with GRC mullions and scalloped, textured lintels.
Above Balustrades on Juliet balconies reference the scalloped form of the lintels.

Featherstone Street elevation (north)

Bunhill Fields elevation (south)



City Road elevation (east)

The resulting warehouse reinterpretation meets the architect's aim of achieving a background character while providing visual interest

Cladding

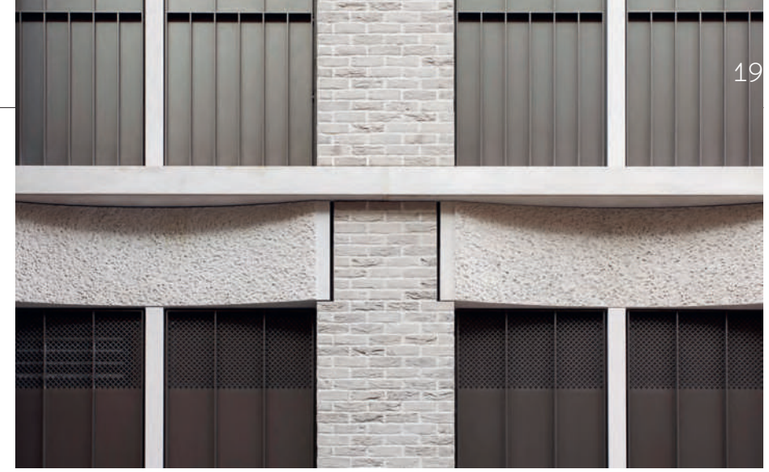
studies, from countless card models right through to 1:1 mock-ups. The resulting warehouse reinterpretation meets the architect's aim of achieving a background character while providing sufficient visual interest through its combination of brick, textured lintels and balustrading.

Brick piers (each four bricks wide) set on a 3m grid provide a regular rhythm. This is interspersed with window bays, each a pair of openable bespoke Schueco aluminium windows divided by a 110mm-wide GRC mullion. In most cases, a single scalloped lintel completes the T-shaped configuration, its 100mm-deep recess creating shadow and interest. There are some variations, including the use of a double scallop on the upper level to define the crown of the building.

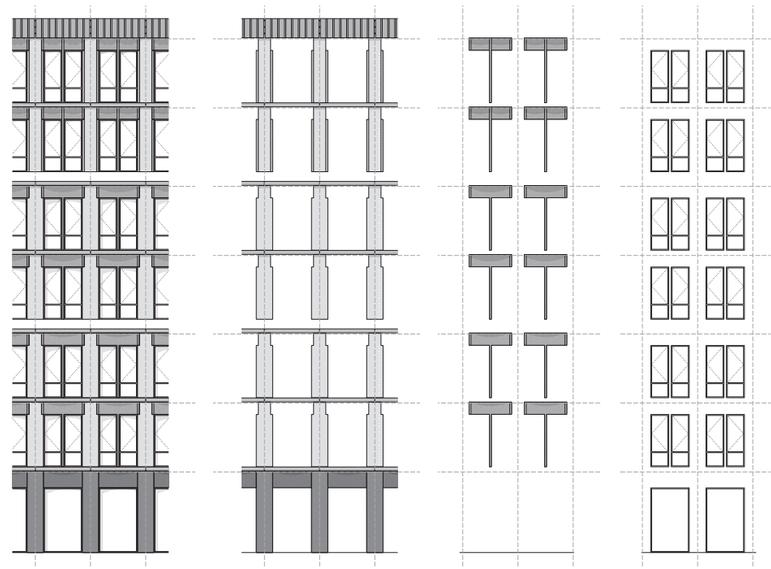
A stringcourse clearly delineates floors. Additional variety is created by the placing of Juliet balconies with scalloped balustrading and areas of solid facade, to shield the backs of risers, for example.

Establishing the design was just the start of what turned out to be a long journey to work out how to realise it. Facade consultant Eckersley O'Callaghan (EOC) looked at 12 options ranging from the traditional robustness of hand-laid bricks and precast concrete elements through to DfMA (Design for Manufacture and Assembly), including the use of brick slips. Although such a substantial building offered economies of scale to unlock the potential of off-site construction, and the design team wished for a DfMA approach, in 2016 the market still favoured traditional hand-laid brick construction and precast concrete.

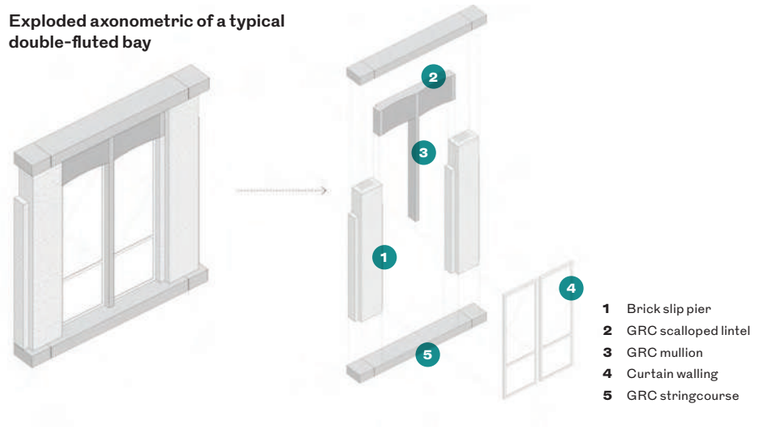
But by the time the main contractor was involved in 2018/19, market priorities were shifting, influenced by shortages of skilled labour and the availability of better quality brick slip and GRC options. Coupled with the restrictions of the tight site and the ambitious programme, this made a unitised approach more viable. Having established that it would provide similar efficiencies in operational carbon, the switch to unitised was made, using brick slips on a GRC backing as part of a lighter weight, unitised curtain wall. This had the added advantage of halving the amount of brick required, and was used for everything except the ground floor, where the brickwork can be touched and observed up-close. Here it was built traditionally. The unitised approach also improved airtightness. A three bay,



Above Detail of bay units with solid infill panels.
Below Taxonomy of design proposal showing elevational elements and ordering.



Exploded axonometric of a typical double-fluted bay



1 Brick slip pier
2 GRC scalloped lintel
3 GRC mullion
4 Curtain walling
5 GRC stringcourse

Cladding

1:1 mock-up of the facade was built and included in the tender documentation, with the successful facade contractor – Skonto Plan – required to build a demonstration bay next to the mock-up as part of its tender.

The biggest challenge, according to EOC director Hugh McGilveray, was getting it to look as much like a hand-laid traditional warehouse as possible, while incorporating a manageable jointing strategy, and designing for maintenance and disassembly to ensure longevity.

Both the mullions and lintels were created in precast GRC, with Reckli moulds employed on the latter to create a hammered effect using texture in a nod to patterned tiles. A retarder in the mould helped to avoid the distraction of a glossy finish. The lintels and mullions are created in light and dark shades (Crest BST's Gibraltar and Weinerberger's Cinder Grey) according to the hue of the adjacent brickwork of each block. The contrasting shades also reference the variety of materials found in the gravestones at Bunhill Fields, such as black granite and white limestone.

'We wanted to make a really clear differential between the blocks. There's a risk in townscape that you can make too subtle a differential,' says Storring. Aluminium frames, balustrades and any opaque panels were given a metallic lustre with Tiger paint. Care was taken to create 20mm shadow gaps between frames and piers.

After Skonto had constructed the facade units in Latvia, they travelled to site where they were craned into place – the brick piers separately – on pre-set brackets using a small installation team.

Another big design challenge was dismantling and maintenance, with the need to make the GRC stringers and lintels demountable for both maintenance, such as inspecting the slab-edge gasket, and for ease of replacement of individual components if required. It is hoped that this will enable the facade to last beyond its 40 year theoretical service life.

EOC recently revisited the decisions made on the choice of facade construction, carrying out a Whole Life Cycle Assessment on both the built facade and the original hand-laid brick design, with the assumption that the unitised option would need to be refurbished once during the lifespan of the building. While the unitised option was more circular and slightly lower in upfront carbon, the assessment suggests that it has the potential to be slightly more carbon intensive in terms of whole life carbon due to its shorter service life, highlighting the need for careful maintenance and considerate refurbishment in the future. The research also concluded that the construction industry should have more regard for facades and buildings as material banks for future use, and that design for disassembly, adaptability and reuse should be promoted early in the conception of projects.

The Featherstone Building is aiming for BREEAM Outstanding and LEED Platinum ratings.

Top The building is staggered in both height and plan.
Above Double height main entrance, where brick piers and exposed concrete combine with timber panelling and feature lights.

Credits
Architect Morris+Company
Executive architect Veretec
Client Derwent London
Structural engineer Heyne Tillet Steel
Cost consultant Exigere
Planning consultant DP9
Facade consultant Eckersley O'Callaghan
BREEAM consultant, fire specialist, services engineer WSP
Approved building inspector BRCS
Main contractor Skanska
Facade contractor Skonto Plan

Selected suppliers Crest BST **(Gibraltar brick);** Schueco **(curtain walling system);** Weinerberger **(Cinder Grey brick)**

Specified

PiP specifieds are compiled from supplied company press releases

ALEX UPTON PHOTOGRAPHY

NEXT BIG THING DEVELOP-MENTS/THE HERITAGE LOT-TERY FUND/FRIENDS OF BANK HALL GROUP

DAN PATON PHOTOGRAPHY

1
Cupaclad 101 natural slate
Cupa Pizarras

‘Rhett! Rhett! Where shall I go? What shall I do?’

‘Frankly, my dear, I doubt you’ll be going anywhere, since you are firmly enclosed in the horizontal 40cm by 20cm natural slates of Cupaclad 101 Logic, whose modern look and secure invisible fixing systems make them extremely resistant to frosting, hypothermal ageing, fire, impacts – and, of course, The Wind.

‘It is, my dear, also BRE certified, making it both stable and sustainable. I only wish we could say the same of your marriages.’

cupapizarras.com/uk/

2
Foamstone
Sytex UK

‘Ere, Baz! Remember that Troy job we did?’

‘Yeah! She wrote to me after, that Helen. Lovely woman. Said she was thrilled with the BBA certified FoamStone mouldings we put in using our very basic carpentry skills, but their city ended up falling anyway.’

‘Ahhh, yeah, it was in the paper: they couldn’t get through the tough custom-made lightweight mouldings, so they built a wooden horse and smuggled a load of blokes in through the main gate! Terrible business.’

‘Yeah, terrible; and as well as a stunner she was generous. Always doing us chips. Thousands of chips. They got that wrong in the paper!’

sytexuk.co.uk/

3
Cwt-y-Bugail Dark Blue Grey slate
Welsh Slate

We are the bats!
The glad bats of Bank Hall!
For the house has been saved,
and we’re jubilant all!
For the re-roof is lovely,
we’ve boxes galore
So we zoom through dry attics
with slates as of yore!
Since the Seventies empty,
we’ve flown here alone;
Abandoned and roofless,
our ancient fine home!
But it’s ‘At Risk’ no longer!
No more falling down!
SAVE’s campaign its
foundations,
and Welsh Slate the crown!

welshslate.com/

4
Sectional brick slip support arches
IG Masonry

Focus, boy! You may be a peer of the realm, but until you leave this place YOU ARE MINE! Chapel is at the heart of our community here at Radley College, and accuracy is at the heart of Chapel!

No, not God. Don’t be silly boy. Look at these arches. Each apse fits between asymmetric kicker stones, meaning tight tolerances and size variations in two planes. All have different spans! And all six apexes still align! Accuracy!

These arches are up for prizes, boy! Apart from inheriting Gloucestershire, the only prize you’ve ever won is a justified switching. Now pull your socks up – and get to class!

igmasonrysupport.com/

Sustainable larch is the stand-out at stunning eco-build

A family home that makes the most of its natural environment relies strongly on the aesthetic and ecological qualities of larch

STUDIO FUSE (3)

Sustainable larch with an innovative wood protection treatment, supplied by International Timber, has helped to create an award-winning three-storey biophilic dream home designed by Studio Fuse.

Chichester House comprises nearly 1,000m of decking and over 6,400m of cladding both in and outside the build. The natural aesthetic of the larch has further benefited from Si00-X wood protection treatment, giving the timber a long life and natural surface with even colouration.

Where it began

Several years ago, husband and wife team Studio Fuse – architect Dan Rowland and interior designer Nina Rowland – purchased the 1.5-acre plot and began creating a contemporary home that combines nature with an eco-friendly design.

Procuring such quantities of sustainable, durable FSC-certified timber was a priority for the duo and led to the collaboration between International Timber and Studio Fuse.

Initial specifications for machine or sawn finished timber were soon updated to a textured finish, thanks to International Timber’s expert team recommending the alternative method which highlights the grain of the timber while retaining a smooth surface.

Combining the timber with the Si00-X coating system accelerates the weathering process to provide an even, silver finish, adding versatility. Larch was also used internally to provide a high-end, decorative finish in the kitchen.

Dan Rowland said: ‘It was our dream to build a home for our family that made the most of its natural environment. The larch cladding and decking have added to the building’s beautiful biophilic aesthetic, contributing to the warmth and durability of the home.

‘International Timber was incredibly supportive, and its unsurpassed timber expertise ensured everything arrived on time and went to plan. We can’t wait to work with them again soon.’

Above left Chicester House from Studio Fuse showcases the beauty of larch.
Above right Cladding leads into the kitchen with stunning results.
Below Larch is an excellent timber to last a lifetime.

international timber

For further information about building with sustainable timber, visit https://internationaltimber.com/ or email info@internationaltimber.com. Discover more about Chichester House on Instagram @_studiofuse or visit http://www.studiofuse.co.uk/

Low carbon retrofit takes the office power seat

Minimum energy efficiency standards are one reason why practices are making more of refurbs – and being creative about how to do it

Words: Josephine Smit

When one of the UK's largest practices says the focus of its work in the office sector has shifted from newbuild to refurbishment, something is going on. It's the government's minimum energy efficiency standards, which require rented commercial properties to have an energy performance certificate (EPC) of at least B by 2030. With property consultant Savills calculating that 74% of UK offices are below B, the pressure is on to act to avoid assets becoming stranded. But other influences sit alongside that, including protests against high-profile demolition and rebuild plans, increased business focus on environmental, social and governance (ESG) criteria and hybrid ways of working.

British Council for Offices updates to its specifications and fit-out guides make what BCO president and Sheppard Robson partner Mark Kowal calls wholesale change to the metrics. They take into account net zero carbon (NZC) ambitions and post-pandemic hybrid working, and perhaps most controversially advocate reducing workplace density occupation criteria from 8m² per work setting and 80% utilisation to 10m² and 60%. 'Saying you need more space for fewer people seems counter-intuitive, but over-populated buildings can't perform to net zero carbon standards,' explains Kowal.

But project design and delivery are no more straightforward. Lack of policy clarity on defining NZC buildings has left industry relying on proliferating industry tools and led a coalition including the RIBA to develop its own UK NZC Buildings Standard. Kowal says: 'There's frustration at so many bodies and accreditations. It's a minefield to put them together to get to the right answer.'

SHEPPARD ROBSON

Above At 95 Queen Victoria St in The City, Sheppard Robson took a lifecycle carbon view when deciding not to replace its facade with a better performing one.
Below right Barr Gazetas' Holbein Gardens scheme in London made significant embodied carbon inroads by re-using steel taken from a previous Grosvenor demolition.

It's complicated...

Projects are inherently complex, largely due to the myriad choices around what to retain or replace to achieve a balance of operational energy, embodied carbon, cost and value. 'The way we and many others are tackling this is to get on the pathway to NZC,' says Kowal. 'You're deciding out of a menu of things what you're going to do and when. There is no one answer, because there are so many variables.'

That is illustrated by two current projects: Bruntwood's Pall Mall Court in Manchester and J Safra Sarasin's 95 Queen Victoria Street in London. Significant energy losses through the single-glazed facade of the 1960s-built Pall Mall Court justified its energy-efficient replacement, which safeguards the building's grade II-listed status. Although listing constrains interventions, operational energy is being targeted to boost the EPC to B and recycled materials feature in the fit-out. By contrast, the glazed facade of the 19-year-old 95 Queen Victoria Street is being retained, along with elements including ductwork in the risers, while internal features are being refreshed and brought up to contemporary standards.

> 'There's frustration at so many bodies and accreditations. It's a minefield to get to the right answer'

Replacing facades – often highly glazed – in buildings of the 1990s and noughties can be problematic. 'The facade you want might not give the performance you want, but both lifecycle cost and lifecycle carbon perspectives make facade replacement challenging if it's otherwise in good condition,' says BCO ESG group member and Arup associate director Stephen Hill. This is where he sees greatest potential tension between commercial viability and market expectation and whole-life and operational carbon – and a need for more considered responses. British Land's 2021 upgraded 1 Triton Square in London – where Arup worked on both the original and its refurbishment – included the removal, refurbishment and re-installation of 3,000m² of existing facades and could, believes Hill, be the first step towards a solution.

M&E is another area where thinking is evolving, informed by tools like the TM65 methodology, developed by CIBSE and consultant Introba. 'We're now using the product data to establish knowledge and rules of thumb that will help us understand the effect of MEP systems on a building's overall carbon impact,' says Louise Hamot, Introba's global lead for sustainability research. 'Conversations are starting about how much material in an M&E system can be retained,' adds Hill.

While understanding of operational and embodied carbon is improving, particularly through BRE's NABERS energy efficiency rating on the operational side and lifecycle analysis for embodied carbon, Hill says they are still too often considered separately. A balanced view, incorporating both, is needed for individual buildings and across portfolios, he says: 'Our intuitive response is to think about how much energy we're using day-to-day. But really we need to look at whole life carbon transition, not just operational carbon transition.'

Capital and carbon

Developer Grosvenor has pledged to reduce emissions by 90% by 2040 and has set a pathway to NZC for a portfolio spanning both London heritage assets and regional space. Executive director for development Anna Bond says a long perspective helps justify the capital investment of retrofit. 'We realised that looking at buildings on an individual basis for sustainability doesn't really work, because it's very difficult to argue that spending £300,000 on something gets you a return,' she explains. 'You need to look at the direction of travel. We believe sustainability will become more important to businesses over the next 10-15 years.'

Over a decade ago the company delivered the first BREEAM Outstanding retrofit of a listed building, 119 Ebury Street; now it is carrying out its first NZC office refurbishment at the 1980s-built Holbein Gardens in London. The project is the first to apply Grosvenor's Sustainable Development Brief – based on best practice from current certification schemes and Grosvenor's sustainability targets. 'The brief was about being as ambitious as possible – not box ticking,' stresses Bond. 'We could have knocked the building down and rebuilt it, but in this capital-constrained world – irrespective of carbon – that would only have got an incremental gain in terms of quality, compared with what we're actually able to do.'

The building had 20mm of cavity insulation, cold bridges and poorly-performing windows, but good slab-to-slab heights and a narrow plan gave volume and daylighting. 'Those are fundamental to retrofit as a starting point,' says Jonathan Allwood, director of project architect Barr Gazetas. The firm cast the net wide. 'Nothing was off the table,' he says. 'Once we defined the opportunities, it was about going through as rigorously as possible whether they were justifiable and appropriate.'

The most significant intervention sees the top floor replaced with two storeys constructed using a steel frame and cross-laminated timber slabs. In a circular trial, much of the steelwork was taken from a Grosvenor demolition project in nearby Bermondsey, cleaned, stored for some months and re-used. 'It is brilliant from an environmental perspective and works for us because we have good visibility on when it's coming out of a building and will be reused,' says Bond. But aside from the cost and time of certifying the quality and strength of reused steel, there are significant barriers, she adds: 'There isn't a UK database of people needing steel and it is phenomenally expensive to store'.

> 'We need to look at whole life carbon transition, not just operational carbon

The building's brick facade is being retained and its thermal performance upgraded, although its unappealing retro look prompted a refresh, with full-height glazing and a Juliet balcony introduced in two areas. There are many more sustainable features and RIBA work stages have been extended to allow time to develop evidence bases for decisions and increased design co-ordination, adding around four months, Allwood estimates. 'We were constantly running lifecycle carbon models to check the design decisions we were making were really the right thing to do,' he says.

And the result? Holbein Gardens was pre-let at a higher than anticipated rent, due partly, says the developer, to its sustainability. Upfront embodied carbon is set to achieve 300kg/CO_2e/m², exceeding Grosvenor's and the LETI target, operational energy consumption will be much reduced and occupier experience enhanced. 'When you put retrofit interventions on the table at options analysis stage, you suddenly start looking at the incremental benefit of spending so much more money on demolishing and doing a new build,' says Bond. 'As doing development becomes more expensive, it's forcing us to become more creative and mindful about the capital we're spending, which is good for sustainability.'

SOCRATES

Workplace specified: Black & White Building, London

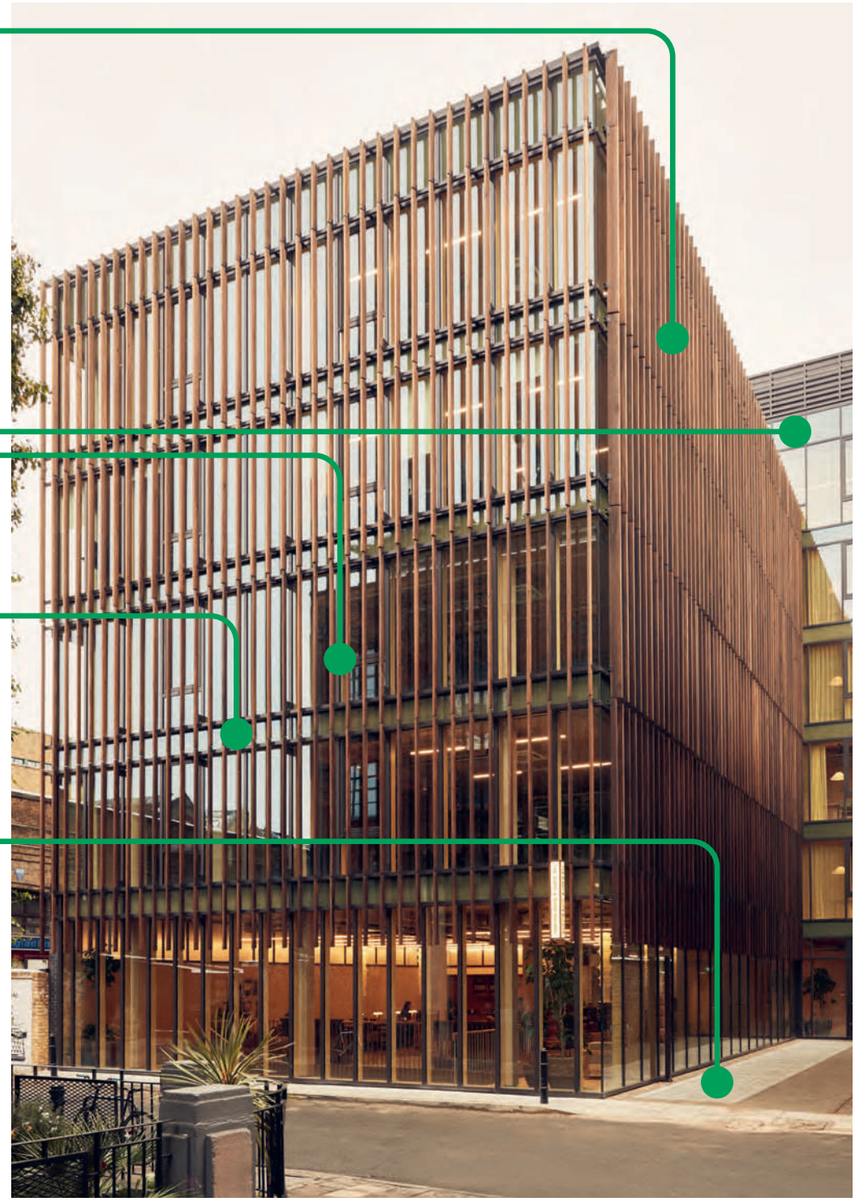
Waugh Thistleton explains its specification choices for a sustainable office building that put wellbeing and productivity high on the agenda

Timber fins
Lightweight fins at various depths provide solar shading to give inhabitants a thermally comfortable workplace. Thermally modified tulipwood (Liriodendron Tulipfera) FSC certified, 44mm thick timber fins, 100mm-250mm depth on folded aluminium carrier rails, PPC RAL 8019, Euroclass B.
americanhardwood.org/en

Curtain wall
Engineered spruce curtain wall system allows good light in and generous views. Raico Therm+ engineered spruce timber curtain wall system with PPC aluminium capping externally, RAL 8019, argon filled glass.
pacegrade.com/raico.de

CLT floors, walls, roofs
Floors, walls and roofs constructed in CLT, an innovative sustainable material chosen for its low embodied carbon and efficient construction methods.
European Whitewood Spruce Leno cross laminated timber, 140-280mm thick.
zueblin-timber.com

Clay pavers
Clay paved entrance courtyard welcomes users and draws them into the building. Vaandemortel olive light grey tumbled unsanded clay paver – 52x57x215mm
vandemoortel.co.uk



Gross internal floor area
4,480m²

Gross external floor area
4,906m²

Form of contract or procurement route
Design & build

Construction cost
£17.8m

Net internal floor area (base build)
£3628/m²

ARCHITECT'S STATEMENT
Andrew Waugh, director Waugh Thistleton

The Black & White Building in Shoreditch marries wellbeing and productivity with environmental and sustainability ambition. This boundary-pushing building has a fully engineered timber structure and sets a benchmark for sustainability.

Material optimisation was key from the outset and the design evolved from the idea of an 'architecture of sufficiency' with each component designed to be as efficient as possible and almost purely functional. A celebration of tectonics, the design is expressed through the constituent parts, avoiding excess or unnecessary flourishes. Its beauty stems from the inherent qualities of each layer and material without decoration.

The simplicity of this fully engineered timber office building belies its ground breaking innovation. The structure has 37% less embodied carbon than its equivalent in concrete and steel. Biogenic, regenerative materials have been prioritised in both construction and fit out, creating a welcoming and calming space that treads lightly on the environment.

It was designed for The Office Group, a provider of design-led workspaces, which operates more than 50 buildings in London, Leeds, Bristol, Berlin, Hamburg and Frankfurt. TOG's portfolio of workspaces serves over 20,000 members, including both individuals using flexible multi-workspace membership and organisations leasing complete offices and buildings.

It was a meeting of minds. TOG wanted a building that made a statement about who they are; a manifestation of the firm's commitment to sustainability. It was keen to avoid building with carbon intensive concrete and steel and approached us to realise this ambition. We ran with this, designing a building which reduces its carbon impact in construction, operation and at end of life: the structural elements have been bolted together to make a fully demountable building that can be reused or recycled.

Acoustic ceiling panelling
Seamless, decorative sound-absorbing finish, spray-applied to give communal areas superb acoustics.
SonaSpray Special – coarse, K-13, light grey, minimum thickness 25mm.
oscar-acoustics.co.uk

Low level wall finish
Tactile interior finishes pay homage to the raw aesthetic of the timber structure. Red sanded Viroc treated with a waterbased clear matt lacquer, chamfered edge, thickness 12mm, panel size 2600mm x 1250mm.
investwood.pt

LVL beams and columns
Precision-engineered prefabricated structural frame designed for disassembly.
Beech Baubuche laminated veneer lumber, GL75 (LL) Grade c70, 320mm-680mm thick.
pollmeier.com

Recycled paper kitchen surfaces
Long, communal surfaces unite teams for shared discussions, manufactured from recycled paper to be sustainable. Redstone, leathered finish, engineered paper with thermosetting resin kitchen counter tops.
richlite.com

Built in joinery
Interiors that complement the timber architecture, exploring a playful mix of warm textures and craft, make a comfortable and engaging environment in which to work and connect. Oak and ash solid timber joinery items, various sizes.
oakenwoods.com

Raised access floor
Recycled raised access floor panels maximise reuse of materials and products across the building.
RMF Eco range raised access floor, reused, 38mm thick, 600mmx600mm.
rmf-services.co.uk

Vinyl flooring
Robust sustainable vinyl flooring used for high trafficked areas.
Gerflor, Lino Art Start – Stratiatella 0092.
Gerflor.co.uk

JAKE CURTIS (2)

TEAM
Structural engineer Eckersley O'Callaghan
Structural frame specialist Hybrid Structures
Façade engineer Eckersley O'Callaghan
M&E consultant EEP
QS Gardiner & Theobald
Interior designer Daytrip Studio
Planning consultant DP9
Fire engineer Hoare Lea / Sweco
Acoustic consultant Paragon Acoustics / Sweco
Project manager Opera
CDM co-ordinator Sweco
Main contractor MidGroup / Parkeray

Rethink the sink for better performing kitchens

Sixty per cent of our time in the kitchen is spent at or around the sink, so paying more attention to how we design our ‘water hubs’ is crucial

Above The Blanco Unit: a clever combination of sink, taps, accessories and waste management for a creative kitchen. Seen here with Blanco’s new colours in a Soft White Silgranit® sink and opulent Satin Gold tap.

To find out more about Blanco’s full portfolio of products and services visit blanco.com.
Contact: Mark Craine, contracts manager
07909 682757
mark.craine@blanco.co.uk

The kitchen is the heart of the home and data from Mintel, 2021, reveals that 41 per cent of homeowners value their kitchen more now than they did before the Covid-19 pandemic hit.

Research shows that consumers spend around 60 per cent of their time in the kitchen at or near the sink and so designing to reflect that should be a top priority in the kitchen refit process.

Although the sink is an area that is often overlooked, this corner of the kitchen triangle is something that specialist German manufacturer Blanco is passionate about. The company supplies sinks, taps and organisational systems that work together to create a centralised kitchen ‘water hub’ for everything clients need to drink, clean and prepare food.

Blanco has been developing ideas to improve homeowners’ water hub experience for over 95 years, producing products and services that combine distinctive and elegant design with smart functionality. Central to this is its Blanco Unit – a selection of multi-functional premium products supplied in dedicated packs that make kitchen life easier.

Founded in 1925, Blanco is fast approaching its centenary. Over that time the firm has seen kitchen layouts, functionality, consumer use and the industry itself change, but one constant

Above Engineered by experts: Blanco sinks (here in new Volcano Grey), taps and organisation systems mean you have everything you need, all in one place.
Below Blanco’s new Volcano Grey colourway is available across its range of stylish Silgranit® sinks.

remains: the kitchen is still the centre of the home and a priority for consumers.

Blanco manufactures in Germany, and has subsidiaries in Europe, North America and the Asia-Pacific as well as a presence in more than 100 countries worldwide. This reach gives it a strong overview and understanding of changing global demands and trends.

The company is able to harness these insights to benefit its trade customers through a core range of products and smart new innovations.

With the post-pandemic increase in home working and more people cooking from scratch at home, greater amounts of time are being spent in the kitchen. Data shows that consumers have been investing in their kitchens through refits and updated layouts and features.

Creating a functional, aesthetic space should be a priority for any kitchen designer and Blanco is passionate about helping to make that a reality.

This year, the brand has added new on-trend colour harmonies to its range, further extending kitchen designers’ options when selecting colourways for a Blanco unit and offering ultimate planning flexibility.

These include striking metal finishes in Satin Gold and Black Matt, available across its portfolio of mixer taps, soap dispensers and sink components. Meanwhile, Soft White and Volcano Grey are newly available across its range of stylish Silgranit® sinks and bowls – a strong granite composite material patented by Blanco with a hygiene protective formula reducing bacterial growth by around 98% .

These extended options tie into the latest kitchen trends around warm neutrals, bold blacks and new metallics. Combine Volcano Grey and Matt Black for a modern or industrial style home or harmonise Soft White and Satin Gold for soft and light opulence with a metallic accent. ●

Lucy Cavendish College, Cambridge

RH Partnership's new Passivhaus dormitory block for the young college connects the existing and performs for the future

Words: Jan-Carlos Kucharek Photographs: Nick Guttridge

An informal collective of female professors and students, Cambridge University's Lucy Cavendish College was founded in 1965 as a graduate Collegiate Society. It began admitting female mature undergraduates in 1972, only becoming fully incorporated as a college in 1997. That initial informality was reflected in the campus itself, explains domestic bursar Christine Houghton, with the college originally working out of three Edwardian villas in private gardens on suburban land west of the city centre, all owned by St John's College. This 'tenant' condition resulted no change to the campus in the interim, but when the nascent college was bequeathed an adjacent villa and St John's then sold them the freehold of the others, development could begin in earnest.

This happened at pace; in 1989, the unremarkable Oldham Hall went up to define the east entrance. Then in 1993 the gardens between the original Strathaird House and College House were replaced by two new dorm blocks and Warburton Hall – the new dining hall and teaching

Above Running east west through the centre of the Lucy Cavendish College grounds, the new Passivhaus block aims to address the college's sustainability priorities, increase student comfort and connect disparate buildings on the site.

space – designed in of-its-time but still-charming vernacular by van Heyningen and Haward, with Freeland Rees Roberts completing the college library on the campus' southern edge in 2001. But a house located in the middle of the site stymied further development; even in its developed iteration, Lucy Cavendish remained characterised as discrete 'buildings in a garden' rather than a collegiate form.

Local firm RH Partnership's 3000m² new dorm block seeks to address that informality once and for all, as well as communicating the college's aim to have the most diverse intake of any Cambridge college. For, established to support one marginalised community – mature women – it has since ensured most of its intake is state-educated, has accepted undergraduates since 2020 and been co-educational since 2021, and wishes to attract more from disadvantaged or minority groups. But, says Houghton, it's not just about progressive attitudes on intake: 'Mixed gender is one thing, but diversifying is key to the college's future. Accessibility and expressing the college's commitment to sustainability are really important ideas for us,' she adds. Aware this would be a tall order for any architect, and after RH Partnership had submitted its proposal as part of a wider masterplan, the college decided that demolition of that intransigent Edwardian villa at the centre of the site was necessary to realise it.

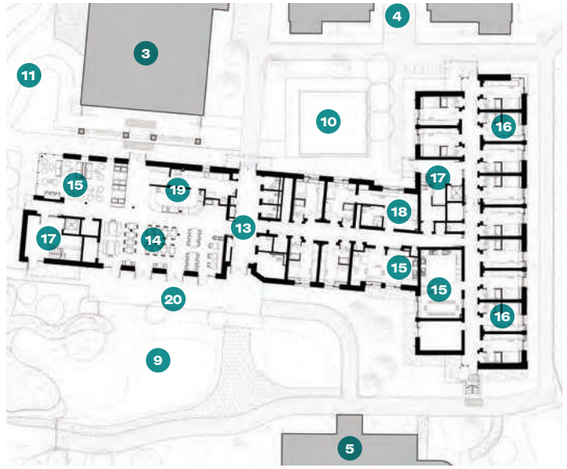
The £10.5 million, three and four-storey, cross-laminated timber Passivhaus building that now runs boldly through the centre of the site is as much about how it catalyses the campus as it is about expressing the aspirational agendas of the building's brief. With 72 ensuite bedrooms – some fully accessible – associated kitchen spaces and ground floor café, lounge and study spaces, the new T-shaped block means that 20% of the college's total student number of 800 can now be accommodated on site. Not only that, but the building seems to effortlessly connect Oldham Hall on the east side to Strathaird Lawn on the west, better framing the College and Library Lawns in the process. It also creates the new Garden Court on its north side, on what was formerly a dowdy and intrusive college car park. Movement across the college campus is now defined by a route that shifts by turns; expanding to address

Above The new block inserts itself between earlier developments – most notably vHH's 1990s dining hall on the right and the practice's student dorms on the left, creating new adjacencies on the college site.

some blocks across a square or lawn or compressing to a mere alley's width between them, creating not just spatial complexity but, critically, a connectivity that feels more collegiate in nature.

RHP initially felt challenged to manage the expectations of a client determined to ensure that its new campus building was as low embodied and operational energy as possible. 'Given that the college said it wanted a building that promoted student wellbeing as well as embracing tenets of sustainability, we obviously pushed to make it a Passivhaus building from the outset,' recalls practice director Kevin Myers. But with optimal versions of the typology based on reducing surface area 'we were aware that we would have to take care not to make the final form too block-like.' Myers recalls an early conversation with a city planner from the picture window of the library's eyrie-like upper reading room, where strong hints were dropped that flat roofs and banks of MVHR plant were a non-starter. Advice was duly heeded; from the outset Myers worked with sustainability consultant Max Fordham to ensure that occupant comfort and building performance were married into a complex and variegated form fitting of the conservation area in which the

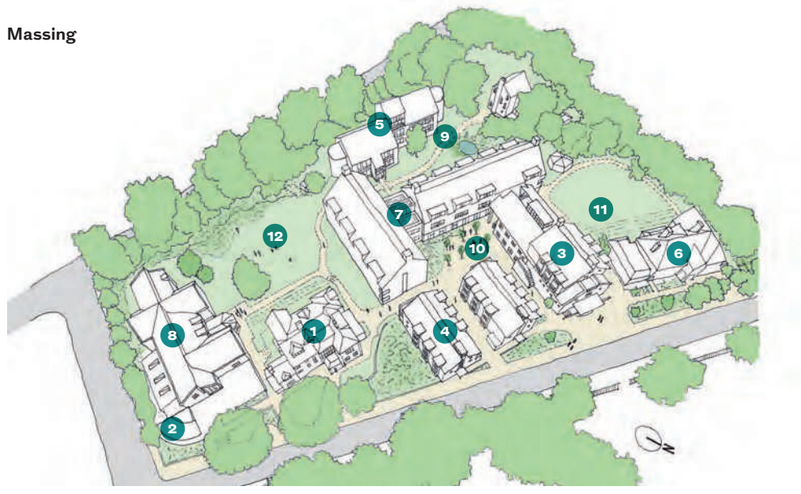
Ground floor



Upper floor

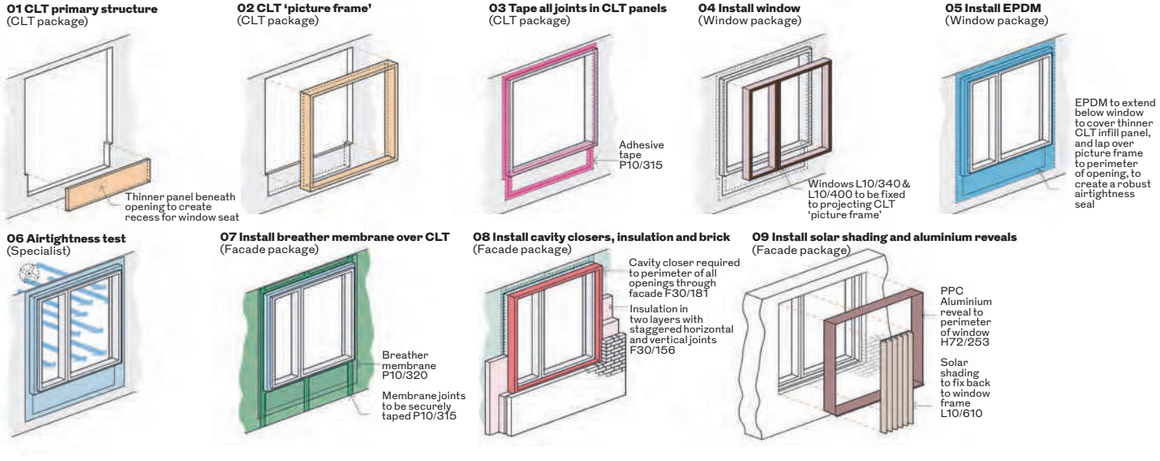
0 5 10 25m

Massing



1 College House
2 Porter's Lodge
3 vHH Warburton Hall (formal dining hall)
4 vHH dorm blocks
5 College library
6 Strathaird House
7 Passivhaus doem block
8 Oldham hall
9 Library Lawn
10 New Garden Court
11 Strathaird Lawn
12 College Lawn
13 North south connection
14 Cafe/ study area
15 Lounge
16 Standard ensuite bedroom
17 Core with lift
18 Accessible bedroom
19 Kitchen and servery
20 South terrace

Below Diagram showing RHP's methodology for creating the required airtightness for its standard window elements.



college sits. 'It meant creating a suitable level of detailing for the brick facade as well as having it respond to views from and to it,' says Myers. 'The college really loved the bench seat windows we proposed for student rooms but it was also about creating glimpses-through and feature corners for the building' – a design that responded reflexively to its context. The planners must have thought so too – the design was ultimately passed under Delegated Powers.

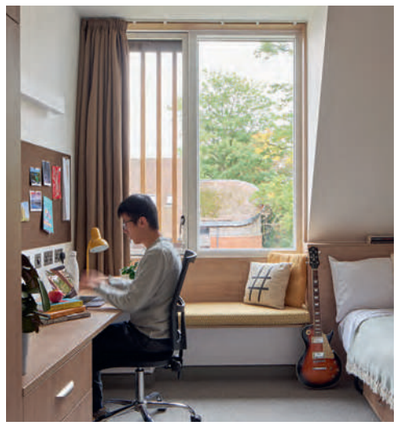
This approach is best evidenced on the north-west side where the language of warm, Forterra Bamford Blend red facing brick with lime mortar joints makes way for the openness of the ground floor café and lounge area. Here, the architect has foregone the CLT structural frame in favour of a steel cantilever to create a large, fully glazed corner looking straight onto the original Strathaird Lawn. RHP chose a full-height Schueco FWS 50 curtain walling system and matching AWS 90 triple-glazed external doors with thermally broken aluminium frames, offering up the glass not only to the historical view but also to its less problematic northerly aspect, preventing potential heat gain through the glazing. The system runs around to the south face, here as four sets of matching double doors set between brick piers that give easy access from the café lounge to a south terrace facing the library building.

Gables too have been defined by the massive, two-storey height pitched roofs that don't only articulate the Passivhaus 'box', but provide an opportunity to hide the plant at the external upper level. Windows – on the 'split' west gable and with dual aspects on north and south sides of the east wing – articulate them and bring light into bedroom corridors, rewarding curious students with wide views over the college site.

Large student room windows, which predominate on the facade, were performance specified as Idealcombi Futura+ composite windows under the Design & Build contract. Triple glazed, the tilt and turn units allow for requisite levels of ventilation while taking account of safety concerns. Myers adds that adjacent slimmer window units, behind

Above Standard bedroom window units are articulated differently as they move into the roof zone, creating difference despite homogeneity.
Above left Window units at the end of access corridors are dual aspect where the gable splits, giving broad views over the college site.

Top At ground level, multiple entrances make the building permeable for users across the site. Full height Schueco cladding on the north east corner gives views onto Strathaird Lawn.
Above Full height glazing complements standard fixed and side hung units in kitchens.
Below Fixed triple-glazed units are augmented with a side hung opening unit for natural ventilation. Vertical rods offer solar shading and security.



Consultants
Client Lucy Cavendish College, University of Cambridge
Architect RH Partnership
Passivhaus/sustainability consultant/building services/acoustician Max Fordham
Passivhaus certifier WARM Low Energy Building Practice
Civil and structural engineering Smith and Wallwork
Project manager/planning/heritage Consultancy Bidwells
Cost consultancy Richard Utting Associates
Landscape design Bidwells UDS
Transport consultancy B G Hall
Fire consultancy MLM
Ecologist MKA Ecology
Access consultancy Leonard Cheshire Homes

Suppliers
Contractor SDC Builders
CLT manufacturer KLH UK
M&E subcontractor Munro Building Services
Post-tender fire consultant Affinity Fire
Brickwork contractor Caxton Brickworks (part of SDC)
Roof and facade tiling contractor White Roofing
Passivhaus windows Ideal Combi
Passivhaus curtain walling Schueco
Brickwork Forterra 'Bamford Blend'
Roof tiling Weinerberger 'Alban Sussex Blend' clay tiles
Wall tile-hanging Keymer Traditional 'Wealden Red' handmade clay tiles

vertical circular oak rods, are fully inward-opening to optimise ventilation levels in warmer months and provide solar shading – as well as more visual granularity – to these repeating facade elements. However, tilt and turn units are large and require some heft to open and shut; for accessibility reasons alone, and with hindsight, Myers feels it would have been good to install some form of actuator in shared kitchen areas, given that these supplanted the side-hung versions originally specified.

Exterior details create added complexity to elevations. In a nod to the Edwardian architecture on site, at the first and second floor levels the architect went for clay wall-hung tiles for a subtle counterpoint to the brick. On the south elevation, this is augmented by a curving 'eyebrow' detail over first floor windows like some form of notional oriel, giving a component of solar shading to recessed windows on this south side. With the top level rooms set in the lower level of the massive pitched roof, there's an opportunity for more tweaking of otherwise repeating window elements, with the these units expressed as dormers clad on their sides and tops in standing seam red oxide sheet to match the vents that pop out of the upper level plant zone – where that roof pitch cunningly hides all the air source heat pumps and MVHR.

The new block, through its central placement, not only creates rooms with a multitude of enviable aspects to the Lucy Cavendish College's Strathaird, Library and College Lawns as well as its new Garden Court, but it also realises what Myers calls 'a community of buildings, separate but interconnected.' Delivering an overall U-value of 0.8W/m²K, RHP's sizeable Passivhaus addition, through its modern vernacular, seems happily embedded in its context, bringing both coherence and an aspirational component to the offer of this young college. Its directionality also intimates the aim of RHP's wider masterplan to activate areas to the east of the site. Houghton describes a possible future of new teaching and social spaces, perhaps an auditorium – all potential unlocked by the new design. And to resolve the underwhelming main east entrance, perhaps even a gatehouse; that most defining of Cambridge urban tropes, transposed to its suburban fringe, to generate that elusive collegiate form. ●

Costed

Supply and fix costs from Nicola Sharkey, UK insights and research lead, and James Garner, global head of data and insights and analytics at Gleeds

Research from the Energy Saving Trust states that 21% of the UK's total carbon emissions come from housing. More than 80% of homes that will be lived in by 2050 are already built, and most of these require upgrades to achieve required energy standards — there is a major retrofit challenge ahead.

Meanwhile, in the commercial sector, the government has set a target to incrementally raise the minimum energy efficiency standard to let, non-domestic, buildings to Energy Performance Certificate (EPC) rating B by 1 April 2030.

Retrofitting double glazing will play a key part in achieving net zero targets. It is also becoming more commonplace, particularly when targeting Passivhaus standards.

Key considerations during specification are thermal efficiency (U-value), solar gain (G-value) and air leakage (L value). Acoustic performance and aesthetics are also important.

The following rates include the supply and hang of doors and windows, complete with all frames, architrave, typical medium standard ironmongery set and appropriate finish.

Rates are based on the UK average and represent typical prices at 1Q 2023. Please note that prices can vary significantly depending on specifications

DOORS	
Softwood external doors	**£ each**
standard external softwood doors and hardwood frames; doors painted; including ironmongery	
matchboarded, framed, ledged & braced door, 838mmx1,981mm	650-800
flush door; cellular core; plywood faced; 838mm x 1,981mm	675-825
heavy duty solid flush door	
single leaf / single leaf; emergency fire exit	1,425-1,750 / 1,950-2,375
Steel external standard doors	**£ each**
single external steel door, including frame, ironmongery, powder coated finish	1,200-1,500
single external steel security door, including frame, ironmongery, powder coated finish	2,350-3,000
bullet resistant doorset: single, 1,000mm x 2,100mm steel doorset overclad with decorative ply veneer	5,000-6,000
Overhead doors	**£/m²**
single skin; manual / single skin; electric	225-275 / 375-450
electric operation standard lift, 42mm thick insulated sandwich panels	275-325
rapid lift fabric door, external, electric operation	1,100-1,350
Dock shelters	**£ each**
curtain mechanical shelter; extruded aluminium frame; 2 side curtains, one top curtain; double-layered high-quality polyester, coated on both sides	1,450-1,650
inflatable mechanical shelter; hot dipped galvanised surface treatment, polyester painted, top bag with polyester fabric panels; side bags with polyester fabric panels; colour from standard range	4,450-5,250
uPVC external doors	**£ each**
entrance doors; residential standard; PVCu frame; brass furniture (spyhole/security chain/letter plate/draught excluder/multipoint locking)	
overall 900 x 2,100mm half glazed	600-700
overall 900 x 2,100mm half glazed; WER A rated/coloured	600-725/675-800
Automatic glazed entrance doors	**£ each**
automatic revolving door; 2.1m diameter, 2.2m high; clear laminated glazing; 4nr wings; glazed curved walls	35,000-45,000
automatic sliding door; bi-parting opening 2m x 2.3m opening	10-15,000
Internal doors including supply and hang of doors, complete with frames, architrave, typical medium standard ironmongery set & appropriate finish	
Standard doors	**£ each**
cellular core; softwood inc architrave; aluminium ironmongery (latch only)	
single leaf; moulded panel; gloss paint finish	400-500
single leaf; Sapele veneered finish	450-550

Purpose-made doors	£ each
softwood panelled; softwood lining and architrave; aluminium ironmongery (latch only); brass or stainless ironmongery (latch only); painting and polishing	
double leaf; four panels; mouldings	1,250-1,500
hardwood panelled; hardwood lining and architrave; aluminium ironmongery (latch only); brass or stainless ironmongery (latch only); painting and polishing	
double leaf; four panels; mouldings	2,200-2,650
Fire doors	**£ each**
standard fire doors; cellular core; softwood lining; softwood architrave; aluminium ironmongery (lockable, self-closure); painting or polishing;	
single leaf; oak veneered; 30 min fire resistance; polished	600-800
double leaf; oak veneered; 60 min fire resistance; polished	1,700-2,100
Ironmongery sets	**£ each**
stainless steel ironmongery; euro locks; push plates; kick plates; signage; closures; standard sets	
office door; non locking; fire rated / fire escape door	375-475 / 2,000-2,400
standard bathroom door (unisex) / accessible toilet door	325-425 / 225-275
WINDOWS	
Softwood windows (U-value = 1.6 W/m²K)	**£/m²**
standard windows: painted; double glazed	
up to 1.50 m² / over 1.50 m², up to 3.20 m²	525-650 / 425-500
purpose made windows: painted; double glazed	
up to 1.50 m² / over 1.50 m²	750-900 / 650-825
Hardwood windows (U-value = 1.4 W/m²K)	**£/m²**
standard/purpose made; stained, double glazed	1,250-1,450/1,400-1,750
Steel windows (U-value = 1.6 W/m²K)	**£/m²**
standard/purpose made, double glazed; powder coated	750-900/975-1,200
uPVC windows	**£/m²**
windows; standard ironmongery; sills and factory glazed with low E 24mm double glazing	
WER A rating/Secured by Design accreditation	325-425 /325-400
extra for colour finish to uPVC	75-100
Composite aluminium/timber windows; U value = 1.5 W/m²K	**£/m²**
purpose made windows; stainless steel ironmongery	
fixed windows up to 1.50 m²	325-425
fixed windows over 1.50 m² up to 4.00 m²	300-375
outward opening pivot windows up to 1.50 m²	825-1,000
outward opening pivot windows over 1.50 m² up to 4.00 m²	350-450

Specified

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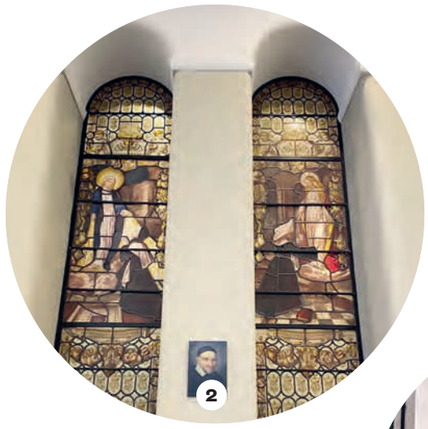
1


2

3


4

1
Aluminium windows and rooflights
Keylite

‘It can be a real drag, sometimes,’ coos Aurora, curling up on the sofa in £3500 cashmere joggers, ‘being rich an’ all.

‘I don’t want to come over moaning, but a 6,500ft² home on the Wentworth, with y’know, pool, cinema, private woodland… It can only really get you so far. It’s the bright, airy electric Keylite roof windows, and the ultra-slim floor to ceiling windows in the statement gables, that really keep me going, you know? I just come up here, buzz Philippe to bring us a Lambrini, and I’m in me own attic glamping pod.’

keyliteroofwindows.com

2
Heritage steel window services
ASWS

‘Father Vincent! We’ve moved!’

‘Yes, Louise, but we appear have moved only from the Passage Charity’s outside wall to inside it, alongside our two dear old huge windows. I heard the workmen saying they were beyond refurbishment, so the stained glass panels were restored and mounted in remanufactured steel windows by a specialist glazier with over 40 years of experience. Pity they couldn’t perk us up a bit while they were there.’

‘Yes, though it would have been a challenge considering we’ve been dead since 1660. But at least we’re not getting wet any more.’

aswws.co.uk

3
HG57 section bespoke rooflights
Howells

‘Oh darling, I’m so glad we took shelter in Barker’s of Northallerton’s 140-year old department store, with its four new rooflights!’

‘Yes, darling, me too. The self-supporting powder-coated medium duty glazing bars hold 28mm double glazed units, you know. They have 6mm self-cleaning clear solar control panes on the outside, a 16mm argon cavity, and are toughened 6mm inside too. And the automatically opening lights have rain and temperature sensors! Shall I tell you about U-values?’

‘Oh! They’ve got Barbour! Suddenly I need another raincoat. And I’m starting to see why Daphne left you.’

howellsglazing.co.uk

4
T60 thermally broken steel window
Crittall

‘Had the Estates Bursar not specified these modern thermally-broken Crittall T60 windows,’ said Miss Marple, ‘Douglas Bouclé’s Olympic-sized snow cannon would have frozen the entire student body to death in seconds! It was pure fortune that a sudden emergency at his fake beard warehouse distracted him long enough for them to escape. The low U-value of the glass, the powder-coated fully welded frames, and EN16727 security features, protected them – even as the 37mm thick laminated triple glazing blocked out the sound of his evil laughing. And he never for a moment suspected the windows were new!’

crittall-windows.co.uk

Reeded House, west London

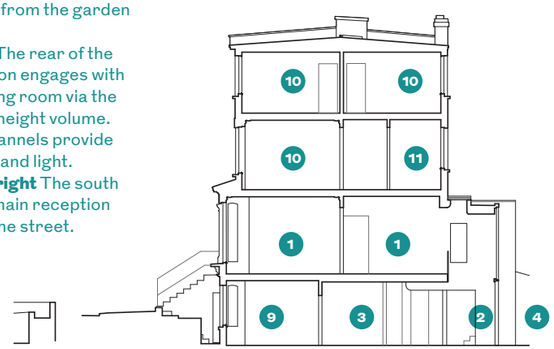
Reeded House is full of verticals, but the line between old and new, seen and hidden, is distinctly blurred

Words: Michèle Woodger
Photographs: Jim-Stephenson

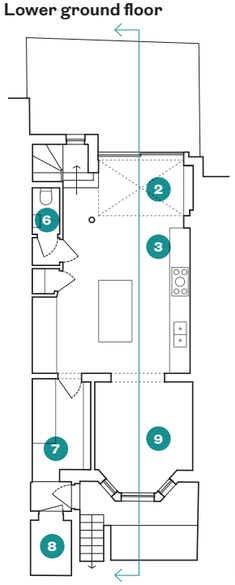
NICK DEARDEN

Left Looking into the kitchen from the garden space.
Above The rear of the reception engages with the dining room via the double height volume. Linit channels provide privacy and light.
Above right The south facing main reception facing the street.

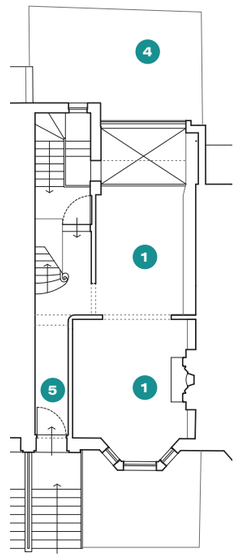
Long section



Lower ground floor



Raised ground floor



1 Reception
2 Dining room
3 Kitchen
4 Garden
5 Entrance hall
6 WC
7 Utility room
8 Plant room
9 Office
10 Bedroom
11 En suite dressing room

Looking for a project and a forever home, Dan and Eliott negotiated patiently for two years before acquiring this Victorian house in a west London terrace. Thankfully, they are highly design literate. The couple formulated a detailed brief, which explored how they wanted to live in the home but was not prescriptive about the rooms – an approach they gleaned from Terence Conran's book Plain, Simple, Useful. This sort of ideal client behaviour allowed the architect to approach the house as a whole, truly optimising its spaces.

Several key moves were necessary. First was to reintroduce coherence to the circulation route, entrance sequence and the hierarchy of spaces. The original house (which had been divided into flats but then lived in as single occupancy) needed rationalising into a more sociable and communicative layout. Next came maximising natural light, which was mainly achieved with the addition of the 'light-box' rear extension. (While the front of the house is south-facing, pre-existing incongruities had led to dark and isolated rooms.) Then there was a need to capitalise on reworking the failing roof by adding a pod-like fourth storey – an involved process as the house is in a conservation area. And finally, of course, they wanted privacy from Big Brother.

One does get the feeling of 'hiding in plain sight' in this house: be it from the impossibly-neatly-tucked-away downstairs WC (with its unexpectedly jazzy Barber Osgerby 'Puzzle' tiles), the wiring and television concealed in bespoke cabinetry, or the plant neatly stowed under the main entrance stairs. From the elegantly classical front facade of stripped back London-stock brickwork and bay windows, there is no indication that the back is so startlingly modern.

'We did want to balance modern and old,' explains Eliott. 'Keeping the Victorian charm, but bringing it to today's standards' – and this respectful approach applies throughout. In the living room, for instance, the marble fireplace is modernised with a slate insert. Original cornicing is painstakingly restored, but is colour-drenched in subtle greys from Paint and Paper Library to bring the room into 2023. Oversized chevroned Reeve oak flooring references the Victorian era but rejects its fussiness. A Nemo 'Potence' light helps bridge the gap between old and new – with its timeless, purist design by Charlotte Perriand the 1930s it falls squarely in the middle of the timeline.

On every floor there is also a sense of transitioning from old to new (and from domestic to commercial) as one moves from the front to the back of the home, via a gradation of spaces. Take the master bedroom, with its Victorian proportions and original detailing: an anteroom, separated by panelled wooden pocket doors, operates at a smaller scale, beyond which is the en-suite, partitioned by Crittal-style reeded glass doors. The sequence introduces a logical progression, allows light to be controlled, and enables one partner to get dressed without disturbing the other.

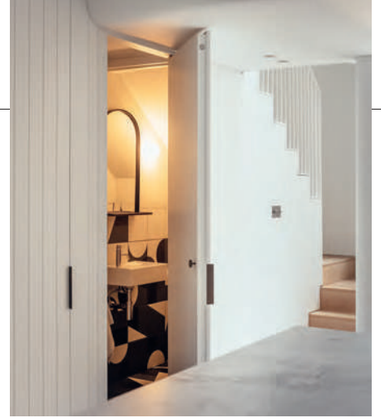
Likewise, the entrance sequence: in the entryway, chevroned 'Mews' tiles by Barber Osgerby direct us inward. From here we are beckoned towards the back of the house by a long, thin, vertical

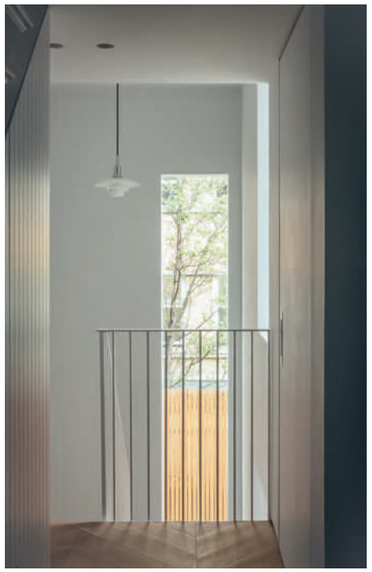
Every detail – down to the grouting in the bathrooms – is executed for longevity and durability

window illuminating the oak staircase down to the kitchen and the voluminous extension, where the Linit glass forms a large expanse above a Maxlight sliding door. The use of u-channel glass profiles was partly inspired by Carl Turner's Manser Medal-winning Slip House, as well as applications in council and commercial premises. Primarily, though, it was selected for its diaphanous translucency: 'It changes the opacity, the light changes throughout the day, you get this shimmering effect... when you are walking past it, shapes are obscured but you get a sense of something there,' explains McArthur.

Vertical lines in the reeded glass create a motif that has been applied to the entire house. The balcony overlooking the kitchen from the TV room above makes use of thin, vertical, metallic railings. The slats of the garden fence, whose width matches that of the narrow clay external tiles; the linearity of the wooden cabinetry; even the fluted drapery of the cotton voile curtains in the bay windows, which creates a diffuse, clean light – all play to this vertical line, elongating the narrow and shallow-planned home.

Every detail – down to the grouting in the bathrooms – is executed for longevity and durability, because, says Eliott, 'we were very much driven by practicality: how will we live, how will we use this space, how will we maintain it, does it damage, can you clean it?'. This can be seen in earnest in the kitchen, with its Bianco Quartzite surfaces and custom oak cabinetry (designed by Oliver Leech), which optimises storage space to a surprising degree. Even the colour palette, of navy and grey with black accents, is viewed as a canvas. 'With all the walls we have been very safe – sorry, "architectural",' joke the clients. This is indeed a 'plain, simple, useful' home, whose apparent simplicity stems from architectural complexity. 'Who knew Terence Conran would have some good ideas?' quips Eliott.





Credits
Client Daniel and Eliott Bhalla-Forman
Architect / interior design Oliver Leech Architects
Structural engineer Constant Structural Design
Main contractor Sutton Construction
Suppliers
Aluminium doors Maxlight
Reeded glazing Linit
Timber flooring Reevewood
Handrails/balustrade Metalworks London
Timber windows BoisRois
Reeded internal door West Leigh
Kitchen & joinery Weymont & Wylie
Lighting Astro Lighting
Sanitaryware Laufen, Crosswater
Tiles Parkside, Domus

Top The kitchen WC 'hides' beneath the stairs.
Above Upper level spaces visually engage with the rear garden.
Above right A picture window looks down over the dining volume. Light filters down via the curve of the plasterboard soffits.
Right The first floor main bedroom opens out to a dressing room and en suite bathroom beyond.

Specified

PiP specifieds are compiled from supplied company press releases

1
Pluriball ceramic tiles
Diesel Living with Iris Ceramica

Yeah, baby! I'm in the future!
Again! And I dig these groovy
bubble tiles! Thirty years in
cryostasis, and I completely
missed the bubble wrap
sensation! Never popped my
bubble-popping cherry – if
you'll pardon the phrase...
Good job Diesel Living
have done them in durable
monoculture red-body
semigrès ceramic with
psychedelic gold and platinum
glazes! They wouldn't stand a
chance if I, the most poptastic
spy in British history, got
a-poppin on these classic
plastic poppers! Diesel
Living, baby! With added Iris
Ceramica! These 8.5mm thick
20x20 tiles are driving me
dotty! Oh behave!
irisceramica.com/
diesel-living

2
N-SIDE ceramic stone
Laminam

Midway upon the journey of
our life
I found myself within a
bathroom dark
And all about were Nero Greco
Lucidato slabs
I thought myself in Heaven,
for Our God glowed down
in Holy Majesty. I searched for
Beatrice in the stalls,
but where my love had gone
remained a mystery.
A stable, safe ceramic stone,
Virgil announced, it comes
in colours five, and Naturale,
here, and Fiammato finishes –
flame-patterned like the Hell
from which we'd come.
And so I sought relief in these
facilities,
a mould-repelling Paradiso of
a Purgatory!
– Dante Alighieri, 'Divina
Balneo', 1297
laminam.com/gbr/en

3
Happy D.2 Plus basin and base unit
Duravit

'Hi babe! Not great. He's
a bit weird. Robin. Robin
Goodfellow. No? His friends
call him Puck?
'Well anyway, he brought
me here for a "forest bathing"
break but he's shinned up a
tree and started throwing
acorns at me. Thank God
for the place we're staying!
Tiny house. Great bathroom!
Beautiful ceramic basin on
a height-adjustable stand,
which is handy, because he's
tiny too! And the drawer
underneath has a nice padded
seat, so I'm in here hiding.
Best thing is there's a big
backlit heated mirror so I can
see him coming.'
duravit.co.uk

4
Niva Bath radiator
Vasco

Nigel. You are really getting
up my nose. Yes, your new
Niva Bath radiator is sleek in
steel, and yes, it only takes
four litres of water! And
yes! The 325mm shelf depth
means you don't have to look
at Lydia's gluey leg wax tubs
any more – but Nigel! We all
have our bathroom secrets,
and thankfully tweezers and
Savlon are pretty easy to stick
behind the radiator. You are
utterly up my nose with your
shirtwarming tales, Nigel.
Just like this big curly black
prong of mine that keeps
regrowing.
vasco.eu/en

Making our infrastructure better

The infrastructure involved in moving people and goods from place to place is evolving, from our modes of transport to the warehousing and stations that punctuate journeys. What are the latest trends?

Train travel defined the infrastructural landscape of the 19th century. In the 20th century, our cities were moulded in subjugation to the car. In the 21st century, we urgently need healthier, cleaner ways to navigate our urban environments, as climate change and social pressures cloud the horizons beyond. PiP's latest webinar on Transport, Infrastructure and Warehouse Architecture looks at how architects are working to reclaim our cities for the people that use them.

So could railway architecture return as an exemplar of good design with civic value? Following an introduction by PiP editor Jan Carlos Kucharek, the first project suggests it could.

With Network Rail needing to replace the UK's aging infrastructure with elegant, recognisable and coherent stations, principal architect Frank Anatole introduces HubStation, a benchmark concept for a small-medium station that integrates sustainability goals – such as becoming carbon neutral by 2050 – with a strategic vision to promote community empowerment and connectivity.

HubStation builds only what is needed, makes it adaptable, reusable and accessible, and gives back to the public realm. It began four years ago with stakeholder consultations, including the RIBA competition 'Rethinking Small Stations'. 7N Architects won with its clean, open, simple concept – a kit of mainly CLT modular parts that, thanks to a PV canopy, is sustainable, configurable to different scales, easy to install and cost effective.

HubStation has great potential. 'We are trying to create a benchmark design for stations that are fit for the future', says Anatole. 'It is vital to invest in social and green infrastructure. It will aid in the recovery from our current instability.'

NETWORK RAIL

Above Visualisation of stacked units at Haworth Tompkins' Industria Centre in Barking, London. **Left** Network Rail's Hubstations use tailored kit elements to create bespoke forms for different geographical sites. **Opposite** Moxon's Esperance Bridge at Coal Drops Yard boosts connectivity with a nod to craft and heritage.

Noise reduction

Most industrial and transport settings however still rely on concrete and steel, whose hard surfaces often reverberate noisily. Ben Hancock of Oscar Acoustics, specialist in spray applied architectural acoustic treatments, highlights the HSE implications of poor noise attenuation in 'Loud and clear: the dangers of noise in industrial spaces'. Such environments make stressful workplaces, particularly for those with hearing impairment, leading to poor health outcomes.

Acoustic sprays can be applied easily and affordably to nearly every finish, however. SonaSpray, made from recycled paper, is the only acoustic spray safe for use over cementitious fire sprays and to be allowed within 50mm of intumescent steel coatings.

Next, Hugo Braddick, associate director at Haworth Tompkins, introduces the Industria Centre in Barking, a new typology of a stacked industrial unit. For a whole range of new industries – including ecommerce logistics hubs, data centres, dark kitchens, urban farming, artisanal and wholesale food, EV fleet charging hubs and microbreweries – industrial space is critical in delivering the services that make modern urban life possible. But how to optimise it?

Industria shows that a multi-level industrial estate can be viable. It spans two wings of light industrial units, stacked across three levels of deck, served by a helical vehicle ramp for vans and small vehicles. A goods lift moves HGV deliveries from the ground floor up the building. Three cladding types provide interest, fire safety and insulation: at ground level is a panellised precast concrete facade system with a pebble appearance; above this is a simple composite black metal facade whose tongue and grooved joints make it fast to install; and more playful deck-facing facades have a coloured corrugated profile – again, slim and efficient.

HAWORTH TOMPKINS

SIMON KENNEDY

Throughout, the intention was to create a high quality, flexible, long-lasting building. 'It is a real stretch for the client in terms of viability and risk, and there is a great deal of scepticism in the industry to see if this will work,' says Braddick. 'We are pushing the envelope very hard.' Despite extensive use of concrete and steel (due to loadbearing requirements) the building is achieving BREEAM Excellent, a positive start for a busy building.

Fast-track construction

Many industrial and transportation buildings need speedy construction, as downtime hits traffic and income. Tim Boarer, head of specification at Mapei, illustrates his company's range of product types for fast-tracked projects. Briskly walking us through station concourses, corridors, industrial units and underground tube platforms, Boarer unpeels layer by layer the materials making up a durable and sustainable system: separating membranes, fast drying screeds, high strength tile adhesives, abrasion resistant tile grout, sub floor preparations, primers, sealants, reinforcing meshes, and epoxy resins. Think of these diligent hidden materials next time you pass through Birmingham New Street or London Victoria.

> Many industrial and transportation buildings need speedy construction as downtime hits traffic and income

Ezra Groskin, director at Moxon Architects, moves above ground to unveil Esperance Bridge at Coal Drops Yard, King's Cross. Because of its proximity to other bridges, Esperance 'needed to punch above its weight', explains Groskin. 'It is not just connecting A to B, but increasing porosity over the canal and providing more options for people [using] the shops and restaurants, and anticipating the high density housing to the north.'

King's Cross was historically a very well connected area with the rail network and Regents Canal making it the perfect site for industry and transport. Yet as that died off during the 20th century, the site was hard to redevelop, with the rail corridors and water creating a divide. Ongoing development reconciles and celebrates much of this post-industrial heritage and Esperance Bridge is another attempt to integrate people into the urban environment while celebrating the historic landscape; Camden in fact pushed to make the bridge narrower to be more comfortable at the pedestrian scale.

'Rather than a singular gesture, the end result was about repeated elements and making the most of a highly crafted system of units,' says Groskin, 'That idea of homing in on elements, and the craft and finish, sits well within the historic context.' The bridge, with its flamboyant red colour, completes the urban theatre by forming a side balcony to the gap steps leading down to the canal. Despite its use of steel, the carbon assessment achieves 'B'. The bridge succeeds in making a bold statement while offering an intimacy for the pedestrian within a varied and multi-layered urban setting.

Cars tucked away

Finally, placing pedestrians front and centre may not seem a primary goal for a car parking system. But Andrew Smith, managing director of WÖHR Parking Systems, discusses how automated parking systems can achieve just that by reducing the space required to house cars and creating efficient means to store them, improving pedestrian experiences.

'The space that cars take is a big problem' Smith explains. 'To give people back the urban realm, and make space for human beings, we need to be cleverer about how we use the car, and make our transport nodes more efficient.' Changing markets and greater sustainability awareness has driven WÖHR to develop ever more space and energy-saving systems. Compared to a conventional car park, an automated system can save 52% in materials and resources. Through the use of fobs and cameras integrating with the security systems of buildings, such systems can make for a seamless and stress free experience. Positively, the company also now provides large scale automated bicycle storage, driven by ever-growing demand. This surely indicates the future direction of travel. ●

Stick with sustainable goals

Even as economic pressures threaten the green agenda, architects have a duty to do their best on sustainability

MATT SMITH

'With the government committed to stimulating the economy,' warned PiP editor Jan Carlos Kucharek, as he opened RIBAJ's 'Design for Sustainability' webinar in October, 'they'll be doing so by relaxing legislation, perhaps removing green levies, scaling back on green infrastructure and instead committing to fracking.' Prescient words, since soon afterwards, Liz Truss' chaotically over-stimulated administration collapsed, with the fracking debate, ironically, contributing to its demolition.

These concerns remain urgent and relevant; outside Westminster's corridors the climate emergency rages on.

In an industry that contributes so significantly to the problem, how are architects to achieve the requirements of the RIBA's 2030 Climate Challenge, or the government's own 2050 net zero targets, when potentially faced with self-sabotaging government policies as well?

This webinar brings together thinking and projects that are doing their bit to address the climate emergency in spite of such challenges.

> Knowing the outcomes will be studied leads to greater accountability for architectural quality and performance

Judit Kimpian, architect and environmental policy expert, and Hattie Hartman, authors of Energy | People | Buildings, begin by discussing Energy/People/Buildings – Making Sustainable Architecture Work. Their book tackles the complexities of building performance, making it relevant to day-to-day practice.

Developing a participatory, feedback driven, 'UX design' approach entails capturing project aims, tracking them during design, following through on procurement, checking that the building meets specifications and is living up to expectations in use, and then sharing this information to iteratively improve the process each time. 'Knowing that the outcomes will be studied leads to greater accountability for architectural quality and performance,' Kimpian argues. And documenting building performance gives architects valuable evidence of the long term impacts of design decisions.

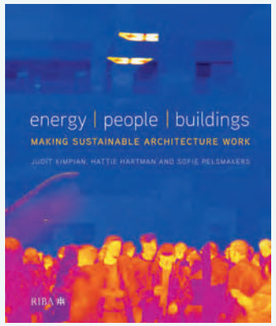
'When we work with participatory processes, we can design for the needs of building users, their life pressures, sensory preferences, family structures, work patterns,' says Kimpian. 'That means we don't just build buildings that meet regulations, but ones that are inherently more resilient for changes in use, occupancy patterns, climate and weather.'

Hartman elaborates further with case studies such as JTP's offices in Wapping, Haworth Tomkins' Everyman Theatre (2014) and Architype's Enterprise Centre at the University of East Anglia (2015), one of the greenest buildings in Europe. 'This was completed seven years ago' concludes Hartman, 'which means it was conceived and designed a decade ago. Why don't we have more ambitious buildings like this? They are few and far between.'

Carbon savings

Mark Hill, of sponsor Rockwool, discusses the extensive use of the rock-based insulation product in the retrofit of Wilmcote House, an 11-storey 1960s local authority building in Portsmouth, spread across three linked volumes. Rockwool is a carbon negative company, with demonstrably strong commitment to ESG concerns. 'Building insulation sold in 2021 will save 100 times the carbon emitted in its production,' claims Hill.

The Wilmcote House retrofit, by ECD Architects, was, at the time, the largest EnerPHIT project in the world to be undertaken with the residents of its 100 flats still in situ. The brief was to cut heating demand by 90%, address damp, and add a minimum 30 year extension to the estate's lifetime. Rockwool was inserted into stainless steel frames which wrapped the whole building, improving airtightness, thermal performance and acoustic comfort; the Rockpanel system was also used on the roof and facades.



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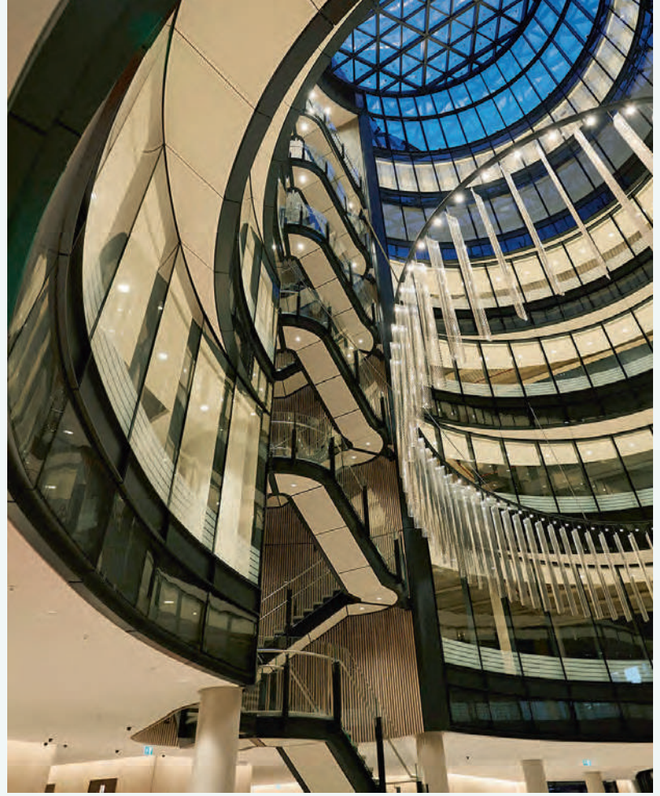


JANIE AIREY

Left Hopkins Architects' 2022 Stirling-Prize-nominated 100 Liverpool Street office refurb has transformed both the space and performance of the original building. **Opposite** Wuduhus by Mole Architects – a high performing, low-energy Fenland home.

Since completion, Rockwool,with LSE and the University of Southampton has been conducting post-occupancy evaluations to monitor effects on wellbeing.

Low energy

Next, Ian Bramwell, director at Mole Architects, introduces Wuduhus (Anglo Saxon for wooden house) a low-energy Fenland home. The client was seeking a future-proofed and energy efficient home, adamant not to fritter her pension on fuel.

Advantageously, the client had already engaged timber frame contractor Beattie Passive, Mole's previous collaborators, enabling the designs to be tailored to construction requirements. The architect used PHPP software but did not attempt full Passivhaus accreditation due to budget; for the client, accreditation was secondary to actual performance. Passivhaus accredited materials also carry a cost premium – Passivhaus certified windows, for instance, despite having similar performance to those used here, were £6000 more expensive.

In terms of design, the house is two-storey (for a lower heat loss form factor), with a butterfly roof and timber-clad facade inspired by local agricultural bushels. The plot's orientation was challenging – nearby bungalows limited the size and positioning of windows on the south side and hampered the maximisation of solar gain. However, that does have the benefit of preventing overheating, and the roof's overhang provides necessary shading. This successful project has helped the architect develop a simple method of explaining Passivhaus principles in visual form to bring future clients on board, and for the client – especially at times such as these – the reduced energy bills (also thanks to PVs on the roof) have been significant.

From the Fens to London's Finsbury Circus: Chris Bannister, principal of Hopkins Architects, shares lessons from the refurbishment of 100 Liverpool Street. The former UBS office, which was immediately recognisable for its ugliness, has been transformed into a high performing building for similarly high performing City workers. The building achieved BREEAM Outstanding, and, in terms of embodied carbon, its 389kg CO_2e/m^2 performs well against the RIBA 2030 challenge target of 500kg CO_2e/m^2.

The new building provides parking for 650 bicycles, meets 40% of its water demand from greywater and rainwater harvesting, and 100% of its electricity provision from renewable sources.

Architectural challenges included St Paul's height restrictions, direct proximity to an entrance to Liverpool Street Station and a row of retail at ground level belonging to Network Rail. Excellent records kept by the 1980s construction team, made retaining and refurbishing feasible: engineers added three levels and increased the area from 33,000 to 48,000m² reinforcing rather than removing foundations where needed.

Context

The 1980s building was notable for its heavy facade and mannered round corners with bronzed glass. It had deep plan dealer floors, the cores impeded circulation and the atria were pushed close to the facade, making the centre dark and unconnected to the outside. In the new iteration, the atrium is in the middle, and a new curved facade wraps around the building, stepping back at the upper levels to respond to the views. On each floor is a landscaped terrace garden.

While, as one webinar viewer says, it seems contradictory to the sustainability agenda to view a 30-year old building as 'tired', the project's context is part of a wider £1.5 billion redevelopment of the whole estate by British Land. 100 Liverpool Street is a new gateway to Broadgate responding to increased demand for retail and entertainment in the area.

These presentations indicate what can be done when client and architect are ethically aligned on sustainability, even when budget constraints or commercial agendas threaten to eclipse these goals. 'If there is anything optimistic to take from it,' our host reassures us, 'you have to imagine that at times when everything seems out of control, the exercise of personal responsibility remains your only, but powerful, recourse'.

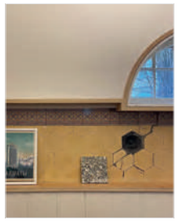
Sign up

Alex Blundell, project architect at Sanya Polescuk Architects reveals three of its favourite products

EMANUELIS STASAITIS

Lime render

We love a bit of texture to act as a foil to the ubiquitous smooth plaster – to throw a few shadows over, to blur the notion of inside and out and create a healthy and joyous environment. Not only does lime naturally absorb and release moisture, helping balance living environments during cooking or the British weather, but its long-term aging process absorbs nearly as much carbon as its manufacture releases. A beautiful and active environmental moderator, combined with natural insulation it creates a vapour-open and flexible skin to warm your home naturally.



POLESCUKARCHITECTS

Woodfibre insulation boards from Steico

We expressed the texture of this insulation for all to see in our studio, with breathable paint on the fibrous surface showing the joints and thermal fixings. The natural buffering capacity of this material reduces the risk of condensation, essential here as it allowed the original tiled band of the Victorian stable to be displayed un-insulated. It comes tongue and grooved, avoiding fiddly cuts or taping to form the entirety of the wall treatment. It locks in carbon, showing our green aspirations to clients and builders alike.

EMANUELIS STASAITIS

FastClad brick slips

We've worked with FastClad on a number of projects with spectacular results. We often work in a conservation context, with brick a key requirement. To add gravity we made this project appear to be carved wholly out of brick. FastClad picks up bricks from the site and cuts them to obtain two faces from each, returning with panelised sections to be screwfixed to the substrate. At a third of the weight and twice the yield of brick, they reduce environmental impact and lighten construction. This look-no-hands approach made the flat roof float above a glass clerestory and gave the ceiling warmth, texture and drama.

Read up

RIBAJ editor Jan-Carlos Kucharek flicks through the latest tech titles. Buy at ribabooks.com

Carbon: A Field Manual for Building Designers

Matti Kuittinen, Alan Organschi & Andrew Ruff eds. Wiley. HB 272pp £47.50

If you sometimes find it hard to visualise carbon and its place in the ecosystem of the planet, look at the opening spread of this book with its sectional diagram of the earth's crust while placing carbon-based matter on a graphic grid of carbon per tonne. Its explanatory tone runs like a seam through this book; copiously illustrated in black and white and on a thin, uncoated paper that intimates the authors' awareness of its own carbon footprint. It's worth it alone just for Chapter 3, 'Case Studies in Decarbonisation'.

Drawing Attention: Architecture in the Age of Social Media

Hamza Shaikh ed. RIBA Publishing. PB 230pp £30

Shaikh, a prominent architectural influencer with his Two Worlds Design podcast, clearly knows a thing or two about the subject and has written or commissioned experts for this book. Just as engagingly, he intersperses the essays with 18 Drawing Profiles, where architects go through tricks and tips of their drawing processes step by step, offering valuable insights for students and professionals alike. There's barely a page without a drawing; understandable for a book about architects' love affair with the art of representation.

Holz Bauten/Timber Buildings

Sandra Hofmeister ed. Edition Detail. HB 350pp £56

In standard Teutonic fashion, Detail's latest book on the craft of building in timber is rigorous and thorough in its showcasing of projects, not only in photographs but with large details of key junctions, which are all meticulously annotated. It runs through 30 global projects, classified by size, and offers a wonderful overview of the modern potential of timber at all scales. It's sobering that only two UK projects – Maggie's Centre Oldham by dRMM and the Vitsoe factory in Leamington by Waugh Thistleton – make the list, but the overall takeaway is that the use of timber has never been more exciting or more necessary.

Editor-in-chief Eleanor Young
Editor Jan-Carlos Kucharek
Design Richard Krzyzak
Sub editor Alysoun Coles
Publishing director Helen Castle

Telephone +44 (0)20 7307 5355
firstname.surname@riba.org

Head of sponsorship and sales
Richard Tomlin +44 (0) 20 7496 8329
Account manager, London & South
John Ward +44 (0) 7741 265 696
Account manager, Midlands & North
Sunil Shah +44 (0) 7501 466 640
Advertising and digital support
Barbara Tognini

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01993 833155
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