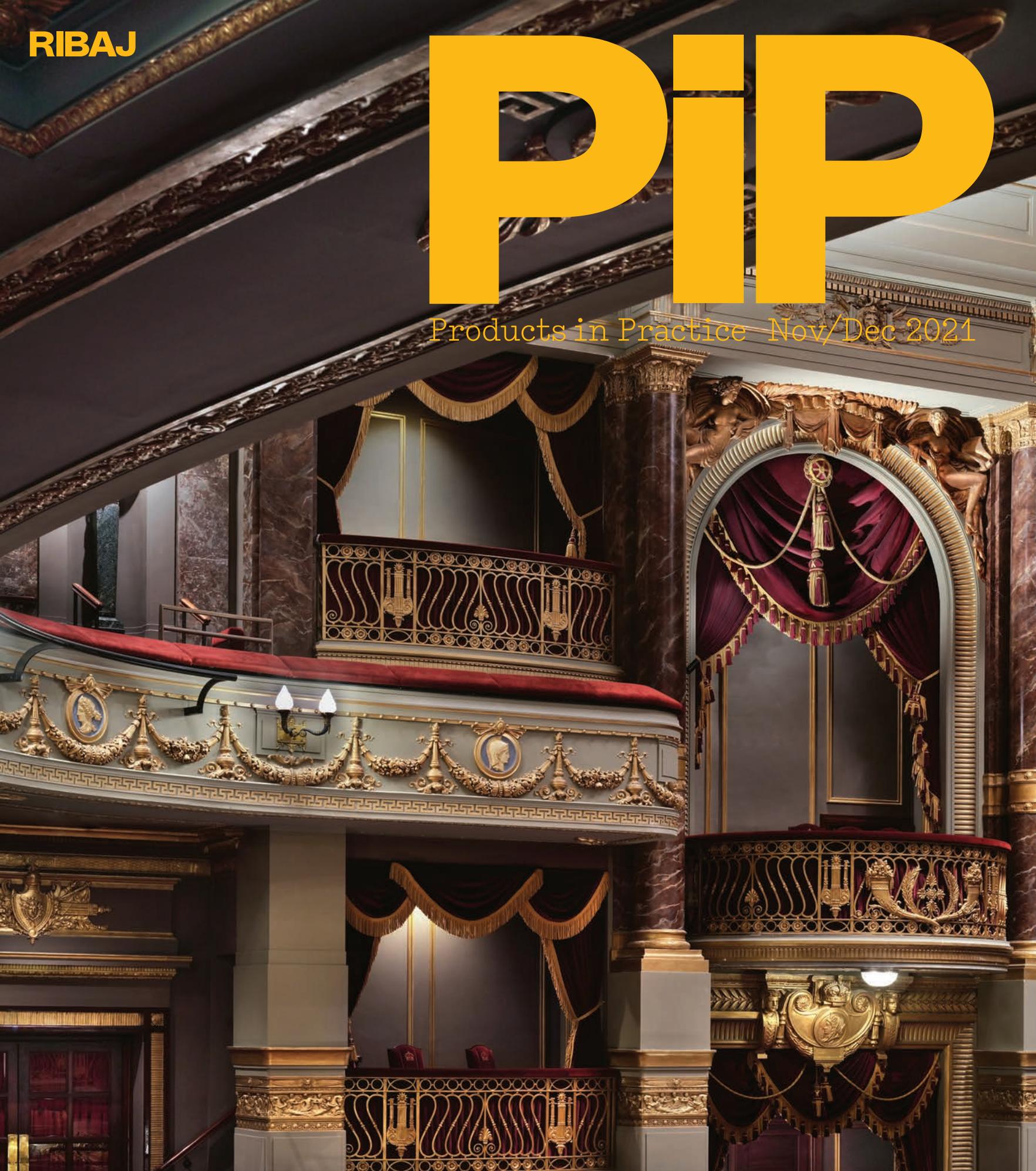


PIP

Products in Practice Nov/Dec 2021



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‘It’s all just a little bit...



...of history repeating...’ Shirley Bassey belted out sagely in the 1997 Propellerheads track, and judging by recent goings-on in global energy markets, it seems she’s right. With the wholesale price of gas spiralling and the domestic gas price cap lifted, it’s not just energy-intensive business feeling the pinch. It all calls to mind the OPEC oil crisis of 1973 – when barrel prices quadrupled overnight – but which drove game-changing energy saving and generation initiatives, everything from a ‘Department of Energy’ to radical efficiencies in engine design,

biofuels and commercial windpower. Big stuff. And you’d like to think we’re wiser now. Climate change is accepted by all but the most hardened deniers and is the reason for Glasgow’s COP26 conference, but the question is how to act on it. Newbuild aside, retrofitting our existing housing stock remains one of the UK’s biggest challenges, but this conflates several issues. Insulate Britain’s tactics might be a thorn in the side of anyone within the M25, but the group’s belligerence is driven by the failed Green Deal and current government ECO schemes

seemingly carbon cutting at a glacial pace. But as we talk about getting insulation on buildings, so much still needs to come off. The cladding deemed unsafe after the Grenfell fire picks up on the fact that in a building industry driven by maximising sites for speculation, the bigger your net area, the bigger the profit. As long as that’s the case and with PIR insulation giving best efficiency in thinnest section, we’ll carry on using hydrocarbon products to reduce hydrocarbon use: history repeating indeed. ● Jan-Carlos Kucharek, editor



More online...

The system intended for Africa will use liquid waste to create electricity and clean water, with fertiliser as a byproduct
Stephen Cousins discovers that human urine has some unexpectedly valuable uses: ribaj.com/powerd-by-pee



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PiP’s on Pinterest! See the latest products on our Pinterest feed: pinterest.co.uk/productsinpractice



Home working with Jaime Hayon’s Mesamachine for Benchmark



Beams heated towel radiator for Vasco



Italian-inspired seating: The Bergamo sofa from BoConcept



Super-large Synesthesia marble effect slabs from LEA Ceramiche

Cover image: Theatre Royal, Drury Lane, London. Photograph: Philip Vile

Compendium

Low iron

Our disturbing journey last year into the unknown is perhaps reflected in the theme of Bruges' Art Triennial 2021: TraumA. Belgian duo Gijs Van Vaerenbergh's public space intervention, Colonnade, proves as challenging as anything it's done before. Set on the edge of Baron Ruzette Park in the town's medieval centre, the sculpture is a spatial field of 100 slanted and criss-crossed columns, which seems to defy anyone making their way into it. Resembling the civic quality of a temple, yet instantaneously subverting it, PiP has yet to find out quite what goes on inside; though the press release intriguingly suggests 'the solid image dissolves, the context disappears, and all points of reference vanish'. Quite a metaphor for the coming post-pandemic age.



JOHNNY UMANS

John by Tom

Given how prolific he's been in every other room, it was only a matter of time before furniture and lighting designer Tom Dixon made it to the toilet. In collaboration with bathroom brand Vitra, Liquid is his first ever bathroom range incorporating sanitaryware, furniture, taps, tiles, shower systems, and accessories – designed to work together or as standalone pieces. Dixon claims a breadth of inspiration, notably Jeff Koons and his Balloon Dog and Claes Oldenburg, but also Victorian bathroom design. 'I like their feeling of permanence, their big chunky taps and fat tubes,' he says. Most curious perhaps is his ceramic stool – in what seems an exercise in exquisite inutility.



MARISTOMBA



CHESTERONG

Make that a double

Anyone old enough to remember James Mason as Captain Nemo in the 1954 sci-fi movie 20,000 Leagues Under the Sea might feel at home in the Four Seasons Hong Kong's new Argo bar, designed by studio AB Concept. The film, a version of the Jules Verne classic, seems to be an inspiration, with the cocktail bar overlooking Victoria Harbour, fitted out like a dead ringer of Nemo's steampunk submarine, Nautilus. The pièce de résistance is the 136 faux shagreen cylinders, 72 of which rotate to create functional – and fun! – bottle storage for the bar.

Birching in Ealing

Architect Fletcher Crane has been doing its bit to disturb suburbia with its recently completed Tree House in Ealing, a small family home built in the middle of a terrace, on the site of a former garage. A simple exterior of grey brick, black timber and anthracite metalwork is reflected in its split-level interior, with bespoke ash joinery, terrazzo tiles and delicate metal balustrades. Complementing all this are Gira's Esprit Linoleum-Plywood switches. Part of the 'Design Line' range finished in birch wood, they also make it easy to power-up to a smart home system – just as soon as the shocked neighbours have calmed down.



LORENZO ZANDRI



Fifty rings

Established in 1971, this year marks the 50th anniversary of the annual Wood Awards, a not-for-profit competition recognising good design in timber in both architecture and furniture. The shortlist of 19 construction projects and 11 product designs will be on display at London's Building Centre until 3 December. There's a great breath of projects in the architecture category, most of which have graced the pages of the RIBA J over the last year. One that got away however was SNUG Homes' 44m², one-bed, one-person, two-storey, four volume home, which is offsite, modular and claims to be net zero carbon. And quick too – it was all lifted onto the plot in two days.



TF BENNETT/TOM GREEN PHOTOGRAPHY

Listen up!

Oscar Acoustics' SonaSpray K-13 might be all over the ceilings of tp Bennett's Herbal House office re-fit (above), but the acoustic specialist's latest survey implies that the acoustic spec central London office refit might be the exception rather than the norm. Asking over 200 architects and specifiers on office wellbeing, 42% said clients weren't interested in end-user health, 67% saw budgets as the biggest challenge to better workplace acoustics and a mere 9% said acoustic design was given the attention it deserved. How the figures pan out with social distancing is unclear, but if employers want to get staff back into the office, the findings might, ahem, merit listening to.

Old times' sake

We have recently spent more time indoors staring at the great outdoors, but Spain's Jaime Hayon seems to have channelled that into his T-Bone armchair design, for Italian furniture brand Ceccotti Collezioni. Where he went in his thinking is anyone's guess, but there's something of a Spanish wrought baroque meets carehome aesthetic in the result.

With a padded backrest and seat, it's available in American walnut or ash and multiple colours, including shellac, and can be upholstered in fabric, leather or natural leather, and even customised. The look is complemented by Hayon's Árbol side table with three different height 'branches' on which you can place your cuppa, TV Times and slippers.



The crystal amaze

In a world where it seems the separation of truth from fiction comes in a million shades of grey, don't we all want a little more transparency? Well, NSG Group, owner of Pilkington, might not be offering a panacea for all that social media disinformation, but it is making glass surfaces from which to power-up your pesky but ubiquitous hand-held device – and a lot more besides. Together with product design studio Cohda, it's come up with its NSG TEC electrically conductive glass with its P-Tap wireless power technology, allowing both power and data to be transferred through the glass surface. Imagine museum display cabinet LEDs and induction cooking without all those wires too, letting you free-up valuable headspace for more cute kitten vids.



Early data details help rigorous design



The construction industry contributes to a colossal 39% (WorldGBC) of the world's carbon emissions and architects have a pivotal role to play in reducing this. In recent years engineers have led the way in good quality data modelling of building performance, but as these complex models are time consuming they tend to be run late in the process. The design is typically conceived much earlier using the skills and intuition of the design team. At Fathom we've been testing digital tools that can bring more rigour to the conceptual stages and follow this with close collaboration to ensure the engineering model is at the heart of decision making.

Detailed 3D models of design proposals have been around for some time, and ViewCity's London model – a fast evolving digital twin of our capital – is now providing us with accurate, data-driven context within which to design. As well as massing and visual impact, the model overlays data on microclimate including sunlight and overshadowing. This early information helps us make informed decisions about aspects like location of entrances and terraces before the concept design is fixed. More

upskilling and investment of time is needed to combine transport and pedestrian metrics with air pollution and noise data.

Following initial design studies, we get more detailed. One of our architects has been using Grasshopper scripting skills to create a precise heat-map on the facade of sunlight exposure throughout the year. With graphic clarity, we're able to spot counter-intuitive outcomes, especially with projects in the narrow and winding streets of a UK city. We then sketch, model and rerun until we have developed a coherent architectural language which also does the dutiful job of tempering the environment.

Despite our considered early efforts, it's the engineer's model that has authority. It forms the basis of the carbon calculations for planning, cooling and heating loads, equipment sizes etc. Careful collaboration is needed here. We work hard to give those modelling more airtime to ensure inputs and assumptions are correct. For example, in a home a typical model assumption is that internal walls are plasterboard and floors are timber. Interrogating this model, we found that switching to stone floor and brick

walls reduced peak overheating by more than 50%, allowing us to bring forward design and client decision on finishes.

It's also important to integrate the outputs – perhaps unexpectedly the south facing, tree shaded, ground floor living room overheated more than the dual aspect south and west facing bedroom. We discovered that occupants don't like leaving ground floor living room windows open at night so the space doesn't get purged – we would never have known that had we not been rigorously questioning.

At Fathom we're excited that intuitive digital twins, such as ViewCity, and innovative software learnt in academia like Grasshopper, can be brought into practice to add rigour to our processes and thinking. We're also not forgetting the importance of person-to-person collaboration – continued knowledge-sharing is essential to a productive detailed iterative process of design evolution. Our commitment to depth of thinking highlights that the first answer is rarely the right one. ●

Justin Nicholls is director at Fathom Architects

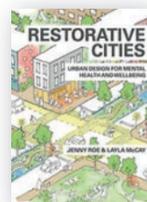
Books

Buy at ribabookshops.com



Ecological Buildings: New Strategies for Sustainable Architecture

Dorian Lucas. Braun Publishing. 192pp HB £39.95
The author offers a whistlestop global tour of 45 sustainable exemplar projects, in this large format coffee-table book. There's a helpful preface, which explains sustainable architecture's development in the latter half of the 20th century and its ensuing legislative context, before we are launched into the projects that form the body of the book. Individual explanations are very image-driven, with pared-down accompanying plans and sections. Probably most helpful is a breakdown of each project's 'ecological aspects', preceding the description, which gives its key takeaways. There's breadth here – and many well-executed projects I wasn't aware of; good for aesthetic inspiration if not technical detail.



Restorative Cities: Urban Design for Mental Health and Wellbeing

Jenny Roe & Layla McCay. Bloomsbury 251pp PB £24.99
Given the bitter experience of the global pandemic, there's been a real ground-shift in thinking around the quality of our open spaces and how they can feed into the wellbeing of city residents – hopefully manifesting in better design in the future. The authors, both academic experts in fields of health and urban design, have broken down their manifesto into eight city ideals of 'green', 'blue', 'sensory', 'neighbourly', 'active', 'playable', 'inclusive' and 'restorative'. This is big picture stuff and while the book is granular in breaking down their concepts, it's perhaps less so in terms of interrogating actual examples – although there are a lot cited, and illustrated – throughout the text.



Inspired by Light: A Design Guide to Transforming the Home

Sally Storey. RIBA Publishing. 210pp HB £35
Founding director of her own consultancy, Storey has over 30 years of experience under her belt and draws a line in the sand at the outset with that expertise: architects imagine their volumes in light; lighting designers imagine how those same spaces can be drawn from the darkness. Making the point, her intro shows three views of the same bathroom over a day, the last evocatively lit at night. Part 1 of the book looks at technical considerations, Part 2 shows how those techniques can be applied to various spaces in the home and Part 3 sees it all employed in exemplar projects. Concisely written and with copious photographed, Storey's book proves to be... illuminating.

Extreme spec

PATRICK DEGERMAN (3)



Left At 75m, Sara Cultural Centre is the world's second tallest timber tower after the 85.4m Mjøstårnet tower in Brumunddal, Norway. Two more floors could have been added with no structural change.

All-timber tower

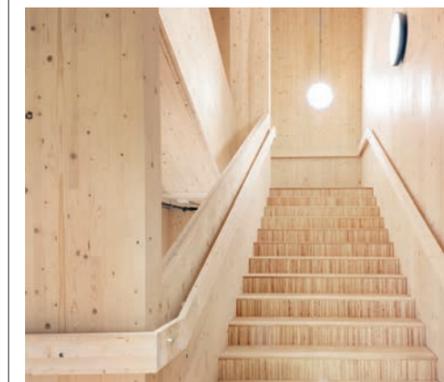
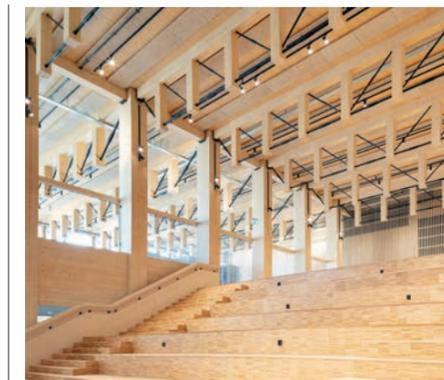
What CLT timber tower
Where Skellefteå, Sweden

White Arkitekter's Sara Cultural Centre at Skellefteå on Sweden's north-eastern coast is a 30,000m² complex of theatre, library and art gallery in a four-storey plinth which is topped by a 16-storey hotel tower that acts as a beacon for the city's catchment of 70,000. Acknowledging the town's links with the timber industry, the 74m high complex, including tower, is built of locally-sourced wood, to make one of the world's tallest all-timber structures.

Working with project engineer Florian Kosche, the firm adopted a dual approach to construction, say project architects Robert Schmitz and Oskar Norelius, pushing innovation in offsite engineered timber technology. The first was prefabricated glulam for the plinth holding the cultural facilities – which would mean delivering modules as big as 27m by 3m to site; and secondly, a cross-laminated timber (CLT), volumetric route for the hotel tower, plus timber cores, which accelerated construction and aided servicing logistics.

Although many taller timber buildings rely on cross-braced glulam for structural stability, the firm still wanted a predominantly glazed aesthetic. It chose a volumetric solution using CLT, which could better handle shear loads without cross-bracing. The cultural centre in the plinth also helped: with massive hybrid timber and steel trusses creating the necessary spans, it spread the tower load over a bigger footprint.

The tower's stacked pods, each a bedroom, are constructed as 7.2m by 3.6m by 3.2m high volumes, the timber pillars on all four corners



Top Timber trusses are hybridised to reduce depth by introducing steel in tension. They also help distribute the tower's loading.
Above Throughout the complex, including the hotel, internal finishes have been left deliberately minimal.

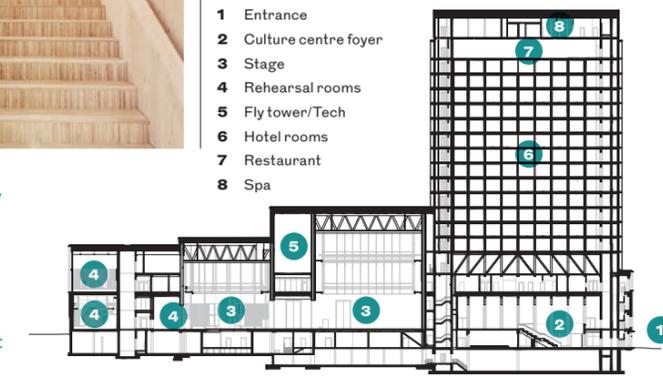
acting as spigots to transfer loads down the structure. Pods are connected via steel plates. Timber walls are 100mm thick while floor and ceiling elements are 120mm. Voids created where column spigots interface act as a run for drainage between floors and as air ducts between walls and were later filled with attenuating and fire-retardant insulation.

Each floor consists of 16 pods which were delivered on site with bathrooms and the glazed bedroom face already installed. These windows also act as the weather line of the tower's double-skin ventilated facade; the outer glazing layer was added after pods were stacked in place. This structural glazing, White Arkitekter adds, also helps to stabilise the entire structure.

While it took a year to build the concrete sub-structure, assembling the complex's timber structure only took another year from start to completion. Construction of the main tower was particularly fast, taking around three days per floor to hoist its 16 pods into position. Delivered to site as sealed units, interior wall finishes were left exposed; no dry lining was used in bedrooms. Each room has three sprinkler heads, giving a 90-min fire rating to the tower structure and its two escape cores, while the plinth level has a 60-min rating.

Total building cost was €105m – around €3500/m² including design – not bad for a highly serviced typology in a country with high labour costs. And while White Arkitekter concedes that concrete would have been cheaper, timber was not only more sustainable but had symbolic resonance: 'This was a city centre with a timber heritage lost to concrete over the last century,' says Robert Schmitz. 'We are returning timber to it, at a new and grander scale.' ●

- 1 Entrance
- 2 Culture centre foyer
- 3 Stage
- 4 Rehearsal rooms
- 5 Fly tower/Tech
- 6 Hotel rooms
- 7 Restaurant
- 8 Spa





Theatre Royal, Drury Lane, London

Flickering LEDs are part of the theatrical effect in the restoration of the West End theatre that pioneered light from the early days of whale oil

Words: Stephen Cousins
Photographs: Philip Vile

Disney's *Frozen* is the musical entertaining crowds at the refurbished Theatre Royal at Drury Lane in London, and the choice of production seems apt given the stasis forced on theatrical venues as lockdowns kept crowds away.

The £60 million restoration of the grade I-listed building, with its grand Regency interiors, red carpets and gold leaf detailing, is a welcome distraction for audiences fed up with the TV. It has also been a labour of love for the composer Andrew Lloyd Webber, who self-funded the project and owns and operates the venue through his company LW Theatres.

Haworth Tompkins' design was conceived to protect and restore the original features of the 1810 building, and update it to meet the standards expected of modern theatres.

It has revealed and restored the foyers and staircase – arguably the most impressive surviving sequence of Georgian public interior spaces designed by original architect Benjamin Dean Wyatt. Three of his entrances to the front of house foyer were reinstated and later additions,

which segregated the space, removed. New bars and retail space extend opportunities for revenue generation in the new normal.

Fully-accessible circulation includes a new lift and, for the first time in almost a century, the auditorium can be entered directly from street level rather than via the basement.

The auditorium itself dates from the later Edwardian period. This was remodelled and reshaped to create a tighter curve, bringing the audience closer to the stage, and to introduce wider seats, better legroom and improved sightlines. A full technical refit includes a flexible stage that can be altered to enable performances in the round.

Always at the forefront of lighting technologies, the Theatre Royal was one of the first to implement innovations such as whale oil, gas and, later, electricity.

That pioneering spirit continues with the groundbreaking use of 21st century stage technologies and the latest low energy LED lamps, fused with original 19th century craftsmanship, including ironmongery and cut glass.

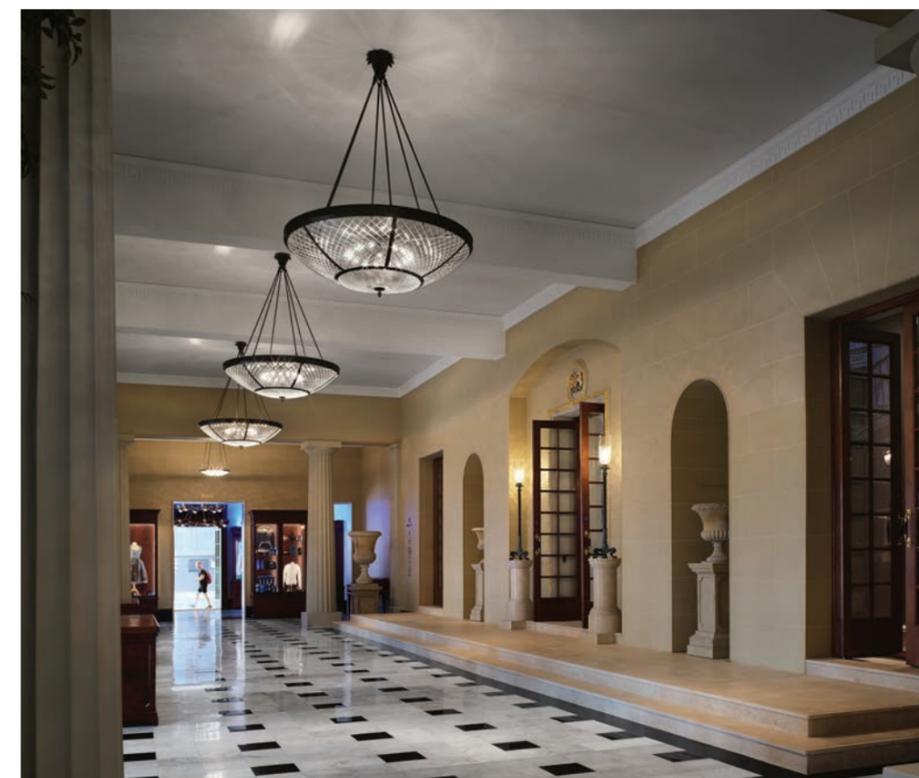
Colin Ball, lighting director at lighting consultant BDP, says: 'The lighting is so intrinsic to the space that part of our idea was to create a sense of timelessness – the feeling that the lighting has always been that way, but you can't quite tell when it was installed.'

This is the West End's first use of dimming technologies across an entire theatre to maximise flexibility and balance sensitivity and ambience. LEDs were considered crucial to cut energy consumption and future-proof compatibility and maintenance for the client, although they often struggle with low-level dimming and can visibly flicker.

ETC supplied an advanced theatrical control system that overcomes this issue to deliver a consistent 'low golden hum' similar to the original gas lighting in the historic areas, including the Grand Saloon bar and foyers.

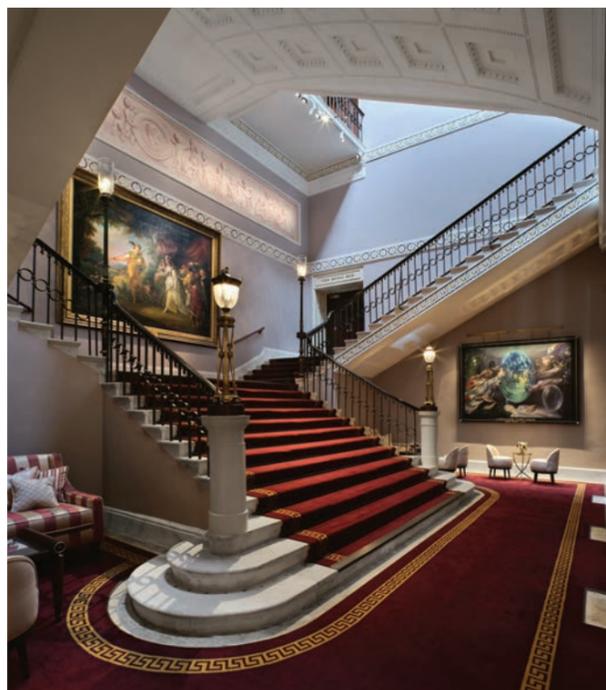
'Ironically, when we presented our scheme to Andrew Lloyd Webber, he asked if the standard

Main image Drury Lane Theatre's former glories restored – including state of the art lighting – courtesy of £60 million of Andrew Lloyd Webber's personal fortune. **Left** In the ground floor lobby LED fittings are used in up-sized chandeliers, for diffuse lights as well as spotlights.





Above Fittings were installed as contemporary yet suitable for 1810; contextual yet high performance.
Right The Wyatt staircase has been sympathetically lit with a combination of discreet and traditional Torchiere standard lamps.



Lighting

Ground floor plan



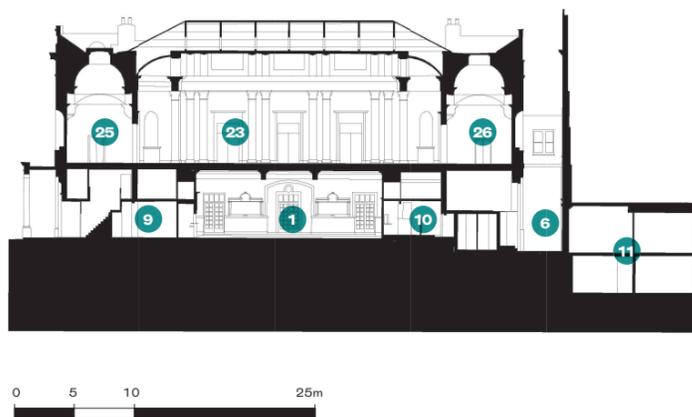
First floor plan



Second floor plan

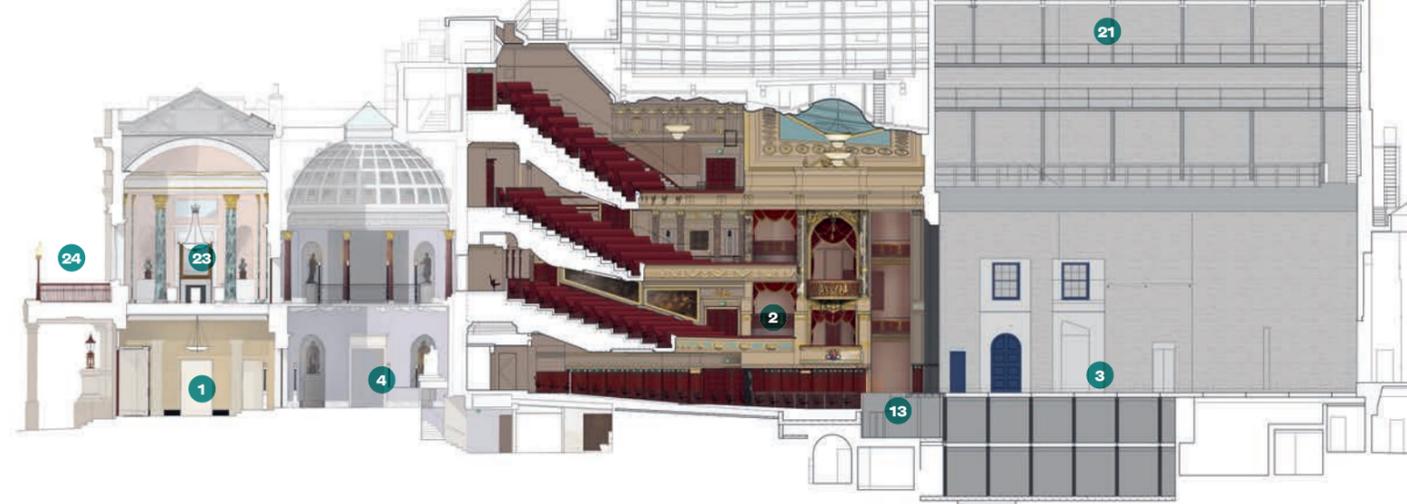


Section AA



- | | | | |
|--------------------|---------------------|-----------------------|----------------------|
| 1 Foyer | 8 Lower foyer | 15 Paint frame | 22 Auditorium box |
| 2 Auditorium | 9 Merchandise | 16 Long dock | 23 Grand saloon |
| 3 Stage | 10 Cecil Beaton Bar | 17 Technical workshop | 24 Terrace |
| 4 Rotunda | 11 Restaurant | 18 Stage door | 25 North coffee room |
| 5 Wyatt Stairs | 12 Control room | 19 Dressing room | 26 South coffee room |
| 6 Vinegar Yard | 13 Orchestra pit | 20 Office | 27 Kitchens |
| 7 Vinegar Yard Bar | 14 Store | 21 Stage void | |

Section through lobby spaces, theatre and fly tower



lamps in the staircase could be made to flicker to look like candle light in the evening,' says Ball. 'Happily, we were able to say "yes, we can programme the flicker in", so it was lucky we chose this rather than a more standard system.'

The lighting team and architect worked closely together to determine how each paint finish would look in daylight and under artificial candle light. Much of the lighting is switched off during the day to replicate naturally lit Georgian interiors.

Drawings, financial records and publications from the long history of the theatre were studied to determine the focus of the lighting in each space, whether low level standard, wall sconce or chandelier.

Rather than replicate period fittings, the intention was to make them look contemporary, yet appropriate for 1810, with updated equipment to meet modern illumination requirements. For example, the three crystal bowl pendants in the foyer, by crystal specialist Wilkinson, were scaled up to 1.8m in diameter and fitted with a series of diffuse lamps and chrome spotlights to create a balance of ambient wash and focused spotlighting.

Large chandeliers hung in the Grand Saloon and private rooms started out as 1970s pendants removed from storage. Their red velvet was stripped away and crystal and brass components re-aligned to match longer and slimmer Regency era chandeliers still being used in Windsor, Liverpool and Bath. Each integrates hidden chrome spotlights for table accenting.

Sometimes the shortage of skilled trades for lighting work became apparent, says Ball: 'For example, Wilkinson rang to say we had to order the cups for the chandelier lamps straight away because the last crystal glass blower in the UK was about to retire.' All the diffusers in the chandeliers and sconces were hand blown and cut, according to 19th century techniques.

Heritage lighting specialist William Sugg, which still installs and maintains remaining

The team realised lamps in the hands of four muse statues in the Rotunda could be used as part of the emergency lighting



gaslit street lights in Westminster, made all the external lanterns, and the 'torchiere' standard lamps integrated into handrails, including those on the cantilevered staircase.

A small scale cross section drawing from 1810 revealed the positions of the lamps on handrails, but not the full design, so BDP's lighting team looked to surviving buildings designed by Benjamin Wyatt for inspiration.

A suitable original lamp was found in a state-home in Manchester. This was laser scanned and 3D printed as a mould to create traditional casts. One of the last remaining blacksmiths in the country then cast the lanterns using the same technique as when the theatre was built.

But it wasn't all about ornate illumination. Controlled low glare optics and hidden fittings were also installed to deliver the required light levels and uniformity for a public building, with a particular focus on level and route changes where crushing could become an issue.

In a moment of inspiration the team realised that lamps in the hands of four muse statues in the Rotunda could be used as part of the emergency lighting solution. 'It was one of the joys

Above left 1970s chandeliers in the Grand Saloon have been refurbished to emulate more traditional Regency styles, with integrated mini-spots to invisibly light tables.

Above right LED torchiere lamps on the staircases and upper foyer are programmed to imitate the 'flicker' of gaslight. Muse statue lamps are part of the emergency lighting strategy.

of this project,' says Ball. 'No one usually thinks of emergency lighting as anything other than Bug Eye floodlights and ugly bulkheads, which misses the idea of integration.'

To keep light levels as low as possible throughout the day and evening, the optics and finishes of the corridors and spaces were modelled as a sequence, so the eye adjusts gradually and comfortably from daylight through to the 50 Lux maximum auditorium interior. 'It's about lighting balance, you have to avoid glare so people aren't stepping into a dark space immediately after a very bright space,' says Ball.

The Edwardian auditorium required a stealthy approach to illumination. Existing pendants, balcony sconces and chandeliers

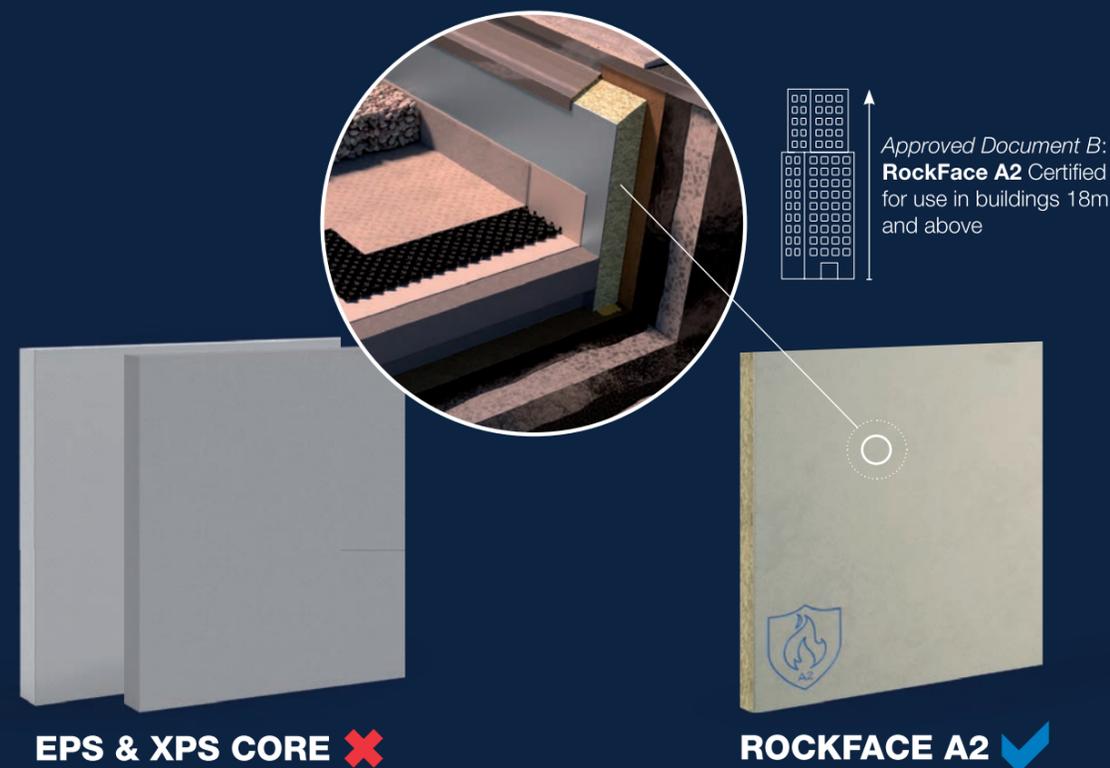
were retained and updated by specialist Dernier & Hamlyn with more efficient optics. Large pendants at high level were fitted with pencil-thin narrowest beam optics to deliver a uniform light – suitable to read by, without making the pendants themselves too bright.

In addition, integrated and hidden details reveal the ceilings and architectural details, while reflected light from seat-end lettering provides low glare accents to each step to ensure safe navigation to seating.

Safe navigation in the dark is a theme that will resonate with those involved in the Theatre Royal's restoration. The pandemic took hold just over a year into construction, so seeing it through to completion came to symbolise, for many, the recovery of the West End as a whole.

'For nearly a year, virtually the only people you saw around Covent Garden were the people working on this project, that's how severe the West End was hit,' says Ball. 'It became a flag bearer for the sector.'

As Covid restrictions ease and audiences return to this and other theatres, there certainly seems to be light at the end of the tunnel. ●



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Specified



JACKIE CHAN



STEFAN MÜLLER-NAUMANN



1
Hi-Macs Opal Lucent acrylic stone
LS Hausys

The brief went out for something 'Googie Withers'. But we got a pitch in for a 1940s British film star and a bit of a horse! Still confused about that. Bloody students.

But this? This is quite perfect. Those perimeter luminaires are 390 preformed panels of 'Opal' Lucent Hi-Macs cladding, with signwriting milled in. Elegant, tough as anything, easy to work with – and glows so beautifully. Rather like 1940s British film stars, actually. And after all, being a bus station is pretty much like living through the Blitz, when it comes down to it.
himacs.eu

2
Quad recessed linear profile lighting
Optelma

Troubled by decreasing truancies in local schools, the Learning Trust engaged LightPlanet to signpost routes to external doors in the hope of encouraging pupils to sack off Trig, Latin, Birching and Lacrosse. Instead, the Osram LEDs installed in the largely bespoke Quad profile fittings have only encouraged pupils to arrive early for lessons. The mustachioed bruisers now loiter in bright corridors reading improving novels, before sliding onto their benches and dipping their pens. With 50,000-hour lamp life and a five-year warranty, a return to traditional educational habits does not seem imminent.
optelma.com/

3
Porta Lighting by estudi{H}ac
Aromas del Campo

'Hello Mrs Stylemaven, I'm Merlin Sheldrake. Thanks so much for inviting me. I have to say this is a fungus quite unlike any I've seen before, even in the forests of Panama.

'I've examined the exquisite fruiting body, and I was quite amazed to find that not only is it intermittently bioluminescent, but also it's like glass! The mycelium seems to sprout very neatly through three small pins in the wall, so what I propose is that I use my trowel to clear the area around the spot, and see where it... AAAAAARRRRRRR-RRGGGGGHHHHHHH!
estudihac.com/

4
Tesis ground-recessed luminaires
Erco Light

Greetings, oekuk-saram! And kneel, if you value your lives! For I am the spirit of great Taejo, last King of the Joseon and builder of this vast (and beautifully illuminated) Gyeongbokgung Palace!

Oh, alright. I'm not the Emperor's ghost. I'm the palace sparkie, and even after 50,000 hours of operation, 90% of the LEDs in these square 3000k luminaires are still at 90% strength – and the failure rate is less than 0.1%. I got this costume round the corner 'cos I'M BORED.
erco.com/en/

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COMING SOON

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A brighter future with Soliscape

Delta Light's latest lighting system, Soliscape, is versatile and flexible, putting people at the heart of the spaces it illuminates



Delta Light is always looking to the future. By embracing the latest technologies and developments, Delta Light continues to innovate, break the existing mould, and set the pace for a brighter, more advanced lighting industry.

With this in mind, Delta Light is extremely proud to present one of its latest additions to its already strong portfolio. Soliscape is a collaboration with Dutch architectural practice UNStudio to develop an extremely versatile and flexible system, specifically designed to create human-centric environments.

In a world that's in a state of constant evolution, where cutting-edge technology brings new ways of interacting and experiencing, the physical need for buildings to live and work in will remain. Rather than staying static, these buildings are more and more becoming a reflection of what humans crave in their daily lives, and a response to many new economic, environmental and social movements.

By joining forces, UNStudio and Delta Light have endeavoured to improve the wellbeing of people in society's rapidly changing work environment, where human health and the war on talent have become a primary focus of employers.

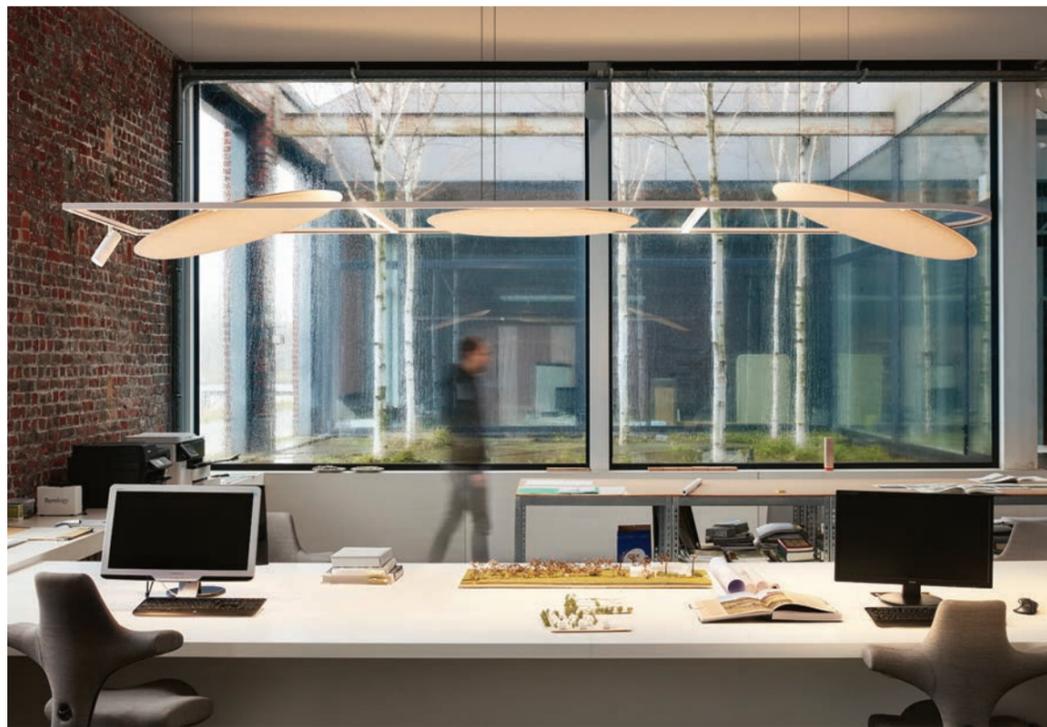
Speaking about the changing world, Ben Van Berkel, founder and principal architect of UNStudio, said: 'The way we work, live and relax is changing. This new hybrid world is causing architects and designers to rethink about how we design our cities and buildings, so we can create places that encourage health and wellbeing.'

'Lighting is a crucial element in helping us to create such places.'

In any given location, the Soliscape (sound and light-scape) system makes possible activity-based illumination, alongside acoustic qualities. A sensor-based environment understands what kind of activity is taking place and adjusts to provide the optimum conditions. As such,

digitally enhanced environments can be created where technology supports in the creation of sensorial adaptive environments in which the user is central.

Teams from both UNStudio and Delta Light collaborated on the intricate design details, such as placing the module connection on top of the profile to maintain a smooth appearance from



below, the way the acoustic panels can move, or keeping it adaptive to position the different modules on either side of the profile.

The Soliscape system is not limited to work spaces alone. Its adaptable configuration possibilities give the system a broad range of applications and can also be used in hotels, hospitality, retail and public spaces. It can be configured to best suit the daily needs and programming of each location.

In addition, more than ever before, today's spaces are evolving to operate with hybrid functions; the home and office are blending, and hospitality spaces are becoming meeting places. The ability to adapt lighting and acoustic landscapes for dual or multi-purpose use is therefore an added quality for many of these spaces, an option that Soliscape is able to deliver.

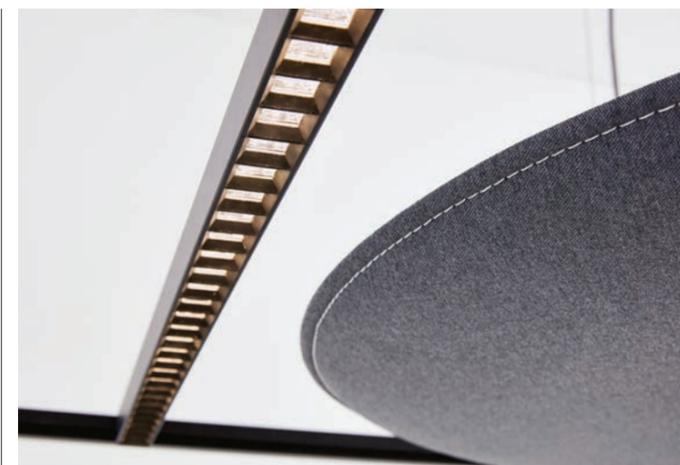
Soliscape combines individual functions in one all-encompassing system, offering a more affordable and efficient tool to work with.

The Soliscape system is a toolbox of flexible components and modules for architects that will enable them to create workable and liveable solutions for their projects; combining lighting with acoustics and connected sensing, into an aesthetically appealing solution that can easily link to any building management system. It is flexible and future-proof, as it allows for new materials and functions to be added in the future.

Soliscape has basic framing elements but allows for a variety of complementary sustainable materials to expand its look and feel. More than 60% of the material in the acoustic panels comes from recycled PET bottles, although different materials can be used within the system to facilitate specific functionalities, from acoustic to decorative to atmospheric. Furthermore, controlled and smart lighting contributes to the overall energy efficiency of the building.

Speaking of his inspiration, Ben Van Berkel said, 'We believe that human health and wellbeing form the impetus for a new era of design, and that the incorporation of new and emerging technologies in the built environment plays a central role in this. It is not the hardware or the software itself that interests me, but how it can be applied within architecture and urban design to improve our daily lives.'

Soliscape is an adaptive system that will continue to evolve in time. You can keep up to date with present and future developments at www.deltalight.com where recent product information to support clients at every stage of the lighting journey is also housed. ●



The Soliscape system is a toolbox of flexible components and modules for architects



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For more information on Soliscape or any other Delta Light solutions, the Delta Light team can be contacted on marketing@deltalight.co.uk.

School design: can do better

After two years of disrupted education, children's mental health has been put in the spotlight. What can architects do to help?

Words: Josephine Smit

While there has been a focus on making workspaces for adults more playful, creative and inspirational, the places where most children spend their working days have largely gone back to basics. There's little scope for office-style colourful pods, landscaped terraces and indoor slides in the schools delivered under government programmes.

That is a consequence of the Department for Education's (DfE) focus over the past decade on space, cost, standardisation and build efficiency, together with the use, particularly by free schools, of constrained urban sites. Confined corridors and open spaces have helped contain delivery costs, but might also be contributing to British children's increasing unhappiness, as charted by charity The Children's Society.

'In many ways offices are way ahead of schools in innovation in responding to wellbeing and the different ways people want to work,' says Nick Mirchandani, director with

ArchitecturePLB. While employers look to office environments to help attract, retain and get the best from workers, he says, 'productivity is relatively new as an explicit conversation in schools, and there have been times when it has been denied'. This is a reference to one-time education secretary Michael Gove, who began the Gradgrindian focus in 2010. That limited architects' opportunities to create more nurturing environments – although there are signs of change in the DfE's evolving requirements.

Delivered with dialogue

The DfE's Output Specification, which governs school design, promotes health and wellbeing through performance specifications for the internal environment. 'There are so many aspects to wellbeing. Some are measurable, like air quality and daylighting, and in the state sector they are really well covered by the Output Specification,' says Mirchandani. Other factors,

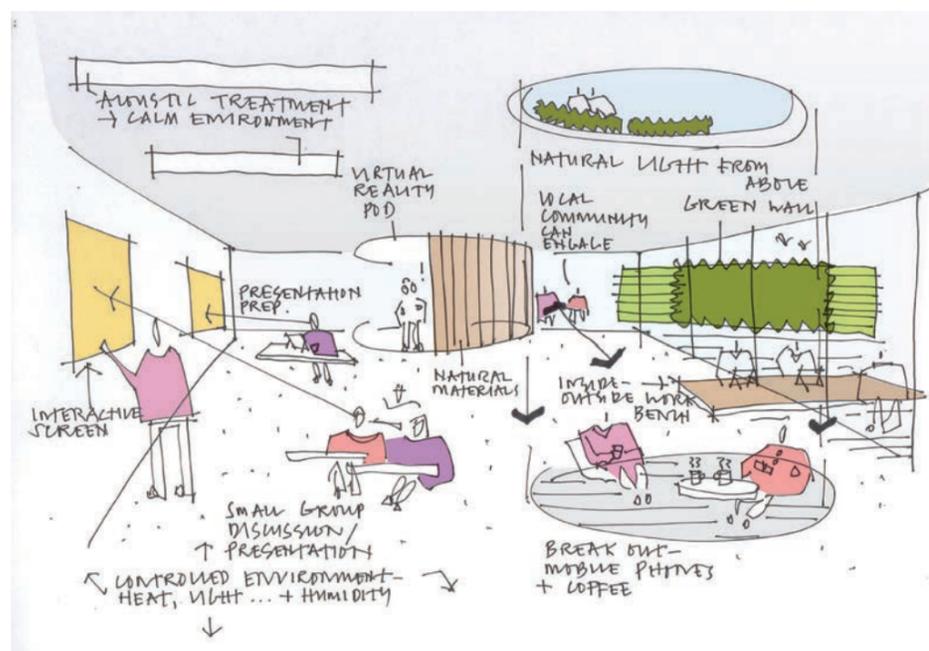
like access to nature and views, are less measurable and, he says, 'Those are the areas that are more concerning. I'm a fan of the Output Specification, but there is still a need to focus on those less tangible qualities of space.'

Focus on such qualities – and on nurturing pupils' diverse needs – has come where the architect has been able to engage in dialogue with school staff. By way of example, Mirchandani cites St Mark's School in Southampton, an all-through school for 1346 pupils aged 3-16, being constructed on the site of an existing primary.

The primary head is to run the expanding school. 'It was really valuable to have the person in charge to talk to,' says Mirchandani. 'We have done a lot of thinking about how those groups can have their own territory but also a group identity. A five year old is very different to a 16 year old.' The architect's solution is an L-shaped design, having a three storey main building for secondary pupils and a two storey primary wing. The corner of the L where the two meet houses a dining room and other shared facilities while the whole is surrounded by spaces for boisterous play or contemplation.

This kind of connection with end users is more common in schools for children with special educational needs and disabilities. Harbour School, which is under construction in Bovington, Dorset, is designed to accommodate 160 pupils from two cohorts: those with social, emotional and mental health needs and autistic spectrum condition, from age 10 to sixth form. The two cohorts are attending the same school but have different learning requirements and need to be separated, having their own defined

Above One of architect ADP's concept sketches for post-pandemic future schools' design, with a greater emphasis on pupil wellbeing rather than just the school 'estate'. **Opposite** St Matthew Academy, Blackheath, is representative of ArchitecturePLB's commitment to an effective 'output specification'.



TIMOTHY SOAR

areas and entrances, the latter designed to accommodate specific drop-off procedures. The design solution couldn't be more different to the typical superblock secondary, being a single storey building set around a series of calming courtyard breakout spaces. 'To get that right we had to go into a lot of detail with the staff who will be operating it,' says Mirchandani.

Taking responsibility

With 10-minute reflection breaks for yoga or meditation incorporated into the school day, the timetable for Aureus School, in Didcot, reflects its head teacher's focus on health and wellbeing. So too does ADP's design for the 1200-pupil secondary, which is part of a new neighbourhood. 'Wellbeing was in the ethos of the school and we had to understand what that looked like as a building,' says ADP's school sector lead, Claire Mantle. Opened in 2017, the school has a dining room created for 'family dining', where pupils eat and converse around large circular tables, and outdoor spaces for quiet reflection and informal activities like trim trails. There's a biophilic sensibility to the design, with large windows at corridor ends framing rural views and fun in the graphics on the staircase wall.

The school's budget was higher than the norm, but only slightly so, says Mantle. Cost, construction frameworks and lack of user dialogue may limit the potential to incorporate health and wellbeing into designs, but she

believes architects can help redress the balance, arguing, 'As designers we need to take responsibility and drive the agenda on what schools should be about, promoting healthy living and asking the right questions. At the moment, it is not being put at the forefront of conversations.'

Practising what she preaches, Mantle carries out post-occupancy evaluations (POE) of the practice's schools projects, which involves both examining data on building operation and environmental comfort and speaking to staff and pupils about less tangible aspects, such as their feeling on arrival, which can influence their school day. Small interventions – which are often down-specified in delivery – can make big differences to children's experience, as she explains: 'For smaller children, that might be about what door handles feel like or having a whiteboard at their eye level. For secondary pupils it could be about spaces where they can develop social skills or having a bench for reflection.' And the staff experience is relevant too, with a revisit to its Braywick Court Primary

We have thought a lot about how groups can have their own territory and a group identity. A five year old and a 16 year old are very different

School, in Maidenhead, revealing that glazed panels beside classroom doors to allow daylight and passive supervision of pupils also gave the headteacher a quick connection with staff by walking along the corridor.

POE and round-tables with clients and educationalists have contributed to a body of learning and allowed the practice to identify some essential ingredients of good school design, including being outdoors, a sense of community, inclusivity and flexibility. Last year the practice developed the SBE Toolkit, an assessment tool it applies to all its projects and measures them against three core principles – sustainability, belonging and engagement. The second concentrates on forming connections through community and the third prioritises the internal environment, broader health and wellbeing.

With five sub-sections to each core principle and further questions under each sub-section, the toolkit helps shape priorities at feasibility, planning, completion and POE stages and drive continuous improvement. 'It prompts conversations among designers and their clients. If you ask the right question a head teacher might say they want a bug hotel or a green roof,' says Mantle.

Sustainable benefits

Alongside the renewal of its construction framework for school delivery, the DfE is revising its Output Specification and adding a technical



Left To counter bullying, more generous corridor widths than average are the norm at Stride Treglown's West Coventry Academy. **Below** Generous common spaces, observed spaces and rooflights all contribute to the spatial generosity of the West Coventry Academy.

annex on sustainability, which will drive a requirement for schools to be passive in design and net zero carbon (NZC) in operation – or, where that's impossible, for designers to state how carbon neutrality can be achieved over a building's lifetime. Ahead of the documents' formal introduction later this year, the DfE is applying it in draft form to its School Rebuilding Programme for England, for which the first 50 projects were named in February and 50 more in July.

Stride Treglown worked on test projects in the run-up to the programme, its experience informing the new DfE documents. Danny Harris, its head of schools, says pupil wellbeing will benefit from the focus on net zero carbon as well as some lessons learned. Of the latter, he says, 'Historically, everything was delivered to the minimum requirements and there was not much aspiration to go above and beyond those. I think that's changed, mainly because of the drive towards modern methods of construction (MMC) – it has been counter-intuitive to have area as the top priority when a system-build product can perhaps generate a different area but create more efficiencies in cost through its means of production in a factory.'

One concern has been corridors, long associated with anti-social behaviour and bullying. 'Some of the working to minimum requirements exacerbated the issue, so we did things like introduce offices near staircases to give good passive supervision,' says Harris. Minimum widths were increased in the 2020 update of the Output Specification, but NZC promises to be a gamechanger. Harris explains: 'With sustainability requirements and a passive approach to the building, the way the Output Specification works is that the air gets drawn in through the classroom to the central corridor and out via the roof. That means you need a much wider corridor with more daylight, which creates a more generous and visually stimulating space.' It is

also hoped it will reduce anti-social behaviour.

The difference will be evident at West Coventry Academy, an early project in the school rebuilding programme where the practice is working for client and main contractor Bowmer and Kirkland. Here, an outdated 1960s secondary with swimming pool is being rebuilt using a timber structural insulated panel system from a local supplier. In line with the passive approach, the design incorporates 3m wide corridors – instead of the conventional width

Historically, everything was delivered to minimum requirements and there was not much aspiration to go above and beyond those. I think that's changed



of under 2m – with 1m deep light shafts above.

While sustainable design promises wellbeing benefits, there are factors to reconcile. 'Opening up the classroom to the corridor so air can travel through presents fire and acoustic issues,' says Harris. Another problem is ventilation, which itself has gained prominence with Covid-19. 'There are quite stringent requirements about how you bring air into a classroom. For example, DfE's strategy is that you're not allowed to bring in cold winter air, so you can't just open windows,' says Harris. Air must, therefore, be mixed before it gets to the classroom, passively or mechanically. 'Passive is good for health, but the way we achieve that is quite challenging in practice,' he adds.

Health and wellbeing gains could also come from the need to maximise passive cooling potential, which strengthens the case for enhanced landscaping, and the adoption of renewable energy technologies. West Coventry Academy will have photovoltaics (PV) on the roof, but where roof space is limited contractors are installing PV-topped canopies in school grounds. 'That gives good opportunities for outdoor covered dining or teaching spaces,' says Harris.

Early projects show that simple strategies are the most effective. 'Passive buildings are very simplistic by nature,' says Harris. Perhaps, this time round, a return to basics can be better for health and wellbeing. ●



Historic to contemporary and new build to retrofit

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Three different ways with rooflights

Rooflights are a staple of the domestic extension: three ingenious designs show how this ubiquitous device can be superbly individual

Words: Pamela Buxton

Main image At Umfreville Rd in London, DHaus' centrepiece is the L-shaped rooflight that pulls light in from above and the side, to fill a previously dark staircase with daylight.



While domestic extensions yield welcome additional space, they can also create their own problems when it comes to bringing light into an even deeper plan. In the following pages, we look at three Victorian house projects that tackle overhead light with aplomb. Overcast House, by Office S&M, makes a virtue of north light by using a saw tooth roof to provide just the right conditions for the colour consultant client. In contrast, the two other projects give the skylights starring roles. Another side return project, Matthew Giles Architects' Hannington Road, floods the new double height space with light with the help of extensive overhead light. And at Umfreville Road, DHaus uses dramatic skylights to bring light into the heart of the plan and, in doing so, transforms the experience of the apartment.

UMFREVILLE ROAD, LONDON BY DHAUS

'It makes you feel like you're flying through the sky – it's an amazing feeling,' says DHaus co-founder David Ben-Grunberg of the practice's transformation of a dark maisonette into a light-filled triplex in north London.

Before, a gloomy staircase was the initial impression of the first and second floor apartment, but no longer, thanks to the addition of an 'up-and-over' frameless skylight to drench the staircase in light. This addressed the biggest challenge of the refurbishment – how to bring light into the core.

The practice worked with 1st Folding Sliding Doors to create the 1.6m by 1.8m skylight, which combines in an L-shape with a 1.6m by 1m side panel to accommodate light both

Above left An upper terrace gives vertiginous views down into the staircase.

Above centre The rooflight creates 'a magical experience', says DHaus' Ben Grunberg.

Above right Light filters down to the lower levels through the CNC-fabricated lattice staircase.

Right A triangular flat dormer ekes light out for an attic bedroom.

from above and the side – bringing, says Ben-Grunberg, a magical dimension to the experience of ascending the staircase.

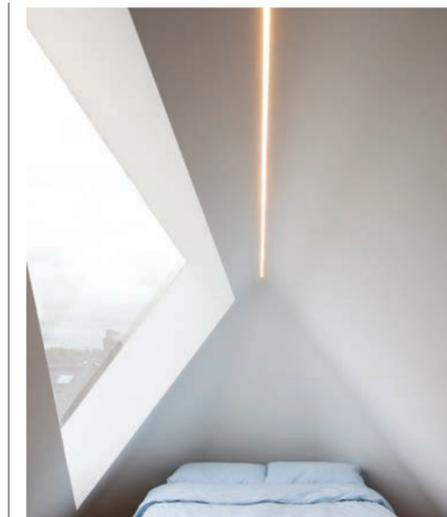
The double-glazed units are set into a concealed anodised aluminium frame to maximise the impact of the sky.

The effect of the skylight is enhanced by the open lattice staircase. For this, DHaus drew inspiration from the work of architect Taro Tsuruta, a friend of the client, to create a bespoke plywood design by Materialise Creative Design using CNC fabrication, with perforations that allow light to permeate down. The underside is curved to give a softly contoured effect.

'The stair is an investment piece at about £1000 a tread and was one of the things [the client] wanted to spend money on. Not only is it a nice statement piece but it's practical for bringing the light through,' says Ben-Grunberg.

A 2m by 3m inner roof terrace has cunningly been inserted to the side of the rooflight one of the first upper terraces in the area, he adds.

The other main move was the loft conversion. For this, a dormer roof extension was enabled by structural reinforcements of extra beams and posts. In here, an unusual, giant triangular skylight with a 450mm reveal gives the



new bedroom space an eye-catching character from both inside and out.

Measuring 3m by 2.2m by 2.1m and again created by 1st Folding Sliding Doors, which had not previously tackled such an unorthodox shape, the metal-framed skylight is manufactured in double-glazed glass with low E argon gas. Rather than sitting flush in the roof, it projects by 150mm for better waterproofing by enabling rainwater to drain around the windows and down.

The concealed frame puts the focus on the view of the sky – it is, says Ben-Grunberg, 'like going into a spaceship.'

Structural engineer Michael Alexander Engineering
Selected suppliers 1st Folding Sliding Doors (skylight); Materialise Creative Design (staircase)

Roofing & rooflights



HANNINGTON RD, LONDON BY MATTHEW GILES ARCHITECTS

Enclosing adjacent garden space is a classic strategy for many a kitchen overhaul. But making your neighbour's flank wall the star interior design feature is a more unusual move, carried out with aplomb by Matthew Giles Architects with the help of a 5.4m by 2m skylight.

The new space is part of an extensive overhaul of a Victorian townhouse for a young professional couple, in Clapham Old Town in south west London. The architect decided to enclose the side return at second rather than first floor

level, creating a double-height space on one side of the kitchen-diner and replacing a low-quality lean-to.

'You get this lovely space, glazed above, full of natural light – it's quite dramatic and different,' says Giles, adding that the architect had 'lucked-out' with the presence of the distinctive Victorian brick wall, which had at some point acquired dashes of white paint. The bathroom and study windows both look onto this space at first floor level.

All the wall needed, he says, was sealing, plus the addition of the huge skylight, which brings the light down to play on the wall. The rear facade now has new steel-framed Crittall glazed doors and windows.

The bespoke skylight was created by L2i Aluminium, which the architect had collaborated with on several previous projects. After discussions about panel sizes, installation and detailing of the junctions between frames and the main building fabric, it was designed to create the roof light in four double-glazed panels, each 1.3m wide and framed in powder-coated aluminium. The most complicated part was panel nearest to the rear wall, which opens as a vent via a switch-operated mechanism as part of the natural ventilation strategy.

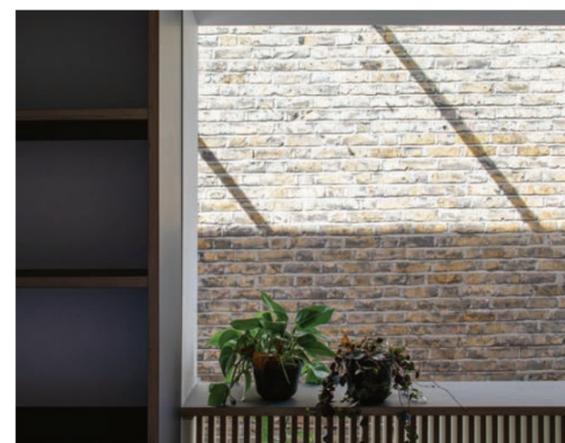
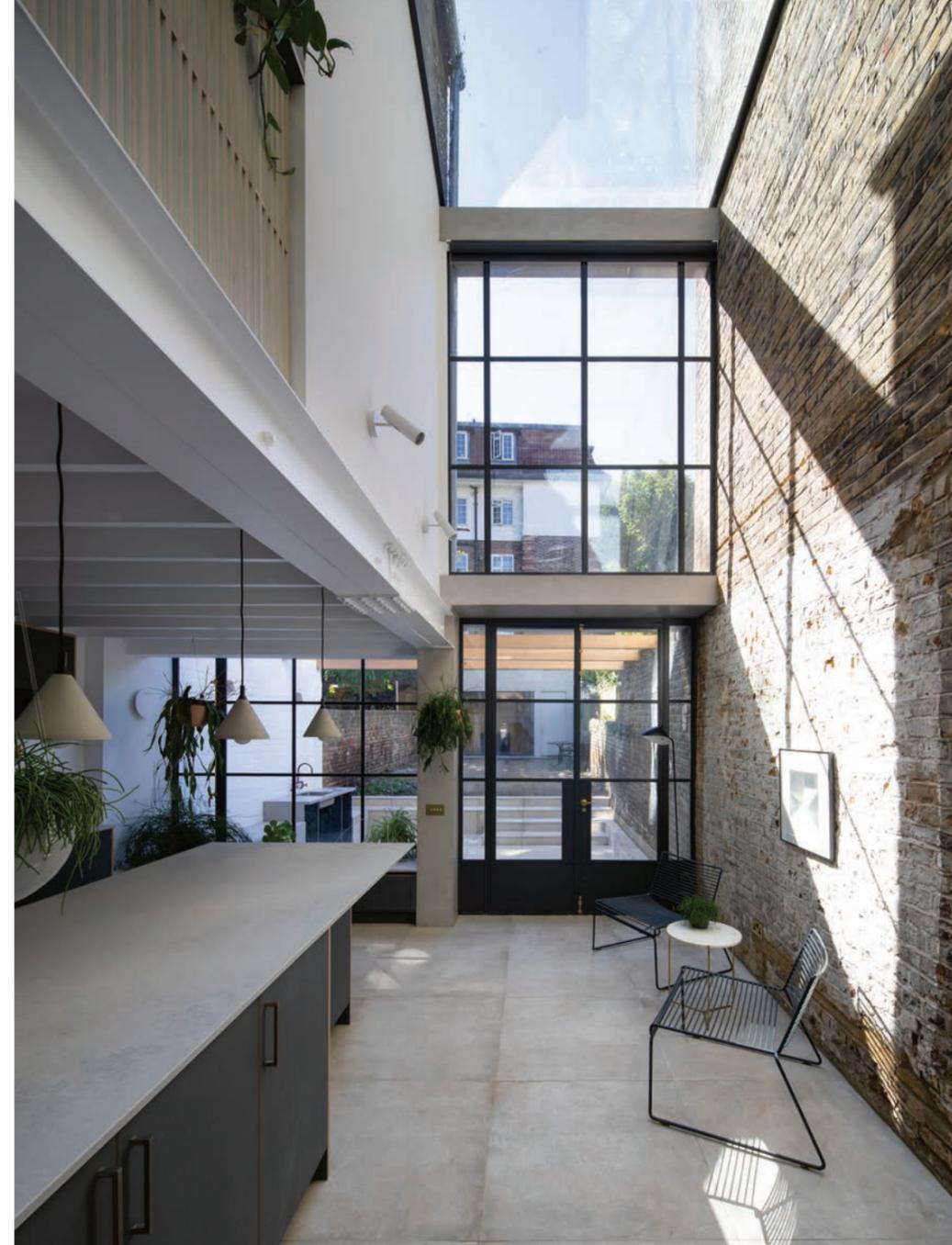
Enclosing the wall space was part of a desire to blur the boundaries between the interior and exterior – previously, the presence of a toilet at the back of the house had blocked views of the garden from the kitchen.

This inside-outside theme continues at the rear of the house, where the kitchen opens onto an 'outdoor lounge', a sunken patio area with its own sink to one side and above, a pergola arrangement of timber joists – the hope is that these may one day support a vine.

As well as the kitchen intervention, the architect reorganised the ground and first floors to create a four bedroom family house, with a study overlooking the newly-created double-height space. At the end of the garden is a new gym.

Matthew Giles Architects is currently working on 24 further residential projects throughout the capital.

Civil/ structural engineer Michael Barclay Partnership
Contractors Lucas Construction
Selected suppliers L2i Aluminium (aluminium rooflight); Fabco Sanctuary (Crittall glazing)



LOGAN IRVINE-MACDOUGALL (4)

Long section through house



- 1 Kitchen/dining
- 2 Balcony from study
- 3 Bathroom
- 4 Sunken external garden
- 5 Bedroom
- 6 Garden
- 7 Summer house

Opposite The aesthetic is one of industrial luxury.

Left At Hannington Rd, the party wall becomes a feature wall, creating an imposing double height space in the process.

Below An interstitial external 'second kitchen' blurs the line between inside an out.

Below left At first floor levels, both the study and bathroom look out onto the double height, rooflit kitchen space.





Opposite Maximising the side return meant the rear extension did not have to push unduly into the back garden, and brought light deep into the plan.

Left The ceramic tile exterior creates a distinctive garden elevation.

Below left The design brings a domestic twist to the industrial sawtooth roof, heightened by the gold wall.

Below Worm's eye view of the L-shaped extension.

OVERCAST HOUSE BY OFFICE S&M

When Office S&M designed a small, single-storey rear kitchen extension to a house in north London, it wasn't merely a question of getting in enough light, but getting in the right sort of light too. This was crucial given that one half of the client couple, Keiko Cummings, a colour consultant, would be using the new space for meetings with her own clients so needed a consistent quality of light, which had been difficult to achieve at the front of the house where she previously worked.

As well as dealing with the light, the architect needed to deliver a kitchen space big enough to accommodate 10 people around a table, whether for Keiko's consultations or socialising. Permitted development would have allowed a 3m rear extension, but by taking in the side return, Office S&M's design required just a 1.5m rear extension to increase space from 94m² to 114m².

The solution was a series of saw-tooth rooflights, an approach common to studio or gallery spaces but more unusual in a home. The row of three rooflights delivers indirect north light to the enclosed side return, with a further, flat

rooflight to the rear, where it is shielded by the back wall of the main house. To neutralise the cold light coming through the roof, the wall was painted gold.

'Sawtooths were the best way of achieving even lighting, says Office S&M partner Hugh McEwen. We looked at some more shaped rooflights but they'd cast shadows and pools of light.'

Office S&M used Velfac V200i fixed windows measuring 1268mm by 432mm with polyester powder-coated aluminium frames in tandem with a bespoke build-up. This was designed to be as thin as possible in order to minimise the overall height of the roof, which rises to 770mm. The solution was a timber roof frame with Kingspan insulation on top and between the beams to give a hybrid between a warm and cold roof.

It was decided to continue the timber to create the structure for the whole extension, with rear leaf of self-supporting cast concrete blockwork. Created in collaboration with

Mortise Concrete, the pigmented blocks are scalloped to act as 'shadow catchers'. A prominent hopper is celebrated in contrasting dark green, and marks the transition to the former side-return.

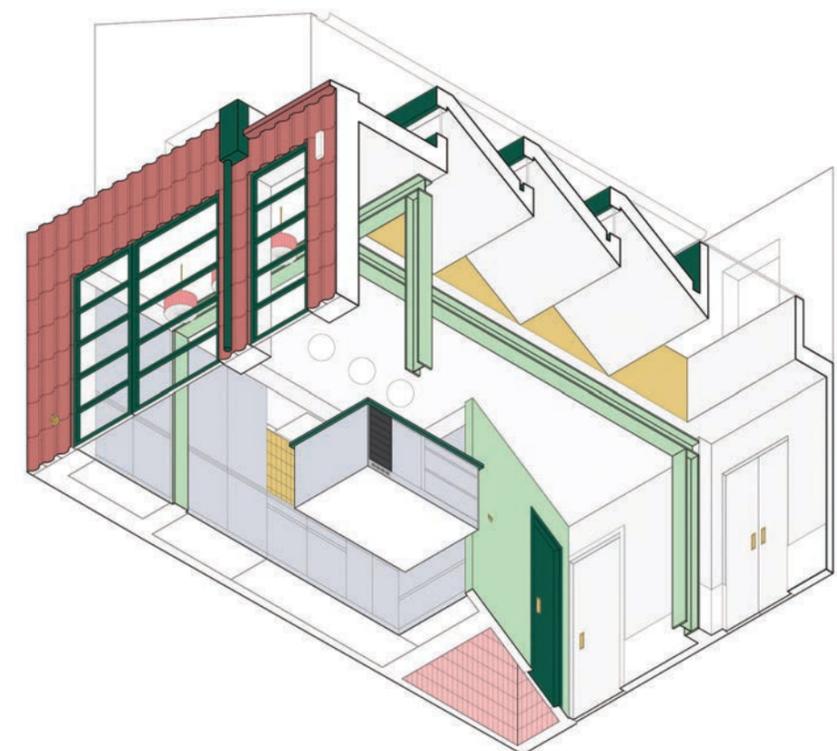
On entering the extended kitchen, visitors are funnelled away from the cooking area with the help of an angled wall that conceals a new WC, and the orientation of the flooring, which follows the same direction. The new space has the flexibility to position the table at the rear or the side. The clients are currently using the new area beneath the rooflights for their morning yoga.

'You don't have to build the biggest space to have quality of space – you can create really wonderful spaces that are compact,' says McEwen. ●

Engineer Foster Structures
Contractor YG Builders
Selected suppliers Velfac (rooflights), Kingspan (insulation)



MEGAN TAYLOR (3)



OFFICE S&M

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Costed

Nicola Herring, UK insights and research lead, and James Garner, global head of data and insights and analytics, at Gleeds, look at roofing costs

There are many factors to consider when selecting a roofing material, such as appearance (including local planning considerations), durability, maintenance, climate/energy considerations, weight and cost. The structure and pitch of the roof will also influence the choice made.

Tiling is a popular choice for pitched roofs, and while those with shallow or steep pitches will require particular consideration, there are many products available. Materials include clay, concrete, natural slate, fibre-reinforced concrete, cedar and metal, and will be appropriate depending on the drivers for a project. For example, natural slate is suitable for period properties and buildings with a long design life, as well-maintained slates can last 120-150 years. Clay roof tiles have been used for a long time and offer good weather protection as they absorb less water than concrete tiles while remaining lightweight. For projects where cost is a key driver, concrete tiles have become popular. Cheaper and with a longer lifespan than clay tiles, they are fire resistant, but also heavier.

Sustainability is becoming an important consideration in materials selection. Metal roofs – zinc, copper, aluminium and galvanised steel

– are increasingly used due to their durability, typically lasting between 40 and 70 years, and their energy efficiency properties. Light is reflected from the surface and the finish can be fully recycled. Metal roofs can be significantly more expensive than other options, and shingle roofs, produced either from sustainable wood or recycled content from plastic, wood fibre and rubber, are a more cost-effective sustainable option. Green and brown roofs continue to be used for their environmental benefits such as reducing the volume of water run-off, improving thermal performance, recreating habitat and improving biodiversity.

The rates below are a guide to roofing costs at third quarter 2021 for an average UK location. No allowance is made for sundry or related preliminaries. VAT is excluded. At the time of preparation, there are significant implications to materials availability and pricing owing to Brexit and the Covid-19 pandemic, so the costs below are subject to quick changes depending on availability and lead-in times. When specifying products it is important to consider the origin of materials, whether they are to be imported and what the lead-in times are. ●

Rates are a guide only and are Q3 2021 excluding VAT.

	£/m ²	£/m ²	
Flat roof systems, including insulation and vapour barriers as necessary; excluding decking or similar			
Single layer polymer roofing membrane; insulation	160–190	Aluminium sheet; mill finish; wood roll; insulation	
Single layer polymer roofing membrane; tapered insulation	235–265	Aluminium sheet; standing seam; mill finish; insulation	
20 mm thick polymer modified asphalt roofing including underlay	170–200	Extra for Pvf2 aluminium finish	
High performance bitumen felt roofing system	170–200	Stainless steel; terne coated sheet	
High performance polymer modified bitumen membrane	180–210	Lead roof covering; code 7; welded seam; milled lead; laid flat	
Pitched roof tiles or slates, including reinforced underlay and battens as necessary; excluding roof structure			
Natural Welsh slate tiles	240–270	Lead roof covering; code 7; welded seam; milled lead, pitched roof	
Natural Spanish slate tiles	160–190	Zinc; natural bright Rheinzink; pitched	
Synthetic slate tiles	110–140	Extra for pre-weathered zinc	
Reconstituted stone slate tiles; random slates	230–260	Landscaped roof, excluding decking	
Clay pantiles	90–120	Green flat roof – extensive type; growing medium; waterproof layer; separation layer; low maintenance	300–350
Clay tiles; handmade; sand-faced plain tiles	120–150	Green flat roof – intensive type; growing medium; waterproof layer; separation layer; low maintenance	350–400
Concrete tiles; interlocking; troughed/bold rolled	80–110	Brown flat roof; growing medium; waterproof layer; separation layer; low maintenance	375–425
Concrete tiles; plain	60–90		
Fibre cement slates	65–95		
Red Cedar sawn shingles; preservative treated; uniform length	110–140		
Pitched roof sheet metal, including breather membrane, underlay or vapour barrier as necessary; excluding roof structure			
Commodities pricing is currently particularly volatile. (As an example, data from the London Metal Exchange shows that copper pricing has increased by over 40% in the year to September 2021) and this should be considered with the metal roofing rates.			
Copper sheet; mill finish; flat seam or wood rolled	350–400		
Copper standing seam roof; mill finish	350–400		
Extra for pre-patinated copper finish	75–100		



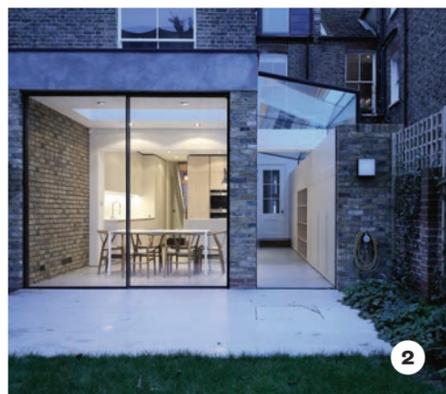
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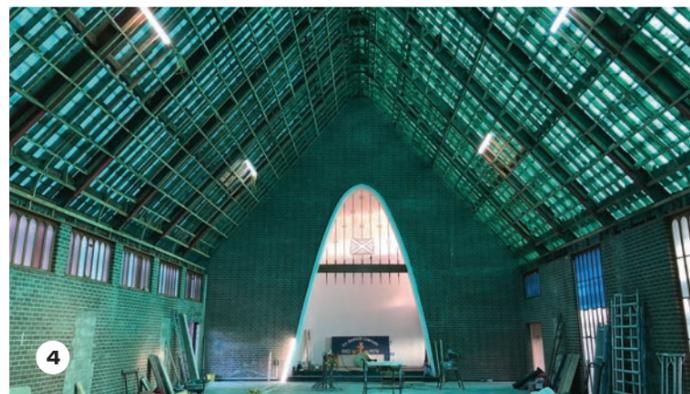
1



3



2



4

1 Centre pivot roof windows Keylite

'Rapunzel! Rapunzel! Let down your amazingly long hair out of the Keylite centre-pivot roof window!'

'Don't be a mug! My dad's locked it and I don't know where the key is!'

'But the flick-fit brackets mean you can probably just pop it out again! And the sash hinge finger springs mean you can just slap it back after, in one easy motion!'

'But I don't want to damage the integrated expanding thermal collar! And my name is Lorraine! I don't know you, strange window-fitter man! And this hair is extensions!'

keylitteroofwindows.com/

2 Invisio structural glazing system IQ Glass

'It doesn't look quite how I remember it, Sarah.'

'But Grandfather! This house was here in Lime Grove when we filmed that seminal first episode of Dr Who in the Totter's yard! The one where teachers followed me home from school and discovered us going into the Tardis!'

'Yes, Susan, I know. It's this IQ Invisio structural glass extension. Quite remarkable! It's thermally broken, and with slim, industrial silicone joints gives the illusion of a much larger space. Almost Gallifreyan in its "relative dimensional" ingenuity, in fact. We should get a quote to have one fitted.'

iqglassuk.com/

3 Pigmento standing seam zinc VMZinc

'Oi! Down there! You smug patriarchalist! You've got no idea, have you? Look up for once in your life FOR GODDESS'S SAKE! I am Whitehorn Hall! Purpose-built student accommodation named after the QUEEN that was Katharine Whitehorn: columnist, broadcaster and first female rector of St Andrews! My VMZinc Pigmento standing seams in mineral pigmented pre-weathered zinc and maintenance free! That's real feminism! LOOK UP, you fool, and see that the future is female, watertight – and GORGEOUS! 'But OH NO you're just up to your chauvinist eyeballs in Shakira videos!'

vmzinc.co.uk

4 Roofshield membrane underlay A Proctor Group

'Nearer my God to Thee? I love it. The congregation at St Andrews, Bangor, is really going to go for that.'

'Well, Reverend, it's not exactly finis...'

'It's breathable! So no need for a vapour control membrane! This is going to save us THOUSANDS! And look! It's almost like stained glass! This is going to give those Papists a real run for their money!'

'But Reverend...'

'We'll sing it at the dedication. Can we get away without tiles as well? I'm booked for a fortnight in Dubai.'

proctorgroup.com/

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Health & wellbeing

Good health just keeps coming back to good design

The diagnosis is clear: better buildings are good for your health. But will the government take the medicine? Michèle Woodger provides a review of PiP's latest webinar on health and wellbeing

The effectiveness of our healthcare buildings, and architecture's effect on wellbeing in general, have been duly questioned by the pandemic. In his opening remarks, webinar chair Jan-Carlos Kucharek revealed that only two RIBA Award winners were health buildings in 2021 – perhaps reflecting a tendency towards safe, well-meaning yet anodyne design in this sector.

But this isn't always the case: recent additions for the Guy's and St Thomas' NHS Foundation Trust and Maggie's Centres are inspirational. Though architects have little control over politics and policies, it is possible to implement health-promoting design wherever we can.

Architect and author Sumita Singha OBE discusses the struggles she has witnessed as non-executive director of an NHS trust. Disappointingly, 'design is not particularly valued by the NHS' she laments, and procurement always favours lowest-cost options – ironically, at the expense of patient welfare. 'The very environment which is meant to be healing is in fact hurting people; while pharmaceutical and medical innovations have moved on, architectural ones have not been allowed to', she points out.

The fact that over half of NHS hospitals are over 40 years old and in need of maintenance is concerning. Prioritising maintenance and retrofit is one solution, as is improving the experience at community level to reduce the burden on hospitals, which should ideally specialise in acute concerns. Yet this depends on NHS spending. What can architects do other than attempt to prove that design = value for money? 'Ultimately we need to try to prevent hospital admissions', she argues. Through preventative urbanism, adaptive homes and public health understanding, life-long wellbeing can be improved, reducing



Above At G Park in London Docklands, the 'logistics box' is designed to be wrapped in a deep facade of other functions and community uses, responding to its specific context. **Right** Society's post-lockdown relationship with the great outdoors has been effectively addressed by Re-Format in its 2019 Wendover Woods visitor centre for Forestry England.



CHETWOODS ARCHITECTS

JIM STEPHENSON

hospitalisation. Crucially, these are areas which 'involve and elevate the value of architecture'.

Hospitals have complex building envelopes, and Allan K Hurdle, technical consultant at Serge Ferrari Stamisol UK, offers clarity about fire safety on such buildings. He discusses Limited Combustible Membranes (LCM) and Limited Combustible Products (LCP) in light of Approved Document B, independent test certification, British and European Standards and warranties. Strong on technical details, his presentation helps navigate the complexities of an increasingly important topic within building safety; the take-home message being: don't wait for legislation – take things on board yourself and act.

Air quality, sunlight, exercise and green space are obvious contributors to good health – but these are often compromised in the highly commercially driven settings of logistics facilities and warehouses. G Park London Docklands is the UK's first three storey logistics facility; its architect Laurie Chetwood, a pioneer in sustainable warehouse design, offers ways to optimise wellbeing in such facilities.

Reminding clients that 'an enjoyable building is a valuable building', Chetwoods tries to improve the wellbeing of workers and local residents alike. Less frequently consigned to out-of-town roadsides, and encroaching into urban settings instead, 'these buildings have to take responsibility, grow up, and not just act like nobody can see them', argues Chetwood. He talks us through various iterations of the G Park building, which is still in progress, alongside beneficial strategies used in other projects.

From London's Docklands to the bucolic Chilterns, Alex Street, project architect at Re-Format, discusses Wendover Woods Visitor Centre. The client is the Forestry Commission – the biggest provider of outdoor recreation in the UK. The project involved a café, rangers' buildings, public conveniences, woodland trails and children's play areas. The concept is simple: a floating plane suspended on a thin support structure referencing 'a forest of columns'. Street talks us through the challenges of minimising and offsetting counter-intuitive elements such as removing trees for car parking, balancing

Above Alder Hey Children's Hospital on its Liverpool campus brings a warm, collegiate feel to a clinical building. **Right** Sumita Singha's new book.



RICHARD BRINE

them against the revenue generated in support of the Forestry Commission's long-term work in sustainability, ecology, and public wellbeing.

Charlotte Markey, green urbanisation innovation manager at Polypipe Civils, talks about the evolution of SuDS in catering to a wider range of urban landscaping needs. She elucidates the technical features of different systems for use in tree planting, blue and green roofs and irrigation, and introduces research linking landscape engineering to improved physical and mental health. Urban greening and designing with water have beneficial health outcomes and often their implementation is a masterplanning issue, but this doesn't preclude architects from introducing change at the project level. 'Public realm agendas are much more driven by health

outcomes, particularly post-Covid, so hopefully we will see more now', she concludes.

Finally, Mike Burnell, project architect at Hopkins Architects, discusses Alder Hey Children's Hospital, which completed 2018. The collegiate building on the hospital campus enjoys an undulating timber facade, its formal but internally adaptable wings accommodate future uses, and the glazed central atrium integrates the building with the surrounding landscape.

Burnell touches on collaborative working, the project's phased delivery, technical details and design choices, including heating, cooling, energy and sustainability strategies. 'A series of different spaces within the building provide an element of choice as to the way that people wish to work,' he says. This has meant the users have not had to alter the internal layout in light of social distancing concerns at all – a rare and positive result.

In summary then, healthcare infrastructure suffers from complex disorders but good design is transformative and life-saving. Clear though that message is, proving it to those who hold the purse strings is another matter. ●

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RIBA PUBLISHING

The Old Library, Liverpool



Restoration combined with playful interventions has renewed the civic status of a grand old library by converting it to multiple community uses

Words: Will Jennings Photographs: Hufton+Crow

'This one is almost at the end of my street so I've been round a few times, on the last occasion to chase away some kids I saw climbing in with spray cans. It's been in the same semi-stripped state for years and nothing much has happened until recently when all the cherry blossom trees were cut down and red wooden hoarding went up.'

These are the words of one user on urban exploration website 28dayslater.co.uk, discussing the former Andrew Carnegie Library in Tuebrook, Liverpool. The building frequently appears in posts since closing in 2006, with urbex practitioners (who generally respect and don't damage the heritage they visit) discussing its beauty, materials, and impressive civic nature – as well as a reliable alarm system and proximity to the police station.

Their ruinlust photographs record 10 years of theft, vandalism, and water ingress to the grade II listed building, a decade where the local



Above Little seems different from the outside, but the Old Library's internal changes are intimated by the fun kids' slide.

Right above Kitchen/refectory space is expressed in external ceramic tiles, reflecting the prolific use of tiling inside.

Right below Crisply detailed oak hot desks on the upper level for community clubs or private hire.

community first lost a building of civic value, then saw it decay into its prominent site, slowly concealed by overgrowth. That is, until OMI Architects' red hoardings.

Appointed by local charity Lister Steps, OMI set out to restore its civic-ness, weaving together a mix of community uses including a nursery, rentable workspaces, and a multi-functional community hall. Working to a SPAB philosophy of minimum intervention, a gentle touch respects the existing interior volumes and materials – salvaging and restoring as much internal fabric as possible. The saturated wooden floor was lifted, dried, re-laid and sanded, and rich green wall tiles steam cleaned and damaged sections repaired. Windows were replaced with double-glazed, manufactured by REA Metal Windows, which made the originals and still operates less than 500m from the building.

The centrally-placed nursery adds a complicated ingredient to the architectural mix, with



design needs that don't neatly fit the existing architecture or the brief's other spatial uses. It has led to what project architect Stuart McGrath calls 'a two-faced building – open and accessible to the public, but also private and secure for childcare', with the ground floor effectively diagonally split into distinct spatial uses.

Public visitors enter via foyer and corridor, arriving at the central café and reception in the former lending room. The new reception desk, servery and staircase are unashamed modern interventions, highlighting new functions but not competing with the existing rich fabric.

Adjoining, a former reading room has been restored, offering space for support groups, community clubs and private hire. Upstairs, rentable hot-desks surround the reception area void with four set into refurbished book-cases, and four oak designs inset in clerestory windows overlooking the community space. Steps lead to the tower room, now a meeting space.

The children's space is altogether different, requiring specific design solutions. Original high-level windows offered perfect reading light for library users, but are less suitable for baby, toddler and pre-school occupants. OMI cut new windows and doors

Above A pod of rentable space above impinges on the nursery space, lowering the scale and creating much-needed acoustic attenuation.

through the deep walls, offering views and access into landscaped play areas, and sufficient depth for reading and play nooks. A Peckham-Library-like pod on stilts fills the space, not only containing rentable offices accessible from the first floor but also making a joyful addition to the kids' space. Wrapped in fabric acoustic panels with strip lighting to the soffit, it delivers a lower ceiling height for the children and helps turn what would be a daunting and echo-filled space into one better suited to play, learning and interaction.

Externally, the building has re-found its civic and local landmark status. All new external openings are framed with a zinc boxing, hinting at a new interior, while a new extension for a children's eating space and kitchen is clad in terracotta tiles, inspired by the green tiling within. Lastly, but perhaps most importantly for some of the new occupants, a new external fire-escape staircase doubles up as the route to an exciting, curving slide. ●

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Specified



1
D-Neo Monochrome bathrooms
Duravit

No! I will not kneel in obeisance, and I have not brought you 'tribute', whatever that is.

Look, I really like your new Oak Terra veneer and minimalist styling, the wall-hung loo, and the fact that all your pieces are designed to work in the smallest space. Yes! Your generous oval countertop basin gives the washing area a modern feel, BUT I WILL NOT BE POURING ANY LIBATIONS DOWN IT!

Stop talking to me, spooky mirror! I only came in here to strain the spuds!

duravit.co.uk/

2
StoSilent distance acoustic system
Sto

After a hard day designing the sound of boot lids in the anechoic chamber, I like to unwind by enjoying the peaceful ambiance of the atrium walkways here at the National Automotive Innovation Centre. It's all thanks to the StoSilent Distance suspended ceilings, with their 96% recycled glass boards, and Natureplus-approved StoSilent Décor M stipple-sprayed finish, that I can return home each night to a freshly home-cooked meal in a house full of under fives – and still maintain a sense of benign peace with the world.

sto.co.uk/

3
Tarasafe Ultra safety flooring
Gerflor

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gerflor.co.uk

4
Volume kitchen fit-outs
Deanestor

'Slaying it, @Jessica92. We've got white Deanestor quartz worktops, oak-effect breakfast bar, and a full set of integrated Zanussi appliances. And in this building there are 682 other cool AF Jessicas and Michaels, all sitting down right now to divine home-cooked veggie shepherd's pie.'

'Wow! OTP or what? I feel like we've found our people, you know?'

'Yeah, goals AF, but you know what? Not one of those pies will be as good as yours, bae.'

'They're all the same, @Michael87. HelloFresh delivered 683 vegan boxes this morning.'

deanestor.co.uk/

Sign Up

Grace Choi of Grace Choi Architecture on three of her procurement favourites

JILL TATE PHOTOGRAPHY



IROKO JOINERY

We opted for FSC-certified Iroko to create a new timber loggia as part of the retrofit at our Kenton Road project. This hardwood is a strong, durable timber that can deal with the knocks of everyday life. Changes in the weather conditions result in minimal movement, which is an advantage for the doors and windows. After grappling with various test samples of finishes, we treated the iroko with Osmo UV protection oil, which deepened its tone and helped to bring out the grain while preventing the natural colour from fading. The result was a rich and opulent looking timber arrangement, which we repeated throughout the home.

VALCHROMAT

We used valchromat sheets to create a textured wall at our Queens Road project, where we needed to align several uneven existing walls to create one continuous backdrop. The non-toxic wood fibre sheets come in different thicknesses, with a natural variation of the wood fibre visible on the surface, adding depth and texture. The colour is consistent, wherever the board is cut, allowing us to cut and layer it without worrying about the edges. We oil-finished the surface and it absorbed well, without affecting the matt finish. The board was easy to cut and manage, so we concealed tiny LEDs within it, controlled by a nest smart lighting system.

PENDANT LED BULB

The ethical impact of our design decisions are important to us. Cheap lighting can often be imported without knowing who's been exploited in the process. So we love the way Well Lit cares about its supply chain. This simple pendant bulb, made from hand blown glass, lights up without the need for additional cumbersome fittings, is affordable and is a well-refined design. We paired the bulb with a brass fitting to hide the cap of the bulb. The LED filament runs along the rim of the bulb, giving a subtle glow to the glass. We've arranged this pendant both as a cluster in a double height space and as procession of lights along a kitchen island.

GRACE CHOI ARCHITECTURE



JILL TATE PHOTOGRAPHY



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ribaj.com

...Sign Off

Jan-Carlos Kucharek enjoys three stand-outs from the inbox



Q HERE

When there's No Time to Die, things must be tough for an international man of mystery. It took a global pandemic and two-year delay for James Bond to reappear – presumably not from furlough. But while a real-life MI6 bod bemoaned pay scales to the press – 'you won't find any Aston Martins in Vauxhall's car park' – it seems a fake agent's retirement package is enviable. Take one time Bond Pierce Brosnan's 13,000ft², \$100m Malibu home. Codenamed 'Orchid House,' it has 14 baths, fireplaces galore and a wine cellar but, surprisingly, given Bond's prowess, just five bedrooms. Languishing on the market since last year, Bond has 'pulled out' of selling it!

YOU DIRTY RAT

Given that Israel is the alma mater of Pegasus mobile phone spyware, it's no wonder that local tech firm Vayyar Imaging has been busy putting its skills to more prosaic, but no less useful, purposes – certainly if you're into DIY. The company has launched its 'Walabot DIY 2', a wall scanner compatible with your phone. While the first version only helped you find 'visual studs' (James Bond- beware!), this one is a 'window into the wall', revealing where electric wires and water pipes are. It even detects rodent movement. Quite how you get to vermin once you've X-ray'd them isn't clear: we'll leave that to 007 – or pest control.

HAVES AND HAVE KNOTS

Apparently, super-yachts really can be green – if German design studio 3deluxe is to be believed. It's produced exclusive visualisations of its 'biophilic yacht', set in the port of Monaco and available to buy as a 'digitally encrypted' non-fungible token on virtual auction platform 'SuperWorld'. As that's three new concepts to me, I'll return to the vessel's design. Built of aluminium from renewable power, it has a zero-carbon propulsion system, veritable Garden of Eden on deck to grow your own food, and open stern with 'saltwater pool'. And it can be an 'educational vessel' for school kids or think tanks when not overrun by Russian oligarchs. Job done!



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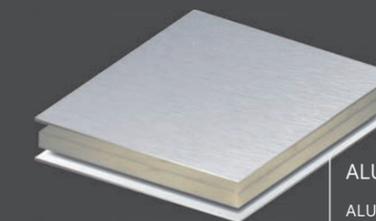


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