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2026 ISSUE 1

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Climate change calls for an epochal shift – and architects must learn how to design as nature

GREEN FACADES
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NATURE

ARCHITECTURE'S EVOLVING RELATIONSHIP WITH THE NATURAL WORLD

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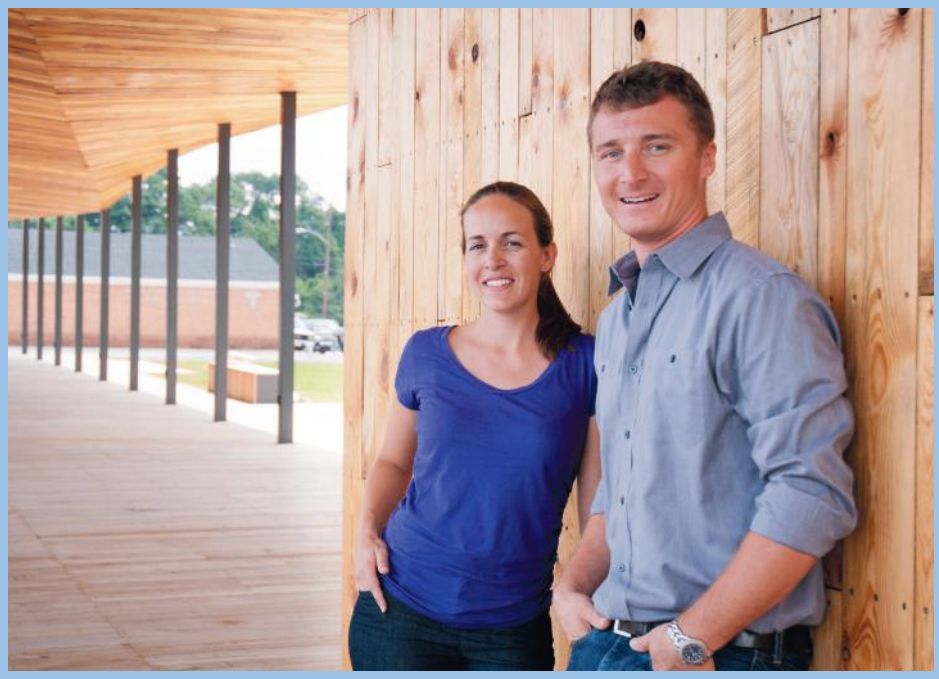

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ECLISSE
LOOKING FURTHER

NATURE

In this edition – the first of 2026, and the first to showcase RIBAJ's new redesign – we are examining nature's relation to architecture. As the impact of climate change grows stronger, there's never been a more pertinent time to do so, writes Eleanor Young

Nature and architecture find themselves in perpetual tension – and, sometimes, in sympathy. Our use of the territories and resources of nature is constantly evolving, in line with social attitudes. Think of the upsurge in interest in stone structures – and facades – during the last decade. It is a carbon-saving rediscovery which can breed a strong sense of the local, reflecting regional geologies in way that has often been forgotten in our rush towards efficient, panellised construction.

Aberdeen's character is set by its local granite, its silica sparkles lifting the grey gloom to give it the enviable nickname of Silver City. The sandstones of Edinburgh impart a warmth; the rubblestone backs of tenements a gentle informality. In the uplands of northern Portugal, meanwhile, village houses mix field and quarried stone, giving them an impression of having grown out of the nearby outcrops.

But even as we start to worship again at the altar of stone, the movement against extraction has asserted itself, and campaigns against individual quarries galvanise locals. Which way, then, to turn?

In the first 2026 issue of RIBAJ, we have applied ourselves to the theme of nature to help you bring more to your designs. We wanted not only to ask how nature and architecture can coexist, but to explore how architecture is evolving alongside nature.

With you we will climb towers with trees, hunt architects sourcing materials locally from their bioregions, and meet one practice anchoring itself firmly in its mountain home. And we can take a journey into the future with leading proponent of biomimicry, Michael Pawlyn, to understand how we could unlock our thinking about the dichotomy between nature and development to better address climate change. Along the way we consider light and bugs, scattering seed from fantastical contraptions and the increasing calls for rights of nature, which all architects should be aware of.

That thematic section kicks off the magazine before we return to well-loved building coverage and the invaluable and entertaining Spec (to see a slice of Egypt in Kent, turn to page 72). In the back pages you will find RIBA President Chris Williamson's column, tributes to architects who have passed away and a fascinating item from RIBA's collection.

Your magazine has had a redesign as well as a rethink. On the cover is a new logo, in line with the RIBA rebrand, and both magazine and website have been reworked based on extensive consultation with you to better represent what you want, and where you want to see it, in print and online. The practice and design articles you used to find in the Intelligence section are now the core of the bold and vivid new ribaj.com – including a new series on AI, starting with the tricky topic of copyright. Designer TM Studio has taken the print design to the next level with its bold use of typography and images, combined with a cleaner look. And in collaboration with the subtly expressive photographer Simon Menges we have a dramatic cover, a huge butterfly and tiny figure amid a jungle of plants, under the beams in a Potsdam biosphere.

Welcome to the redesigned RIBAJ, and to our Nature issue.

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SEEDS OF HOPE – AND CONTROVERSY

WORDS
Flo Armitage-Hookes

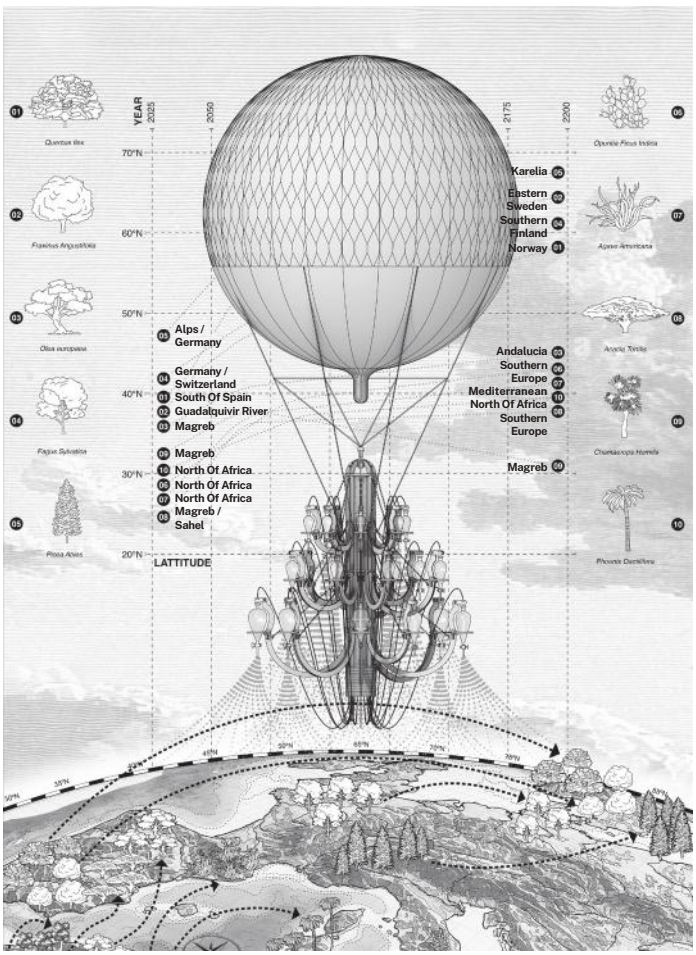
"IF ASSISTED MIGRATION CAN BE REFINED AND TESTED, IT OFFERS REAL POTENTIAL"

It's 2050 and over remote forests and inaccessible outcrops floats a strange and spectacular device. Following precise coordinates, it releases seeds from tiered glass pods onto the landscapes below. It may appear UFO-like, but it's actually a chandelier designed to combat the ecologically devastating impact of climate change.

Seed Chandelier is the fantastical creation of Spanish architecture firm TAKK. Although only speculative, it draws on research into assisted migration, a conservation approach that relocates plant species unable to adapt in time to rapid changes in rainfall or temperature in their native habitat.

With studies limited, the practice is contested among experts: some fear that such interventions could disrupt existing species, while others argue that they could save endangered plants and bolster biodiversity. However, if the process could be refined and tested, it offers distinct potential.

With its powder-blue arms and 20-plus tubes, TAKK's chandelier is deliberately eye-catching. Created for and hanging in the Tamed Nature exhibition at The Flanders Architecture Institute (VAi) in Antwerp, which runs until 1 February, it is a provocation to visitors to think creatively and boldly in response to the environmental crisis.



Left: Seed Chandelier, 2025, by TAKK (Mireia Luzárraga and Alejandro Muiño).

TAKK

LIGHTING FOR BIODIVERSITY

WORDS
Pamela Buxton

The dangers of light pollution to the natural world are increasingly well-documented. Pollinators such as bees and moths get confused and distracted from their vital task. Birds are put off their migratory paths. Bats are deterred from their normal foraging and roosting. Trees and plants, too, are negatively affected by nocturnal artificial lighting. And with light pollution increasing apace, it's a subject of mounting concern. So how can lighting design help to minimise these harmful effects while balancing core priorities such as security and wayfinding?

According to Benz Roos, associate partner of lighting designer Speirs Major Light Architecture (SMLA), lighting has become "a more and more complicated puzzle in that sense" as the biodiversity – as well as energy – implications of light pollution become better understood.

It's a subject close to the practice's heart. At the recent LiGHT25 show, SMLA created Re:Vision, an installation showing how different animals, from spiders to octopuses, perceive colour in different ways. This aims to raise awareness within the lighting industry about the impact of artificial light on the natural world. "To really benefit nature, we need to look at how other living species react to light," Roos said.

Light temperature is hugely important: too white and species can be confused into thinking it's daytime. The now-customary deployment of LEDs has had a significant influence. "The impact on animals, bats, moths, spiders has gone up because of the white components in LED – the light is cooler," he said, adding that many animals (including humans) are sensitive to the blue wavelengths within LEDs. Ecology-friendly lighting products are now available, however, which offer a variety of much warmer, monochrome light.

The effect that lighting has on biodiversity formed part of SMLA's supplementary planning document on lighting for the City of London. This sets out strategies to reduce obtrusive light including use of optical controls and detailing on glazed facades, and retaining areas of 'natural darkness'. Roos, however, feels that designers are still playing catchup. "What worries me as a lighting designer is that we simply do not know so many things. We're not aware of how [different] species see the world around us," he said, adding that the result is an "enormous" lack of ecological understanding.

Drawing on the knowledge of experts is therefore essential; Roos notes that more ecologists are part of design teams nowadays. His practice worked closely with London Wildlife Trust on Canada Dock Boardwalk, designed by Asif Khan, creating lighting with a particularly bat-friendly focus with seasonal controls for intensity and colour, ensuring the light is as warm as possible to reduce its impact, and minimising spill. In an ongoing project in Bhutan, SMLA is exploring using artificial intelligence to track seasonal patterns of fireflies, and controlling lighting levels in response.

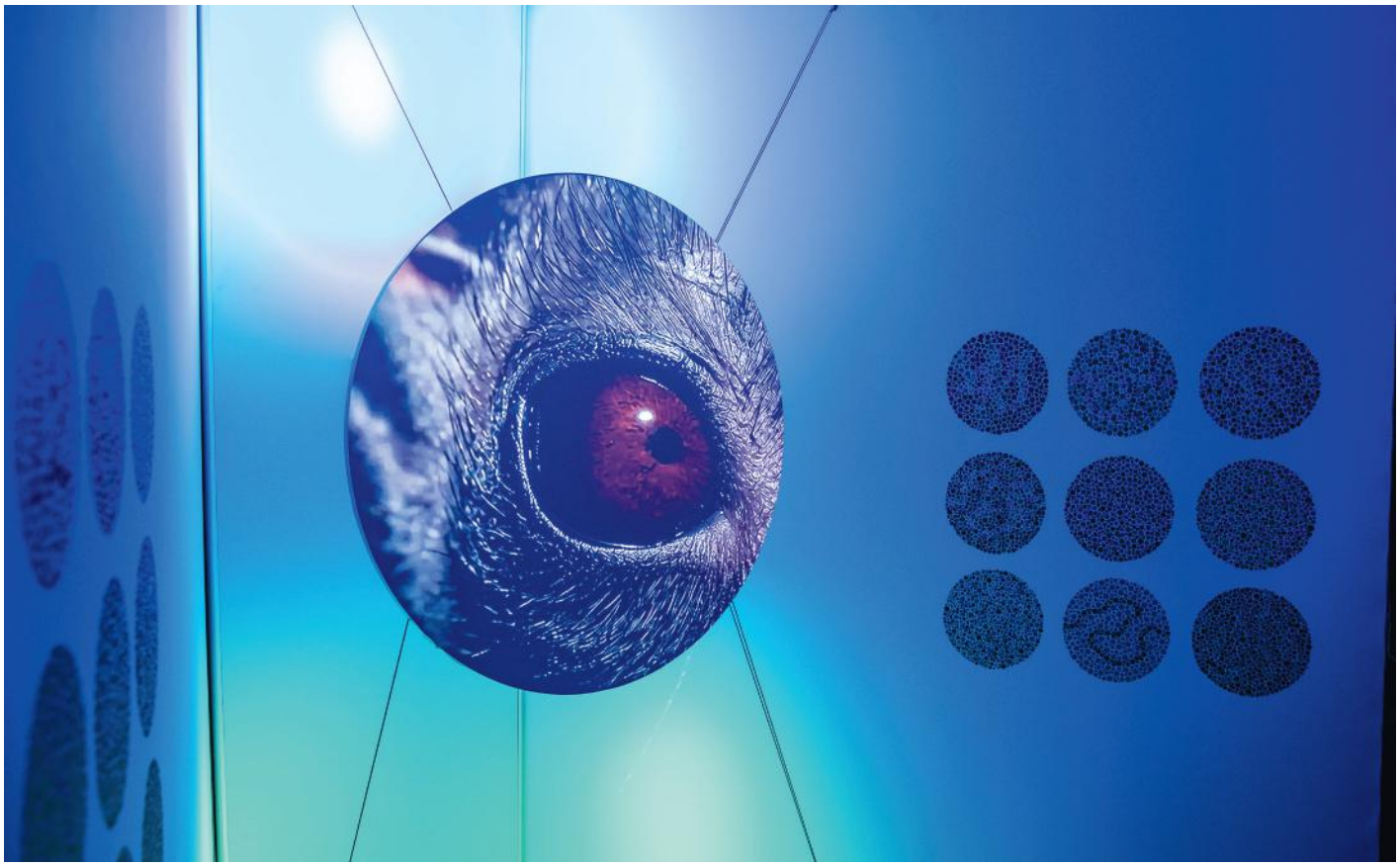
Roos advocates using lighting to "navigate" the night rather than "just extend the day", as can be the case. The emphasis should be on better legibility rather than more lighting, with strategic vertical lighting rather than a blanket horizontal approach.

This means retaining some areas of darkness within a layered landscape design for the benefit of other species, including trees, which also need the dark. SMLA took this approach at Elephant Park in south London, where pockets of light illuminate pedestrian routes and seating areas.

Roos sees the ecological dimension as "another huge field of inspiration" that can enrich lighting design strategies "if we try to change our mindset as designers – and really start thinking about the perception of animals and plant species".

Opposite top: SMLA showcased how different lifeforms perceive colour and light at LiGHT25.

Opposite bottom: Light and darkness are carefully balanced at SMLA's Elephant Park project in south London.



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KNUCKLING DOWN

WORDS
Flo Armitage-Hookes

"THE SWITCH TO HARDWOOD HAS BEEN A GAME CHANGER"

Oak knuckle joint (above); the joint installed as part of a glulam portal frame (top). Both are on display at V&A South Kensington until October 2026.

Renewable, lower-waste and aesthetically appealing: engineered wood structures are rightly lauded. However, often requiring metal fixings and oversized elements, they have their shortcomings.

dRMM, working closely with manufacturers, innovation labs and universities, has been researching ways to unlock the full potential of cross-laminated timber (CLT). Building from Forests, funded by Forestry Commission England, has developed a series of new engineered wood products, including a hardwood knuckle joint.

A softwood CLT knuckle had already been prototyped, but the switch to stronger species has proved a game changer. The hardwood transfers forces more effectively, eliminating the need for metal flitch plates and bolts and reducing the overall size of a post and beam structure. "What's really smart about the knuckle is that by tapering it, you can brace the frame so you don't need cables or a wall panel," says Finbar Charleson, research leader at dRMM.

The knuckles are made from British oak, which was readily available to manufacturers at the time. However, in theory they could be made from any homegrown hardwood – drawing on strength, stiffness and density data generated by the research project.

Although still "an involved piece of carpentry", dRMM plans to demonstrate the knuckle in a building and hope that it will become more widely available, or even a standard product, with a growth in demand. This is not just wishful thinking – the project's 45mm CLT sheets are already available for furniture applications from manufacturer Highland Heritage Woodworks.

Finbar Charleson on developing the UK's timber industry, page 24

ALEX DERIJKE

ADVOCATING FOR NATURE

KEVAN, FLICKR

WORDS
Isabelle Priest

PORTRAIT
Ackroyd & Harvey

Barrister Paul Powlesland explains why Rights of Nature will transform the 21st century, and how giving nature a real voice in the planning system could actually help to get more homes built

Opposite: The River Roding, where Paul Powlesland is a guardian and lives on a narrowboat.

Above: Paul Powlesland is a barrister and an advocate for Rights of Nature.

I came to Rights of Nature because I was trying to protect trees and rivers from being destroyed, and had a number of cases as a barrister where that was happening. Through those experiences, particularly the Sheffield Tree Campaign, I realised we can make legal changes to improve things for nature, but that fundamentally the relationship between law, humans and nature in the UK is broken and that we need to start again.

Rights of Nature is a way of looking at the world. It says we need to redesign all human systems – economic, political, religious, commercial and legal – to recognise nature as alive, more than a resource for humans, with its own interests that need to be represented. Potentially the most transformative system to reform would be the planning system, through design and construction.

What led you to it?
The NIMBY/YIMBY problem and the way the government is potentially going to remove protections for nature in the Planning and Infrastructure Bill. Recent developments on the River Roding, where I'm a guardian, also upset me: we could have built the same number of homes while giving space and life back to nature, making the homes nicer too. It's not just about swift bricks, but the fundamentals of planning and design decisions.

At the moment, the way it works is that there's a site and an evaluation of its ecology. We build as many homes as possible and do 10 per cent biodiversity net gain. That's not radical enough. It also means we get less housing overall because we're not maximising restoration on each site – we need more space for the same amount of nature. If we can weave nature into development better, we can have more development. We should question: what was this land, what does it want to be, what would bring maximum richness of life – nature – if it were fully restored? How can we do that while building a reasonable number of homes? It's a subtle, but revolutionary shift.

Have you been involved in projects?
I was involved in the redevelopment of a former Wickes site in Barking. There was little nature. The developer wanted to build 700 homes in four 25-storey blocks. I went to the community consultation and said: I'm here to represent the River Roding, which flows next to the site. I don't have legal powers, only the power of a local person to object. I reassured them I wasn't a NIMBY, but wanted to make the scheme as good as possible for nature.

I went to about six meetings and negotiated making all plants native species; putting in more SUDs; planting along the river; usable natural space; and turning shrubs and flower beds into trees and scrub, working with the architect. There was an impasse over putting a disabled car park next to the river. I was going to object; then they came forward to put a green roof over it, plant trees between the spaces and a native hedge. The scheme passed planning first time. Had I not negotiated, those things likely wouldn't have been included. We know they were possible since they have been.

Recently, I have also joined the board of the Albion City Development Corporation overseeing the proposed 'forest city' project east of Cambridge.

What's your big idea?
In the UK, either development goes through without being value engineered for nature, or people object and nothing

"WE HAVE TO GET PAST NATURE BEING SEEN AS A DRAG"

gets built. What if instead we have representatives of nature, locally and nationally? Presently, local people often do the work of representing nature, but it doesn't work well. They don't have access to expert reports.

There's a class issue too. Development is higher quality in richer areas with more middle-class, retired people able to devote time. With someone representing nature's interest in the process, you can achieve more. It's often win-win stuff. For every planning application of scale, someone should represent nature independently, probably paid for by the party doing the application, appointed by the council to speak powerfully for the interests of nature and ensure that in any trade-offs, which there will be, as much as possible is achieved for nature.

How do you go about finding representatives for nature?
It would be people who speak and act powerfully either at a national level, in policy decisions, or at a local level, for the river, wildlife, plants, trees and other ecosystems. They're often already doing so as volunteers. Give them support, help and paid time. The process in Barking unlocked a lot of value. However, the development wasn't as good as it could have been if they'd taken that approach earlier. We have to go beyond nature being seen as a drag to a good thing.

Another site I'm looking at was on London's largest marshlands. What if we said, from nature's perspective, this is not a disused gasworks; it is a precious remnant of one of the richest and most threatened habitats in London. It is not beyond the wit of man to recreate as much marshland there as possible, while creating a beautiful environment and homes. It would be one of the only places in London where you can live inside a restored wetland, where walkways are boardwalks over marshland, where trees are wetland species that are supposed to be there. The build cost might be slightly more, but you see it back in sale values.

What's the purpose of protecting nature?
Nature has an inherent right to exist on this planet. Our role is to be complex ecosystem engineers who, through changing things for our benefit, make the ecosystems around us richer – and bask in that glory. I live in a very urban area, yet my alarm clock is a warbler and my TV is the flash of a passing kingfisher. People are willing to pay a huge premium to live near nature. But we have to defeat an ideology that's about a hundred years old that says nature needs to be tamed, concreted, restricted, held back.

I believe Rights of Nature will be to the 21st century what human rights were to the 20th. This isn't about self-sacrifice. Solving how we weave nature into human lives and development is the question of this century. Those who help solve it will make money. Architects can start making this happen. They can stretch clients by saying, if you want to go through the planning system more easily, here's how.

You have helped get nature on the board of organisations. How does that work?
Rights of Nature isn't one thing, it's putting it into all systems. One is to put it into company decision-making via boards. I worked with cosmetics company Faith of Nature, for instance, to put nature on the board. We've now done it for several companies, though none in the building space yet. It doesn't mean you dissolve the company, sell your assets and give them to nature reserves. It might be a question of the nature director/representative saying to only take on a client if they're willing to do something to change, or working with technical knowledge to turn ideas into principles. It is soft power too: the whole company is thinking: 'What would nature do?' It depends how it's done whether it has legal influence. Some have legal powers; some are advisory. You can give the nature director a veto or voting rights. My organisation, Lawyers for Nature, would want some legal fallback.

Final thoughts?
I often imagine walking along the River Roding in 30 years' time when we've had a system that incorporates nature into the planning system and imagine, for example, the stuff that's been built in the past 20 years being regarded as slums. Because in the future, slums will be places that have no nature. In the same way we retrofit insulation, we're going to have to retrofit nature because people will demand it. Places that incorporate nature and nature's rights will be high status, because people will love them. How could you not love living in a beautifully designed home in a tower with life all around you? You don't have to drive to a nature reserve – you open your window.

This will be a principle that will guide one of the most important ideas of this century. An architect, designer or developer coming into this has a chance to shape, from the ground up, what Rights of Nature in planning, architecture and development looks like. It's the start of a new age: that is incredibly exciting.

Paul Powlesland is a barrister at Garden Court Chambers and a founder of Lawyers for Nature

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VERCORS

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PORTRAIT
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Based in the mountains of France and working with students and locals, onSITE is delivering a masterclass in sustainable, site-specific architecture

VERNACULAR

At its eastern edge, the 1,000m-high limestone plateau of the Vercors massif, in southeast France, drops dramatically to the Drac river valley to address the foothills of the Dauphiné Alps, which rise on the far bank.

In a largely self-built home in a remote mountain community sitting atop this vertiginous escarpment, Keith Zawistowski, co-founder of 'critical practice' onSITE, lives with his partner in work and life, Marie. Are they voluntary prisoners of architecture?

"The inaccessibility is partly what drew us here," says Zawistowski, 48, adding that the French Resistance operated from here during the Second World War, despite being only half an hour from Grenoble. "It's a patch of pristine culture and landscape with an amazing circular economy, its own stone and timber and craftsmen working intelligently with it; with our mindset, it felt like the right place to be."

That mindset was forged far from Vercors, back in Zawistowski's homeland, the United States. It was at a 2001 outreach studio run by Rural Studio, an off-campus design-build programme run by Alabama's University of Auburn, that he met Marie, who was over from Malaquais University in Paris. Both had been drawn by founder Samuel Mockbee's ethos, gaining a global reputation, of student learning via self-built projects, designed using locally available materials and engaging with the communities they would serve.

Not long afterwards, in 2005, the pair would begin developing onSITE in the same vein while working as architects and associate professors at Virginia Tech, with their own students. But their 2016 decision to move to France, where they were appointed by Grenoble's National Architecture school (ENSAG), would expose Keith to a new world of teaching, working – and living.

Over the last decade, onSITE has realised a string of string of bio-based and geo-sourced community projects. Working alongside students as ENSAG's designbuildLAB, an initiative they co-founded which focuses on ecologically, socially and culturally responsible architecture, these have been delivered as not-for-profit schemes via local government funding.

Starting with the simple 'Nomad' shelters dotted about the massif, designbuildLAB's work has grown more ambitious. The 2018 Maison Pour Tous community centre in the village of Four utilised rammed-earth construction, while the 2021 Jean Rostand schools café in the commune of Bourgoin-Jallieu made beautiful use of structural stone – part-assembled by student hands.

onSITE's latest work, such as its founders' 2024 home, Maison Achard, reinforces a belief in using local materials and skills. It's part of a life project that, says Zawistowski, aims to "confront climate change, resource scarcity and economic insecurity... to offer a compelling case study in resilience".

Being teachers and running a critical practice, not beholden to clients in the traditional way, has enabled onSITE to be experimental and, Zawistowski adds, to remain enthused.

"We've found students are optimistic about the future and not scared to question givens or reimagine the world," he says. "We'd be irrelevant as teachers if we weren't willing to take that radicality and feed it." Working with master's students on designbuildLAB's pro-bono construction of their designs, this pedagogic, practice-based and personal approach saw Keith and Marie named among the Global Award for Sustainable Architecture laureates, presented at the 2025 Venice Biennale.

While the Vercors move predated the pandemic, the breakdown of global supply chains during it lent prescience to onSITE's circularity thinking. "We realised everything this community needed to survive by way of agriculture, food production, fuel supplies or raw materials was already here," Zawistowski explains. "The butcher gets his beef from a farm in the next village, the baker heats his ovens with compressed sawdust pellets from a local sawmill – a byproduct of trade with the logging community – which also feeds district heating. There's

"WE'D BE IRRELEVANT AS TEACHERS IF WE WEREN'T WILLING TO TAKE STUDENTS' RADICALITY AND FEED IT"

Opposite: Restaurant Scolaire Jean Rostand in Bourgoin-Jallieu. designbuildLAB favours projects as local as the materials it sources.

MAXIME VERRET

an embedded notion of living and transforming materials simply; providing for yourself with what you find under your feet or around you."

The thinking applies to construction too, continues Zawistowski, pointing his laptop camera to the landscape filled with spruce and fir beyond his window. "There's two materials here: rock and – as one of France's larger forest-based communities – timber." He counts "gentleman loggers" Gérard Sauvajon, former mayor of nearby Corrençon, and his son John, as friends. Having also helped build the architects' new Maison Achard home, John is "living proof" of the circularity and long-termism bound into the community's view of itself and by inference, its place on the planet; its "systemic sustainability", says Zawistowski. "He knows if he treats the forest well, it will provide not just for him but for his son and grandchildren."

Zawistowski portrays a community founded on 'la souche' (the stump) – an economy where everything is used and nothing wasted. Even onSITE's own built work is designed for dismantling, he adds, using timber splices or metal fastenings rather than bonding agents. He contrasts this with an endemic culture of disposability in the USA that "tinkers with sustainability on the edges" – despite the looser regulation that enabled Rural Studio's experimental work.

Moving to France reframed Zawistowski's views. While complex bureaucracy meant onSITE had to work differently to get projects built (designbuildLAB students need to be employed as 'interns' by the contractor, which insures them), "institutions [here] are vested in public welfare", he says. "It takes time, but once they are on board, they're 100 per cent committed to facilitating such sustainable projects."

onSITE's thinking, though, is bound into broad stateside notions. Zawistowski's view of "contemporary vernacular" he says, is inspired by the likes of Bernard Rudofsky's Architecture without Architects show at MOMA, James Howard Kunstler's Geography of Nowhere (1993), a critique of modernism's anonymisation of America's urban landscape, and Architecture for Humanity founder Cameron Sinclair's 2006 Design Like You Give a Damn. The "shared language" ideas these authors espouse is, Zawistowski feels, evolving here on the plateau: "For me, it's just local people getting together to make something that makes sense for them as a collective, which will be different than what you'd make in another community or context with other resources."

It's also adaptive: with the Vercors massif in a moderate seismic zone, locals learned 'elastic' timber structures outperform traditional rubblestone. And so, Zawistowski says, the highly specific vernacular begins to evolve, adopting new materials and methods. He calls France a "master" of prefabricated timber building, using Cadwork software and German Hundegger CNC cutting technology. This, along with such untransformed materials as sheep wool or wood-fibre insulation is, Zawistowski claims, neither high- nor low-tech, but "right tech".

I note the concrete retaining walls at onSITE's 2022 Terraced House in Villard de Lans: how does he justify

Right: onSITE's 2022 Terraced House in Villard de Lans. Concrete is not off the menu – but it must be locally sourced.

FRANÇOIS CROISILLE

them? "We're not allergic to it," he replies. "Every material has its purpose; with concrete it's compressive strength and watertightness. And its place – all the materials used to formulate it were sourced locally." At Maison Pour Tous, concrete moment frames were used to augment rammed earth walls for seismic reasons. They could have opted to add cement to the rammed earth, "but do that and everything's 'dead', so you can't reuse it; but segregate them and the earth is reusable at end of life, as it's undergone no chemical transformation". Judicious concrete use perhaps also helps onSITE to scale up, such as at the 12-unit La Tanière housing scheme being designed in the same village as Terraced House.

With designbuildLAB engaged on its local government work, onSITE also takes on its own projects. It won an ideas competition for the UNESCO Al-Ula archaeological site in the Middle East, but live projects are located in the Appalachian mountains of Virginia as well as the Vercors. I gather that fee-setting is client-specific. "We are not talking about excluding clients based on means but based on values... we will not contribute to the culture of cheap, disposable garbage that is overconsuming our planet's resources," Zawistowski says. "We build to last or not at all."

I ask whether all the talk of local procurement and production fits right into the Trump tariff playbook. Zawistowski pushes back, saying that leaving the USA before his 2017 inauguration was no coincidence, but admits: "You put your finger on the biggest contradiction Marie and I have to wrestle with." He sees MAGA thinking as a "static notion" that looks to revert to an idealised past based in limitless consumption. "What I'm talking about might at first blush sound not so far from that insular worldview; but it's exactly the opposite. It may cost more – or not – but it's about everyone living here contributing to their community's culture, economy, sustainability and environment." About holistic investment, in effect. "For us, the idea is about reducing economies to things that make real sense at local scale, without being actively protectionist."

Zawistowski cites former Metropolis editor Susan Szenasy, who said: "The ecological problems of our time are largely problems of overconsumption and we are not going to simply switch to more sustainable materials and consume our way out." And if overconsumption is the problem, he adds, "you could say capitalism contributes to it", drawing on the logic with the jocular caveat: "But I'm American, so maybe I'm not supposed to say that."

Maybe not pure revolutionaries then, but committed to change by degrees: onSITE's founders are steadfast in their conscious, grounded way of life; resisting "the global and the virtual in favour of the local and the real". For them, there's nothing illusory about their rural idyll – it's but a planet-scaled prospect in microcosm. And the future is less complex than we might fear, concludes Zawistowski. "The current economic construct just needs reimagining to support the ecological one we aspire to."

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Growing Place workshop held in a replicable timber, clay, wheat and reed unit by Material Cultures, Enfield, London, 2024.

HYPER LOCAL

WORDS
John Jervis

Bioregionalism is changing the way we think about architecture and construction, focusing on local materials and regenerative systems, redefining supply chains and imagining more grounded, resilient futures

In 2023, Belgian practice BC Architects and UK collective Assemble completed the renovation of a train depot in the French city of Arles, using material sourced almost entirely from within a 70km radius, much of it waste from the site itself. The scheme now houses design lab Atelier Luma, whose website states its commitment to harnessing multidisciplinary expertise to research "the potential of non-extractivist, and often discredited, local materials, such as invasive plants, agricultural coproducts, algae, and industrial waste", focused on "the Arles bioregion… home to rich natural resources and many kinds of know-how, which we investigate, valorise and engage."

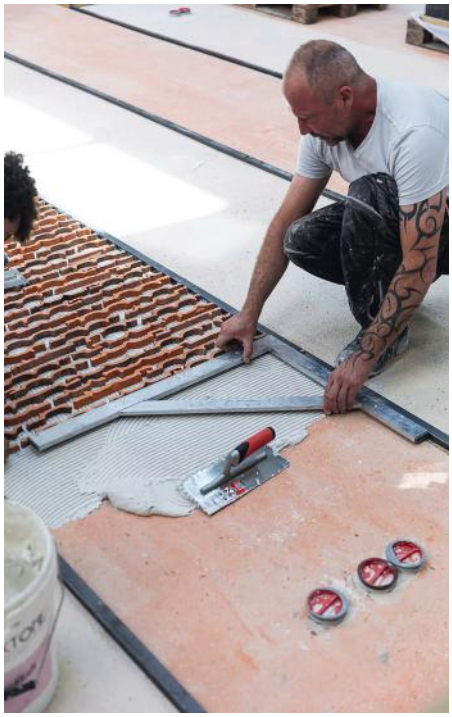
Backed by the well-to-do Luma Foundation, Atelier Luma has played a key role in bioregional architecture since 2016, in particular sharing recipes for materials and processes to be adapted to the specificities of other bioregions. The concept, in artistic director Jan Boelen's words, is that "materials are heavy and should stay local; people and ideas are light and should travel".

For BC Architects, however, these ideas came first from Africa. Its founders left architecture school a decade and a half ago with skills in space, light and concrete, but in Burundi, Morocco and Nigeria were required to embrace stone, clay, compressed earth and local knowledge. The experience helped to establish the practice as among Europe's leading bioregionalists, applying regenerative principles to both rural and (with backing from Brussels city architect Kristiaan Borret) urban settings. In ambitious public and private projects, it evolves techniques and regulations to exploit local construction waste, while tapping into Belgium's half-lost heritage of bio-based building.

For some, bioregionalism is old news, a countercultural movement pegged to a geographic concept defined in Peter Berg and Raymond Dasmann's 1977 article Reinhabiting California: "A bioregion can be determined initially by use of climatology, physiography, animal and plant geography, natural history and other descriptive natural sciences. The final boundaries… however, are best described by the people who have lived within it, through human recognition of the realities of living-in-place."

From this sci-cultural compost, bioregionalism grew environmental, spiritual, political and academic shoots, touching on decolonialism, animism and anarchism; focusing on Indigenous knowledge and governance; condemning extractive Western paradigms; and

ANGELA GRABOWSKA



ADRIAN DEWEERDT

BIOREGIONAL.AGENCY

Above: Renovation of Le Magasin Électrique, Luma Arles, in 2023 by Assemble and BC Architects. Roof tiles from the former train depot are incorporated into terrazzo.

Above right: Clay excavated from Vienna's subway was developed into tiles, glazes and unfired bricks for Biofabrique Vienna (2024), a project by the Vienna Business Agency and Atelier Luma, with the Institute of Architectural Design, TU Wien.

proposing the bioregion as a template for future governmental structures.

Translating all that into architecture is difficult, especially as the term 'bioregion' itself remains contested and malleable, more mindset than geography. Thus a certain pragmatism infuses bioregional architecture, but it is born not out of cynicism but a genuine belief that a reset is possible. The momentum is clear in academia (BC Architects' research arm, BC Studies, teaches at six universities) and is gathering in industry and government, as Covid-related price inflation and insecurity in global trade drive shorter, stronger supply chains.

Another BC branch, BC Materials, partners with firms to turn excavated earth into circular building materials, while offering associated workshops and consultancy. "So many contractors in Brussels pay to dump earth," says co-founder Wes Degreef, "so we thought, what if we made it into compressed earth blocks, maybe there is some economy to find in this transaction?"

Such spin-offs are often required to realise bioregional ambitions. Based at Vienna's Technische Universität, architects Gordon Selbach and Jakob Travnik have set up bioregional.agency to create collaborative networks. Selbach spent seven years working on large-scale timber projects across France, Germany and Austria (a sector that, although bio-based, frequently employs extended logistics and industrial production); Travnik has been involved with Atelier Luma since 2018.

They are keenly aware that remaking the complex economic and political structures behind supply chains will require effective pooling of knowledge across academia, industry and government. "It's about creating the right conditions for this to happen, because that's what's missing. Governments are not providing it, industry is not set up, even universities lack that knowledge," says Travnik. "If we can achieve those conditions, things should happen by themselves, and that's the best result."

For both, reference projects are key, "exemplifying what locally oriented approaches could mean, cultivating networks and production systems, and orchestrating their multiplication within a region", in Travnik's words. This

tangibility bridges gaps with suppliers, but also with communities, engaging them with materials and architecture that may have local resonance, and preserving skills that may be close to vanishing.

Selbach and Travnik characterise their relationship with industry as a form of hacking, avoiding the time and expense of creating alternative systems operating in competition. Conversations are proliferating as companies recognise the profit embedded in 'waste', while coming under pressure to reduce embodied carbon and increase supply-chain transparency. The pair don't hide the scale of the challenge – there is no simple answer when companies find their infrastructure is unsuited to a bioregion, while decentralising manufacturing clashes with dominant ways of operating, both economic and political. But, as Travnik says: "We need to understand what it means to finance this transition. And we also need to know what we're transitioning into. So it's like a mountain you need to drill from different sides – reference projects help us do this."

Such 'drilling' proceeds more slowly in the UK. A key player is nonprofit Material Cultures, which has pioneered low-carbon construction, regenerative principles and bio-based materials since 2019. Co-founder Paloma Gormley has only recently come to view her work as bioregional, but says it offers "a really useful framework for understanding geographic context, not in terms of political boundaries, but how it functions as a kind of organism of different habitats and geology, and how those things almost inherently prescribe a materiality".

Gormley accepts the UK lags in practice and policy, with post-Grenfell regulation on materials a key factor. Yet she believes understanding, language and appetite do exist within architecture, and says conversations are also starting with housebuilders and local government, even if "real change" will require legislation. She cites the example of France, where stepped targets for bio-based materials introduced for public projects in 2022 are causing dramatic change in supply chains.

Like European equivalents, Material Cultures has a versatile approach, with collaborative projects that intertwine design, research and education. There are physical outcomes such as demonstrators and displays, but also in-depth white papers, providing diverse ways to transfer knowledge into the mainstream. "We need to work laterally," Gormley says, "as infrastructures don't exist to achieve a functional process, so we have to find ways to plug gaps, whether in materials, skills or knowledge. It's a chance to learn, and kind of necessary as it's prefigurative: it's trying to imagine a future."

These efforts include a programme, MAKE, which runs workshops offering skills in both sustainable construction and, as Gormley puts it, "the human experience of being part of a supply or construction logic". Learning such skills facilitates the maintenance that bio-based structures require, giving people agency over their environment, and creates networks of participatory expertise, with effects extending beyond construction into culture and society.

Today, Material Cultures is far from alone, as evidenced by dRMM's three-year Building from Forests programme, commissioned by Forestry Commission England. Recipes, prototypes and models have been developed with specialist

HENRY WOIDE

THOMAS ADANK

Left: Clearfell House in Dalby, created in 2022 by Material Cultures with CSM, explores the diverse potential of British timber species.

Above: The innovative models in dRMM's Building with Forests offer the prospect of strength, sustainability and resilient forestry.

Above and right: The Stone Demonstrator by Groupwork with Webb Yates and Arup features pre-tensioned stone beams and columns, linked by steel tendons.

BAS PRINCEN. COURTESY OF THE DESIGN MUSEUM AND FUTURE OBSERVATORY (2)

manufacturers to exploit underutilised British-grown hardwoods, and are currently on display at the V&A for its Rethinking Material Futures series.

However, for Finbar Charleson, research leader at dRMM: "The most useful output has been the lab data from testing species in their most raw form… With fresh data, acquired using modern techniques, engineers can feel empowered to use local timber species, and discern between them."

If all sectors sign up, hardwood offers plentiful avenues for stronger, lighter solutions, whether as sawn timber or engineered products, perhaps even with standardised sections. "That remains the most nascent idea, but perhaps the most fertile," he says, "not just tapping into low-hanging fruit or existing supply chains, but thinking radically about products we develop from natural materials."

Charleson is bracingly optimistic about the future. "We don't have the strong, internationally profitable industry of Scandinavia or Central Europe," he admits, "but it's for precisely that reason we're uniquely well placed to design exactly the timber industry that we want." This could incorporate data-driven approaches to planting cycles with mixed species not monocultures, ensuring diverse supplies, preserving biodiversity, and futureproofing against vagaries of demand, climate and disease.

In contrast, stone gets a raw deal in bioregional terms, lacking the bio-based tag, but is now being championed as an ultra-low-carbon material via the Stone Demonstrator, erected in Earl's Court by the Design Museum's Future Observatory programme. The latter's director, Justin McGuirk, describes the project as "a stepping stone to adoption – the main reason we built it was to engage all parts of construction: contractors, developers, planners, regulators, and perhaps insurers above all. If you can't insure a building, you have no business model."

An advocate of bioregionalism as "a valuable, challenging way of thinking about not just land, but politics and communities", McGuirk points out that replacing ultra-processed, energy-intensive concrete with local stone would find receptive audiences and ready supply chains. Substantial uptake could generate equivalent costs to concrete and steel, and require trade skills that are "often not rocket science – a brickie can lay stone bricks as easily as clay ones".

I'm not sure that I quite grasp some issues. Constrained by capitalism and culture, does a self-selected, diminished bioregionalism risk becoming more greenwashing? Where are supply chains for PV panels or data centres in Arles? Is this really about degrowth? And should we unpick tech-based regulations around operational carbon quite so soon? On the latter, Degreef is hopeful: "Every generation searches for a new balance. This one is much more aware of materials; before, people sought technical solutions. Perhaps what we're doing may also prove not to be the best solution, but at this moment, it is the right question."

Gormley signs off with a note of caution: "When we do hopefully decide to make this transition at scale, I think the consequences will be immensely positive on so many levels. My only real question is whether we will get there in time, but at least it's clear what we need to work towards." And, despite my own lingering questions, this series of conversations leaves me hopeful that we will.

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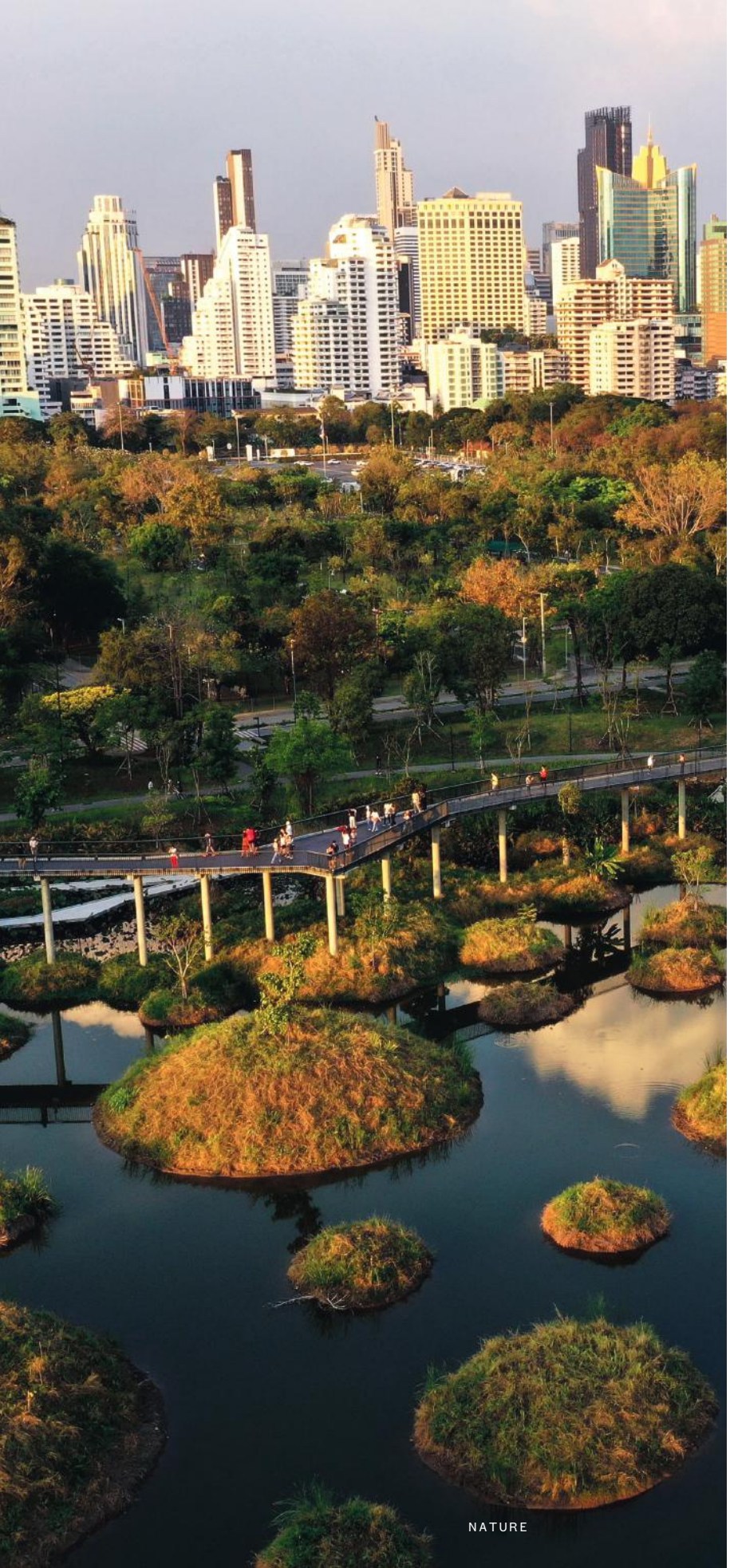


WORDS
Michael Pawlyn

Precision manufacturing, co-opting water and designing for life and for the circular economy could help architects contribute to the epochal shift needed to tackle global heating

TURENSCAPE & ARSONSILP

In 2018 the Intergovernmental Panel on Climate Change warned that to limit global heating to 1.5C, the world needed "rapid, far-reaching and unprecedented changes in all aspects of society". There has since been a notable shift towards a paradigm of regenerative design – but our behaviour as a species has been altering nowhere nearly as quickly as it needs to.

Now, we need an epochal shift that reconsiders what it means to be human, including a radical rethinking of how we shape the built environment. That is the contention of the new edition of my book, Biomimicry in Architecture. As architects we can, and must, all play a part.

There is a growing consensus that a (or the) root cause of unsustainability is our dualistic separation from nature. Most 21st-century economies function as if the living world is something separate that can be plundered for resources and used as a dump for our waste. So how do we move beyond this?

'We are nature' is increasingly asserted in environmental discussions. The essence of biomimicry is that we can learn to design as nature. It now seems obvious that 'trying to be a bit less bad', which typified much of the sustainability mindset, was never going to be enough. Another idea coming into sharper focus is that everything we do as humans must be aligned with life. Learning from how life has evolved on Earth can provide useful clues for how to radically rethink the design of the built environment.

The new edition has been heavily influenced by the philosopher Freya Mathews, who builds on McDonough and Braungart's proposition in Cradle to Cradle that a hair gel manufacturer should consider the river it will end up in and ask: "What does the river want from the hair gel?" Mathews has a more demanding question: "The question that needs to be asked is not merely what byproducts does the river want from the commodities we desire, but what does the river want us to desire in the first place?"

Aligning with ecosystems

Ecosystems are densely interconnected and symbiotic. They are zero-waste, run on solar energy and are regenerative to their places. Mimicking their traits may be one of the circular economy's biggest, most underexplored opportunities.

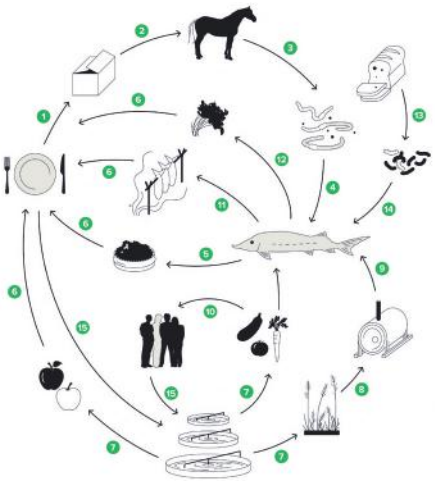
In this conception, each element in a human-made system can be considered equivalent to a species in a food web and the waste from one can become the nutrient for another. By bringing together cycles of food, energy, water and materials, we can transform waste into value while creating new sectors of employment and vastly increasing overall resource efficiency.

A number of successful projects have followed principles of ecosystems. The Danish town of Kalundborg began with two industries connecting to share waste heat. The number of industries and land uses grew, and achieved annual cuts of 240,000t CO_2 emissions and 1 billion litres of water, among other savings.

Schemes like Yorkshire's Cardboard to Caviar Project show how human-made systems can grow to steadily engage more and more resources while moving towards regenerative ways of operating. There's a real sense in which the more these projects adopt biological principles, the more their possibilities increase.

Working with inherently complex systems takes different skills to those typically taught in architecture schools. Instead of trying to plan for everything at the start, designers need to observe and evolve interconnected systems over time.

BARKOW, COURTESY OF THE LIVING



MARCIA MIHOTICH

KELLY HILL PHOTOGRAPHY

Previous page: Benjakitti Forest Park in Bangkok by Turenscape & Arsomsilp – an example of a 'sponge city' approach which maximises biodiversity while managing water more effectively.

Top: Wakefield's Cardboard to Caviar Project aligned with nearly all traits of ecosystems and provided a range of regenerative benefits.

Above: Lichens can chemically extract minerals from rock and start the process of soil formation.

Left: Hy-Fi by The Living features bricks grown using fungal mycelia.

Materials and structures

Materials are the next step in realigning the built environment with life. Ecosystem models demonstrate that persistent toxins must be designed out and that we need to reconsider how we make things, so all materials can be stewarded in closed-loop cycles.

The living world offer clues for rethinking material choices, starting with elements of the periodic table. As leading biomimicry advocate Janine Benyus has observed, nature has evolved high-performing materials with a limited, safe subset. Carbon, hydrogen, oxygen and nitrogen are 96 per cent of living matter; the other 4 per cent is mostly calcium, chlorine, magnesium, phosphorus, potassium, sodium and sulphur.

Where we tend to use brute force, nature uses more benign processes. Our materials production often used to start with mining, crushing, smelting, refining and forming. The process then frequently continued with other stages of treatments, protective coatings and adhesives. While a lot of this still goes on, the shift towards more sophisticated manufacturing, and increasing use of biomaterials, is gathering momentum.

Within a regenerative mindset, technologies such as 3D-printing could get us closer to biological manufacturing. According to Professor Julian Vincent: "In nature, materials are expensive and shape is cheap," and examples abound with such structures as bird skulls, water lily leaves and bamboo stems that show remarkable efficiency by having their materials in exactly the right places.

Trying to emulate this with regular manufacturing nearly always added cost, but 3D-printing has no such penalty for complexity: it can save money by using less resources. Computer-aided design and manufacturing will also enable us to build in biological features, such as interfaces that improve fracture control. Shells of marine molluscs like abalone illustrate the potential: chemically it is almost identical to ordinary blackboard chalk, but flexible protein interfaces make it 3,000 times as tough. Nature-inspired manufacturing could facilitate high performance with less material.

It is now easy to imagine a building in which concrete foundations, structure, insulation, internal and external finishes are all planet positive and sequester carbon. This gives a sense of what could be achieved if these approaches were scaled up. Nearly all the solutions exist for the construction industry to move into a new environmental paradigm. Computational design and fabrication are helping us edge steadily closer to biology's precisely structured materials.

Water and thermoregulation

Leading consultancy Biomimicry 3.8 makes the case that the way we design buildings and cities doesn't go far enough. Approaching a new project, we should start by analysing how a mature ecosystem in that region would function: how much oxygen would be produced, water filtered, carbon sequestered, food grown and wildlife accommodated.

Janine Benyus and Dayna Baumeister refer to these as ecological performance criteria; we should aim for human-made developments to match the rest of nature. This includes rethinking how water is handled in the built environment so we can maximise the potential for life.

An idea that comes close in terms of water and thermoregulation is 'sponge cities', developed by ecological urbanists in China in the early 2000s in response to an overreliance on grey infrastructure. It draws from Daoist philosophy and involves nature-directed solutions including retaining water at its source and slowing its flow, using biological treatment methods, reusing rainwater, establishing areas of soft landscaping and improving surface permeability. The result: more biodiversity, cleaner air, cooler cities, less flooding – and reconnecting us with the rest of nature.

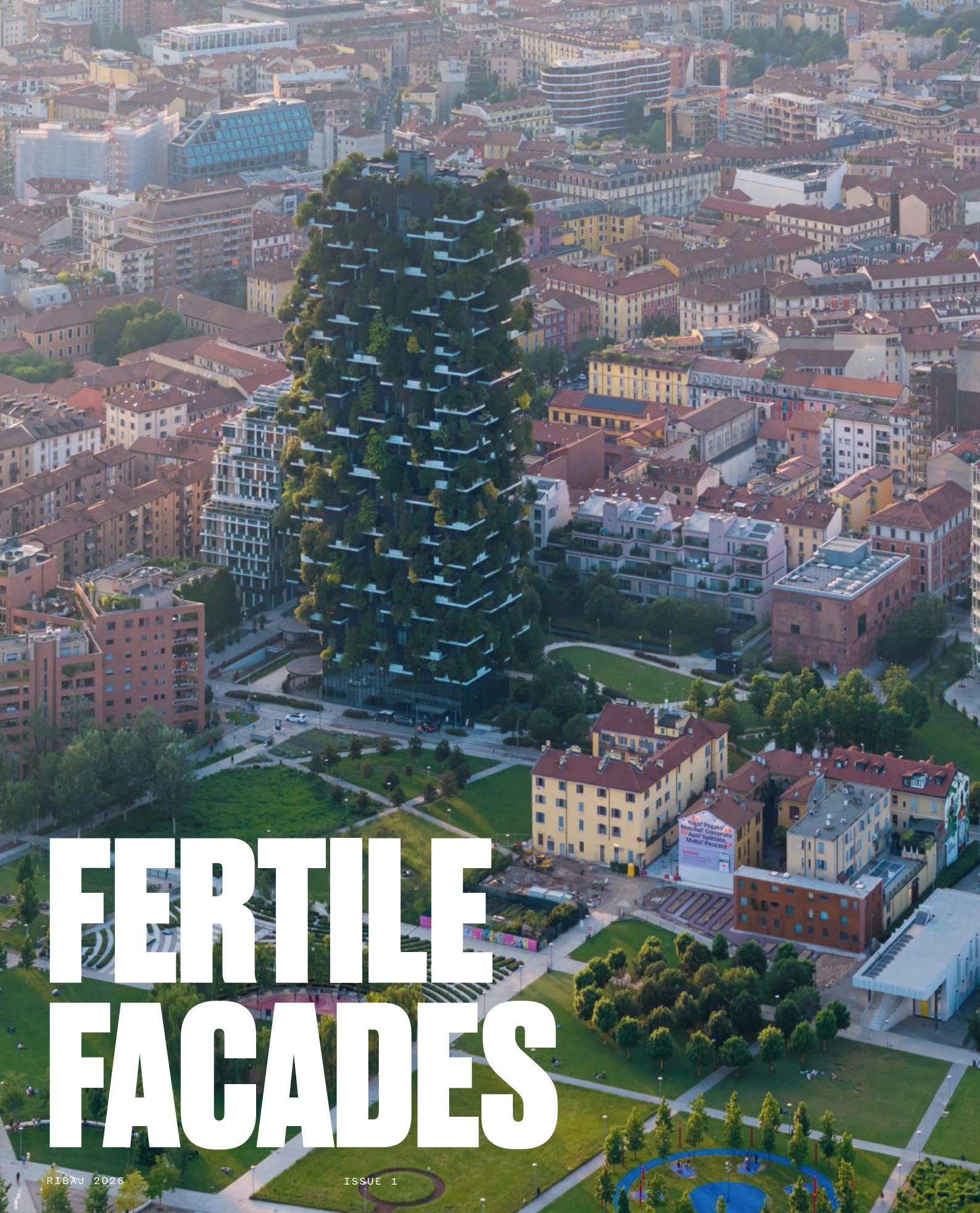
Aligning ourselves with life

Deepening biomimicry means not just mimicking forms and adaptations to deliver higher performance or designing standalone biomimetic buildings. It demands complete synergy, such that our ends as humans are congruent with the ends of the living systems we are part of.

Epochal shifts in human thought occur when enough of us lose faith in prevailing worldviews and are inspired by emerging ideas. There are good reasons to believe we are at such a juncture.

We can work towards this shift by regularly calling out the existing system's flaws and designing in a way consistent with the new paradigm. That means aligning everything – systems, materials, structures and cities – with life.

Michael Pawlyn is the founder of Exploration Architecture



FERTILE FACADES

WORDS
Chris Foges

Planting trees on building exteriors is a contentious topic, on grounds of cost, complication and questionable carbon benefits – but the appeal of unexpected greening goes beyond mere functionality

With tree canopies spreading over one fifth of the land area in Greater London, the capital is officially a forest. This natural asset is not evenly distributed, however: trees cover just four per cent of the City of London. There, a modest boost is expected in the unusual form of 63 St Mary Axe, a 46-storey office tower by Fletcher Priest. Where its narrow edges face into the City's glassy canyons, double-height balconies will house 76 trees, making continuous strips of foliage extending from ground-floor gardens to the sky.

"Our aim was to have a vertical forest of proper trees lapped up the height of the building – not just a green 'eyebrow'," says managing partner Ed Williams. "We managed to get two on every floor." For the architects, this bosky arch is a natural progression in a longstanding effort to integrate trees in every project: 135 Bishopsgate, for example, has a similar-sized plantation tucked away on a rooftop, but here it is made fully visible. "Vertical trees enhance occupant enjoyment, but also views from around the building," says Williams. "Double joy."

Many others are thinking the same way – as witnessed by visualisations of numerous forthcoming buildings, both near and far. Saplings will sprout from a ziggurat of terraces capping HWKN's Two Dockside at Canada Water, and from Gaudi-esque balconies that project from The Island, a newly consented tower by MVRDV in Taiwan.

Is this a good thing, though? Doubts are voiced by architects and agronomists who caution that planting trees at height is rarely a rational choice – too complicated and too expensive – and also maybe somehow dishonest, or unnatural. In London Arboretum, a new gazetteer of London's trees edited by Judith Lösig, architect Liza Fior takes a wry look at high-rise forestry, describing it as "a self-deception as much as a deception, a denial by the architect that the building takes up the ground in the first place".

IWAN BAAN

Previous spread: Bosco Verticale in 2024, a decade after completion.

Below: 63 St Mary Axe, by Fletcher Priest and landscape architect Gustafson Bowman + Porter for AXA IM Alts, is expected to complete in the early 2030s.

Below right: Trees sprout from tile-clad balconies in visualisations of The Island, by MVRDV.

A robust defense is made by Stefano Boeri, who planted a seed for this burgeoning species of arboreal architecture with his 2014 project Bosco Verticale – a pair of residential towers in Milan that are swathed in 800 trees. He recalls widespread scepticism, but a decade later both the organic and human tenants are happy. His recent book, Bosco Verticale: Morphology of an Urban Forest, documents a thriving ecosystem of bugs and birds, and balconies that groan with vegetation. "If you climb mountains, then you know how far up trees can survive in a completely mineral environment," he tells me.

He does underline, however, that this approach is by no means an easy gimmick. Onerous commitments ranged from climate analysis and wind tunnel tests to development of a centralised irrigation system and the painstaking selection of appropriate species with agronomist Laura Gatti, plus a two-year cultivation period.

Fletcher Priest has also recruited Gatti at 63 St Mary Axe, and Williams underlines the additional work required even ahead of planning. "We wanted to be sure that we specify tree species that will thrive – because there are certainly stories about those which don't – which in turn affects the way we've designed terraces," he explains. "We've gone into substantial detail so that we won't lose trees in later design phases."

Vicente Guallart sees the complications of tree-covered buildings not as a fault, but as something like a feature – or at least an opportunity to fundamentally rethink our understanding of urban ecology. The former city architect of Barcelona is co-founder of Urbanitree, whose recent apartment building Terrazas para la vida (Terraces for life) features trees on its cantilevered balconies, as well as a rooftop farm. Plants are fed by grey or black water from the building, reinstating a kind of local circularity that was lost when Ildefons Cerdà installed the city's sewers. "The building becomes a kind of machine for depurating water," he says. "That does add another level of complexity, but we need to renaturalise the places where we live."

All that can entail extra expense both up front and for maintenance, so it is notable that Urbanitree's scheme is social housing. Since the prototype

FLETCHER PRIEST

MVRDV

GIOVANNI NARDI

ADRIÀ GOULA

of Bosco Verticale, Boeri has applied its principles in dozens of similar projects including social housing in Europe and China, where prefabrication reduces cost; Trudo Vertical Forest in Eindhoven (2021) had a target of €1,300/m². "That's very important," says the architect. "Basically, affordability is our main goal now."

There is a carbon cost, too, in the structure required to support quantities of wet organic matter at height. At Bosco Verticale, engineer Arup estimated that increment at one to two per cent. That's offset – it suggests – by other environmental benefits. Boeri rattles off a good list, from shade that reduces interior temperatures by three degrees to a local reduction in the urban heat island effect equivalent to that of a park.

Williams of Fletcher Priest is careful not to make exaggerated claims for 63 St Mary Axe. "The increase in structure is modest in context, and while trees have environmental benefits, you need a forest-scale quantity to make a real impact in terms of carbon dioxide."

It is understandable that any tree-covered building might be interpreted as making an implied claim to sustainability – or 'greenwashing' schemes which fall short in other ways. When Heatherwick Studio completed its 1,000 Trees in Shanghai – a mixed-use development resembling a pair of forested mountains – the architectural academic Philip Oldfield calculated that it would take 155 years for a tree to sequester the amount of carbon in its concrete planter. Stuart Wood, executive partner at Heatherwick Studio, offers a counterpoint: trees have a powerful appeal, and the most sustainable commercial buildings are those that endure beyond a typical 30-year life because they are loved.

For Wood, the main architectural advantages offered by trees lie elsewhere: "surprise; delight; the unpredictable". In Shanghai, the principal objective was to smooth a hard edge between the built environment and a riverside park, while mitigating the bulk of a large building. "As buildings get larger volumetrically, and materially harsher, nature can soften that experientially."

Stefano Boeri recalls accusations from fellow architects that 'hiding'

Above: Young trees populate double height balconies at the timber-framed Terrazas para la vida (2025), designed by Vicente Guallart and Daniel Ibañez of Urbanitree.

Above left: Trudo Vertical Forest in Eindhoven, by Stefano Boeri Architetti, provides 125 flats for low-income tenants, each with at least one large tree set among 8,500 smaller plants.

Below: Trees stand atop every structural column at Heatherwick Studio's 1000 Trees, which the architects liken to the hanging gardens of Babylon – the archetype for planted buildings.

Below right: Life among the trees at Bosco Verticale. The towers house vegetation equivalent to 5ha of flat parkland, according to the architect, concentrated in an area 50 times smaller.

buildings with trees suggests some deficiency in what lies below. Instead, he argues, they should be seen as an extension of the architectural palette, whose seasonal variation, textures and movement present unique compositional opportunities. "Greenery is not decorating the 'real' building," he says. "It is the basic content of our facades."

The architectural opportunity is not merely aesthetic; the sound, smell and dappled light of trees that are close to living spaces have proven benefits for mental health and wellbeing. Williams has a collection of studies quantifying the effects on everything from heightened energy levels to a fall in sick days. "I don't know how those are worked out," he says, "but I'm inclined to believe it because I'm aware of the emotional benefit trees have for me."

That reflects the way enthusiasts tend to talk about vertical forests: it's often unashamedly subjective, rooted in the language of feelings and the fantastical. "Trees are just lovely things," says Williams. "I've loved them in every way, from climbing to collecting conkers, since I was a kid."

Boeri, too, admits to a "profound obsession" dating back to childhood. His inspirations include Italo Calvino's novel The Baron of the Trees, about a boy who runs away to live in the treetops; his own book talks of "fairy tales and legends" that now inhabit the Bosco Verticale. "The idea of observing life from the perspective of the trees – hidden by leaves and branches – has always fascinated me," he says. "The appeal to the imagination is very important."

It's a striking contrast to the dry, functionalist terms in which architects often feel compelled to frame design proposals. There may be good arguments for vertical forests as a rational approach to urban greening, but it's also refreshing to hear they could be something more.

QINGYAN ZHU

IWAN BAAN

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DIVINE MILDEW

Carlo Arancio
Moss and Faith
Marsala, Sicily. 2018
Instagram: sicily_in_decay

The Marsala church of Santa Maria della Grotta's past is read not in centuries but millennia. In the ancient Punic Wars, the rocky plateau in which it sits was a necropolis (city of the dead), but by 300AD, it had become a quarry, supplying Romans with stone for the city of the living they founded there. Later, early Christians would discover and inhabit the excavated outcrop, carving subterranean arcosolia that served as both tomb and altar. After the Normans conquered Sicily, Basilian monks built a crypt of its caves and a church above it before heat and humidity drove them to cooler climes a century later. Abandoned for 300 years, the Jesuits arrived in 1550, appointing Giovan Biagio Amico in 1712 to create a new church from what remained. But even his Baroque flamboyance, lit by just its dome oculus and the east face, fails to mask primordial origins. This church, like those before, is set into the hill, its nave carved from the earth; and so, inexorably, its warm, vegetal damp seeps through walls of holy plaster, taking back what man had put asunder.

Jan-Carlos Kucharek

A SPACE TO GROW

WORDS
Vicky Richardson

PHOTOGRAPHS
Gareth Gardner

In Grimsby, John Puttick Associates has boldly reimagined a group of Victorian warehouses as part of a scheme bringing a new breed of youth centre to some of the UK's most deprived areas

Opposite: Restored riverside warehouses had served as a billiards hall, a sawmill and a box factory before closure in the 1990s.

The 2026 opening in Grimsby of Horizon Youth Zone – a centre for 2,500 young people aged eight to 19 – is set to bring optimism and fresh civic pride.

In the 1950s Grimsby was one of the world's largest fishing ports, but from the 1970s experienced rapid decline and now includes some of the UK's poorest communities, and some of its greatest health inequalities. Children and young people have been hit hard: during the austerity era of the 2010s, four council-run youth centres closed in the town, with several local family hubs shutting their doors more recently. In 2021 Ofsted rated North East Lincolnshire children's services 'inadequate', although the local authority has since rebounded and was regraded as 'good', with 'outstanding' leadership, in September 2025.

The Youth Zone's development has coincided with this turbulent period. Architect John Puttick Associates (JPA) had been asked to draw up designs for the site in 2018. In 2022 it was the first major project to receive a grant from the government's Youth Investment Fund – £5.7 million, roughly half the building's capital cost. It also benefited from the Heritage Lottery Fund, and JPA worked closely with Historic England which carried out a detailed site report in 2019.

Puttick had been working with the client, charity OnSide, since 2015 when he won a competition to design a Youth Zone in Preston (also due to open in spring 2026). The time it takes to get these projects off the ground is depressing given the urgent need, and is partly explained by the complexity of securing funding, a minority of which comes from the local authority.

Once capital costs are secured and the build is underway, OnSide sets up a local, independent charity responsible for raising funds for running costs from the local authority and from local business partnerships and charitable donations. The national parent organisation was founded in 2008 by entrepreneur Bill Holroyd, who had been the chair of Bolton Lads and Girls Club. His idea was to offer good quality leisure facilities for young people in the UK's most deprived areas. There are now 16 Youth Zones with more than 55,000 young members who each pay £5 a year and 50 pence a visit.

JPA is the architect for four of them – in Croydon, Preston, Blackburn and Grimsby – and hopes to work on more,


HORIZON

Above: New construction includes a climbing wall wrapped in expanded aluminium mesh.

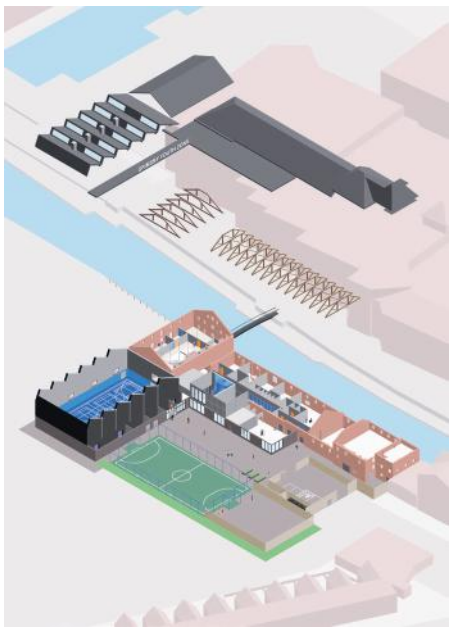
including one in Burnley. Puttick has the right mix of optimism and practicality, thanks to a varied career with David Chipperfield and Make Architects, whose Beijing studio he led. Patience and pragmatism have been useful on these lengthy projects where consultation, collaboration and partnership are key.

Grimsby Youth Zone restores an important group of Grade II-listed Victorian grain warehouses and maltings in the West Haven area. Haven Maltings, Garth Buildings and Migar House, which date to 1821, had been derelict since a fire destroyed most of the site in 2009. The elegant brick structures sit on the River Freshney, which flows into Grimsby Docks and has been documented as a natural harbour since the Norse invasions of the 8th century. The Freshney here runs parallel to Grimsby's main shopping street and is sadly blocked from view by a 1980s shopping centre which confronts the river with a windowless facade.

JPA proposed an L-shaped campus, restoring the listed buildings and adding a 1,115m^2 sports hall. Haven Maltings and Migar House, either end of the old site, have been restored, while the central Garth Buildings has been rebuilt using a combination of salvaged and new bricks. In discussion with Historic England, the decision was taken to use the old bricks for the river-facing south facade, with new natural orange Furness Bricks being used for the lowest 10 courses above the waterline, and for insulated cavity walls.

The handsome run of warehouses has a distinctive raised hipped ventilator on the far left where there was once a maltings kiln, and an exciting approach to the entrance in the old granary, Migar House, via a curved pedestrian bridge added in the 1970s. Young people cross it directly into an arched opening leading to a large entrance hall with a full-height atrium. Openings on the south facade, which would have been used for hauling in grain from barges on the river, have new fittings. The expansive hipped slate roof, meanwhile, has been restored using old drawings and photographs.

We're a long way here from the old format of a youth club (think community halls with table football and old sofas). Since the 2010s, when 70 per cent of their funding was cut from local authorities, neighbourhood-based youth centres have been disappearing, with more than 1,200 closing in England and Wales between 2010 and 2014. Youth Zones are very different beasts, almost like stylish private members' clubs for young people,



Above: The triple-height atrium gives access to music and film facilities, a health and wellbeing room and upper-floor offices.

Left: Adding a sports hall to the Victorian buildings creates an L-shaped campus.

with facilities including performing arts studios, design and maker spaces, training kitchens, music recording suites and sports facilities including climbing walls and fully equipped boxing gyms.

JPA has carefully orchestrated the sequence of spaces to avoid the feeling of a school or institution. The atmosphere is busy to the point of chaotic, with loud music and hundreds of young people milling about. Members decide how to spend their time, away from parents but supported by well-trained, energetic staff. Youth project group members, who worked closely with the design team, said they most value time together in small groups. The design strategy therefore is to draw them into activities rather than tell them what to do; this is reflected in the architecture, which makes many spaces visible from the entrance and social heart of the building. Most important of all is a café alongside the entrance hall which has booth seating and breakout spaces with sofas and quiet corners. OnSide believes it's important for young people to set their own agenda but doing this on a full stomach is also vital, and the canteen provides a hot meal for just £1.

Despite having to negotiate the complexity of user groups of adults and young people, and multiple stakeholders, JPA has designed a building with integrity and clarity, which responds intelligently to various desires. A key element JPA has deployed on all its Youth Zones is to reveal and celebrate the roughness of building services and structure. In places it is almost crude and over-structured – in the atrium a brutal steel and glass box rises three storeys with a complex combination of existing round steel columns and new square section steels. Puttick says young people enjoy the dynamic nature of a space that seems not fully complete or pristine.

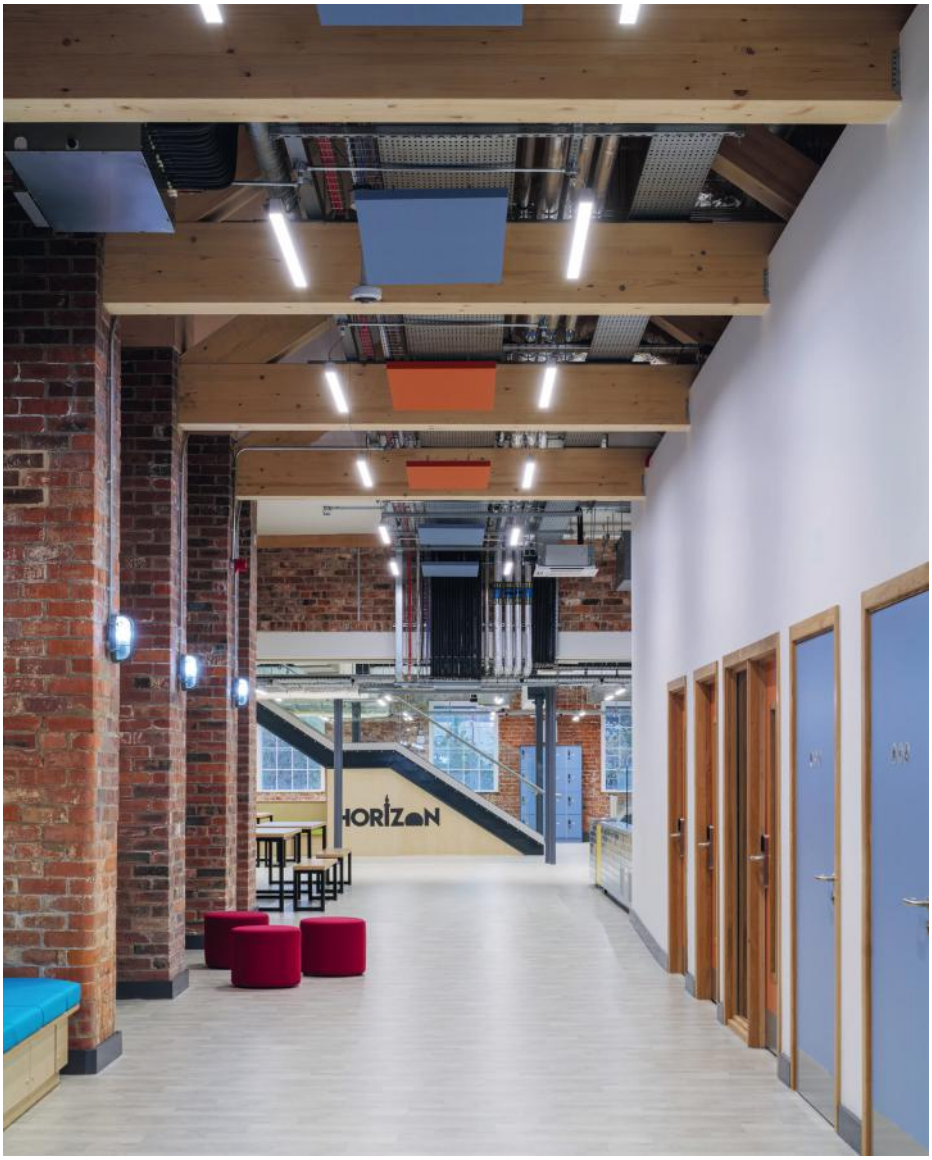
A wide, 50m-long hallway running the length of the Victorian warehouses is a space for milling about, inasmuch as it provides access to various activity spaces. Painted surfaces are bright but not 'kiddified', and are offset by 'raw' materials: large areas of exposed brick, glulam trusses, and, where they survive, original timber lintels. JPA has designed robust timber furniture, including workshop tables on wheels, for the maker space, which will be equipped with digital fabrication tools as well as art materials.

The environmental and sustainability strategy includes photovoltaics on the

roof, a mechanical heat recovery system and movement-linked LED lighting. Yet many campus spaces inspire with their scale and proportions, as much as their quality of equipment. The gym, complete with free weights and the latest machinery, has a soaring view of exposed glulam trusses and the birch-ply-lined roof space. The four-court sports hall's sawtooth roof brings in diffuse northern light, while wind catchers provide natural ventilation.

On the wall is a poem commissioned from Poet Laureate Simon Armitage, concealed when I visited with strips of paper. It speaks of Grimsby's history and young people's role in creating its future and will be revealed at the grand opening in February 2026. While no one is allowed to read it until then, Horizon's new chief executive, Lucy Ottewell-Key sums up the message: "We don't get stuff like this here – Grimsby has been a wasteland for most of my life. It's mega. A game-changer."

Vicky Richardson is a curator, writer and former head of architecture at the Royal Academy



Above right: Deep glulam beams and galvanised conduit echo the industrial architecture of the existing buildings.

Opposite: Exposed structure in the sports hall lends a robust, no-frills character.

IN NUMBERS

GROSS INTERNAL FLOOR AREA
2,995m²

GROSS (INTERNAL + EXTERNAL) FLOOR AREA
4,055m²

ANNUAL CO_2 EMISSIONS
11.81kgCO_2eq/m²

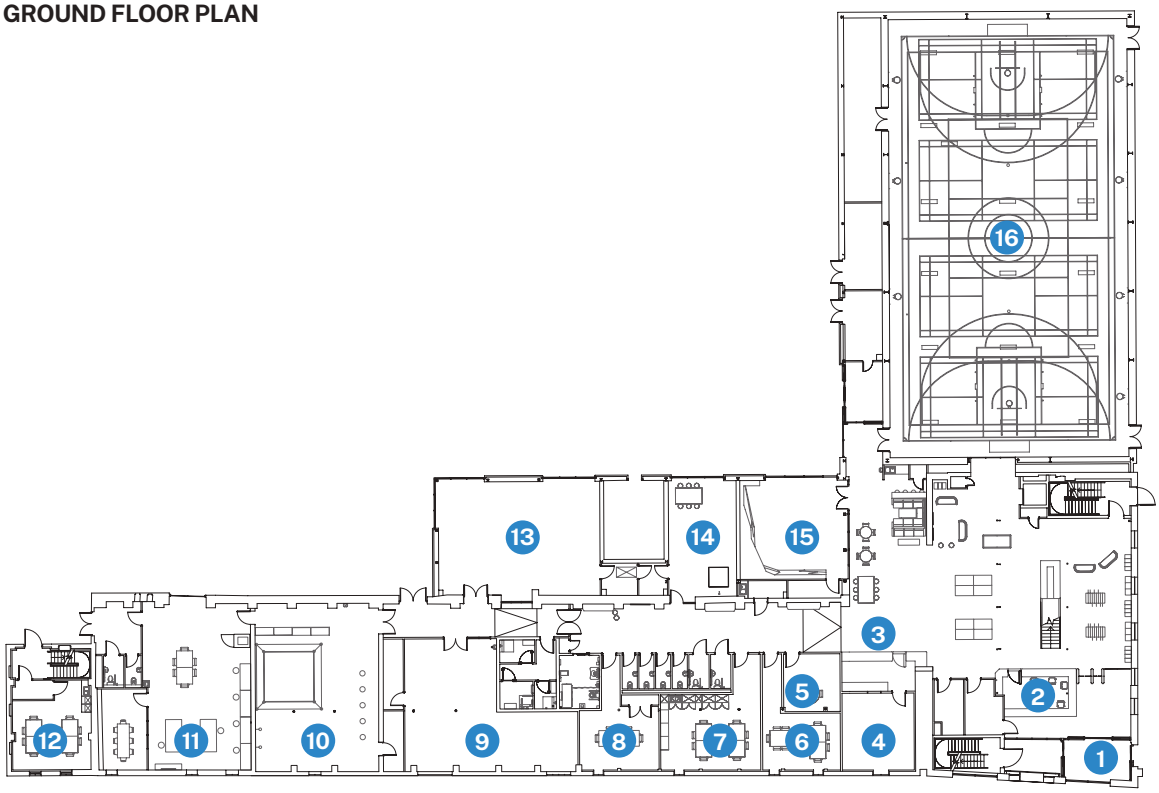
OVERALL AREA-WEIGHTED U-VALUE
0.21W/m²K

ONSITE ENERGY GENERATION
24%

CREDITS

Architect
John Puttick Associates
Client
Horizon Youth Zone
Conservation architect
Seven Architecture
Structural engineers
Ramboll, Craddys
M&E consultant TACE
QS, project manager
Walker Sime
Principal designer
Jacob Feasey Associates
Fire consultant
Clarke Banks
Main contractor
Hobson & Porter

GROUND FLOOR PLAN



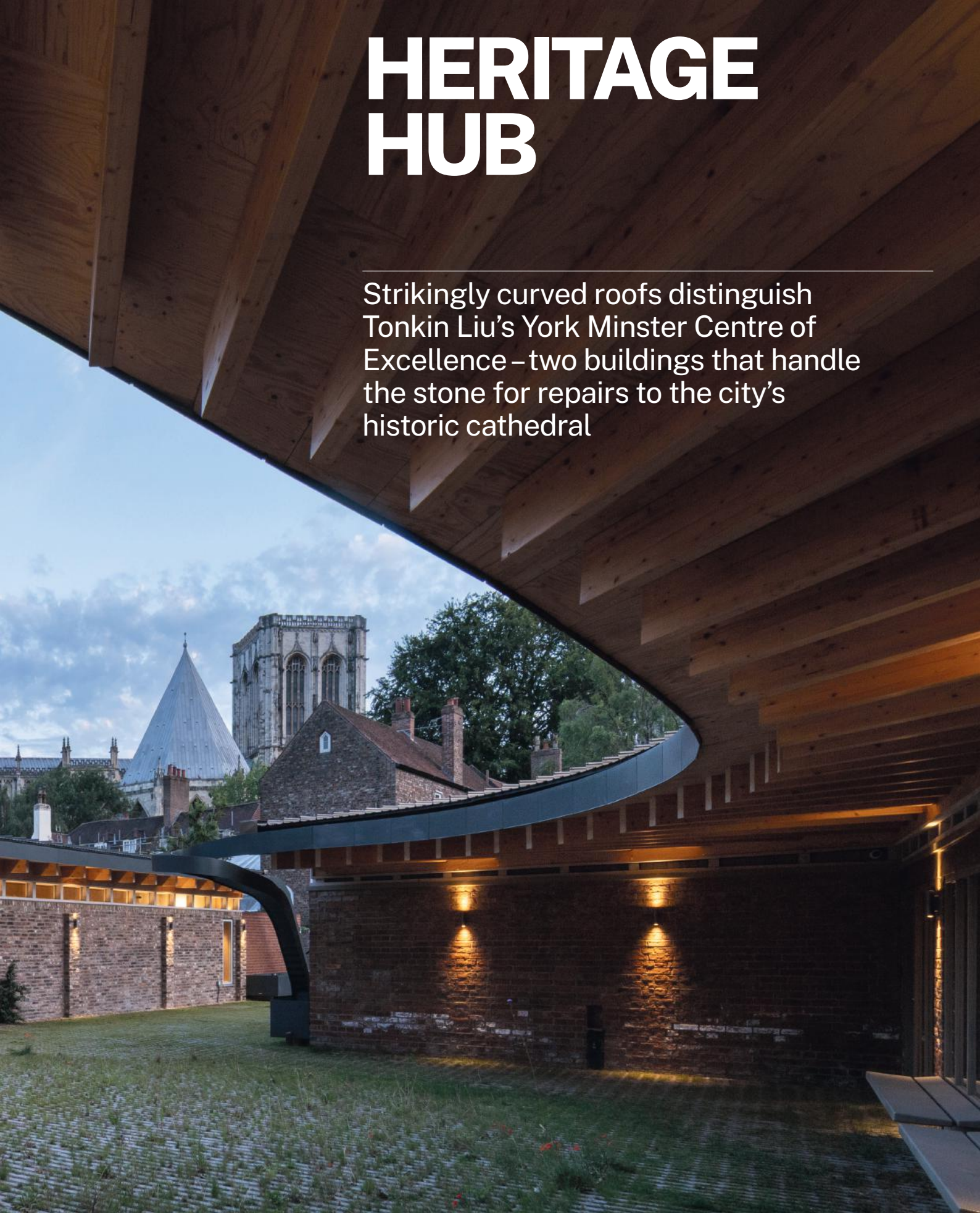
1 Lobby
2 Reception
3 Recreation area
4 Kitchen
5 Inclusion room
6 Group work room
7 Arts and crafts room
8 Enterprise room
9 Fitness suite
10 Boxing gym
11 Makers space
12 Meeting room
13 Performing arts
14 Mentoring kitchen
15 Climbing wall
16 Sports hall

WORDS
Eleanor Young

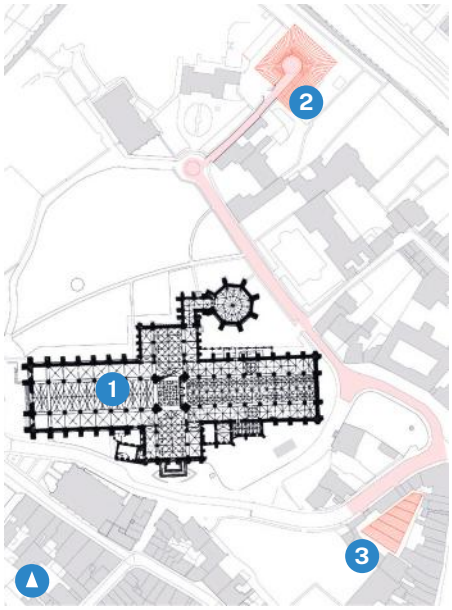
PHOTOS
David Valinsky

HERITAGE HUB

Strikingly curved roofs distinguish Tonkin Liu's York Minster Centre of Excellence – two buildings that handle the stone for repairs to the city's historic cathedral




Street
3,2t



Site plan

1 York Minster
2 Heritage Craft Skills Building
3 Tech Hub

"We are at the cutting edge of climate change," says Alex McCallion, director of works and precinct at York Minster. "Magnesian limestone does not like wet winters and hot summers, it is delaminating at a great rate. We need 21st-century tools to look after the estate; we couldn't do it in the old way."

Thus the York Minster Centre of Excellence, comprising two buildings: the Heritage Quad, won in invited competition by Tonkin Liu in 2021; and the Tech Hub, coming shortly after. The two buildings handle the stone for cathedral repairs, first CNC-sliced into workable blocks at the hub – two weeks' work reduced to two hours, says McCallion – then taken the five-minute journey to the Heritage Crafts building. Both buildings are in the precious 6ha precinct of the Church of England's second cathedral. Both were briefed to be low carbon and have unexpectedly expressive special roofs, which Mike Tonkin of Tonkin Liu explains to me in (painstakingly) functional terms.

McCallion, his client, however, is lyrical about why York has chosen to keep its stonecutters in the cathedral precinct while elsewhere – including at Canterbury – this work has been moved out.

"We could have moved out to an industrial shed on the moors," he says. "But we wanted to keep that affinity [with the] heritage environment – and a beautiful building."

So he seeded the development sites – promising design excellence – into a neighbourhood plan for the precinct, that was in turn adopted into the local plan.

Large-scale stonecutting: Tech Hub

The Tech Hub is all but invisible. Replacing an old stone yard, this mesh cage and its steel frame have barely a wall but instead are surrounded by a block of 1920s houses and glimpsed only through a 1930s mock Tudor arch. From the street there are hints of bright yellow gantries and the large blocks of limestone they shift around. Through this arch also came all the construction materials. The hub is like a "ship in a bottle", says Tonkin.

There are enclosed spaces at either end of the hub – light touch refurbishments. But the effort, carbon and ideas went into the roof and foundations, above and below the mesh that delineates the space. Below ground, once the 1940s/50s slab was lifted, medieval York was waiting to be discovered with fireplaces and walls still visible. The foundations were deliberately planned to be shallow with a raft at 1.8m below grade. But a trial trench found a Roman road at 1.6m. Archaeology followed, before the raft was constructed. "It burnt some contingency," says McCallion ruefully.

The roof is a delight, transforming and elevating the yard. Gazing up into it from the narrow end of the tapering site, the arched north lights are almost invisible. Instead you see a series of timber ribs pushing up into the roof with the double curve of the hyperbolic paraboloid. From the entrance, where the space is at its widest, the glass reaches up to the sky from its steel and glulam trusses, giving space for the large CNC cutters, before touching down at the yard's edges so it avoids oversailing the surrounding buildings. From the first-floor drawing workshop you can see how the PVs, borrowed from yacht technology, wrap around the double curve of the roof. The back wall ripples with folds of acoustic insulation while pallets and racks house a library of limestone blocks.

Heritage Craft Skills Building

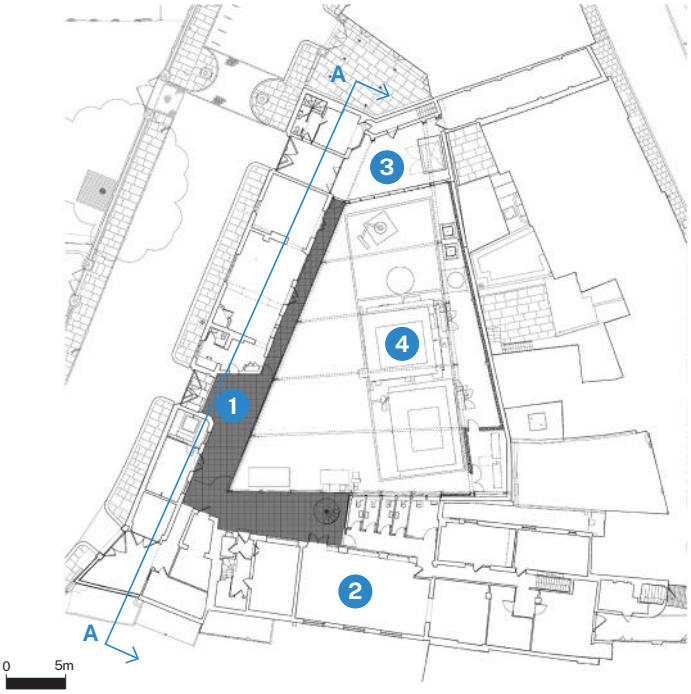
Tucked away where the precinct meets the city walls lies the Heritage Quad. The tilt of its sweeping roof welcomes views into the stone carving workshops from those who walk the walls. But the entrance is less welcoming: a secure metal gate and no obvious entrance sequence. In fact there are multiple external doors. One acts as a back door for the stone to be brought into the workshop, a couple allow for a troop of toilet visitors during the annual parties at the Deanery next door. But there are also four for the workshop itself and one for each of the six rooms in the block where first-year apprentices are housed (in lovely rooms with top-lit bathrooms) so they can enjoy their own small garden terrace.

The main building is almost reductive: simply three blocks set around a courtyard. But again it is elevated by the roof. This was originally designed with a green roof, then switched to a gold-finished aluminium with standing seams that emphasise its geometry, and a timber underside. This sweeps around the building, lifting up for the city walls and dipping down for the courtyard. Tonkin Liu has allowed its curve to soften the rectilinear courtyard, a very satisfactory shape in plan and one followed through with the courtyard paving, which is laid

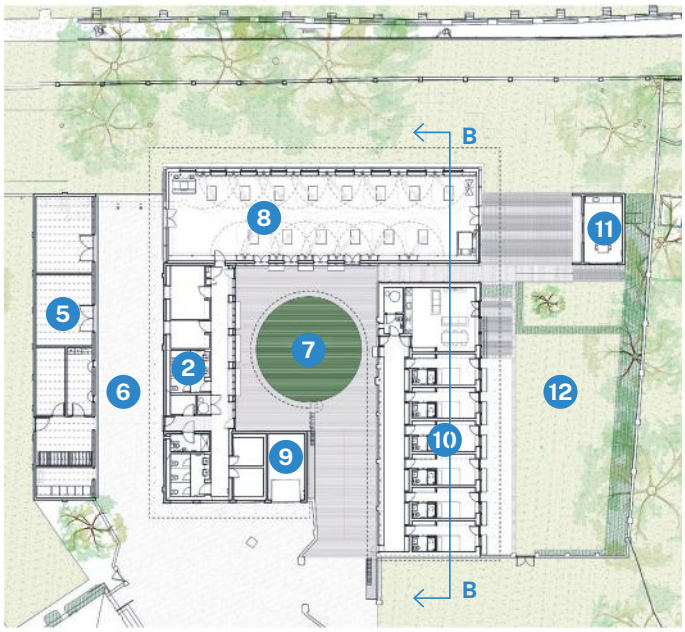
Previous page: The sweeping roof of the Heritage Craft Skills Building embraces the view of York Minster and creates covered work and sitting spaces.

Left: Inside the mesh of the Tech Hub the rooflights open it up to the sky.

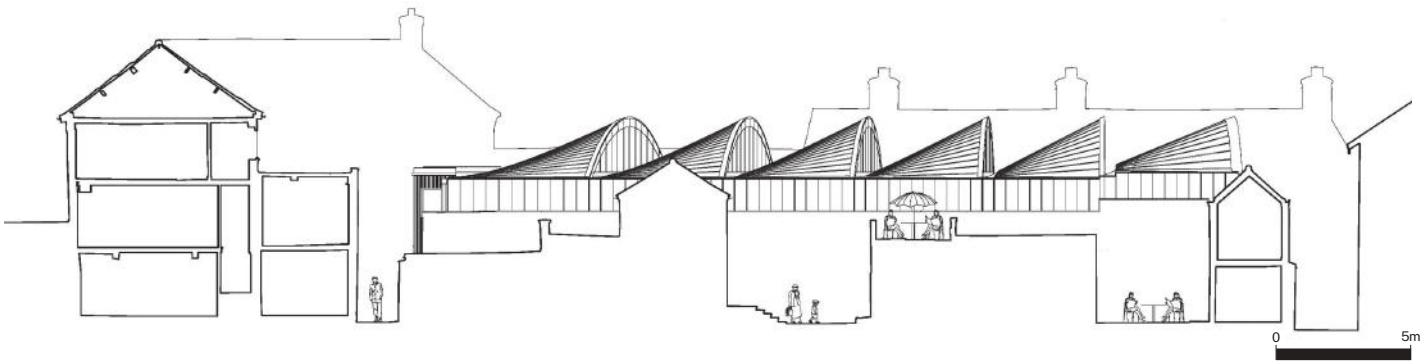
Tech Hub ground floor plan



Heritage Crafts Skills Building ground floor plan

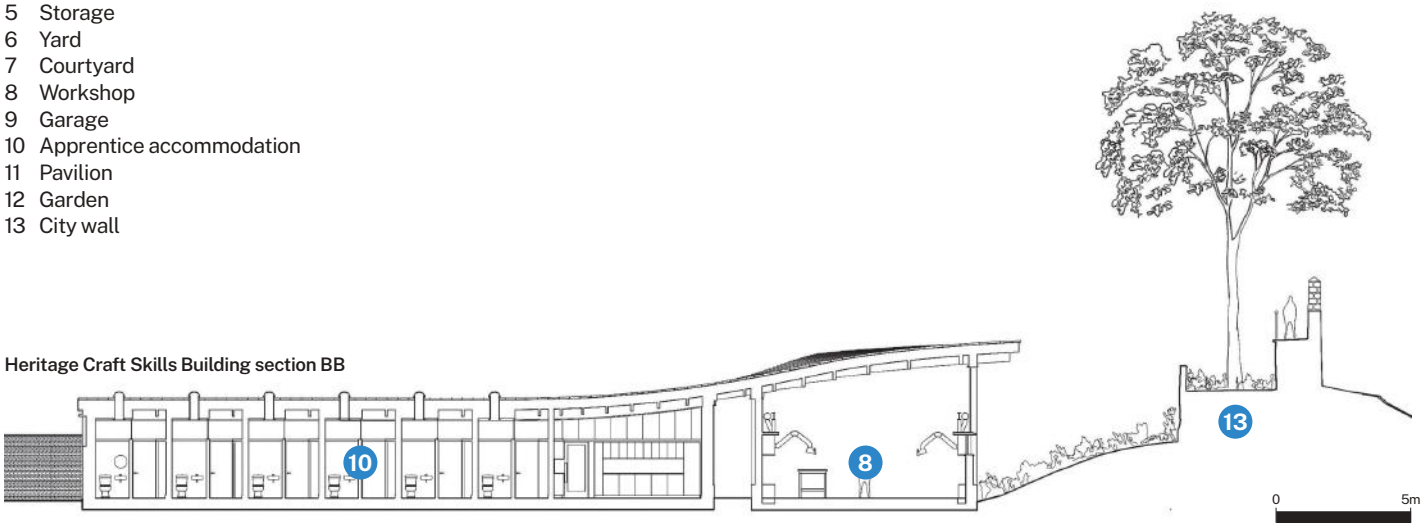


Tech Hub section AA



1 Entrance
2 Admin
3 Glaziers workshop
4 Stonecutting hub
5 Storage
6 Yard
7 Courtyard
8 Workshop
9 Garage
10 Apprentice accommodation
11 Pavilion
12 Garden
13 City wall

Heritage Craft Skills Building section BB



out around a centre point with less dense paving in a circle around it, allowing a shock of grasses and wildflowers in the centre to prosper. The timbers are sized individually for load and position around the roof, the overhang protecting them from damp while a white coat of paint helps preserve them. Seven types of timber were used for this structure, the cladding, doors and infills – "Just what we could get at the time," says Tonkin with a shrug.

But back to that roof, where there is some lovely play with water. From the peak of the roof, half the rain runs into the oversized gutter circling around the courtyard, ending with a final gestural flourish of a curve, then into the metal, which breaks the flow into a series of mini waterfalls before it runs into a water trough of aquatic plants. Tonkin summons up the Roman idea of the pool of water under the roof, the impluvium, and happily refers to the Indian chadar or water chute. The rest of the rain ends up in a rainwater harvesting tank – with a little less celebration.

Inside the thick walls, stuffed with 300mm of Rockwool insulation, the defining element is the circulation. On plan you can see the enclosed cloister that the architects talk about but, in reality, the sense is of two generous corridors with satisfyingly thick service walls keeping other surfaces and the ceiling clear. One looks out – as does the stone workshop – into the courtyard where Tonkin Liu imagines there might be a gathering of stone carvings, a lapiderium, populated by worn sculptures retired from the cathedral as they have been replaced with new ones.

Inside the workshop are 14 stations for stonemasons, often working on detail carvings, perhaps of replacement gargoyles, or repairing precise pieces of worn stone. Lead mason Aaron Rowntree is focusing on a the details of a carving as we arrive but breaks off to speak.

"This is actually designed to be a pleasure to work in," he says, waving his hand to indicate the quality of the light, even on a grey day. "It connects us to the city wall and the minster, as well as where the sun is coming from."

The desperate fight to keep ahead of the destruction caused by climate change may not be obviously apparent here, but, whatever the stonemasons' mission, the building instils a sense of order and harmony; that all is right with the world.

Left: The workshop at the Heritage Craft Skills Building is beautifully ordered with servicing and storage in the walls. Clerestory windows give views one way to the city wall, the other to York Minster.

IN NUMBERS

TECH HUB AREA
963M²

HERITAGE CRAFT SKILLS BUILDING AREA
811M²

CREDITS

Client York Minster
Engineer Integration M&E
Structural engineer Webb Yates
Heritage Donald Insall Associates
Planning Savills
Lighting designer Seam
Building control Assent
Fire engineer Gwen Brewer
Timber specialist contractor Buckland Timber
Main contractor Simpson

CONFIDENT COLLECTION

WORDS
Flo Armitage-Hookes

PHOTOGRAPHS
Richard Barnes

Emerging into a time of worry for US higher education, Princeton University's new art museum is a daring triumph

Left: A multi-pavilion design breaks down the overall scale.

Below right: The museum navigates existing campus routes.

At the heart of Princeton University's eclectic campus in New Jersey, among the mock Gothic, Georgian-esque and Classical-ish architecture, crouches a striking newcomer. Nine chunky interlocking pavilions, clad with angled concrete fins, make up the institution's new art museum. Rising from the demolition dust of its outdated predecessor, the building doubles the space available for teaching, conservation, research and showcasing its 117,000-strong collection.

Designed by Adjaye Associates, the museum was already 60 per cent constructed when allegations of sexual misconduct against David Adjaye emerged in 2023 – which he has denied. Like many other institutions, Princeton distanced itself from the practice, with executive architect Cooper Robertson taking over the day-to-day oversight. But building continued, with the resulting architecture, completed in autumn 2025, a source of pride for the university.

Scaling down

My tour is led by the energetic museum director James Steward, who has been at the helm since 2009. "The idea was to take this very large building and break it down into components that would help it keep company with the neighbours," says Steward. This approach was also driven by a need to retain the existing research library block, with options to subsume it into a larger structure or multiply its volume. The latter helped establish a loose grid composition which responds to its varied surroundings.

To the southwest, where the site falls away, a pavilion is lifted up to preserve a historic pathway and frame the stone archway it passes through. To the northwest, a smaller pavilion juts out – to greet passersby at a key campus intersection – then pulls back to create an informal terrace along the western facade. "I told the architects, essentially, I want a building with all fronts and no backs," says Steward.

The building still reads as a single mass, characterised by bands of concrete and anodised bronze panels, but it only ever presents a partial view. You have to wander the perimeter to perceive the museum's full scale and all four public entrances. For all its muscularity, it is surprisingly courteous.

Engineering footfall

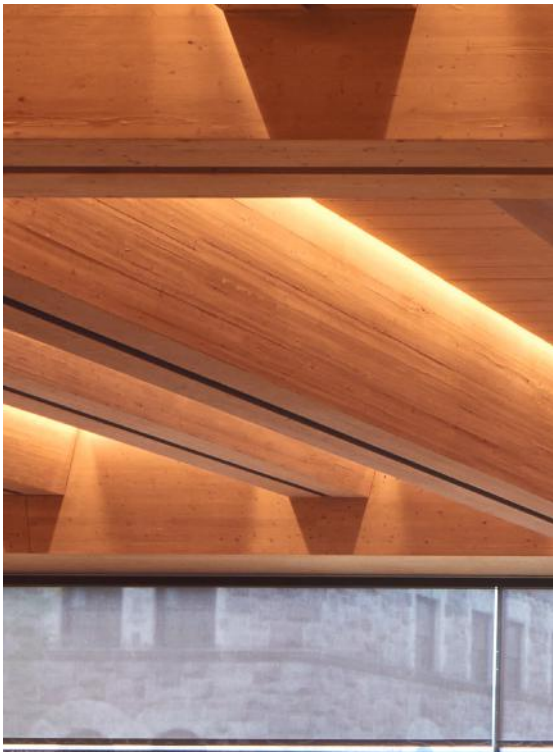
Keen to entice students in and capitalise on its central position, the design encourages everyday engagement with the works through 'artwalks'. Two external pathways continue through the museum's ground floor, with glimpses of the collection; including colourful paintings, a cluster of objects and an ancient Roman mosaic underfoot. "Even if they're not stopping and having the full experience, it might lure them back," says Steward. The covered cut-throughs (open until 10.45pm every day) are a canny way to increase footfall; I can imagine students running through to make lectures, or ambling to let rain subside.

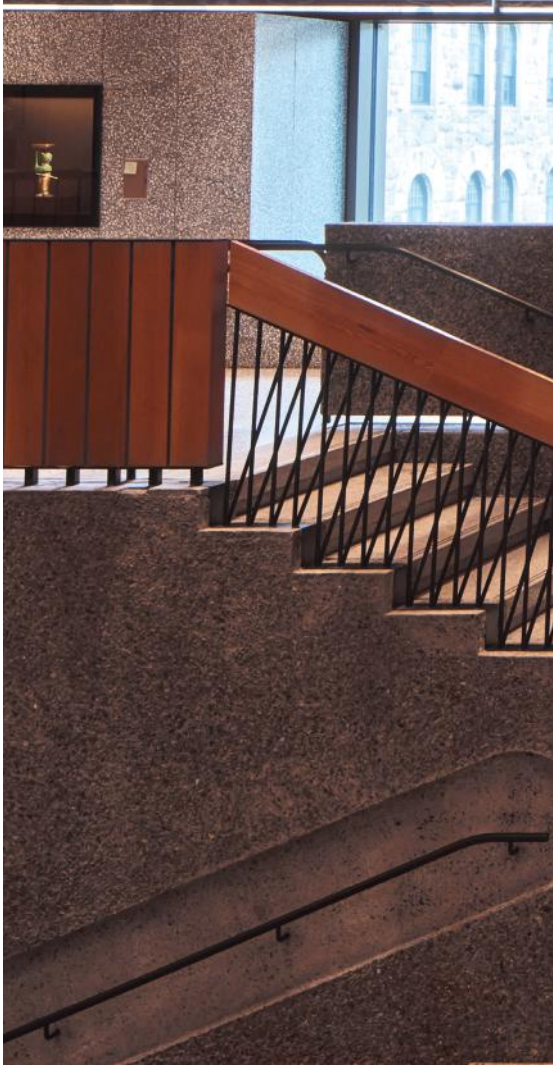
More than 3,000 attended the recent student preview, Steward tells me. "I could have cried, because it was evidence that what we hoped for was actually working," he says. Yet the team acknowledges that once initial curiosity dissipates and free drinks aren't being served, programming will be needed to fully establish the routes.

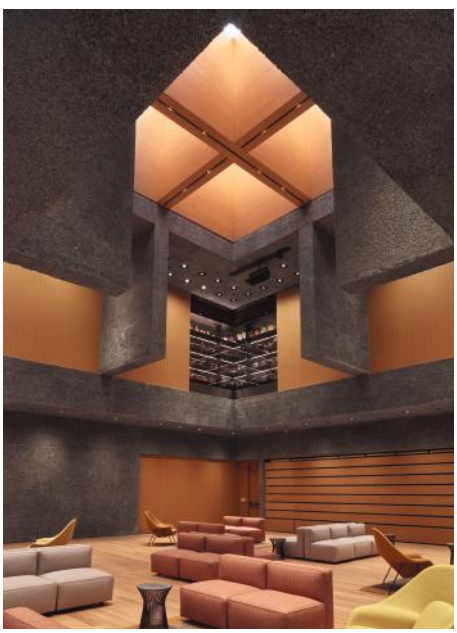
Standout space

"One of the fundamental design motifs of the building is this play between volumes," says Steward, as we enter the Grand Hall from the north-south artwalk. It's one of only two triple-height spaces in the scheme, and is quite monumental. Structural cast-in-situ concrete frames the room, with four rugged buttresses cutting in at first-floor level. In between, movable wood panels reveal glazed cases of objects and galleries beyond. Above, a deep glulam skylight draws the eye and frames four pockets of sky. It's very Louis Kahn meets Barbican.

The event space can be seamlessly configured for film screenings, lectures, performances or social events, with mechanised bleacher seating (folding out from behind wood panels), a stage (rising from the floor) and more. The museum's custodians are conscious of needing to do







Right: From the Grand Stair, visitors gain tantalising glimpses of the collection and galleries beyond.

Left: Flying buttresses stun in the Grand Hall.

Above: 'Dense display' cases enable more artwork to be exhibited.

more than passively display art to tempt back visitors, and there has clearly been eye-watering investment (undisclosed) in this standout public space.

Curiosity-led exploration

The previous, demolished, museum had a tangle of 18 floor plates, whereas the new exhibition spaces are mainly on one level and offer a different visitor experience. "We want the visitor to have a much stronger sense of their own role in meaning-making," explains Steward. "Of course, everything has been chosen and curated, nothing happens by accident, but the strategies are multiple." Instead of following a prescribed route, set by level changes and overt wayfinding, users are driven by their own curiosity.

Climbing the Grand Stair to the first floor, past an embedded 15th-century staircase from Mallorca, long sightlines provide glimpses into interstitial galleries and more traditionally curated pavilions. Visitors are tantalised in many directions, led by one object to another.

Deploying difference

However, a palette of materials signals what kind of space you're in and about to enter. Underfoot, monochrome terrazzo delineates public areas; warm hardwood the exhibition spaces, while pavilion entrances are marked by portals of Vermont granite. Further, occasional windows offer campus views and help orientate where you are in the building.

The 32 gallery spaces also vary significantly in scale, from 14 to 370m^2 and from 4.1 to 5.5m in height. "We wanted to create moments where the density falls away and the pace changes," says Steward, as we enter a wood-panelled room with only three objects in it. The variation allows for different ways of displaying and perceiving objects, and also prevents monotony. In some areas, a structural glulam beam confidently spans the ceiling, with shorter perpendicular beams carrying M&E. The museum does not offer neutral, 'white cube' spaces, but ones that can be savoured alongside the artwork on display.

How sustainable is it?

Some efforts have been made to reduce embodied carbon in the scheme, through the use of structural glulam and North American-sourced materials. Yet it's hard to ignore the environmental impact of largely demolishing a building, swallowing up an adjoining field and using lots of concrete.

That said, the Princeton-wide operational carbon strategy is more promising. The entire campus is being converted from gas to a ground-source heat pump system, with over 1,700 boreholes already drilled and the aim to reach net zero by 2046, explains university architect Ron McCoy.

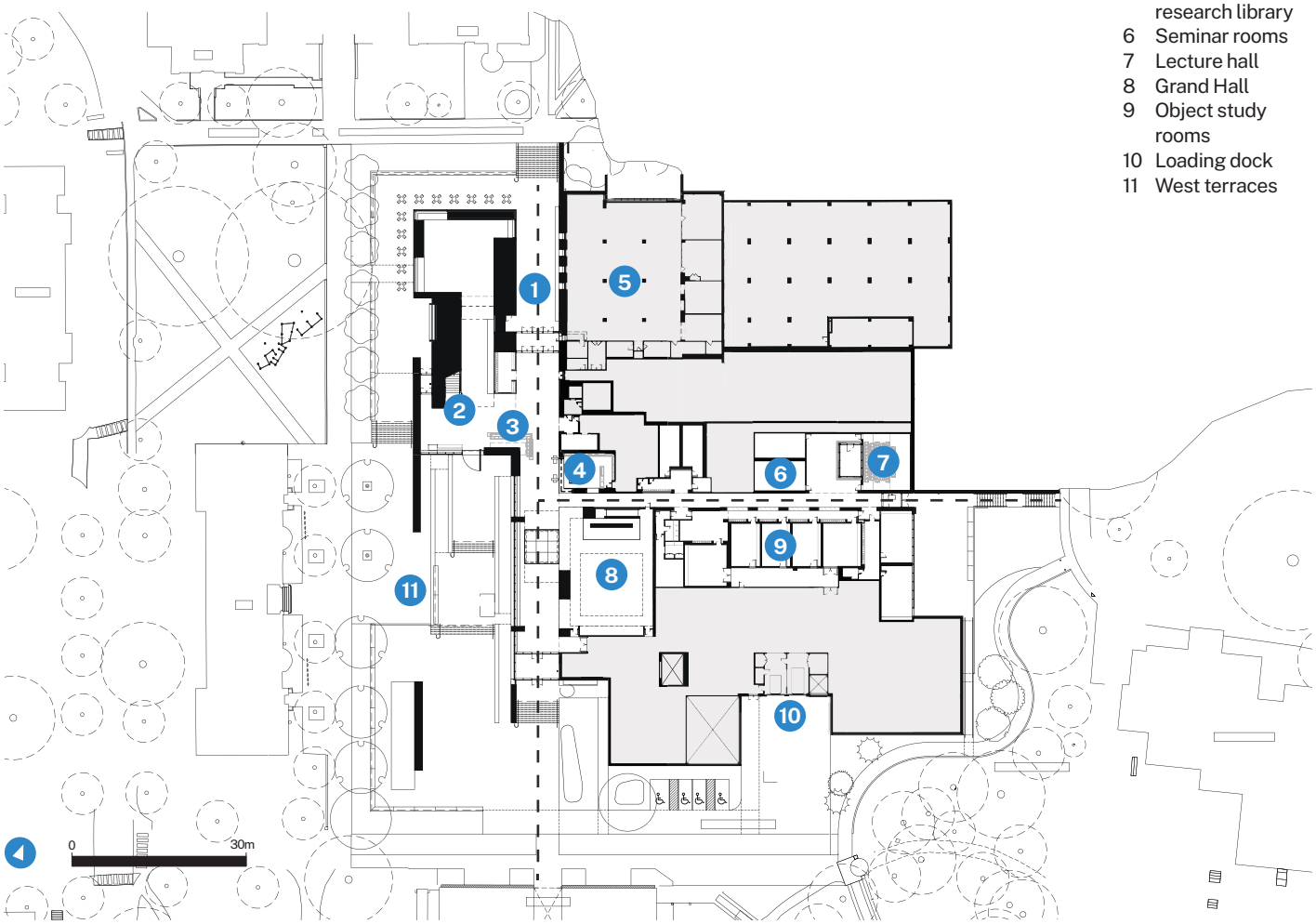
Attention to detail

Throughout the tour, Steward uses the phrase "obsessed over" repeatedly. "We were a really exacting client. We made them mock up everything. We left nothing to chance… I'm sure it exasperated people at times," he recalls. The obsession has, however, paid off – resulting in spaces that use robust materials in remarkably refined ways. This is perhaps most evident at the Grand Stair. A bronze rod balustrade, flanked by alternating rough and polished concrete, steps down beside granite treads. Wood cups one bronze handrail while the other is thoughtfully fixed to the staircase's rough concrete sides. It's a moment that intricately gathers together and introduces the key materials of the scheme.

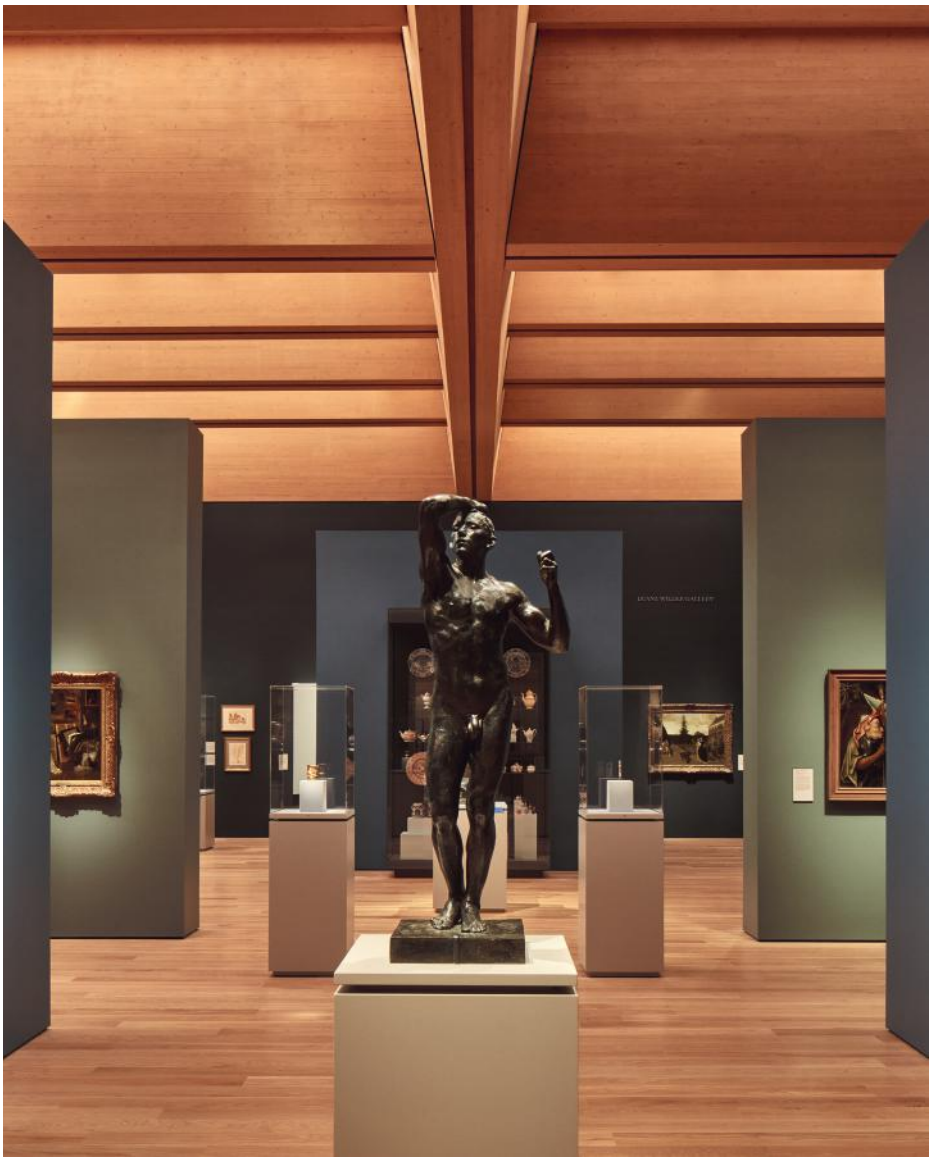
"I can't fathom this project happening right now," admits Steward, reflecting on the US government's dramatic undermining of the education sector. Nor, I suspect, would Adjaye Associates be selected to design such a scheme today. Speculation aside though, what's emerged is a triumph: not too bullish for the campus setting but, surrounded by architectural pastiches, also unexpectedly bold and daring.

GROUND FLOOR PLAN

1 Entrance court
2 Grand Stair
3 Welcome desk
4 Shop
5 Existing research library
6 Seminar rooms
7 Lecture hall
8 Grand Hall
9 Object study rooms
10 Loading dock
11 West terraces



COOPER ROBERTSON



JOSEPH HU

IN NUMBERS

TOTAL AREA
13,600m²

PAVILIONS
9

GALLERY SPACES
32

CREDITS

Client
Princeton University
Design architect
Adjaye Associates
Executive architect
Cooper Robertson
Landscape architect
Field Operations
Civil engineer
Nitsch Engineering
MEP Kohler Ronan
Structural engineer
Silman
Building envelope
Heintges
Wood scientist
Ron Anthony & Associates
Concrete consultant
Reg Hough Associates

Above left: Aggregate in the zigzag facade fins echoes the tones of nearby buildings.

Above right: Robust glulam beams support and service gallery spaces.

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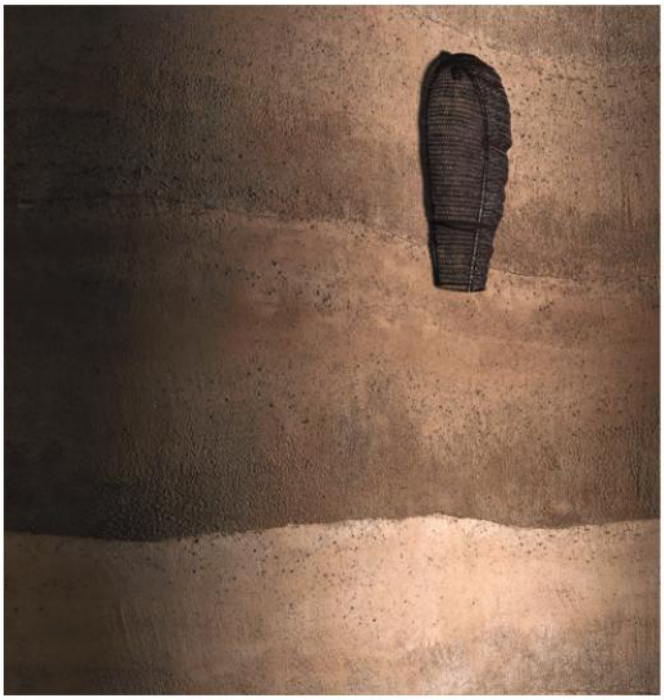

Raw Earth: Clay Lime Plaster finishes made in the UK using natural mineral materials

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HOT PROPERTY

In Houston, Texas, Farshid Moussavi Architecture and structural engineer AKT II had to factor in brutal summer sun and hurricane risk in creating the striking stone-and-glass facade of the city's new Ismaili Center

WORDS
Jan-Carlos Kucharek

PHOTOGRAPHS
Iwan Baan

Overlooking Houston's Buffalo Bayou Park, Farshid Moussavi Architecture's new Ismaili Center is the seventh such facility to be built globally and the first in the US. Representing the world's Ismaili Shia Muslims, led by hereditary imam the Aga Khan, these centres are not just places of religious congregation but perform a cultural outreach role for a wider public. FMA's iteration boasts a stunning 1,500-person prayer hall and atrium, art and performance spaces, a 'black box', a café, outdoor terraces, a learning area, seminar rooms and admin spaces.

Being a project that could look to a long history of Islamic architecture, it was always as much about the setting as the building. Landscape designer Nelson Byrd Woltz's sophisticated flood mitigation strategy for this 4.6ha, low-lying site drew on ancient gardens, with stepped terraces of tree-lined paths and pools. At its elevated south end, the 14,000m², five-storey building uses the same precedents in a strikingly contemporary way.

FMA director Elliott Hodges outlines the simplicity of the tripartite, hybrid concrete and steel form holding the three main functions of the building. A central volume contains the south entrance terrace and reception, with an atrium beyond and prayer hall to its north side. The learning block is appended to the east, with the public-facing block on the west side; each has its own Persian-style 'eivan' terraces.

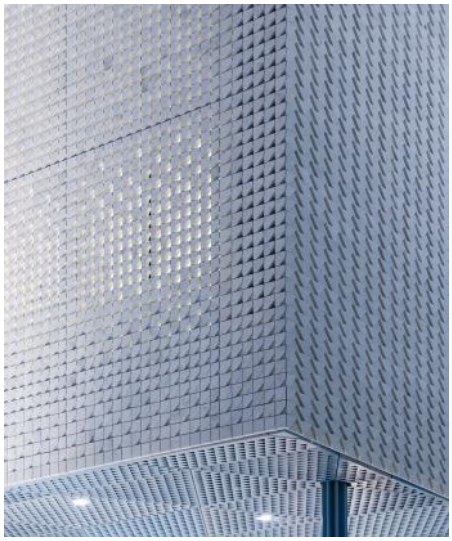
With these distinct public, religious and educational functions addressing all directions from its prominent outlook, FMA decided the building needed to feel unified; that each elevation should show a 'formal' face to the city. "Our idea was for its large lower-level openings to be read purely as glass, but for the rest of the building above it to be a monolithic – if perforate – stone facade," says Hodges.

Houston's punishing summer heat, which can approach 50C, along with its exposed position in the US hurricane belt, were real concerns for both architect and engineer AKT II. Yet so was the desire to create a culturally significant form for the client. The result is a robust, granite block facade that acts as either cladding or solar screen; the distinction only becomes evident as day turns into night.

The social hall, cantilevering over the south entrance, shows the studio's approach to best effect. A huge three-storey, 35m-wide wall of clear glass is set behind a massive stone screen of 190mm x 190mm x 100mm Turkish silver-beige limestone blocks, cut in Italy, in varying configurations. This filters Houston's hard light through openings that gradually shift in size across the surface.

"Think of the screen like a loom or a tapestry of stone," urges Hodges. "Each 3D block is set within a mesh of thin steel rods – a weft and warp that collectively creates it." This epic stone wall sits 1.5m in front of the glazed one, optimising the shading effect, while enabling access for maintenance purposes. "The five different tile designs allowed us to modulate the facade effects as we wished," Hodges continues. "At the top they are more solid, but variating 45-degree openings are cut out as they run down. As tiles approach eye level, we added curved openings to increase visibility and offer subtle variety across the surface, to give it visual as well as functional qualities."

As AKT II's design director Christopher Blust explains, the facade screen is in fact formed of 33 prefabricated sub-screens. "It's actually multiple steel edge frames, each 5m tall and 3m wide, made of steel flats set into thin pockets of perimeter stone blocks," he says. "The steel rods are



Top: The stone screen above the south terrace, with west and east blocks and respective eivans either side.

Above: Junction of the UHPC soffits with wall cladding and stone screen wall, creating a dramatic, monolithic effect.

fixed into and post-tensioned within each frame." He adds that this, combined with stone self-weight "makes the cassette act as a single element, even though the stone blocks are not bonded in any way, save for bearing shims". Each sub-screen is bolted to a steel flange fixed back to 450mm x 250mm steel supports running at the same centres, picked up by beams at top and bottom. Overclad in polished stainless steel fascias, this last detail is critical since, viewed from the inside, these supports almost "dematerialise".

The 11.4m-high glass wall behind, as two stacked 3m x 5.7m frames, is made of 50mm laminated double-glazed units (DGUs) and had to be modelled by AKT II. Facade director Simone Miriana explains: "We analysed scenarios where heat differentials might occur according to the DGUs being in sun or shade, but found that the void between the glass face and the stone screen does its job in acting as a microclimate that mitigates these effects."

The screen's rigidity had to be guaranteed, Miriana continues – even in hurricane scenarios: "The stone's perforate nature really helps in that regard, but it was designed to flex by only +/-7mm", to limit any stress on stone elements. Blust adds that the possibility of object impact on the facade in severe weather partly drove the screen's design; while beautiful, it's also sacrificial, protecting the glass behind and itself repairable.

For north and south wall glazing, there was an aim to provide almost seamless visual continuity, leading to the decision to run with curtain walling. "As much as we could, we wanted it frameless; ideally silicone-to-silicone connections or small metal transoms and mullions," Hodges says.

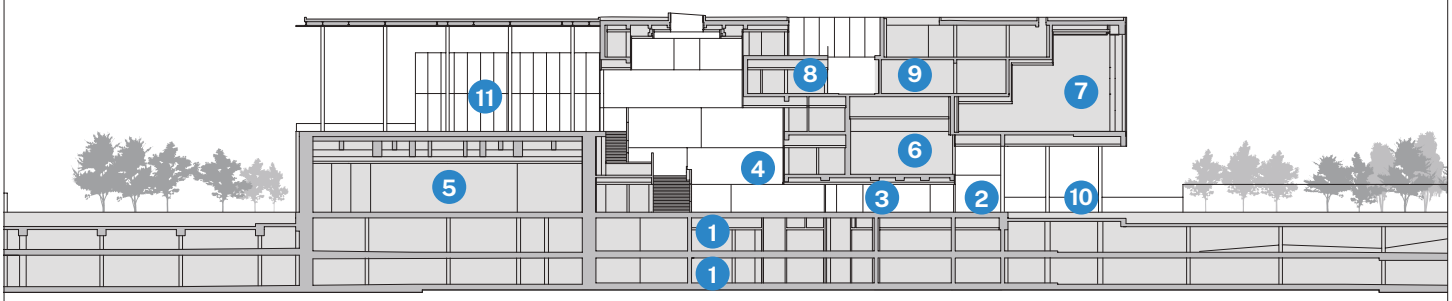
At the south entrance terrace, this manifests as 7.3m-tall, 70mm-thick DGUs of laminated glass. Panel widths were set at 1.5m, with Blust stating that sheet sizes "were optimised in terms of performance and the logistics of manoeuvring them into place". At the north eivan, glass heights are even taller – at 12m – so the approach necessitated additional structural support and a horizontal steel transom at the 9m point. Wanting to keep sightlines as clear as possible, FMA opted for the same thin, glazed steel-framed system but added 500mm-deep, quadruple-layer laminated glass fins at each frame interface.

On east and west sides, while glazed openings are far smaller at 8.1m and 4.7m

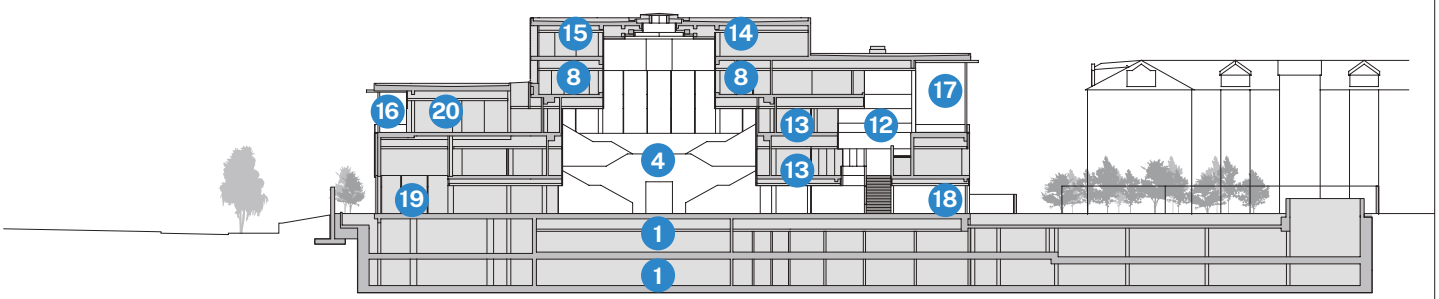
NIC LEHOUX

Left: The huge south wall stone screen and glazing to the upper-level social hall. Steel posts supporting the screen are rendered almost invisible by mirror-steel cladding.

NORTH-SOUTH SECTION AA



EAST-WEST SECTION BB



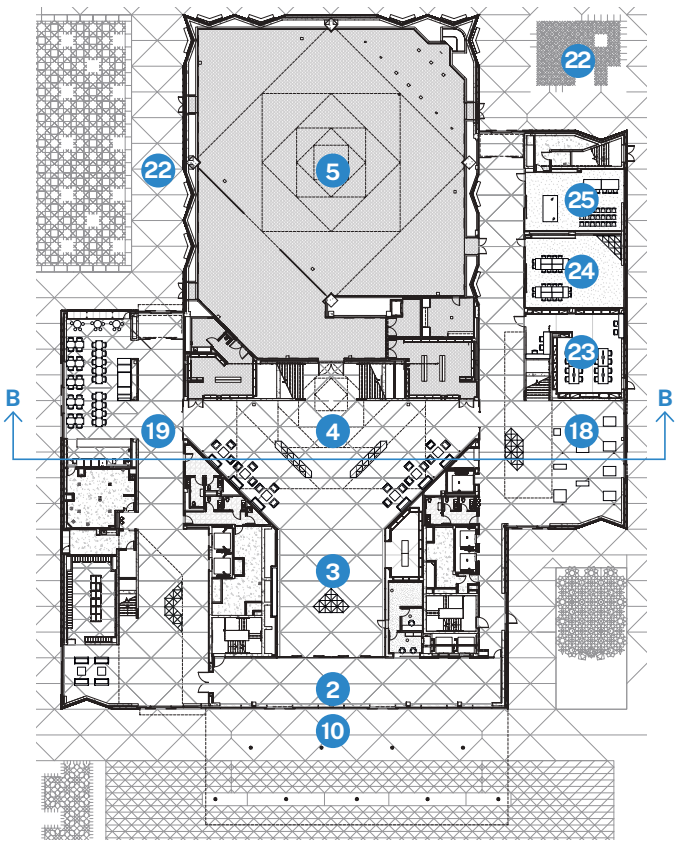
1	Parking	10	South terrace/drop-off	19	Cafe
2	Vestibule	11	North eivan	20	Plenary
3	Foyer	12	East atrium	21	West atrium
4	Central atrium	13	Classroom	22	Courtyard
5	Prayer hall	14	Boardroom	23	Library
6	Black box theatre	15	Executive office	24	Children's lounge
7	Main social hall	16	West eivan	25	Youth lounge
8	Offices	17	East eivan	26	Secondary social hall
9	Plant room	18	Exhibition space	27	West atrium lounge

0 10m 20m 35m

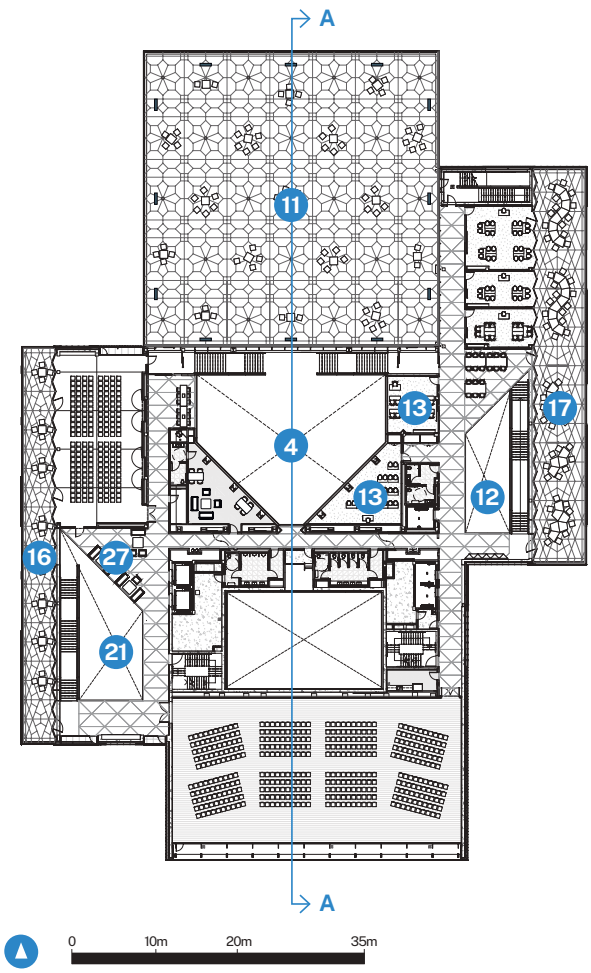
Above: Outer Prayer Hall corners both have garden seating alcoves, cast in the same blue-tinted UHPC that forms eivan soffits.

Right: Supported by star-shaped steel columns, the 35m x 35m north eivan has an elegant soffit of blue-tinged UHPC triangular panels.

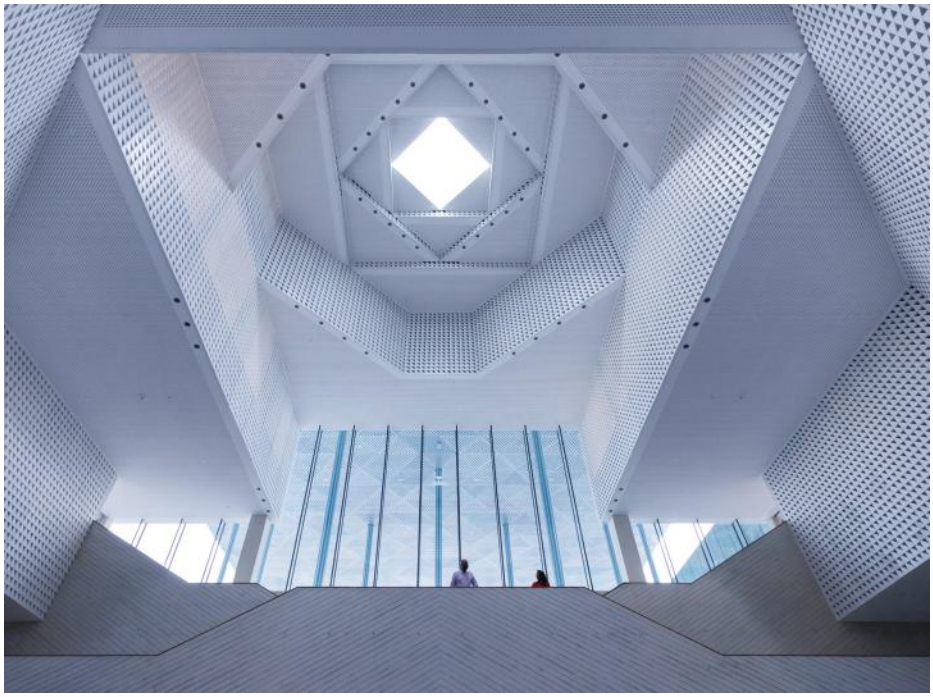
LEVEL 1 PLAN



LEVEL 3 PLAN



FARSHID MOUSSAVI ARCHITECTURE (3)



Above: Ethereal lightness takes over by dusk.

Left: UHPC blocks continue the monolithic feel in the atrium.

respectively, the need to deal with strong, low light brought other challenges. FMA opted for frameless glass DGUs with angled corrugations for a self-supporting result. "While there are mirrored stainless steel caps with bespoke fixings at panel interfaces," says Ioannis Gkikas, AKT II's facade engineering associate director, "the panels' corrugated form lent extra stiffness, so glass depth could be minimised to cut weight and visual impact."

Glazing, which has to work hard in order to mitigate solar gain and excessive windloads, takes the form of 67mm-thick, triple-laminated DGUs. Sun radiation had to be seriously considered on all four faces, explains Hodges – not least on the south and west sides – so application of solar control coatings had to achieve a fine balance of performance with the desired transparency, bearing in mind adjacencies and subtle variations between glazed components from different subcontractors.

For solid parts of the building, including the walls that encase the prayer hall, Hodges says stone was continued homogenously, though shapes do shift. Here, slim, long, 70mm-thick sandblasted and honed panels of silver-beige limestone form the rainscreen cladding. With the concrete wall externally insulated, 80mm x 80mm box-section posts in front of it act as the main support for secondary horizontal rails, whose L-shaped steel spigot support pieces facilitate stone panels being simply fixed. The cavity acts as a thermal buffer, helping to passively cool the building.

To complete the monolithic look, even the eivan roof soffits have been articulated using triangular panels of ultra-high-performance concrete (UHPC). Picking up on the same concrete wall panels of garden seating alcoves below, it extends the homogenous look to the horizontal plane too. Hodges says the UHPC not only "offers lightness but greater span with thinner section and long life". Pigment-tinged blue to complement the building's eight-pointed star-shaped blue steel columns, the Islamic-inspired panels were hung from the 35m x 35m north eivan roof's diagrid beams using Unistrut rails and hangers.

For Hodges, its patterned perforations worked acoustically – "the whole soffit acts as an attenuator as well" – and for AKT II it helped dissipate inevitable uplift and downward wind loads imposed on the roof.

Seen together, the overall effect is of simple, white stone volumes hovering impossibly above glass. On entering, the same materials are encountered within, lining the walls of the dramatic internal volumes but detailed with greater finesse.

"What we wanted was monumentality from a distance and artisanal close-up," concludes Hodges. With its 100-year design life, it's a grand, slow reveal that, FMA trusts, will captivate future generations of visitors.

CREDITS

Client
IMARA Houston – agent for Aga Khan Foundation, USA
Design architect
Farshid Moussavi Architecture
Architect of record DLR Group
Structural and facade engineer AKT II
Structural and facade engineer of record, MEP, sustainability, acoustics, audiovisual, lighting and theatre design
DLR Group
Civil engineer Duplantis
Erection engineer CSD
Consulting engineer RWDI
Traffic engineer Walker Engineering
Geotechnical Intertek
General contractor
McCarthy Building Companies
Building envelope subcontractor Gartner
Precast systems subcontractor Kinetica

SELECTED SUPPLIERS

Stone screens/metal/glass curtain wall
Josef Gartner USA
Solid stone rainscreen, interior stone and cast stone Camarata Masonry
Precast concrete UHPC Kinetica Group
Metal panels Dynamic Glass
Exterior specialist columns
Myrex Industries
Storefront window system/exterior glass doors Sustainable Glazing Concepts

GIVING CLIENTS THE SMART HOMES OF THEIR DREAMS

Understanding a client's lifestyle and aspirations is as important as having a grip on the technology, said speakers at Designing the Smart Home of the Future, a conference organised by RIBAJ and trade association CEDIA

WORDS
Josephine Smit

To some, a smart home may mean something as simple as controlling heating and lighting via an app. To others, it may be a modern day equivalent of Jacques Tati's Villa Arpel, featured in his film Mon Oncle. Between these two extremes, there are myriad variations.

But all these visions have one factor in common. "The question isn't whether you bring technology into the home, it's how we do it," said Daryl Friedman, global president and chief executive of CEDIA, the global industry association for smart-home professionals.

Friedman was speaking at Designing the Smart Home of the Future, a conference organised by RIBAJ in association with CEDIA and held last November. The event provided designers with guidance to help them work more effectively with homeowners and smart-home consultants and installers. Speakers and panellists addressed some of the big issues around incorporating smart systems into homes, including how to meet customer needs and ensure they feel empowered rather than intimidated by technology, how to minimise disruption to a home's design integrity and what technology can mean for sustainability.

Any project starts with understanding the client's aspirations. Speakers stressed the importance of gaining insights into residents' lifestyles. "The variable isn't the project or the location, it's the client," said Sam Brunsden, founding director of design consultant Dyntec. He mentioned clients who request a cinema room. "Then they say, 'I might go in there and read or play an instrument', so you start learning about all these use cases. Suddenly, that cinema the architect has drawn up really isn't a cinema anymore; it's a multi-purpose room."

KSR Architects and Interior Designers partner Guy Ailion said: "In design there is always a tug of war between the dreams and aspirations of the client and what's actually possible." Where clients are big spenders with equally big dreams, that tug of war can call for innovative thinking, as the practice found when creating a 2,000m^2 London home for a tech entrepreneur. The client wanted a house that Ailion describes as "somewhere between a home and a playground" – the help of magicians was even enlisted to create it. Extensive prototyping and 3D modelling went into the eight-year design and planning of the IO House. Its many bespoke features include a light-up "floating" staircase and 20,000 LEDs.

KSR worked with smart-home specialist SMC-UK to ensure technology and architecture were in step from the start. For example, the site lent itself to a floorplan with sleeping and living separated by a corridor, which became an obvious services route. "The form of the building began to inform exactly where we could have a strategy with SMC on how we could service this building," said Ailion.

SMC-UK director Kevin Wilton pointed out: "There are no speakers to be seen at IO House. That's the vision. The client bought into it and it's our job as technology consultant to make sure we can see that through to completion."

Existing homes bring added complexities. "There are lots of challenges because you don't know what you're going to find when you do part strip-out," said Charlie Avara, director of BUILD by Charlie, a contractor working on domestic projects in north London. On

TARAN WILKHU

Above: IO House, designed by KSR Architects, features a light-up floating glass staircase.

one recent project, the client wanted refurbishment to be combined with the addition of air conditioning, CCTV, audio/visual technology, a whole house network and surround sound, all controlled by a single app, and including multiple heating technologies. Avara collaborated early with installer Rodrigo Ventour, director at Edison Projects. "We want to be there at the beginning to integrate the technology," Ventour said.

Smart-home professionals can also drive sustainability in system specification and performance. "There are lots of ways technology can help with energy footprint," said Dyntec's Brunsden, giving the example of motorised blinds. "It's about having a client that's willing to engage, and having someone on board who can help them on their journey."

The message from the conference was clear: early engagement with smart-home professionals together with client understanding and close collaboration in the project team are key to project delivery. Get them right, and as Friedman says, rather than impeding, "technology enhances the design".

KEVIN NIXON

Below, from left: Guy Ailion, KSR Architects; Rodrigo Ventour, Edison Projects and Charlie Avara, BUILD by Charlie at the conference panel on 3 November.

Five lessons in smart home design

- Be curious and ask questions about how clients live, relax, work, feel in a space, experience technology and even how they sit on the sofa. CEDIA is developing a questionnaire template pulling together key questions
- Give clients an opportunity to see, feel and touch products in the showroom
- When working on multi-family developments, it's important to understand the culture of the market you're designing for
- Networking and Wi-Fi are the backbone of the smart home. "Without that, nothing will work," says SMC-UK's Kevin Wilton
- Consider where the home's technology hub-will be located. Smaller installations can be concealed in bespoke joinery but larger installations may need a dedicated plant room

CORTEN CROWN

Taking on the task of converting a disused 19th-century neo-Egyptian boilerhouse into modern office space, Felix Lewis Architects opted for a Corten steel-clad mansard extension that enhances the building's stature

WORDS
Pamela Buxton

PHOTOGRAPHS
Chris Snook

How do you make a roof extension that's effectively neo-neo-Egyptian? That was the challenge facing Felix Lewis Architects for The Works, a 244m² head office for an electronics company created within a Victorian former waterworks' boilerhouse on the River Medway in Kent.

Both the boilerhouse and its site, at East Farleigh near Maidstone, are remarkable. Designed in 1860 by engineer James Pilbrow, the Grade II-listed building was originally topped with a soaring chimney several times its height.

Now long gone, this was designed to resemble an obelisk, while the main building channelled the appearance of ancient Egyptian temple pylons and was part of a flurry of Egyptian Revival buildings around that time that also included Brunel's Clifton Suspension Bridge (1864). To add to the rich context, the location is a flood-prone site adjacent to a medieval Grade I-listed bridge, believed to be the oldest in Kent.

After becoming obsolete as a waterworks, the building had been unsympathetically converted into offices before latterly falling into disuse and disrepair. Not only was it susceptible to flooding at the bottom; it leaked at the top.

The site was bought by Chord Electronics, which already occupied the nearby associated former pumphouse, and was looking to expand. The company commissioned Kent-based Lewis, who had grown up nearby and knew the building.

His challenge was to deal with the flooding issue and deliver a rooftop extension as part of a sympathetic overhaul of the whole building. Rather than feeling oppressed by the building's history, Lewis found it liberating.

"It's a 19th-century interpretation of a 3,000-year-old style on an industrial building that was burning coal to do a job that no longer exists, and is now housing a modern digital industry," he says. "If you take all those things together, they actually give me a lot of freedom to not be bound by anything other than what I think is neo-Egyptian."

Chord was looking for something bold that would be a showcase for its slightly quirky brand – no discreet modernist box for this firm. Planners, meanwhile, were vigilant that the extension should remain subservient to the original building. After trying and abandoning a more minimalist approach, Lewis opted for a contrasting Corten steel-clad tapering mansard extension that steps back 650mm from the prominent original roofline.

"Fortunately with the big Egyptian cornice, we could make it look like the Corten was extruding up from the inside of it," he says, adding that Corten was appropriate as "an industrial material on an industrial building".

Increasing the height of the building by another storey gives the structure a more heroic stature, while the form and detailing serve to emphasise its Egyptianising characteristics. In particular, the positioning of light slots in the middle of the two long sides of the roof extension allude to the twin pylon form of temple gateways referenced in the original design, as well as providing 'textural relief' and light. Insets in the Corten reference the niches for statues found in historic temple pylons.

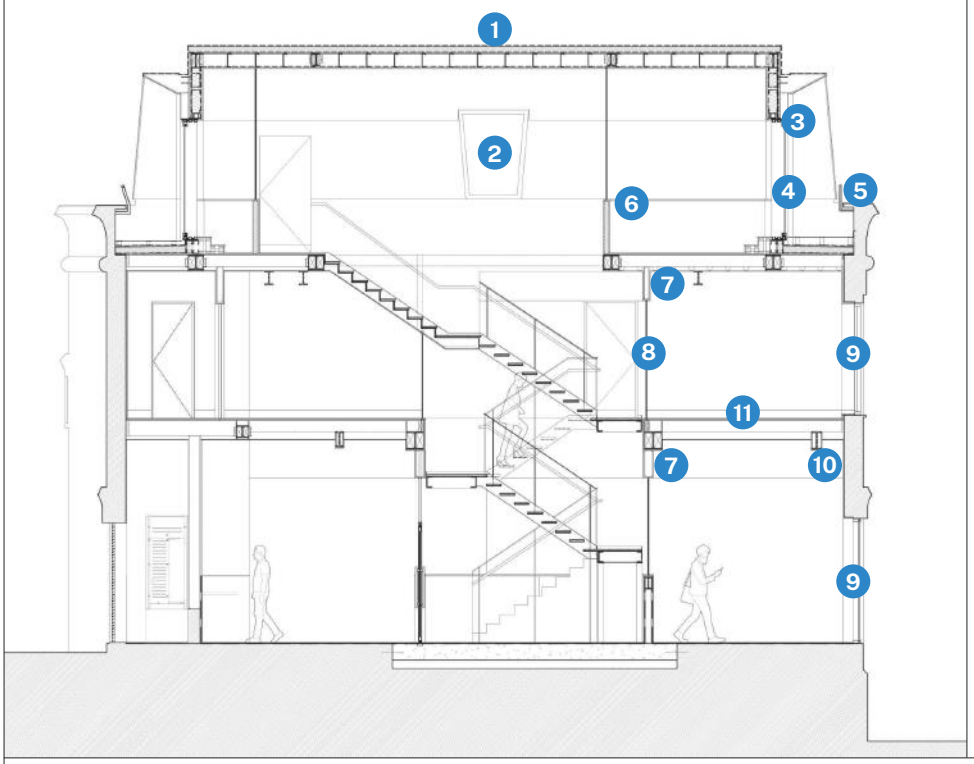
To further enhance the original intent, Lewis removed four porthole windows that had been added some decades ago on the first-floor southeast and northwest elevations, increasing the monolithic impact of the brick elevations. A skylight into the roof extension helps compensate for the subsequent loss of light.

The walls of the new roof storey incline at 85 degrees, matching the angle of the existing brickwork buttresses, and helping to reduce the extension's bulk. The Corten rises to an eaves level of 2,330mm above the cornice, with a shallow roof rising to 2,760mm.

Above: The Grade II-listed works is located by a Grade I-listed bridge and the River Medway.

Left: The new Corten mansard blends well into the village vernacular of tile and timber.

LONG SECTION



1 Roof build-up of 120mm Kingspan TR26 insulation and vapour barrier on 18mm OSB; structural steel with 250mm SFS stud between vapour barrier and 2 x 12.5mm plasterboard as soffit
2 Centre pivot window
3 Corten steel cladding
4 Aluminium sliding doors
5 Steel balustrade
6 Metal stud partition
7 Metal stud bulkhead
8 Dual-opening window with fixed panel below
9 Steel beams to be encased in 60-minute FireLine board
10 Steel balustrade
11 Timber joist positions confirmed on site

FELIX LEWIS ARCHITECTS

The roof is formed with four steel frames, each of which was craned into place onto new beams spanning 7.2m, with lightweight steel infills. The new roof structure is supported on eight new concrete padstones on top of the original brick wall. Two of the original wrought iron beams are left in place, with a third relocated to frame a glass slot acting as a rooflight for the floor below.

The extension walls, meanwhile, consist of two skins of plasterboard with a vapour barrier; insulation between the studs and outside the studs; cement board; breather membrane; and the Corten rainscreen system, by Thruwall. The Corten is 3mm thick in modules of 500mm, with bespoke detailing where it meets the full-height glazing at either end, supplied by Comar. For the roof, the build-up is cement board; vapour barrier; Rockwool ridged, 250mm thick mineral wool boards; and a single ply roof membrane

Lewis says the trickiest aspect of the project was the air-handling strategy – how to avoid both rooftop plant and any visible ductwork or new openings, either on the elevations or inside the new upper level, which is used as an executive suite. The remnants of the chimney stack proved invaluable. An external stub of this was still extant above the cornice on the northeast side of the building alongside the road. This was removed, and its bricks used elsewhere on the building as required as part of the refurbishment works.

But the shaft of the stack within the building remained, and was used for all risers, in addition to housing washrooms and a heat exchanger. The risers include the air management system from the rooftop intake down to the stale air extract at the ground floor on the road side. Behind an adjacent second original door is an air-source heat pump, raised on a plinth. Exposed ductwork from the first floor feeds into the upper storey via wall vents.

Aside from the roof, the main move was tanking the entire ground floor, including a concrete first flight of the staircase, and raising the electrical systems to give resilience to flooding. Terrazzo flooring and tiling was specified on the ground floor, with oak on the two upper levels.

Rather than white walls, each storey has a different warm, sandy tone. New steel windows were installed and brickwork repaired, and the cellular layout has been opened up to create a more light-filled environment.

In a nice touch, glass partitions have a strip of hieroglyphs across them, including, appropriately, water symbols, although Lewis was sorry not to be able to find any about the flooding of the Nile. Thanks to the sympathetic yet inventive refurbishment, the building has a new lease of life, and can continue to surprise passers-by with an unexpected hint of Egypt in the Kent countryside.

CREDITS

Architect, interior designer
Felix Lewis Architects
Main contractor
Inline Design
Structural engineer
Considine Consulting Engineers
Planning consultant
DHA planning
Lighting designer
Integrated Light
Selected suppliers
Comar Architectural Aluminium Systems (roof windows); Deco Steel (ground and first floor windows); Frameclad (lightweight steel frame); Rockwool (mineral wool insulation); Thruwall (Corten cladding)

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BEYOND CONVENIENCE

What makes for a great public toilet experience? And what can design teams do to ensure that in the future, such experiences are the norm? A RIBAJ/VitrA Bathrooms roundtable convened to discuss these and other fundamental questions

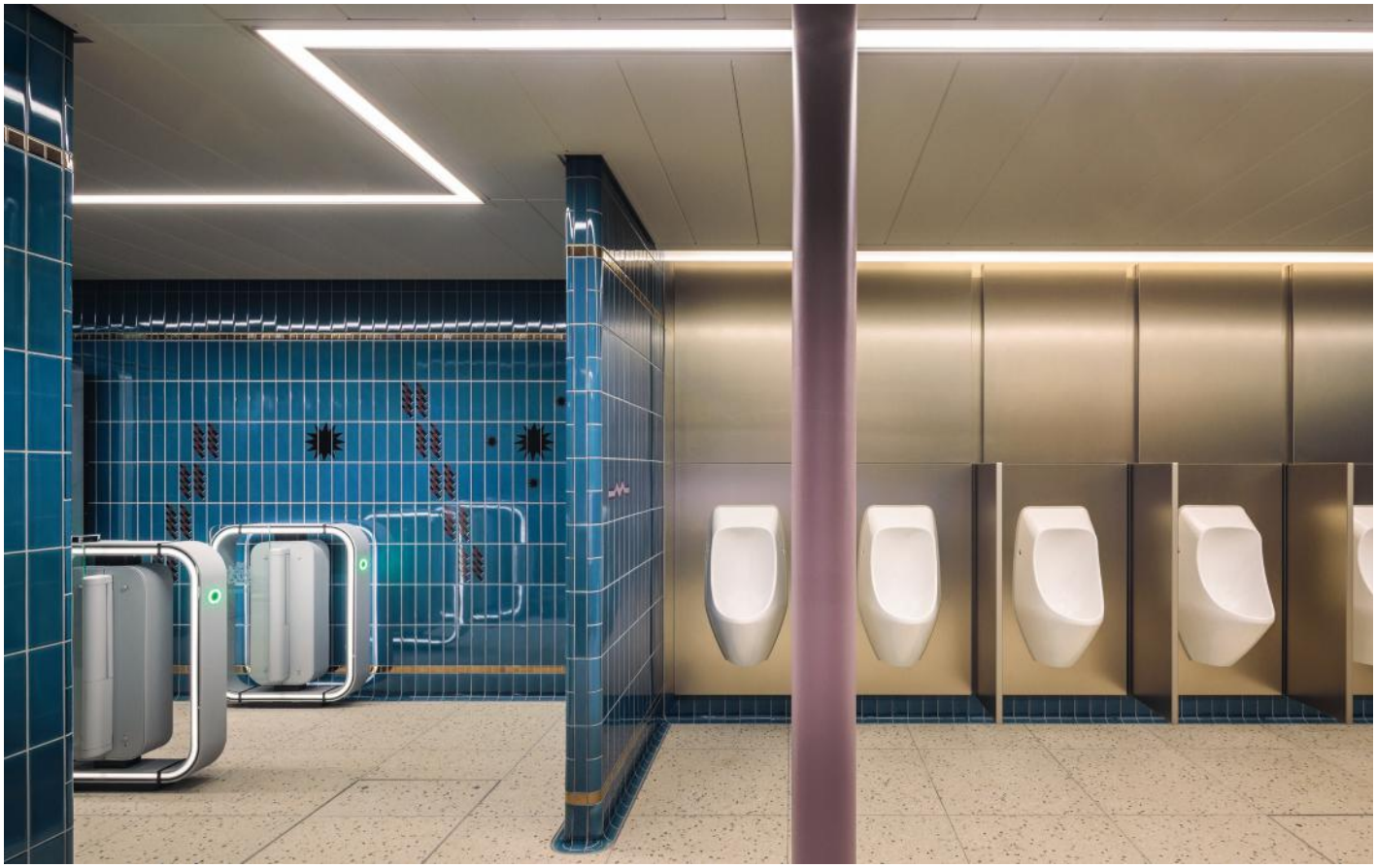
What was your favourite public toilet experience? It may not be a question you have asked yourself previously, but think back through the countless places visited for that most human of activities and see if any stand out from the countless utilitarian and nose-pinchingly awful visits. Perhaps you've enjoyed the overly Instagrammed egg loos at Sketch London, or one of the 16 Tokyo Toilet Project lavatories, or peed at the peak of the Shard, gazing over London.

There is a good chance the public loo you recall is Victorian, a legacy from the age of grand civic improvement. Rothesay Harbour toilets on the Isle of Bute are an example – Grade A listed, described by Lucinda Lambton as "the most beautiful in the world", and with a urinal used by King Charles sporting a "by royal appointment" plaque. RIBAJ's Jan-Carlos Kucharek has a soft spot for the subterranean South End Green lavatories in Camden: "Urinals are individual and tall, solid semicircles of porcelain with walls of green-glazed tiles and light filtering down from above; it's a level of thinking and quality of finish that has endured more than 100 years." Chairing a RIBAJ roundtable on washroom design at VitrA Bathrooms' Clerkenwell showroom, his recollection kicks off a lively discussion of the best and worst of loo design, finishing with hopes for the future.

"The Victorians made an effort," says Emma Watson, associate at Hugh Broughton Architects, who is overseeing the refurbishment of eight WCs for the Westminster Toilets Project, conserving heritage while modernising with artistry. She continues: "They invested in materials that would last and acknowledged that toilets were important places." Yet Watson sums up the group's feelings when adding: "But attitudes towards toilets have changed; people don't want to think about them, spend money or maintain them – there has been an erosion over time."

Gail Ramster, a senior research associate at the Royal College of Art's Public Toilets Research Unit, adds historical context, noting the 1970 Chronically Sick and Disabled Persons Act as a key moment. It was designed to legislate for accessible toilets, but Ramster mentions tension around spaces that could not be made accessible, positing that the Act was sometimes used as an excuse to close conveniences. The academic also suggests that decades of "designing against crime" has contributed to decline: by trying to design out anti-social behaviour, vandalism or sexual activity, legitimate uses may be impacted. For instance, UV lights to counter illicit drug use also create a less functional space for everyone else. "The history of toilet design often has an initiative to make everything better, like accessible spaces, followed by another that makes everything worse, like stainless steel toilets," Ramster says, adding, "we know how to do things well, but sometimes we take two steps back."

In 2026 the new London Museum will open, transforming Smithfield Market into a vast cultural space. Contributing to the roundtable are Sinéad Jennings and Cathal



DIRK LINDNER

KEVIN NIXON

Above: Hugh Broughton Architects' new public toilets at Westminster are an exemplar of robust, thoughtful and replicable washroom design for truly public spaces.

Left: The roundtable brought experts together at VitrA's Clerkenwell showroom. From left: Gail Ramster, Sinéad Jennings, Jan-Carlos Kucharek, Cathal Quinn, Edward Murray, David Richards and Emma Watson.

ANDY STAGG

RCA PUBLIC TOILETS RESEARCH UNIT (2)

Quinn of Stanton Williams, the architect collaborating with Asif Khan on the project. They are charged with ensuring the new museum's WCs rival the exhibits. "It was an explicit part of the brief – the museum director said several times that the toilets are the building's most important feature," says Jennings, who believes "having a bit of fun with the toilets should not be an afterthought, but something everyone is on board with". The museum is intended to become "a part of the city", so Jennings and Quinn will not be repeating a single toilet module 20 times throughout, but tweaking designs so each is a unique experience with character and identity. It is a similar approach to Watson's in Westminster, where a blue-and-gold palette is spread across all, but each has "their own sense of identity with a body of site-specific public art and icons".

Long queues, a lack of hooks for bags, and no baby-changing space in men's washrooms show that historically, designers didn't always consider women's needs. Now there is a drive not only to rectify that wrong, but also to design with awareness and empathy for diverse users. Ramster believes accessibility does not mean toilets must be beige or boring: "Instead of limiting, better understanding of diversity can lead to better design."

There's been "a habit over the last few decades of very white spaces, associating white with cleanliness when it just makes the space harder to use and harder to identify the cubicle compared to the wall, so it actually gets dirtier", Ramster says. "Maybe if the space was more colourful, more homely, that would improve our perception of cleanliness, and also our ideas of how cared for that space is and how well we treat it." Jennings thinks this can be considered in tandem with Part T requirements around visual contrast for visually impaired users and those with dementia. "I think people are also less afraid of colour now," notes the architect, hoping for more inventiveness in schemes while fulfilling contrast needs.

Attention turns to the future and technology's increasing role in bathroom experiences, including self-flushing and dual-flush cisterns, waterless urinals, and combined water/soap/dryer units. "I think there's a tendency to try and reinvent the wheel," suggests Edward Murray of Studio Moren, annoyed by hidden infrared sensors. Panellists are similarly frustrated when technology or overdesign interrupts ease, whether that is discreet soap dispensers running out or automated systems not being installed or managed correctly. For VitrA's David Richards, this is a recurring issue. Explaining how waterless urinals work, he describes how easy it is for systems to fail if cleaners use incorrect products, or water where they should not. Emma Watson has an easy solution: "The client is not going in every day to check what's working well and what isn't, so the facilities people are the most important ones to consult at the start of a project."

Keeping them happy can mean adopting simpler rather than high-tech solutions, dependent on project circumstances. That said, Richards adds that for VitrA, technology can be uncomplex too, rooted in materials and production, leading to products made with recycled materials, new hygiene glazes and antibacterial coatings.

Ease of use and legibility of space improves washrom experiences for us all, with the group discussing simple design approaches: unoccupied cubicle doors settling ajar so users can see which are free, curved tiles to aid cleaning, mixer taps with elbow-operable handles, and clearer signage for single or double flush. "We may become too complex in pursuit of all-singing, all-dancing," says Quinn, "so something basic with one function and an ease of cleanliness is very important."

For Jennings, to design a perfect toilet "is about asking the right questions at the right time and challenging yourself to not go down the route of replicating what you've designed before". This might use off-the-shelf products, or require bespoke spatial ones. Richards often collaborates with designers on solutions that then solve problems elsewhere. For example, when working with Pascall+Watson and BAA on Heathrow Terminal 5: "A rectangular wash basin with an offset bowl and a shelf on the side to put a bag." This simple, easy-to-clean unit cut the transfer of bacteria from bathroom floors around the airport, and has been replicated internationally.

Technology may progress, but in the end the most fundamental elements are quality of materials and spatial usability. Murray emphasises washrooms' haptic experience: "They are probably the most intimate part of a public building: you make physical contact with the architecture, you engage with it, you're alone and it's tangible." Perhaps this is why those Victorian public conveniences are so loved: not just for grandeur and civic gesture, but for being logical and easy to clean.

Opposite top: Bathroom at the Westin London City hotel. Tech should be subservient to good design, says Studio Moren's Edward Murray.

Opposite bottom left: Decoration should not impede visibility of fixtures such as toilet flush sensors.

Opposite bottom right: Washrooms need to consider accessibility issues, however they present themselves.

ROUNDTABLE PANELLISTS

Sinéad Jennings
Architect, Stanton Williams
Jan-Carlos Kucharek
Deputy editor, RIBAJ and chair
Edward Murray
Associate, Studio Moren
Cathal Quinn
Architect, Stanton Williams
Gail Ramster
Senior research associate, Public Toilets Research Unit, Helen Hamlyn Centre for Design, Royal College of Art
David Richards
UK contract manager, VitrA Bathrooms
Emma Watson
Associate, Hugh Broughton Architects

DRAW THE LIGHT DOWN

Skilful use of rooflights can set a building apart, transforming the spatial experience. Jack Hosea, director of Threefold, sets out four of the architecture practice's projects where natural light has informed the design approach

The use of rooflights to draw daylight deep into buildings is a technique architects have relied on for millennia. Yet it is the way in which certain designers filter, focus and choreograph this light; capturing it, softening it or casting it unexpectedly across surfaces that can set a building apart, giving it a tangible atmosphere and emotional resonance. John Soane famously used his own house as a form of testing ground, experimenting with apertures and voids to understand how daylight from above could transform the spatial experience.

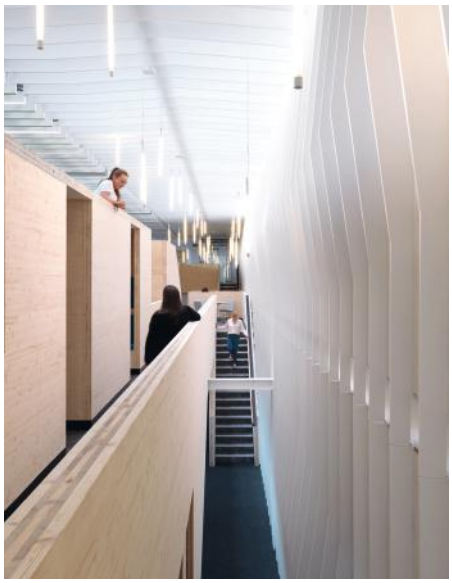
At Threefold, we have long been captivated by natural light and its ability to shape mood, reveal surface texture and become a building material in its own right. The projects shown here illustrate how this fascination has continually informed our design approach.

The Apprentice Store, Bath

Our Apprentice Store project involved the restoration and conversion of a former industrial building into a family home. While much of the original fabric was modest, a two-storey rubble-stone wall running the length of the building offered a remarkable opportunity. We wanted this wall to become the house's defining feature and organisational spine; something both celebrated and experienced.

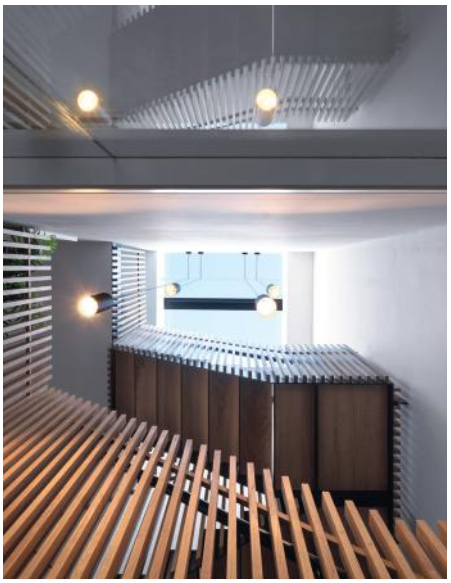
To achieve this, we introduced a continuous, slender strip of Lonsdale Metals' ThermGard patent glazing set between the stone wall and the roof along the building's full length. The intention was never to emphasise the rooflight as an object, but rather the quality of light it admitted. Throughout the day, the shifting daylight animates the interior, accentuating the rich texture of the historic masonry, while from the exterior it draws the eye deep into the plan.

> “We have long been captivated by natural light and its ability to shape mood, reveal surface texture and become a building material in its own right”



The Bridge, Dartford
The Bridge project created a new workplace for Bathroom Brands, housed within a vast warehouse that also accommodates the company’s storage and distribution centre. A core ambition was to bring together staff from three previously separate companies and unite them in a single, uplifting environment.

Given the depth of the warehouse floorplate, we knew natural light would need to be introduced from above. Our response was a 60m-long “inhabited” cross-laminated timber bridge, suspended within a double-height void between two office floors. The bridge contains open staircases, breakout areas and informal meeting spaces, and is washed with natural light from a continuous ribbon of rooflights overhead. This creates an inviting, sociable heart to the workplace – an environment that encourages movement, interaction and collaboration.



Cloak House, London
Set within a conservation area in Muswell Hill, Cloak House is a striking, contemporary home set behind a retained period facade. The project involved extending the building upwards with a roof addition, and downwards with a new basement, alongside a two-storey rear extension that deepened the plan significantly. Consequently, bringing daylight into the centre of the plan was a challenge that needed to be overcome.

We addressed this by introducing a lightweight steel and timber staircase positioned within a dramatic quadruple-height void, topped by a large mechanically operated Glazing Vision rooflight with integrated visionvent. This aperture floods daylight from roof level to basement, invigorating the heart of the house while also providing effective natural ventilation.

Garden Pavilions, London
Our Garden Pavilions project creates dedicated spaces for both wellbeing and exercise, within the calm setting of a mature south London garden. The differing characteristics of this dual use created an obvious challenge in terms of the atmosphere that suited each activity. From the outset, we sought to use natural light to give each pavilion its own distinct mood, in the same way that you would use different artificial lighting modes at night.

We combined floor-to-ceiling glazing, introducing direct light and sharp, energetic shadows suited to activity, alongside a linear opalescent Glazing Vision rooflight that brings in diffuse top light. This softer illumination enhances the natural materials chosen for the space and envelops the interior in a gentle, meditative glow, supporting the pavilion’s restorative purpose.

CHARLES HOSEA (4)

HOW ARCHITECTS ARE NAVIGATING A SUBDUED ECONOMY

At RIBA's latest economics panel, expert speakers offered insights into the economic environment and architects' market, reflecting on experiences in practice and what the outlook means for businesses

WORDS
Michèle Woodger

For architecture practices, 2025 has been challenging. Persistent inflation, high interest rates and global uncertainty conspired to turn spring's cautious optimism into a gloomy autumn.

Helen Castle, director of publishing and learning content at RIBA, commented at RIBA's biannual economics panel (sponsored by Milient) that the current business environment is "not stalling entirely, but weak". It's a subdued outlook, where caution is a brake on growth.

Even so, said Castle: "Architects continue to problem solve and to improve their business processes, as reflected in the contributions of the architect panellists and their response to the economic outlook from the Bank of England and RIBA."

The view from the Bank of England

While the Bank of England Monetary Policy Committee (MPC) believes headline CPI inflation has peaked at 3.8 per cent, this is still higher than the 2 per cent target the Bank now hopes to reach by 2027. GDP growth is expected to rise modestly (1 per cent in 2025) – slow by historic standards. Inflationary risks have persisted due to factors ranging from global conflict to extreme weather events and tariff threats.

The unemployment rate is expected to pass 5 per cent by mid-2026. Not fantastic news, but this might temper wage inflation, which is potentially already "easing", says the Bank's Lai Wah Co, deputy agent for Greater London. That said, the National Living Wage Foundation's latest increase is 6.7 per cent nationally and 6.9 for London – mandatory for RIBA Chartered Practices.

Caution grips architecture sector

What this means, says Wah Co, is that squeezed businesses "aren't hiring as much, or are letting go of staff". 'We know,' respond architectural firms. Kaye Stout, partner at Pollard Thomas Edwards (PTE), admits to caution around investments: "We want to keep our costs low, and that includes not recruiting additional staff."

Consumers are also spending less and saving more, with the biggest excuse cited in a Bank of England survey as worrying about emergencies. "Domestic clients are holding onto their money; commercial ones are looking for certainty before investing in large-scale projects," says Adrian Malleson, RIBA's head of research and analysis. Architects are facing scaled-back projects from both types of client.

Still, the latest Construction Products Association (CPA) report predicts a "subdued but positive" uptick in housing repair and maintenance in 2026, with growth of 2 per cent forecasted. The CPA also expects growth in the defence sector, whereas commercial work – which has fallen this year – will still grow in 2026, with the disappointment of stalled big-ticket projects offset by profitable office fit-outs.

Construction information service Glenigan's research forecast latest update, counters Malleson, "talks of decreases in planning approvals, contracts awarded and in project starts". Planning delays are a key dampener, with slower payment common, and clients deterred from investing.

This chimes with the experience of PTE, and of Bristol-based Barefoot Architects. "People are opting not to instruct us to start work, because the budget is beyond their means," says founder Sam Goss. "They are stalling or cancelling projects before they go on site, and we are tendering repeatedly for work."

TOM BRIGHT

CHRIS SNOOK

Above: MEA Studio's boot room at a London house.

Left: Wing masterplan, Marleigh, an ongoing project near Cambridge Airport designed by Pollard Thomas Edwards Architects.

Where is the growth?

Yet there is a real split in outlook between larger and smaller practices: 81 per cent of RIBA Chartered Practices are small businesses, accounting for only 15 per cent of revenue, whereas large practices bring in the majority of revenue (and take £1 in £4 from international projects) but represent only 3 per cent of practices.

Domestic homeowner clients looking to "deep retrofit, improving the performance of the envelope, rather than the property value" seem to be continuing through the hard times, observes Megan Ebanks, founding director of London-based MEA Studio. Since this aligns with the practice's core values, Ebanks has decided to pivot her brand to attract likeminded clients.

Success is also a question of work ethic and embodying your values. Barefoot Architects, which Goss says has "thrived", focuses on community and co-design, and the practice actively seeks clients who want to collaborate with architects. "Our passion meets their purpose," he says, and "that doesn't feel like a marketing line… we are attracting clients who share those values; it is easier to get them on board".

Working in synergy with clients is also key to PTE's resilience, says Stout: "We had to decide what kind of clients we wanted. We discovered we have a strong reputation around placemaking. This has resonated well with national housebuilders working outside London." Consequently, over the last three years the commissioning of masterplans, placemaking and village extensions has grown.

How else to weather the storm?

So how can practices maximise potential, and ensure they get paid on time? "We have been focusing on debt collection: a lot of clients have gone out of business or had cash flow problems," admits Stout. Watching the bottom line is crucial.

Ebanks describes a practical approach towards homeowner clients: "When they first contact us, we try to share knowledge immediately to build trust," she begins, adding that the firm will refund the fees attached to an initial visit and sketches if a project proceeds. By being transparent with three fee tiers, Ebanks also finds she is able to negotiate better, since scope can be reduced rather than fees.

Barefoot Architects uses consistent marketing to a wide network via social media and newsletters. The "flywheel effect we have created brings the numbers back in", Goss says. "Learn from the numbers and constantly refine." Moreover, consistency is key: "If you go to the gym you have a vision of what you are trying to achieve, and that applies to projects. But you need a plan, where you show up week on week and build strength". Sound advice.

Final thoughts

"The rosy view of the summer" has gone, says Malleson. Advice for now is to hunker down, keep the "storytelling" alive throughout the dark, cold winter nights, focus on expertise and future visions, and nurture your quality contacts… because those are the clients who will be sharing your bunker until you exit hibernation.

A new direction: Our brand, our future

Ahead of our bicentenary in 2034, we have refreshed the RIBA brand. This includes a redesigned visual identity with a new logo, inspired by the spaces and places between walls and structures.

It also introduces a new way of telling the world why we exist and what we aim to do: to advance architecture for all by building the world's greatest community of architects. And we'll do that by educating, supporting, inspiring and championing architects everywhere, so that we can all deliver better, safer, more inclusive and sustainable places for everyone.

RIBA has never been more vital, and our architects have never been more important. This is why our brand matters, why architecture matters, and how together we will make the future a better place.

To find out more, visit:
riba.org/about-us

CHECKLIST
SPECIFYING 'TRADITIONAL' PITCHED ROOFING

WORDS
Mark Austin, SpecStudio

This advice is aimed at domestic applications of traditional-type pitched roof construction using slate and manufactured clay and now concrete tiles. While the term 'traditional' is still used, traditional techniques have been supplemented with modern materials and approaches necessary to achieve performance requirements to comply with ever more stringent building regulations.

There are many considerations when designing and specifying pitched roofs: from visual to practical to material selection, performance, cost and maintenance. All design aspects should be reviewed to develop a thorough, detailed pitched roof specification.

COMPONENT SPECIFICATION

Support – generally split into two broad categories and considered outside the scope of this article, other than the following:
- 'Cut roof' – forming the roof structure on site to suit the required configuration. Elements include joists, purlins, rafters and hip/ ridge boards. This construction type provides a more open, usable roof space.
- 'Truss roof' – prefabricated support assemblies installed on site. These result in less usable roof space.

Timber, of correct type and grade, is often used in domestic applications although metals can also be used.

Proprietary air and vapour control layer (AVCL) – membrane to manage moisture and air movement within a building's structure.

Proprietary insulation – in pitched roofing the location of insulation in the overall support construction dictates the roof type, which can either be:
- 'cold', where insulation is located at ceiling level interfacing with joists
- 'warm', where insulation is located along the 'pitch' interfacing rafters

Common proprietary materials/ products include mineral wool, rigid foam boards (like polyisocyanurate) and fibreglass. We generally advocate the use of mineral wool.

There are pros and cons to the attributes of each. Designers/specifiers need to be explicit regarding terms of use and required performance so any proposal ensures building regulations are met. Main attributes to be considered are fire and thermal performance; for example, plastic foam type products can be better at achieving thermal performance in reduced zones but are more combustible in terms of reaction to fire, to BS EN 13501. Fibreglass, although currently legal, can cause respiratory health issues and irritations.

Board overlay (rigid sarking) – provides a continuous rigid layer across the rafters. It is not mandatory except in Scotland (for Scottish Building Regulations). In areas of the UK other than Scotland, it is recommended for:
- areas prone to high winds or exposure, since they provide greater resistance to wind uplift and driven rain
- additional rigidity and bracing if required for roof structure
- reducing thermal bridging and improving roof U-value if a proprietary insulated sarking board is selected

Types, generally are:
- processed boards such as Class 3 plywood, or OSB/3
- proprietary boards with insulative attributes

Underlay (flexible sarking) – provides a continuous flexible layer over the rafters or rigid sarking. Sarking felt (roofing underlay) is not mandatory by law, but its use is a well-established, essential practice in UK roofing, as guided by BS 5534, because it:
- provides a secondary barrier, to prevent ingress of wind-driven precipitation and dust
- assists with moisture control
- acts as a barrier to lessen effects of wind uplift on the main covering; 'ballooning' of underlay is to be avoided
- offers temporary weather protection (before the slate/ tile covering is installed)

High-resistance roof underlays are non-breathable and non-permeable (no air or water can pass through them). Meanwhile low-resistance roof underlays come in two types:
- vapour permeable (water vapour is able to pass through)
- air/vapour permeable (both air and vapour can pass through)

Select and integrate in coordination with product manufacturer's recommendations, standards and third-party testing for the roof type and construction, and necessary ventilation requirements.

Battens – used to secure underlay to rafters and receive 'covering', at correct centres for the correct head lap.

Counter battens – used for ventilation above underlay, where required, and secure underlay to rafters.

Material-wise both are softwood graded, sized and treated in accordance with governing standards.

Covering (slate/ tiles) – including ridge tiles and hip tiles – are selected primarily based on appearance and cost. Heritage and planning conditions also limit material choice. However, appreciation of attributes associated with materials are crucial to determining what is most appropriate for the scheme.

Slates are natural metamorphic stone quarried, split or hand-shaped); they:
- carry a heavier load
- have a design life in excess of 100 years and require minimal maintenance
- are more expensive initially but have lower life cycle costs
- are more environmentally friendly, as a naturally sourced material involving minimal processing

Tiles are proprietary products of either clay or concrete and of varying appearance; they:
- are uniform in shape, with most having interlocking profiles
- carry a lighter load than slate, clay being lighter than concrete
- have a 40-to 75-year design life dependent on pitch, material specification and exposure
- are cheaper but with higher life cycle costs
- involve a manufactured process with associated energy and movements of materials

Other options, such as timber shingles and shakes, are outside this article scope.

Governing standards require that all slates and tiles are mechanically secured.

Detailing (flashings, soakers, aprons, valleys and the like) – generally made of lead, although composite-based alternatives are available.

Trim detailing – barge boards, fascia/ accessories, such as ventilators) – as necessary.

KEY CONSIDERATIONS

Design responsibility – we always align specifications with a procurement and design responsibility matrix (DRM). It is important to understand whether design elements are prescriptive (architect design responsibility) or descriptive (contractor/specialist subcontractor responsibility). Final design solution would usually be prescriptive, but this depends on contractual appointment.

An understanding of the standards/bodies (see below) is imperative for those designing pitched roofs using slates and tiles.

Liaison – undertake due diligence with:

- reputable makers/suppliers of required roof elements
- appropriately skilled reputable, local contractors who could undertake the works and are familiar with systems/ products

Such liaison can help navigate requirements, complexities and service conditions (including interface detailing), and determine/achieve required performance criteria and independent third-party testing requirements.

Restrictions – consider any potential heritage/ conservation/planning restrictions (may affect covering requirements).

Interfaces – thought should be given to fixtures and fittings interfacing with the roof, and how these need to be integrated/secured/fixed If photovoltaics are required these can be panels that can be out of line with the covering; recessed and in line with it; or slates/tiles that mimic and integrate with those of the covering.

Penetrations through the roof should ideally be minimised. They should be optimally sized and coordinated so they can be accommodated by appropriate detailing.

Offsite testing – systems/ products shall be independently certified and tested.

Onsite inspection – allow for incremental inspection at key points of the system installation in the presence of the client, contractor and product manufacturers for purposes of quality control before subsequent phases of the installation are permitted.

BEST PRACTICE/ TECHNICAL DETAILS:

Standards/bodies:

- BS 5534:2014+A2:2018 – Slating and tiling for pitched roofs and vertical cladding (code of practice).*
- BS 8612:2018 – Dry fixed ridge, hip, and verge systems for slating and tiling (specification).
- BS 5250:2021 – Management of moisture in buildings (code of practice).
- BS 8000-6:2023 – TC – Workmanship on construction sites / slating and tiling of roofs and walls (code of practice).
- BS EN 1304:2013 – Clay roofing tiles and fittings (product definitions and specifications).
- BS EN 490:2011+A1:2017 – Concrete roofing tiles and fittings for roof covering and wall cladding (product specifications).
- BS EN 12326-1:2014 – Slate and stone for discontinuous roofing and external cladding (specifications for slate and carbonate slate).
- BS EN 12326-2:2011 – Slate and stone for discontinuous roofing and external cladding (methods of test for slate and carbonate slate).
- BS 8747:2007 – Reinforced bitumen membranes (RBMs) for roofing (guide to selection and specification).
- BS EN 13859-1:2014 – Flexible sheets for waterproofing (definitions and characteristics of underlays / underlays for discontinuous roofing).
- Lead Sheet Training Academy.
- Roof Tile Association (RTA).
- National Federation of Roofing Contractors (NFRC).

*The document may not be appropriate for re-slating of old/historic roofs, particularly where traditional and/or reclaimed materials are used. Consult the local planning authority or conservation area specialist for specific advice.

Achieve performance criteria while complying with the above standards/bodies, as well as achieving desired aesthetic requirements. Ventilation is a critical requirement and worthy of specific attention; there are many permutations and correct approaches, to be determined in conjunction with the required construction and products selected.

Installation should be by operatives recommended/approved by and trained by the system manufacturer, and members of quality schemes such as Competent Person Scheme by the NFRC or equivalent. Components of the entire assembly and full installation will need be covered by a single source warranty, with manufacturer approval for all materials used. Any warranty shall include an insurance company backing, paid as a single premium at the policy start. Guarantees to be jointly provided by the manufacturer and contractor.

PITCHED ROOF SPECIFICATION CHECKLIST

- ☐ Whose is the design responsibility?
- ☐ Is the geographical wind zone identified? A key piece of information as the basis for a correct design in conjunction with other performance criteria.
- ☐ Are there any there heritage/ conservation/ planning restrictions/ requirements?
- ☐ If an existing roof, check whether retained structure can support the elements of the new roof construction (including the covering), seek guidance from a qualified structural engineer where necessary and ascertain remedial measures.
- ☐ Is a 'cold' or 'warm' roof determined and their ventilation requirements identified?
- ☐ Has the required/ desired covering been selected?
- ☐ Have samples for visible elements been requested and reviewed?
- ☐ Have the aesthetics for fixing been agreed (mainly for slating as nails or hook fixings)?
- ☐ Have recommendations of the manufacturers'/suppliers' contractors been utilised to achieve compliance with the governing standards/ bodies? Can requirements for warranties be achieved?
- ☐ Have quality control/ inspection requirements been clearly described?
- ☐ Have all interfaces and co-ordination with other disciplines been considered?

ROOFLIGHTS THAT RESPECT HERITAGE AND ENHANCE MODERN LIVING

Presented by

THE ROOFLIGHT CO. COTSWOLDS

The Conservation Rooflight range from The Rooflight Co. offers a seamless, discreet, high-performing solution for period properties

Set in the charming village of Wyck Rissington in Gloucestershire, Greenfields is a secluded dwelling that has been redesigned to create a stunning home, paying homage to its past and celebrating its future. The property is surrounded by open countryside on the periphery of the conservation area. The original 17th-to 18th-century cottage is Grade II listed, while later extensions fall within the property's curtilage listing.

The new owners were keen to reimagine the existing interiors to create luxurious living accommodation for both shared and private spaces, and to convert the existing garage. Given the property's listed status and sensitive Cotswold National Landscape setting, any alterations needed to respect its historic character while enhancing modern living.

Below: The Original Conservation Rooflight sits flush with the roofline for a discreet result.

To achieve this, Tyack Architects were enlisted to bring the vision to life. Respecting the heritage of Greenfields while elevating its interiors with natural light was central to the design challenge. However, existing large, unsympathetic rooflights disrupted the harmony of the Cotswold roofscape.

Having partnered with Tyack Architects on several past projects, The Rooflight Co. was again trusted to provide the solution through its Conservation Rooflights. Engineered for historic buildings, they sit flush with the roofline featuring a slim black frame and hand-applied silicone beading to replicate traditional putty. While authentic glazing bars and clips offer historical accuracy to the design, the rooflight also ensures a modern U-Value of 1.4W/m^{2}K, delivering high thermal performance and maximum daylight. Visually discreet, the conservation rooflights specified blend effortlessly within old and new parts of the property.

Now, Greenfields celebrates both heritage and modern living. The authentic conservation rooflights restore architectural integrity, allowing the roofscape to read as intended: clean, coherent, and sensitive to its Grade II status, marking a new chapter of light-filled, luxury living in perfect harmony with its rural surroundings.

For more information on The Conservation Rooflight, please contact hello@therooflightco.com or visit therooflightco.com

MATTHEW SILLER (2)

Above: The Conservation Rooflight is designed to respect traditional architecture while delivering modern performance.

Below: With an elegant internal finish, the rooflight provides an abundance of natural light.

COLIN POOLE

LESSONS FOR THE FUTURE

Thoughtfully designed buildings can have a huge impact on children and young people's experience of education, and on their wider development. Our education Spec webinar pooled expert learning – and pupil feedback – from projects around the UK

Opposite left: Allies and Morrison's London College of Fashion is a key part of East Bank's cultural offering.

Opposite top right: Architype's Riverside Primary School in Perth, Scotland's first Passivhaus primary, is both sustainably and sociologically designed.

Opposite bottom right: Hawkins\Brown's St Mary's Catholic Voluntary Academy in Derby was designed on biophilic principles.

WORDS
Michèle Woodger

Ex-PM Boris Johnson apologised to the Covid-19 enquiry recently for his government's handling of school closures in 2020. Children paid a huge price after being moved out of schools and into a lonely, atomised online world, and continue to suffer repercussions on their educational and social needs.

In contrast, well-designed buildings augment the school experience, and by default children's wellbeing, relationships and academic performance.

Building and student performance

Learning spaces shape minds as much as curricula, but school buildings face unique, tricky environmental challenges around variable occupancy, overheating, heat loss, air quality and natural ventilation, lighting and acoustic comfort.

Perth's Riverside Primary School, Scotland's first Passivhaus-certified primary, is one example of sociologically and environmentally tuned design. Consolidating two schools, it resulted from extensive research by designer Architype, proving building efficiency need not mean design compromise.

The brief, shaped by Scotland's outcomes-based Learning Estate Investment Programme (LEIP) funding, prioritised health, daylight, local and low-VOC materials, and flexible pedagogy with connected rooms. Despite value engineering (a steel, instead of the hoped-for CLT, frame), a commitment from all stakeholders to Passivhaus principles led to a building that outperformed forecasted metrics. According to architect Ann-Marie Fallon, Riverside's energy use intensity (EUI) improved from a Stage-4 estimate of 62 to around 35kWh/m^2/yr in year three post-occupancy – an admirable result, helped by the school's heating strategies.

The building became a pedagogical tool. Pupils visited the construction site, "inspiring a new generation of climate warriors"; and its design led to a technical paper, influencing national Passivhaus guidance. Post-occupancy performance monitoring is set to continue, and pupils' qualitative feedback has been strong.

Acoustics are often a challenge in schools: if students cannot hear, they struggle. Therefore, says James Boyd of Zentia, they must match students' need for clarity (speech intelligibility), concentration (focus), and confidentiality (privacy). While it is cheaper and easier to implement good acoustics from the outset, there are retrospective solutions, in the form of suspended ceilings, floating baffles and canopies with integrated lighting, colourful wall absorbers, and hybrid approaches for thermally exposed structures.

Compliance with BB93, the UK Department for Education (DfE) guidance defining acceptable reverberation times, is increasingly important, especially in SEN spaces or for students with auditory processing difficulties.

Biophilia and outdoor learning

St Mary's Catholic Voluntary Academy in Derby, which has been called "the UK's greenest primary school", opened in 2023 after arson destroyed its predecessor. For architect Hawkins\Brown, instilling a sense of calm, healing and community was paramount, achieved via adherence to biophilic principles, stripping away "superfluous materials". Elements "worked really hard" to meet low embodied carbon goals, explains architect Louisa Bowles. Exposed concrete slabs provide thermal mass, clerestory glazing modulates daylight, and naturally driven cross-ventilation maintains air quality. Elevated CO_2 in poorly ventilated classrooms can cause headaches, reduce concentration

SIMON MENGES

DAVID BARBOUR

JACK HOBHOUSE

and depress attainment; here, such negative outcomes are designed out.

The fabric is ultra-efficient (U-values 0.1 to 0.12; airtightness 3m^3/hr), and 12-month monitoring shows notably lower than predicted operational energy use and heating demand. The all-electric school produces net-positive energy via rooftop photovoltaics, resulting in a claimed embodied life cycle figure of 440kgCO_2e/m^2, well below RIBA's 2030 target.

Biophilia here is not just decoration, but a pedagogical model. Three low-rise teaching clusters sit along an external circulation spine, so pupils move through planting, weather, and changing seasons every day. Landscapes double as habitat and as teaching aids: gardening clubs, outdoor classrooms or quiet sanctuaries. Early research by the DfE and University of Derby reports pupils' "sustained increase in life satisfaction post-move", says Bowles, as well as gains in reading and maths and a "small but sustained increase in nature connectedness".

It appears this architectural approach has given students renewed hope too. As one put it: "I really like the big trees that survived the fire. It gives me hope [to] think about them."

External spaces can also offer shaded, ventilated, energy-efficient learning areas for older students, notes Harvey Roberts of Markilux. At Stratford School, east London, external shading and canopy systems enabled the transformation of a barren, wind-tunnel-like interstitial space. Automated weather sensors now support year-round semi-outdoor learning – giving teenagers no excuse for shirking.

Community and placemaking

Schools sit at the heart of communities. The spatial concept of St Mary's borrows from urban language: an arrival sequence and central courtyard establish belonging, while a covered entrance offers parents a gathering place.

Similarly, the new London College of Fashion (LCF) campus at Stratford was conceived as a civic anchor for East Bank, strengthening community links across education, culture and city. Consolidating six sites into one vertical campus, it brings more than 6,000 students together.

"A key principle of how the buildings are arranged is connection," says director Mark Foster of Allies and Morrison. The building's lower levels are public: a semi-covered colonnade, café, gallery, and auditorium invite the community inside, while podium and waterfront routes draw people through from the canalside.

Inside, the 15-storey central atrium fosters chance encounters and visually connects floors and courtyards. Feature stairs and open workshops reinforce movement, breaking down silos between fashion, design and technology.

Architecturally, the building echoes Stratford's industrial character with fluted precast concrete and fine glazing detail, projecting a new identity. Foster describes it as "civic in scale and appropriate to the public space [it] occupies".

As RIBAJ deputy editor Jan-Carlos Kucharek notes, "schools aren't just schools – they are community assets". With a Policy Institute report predicting 162,000 fewer children attending school by 2029, closures and consolidations will make educational buildings ripe for architectural imagination in the years to come.

MADE TO MEASURE

Only a tiny minority of people get to commission and live in bespoke-designed homes. Bringing their ideas into reality means developing a trusting relationship with clients and having the skills to create opportunities from constraints, architects told a RIBAJ Spec webinar

Opposite top left: At Croes Fach in the Bannau Brycheiniog, the house is bound into its landscape, materially and topographically.

Opposite bottom left: Hugh Strange Architects wrought Hastings House out of its site's dramatic changes of level.

Opposite right: Vestige House in Wilmslow, Cheshire reused the original house's foundations and bricks to generate a radically different new home.

Homes are as unique as their inhabitants, and owners of bespoke homes are fortunate indeed. But, a recent RIBAJ Spec webinar heard, the right combination of client, architect and contractor can enable a sense of belonging in dialogue with context, landscape and community.

At home in the landscape

For Martin Hall, of Hall + Bednarczyk Architects, Croes Fach in the Bannau Brycheiniog owes its success to a fantastic client relationship plus "a local contractor who understood the complexity". That, and a site looking onto the hills. The project replaces (and shifts) an incoherently built house whose windows overlooked a shrubbery, ignoring the magnificent vistas.

Principal living spaces are upstairs with bedrooms below. Non-orthogonal geometry provides directionality, while a monopitch section expands the upper volume ("like bellows") creating an "IMAX-scale view" of the Sugar Loaf mountain, with end-to-end facade glazing. A controlled overhang regulates sunlight. Landscaped terraces let the garden swoop up to meet the living level, knitting the house, separate annex and topography into a single, legible form.

The home's materials consist of cedar, glass, steel frame and reinforced-concrete retaining walls, as well as extensive walnut interiors and locally contextual stone. Zinc is also heavily used, inspired by vernacular agricultural buildings. It has a long history and, says Jonathan Lowy at VMZINC, is increasingly appreciated for its versatility, durability, sustainability and aesthetics. Famously used on Parisian roofs, zinc's natural patina and flexibility make it ideal for contemporary and contextual architecture, such as that seen at Croes Fach. "The muted tonality works in rural landscapes," says Lowy. "It blends so well."

Croes Fach is jaw-dropping yet modest: "We didn't want the building to make a big announcement of its presence," says Hall – the landscape is the protagonist.

Sharing one's home

We often forget that not only humans live in houses. Ian Durrant, of Fabspeed UK, notes that it is "inspiring to see how much wildlife can be incorporated into buildings." The company, part of Michelmersh, offers certified, prefabricated brickwork systems that streamline construction while preserving design quality; the Brickology range embeds habitats for birds, bats and bees into facades to support biodiversity.

Retaining walls

Architect Hugh Strange faced a major site constraint – a near-vertical cliff – behind his client's Edwardian townhouse in Hastings, which had an "atrocious" 1980s extension.

"The default approach would be demolishing and rebuilding in concrete with large new retaining walls," Strange observes. Instead, engineer, client and architect took on a complex repair job: drilling anchors into the hill, underpinning, concrete stitching, and other piecemeal interventions, making the patchwork part of the architectural language. Onto these repaired terraces, LVL timber frames rise in three stepped volumes opening toward a central outdoor space. They are bolted together, enabling reversibility and eventual reuse; a "house of dead ends" now has a fluid spatial arrangement.

How did the client hold his nerve? "Fantastically well," says Strange. "He

SIMON MAXWELL PHOTOGRAPHY

RORY GAYLOR

HALI MASON

understood we've taken more thought, time and care than required – but it was cheaper and less carbon intensive." Importantly, "he also had a sense that not obliterating the past [adds to our] appreciation of how we inhabit a site".

Constraints and freedom

In a reverse situation, Michael John Young of Smith Young Architects found himself forced to demolish after a simple refurb and extension in Wilmslow, Cheshire, morphed into a full rebuild. Also not wanting the new Vestige House to erase its past, he used the original Edwardian home's foundations and salvaged its bricks in a load-bearing masonry ground floor topped by a timber-framed upper storey.

The project is organised around a north-south axis defined by a linear void. Rooflights and double-height spaces draw sunlight deep into a plan constrained by a north-facing garden. Internally, the ground floor is open yet articulated by masonry spine walls, forming a sequence of loosely defined rooms. The upper storey reintroduces cellular bedrooms around a flexible landing. Externally, brickwork is overlaid with hand-applied bagged render, while stained timber cladding blends with local brick tones. Following "an arduous planning journey" slowed by NIMBYism, "after approval, the clients called me instantly [to get started]", Young recalls.

Looking outside and in

Literally in the back yards of a south London terrace, Stirling-prize shortlisted NIWA House (a horizontal pavilion for a client who uses a wheelchair) challenges all preconceptions around constraints.

"There was a lot of talk about how to [embrace] a Japanese influence, but not make it [too] obvious," explains architect Takero Shimazaki of t-sa. The home draws subtly on such precedents as the engawa (a threshold perimeter), Torii gate-like sequences and inward-looking courtyards.

The open-plan ground floor is divided by a grid of vertical timber columns, setting up 'rooms' without physical barriers. An innovative stone-and-timber roof system, developed with Webb Yates Engineers, supports a green roof that moderates internal temperatures. Openings in the roof, large skylights and diaphanous voiles bring in tempered daylight and cross-ventilation, creating a "cocoon-like" yet permeable space. It is private despite being overlooked, architecturally legible, lightweight, accessible and environmentally tuned, and the family are "delighted to spend every day here".

Conclusion

"I don't think people are generally anti-modern buildings – just ugly ones," says RIBAJ deputy editor Jan-Carlos Kucharek. What unites successful bespoke housing is an understanding that extravagance is incompatible with accessible, sustainable, contextual and harmonious design. Relationships remain key. "Your job is to interpolate the client's vision and bring it into the world," concludes Kucharek.

WE NEED TO BUILD A CULTURE OF ARCHITECTURE

For at least 50 years, the same questions about the underappreciation of architects and their work have been asked. It's time, argues RIBA President Chris Williamson, for education to provide proper answers

INDAH IRAWAN

Artwork for Chris Williamson's children's book on custodians of good design.

My very first RIBA meeting was in 1975, as a student representative for the East Midlands. The discussion became animated as we turned to why architects are not better respected in society and why architecture isn't more widely appreciated. Over the last 50 years I have been in countless meetings at which the same questions have been asked.

To address them, we urgently need to build a culture around architecture. That process starts with embedding architectural education in schools, to ensure members of the next generation are engaged with, and think critically about, their built environment. We are no nearer achieving this aim through the national curriculum, but there is much RIBA and the profession can do.

RIBA has a well-established national schools programme. In 2025 it engaged with 2,803 students – 770 of them at primary level, 2033 at secondary – through partnerships with 22 different schools, with workshops delivered at 66 Portland Place. It was supported by you in the profession, with 64 RIBA chartered architects and associates acting as 'Architecture Ambassadors' who delivered 176 hours of workshops. And it has helped 110 young people in the finding and completing of work placements with top architecture practices.

A highlight in 2025 was the Festival of the Future, which was led by Neil Onions of Beyond the Box. It saw more than 2,000 children, teenagers, students and adults visit Portland Place in a single weekend to attend a range of events and activities run by over 20 partners.

In the coming months, the schools programme will continue. We have been working with 600 pupils in collaboration with Oxford Brooks University, on a research project seeing how building homes from Lego can help to teach children about vernacular architecture.

We helped nearly 500 students engage with RIBA's amazing collections, working with partners including the V&A. And we have launched a National Saturday Club, working in partnership with the London School of Architecture, which will help 30 young people aged 13 to 16 to learn about the built environment while enabling them to achieve a Level 2 qualification.

I would like to establish greater cross-industry links with groups such as BE Schools Trust and the Thornton Education Trust (TET). TET's Imagine Programme aims to embed architectural thinking and creativity within the primary school curriculum, to inspire innovative and engaging approaches to learning through architectural ideas and activities. Their outreach helps to foster meaningful partnerships between teachers and architecture professionals to enrich classroom experiences and strengthen a network of primary educators confident in delivering creative, architecture-focused education.

Over the summer I wrote a children's book. The idea came from a conversation with Paul Iddon, taking inspiration from RIBA's crest incorporating the lions from the Gates of Mycanae. In the story the lions are the custodians of good design and advocate for the appointment of an architect to design a new school. It is aimed at four to five year olds, but I suspect that it might also teach parents a great deal about what we do.

Let's make it our New Year's resolution to do what we can as professionals to inspire a future generation. We need to get into our schools and spread that enthusiasm to ensure all aspects of architecture, and the work that goes into it, are more highly valued.

OBITUARY: JAMES STEVENS CURL 1937—2025

By Timothy Brittain-Catlin

James Stevens Curl, who has died aged 88, was a historian of the arcane and funerary. He compiled and illustrated the Oxford Dictionary of Architecture and co-authored, with Susan Wilson, the later Oxford Dictionary of Architecture and Landscape, works of reference unparalleled in their range and accuracy which are in regular daily use worldwide.

Belfast-born Curl was a qualified architect who trained at the Oxford School of Architecture, now Oxford Brookes. In the mid-1960s he was senior architect first at Oxford City Council, where he worked on creating Britain's first conservation areas, and then at the Oxford Architects Partnership. But it was as a prolific researcher and writer – and later a polemicist – that he came into his own, publishing continuously from 1970 until a few days before his death.

His introduction to this world was thorough, as author of the architectural descriptions in the Northern Kensington volume of the Survey of London under Francis Sheppard, published in 1973, and as an advisor on later volumes. But it was with The Victorian Celebration of Death (1972) that he made his first foray into an area for which he soon achieved renown: the architecture of memorials and mausolea. Over his career he wrote about cemeteries in Glasgow and Ulster, as well on the funerary monuments of St Patrick's Cathedral, Armagh and the 'presbyterian Valhalla' of St Michael's Kirkyard in Dumfries; in 2019 he presented a new edition of JC Loudon's pioneering early Victorian work on the management and planting of cemeteries.

Parallel with this interest, Curl developed expertise in other arcane aspects of building history: the art and architecture of freemasonry, in volumes, lectures and essays from 1991, and on the Egyptian revival from 1994. His Spas, Wells, and Pleasure-Gardens of London (2010) addressed a lighter theme. It was with his dictionary of architecture, adopted by and expanded with Oxford University Press from 1999, that Curl reached an international audience with definitions that are always precise, sometimes beautifully illustrated with his drawings, and – architects and students take note – much quicker to find through his pages than by searching online.

Curl joined the Leicester School of Architecture, now De Montfort, in 1978, and rose to become head of school and professor of architectural history within 10 years. This gave him a direct insight into the workings of architectural education during a period often seen as its nadir, as modernism froze into dogma but before anything had arisen to take its place. This was the world of Morality and Architecture, as described by his friend David Watkin in 1977, where an aspiration for the beauty and quality of building seemed to have been not simply forgotten but actively denigrated in both teaching and criticism. Over the years he became a spokesman for those who abhorred the experimental international architecture of the early century and its aftermath; his 2018 book Making Dystopia: The Strange Rise and Survival of Architectural Barbarism mercilessly took apart the self-constructed myths not only of the modernists who had created the new architecture but also of the critics and historians who promoted it.

Some in the circle that developed around Curl in the UK and US were classicists who could be as dogmatic as the modernists they deplored. Yet Curl was open-minded as to style; he was, for example, an admirer of Erich Mendelsohn's work. He was also a fervent European and liberal in his personal views; not the stern reactionary he was often seen as by the various antagonists who made the error of challenging him.

Curl married Eileen Blackstock in 1960; he is survived by her, his daughters Astrid and Ingrid, and by his second wife Professor Dorota Iwaniec.

Timothy Brittain-Catlin is professor of architecture at the University of Cambridge

IN MEMORIAM

JOHN ROY HUNTER
Elected 1950, Edinburgh

ALFRED LOUIS ABRAHAMSOHN
Elected 1961, Johannesburg

JOHN CHRISTOPHER VINER
Elected 1962, Warwickshire

DENNIS ANDREW JAMES
Elected 1962, Nottinghamshire

MALCOLM ELLIS THIRKETTLE
Elected 1966, Dorset

NORMAN WILLIAM MOYES
Elected 1966, Edinburgh

ARTHUR PITT FRANCIS
Elected 1968, Gloucestershire

DAVID LESLIE DAY
Elected 1970, Essex

BRIAN D'ALTON O'CONNELL
Elected 1976, Dublin

ADRIAN STEPHEN KOVAL
Elected 1981, Colchester

RUPERT NIGEL HARTLEY
Elected 1984, London

MONIKA ELISABETH HILDENBRAND
Elected 1999, Canterbury

ALAN KEVIN STEWART
Elected 2000, Peeblesshire

TOSHIO WATANABE
Elected 2002, Oxfordshire

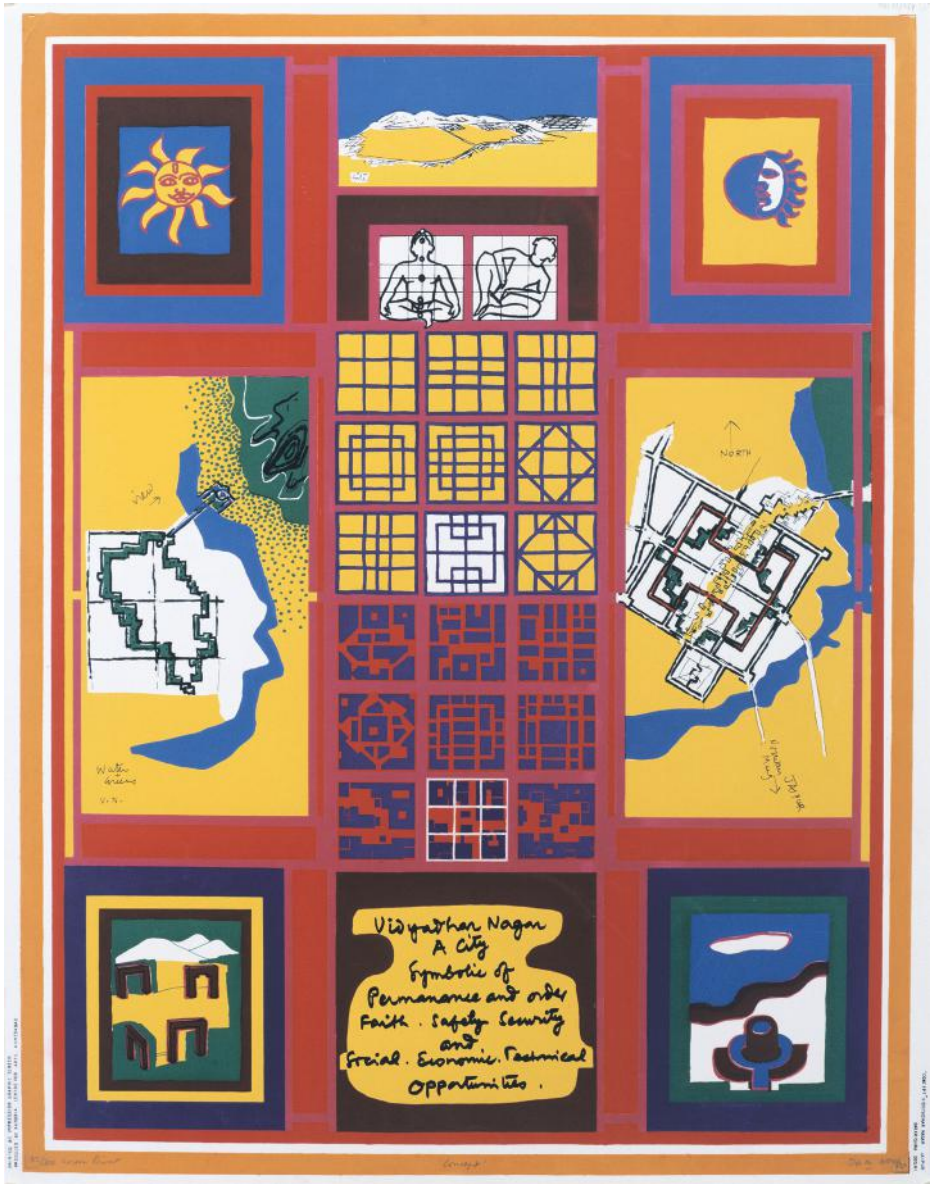
SZYMON MIESZKOWSKI
Elected 2007, London

CLAIRE HANNIBAL
Elected 2008, North Yorkshire

PLAN OF VIDHYADHAR NAGAR, JAIPUR, INDIA

Designed by Balkrishna Vithaldas Doshi (1927-2023)

Silkscreen print
About 1980



By Fiona Orsini

Balkrishna Doshi is regarded as a pioneer of modern, brutalist architecture in India, gaining him international recognition. After a period of time working with both Le Corbusier and Louis Khan in Ahmedabad in the 1950s, Doshi set up his own practice, focusing on low-income housing and urban planning, and pioneering sustainable design.

Doshi's style of presenting his schemes was unconventional, often using the traditional Asian technique of silkscreen printing. This colourful image is for Vidhyadhar Nagar, a satellite town for Jaipur in Rajasthan, conceived to relieve the city's overpopulation.

Although he incorporated some modern urban planning principles, Doshi chiefly based his plan for the town on the 3 x 3 grid of the original city of Jaipur, dating from the early 18th century. Doshi believed that his scheme avoided the failings of the modernist approach, which tended to ignore local traditions. The plan featured elements such as mandala geometry, originating from Hindu and Buddhist philosophies, and water channels such as ponds and lakes to cool the air and support the growth of vegetation.

In 2022, Doshi received the RIBA Royal Gold Medal for his lifetime contribution to architecture. He died in 2023 at the age of 95.

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