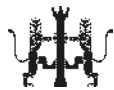


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Buildings



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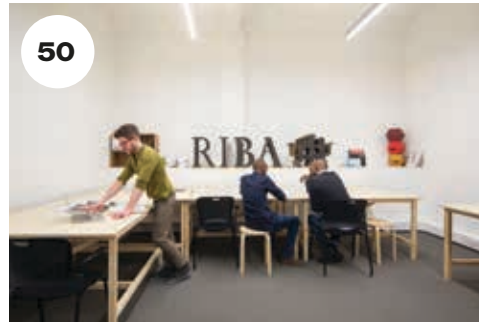
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1: Buildings

'Do you want to take this outside', stands as provocation and threat as much as a question. As protagonists drag off jackets in readiness for a punch-up the crowd follows; a chorus of jeering and caution. Outside the pub or club or school corridor the shouts of 'scrap, scrap' are dulled; in architecture the phrase more likely suggests flooring rather than being floored. Think a seamless inside-out experi-

ence. The pleasure at the subconscious drift from inside to out is lacking in an ever increasing number of our public buildings. Landscaping, even masterplanning, is an added extra, last built, first cut. We are left fighting over stretches of tarmac, scraggy rose bushes and redundant railings. The crowd, including architects, needs to raise its voice for our public buildings, so they can become public places too. ●

Below Caseyferro's transformation of industrial buildings into Anish Kapoor's studio and offices.



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Pamela Buxton on radical ferrocement:
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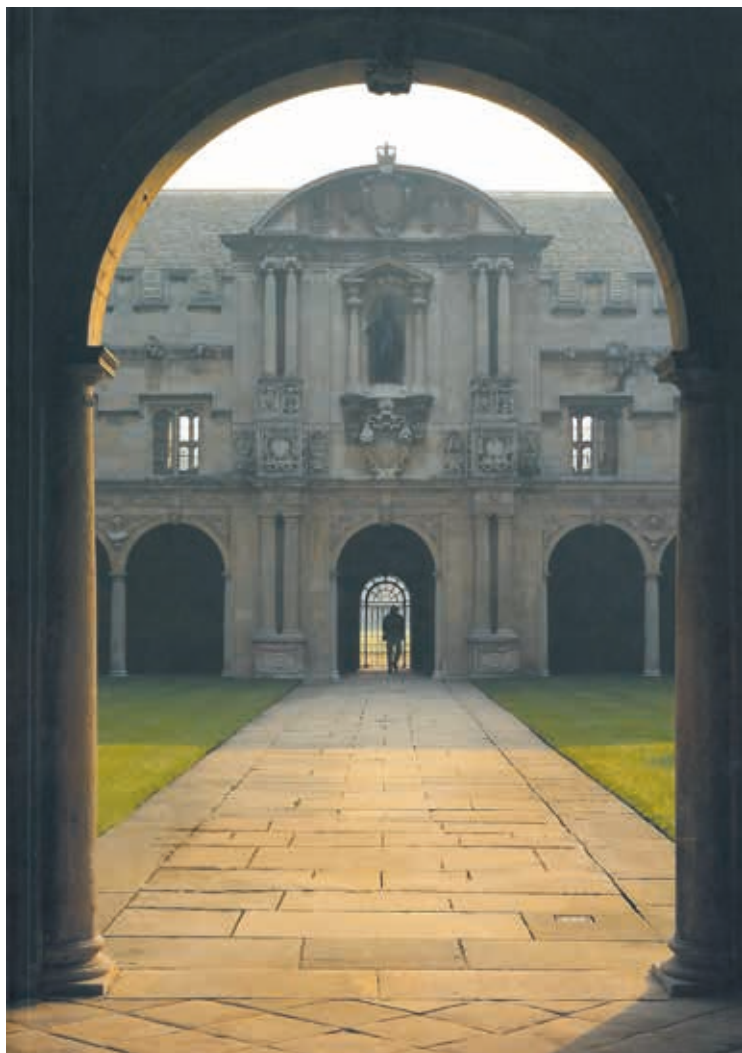
'It was a lovely place, beautiful. It was what you'd call this palace'

A resident of the Aylesbury estate:
ribaj.com/culture/tales-from-a-concrete-jungle

Stitched in

Wright & Wright's treatment of Oxford's venerable St John's College depends on reverence, discretion and quality

Words: Hugh Pearman Photographs: Dennis Gilbert



Above The axial view through Canterbury Quad: the Laudian Library range. The library's new entrance is on the left at the end.
Opposite A few good materials used well – Wright and Wright's new staircase at the north end of the library range.

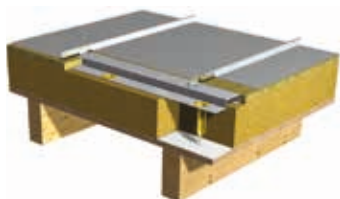
St John's College is ranked as Oxford's wealthiest. It is also very old, dating from 1555 in its present form but with some buildings going back to the former Cistercian College of St Bernard, which started building in 1437. It's a youthful upstart, however, compared with some of the earliest colleges in the city – St Edmund Hall, Balliol, Merton. And according to architect Clare Wright, they're a progressive bunch at St John's. They approve of contemporary architecture, and insist on zero-carbon buildings. In return, Wright & Wright has a famously good eye for such accretive historic complexes. The upshot is that the firm has just completed a first phase of refurbishment there, is about to start a Phase 2 newbuild, and will conclude with a third phase refurbishing the libraries.

Clare Wright likes to quote architectural historian Howard Colvin, who was based at St John's: 'In a university built round quadrangles it stands out as one of the most ambitious of its kind and as the first in which the architecture is predominantly classical.'

It is also astonishingly peaceful, given that this is right in the centre of Oxford. The peace was not permanently disturbed when in the 1970s the college built its range of new student rooms to the north, the Thomas White Building, in the vertebral concrete manner by Arup Associates; nor in the 1990s by the more historically allusive Garden Quad by MacCormac Jamieson Prichard. Both have weathered very well, settling into the college parkland known as The Groves.

This first phase of Wright & Wright's work is rich and subtle, and demonstrates that good architecture is as much about problem-solving as it is about making any kind of statement.





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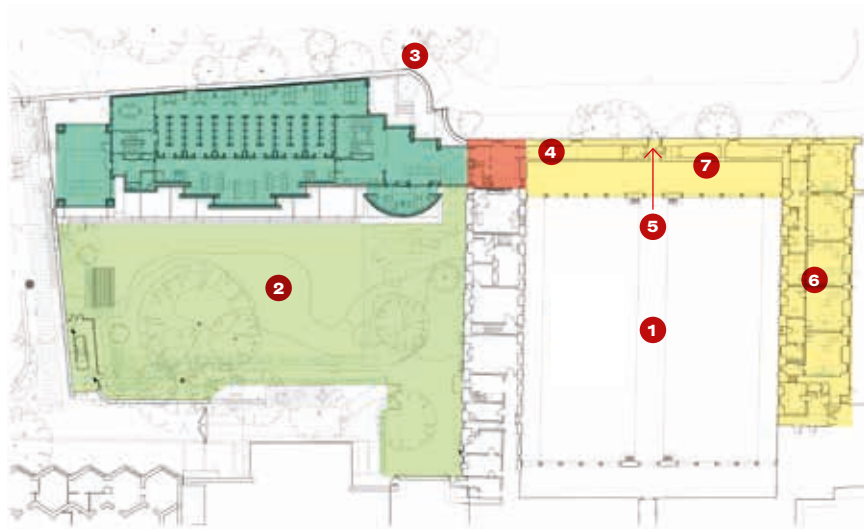
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Phasing diagram



- Phase 1 - refurbishment
- Phase 2 - new build
- Phase 3 - library refurbishment

- 1 Canterbury Quad
- 2 President's garden
- 3 17th century garden wall
- 4 Otranto Passage
- 5 New entrance to library
- 6 Old Library
- 7 Laudian Library



Above Beautiful brass insert to oak handrail.

Below A new entrance to the library runs along the rediscovered 'Otranto Passage'.

The library interiors had been much altered in the 19th and 20th centuries – Colvin himself, as librarian, had inserted a new staircase in the daylight-drenched 90° 'knuckle' space in one corner of the 17th century Canterbury Quad between the Old Library and later Laudian Library. The new plan reinstates the spirit of the original geometric sequence, finding a new way into the Laudian library via an existing door into a half-forgotten slice of left-over ground-floor space known as the 'Otranto Passage'. This now slopes gently up to a new staircase at the (previously altered) end, which Wright & Wright expresses as a piece of freestanding furniture in oak, brass, steel and Clipsham stone.

From this high space, which aside from the rich materials has something of a scullery feel, a connection will be made at first-floor level to a new study centre tucked into a convenient curved set-back to the high 17th century garden wall outside. That, now on site, will also make a link between the original college buildings and the 20th and 21st century additions to the north, and contain a lift accessing old and new buildings alike. Then Wright & Wright will turn its attention to a judicious restoration of the original libraries.

St John's thinks for the long term. The first phase may not be lavish, but is made to last, with excellent durable materials. Wright & Wright – which is now also more radically reworking and extending the library at Magdalen – here gives a masterclass in the art of invisible mending. ●

Credits
Client St John's College, Oxford
Architect Wright & Wright
Structural engineer Price & Myers
Services engineer Max Fordham
Quantity surveyor Peter W Gittin & Associates
Project manager Sweett Group
Contractor Beard Construction Group



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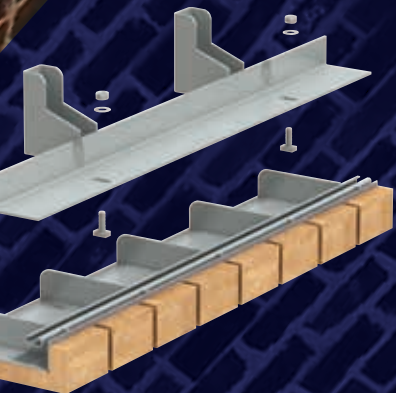
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Room 303, Broadway Hotel, Shanghai

Photograph: Aidan Monaghan

Words: Jan-Carlos Kucharek

If this morning view of Shanghai, taken from the photographer's hotel room, has a Bladerunner-esque feel to it, there'll be a reason for that. Aidan Monaghan studied architecture at Queen's University Belfast and did his Part II at the Glasgow School of Art, working at Foster+Partners in London for two years until the 2008 recession, when redundancy could not have come as a greater blessing. Monaghan had a side line as a photographer

in his home city, shooting the sets of up-and-coming Belfast playwrights and directors; one of whom, fortuitously, was director Terry George, who went on to win an Oscar in 2012 for his short film 'The Shore'. The success was infectious – Monaghan went on to document the filming of Ridley-Scott's 'The Martian' and the more architectural 'High Rise' this year. His latest commission saw him half bitten to death in the Colombian rainforest with, rather than by, Robert Pattinson, for upcoming Amazonian yarn 'The Lost City of Z'.

There's something river-like and lost

about Monaghan's Shanghai shot too; its shallow depth of field evoking the toy-like feelings of insignificance he experienced in the taxi to his hotel on the December night he arrived in this city of 24 million; a mere dot on a super highway beneath futuristic neon towers stretching up and away into the darkness. The next morning, still disorientated, he concentrated on the river – the only thing Marco Polo might still recognise of the great mercantile city. An overview of the metropolis caught on a post-coital plateau; the sunlight lost in the haze of smoke; cold, dead tubes of thrown neon waiting for the day's residual warmth. ●



Out of the woods

Sarah Wigglesworth Architects' RIBA Award-winning primary school extension has brought the children out – in every respect

Words: Jan-Carlos Kucharek Photographs: Beccy Lane

Every now and again, you come across a building that's notable as much for its ability to get the best of what surrounds it as it is for the spaces that it creates of itself. A new primary school extension by Sarah Wigglesworth Architects, built in the village of Mellor just outside Stockport, is a textbook example of this rare type.

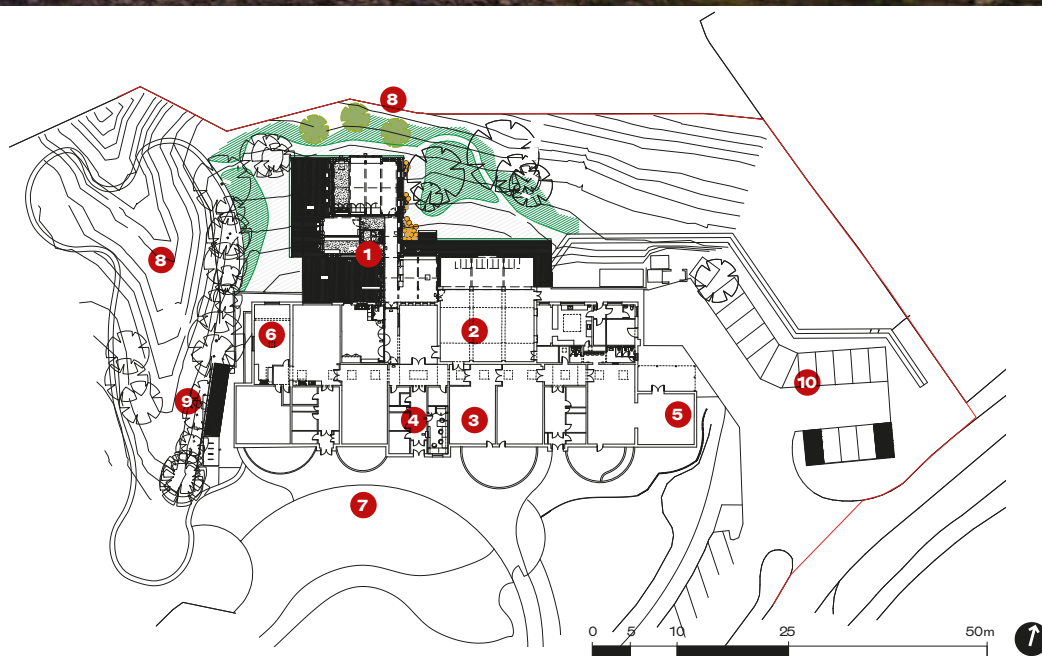
The 1881 building at the far end of Mellor had long been deemed not fit for purpose. In 1995 a new school was built on a patch of green belt at the other end of the village but it came with provisos. Due to objections by some locals, the new school was only allowed to build to the same area footprint as the former, re-interpreted as a row of five south-facing open plan classrooms connected by a cen-

tral corridor to the hall, admin and service spaces to the north. Designed for the same cohort of 100 kids, it was already straining at the seams with 154 when new headmaster Jim Nicholson arrived with big ideas in 2007. He set about getting funding to extend the school on either side with a new classroom and nursery extension, winning 'final' permission on the green belt site in 2011.

But this wasn't a long-term solution; Nicholson realised that the school could only remain viable if he could raise pupil numbers from 22 to 30 per class to secure the extra £3000/year/pupil funding. The local council understood the thriving school's need but was in no position to provide finance; so, not without contention, Mellor became the area's

first primary with Academy status – ironically not because it was failing but due to the fact that the school was just too successful.

Part of that success could be Nicholson's establishment of Mellor as a 'forest school'; meaning kids are encouraged to don their wellies and learn, for some of the time at least, stomping around in the landscape around them. Given the historical site sensitivity, his Eureka moment was when he realised the ethos could be used as leverage to secure planning for an sustainable extension built with reclaimed materials, for his 'treehouse in the woods'. Searching in 2012 for a designer, the governors came across Sarah Wigglesworth Architects' Sandal Magna School in Wakefield and saw its aspirations



Above The Mellor School extension looking east. Internal spaces expand onto outdoor terraces which in turn reach out to the landscape beyond.

- 1 New block with terraces
- 2 Extended main hall
- 3 Existing south-facing classrooms
- 4 Reconfigured entrance/ admin
- 5 Nursery block
- 6 Staff room
- 7 Playground
- 8 Green belt scrubland
- 9 New bike sheds
- 10 Parking

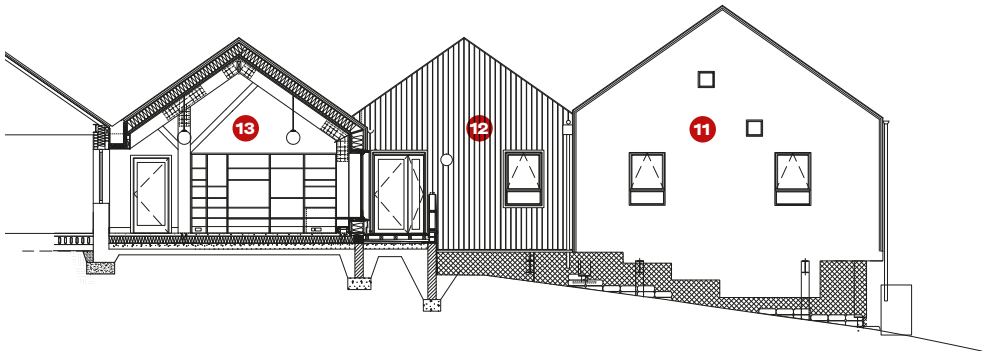
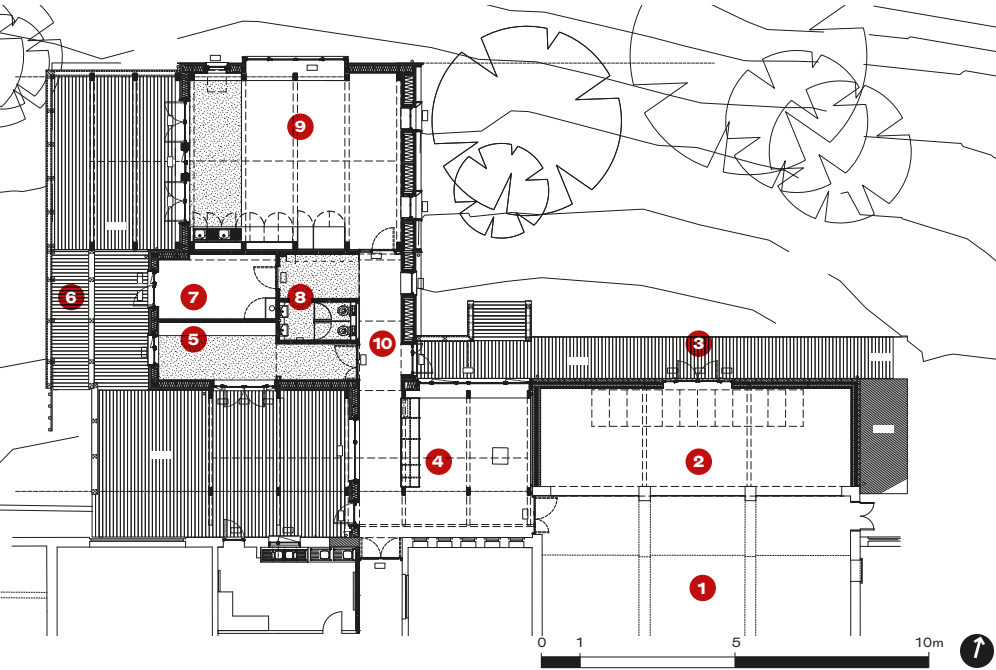


Left Pupils were consulted on the habitat wall design and it was built by them, their parents and the staff.
Right The classroom extends into the landscape for al fresco learning.



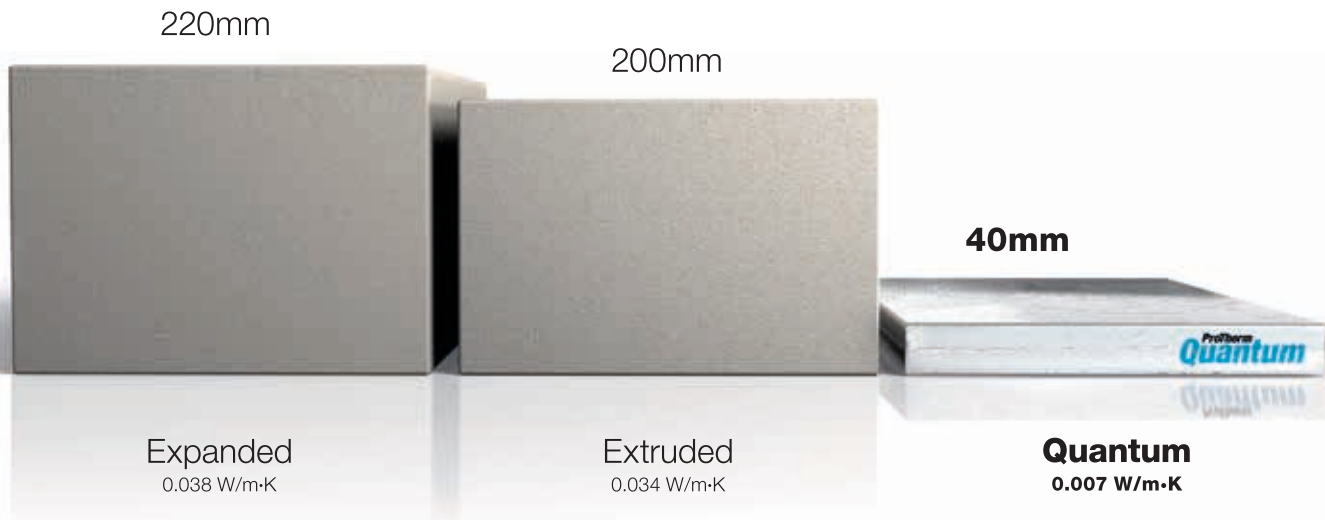
as very much in line with their own. This was confirmed after a chat and the practice's subsequent appointment. The feasibility study they produced resulted in the critical Academies Maintenance Fund grant that enabled Mellor's sustainable extension to win planning; protectively overlooking the wooded scrubland that falls away to a small brook, where kids can learn to count pebbles, build a fire or simply splash about.

Modest in proportion to the existing footprint, the 226m², £0.7 million, glulam timber framed, pitched roof extension is really no more than a single classroom for year six, plus a small extension to the school hall, library, one-to-one teaching room, welly store and exterior terrace area. But the way in which it modifies the relationship of the building to its landscape and affects the internal circulation is significant. Sat on its timber platform, it projects north into the landscape; with a large partly-covered terrace allowing outdoor play at tree level and in all weathers. Large glass windows and doors create connections between the new internal spaces and outside; the hall, the central space of the school, now has a new, wide



- 1 Existing main hall
- 2 New hall extension
- 3 North terrace
- 4 New library
- 5 Welly store
- 6 West terrace
- 7 One-to-one study rooms
- 8 WCs
- 9 New classroom
- 10 Corridor access to classroom
- 11 Habitat wall position
- 12 Cedar cladding
- 13 Library block

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Left Exterior terraces are partly covered to allow outdoor learning whatever the weather.

Below left Classroom windows effect a direct relationship with the immediate landscape.

Below right The welly store is so popular it sometimes doubles as a classroom.

Credits

Architect **Sarah Wigglesworth Architects**
Client **Mellor Primary School, nr Stockport**
Main contractor **MPS Construction**
Structural engineer **Rhodes and Partners**
Cost consultant **Wilkinson Cowan**

Suppliers

Brick **Staffordshire Golden Dragfaced by Weinerberger**
Glazing **The Standard Patent Glazing Co & Alitherm by Smart Systems**
Cladding **Vincent Timber**
Roofing **Wood shingles, Vincent Timber**
Edgemere roof tiles, Marley Eternit
Doors **Alitherm Plus aluminium doors by Smart Systems**
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access balcony, extending its full length and giving wonderful views onto the landscape and Wigglesworth's piece de resistance, the Habitat Wall.

Creating this sizeable straw bale wall, on the east side of the extension, was an exercise in user engagement. Project architect Eleanor Brough did workshops with the kids to ask them to draw what they wanted to fill its external compartments with; and when the time came, off they trotted with their bow saws and loppers into the woods to fetch twigs and branches to do just that. With their parents getting involved at weekend build events, there are also coloured jars, hanging clay pots and logs – even bird boxes built by Gary the caretaker. They've run mesh at foundation strut level for climbing plants and, since the architect last visited,



creation has begun along the hall balcony of a landscaped grassed amphitheatre built from tyres donated by a parent and pure school elbow grease. Parents are responsible too for the new paths back to the parking area; and one dad, who's a contractor, even donated a route the couple of hundred metres or so back to the nearby sports club – a planning condition that would have proved cripplingly expensive for the school. The insects have been busy builders too: the habitat's wall is gradually becoming a vivarium; Nicholson's trying to source micro cameras so the kids can watch a live feed of them moving in.

Internally, meanwhile, pupils have been getting used to their own home. Interestingly, previous congestion in the corridors has eased off now they can get to the classroom from the main hall and library space;

sometimes they don't even use that, but run outside round the terrace and enter the classroom from there. Perhaps it's the calming smell of the cedar shingles, but once they're in it seems there are positive outcomes in terms of pupil engagement and concentration. You could put that down to the acoustic absorbancy of the naturally specified internal wall linings, or the cut in distractions in this more sequestered, isolated space away from the bustle of the linear classrooms. Or maybe it's the connection to nature that the space engenders. But whatever the reason, the welly store is regularly commandeered by the music teacher for impromptu class songs.

So yes, the extension makes the most of not just the place but the people too. For it was in the physical act of reorganising the existing spaces and building the new block that Mellor School achieved something else – as invisible as the extension is from the school's entrance. It's the more intangible yet cohesive and enduring social benefits that the process won for the whole community; wrought by this school next to the woods, from a vision that fuelled the funding, the funding that built the walls, and the guy who paved the road, to the wall made of bales, put up by the parents, which was finished by the children who learn in the house they all built. ●



'A' for Ambition

Satellite Architects' new Atrium Studio School gets good marks for improvement from alumna Eleanor Young

Photographs: Alex Campbell

On a tight triangular site on the edge of South Dartmoor Community College, the Atrium Studio School's A-shaped plan is the starting point for the school's logo, a geometric 'A'. In plan though there is a missing piece of the A as it steps back to give breathing space to a magnificent copper beech, one of a majestic row.

The trees are the glory of this rather dour hodgepodge of the existing school, edging what used to be called 'the drive' when I slogged away at this, my local comp, 20 years ago. It has hosted building sites much of those two decades, for designs that make the sixties system build along the top of the site look like an elegant classic by contrast.

Those who follow education fashions will understand that this new 375-place school for 13-19-year-olds, piggybacking on the larger College, is one of a new breed of small scale specialist studio schools. They are intended to bridge the gap between education and employment – that is vocational education without any concessions to academic achievement. A shortage of construction skills in the South West led to the choice of specialism; here the focus is on preparation for the construction professions. It is striking to hear of the 13-year-old girl who was prepared to leave her previous secondary school to come and study here to further her early

Exposed primary steels have their dimensions and torque strengths spelt out on them and the concrete floor has a pleasingly raw edge



Above The atrium has an industrial aesthetic with some delicate touches, including the laser cut balustrade.

Left An entrance for students and industry, in glowing yellow below the fibre cement.

ambitions to become an architect.

As if to highlight the documented shortage of South West professional construction skills (though the small pool of talented local practices won't thank me for this aside) I travelled from London with associate director James Harper of Islington-based Satellite Architects. Through an ongoing south west connection to Hugh Fearnley-Whittingstall's River Cottage, and ensuing relationships, the firm has completed a number of projects down here and is on site with another studio school in Plymouth.

But back to the Atrium Studio School in Ashburton. The apparent parochialness of

the small town setting is belied by its proximity to one of the two fast roads into the south west, the A38, which delivers its pupils from far and wide. It also transports visiting lecturers from industry to set up in the central atrium – the 5pm finish and longer school days for the students meaning that 'Flexible Friday' can be devoted to the real world these speakers bring in. Later, as the first two intakes of children get into their stride, they will also go out to placements.

The atrium is what most visitors will see, though from here the whole of this tiny 1690m² school is visible. The plan resolves itself around the atrium, edged by classrooms,

IN NUMBERS

£3.7m
total contract cost

£1715
GIFA cost per m²

1690m²
area

14kg/m³
carbon emissions



labs and workshops. Even with only two of the year groups so far in the school, it still has a sense of life – a pair of students talking through a problem, chairs set up as if for a seminar and a group of small tables suggestive of a busy café once there are enough students to open the small kitchen. Yellows boldly mark out the lower spaces. The central stair is a simple form but elevates the whole space with its white water cut steel balustrade which refers back to the school plan.

An 'industrial' space was what the brief asked for. It is not quite that stripped back but it did make a positive of the constraints of a budget of £1715/m². The exposed primary steels have their dimensions and torque strengths spelt out on them and the concrete floor has a pleasingly raw edge. Roof forms are reflected inside, with ceiling tiles in the circulation suspended just shy of the walls to give a sense of the shape and depth beyond.

This approach also sanctioned the display of the air handling kit, which gives the natural ventilation a boost. Supplied by Cambridge University spin-off Breathing Buildings, the reversible heat exchangers in their white boxes, with white socks for air



Above Barn plus colonnade meet through slim 'columns' of fibre cement.

Top The roofscape gives extra character to this new school.

A picture of a finished floor would be good,
but our advice at this stage would be better.



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delivery, are not hidden in a deep and mostly redundant void but left on show. The weakness of the Breathing Buildings solution to classrooms though was that it was hostage to changes in the programme and plan – vents having to move as room designations shifted (labs have a different strategy, for example) leaving some awkward vents interrupting what should have been a well scaled and modulated facade onto the school.

In diagram, the three volumes of the school are clear, their height stepping down towards small scale Ashburton housing. At the entrance the slippage of shapes makes itself felt as the taller volume cantilevers

out – a small assertion of dominance – with the lower volume broken up into meeting rooms and the central one read as the void of the atrium. Some of this carries through into the external form – plant in the subservient volume is clad in white for instance. But you read the building primarily as a piece, the folded steel sheet imparted with rural grit by agricultural-grade profiled fibre cement, which also adds a delicacy to the facade (despite the vent issues) and enough roof angle to break up any boxiness. It is probably the best addition to the college for many years – never mind the fact that any school with an A for a logo must surely be destined for success. ●

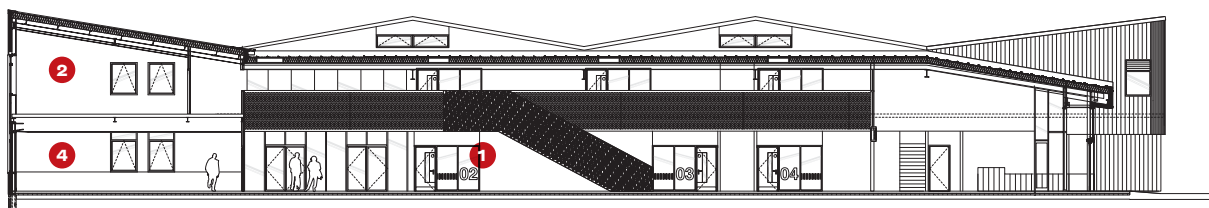
Credits
Architect **Satellite Architects**
Client **Atrium Studio School**
Contractor **Kier**
Structural engineer **Sands**
M&E engineer **Design Solution**
Fire **Toga**
Technical advisor **Mott MacDonald**

Suppliers
Cladding **Marley Eternit Profile / EuroBond Opus Plank**
Steel **William Hayley**
Windows **Window Glass**
Internal doors **Cotswold**

Ground floor plan



Section AA



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Missed appointment

Ballymena's new health centre by Keppie and Hoskins is an attractive building. If only it had taken the opportunity to restore the site's Victorian coherence

Words: Isabelle Priest Photographs: Donal McCann/David Cadzow

Site plan



- 1 Ballymena Health and Care Centre
- 2 Braid Valley Hospital/former workhouse
- 3 Former fever hospital
- 4 Workhouse burial ground

0 10 25 50 100m



Above View of street corner entrance along Cushendall Road. Staff break-out and meeting rooms look out through the expanses of glazing on the second floor.



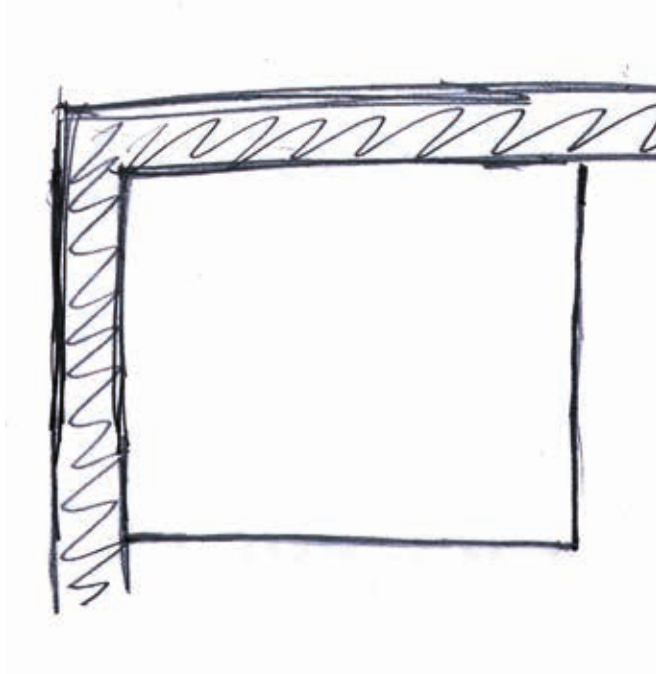
A walk around Braid Valley Hospital in Ballymena, Northern Ireland, goes a long way to explaining the new Health and Care Centre that now shares its site. With the exception of the Victorian main building, a workhouse for 900 inmates built in 1843 by George Wilkinson, it is a muddle of low-rise buildings infilled by 'temporary' structures that look as though they've been there a long time. Local stone sits alongside red and brown brick, white and grey rendering, concrete, pebbledash and timber. These buildings house facilities varying from a former fever hospital, GP surgeries and outpatient x-ray

clinic to a water tower, industrial chimney stack and even an old pauper burial ground – all stitched together by tarmac car parking stuffed in every possible pocket.

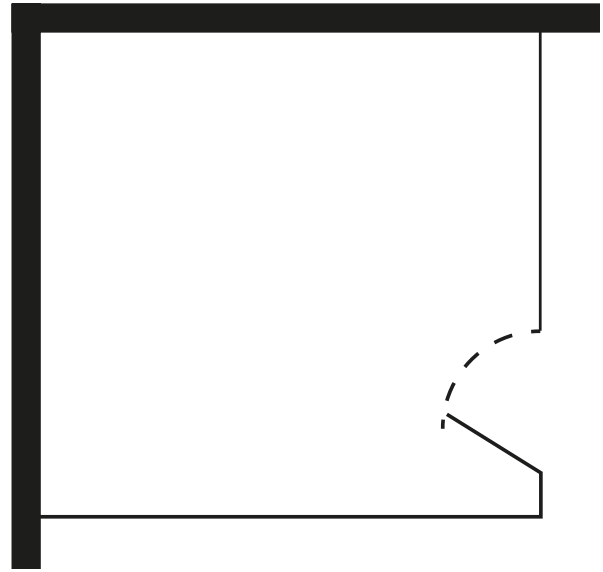
It's little surprise then that any client or architect planning a new building for the Northern Health and Social Care Trust would react sharply to these conditions in favour of something big, bold and rational.

In one great sweep, the new Health and Care Centre gathers together six GP practices, a GP treatment area, community and general dental services, children's services, mental health and acute care outpatient and

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Above View from GP surgery walkway across the atrium. Light enters the space through glazing in the sawtooth roof.

community clinics, as well as physiotherapy, occupational therapy, podiatry, imaging services and offices that were all previously spread across the site. In such a context, you can understand why the building is an 8800m², 2.5 storey land-scraping monolith.

Nevertheless, Ballymena Health and Care Centre, which sits a mile north of the town centre along Cushendall Road, is a smart and attractive building. Sure, it suffers slightly from aesthetic untimeliness, having been commissioned (in 2008) so long before it was completed, but it has been properly planned and thought through. There are two entrances to the atrium reception area, one acknowledging that most people will arrive from the car parking at the rear, the other, on the street corner, offering the hope that some will arrive on foot or by bike. There is an integrated pharmacy and café, and the individual GP reception areas on the first floor are all visible from the building's front desk below. Services with heavy

machinery are on the ground floor. A landscaped courtyard draws light into the deep plan and serves as an outdoor training space for new wheelchair users. Nifty louvres mean windows can be opened. And the ceiling-high glazing in the waiting and staff rooms give wonderful views, including one of Slemish Mountain, a local landmark that is the plug of an extinct volcano.

You can imagine that long-time patients of the hospital and health centre are delighted with the new quarters. The building, designed by a collaboration between Glaswegian practices Keppie Design and Hoskins Architects, is light, airy and – perhaps mostly importantly after years of visible underfunding to the hospital's built environment – new and permanent. It is also full of features. With its sawtooth roof that resembles Caruso St John's recent Newport Street Gallery for Damien Hirst in south London, you can see why the building sailed through planning. Even the colour of the brick is similar.

IN NUMBERS

£15m
total contract cost

8800m²
area

very good
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23.6 kg/m²
annual carbon emissions

Ground floor plan



First floor plan



- Key to zones**
- 1 Entrance
 - 2 Atrium
 - 3 Courtyard
 - 4 Pharmacy
 - 5 Administration
 - 6 Physiotherapy
 - 7 Podiatry
 - 8 X-Ray
 - 9 Dental clinic
 - 10 Children's services
 - 11 Occupational therapy
 - 12 Outpatients
 - 13 Mental health services
 - 14 GP surgeries
 - 15 Dalriada urgent care



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Inside, both entrances open into a three-storey atrium, from which visitors can be directed to departments on the ground or first floors. A long stairway sears through the space and open cantilevered walkways at first floor level indicate publicly accessible spaces. Each level is given its own character to help identification: surgeries have different coloured panels while the staff offices above are more sealed, enclosed beneath the rafters and framed by timber uprights.

On one corner of the atrium a wide double-height corridor runs along two sides of the courtyard at first floor level, giving access to departments at the rear. Its full glazing to the courtyard creates pleasant, naturally lit waiting areas. In contrast, the western side of the building is more cut off, both for children's services on the ground floor and outpatients above. Along these three other sides of the courtyard, doors lead off into different clinical departments. These are, slightly strangely and perhaps unnecessarily, in turn supported by another internal corridor which loops around the plan for access to consultation rooms. In places this organisation is rather odd, with the internal corridor looking back-of-house in plan without actually being so, and some outpatients having to walk all the way around the building to reach the right waiting room because of the atrium being only open on one corner and the courtyard set-up. There are, of



Top In the atrium each of the three levels is treated differently to create identity.

Above Staff level with open and closed office space.

course, advantages, mainly that most consultation rooms have daylight, operable windows and external views.

The third floor, appropriate to its purpose, is quite different from the rest. Given over to staff accommodation and occupying only the south end of the total volume, it contains break-out spaces, meeting rooms, a kitchen and plant under a sawtooth roof, open to the rafters. Here the floorplates are surprisingly traditional, with more private offices than is common these days, as well as open plan space. There are 181 workstations, designed to fit 256 employees at different times, with many operating 1:3 desk ratios – in essence ‘controlled hot-desking’ explains Sarah Mooney, project architect at Hoskins. It is pleasant though perhaps without much slack for manoeuvre.

By now though, you detect my critical reservations. This is irritating because Ballymena Health and Care Centre is a good building. Its renders looked great, and it achieves many good things for the hospital and community care. But after visiting it with its architect, a dig down into the history of the site produces a historical bird’s eye view photograph that cracks open the project’s flaws.

First, the brick is the wrong colour, throwing a speckled yellow that has no visual or geological connection with the local area into the already confused palette of building colours. The obscurity of the yellow is softened marginally by a low perimeter wall in the same brown basalt as the Victorian workhouse, but even so the Health and Care Centre feels like the first yellow brick building between there and Belfast, maybe in the whole of Northern Ireland. It would look more at home in London; here, grey or darker brown might have been more appropriate.

Yet the colour issue, which is more obvious than it appears in these photographs from the architects, is not the only problem. Overleaf is a historical image which, though uncredited and undated, must at the very least predate its 1993 publication on the cover of *The Early Years of the Ballymena Workhouse 1840-45*. It shows the problems that can be created when over-zealous clients, planners and designers apply a modernising hand to correct previous architectural sins, no doubt committed with the same good intentions.

The image shows Braid Valley Hospital with its gateway building intact, a collegiate layout that presented itself grandly but also gently to the street with stepped back buildings, areas laid to lawn, avenues of trees, symmetry and even a tennis court. Some of it is Victorian, some later and it is densely occupied, despite being also only a maximum of two storeys tall. The workhouse closed in 1947, yet since this image was taken the site has been rendered inelegant and complicated by demolition and temporary infill solutions. The overall masterplan has lost its original, indisputable charm. Even the main building did not escape the scalpel of 1960s architectural ‘modernisation’.

It is so disappointing that by reacting so sharply to its surroundings, the new Health and Care Centre doesn’t help the site heal its open sores. Rather, its effect is only to



A historical bird’s eye photograph shows the problems that can be created by over-zealous clients, planners and designers applying a modernising hand

Above The pedestrian entrance is located under a cantilever, with a timber soffit to soften the space. The hospital water tower can be seen in the background next to the former workhouse.

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plunge other areas into further abandonment and possible future dilapidation. The image shows we have forgotten the art of lightness of touch in architecture; thinking only that big means better. We don't take seriously the fact that spaces intertwined with open vistas and green landscapes contribute to wellbeing. Ballymena's new Health and Care Centre is shown by the view below to be needlessly large and bulky.

What's particularly frustrating is that this is not a facility for large hospital wards and space-sucking machinery. It comprises mostly small consultation, inter-

view and treatment rooms measuring less than 5m by 3m – around 140 of them, the kind which could be planned, for example, within the narrow wings of the former workhouse. The courtyard in a way seeks to overcome this depth of plan, but none of that effort can be perceived from the outside. What you are left with is a nice, interesting, elegant in itself, but nonetheless hulk of a building abutting its neighbours and the street in an unforgiving manner, allowing for more demolition behind. That doesn't appease the modest residential buildings around it. The sceptic might say a land sale is coming up. ●

Credits

Client Northern Health and Social Care Trust

Lead consultant Keppie Design

Architect Keppie Design & Hoskins Architects

Interior design Keppie Interiors

Mechanical and electrical engineer Wallace Whittle

Civil and structural engineer Waterman Group

Quantity surveyor WH Stephens

Landscape architect The Paul Hogarth Company

Main contractor O'Hare and McGovern



Above The new Health and Care Centre has an abrupt relationship with the road in contrast to the neighbouring former workhouse, although even the perimeter wall there has been raised as part of the recent works.

Left Historical image of the Braid Valley Hospital site pre-1993. Much of the original order and spaciousness of the site has been lost.

Enduring and evolving

Brick adds more than a traditional feel to projects; its ability to update for modern trends keeps it ahead of the game in any context

The popularity of brick for the new architecture regenerating England's towns and cities is no surprise. Brick helps to stitch back together the fraying fabric of our urban environments, particularly those where heritage – whether cherished or neglected – demands sensitivity in design.

This has provided opportunities to tap into brick's creative potential, with explorations in colour, pattern, texture and detail. That trend looks set to continue, judging by some of the major new residential and mixed use regeneration schemes in London and other cities.

Duggan Morris Architects' apartment buildings at Brentford Lock West, in west London, include brick elevations that change from red to grey in colour. 'We've been showcasing colour on projects for four or five years. That project is in some ways a continuation of what we've been doing,'

says director Joe Morris. The architect is now applying a similar approach – but with texture rather than colour – to a retirement community development, Hampstead Green, in north London, for client PegasusLife. The design's brick skin modulates in texture as its blocks increase in height.

For Morris, brick's value in urban regeneration projects goes beyond helping a new building fit into its context. 'There is something about the methodology of brick that has a strong narrative,' he says. 'We like to think about the juxtaposition of historic and contemporary methods of construction – how you combine traditional and new.'

Brick's design potential gives it the capability to transform and reinforce urban environments, helping buildings to stand out from the crowd or blend quietly into their surroundings. At Elephant & Castle's Elephant Park, brick is integral to setting the

tone for the Heygate Estate's replacement. Maidenhead-based brickwork contractor, Lee Marley, is working on the initial phases of Elephant Park, and is both helping to deliver and witnessing the transformation. 'The new buildings are giving the area a calmer feel,' says Lee Marley, managing director with the firm. That's a quality that is beneficial to many regeneration areas.

The contractor has more than 40 brickwork projects on its books, its workload being driven not only by a healthy housing market in London and the South East, but also by the continuing appetite for brickwork, says Marley. 'Architects are using brick to make standard buildings appear individual, and more 'solid', which has led to greater use of brick soffits and reveal details, indentations, toothing and feature brick panels,' he says. 'Brick is now being used almost as an artwork.' ●

TRAFALGAR PLACE, ELEPHANT & CASTLE, LONDON

Regeneration of the south London's Heygate Estate has been a long-running story, but now the first phase of Lendlease's Elephant Park masterplan is in place. That is Trafalgar Place, which comprises 235 homes in a mix of mini-towers, apartment buildings and townhouses.

Trafalgar Place's brickwork establishes the new development's relationship with its context, marks a departure from the concrete of the Heygate, and conveys a sense of optimism with its rainbow colouring. The scheme features eight types of brick, which provide visual links to neighbouring buildings. Colour banded brickwork along the principal frontage – spanning from grey/brown through to light blue via reds, purples and yellows – is intended to mirror a facing Victorian building.

There is also a wealth of brick detailing to animate the facades. Deep recesses alternate between brick courses, while brick clad parapets and deep window reveals give a sense of depth. At junctions between varying brickwork colours, keyed-in corners refer to traditional brickworking methods.



Credits
Architect dRMM
Client and main contractor Lendlease
Structural engineer Robert Bird Group
Landscape architect (concept) Grant Associates



THE HALYARDS, BRENTFORD LOCK WEST, LONDON

Duggan Morris' two brick apartment buildings fronting the Grand Union Canal evoke waterside warehouses, with their inverted pitched roof profiles. 'They're a response to the context, to the historic warehouses of this location. The design speaks to a vernacular that people can relate to,' says Joe Morris, director of the practice.

The scheme, by developer ISIS Waterside Regeneration, is part of Brentford Lock West and comprises 46 apartments. The two buildings are brick faced – from plinths to soffits and cantilevers – with their brickwork changing in colour from predominantly red at the base to greyer tones higher up. Windows are loosely distributed. 'We wanted the buildings to have a sculptural presence,' says Morris.

Local authority Hillingdon Council was keen to see an exemplar development for the site. Morris says the architect was careful to demonstrate the brick pattern, texture and mortar colour to explain the design to the council. 'It was an important regeneration scheme for the local authority so there was a rigorous process,' he adds.

Credits

Client Isis Waterside Regeneration
Architect Duggan Morris Architects
Structural engineer Expedition
Contractor Willmott Dixon
Landscape Camlins



Join Morris, Marley and Gordon at the BDA's Urban Regeneration day Friday 20 May 2016. Arup, 8 Fitzroy St, London W1T 4BJ. Also speaking are Peter Murray (NLA), head of planning for Barratt Homes East Counties, Andrew Taylor and Arup's Alexis Harrison. For more information see www.brick.org.uk or call 0207 323 7030.

TOWER WORKS, HOLBECK, LEEDS

A Victorian industrial context, including a trio of listed towers, has dictated the choice of materials for the mixed use Tower Works development in Leeds. 'Brick was an obvious choice, given where this sits, in the middle of Leeds' industrial heritage,' says Alex Gordon, associate director with architect Jestico + Whiles, which is working on the project with a team led by Carillion Developments. 'We had detailed negotiations with the planners and they were very supportive of the use of brick, cobble, slate and glass'.

Tower Works is a key site in the Holbeck conservation area, and derives its name from its three listed Italianate brick towers: the largest and most ornate based on Giotto's Campanile in Florence, a smaller version styled after Verona's Torre dei Lamberti, and a third echoing a Tuscan tower house.

The mixed use scheme, which won planning consent earlier this year, includes restoration of the site's grade 2

listed Engine House and the development of 10 buildings, primarily housing and offices with other uses at ground floor levels. The new buildings will incorporate such brick details as recessing, splays, projections and corbels.

The bricks have not yet been specified for the project. 'With as much brick as this, the choice is very important,' says Gordon. 'We're using three main bricks for variety. They'll be chosen for the Leeds local context and to pick up the bond context. We're after bricks that, while being new, will give an old, industrial look.'

Credits

Development partner: Carillion Developments, working with the Homes and Communities Agency and Leeds City Council
Architect Jestico + Whiles
Multi-disciplinary consultancy WSP
Landscape architect Oobe

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Work in progress

Space takes on a whole new meaning at Anish Kapoor's developing studio. For architect Caseyferro, the industrial conversion has taken eight years – and counting

Words: Jan-Carlos Kucharek Photographs: Jim Stephenson



Above The approach to Kapoor's Camberwell complex, looking south; a site of many units, refurbished over time.

Far left The original 1940s dairy building.

Left The original saw-tooth roofed industrial unit.

Perhaps it's just as well Anish Kapoor now has a completed South London studio from which to progress his artistic research. One of the UK's most prolific artists, his experimentations with colour and its ability to create illusory depths of field has recently been rewarded with the exclusive rights to the use of British tech firm NanoSystems' Vantablack, the blackest pigment ever created, formed of light-sucking nano 'tubes'. Synthesised to disguise stealth satellites, and only stabilised in an autoclave at high temperature, its less defensive uses are to be inves-

tigated by Kapoor – a task made a whole lot easier now architect Caseyferro has finally completed his citadel-like Camberwell base.

Partners Michael Casey and Victoria Fierro, who met the artist through a mutual friend, have been engaged on the commission since 2008, but Kapoor has been on the site for over 20, slowly buying up the industrial triangle between a housing estate, supermarket and a local school as his renown and number of commissions grew. He owns six of the seven buildings, amounting to over 3100m², which accommodate about 25 staff

engaged in painting, sculpture, casting or mirror polishing – disciplines reflecting the artist's eclectic modes of representation.

For Casey and Fierro, who met while working at Herzog & de Meuron, the task was to draw out the needs of an artist with a highly developed creative and aesthetic sense, who was unclear as to what kind of physical space he might need. Caseyferro meanwhile was faced with 1950s industrial units that were not only completely distinct from one another but in various states of repair, uninsulated and unheated. All needed to be



Above left Studio V: the refurbished sculpture-making space, but with a sense of the original retained.

Above right Studio I acts as Kapoor's reception, meeting and testing area at ground level. Above is his dedicated painting space.

Left Saw-tooth roof removed, Studio VII's Profilit glazing brings its ceiling in line with Studio VI's 6m brick datum.

Bottom right The original Studio VII, with its 3.5m ceiling height.



brought up to the standards necessary for a state of the art, flexible studio space for one of the world's most prominent artists. The vast, calm, white, wholly refurbished and modernised volume they have created over the last eight years is testament to the slow, iterative design process that characterised an intense client/architect relationship.

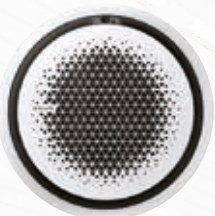
Casey says that, with artist Bill Woodrow occupying a single industrial unit sandwiched among Kapoor's, they were spared the obvious architectural desire to unify the

studio space, factory-like, under one roof. First completing the offices at the southern prow of the site in 2008, they went for piecemeal upgrading and modernisation, working back to it from the longest, widest and longest-held unit, a former dairy at the north end. With hindsight, Casey considered this approach far better reflected Kapoor's working methodology, creating distinct spaces for different activities; and with the artist working in mediums from the science of mirror polishing to binding raw earth in fibre glass,

the necessity to maintain clear separations is understandable. But there were programmatic considerations too. The industrial units, some split over two storeys, worked against the artist's desire both to carry out larger pieces of work, and for the space to act as a research, archive and entertainment/reception facility as well as a working studio. All these needs, some divergent, were ultimately bedded into the final design.

Fierro explains that the artist's own perception of the project changed through-

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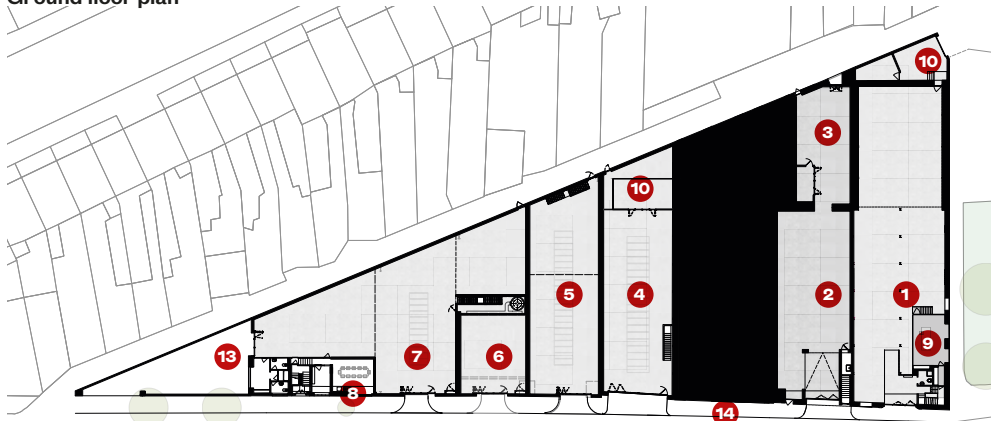
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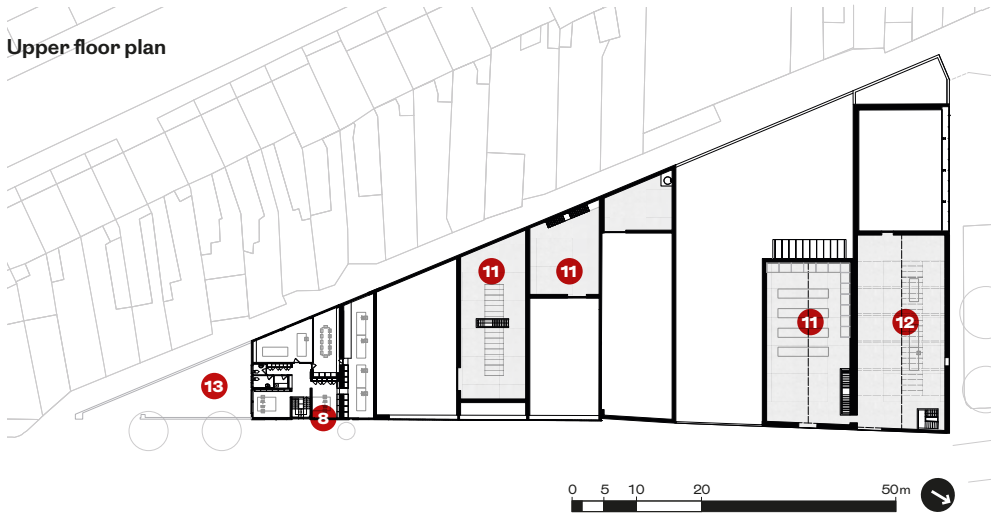

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Ground floor plan



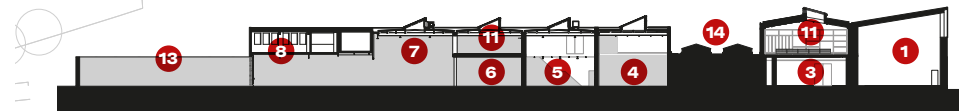
Upper floor plan



North south section



South north section



- 1 Testing gallery
- 2 Making space
- 3 Archive/document storage
- 4 Polishing/finishing studio
- 5 Large sculpture making studio
- 6 Contained special projects studio
- 7 Large works project studio
- 8 Administration office
- 9 Kapoor meeting room/office
- 10 Plant room
- 11 Small projects space
- 12 Painting studio
- 13 External yard
- 14 Bill Woodrow studio

Credits

Architect Caseyferro
Architects
Structural engineer
Price & Myers and MBOK
Main contractor Hoxon
Acoustic engineer Sandy
Brown
Services engineer
Integration Ltd

out the iterative design process. The original 1940s dairy building, Kapoor's main painting Studio I and reception, is the most gallery-like of all the spaces, both volumetrically and in terms of finishes. A single-storey building with a second floor and portal frame added later, the architect's intervention is most clearly seen in the monopitch roof on the northern end topping an enormous 17m by 4m clerestory window. This animates the formerly blank north elevation, crisply detailed so its glazed face is flush with the fletton brickwork. Half of the first floor has been removed to align with the clerestory and generate a huge 9m high gallery. Exposed, riveted steel columns support Kapoor's dedicated painting studio, below which a raised glass box nestles in the front corner overlooking the space, side lit by three new translucent, diffused glass lights, similarly detailed and flat to the existing brick face. A polished concrete floor hides newly installed under-floor heating but sets the general approach for the remaining units. An existing steel portal frame, duly boxed out in fireproofing board, attains a level of abstraction, lit by a new north rooflight running as a strip along the length of the painting space.

As the development progressed, the architects saw Kapoor's view on the building he'd used for 20 years evolve; wishing to preserve more of the sense of its industrial past while keeping the marks of his own occupation over that time. The response to this is best seen in Studios IV-VI, where Caseyferro also had to accommodate Kapoor's desire to work at a larger scale. On these three units, the industrial saw tooth roof was removed in its entirety and replaced with a new flat roof with the same north light, but raised 3m to line up with the brick datum of adjacent Studio III, offering new levels of utility. Here new I-beams span north/south to flank walls, picking up the loads of the new roof but performing an additional function too. Below them hang secondary steels running lengthwise, engineered to take up to 3-tonne loads at mid span and act as a gantry from which Kapoor can suspend his larger sculptures and move them around the studio. Above the structural beams, hollow purlins also perform a perfunctory structural purpose, discreetly hiding cable runs for the dense lines of fluorescent tubes. On the east elevation to the street, the industrial aesthetic is well referenced with 3m high Profilit frosted



Top Steels not only support the new insulated roof and glazing, but act as a gantry for moving heavy sculptures.

Above Internally, high 700lux light levels flood the working space. Partition walls are built to take heavy loads.

Top 1950s industrial aesthetic maintained with new Profilit glazing.

Above Kapoor's studio: paint it – black.

glazing panels denoting the new roof line, its structure intimated behind it.

Internally, the old industrial workshop is better evidenced. Kapoor wanted to keep the memory of the original building during the refurbishment, so the architect preserved walls amid the new interventions. As an active workshop, the studio feels rougher and less complete, to accord with Kapoor's desire for the space to be well-used and imprinted by the production within. Critically, the need for the building not to impede the creative process wasn't just about roughness but even led

to the positioning of light fittings throughout – always hard to the ceiling soffits so as not to constrain the ability to fabricate larger pieces. It's an ethos also reflected in the design of the internal stud partition walls which, though not loadbearing per se, are built with two sheets of ply on either side and then plastered – serious walls with capacity to carry heavier artworks.

With no change of use, the planning application ran smoothly, says Caseyferro, as indeed did the construction contract. The building was procured under the Intermedi-

ate Form of Contract and construction carried out by contractor Hoxon, who had refurbished the offices at the south end. Kapoor, it would seem, is happy with his new studio, procured for a reasonable £1300/m². The artist has commissioned Caseyferro for a new scheme, still under wraps, and the contractor remains engaged on the firm's upcoming refurb of Bill Woodrow's block, sandwiched in the middle of Kapoor's.

In the meantime, something huge, amorphous and earthlike is rising out of Kapoor's Studio V ... ●



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2: Intelligence



Internal
management

Caroline Cole



Design consultant Colander Associates' Caroline Cole is looking to address gender issues in the construction industry with the Equilibrium Network for its higher achievers

For more information go to www.equilibrium-network.com

So are you looking to stage a boardroom coup?

Not exactly! The Equilibrium Network is cross disciplinary; architects, engineers, landscape architects, contractors, academics and clients. With everyone moaning about the lack of female representation at senior level, we asked 'does it actually matter?' We assembled some female big industry achievers to tell their stories and decided 'yes it does'.

So you came to the obvious conclusion?

Actually, we concluded it wasn't just about gender but diversity at executive level and not just about helping women but helping business to do better. At junior level it's a 50/50 gender mix in architecture but at senior level it's 11% – and worse in engineering. We want to find ways to help organisations be more diverse, by not being hellraising and confrontational but business-like.

How do you nudge people in the right direction?

We need to do more research to prove diversity helps in business as there's a lot of anecdotal evidence. Studies from other sectors show it has a positive effect on the bottom line and profitability seems the best way to drive change.

Yes, more senior women would lead to a better workplace but can that counter the long hours work culture that gets passed down?

So the abused becomes the abuser?! Yes, office culture is important but the issue's much wider than that. For the built environment industry, whose output affects how society interacts, there's a compelling argument that greater diversity at executive level would lead to better design outcomes for everyone. But proving it is the key!

So you don't feel the industry is changing of its own accord?

There's a sense now that gender is actively discussed by larger organisations, which is encouraging. There aren't many more women in senior positions now than when I was starting out, and that's problematic. The network wants to use its experience to analyse why some women's careers flourish more than others.

And career-breaks for child-rearing isn't an issue?

No, I would say it's more about pay. If you're in a profession that tolerates low pay you can't afford child care. That has nothing to do with being a woman: the issue applies to both parents and is a financial one.

So where to from here?

We've launched the website and we're expanding the network through personal invitations to both men and women to join as mentors. We ask members to give three days a year to be a role model for diversity and advocate the business benefits of gender balance. Our first event is in September to set the agenda for the coming year.

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Business insider

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Invisible light travels through the glass pane into the window frame, where solar cells convert it into electricity

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on clear windows that make power: ribaj.com/products/power-glass



Intelligence is officially approved RIBA CPD. Look out for icons throughout the section indicating core curriculum areas.

Internal
management

A place to call home

Emotional stress aside, starting out on your own brings lots of practical worries too. But when it comes to premises, RIBA London's Incubator is here to help

Photos: Agnese Sanvito

Hugh Pearman

What is a membership organisation for, if not to help its members? And if that assistance can take the physical and organisational form of affordable studio space to help emerging architectural practices move on to the next stage of their professional lives, then so much the better. This is exactly what has happened at the RIBA's new administrative HQ at 76 Portland Place. A mews building at the rear contains not only the Institute's separately-run London region, but also a floor containing 10 small practices at 14 desks, paying fair rents, managed by RIBA London. This is the Incubator.

'It's one of the best things we've done,' says the Institute's house architect Martin Pascoe, who oversaw the conversion of the RIBA's new admin centre from the previous 1959 City and Guilds building in Portland Place, originally designed by Howard Lobb and Partners and latterly home to the Institute of Physics. This is the result of a competition-winning design by Theis + Khan Architects that opened in 2015. It brought together previously scattered parts of the RIBA empire, including the London office of RIBA Enterprises, owner of this magazine. The former IoP building came with the three-storey mews building of the same date behind, originally containing flats. Previously separated from the back of the main building by



a narrow lightwell, it has now become part of the overall complex by means of a glazed atrium. Various uses were suggested for the mews but in the end the idea stuck that this should become a place for a new generation of practices to emerge.

This was a concept that the London Region had discussed for quite a while, says Owen Wainhouse, partnerships manager for the region. Members had bandied around the idea that – since most of the emerging practices in the capital were in the east – the region should acquire a building there and offer studios. But rapidly-rising property prices in east London ruled that out. When 76 Portland Place came up – acquired by the RIBA on a long lease as the leases on its various existing annexes expired – the opportunity was seized to make the mews the

region's home, including what came to be known as the Incubator.

This is an experiment that could be rolled out to other regions, says Wainhouse – and indeed RIBA North West's new home at Mann Island in Liverpool will also offer studio space. But in London, as all practices know and young practices feel most keenly, the cost of renting premises is especially prohibitive. A basic serviced-office desk space in Clerkenwell, say, can cost around £6,000 a year. In contrast, the Incubator rents – in prime London W1, remember – start at £3,600 in the first year, rising to £5,400 in the second, after which the practices are expected to move on to make way for others. Firms can give a month's notice to quit, so they are not tied into inflexible leases. The idea is that the deal should not be over-generous because the point

is to help prepare practices for the real world – so if they shop around they could probably find other places for much the same money, though not as central – or as nice – as this.

It's not just a desk they get, though. Included in the rent as well as all utility bills, cleaning, wifi and at-cost printing, is access to the RIBA's ground-floor Forum for informal meetings, complete with subsidised café. There is also a ground-floor meeting room, and indoor bike garage with associated showers and lockers. All of these are well used. Wainhouse is now considering if there is a way to find funding for equipment such as a shared 3D printer; in the meantime the practices themselves club together for some activities such as CPD sessions and – more informally – lunch in the pub round the corner. The final ingredient in the mix is a programme of mentoring from other practices, run by RIBA London's Laura Broderick. 'We didn't want to just rent out a desk and nothing else,' she says. Mentors include both younger firms who are one or two stages further on in their development (Mikhail Riches, Carl Turner, Cousins & Cousins), and long-established names including Stanton Williams.

To qualify, tenants must be RIBA chartered practices, which for small firms like these is designed to be affordable. The idea obviously works because the space is normally fully occupied. Two firms – Dan Marks Studio and Holt Architecture – take three desks each; three – Hoos Projects, O25 Architecture Studio and Rashid Ali Architects – take two while Mara Bravo Architecture, Shared Architecture, Bellis Architects, Fluent Architecture and Architects Studio Ltd all take one each. The desks are open-source plywood affairs, the chairs are classy Aerons supplied by in-kind sponsor Herman Miller – rather better than the ones we sit on elsewhere in the building, I can't help noticing.

For Tom Cole of Hoos Projects, the Incubator was timely. 'I quit my job to start a practice just as the Incubator arrived,' he says. 'I put together a business plan and moved in here just a week after I'd served out my notice.' For Rashid Ali, who was previously mainly doing teaching and research with practice on the side, it was a case of moving on from working from home or in the offices of others. 'It's an opportunity to be a small practice now.' And for sister-and-brother team of Chryssanthi Perpatidou and Antonis Perpatidis of O25, it provided a start for

In London, as all practices know and young practices feel most keenly, the cost of renting premises is especially prohibitive



a London branch of a practice they also run in Greece. They think they may soon need to find somewhere with more space.

Nothing's perfect – there's not a great deal of storage or pin-up space, for instance, and until recently the alarm systems wouldn't allow after-hours working. That's now resolved. Plus points include the fact that clients are met by the RIBA receptionist at the main front door and ushered into the Forum for meetings, so there's something of a big-practice introductory feel.

And for the likes of us, elsewhere in 76 Portland Place? It's good to see real architecture being made here – and the firms are clearly visible, up there above the Forum, separate but linked with all the other activities in the building including the making of this magazine. London Region has sometimes had an identity problem by being so close to head office, but the mews behind the new HQ has given them an identifiable base and brought emerging architecture right into the heart of the Institute. ●

See projects by the Incubator practices at ribaj.com. More information is at architecture.com/incubator

Left Just enough space for model-making.

Far left We're all in this together: one room, 10 practices.

Below Away from the upstairs studio, the quieter ground floor meeting room.



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External
management

Is it as good as it feels?

The industry is still positive, but the statistics are a bit downbeat. What does this apparent contradiction mean?

Brian Green

Chat to most architects, builders or construction professionals and they'll tell you they're busy, if not very busy. Suggesting there's no growth in construction or raising concerns over the industry's prospects would probably raise more than a few eyebrows.

But the official data suggests growth in the industry is pretty much flat. Is it too gloomy? Is there cause for concern?

Inevitably the answers to these questions vary according to the time frame and the sec-

tor of the industry. But looking at things from various angles should provide useful clues.

It's most often wise to start by looking at the wider context. Broadly this means the economy, which is key to growth in construction and the workload of architects, and here there are reasons for tempering optimism.

Not bad, but not so good

For those closely watching the data it's been a bit gloomy of late, with a few exceptions. Employment figures remain positive and the latest revisions to gross domestic product

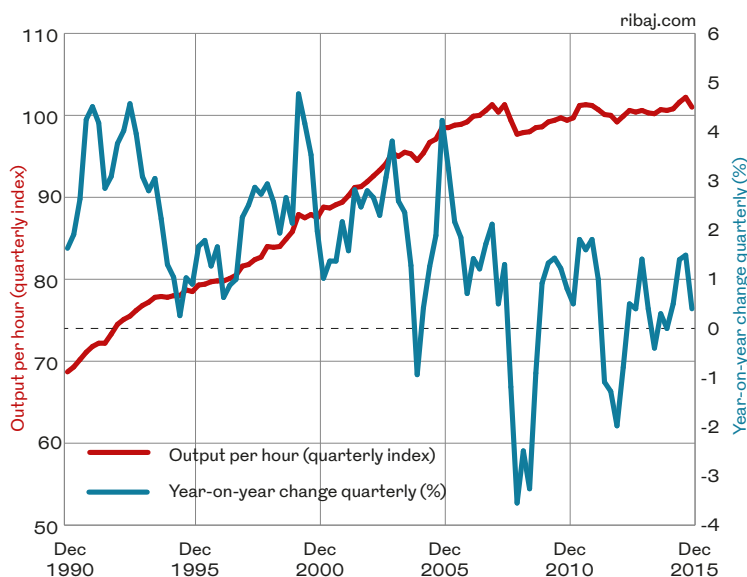
suggest that economic growth in 2015 was higher than previously thought (up from 2.2% to 2.3%). However, worrying signs are emerging in the economic data. After earlier hints at improvement, the latest figures show productivity dropped again from the third to fourth quarter of 2015, putting the level below that in the final quarter of 2007 (Chart 1).

Meanwhile, the latest figures for both trade and output from the production industries add more unease. These suggest the UK is drifting ever further from the post-crash aspiration of a more balanced economy better able to cope with external headwinds.

For a trading nation like the UK the global economy matters a lot. So these data all need to be considered within the context of growing concern over a slowing global economy, with the economics group OECD most recently putting the tag 'easing growth' on most major economies. Add to this the uncertainty created by the EU referendum.

This may all seem distant, but it does matter to construction. Uncertainty and

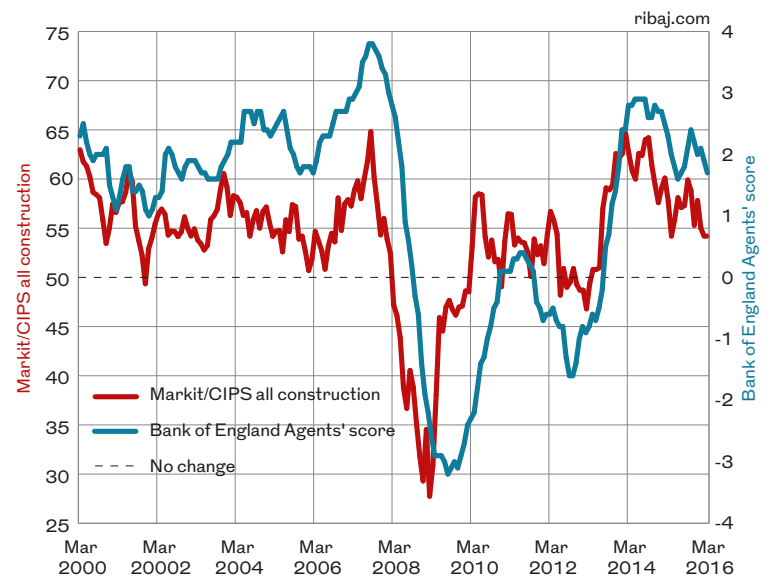
Chart 1: Productivity – whole economy output per hour index and growth rate



Source: ONS, Labour Productivity Table 1 measuring output per hour for the whole economy (ONS code TXBB)

Notes: The red line represents the path of the index over time. The blue line is the change in productivity at each quarter over same quarter a year earlier.

Chart 2: Markit/CIPS and BoE Agents scores



Source: Markit/CIPS and Bank of England

Notes: The scores provide a guide to change in activity within the construction sector. For Bank of England positive scores, taken from the Agents' Summary of Business Conditions data, represent improvement in market conditions over the previous month. For Markit/CIPS scores above 50 represent growth for overall construction compared

knocks to confidence feed into investors' calculations and lead to decisions being deferred. This may affect not today's work but that of the future. It can also hit the workload of architects more rapidly than that of others working within the built environment.

It's worth noting that the Bank of England Agents' summary of business conditions published in March mentions that investment intentions had generally eased as a result of heightened global uncertainty.

So while the context doesn't spell doom and gloom, it isn't brilliant. But how well is the industry actually doing at the moment?

The official data comes from surveys of contractors, as do many of the other data that grab the headlines – the monthly Markit/CIPS indicator for instance (Chart 2). In March this index was once again at the same relatively low level as a month earlier, adding further evidence that construction is growing more slowly than at any time since the summer of 2013. The Markit/CIPS survey points to weakening house building as the main reason for softness, although civil engineering and commercial building work is also experiencing slower growth than it was two years ago. The chart also includes the Bank of England's take on activity in con-

The UK is drifting ever further from the post-crash aspiration of a more balanced economy better able to cope with external headwinds

struction, which tracks a similar path.

Experian's leading activity indicator uses a range of data to generate a projection of construction activity over the coming three months. This again shows a pattern of slowing growth, substantially lower than a year or so ago (Chart 3). It points to weak growth at best across residential and non-residential building and a fall in civil engineering work.

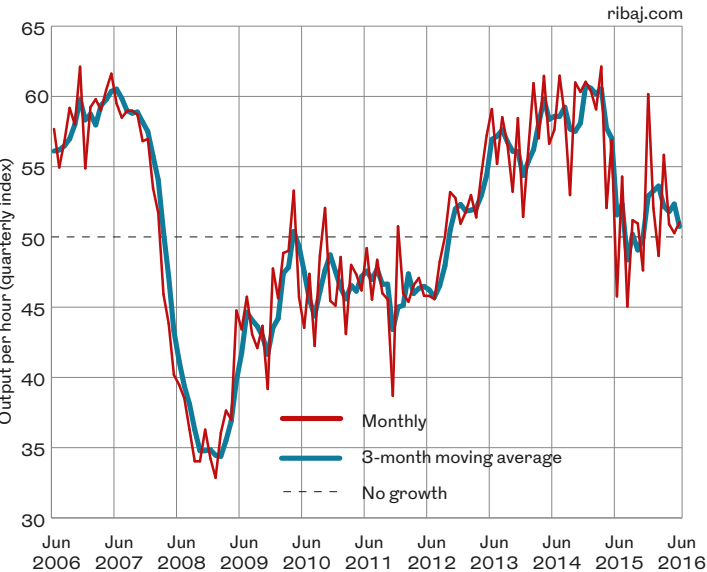
What emerges from these independent data is that, while they may be a little more upbeat, they broadly fit the picture painted by the ONS construction output data of little or no growth over recent months.

A different take

It's always well worth looking at construction from different angles. Casting the net wider we can turn to data on the supply of building materials to provide an alternative insight into construction activity.

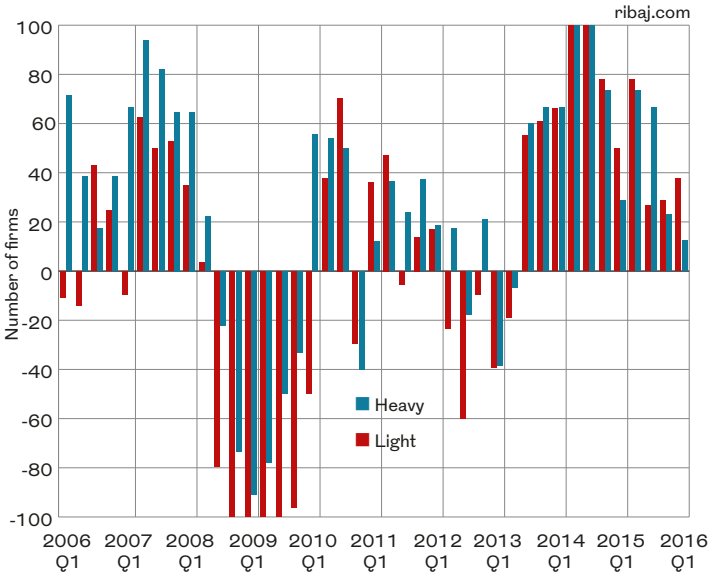
The Construction Products Association state of trade survey for the first quarter of 2016, released early last month, does appear to support the view of slowing growth seen from the contractor-based surveys (Chart 4). On balance, the manufacturers surveyed continued to report increasing sales, suggesting construction activity is still expanding:

Chart 3: Experian - Construction Leading Activity Indicator



Source: Experian
Notes: The leading activity indicator incorporates various factors to assess the construction industry's prospects over the coming quarter. It is put together using information about past levels of activity, orders and tender enquiries. Above 50 the level represents an increase in activity, below 50 represents a decrease.

Chart 4: Building materials sales volumes: balance of firms reporting growth vs fall year on year



Source: State of Trade Survey, Construction Products Association
Notes: Data kindly provided by Construction Products Association

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similar to the contractor-based trade surveys.

The Builders Merchant Federation introduced a new survey last year. It is early days, with just 18 months of data it should be treated with some caution. But when seasonal fluctuations are taken into account it too seems to point to only modest growth. Sales in cash terms over the final quarter of 2015 were almost 3% up on a year earlier, but when adjusted for inflation and trading days, the BMF suggests sales volumes rose about 1%.

The Department for Business, Innovation & Skills also provides data on building materials, including how much is delivered. Among these are data on deliveries of ready-mixed concrete and bricks and blocks.

Naturally changes in the level of ready-mixed concrete will be as influenced by the change in mix of work as in the total level of construction. But there is a reasonable correlation – especially if we factor in a lag of three months or so – with changes in the amount of private non-residential work. The pattern seems fairly positive, with sales on an upward path, growing about 6% in 2015 (Chart 5).

Reading between the lines

The pattern we see in the deliveries for facing bricks and aerated blocks, heavily associated with housebuilding, is more puzzling (Chart 6). Deliveries of facing bricks have dropped

There does seem to be a mismatch between experiences on the ground and the data. Growth is flagging. Firms are busy

over the past two years, while after a rise and a dip the deliveries of aerated blocks appear to have rocketed, although they still sit well below peak levels.

There are plausible and interesting explanations for this divergence, too elaborate to go into any depth here. You'd need to look at the effects of the shortage of facing bricks a few years back on the design and planning for new homes being built. You'd also have to consider the relative impact of imports and the ebb and flow of where homes are being built.

What we should take away from this final chart is a need for diligence when interpreting individual sets of data, in that sometimes the links we might imagine between one var-

iable and another can break down. This does not necessarily undermine the value of the data. It just means it could be telling us something unexpected. That can be very useful.

Taking all the above into account, there does seem to be a mismatch between experiences on the ground and the data. Growth is flagging. Firms are busy.

This doesn't mean there's a problem with the data. Broadly they suggest the same thing. The answer to the mismatch probably lies in the road travelled.

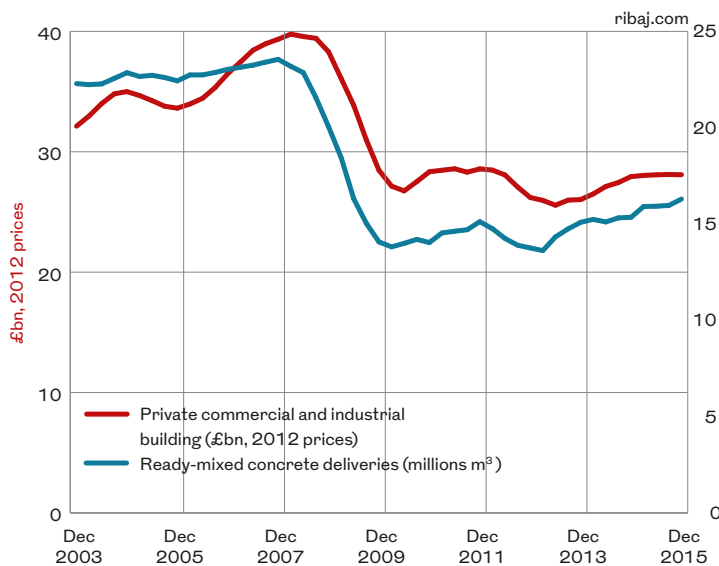
The recession ripped at the industry's resources over many years and since 2012 a depleted construction industry workforce, associated professionals and suppliers have had to produce 13% more output. This is quite enough growth to leave many firms stretched and hard pressed to maintain current workloads, let alone service further growth.

Furthermore, growth is inevitably spread far from evenly, both across sectors and geographically. Experiences within the industry will be varied. There may well be many firms who have never had it so good.

So it's little wonder that most people both in design offices and on site are still very busy. ●

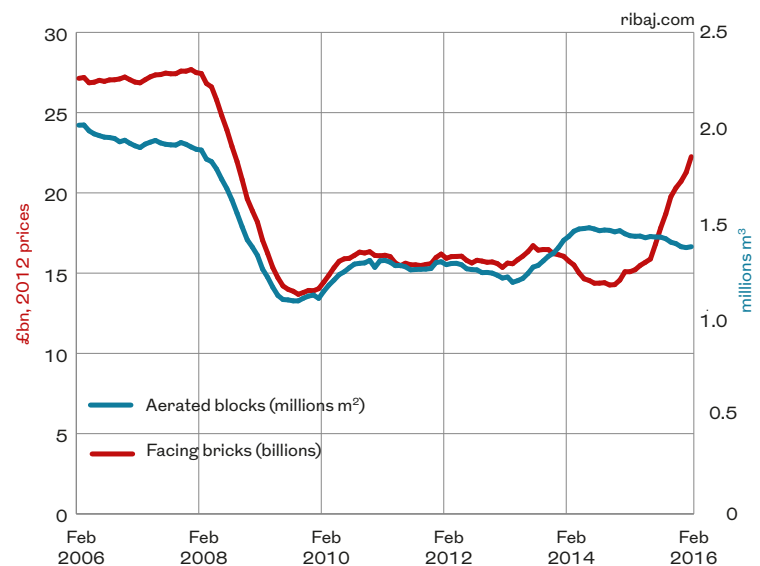
The RIBA Journal's essential dissections of the construction economy appear fortnightly on ribaj.com. Read about where to look for the positives at ribaj.com/intelligence

Chart 5: Commercial and industrial building output (GB) and ready-mixed concrete sales (UK)



Sources: ONS, Construction Output Table 2a; BIS Building materials and components: monthly statistics Table 13
Notes: Data are for four-quarter moving totals

Chart 6: Deliveries of facing bricks and aerated concrete blocks in Great Britain



Source: BIS, Building materials and components: monthly statistics, Tables 9 and 11
Notes: Data for four-quarter moving totals

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CEILING



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Page of consents

There's a shift to the provinces here, from a tiny Manx visitor centre, to the new Arena events venue in Bristol. See a longer, regularly updated list at ribaj.com, and email your latest consents to jan-carlos.kucharek@ribaj.com



SARTFELL VISITOR CENTRE, ISLE OF MAN

Client: Sartfell Education and Tourism

Architect: Foster Lomas

Area: 66m²

Planning authority: Isle of Man Government

Planning reference: 15/01194/B

With the Isle of Man recently designated a Unesco World Biosphere Reserve, this £150,000 visitor centre in an Area of Outstanding Natural Beauty will help Manx locals and tourists alike to explore the area's flora and fauna.

Foster Lomas secured the commission after building a stone home for the eco-conscious client on the same site in 2014. The 66m² visitor centre, which will contain a library, education and exhibition space, is dedicated to educating visitors about the rare orchids, wildflower meadows, native woodlands and lakes on this privately owned reserve. It forms the final stage of the site's development.

In line with the client's biodiversity aims, design has been given due consideration. Stone gabion walls nestle the building into the landscape, while a prefabricated timber frame structure aims to minimise impact on the site, the corrugated metal cladding reflecting its agricultural context.



CHESTERFIELD HOUSE, WEMBLEY, LONDON

Total area: 27,414m²

Client: HUB/ Bridge Ventures

Architect: Maccreehan Lavington

Planning authority: London Borough of Brent

Planning reference: 15/4550

Maccreehan Lavington continues its role as brick tower architect of choice with this permission in north-west London – one of the biggest mid-market housing developments in the country and Wembley's tallest. Chesterfield House converts two office blocks of 21 and 26-storeys into a mixed-use residential project of 239 homes sitting on a C-shaped plinth. HUB, the PR claims, 'will focus on developing homes for working Londoners'; offering a mix of affordable housing, units for sale and build to rent housing above a community centre, retail and cycle storage.

BRISTOL ARENA

Total area: 25,580m² (arena); 19,000m² (mixed-use masterplan)

Client: Bristol City Council

Architect: Populous & Feilden Clegg Bradley

Planning authority: Bristol City Council

Planning reference: 15/06069/F (arena)

15/06070/P (outline)

Located on a former diesel depot near Temple Meads station, Bristol Arena has got the go-ahead while outline plans have been approved for the rest of Arena Island. Due to open at the end of 2018, the arena is a flexible indoor venue for concerts, exhibitions, fashion shows and conferences. It will be able to accommodate 4500 theatre-goers or 12,000 live music fans. In addition to the detailed planning permission for the arena building, which will have a public plaza and new access routes, the outline consent for the future development of housing, business and leisure uses nearby was also approved. According to the press release, 'a steel finish is proposed to reduce glare by day and produce a more subtle glow at night'...



REGENT'S PARK ESTATE

Total area: 15.2ha

Client: London Borough of Camden

Architect: Tibbalds Planning and Urban Design

Planning authority: London Borough of Camden

Planning reference: 2015/3076/P

Here's a case of new homes for old – precipitated by the imminence of HS2, which will see the re-modelling of whole swathes of Camden north of the proposed terminus at Euston. Tibbalds, which has developed the overall design framework for the 2200-home Regent's Park Estate, is working with Mae Architects and Matthew Lloyd Architects, which both have a contemporary twist to their interventions. This development is for 116 new homes for families directly displaced by HS2; housing which will be spread across eight sites on the estate alongside numerous public realm improvements, including a replacement public house on Albany St.

**HOUSING AND TREATMENT CENTRE, ANDOVER, HANTS**Total area: 7865m²**Client:** Enham Trust

Architect: Design Engine

Planning authority: Test Valley Borough Council

Planning reference: 15/00296/OUTN

Winchester-based Design Engine has gained permission on behalf of disability charity Enham Trust for Cedar Park, a state of the art neuro-rehabilitation unit in Enham Alamein, near Andover. The 14-bed centre will treat people who have suffered nervous system damage, including brain injury and strokes. Planners also agreed to 51 disabled accessible apartments and a new health and wellbeing centre, available for community use, on the charity's home estate in the village. The scheme is designed to address significant level changes across the site which impede both users and care workers, by ensuring that all the accommodation and services are fully accessible. This involves recontouring the natural levels as well as optimising lift locations across the complex. Deck access for different flat types around a courtyard avoids an institutional feel and increases the sociability of the proposal.

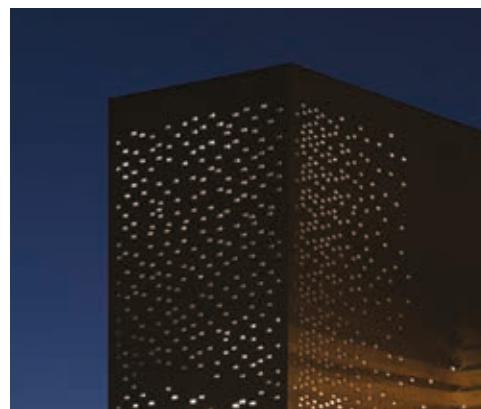
XYLOPHONE BUILDING, HARINGEY, LONDONTotal area: 890m²**Client:** London Centre for Cerebral Palsy

Architect: pH+

Planning authority: London Borough of Haringey

Planning reference: HGY/2015/3830

Client the LCCP has been granted permission for an extension by architect pH+ to its premises in Haringey, an appointment that includes refurbishment of the existing building. The programme will transform the charity's ability to work with children and the wider public. The centre aims to promote inclusive design, with the building acting as a tool for therapy by stimulating children through sound, smells, light and tactility. A walkway wraps around the outside, offering views to the landscape, a sense of fresh air and a timber screen that doubles as a giant xylophone for children to play with. Some of the cladding will be reflective to help children develop a sense of bodily co-ordination outside a clinical environment. Inside there will be a hydrotherapy pool, flexible-use therapy and meeting rooms, and a community hall space.

**ENERGY CENTRE, NORTHAMPTON**Total area: 614m²**Client:** University of Northampton

Architect: MCW Architects

Planning authority: Northampton Borough Council

Planning reference: N/2015/1288

Cambridge architect MCW's Energy Centre will be the first building to complete on the new £330million Waterside campus of the University of Northampton. It will provide low carbon district heating networked to all buildings on the campus. While technical requirements ensure its box-like form, there is a visually strong elevation to the north, responding to the university's 'Arrival Square'. Boiler flues are collected together and rise through a 26m perforated brick tower atop a saw-tooth brick facade at ground. This area houses the woodchip biomass boiler, thermal storage vessels and ancillary plant.

PARAGRAPH 55 HOUSE, RAVENSTONE, BUCKINGHAMSHIRETotal area: 165m²**Client:** Private

Architect: AR Design Studio

Planning authority: Milton Keynes Council

Planning reference: 15/02777/FUL

Paragraph 55 specialist AR Design Studio has consent for a three-bedroom home set in its own sprawling landscape in the green belt. The design, a collaboration of the architect, engineer Eckersley O'Callaghan and landscape architect Ibbotson Studios, turns a paddock into a striking lakeside home.

The rectilinear form was inspired by the local agricultural vernacular, with an open plan living space cantilevering 5.5m above the water and gardens. The engineered structural glass windows brace the cantilever to create a pared-down aesthetic while giving uninterrupted views over the countryside.

**SOMERSTOWN BRIDGE, LONDON**Total area: 38m²**Client:** King's Cross Central Ltd Partnership

Architect: Moxon Architects

Planning authority: London Borough of Camden

Planning reference: 2016/0288/P

This new bridge zips over the Regent's Canal and joins Argent's King's Cross development with Camley St park and St Pancras Churchyard (which boasts Sir John Soane's tomb). Springing from Argent's Gasholder Gardens, Moxon Architects' structure will be an important westward link to the Somerstown area of Camden. At its slimmest point, the steel structure is only 15mm thick but ingenious engineering by Arup means the entire 38m crossing is spanned without any intermediate support. Moxon's minimalist design is robust and unadorned, using careful material selection paired with detailed craftsmanship.



Left The Gira G1 device almost appears to float on the wall.

Multi-talent for building technology

With Gira G1, adjusting light or temperature in your room is as simple as a wave of your hand

From lighting and blinds control and setting the room temperature to online weather forecasts and door communication – the new Gira G1 is the all-in-one intelligent user interface for KNX building technology. All the functions can be conveniently operated by swiping the multi-touch display. In combination with the Gira DCS IP gateway, the G1 can also be used as a home station for door communication. It can be installed on a single flush-mounted box like a normal switch and is equally suitable for modernisation, retrofitting, and new buildings.

High quality and precision

Selected materials underline the high-quality

design of the Gira G1. The continuous front panel is made of scratch-resistant 1mm special glass. Thanks to its precision bonding, it forms a single unit with the housing. A high-quality metal frame gives the device an attractive appearance even from the side. The glass fibre-reinforced holding frame ensures permanent stability on the wall.

Flat, compact, elegant design:

With a delicate appearance, the Gira G1 almost appears to float on the wall. High-quality materials underline the pure, sophisticated design. Available in white or black, the device harmonises well when integrated in different residential

environments. The G1 has received multiple international awards for innovative and high-quality design as well as for its interface.

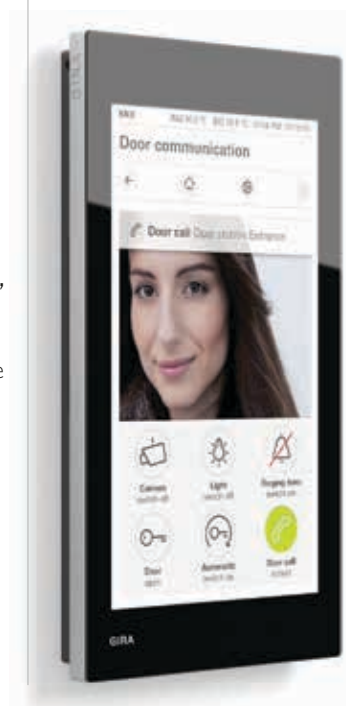
Brilliant display

A brilliant 15.25 cm [6ft] TFT colour display provides an extremely clear representation of images, graphics, and text. The G1 is easily legible from all viewing angles so that it can be used equally well by people of all heights.

Clear, intuitive, user-friendly

The intuitive Gira Interface is an entirely new development which makes operating building technology and door communication easier than ever before. A clear design offers easy access to all functions. The user-friendly display with large font and easy-to-understand symbols of the new icon system ensure clarity. The Interface has received several awards for good design and usability. ●

gira.com/g1



Left The device comes in either a black or white finish and is operated by touch or gesture.

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Everyman keeps its cool

Has Haworth Tompkins' Stirling-winning theatre lived up to its sustainable promise?

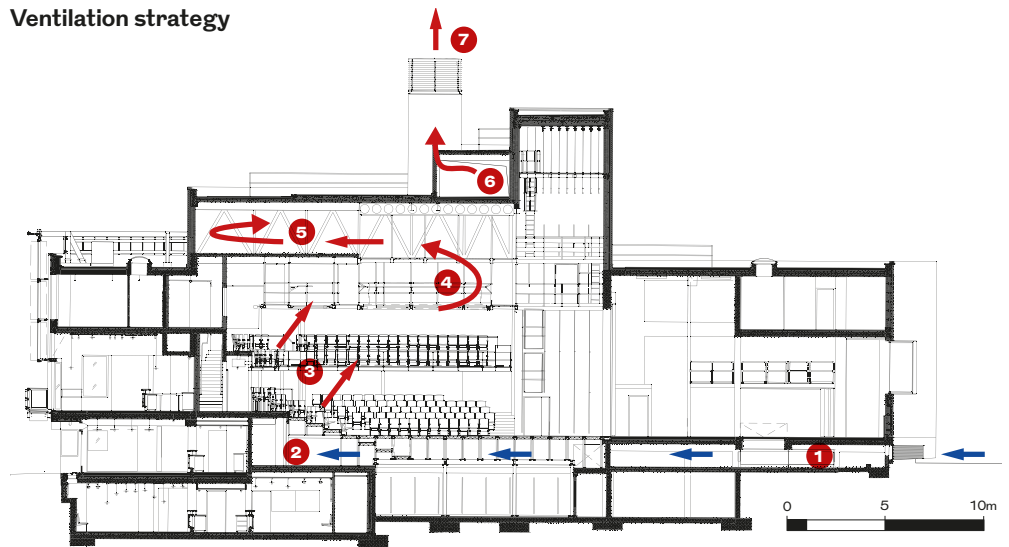
Hywel Davies

When Haworth Tompkins' replacement for Liverpool's Everyman Theatre won the 2014 RIBA Stirling Prize, the judges praised its naturally ventilated auditoria, applauded its use of concrete in cooling the fresh air and described as 'exceptionally sustainable'.

Two years on and the exceptionally sustainable epithet has just been given added credence by the Chartered Institution of Building Services Engineers (CIBSE) after the Everyman won both the Project of the Year (Leisure) and Building Performance Champion in its Building Performance Awards this year. The win recognised the theatre's outstanding energy performance of 159kWh/m²/year. This beats the Carbon Buzz good practice benchmark for theatres of 275kWh/m²/year by over 40%, and significantly below the CIBSE TM46 theatre benchmark of 550kWh/m²/year, used in Display Energy Certificates.

To the Everyman's environmental engineer, Waterman Building Services, this impressive performance will come as no surprise – sustainability was integral to the scheme from the outset. The initial plan was to build a larger theatre complex on a new site but Haworth Tompkins successfully argued for the importance of maintaining continuity by reusing the compact, city centre plot.

Ventilation strategy



- 1 Intake plenum taking air from outside and cooling by thermal mass within plenum in summer, heated in winter
 - 2 Air enters auditorium beneath stalls and circle seating
 - 3 Incoming air warmed by occupant
 - 4 Air further warmed by lighting, helping to drive buoyancy
 - 5 Acoustic exhaust plenum
 - 6 Exhaust plenum
 - 7 Warm air exhaust via chimney louvres
- Incoming air
→ Warm air

To accommodate the new theatre the shell of the existing structure was dismantled and the bricks salvaged for use in the walls of the 400-seat main auditorium. This incorporates a thrust stage encircled on three sides by audience seating to emulate the intimacy of its predecessor. The 25,000 exposed bricks give a familiar, comfortable ambience to the new space and add significant thermal mass – critical to the auditorium's natural ventilation.

'The client wanted a sustainable, low energy theatre so natural ventilation was seen as the obvious solution,' says Jonathan Purcell, director of building services for Waterman. This is easier said than done in what is, essentially, a windowless black box, where ventilation openings could potentially allow noise and daylight into the auditorium.

The method of ventilation adopted by the design team is to introduce fresh air at low level and then allow it to rise up, unobstructed, through the auditorium and out through its roof. Fresh air is drawn from a quiet road at the rear of the theatre. From an inlet louvre it passes through an acoustic attenuator and then into a giant concrete plenum buried in the ground beneath the workshop area at the rear of the main stage. In the summer this concrete cavern helps cool the incoming air.

From the plenum the air passes beneath the stage, through a second set of acoustic attenuators, and into a large horseshoe-shaped



Above Everyman Theatre's chimneys have to generate adequate buoyancy to pull sufficient fresh air through to keep the auditorium comfortable

plenum hidden under the rows of audience seating. Perforated grilles beneath the seats allow the air to be drawn into the auditorium.

Inside the auditorium the largest single source of heat is stage lighting. The stage has 140kW of lighting, of which 65kW could be on at any one time. The occupants and other sources of heat contribute another 50kW.

Heat from the audience and lighting make the air buoyant, causing it to rise through the lighting gantries to an acoustically attenuated exhaust air plenum hidden above the auditorium ceiling. A giant duct, which doubles back on itself to help prevent noise entering the auditorium, carries warmed air from the plenum to four giant cylindrical rooftop chimneys and back outside.

The height and diameter of the chimneys

were critical to the success of the ventilation system. The chimneys must pull enough fresh air through the space to keep the auditorium comfortable and to meet the Building Regulation fresh air recommendation of 10 litres per second per person for the 450 capacity audience plus additional staff and actors.

Despite detailed modelling, the theatre trustees doubted whether a natural ventilation strategy would be capable of maintaining comfort levels throughout the year. As a consequence, two air handling units fitted with air source heat pumps to provide both heating and cooling have been installed inside the concrete air-inlet plenum. ‘In the two years the theatre has been open, these units have run once for a total of two hours – one Saturday last summer the stage doors were opened to bring in staging, followed later that day by two sell-out shows,’ says Purcell.

The rate of air flow through the auditorium is regulated by motorised dampers in the inlet and exhaust ducts. In winter fresh air supply rates are kept to minimum using carbon dioxide and temperature sensors, and the heat pump in the air handling unit is used to preheat the auditorium when the boilers are not running. But once the audience and lighting are warming it up, no extra heat is needed.

The engineers are using the air handling units to enhance the theatre’s natural ventilation strategy. This air blow is regulated by the automated control system: Below 21°C the air handling unit supplies heat to the

space and fresh air rates are kept to a minimum; between 21°C and 24°C, ventilation is progressively increased; at temperatures above 24°C the air handling unit fan is used to boost the ventilation rate; finally, above 26°C, the auditorium switches to mechanical cooling with minimal fresh air.

Since the theatre reopened in March 2014, monitoring has shown that the solution works and that it is possible to adopt a low-energy natural ventilation strategy, even for a theatre with high heat loads.

Robert Longthorne, building development director at the Everyman, says the system does have to be ‘actively managed’ in autumn and spring when the weather flips daily between summer and winter conditions. However, he is pleased overall with the effectiveness of the auditorium mixed mode ventilation system: ‘The great thing is that you don’t get any complaints,’ he says.

It is because the ventilation solution is integral to the architecture of the theatre that it works so well. From the subterranean intake plenum to the unobstructed ventilation path through the auditorium and four giant rooftop chimneys, all are essential features that have ensured the success of the ventilation strategy. Even the thermal mass of the reclaimed-brick walls is vital; the engineers estimate that their added mass contributes to a temperature drop of up to 3°C in the auditorium. No wonder the CIBSE judges were impressed. ●

Hywel Davies is CIBSE technical director

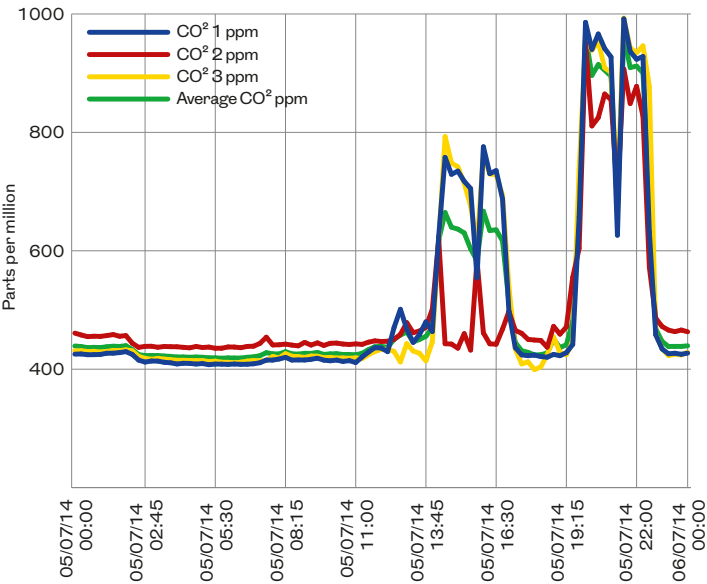
AIR HANDLING UNITS’ DEBUT PERFORMANCE

The plots below of carbon dioxide concentration and temperature show the auditorium system to be performing effectively on Saturday 5 July, 2014.

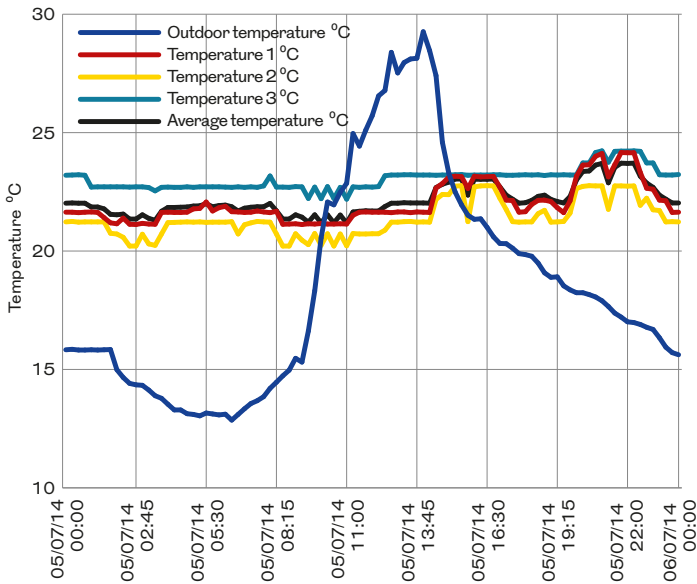
The times of the matinee and evening performances can be clearly seen on the carbon dioxide plot, as can the time of the interval. The plot shows carbon dioxide levels peaking briefly at 1000 parts per million – the CIBSE maximum recommended concentration – at the start of the second act before tailing off again.

The temperature plot shows the outside air temperature (blue line) peaking at 29°C, at about 2pm. Internally, the temperature remains remarkably constant at approximately 22°C, with a very slight increase at show times. The peak temperature is just under 24°C on the balcony (lighter blue line).

Internal air quality (parts per million CO²)



Auditorium temperature – matinee and evening performance



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Going all the way with BIM

If BIM is to help finished buildings work better as well as build them, it needs to be less complex – with improved data systems and standards



If you do any reading about bridging the gap between operations and client perspectives, you'll find most research points to it being the responsibility of facilities management rather than architecture. For designers and architects, this poses the question of what they can do better about co-ordination, what they can do worse, and whether they can do anything in terms of built fabrics and approaches towards smart buildings.

For its second roundtable on the future of technology in architecture AluK asked Dave Moyes of SimpsonHaugh to chair a discussion in Manchester on 'BIM and bridging the gap between operation and design'.

What is BIM?

Such is the pace of change in technology in the sector, as well as the breadth, that no discussion on BIM can start without a review of its current position. And it is clear that there is an array of views, depending on professional perspective. At its root though, behind all its buzzwords and intricacies, participations agreed that BIM is about teamwork and consistency.

Project technology manager at BDP Elliott Crossley argued that BIM can be summarised at high level as digital tools to allow partners to 'communicate and collaborate more efficiently and effectively' – something that

Above (Clockwise from bottom left) Anthony Campbell, Joe Stott, Natalia Maximova, Dave Moyes, Graham Roche, Chris Holden, Elliott Crossley, Dave Woodcock, Sarah Davidson, Isabelle Priest (reporter), Marcel Ridyard and Joanna Chomeniuk.

Right Sarah Davidson, head of research and development, Gleeds

I don't like putting the word BIM on execution plans, I'd rather write "project execution plan"

Joe Stott, BIM manager at AHR Architects, said is about reducing waste in the industry.

However Gleeds director and quantity surveyor Sarah Davidson focused on BIM as 'a process-based approach to approximately generate and share live data throughout design and construction, and into operation. 'To me, the processes are important because historically we haven't spoken well together within teams. No one knows what, for example, the client is doing, so BIM puts a process in place that forces consideration of other parties and raises questions that need addressing. In some ways it creates a very robust briefing process.'

Natalia Maximova, associate at Sheppard Robson, pointed out that while these may be BIM's intentions, the way the models are produced internally is slightly divorced from this: 'Someone develops the concept and then another person does it on the machine.' Manchester City Council planner Dave Woodcock also pointed out that early collaboration can often be difficult: 'Sometimes a facilities management team to come to meetings doesn't even exist yet.'

What does BIM need to do?

At the centre of the discussion around BIM was a long-term cultural shift changing the way buildings are produced. 'Advances in technology are changing the skill sets of the workforce and that will knock on to quantity surveyors and others,' explained Moyes. 'Architectural technicians and structural technicians are dying breeds. M&E contractors generally don't appoint technicians, engineers do design and drawing.'

However, there was wide agreement among participants that BIM is in danger of becoming over-complicated: 'a niche techy subject' that 'shouldn't even be a thing'. Stott explained: 'I don't like putting the word



WHO WAS THERE

Dave Moyes, (chair) information management partner, SimpsonHaugh
Part of a practice using Bentley, Revit, Grasshopper and Rhino, and involved in schemes across various levels up to complex parametric design,

Moyes feels that clients are still very 'green', with much onus on the architect as lead consultants to navigate them through.

Graham Roche, national manager, AluK

Aluminium systems house AluK was originally focused on the residential/trade market before growing into public sector and major projects. It got involved in BIM three years ago, now has a BIM CPD and is looking at the BIM content it creates to see how the company can make it more usable in the industry.

Chris Holden, architect, Alan Camp Architects

As a medium-sized practice doing medium-large residential schemes, the company uses Revit in house for all working drawings and planning. Holden is BIM project lead and has spent time working in BRE's training department. He keeps an eye on research in the field.

Elliott Crossley, project technology manager, BDP

All the UK offices of this multidisciplinary practice are BIM certified. Crossley has spent the last few years working on a large lab project in Cambridge, across all the trades, architecture and engineering.

Dave Woodcock, capital programmes property department, Manchester City Council

Woodcock was brought into research team for Manchester Central Library to oversee BIM management and see if models and information from it could help day-to-day operations. He now works on the property management system to understand building information and how BIM can tie into that.

Sarah Davidson, head of research and development, Gleeds

A quantity surveyor by training, Davidson has been focusing on data/data modelling for past eight or nine years working closely with RICS for developing standards and benchmarking. The focus is on how the business can better interface between design and facilities management.

Marcel Ridyard, senior associate, AFL Architects

The practice operates on projects at BIM level 2, but Ridyard is cautious because he feels everyone is still learning what that means. The company is advising the NHS for many of the frameworks it is on as well as working on Hull Venue, full BIM level 2.

Joanna Chomeniuk, framework lead, North-West Construction Hub

The Hub is the procurement vehicle for the public sector and at present is working with 17 public sector clients. Chomeniuk is intrigued by what the client would do with the information from a BIM model.

Anthony Campbell, architect, SimpsonHaugh

Campbell is BIM lead on the practice's Battersea Power Station phase 1 project – a large residential building that is its first full project done using Revit and BIM. Over the last three years, it has weathered many challenges in setting it up, but is now looking to develop BIM on future projects.

Joe Stott, BIM manager, AHR Architects

Stott been with the practice, formerly Aedas, for 10 years as project architect. He was involved in the pilot project for Revit in 2007 before rolling it out across all UK offices in 2008. Very experienced in delivering architectural projects in Revit, Stott is interested in how it can be scaled down for refurbishment schemes.

Natalia Maximova, associate, Sheppard Robson

One of the largest practices in the country, Sheppard Robson is trying to explore the environmental aspect of design through BIM. It trains staff with a view to making it a routine. The same applies for Soft Landings. In the future, the practice wants to offer BIM as a standard to all its clients.





Many agreed that the government should improve data standards before moving onto BIM Level 3

Left (From left) Anthony Campbell, Joe Stott, Natalia Maximova, Dave Moyes and Graham Roche.

BIM on execution plans, I'd rather write "project execution plan". A personal gripe of mine is that the language and acronyms that have emerged around BIM have encoded everything so it becomes an elite sport.'

'That's why BIM struggles for traction – it drags people out from their normal scope so that they need to figure out from the start of the project what they want from an asset when they probably don't know,' agreed Crossley.

Overall it was felt it was the producers' responsibility to regulate the amount of data contained in any BIM process, but that it is still too early to know what the right level of information is. 'BIM is at risk of having too much detail,' said Woodcock. 'It's like going back to original operation and maintenance manuals, when building owners received boxes and boxes of information but never opened them because there was too much stuff.'

Occasionally, however, clients turn up with specific requests. Chris Holden, at Alan Camp

Architects, was asked by a housing association client for basic spatial information about a building including occupancy and floor area. He responded by giving them simple models. The technical solution, however, required trying various file formats to find the one that worked with their system. 'There is no easy route through this at the moment,' said Holden. 'There are no well-developed facilities management platforms or GIS systems for architectural use. People are still developing the tools and processes to get from A to B.' Although as Davidson pointed out: 'The idea of delivering a project with common data environments and handing it over on a disk is bizarre. It makes sense that it's managed on behalf of the client for the operation.'

But participants hoped BIM would help to create more dialogue between the building process and use in operation, with Soft Landings key to the continued analysis of building performance after completion,

and feeding back information to influence future projects. Although, as Marcel Ridyard of AFL Architects countered: 'Where you do your design is not what matters. BIM is about process not software. Nobody ever talks about PIM but it is actually the whole thing – from where you put your letters or find your emails to marketing. Each job should have the same folder structure and the idea is that if you give everything in the BIM folder back to the client they could theoretically build it.'

Keeping up with changes

The problem is that changes to BIM and technology are so rapid it is impossible to keep apace. What information do end users need? There are different answers to this, and big contrasts in the quality of data depending on whether the end user is an owner-occupier, tenant or buyer. 'When you have a project that lasts three/four years,' explained Davidson, 'you don't really know what will

happen, what will change in technology, what you'll want data for... but you know that an owner-occupier has obligations to comply with regulation. You may as well collect data around those various systems, at least.'

On top of this are the continuous changes in standards and classification systems. Participants varied on their approach to classification; some companies opt for their own, some employ industry recommended classifications and others use them all to cover all the bases.

Holden explained: 'The governing bodies haven't come to many conclusions on classification and until they do there isn't much we can do.' The problems emerge when classification systems preferred by the different industries involved in a project clash; for example quantity surveyors are told to use RM 1, 2 and 3, which doesn't necessarily suit design. Many in the discussion agreed with the chair that the government should improve data standards before moving onto BIM Level 3.

Must we still draw buildings?

There are situations now where architects no longer need to produce 2D drawings to support their work; instead model and data spreadsheets can generate the information needed to build. Yet the panel agreed that the good practice involved in producing a seamless process is seen as a cost overhead – and helps navigate split systems.

The carrot is of course the draw of success and further commissions, but it might need more stick to get all parties involved. Nevertheless, the overriding message from the event was a demand for more accuracy and simplicity in BIM – whether to ensure the final building information is readable by engineers, architects and caretakers alike, or made to fit manufacturers' content plug-ins. And there's not much sign of any desire to abandon drawings yet. ●

● AluK and RIBA will continue this discussion at AluK's new London showroom (Worship St, EC2A 2AB) on 9 June from 18:00. To participate go to ribaj.com/alukseminar

Below Joe Stott, BIM manager, AHR Architects.

Bottom left Joanna Chomeniuk, framework lead, North-West Construction Hub.

Bottom right Elliott Crossley, project technology manager, BDP.





Designing &
building it

Treading a fine line

We might love to hate standards, but we all know they are useful, and can help guide as well as enforce

Julia Park

Architects have always had a love/hate relationship with standards, particularly when it comes to housing. But most of us probably do feel that some basic safeguards are necessary to prevent unacceptable outcomes. We might also agree that no amount of standards guarantee a good outcome, and that imposing too many is as bad as imposing too few.

The word 'standard' is conveniently ambiguous. We use it generically to include some of the Building Regulations and Approved Documents (also used interchangeably), local planning policy requirements (which are effectively standards) and good, or best, practice guidance. And then there are the various Codes of Practice and British Standards. While it feels right to have a set of documents that set out definitive best practice, it's hard to warm to anything priced by the page. If we have to pay at all, my preference would be an inverse relationship between pages and price to make the BSI focus on what really matters.

The lines between acceptable, good, very good and excellent are hazy. All are relative, and depend on context and expectation. I recently visited Havana where much of the housing is extremely beautiful but dangerously decrepit. Drainage, sanitation and street-lighting barely exist, most houses are now in multiple occupation, overcrowded and with only walk-up access; rooms are dark and hot and there is very little privacy or soundproofing. Buildings regularly collapse.

Back here, housing is 'safe and sound',

relatively accessible and energy efficient – particularly newer homes. This is largely due to the building regulations which, broadly speaking, ensure that outcomes are 'acceptable'. These basic performance levels become culturally embedded as the least we should expect. Standards go further and attempt to define, and reward, the good, very good and excellent. They tend to cover more of the softer issues too. To take the age-old maxim, 'Firmness, Commodity and Delight', regulation generally deals with firmness (though Parts M and L stray into commodity), and standards with commodity (though they also wade into firmness, and dabble with delight).

Thanks in part to standards, most of our newer housing is fit for purpose, as well as safe, but it would be hard to describe it as beautiful. Many of our oldest and coldest homes are also the most sought after – largely because they do offer delight. Aesthetics are dangerous territory for standards (enter the design guide) and it is the innate sense of proportion, and pride in craftsmanship, rather than written rules, that have led to the enduring appeal of Georgian and Victorian housing.

When Levitt Bernstein was commissioned to write a handbook of housing standards for the National Housing Federation (NHF), we knew we'd have to wrestle with these issues and tread a fine line. Coming in the wake of the government's Housing Standards Review and the continuing onslaught of red tape challenges to remove barriers, such a book could easily have felt like bad timing. But we felt it was necessary. The review has not yet delivered on its promise to streamline and simplify, and its remit was always to boost supply, not raise quality.

Standards need nurturing

So the handbook is partly to redress that balance. Quality is particularly threatened when, as now, demand far exceeds supply. To be blunt, you can sell anything in London today. During the 2007-9 recession, I was struck by the words of the then Dublin City architect whose team had been working on a set of housing standards for the city. This was during the boom before the bust that left the market saturated with new homes. Suddenly there was no need for standards, because only the really good housing was selling at all. Developers had to compete on quality as well as price. As Britain now needs at least 240,000 additional homes per year for the next decade,

Quality is particularly threatened when, as now, demand far exceeds supply. You can sell anything in London today

relying on consumer pull is not an option.

The NHF also wanted the handbook to be a one-stop resource, a definitive, good practice, briefing tool for its membership of housing associations – clients who understand long-term value and build for people who can't just move when they want a bit more space.

We therefore make no apology for the fact that there are a lot of standards. The important thing is that they are clear according to status. Colour coded and organised in short, topic-based sections, it is clear what you must do (baseline building regulations) what you may have to do based on local planning authority decisions and what else you might choose to do. Most standards, including all those that cover the public realm and place-making, are in this third, discretionary group.

Diagrams, tables and text explain when combined heat and power makes sense, why choosing a window is not as easy as it sounds, and what a 'Category 3' apartment looks like. This is more about helping people make sensible choices than telling them what to do.

Self-interest lies at the heart of this (and I don't mean the fee for writing it). Architects have to be on the ball with new regulations and standards, and, crazy though it sounds, we rarely get a project brief. We see discretionary standards as useful prompts – things that we, and our clients, must consider and eventually make some sort of decision about. Having these layers of information and choices in one place should facilitate that conversation, and save time. We hope it will also help our clients place more value on what we do. ●

Julia Park is architect and head of housing research at Levitt Bernstein
Housing Standards Handbook, National Housing Federation 203pp £59.95

● The RIBA fights for better housing by lobbying the UK and other national governments for change

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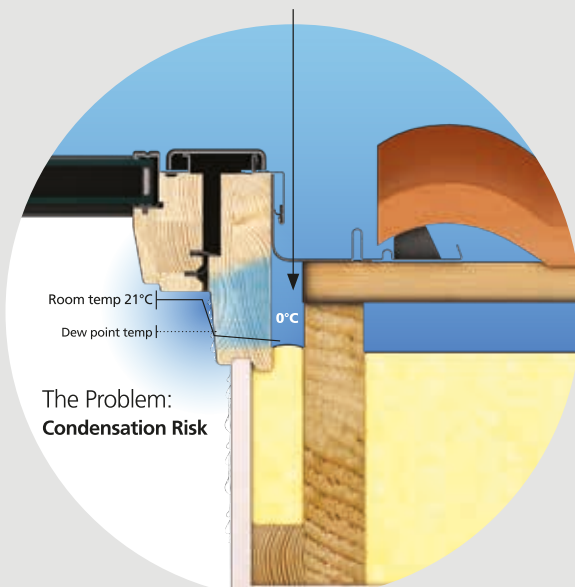
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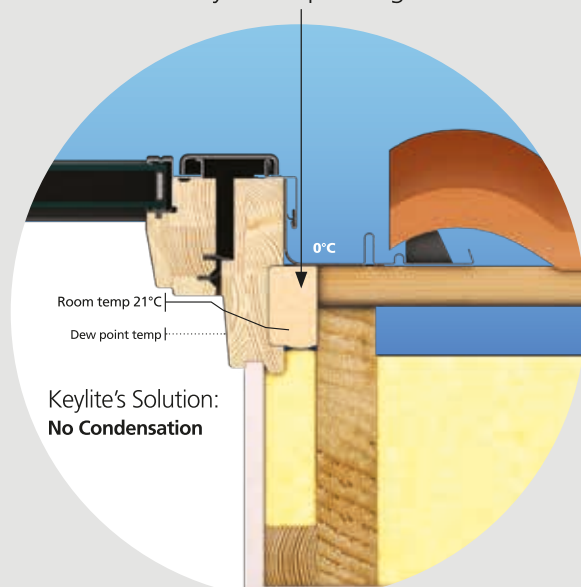
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Procurement
& contracts

No completion, no cash

If the payment schedule ends before completion, do interim payments apply?

Angus Dawson

Payment disputes continue to abound in the Technology and Construction Court and at the start of this year the TCC was asked to decide a question which I have not seen previously considered by the courts. What happens when dates set out in a payment schedule have passed but the works are still not complete? Is the contractor entitled to further interim payments after the final interim payment date in a payment schedule? If so, on what basis?

In *Grove Developments Ltd v Balfour Beatty Regional Construction Ltd*, the parties agreed, after the contract had been entered into, a schedule of 23 interim payment dates. The schedule (which did not cater for what would happen if the works were not completed by the final instalment date) replaced the monthly interim payment date mechanism (alternative B) in the standard JCT contract.

The last date in the payment schedule passed with practical completion some time off and the contractor continued to seek payment arguing that once the payment schedule had expired, as there was no further payment mechanism, it was entitled to interim payments in accordance with the statutory scheme under the Housing Grants Construction and Regeneration Act. The contractor also used the statutory scheme as the basis

for arguing that a pay less notice served by the client (in accordance with the timescales contained in the standard JCT contract) had been served out of time.

The judge rejected the contractor's arguments and held that the payment schedule was a definitive list of the interim payment dates and that no further payments would become due to the contractor once the schedule had expired until after practical completion of the works had been achieved.

Also rejected were the contractor's arguments that there should be an implied term allowing it to apply for payment or, alternatively, that the contract should be interpreted to allow it payment before the works reached practical completion.

The judge ruled that the contract could not be construed as including an implied term that interim payments would continue once the payment schedule had expired as such a term would have been inconsistent with the express terms of the contract. If this was wrong and there was an implied term, the arrangements would not automatically default to the statutory scheme (17 day payment period with pay less notices to be issued not less than seven days before the final date for payment) as the contractor had argued. The judge's view was that the contractual periods for payment and pay less notices could continue to apply and there would be no need to revert to the statutory scheme. Given this, the employer's pay less notice would have been served in time.

Further, although it would adversely affect the contractor's cash flow, it was not against commercial common sense for progress payments to cease before completion of the works. The judge accepted the employer's argument that it may wish to use an interim payment structure to try to incentivise the contractor to finish the works on time.

The decision has implications for those administering building contracts with payment schedules rather than stage or periodic payment mechanisms. If the schedule/associated drafting does not mention what will happen in the event that the works are not finished by the last instalment date, the contractor may not be entitled to further payment until the final account. Anyone administering a contract such as this should take care not to inadvertently authorise payments which may not otherwise be due. ●

Angus Dawson is partner Macfarlanes LLP

Contractual periods for payment and pay less notices could continue to apply and there would be no need to revert to the statutory scheme

IN PLAIN ENGLISH THE STATUTORY SCHEME

The Housing Grants Construction and Regeneration Act 1996 (as amended) sets out minimum requirements which payment clauses in 'construction contracts' (as defined in that Act) have to comply with. If a contractual payment mechanism does not comply, the non-compliant part will be replaced with the relevant part of the Scheme for Construction Contracts (England and Wales) Regulations 1998 (as amended). It is better to avoid this as the timescales in the scheme tend to be more favourable than contractual timescales to a contractor but not to an employer; and they may be inconsistent with other parts of the contractual payment clause which still apply.



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Internal
management

Neurotic? Us?

Maria Smith puts the
industry on the couch



Maria Smith

This is a cry for help. I'm worried that the construction industry is suffering from obsessive compulsive disorder.

I find myself increasingly concerned that the risk-averse behaviour patterns we're witnessing aren't the strategic solutions they profess to be but are symptoms of a system in crisis. Procurement processes involve endless repetitive checks. Very specific methods of measuring and ordering are followed in pursuit of the fabled safe pair of hands. Inflexible rituals deny opportunity and experience to newer and smaller practices, feeding a dire skills shortage. This is exacerbated as practices hoard their knowledge out of a disproportionate sense of rivalry. Fear of failure favours competitions over engaged, iterative design processes. Fear of regret favours facade-retaining, apologetic, conservative design. As our industry becomes increasingly unviable, who can blame it for presenting signs of distress? But have we overshot prudent self-preservation and entered self-destructive neurosis?

Operating successfully as a human involves a lot of risk management. We need to assess the severity and likelihood of a plethora of risks and take proportionate precautions to prevent harm coming to ourselves or

others. This requires creative risk mitigation, and critically, tolerance of some uncertainty.

But sometimes uncertainty is intolerable. This can lead to obsessive compulsive behaviours such as checking, cleaning, repetitive acts, mental rituals, ordering, hoarding, counting and so on. OCD sufferers employ these behaviours to reassure themselves that nothing bad will happen. Overcoming OCD is difficult because the sufferer must increase their tolerance for uncertainty. They must accept that what will come with recovery is not peace of mind and security, but almost its opposite: accepting that this is unattainable.

Operating successfully within the construction industry is similarly characterised by risk management. The large sums of money, large numbers of people, and very real risks of physical and economic harm demand reasonable assessment of danger, creative approaches to risk mitigation, and tolerance of a level of uncertainty.

As with individuals who find themselves unable to tolerate uncertainty, an industry with an untenably low tolerance for uncertainty could also tie itself in knots with obsessive compulsive behaviours that appear superficially justifiable in the short term, but can mutate into disproportionate avoidance and absurd safety-seeking. And just as sufferers of OCD must learn to live with a level of uncertainty in order to free themselves from the all-consuming, debilitating pursuit of a hopeless quest, so must an industry find ways to cope with uncertainty or it will incapacitate itself by withdrawing into an ever-more constricted realm.

Cognitive behavioural therapists advise sufferers of OCD to combat their condition by undertaking a process of exposure and response prevention, ie deliberately and repeatedly facing their fears and not responding to urges to use safety-seeking behaviours. Overcoming OCD requires giving up feeling 'comfortable' and making decisions based on external evidence despite feeling uncertain. Resisting developing alternative, even secret, safety-seeking behaviours is critical.

Can an industry suffering from a collective form of OCD also heal with a process of exposure and response prevention? Can it also improve its tolerance for uncertainty?

Outside the construction industry there's a ground-swell afoot that is realising the limitations of seeking quantitative perfection. A recent article in the Harvard Business Re-

As our industry becomes increasingly unviable, who can blame it for presenting signs of distress?

view proposed that seeking ever tighter efficiencies, ever tinier margins of error or waste, might show up as marginal economic growth but cost our ability to innovate – to do things better, not just more cheaply. In March, The Economist published an article on the impending end to Moore's Law, which stated that computer power would double every two years. Not surprisingly, this is proving unsustainable and as the incentives for such linear progress wane, such radical innovations as intuitive data analytics, the internet of things and approximate computing are emerging.

The days of hiding behind the comfortable quantitative that feels like certainty are coming to the end. Granted, it's a desperate end: we're kicking and screaming and gripping tightly to ever madder behaviours that temporarily reassure. This is all too familiar for our beloved industry that is so often late to the party. But maybe this time we needn't be. Everybody's talking about 'design thinking'. Our industry must be predisposed to such 'design thinking' – a set of principles promoting empathy, trial and error, and tolerance for divergent ideas and iterative 'failures'. Can we embrace our innate 'design thinking' to help us face our fears and resist fruitless, damaging safety-seeking?

What are we really afraid of? I saw the film of JG Ballard's High-Rise and it's a fun power trip to imagine that we really have this level of influence but the 'failure' of a building can't really cause such diabolical results. By the way, an inflated sense of your own power is also a symptom of OCD. ●

Maria Smith is a director of architecture and engineering practice Interrobang and curator of Turncoats



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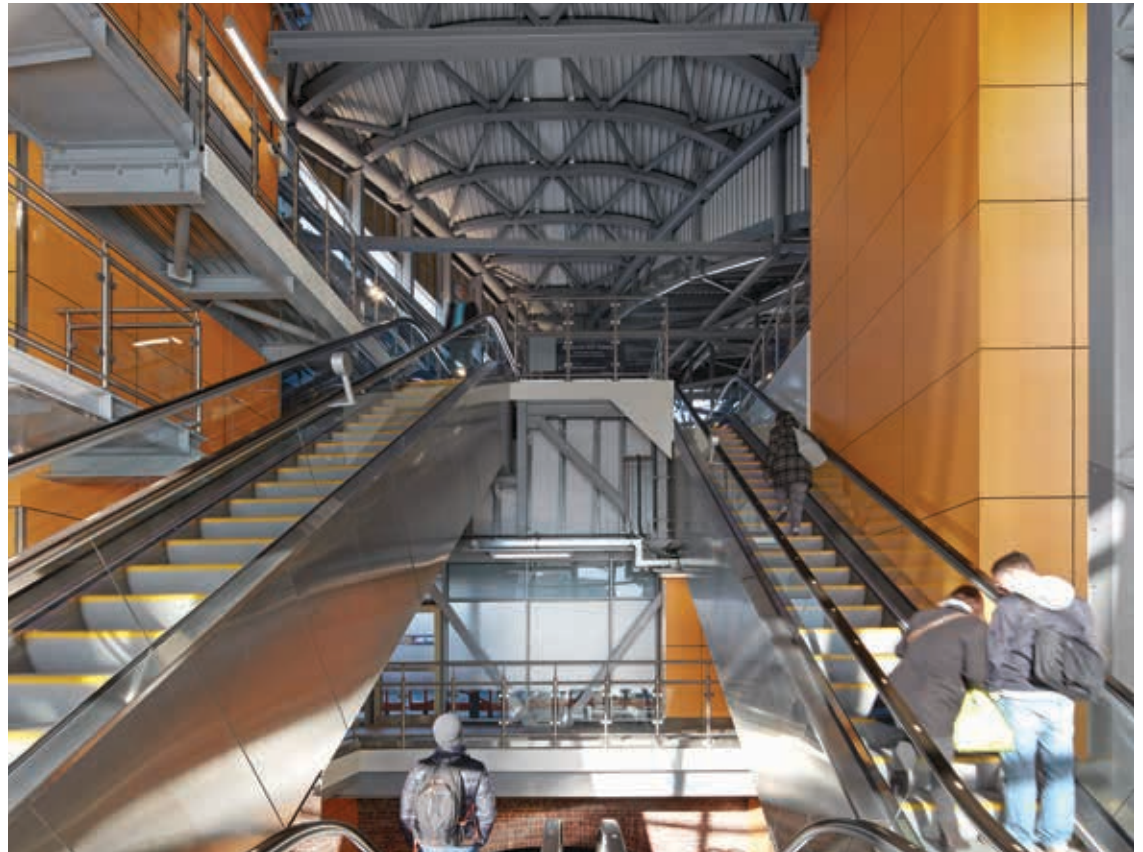


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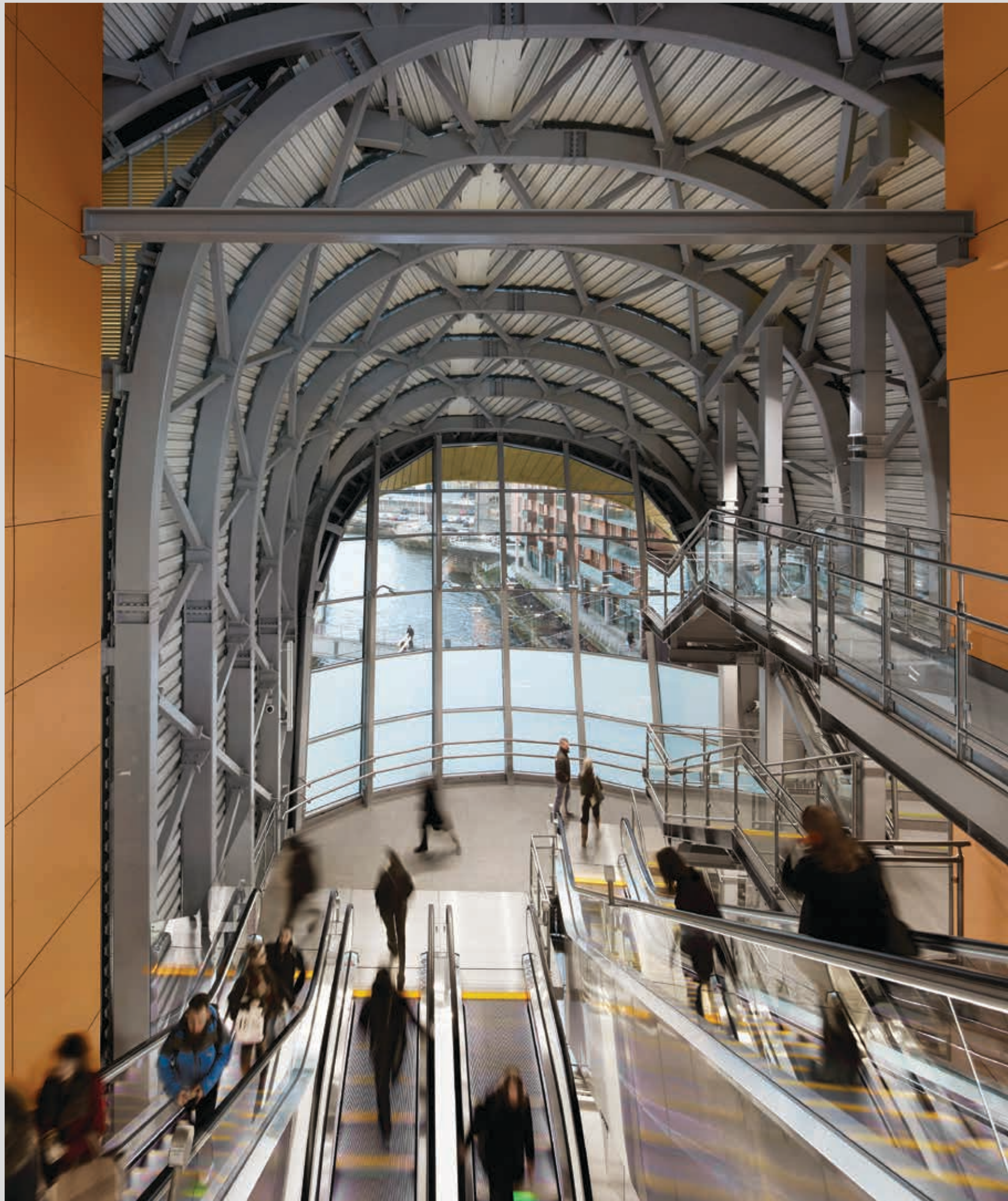


AHR/DANIEL HOPKINSON

Is it possible to future-proof buildings? How can clients ensure they remain assets rather than white elephants? In this issue of Steel Intelligence we consider long spans (p81) and how the increased flexibility of use they provide might aid building longevity. Our two project studies offer sharp contrasts in scale and nature. Make's steel-clad and steel-framed groundscraper 5 Broadgate provides some of the largest floorplates in the City of London (p83). In Leeds, AHR's challenge was to create a much-needed additional entrance to the railway station while building over both a river and live railway tracks (p78 and above). Also on a railway theme, in our icon slot (p86) engineer Chris Wise admires Isambard Kingdom Brunel's 'inspirational' Royal Albert Bridge at Saltash, completed shortly before his death in 1859.

Pamela Buxton, editor, Steel Intelligence





A river runs through it

A golden hood over the River Aire now beckons commuters to the new southern entrance of Leeds Station and provides a landmark for a fast regenerating area, belying the construction difficulties posed by such a tight site

Words Pamela Buxton **Photographs** AHR/Daniel Hopkinson

Leeds Station's £20 million new entrance presented multiple special challenges: piling down into the bed of the River Aire, building up over live railway tracks, managing a sensitive interface with a Victorian structure, and negotiating a heavily restricted site which meant building components had to be brought in by barge.

Following a concept design by Bauman Lyons Architects, the project was developed in detail by architect AHR and structural engineer Mott MacDonald with steelwork by William Hare. Clad in golden, anodised aluminium panels, the intervention creates a new city centre landmark as well as serving the fast-regenerating area south of the station.

'The hope was to create an iconic entrance for the city – something attractive rather than run-of-the-mill,' says AHR architect Matt Beaumont.

'It was an extremely challenging project in all senses. Everything had to be fabricated offsite, then sailed up river by barge, and winched into place by a tower crane positioned behind a tall neighbouring building. And it had to be millimetre perfect.'

The only viable location for the new entrance was to build directly over the fast-flowing River Aire alongside the railway viaduct. The new structure contains stairs, lifts and escalators rising 12m to connect to the existing high-level concourse.

A prefabricated steel structure was judged the best and most practical way of realising the entrance's distinctive hooded form while limiting onsite construction.

'Steel was the only way to achieve the tight structural zone and sweeping curve of the entrance,' says Mott MacDonald senior structural engineer Jonathan Svikis.

The preference for prefabrication also drove the decision to use bolted connections, with every one tested during pre-erection trials offsite.

'Normally the structure would have been welded but because we're working above the river and railway it needed to be something that could be erected quite quickly on site,' he says.

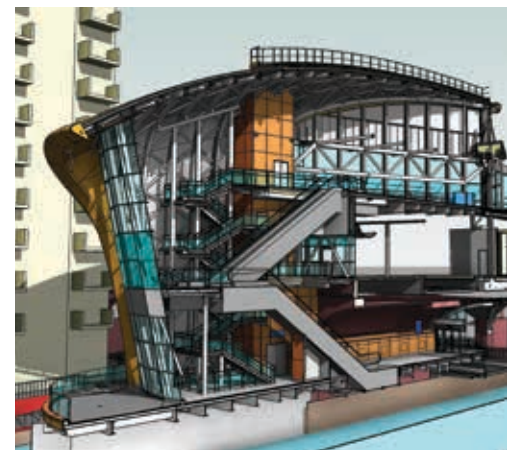
Mott MacDonald piled foundations and built two piers in the middle of the river. These were positioned to align with the rail viaduct arches so as not to impede the water flow, and to rise high enough to clear a 1 in 200 year flood event. The piers support a steel transfer deck (see overleaf) of galvanized beams which in turn supports the primary structure of the new entrance (see right).

During the detailed design process Mott MacDonald and AHR realised they'd need to reduce the structural zone to 400mm from the 700mm of the initially proposed curved portal frame concept structure, in order to



Left Passengers have views of the exposed diagrid steel structure as well as the River Aire as they travel on the escalators.

Above A steel structure was the only way to achieve the distinctive hooded form of the new entrance within the restricted site.



PORTAL FRAME

The portals rise to 20m tall, each with a horizontal span of approximately 12.5m and spaced at 1.8m intervals. For ease of manufacture and transportation, all but the smallest of the frames are divided into four parts – two 400mm x 200mm RHS columns and two rafters of the same size spliced at the highest point of the curve. These have radii ranging from 2.8m to 12.3m to support the required roof profile. The curved rafters were bolted together in the assembly yard downriver before being brought to site by barge and lifted on to the columns. The frames are braced out of plane with diagonal 120mm x 120mm x 5mm square hollow sections to form a diagrid structure over the sides and curved roof of the entrance. There are 11 frames at river deck level and a further 9 extending over three railway lines to form the connection to the higher concourse level.

accommodate all the internal elements.

But with the boundaries of the building fixed, the design team utilised parametric modelling to run curvature analysis, and used this to inform a redesign of the frame. This led to the replacement of the chunkier I-sections with closer-spaced RHS hoops and rafters to give a less faceted, more curved profile and, crucially, the introduction of a diamond-patterned diagrid structure. As well as reducing the structural zone straight away, this structure gave a strong architectural expression to the interior of the building when exposed, according to Beaumont. More drama is added by striking views over the river through the fully glazed entrance facade from the top of the escalators and stairs, although the Schueco system incorporates strategic opaque panels to discourage congestion at mezzanine level.

At the top of the entrance structure, a new upper passenger level with ticket barriers was built above platforms 15, 16, and 17 to join the existing concourse bridge. This is hung from two primary trusses spanning 17.7m and 19.5m. Spliced for ease of lifting, they were installed during weekend rail possessions. Additional support is provided by a new column on Platform 15 on top of the Victorian structure. To accommodate the extra load of the new upper level, one of the viaduct's quadripartite arches was strengthened with four curved plate girder

ribs on the underside of the arches, each tied back into the masonry with 1m long anchors. To ensure a perfect fit, the engineer carried out a point cloud survey of the existing arch and integrated that into the steelwork model before fabrication.

Use of BIM was vital to such a complex project where the design team was working within a 50mm tolerance for the structure. It was also useful for communicating key details to the client, construction and maintenance teams.

'Without BIM it would've been almost impossible to do because of the high number of constraints,' says Jonathan Svikis. 'We'd have taken two or three times longer to get to the fabrication stage.' He adds that William Hare was able to use the BIM model as the starting point for its steelwork details.

'It hasn't been the biggest project but is definitely the most challenging and intricate,' Svikis says.

'It was a very unusual job to work on – tricky but interesting,' says William Hare project manager Sue Wadsworth. 'Normally there might be some element of complexity amid the normal. But there, it was the other way round.'

The new entrance is estimated to save one-fifth of the 20,000 users of the station up to 50 minutes a week. Incorporating 370t of steel, the project won the steel category of the UK Tekla Awards 2015. ●

Credits

Client: Network Rail, West Yorkshire Combined Authority

Architect: AHR (concept design by Bauman Lyons Architects)

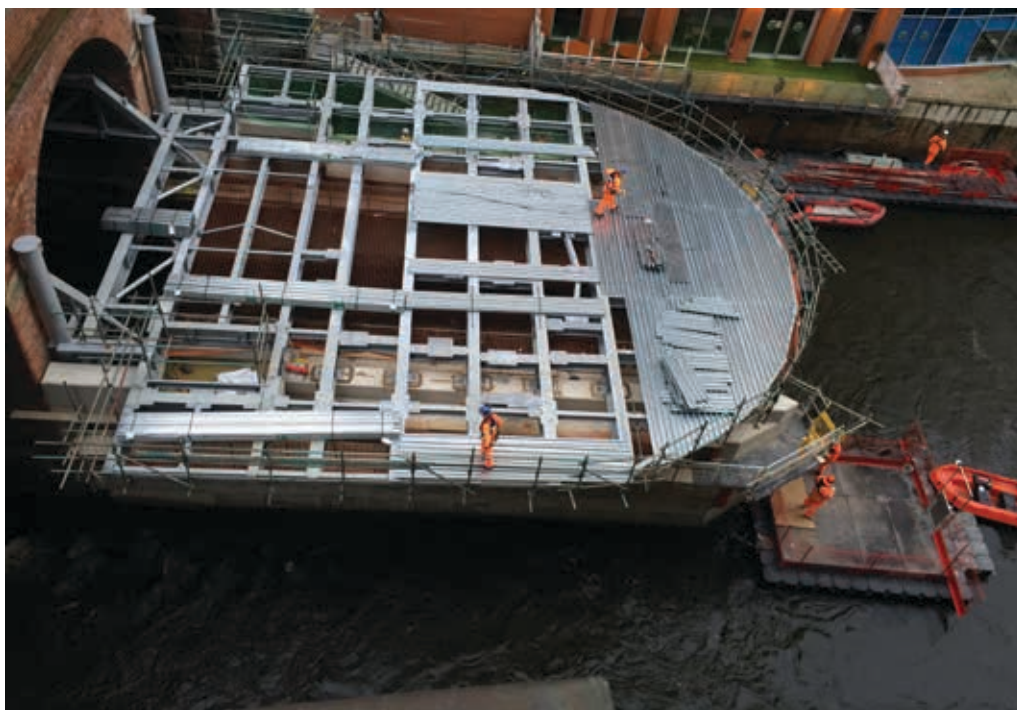
Structural engineer: Mott MacDonald

Steelwork contractor: William Hare

Principal Contractor: Carillion Rail

TRANSFER DECK

A series of galvanized beams, positioned at 1.8m centres, forms the deck. These span 10.2m between the new concrete piers and cantilever a further 3.5m beyond the centre line of each pier to support the columns above. The 650mm deep deck terminates in a curved southernmost end, which cantilevers 2.3m beyond the southernmost primary beam. The engineers explored precast and in-situ concrete options but found prefabricated steel to be the most practical solution, especially for a winter installation. Two upstand trusses measuring 2.1m deep extend 15m from the transfer deck through the viaduct to provide a pedestrian route to the street behind. Access to the east and west riverbanks was provided by two welded, box section footbridges. The transfer deck was constructed in about two weeks.



CARILLION RAIL

How far can you go?

The demand for long single spans to provide column-free space is spreading beyond the financial services and leisure sectors as clients seek greater flexibility in their assets

Words Pamela Buxton **Illustration** Toby Morison



Are changing office styles and increased scrutiny of embodied carbon driving the use of ever longer single spans? Typical steel spans in the latest British Council for Offices Guide to Specification now go up to 15m, reflecting this sector's increasing appetite for longer spans and flexibility of space.

Designers are constantly pushing the envelope to achieve longer and longer spans to create column-free space, according to Neil Pennell, chairman of the BCO's technical committee and head of sustainability & engineering at developer Land Securities.

While this has long been the case for financial services, it is becoming increasingly popular in other types of workplace.

'Now the technology and creative sectors are also valuing long span column-free spaces that promote collaborative working and are easy to reconfigure and brand with their own identity,' he says.

'People like to have the freedom to space plan with as much flexibility as possible to

incorporate different workplace settings, with a particular emphasis on collaborative spaces.'

The British Constructional Steelwork Association (BCSA) has also noticed an increased demand for long spans as flexibility becomes a higher priority.

'What your building is used for now might be very different in 10 years time,' says BCSA marketing and technical development manager Chris Dolling. 'Almost every sector can benefit from the greater potential for adaptation that long-spans provide.'

'Where you may have had smaller grids of 6m or 9m in the past, now we're finding that 15-16m spans are a regular thing, particularly with cellular beams, where you can compress your services into the structural zone.'

This trend is not confined to offices. Leisure buildings have always had to prioritise long spans and there are signs that these are becoming increasingly desirable in the education sector too, as clients seek to build

assets rather than future white elephants. In Liverpool, for example, the city council has commissioned four new schools, all designed with long clear spans to allow scope for alternative uses in the event the buildings ever lose their educational function.

BDP's St John Bosco Arts College, for example, was designed like a giant shed with roof trusses spanning 50m and a removable internal configuration.

'The framing solution to this building is fundamental to the longevity and flexibility,' says the project's structural engineer, Danny Sinclair, who is an associate partner at The Alan Johnston Partnership.

He has also seen an increase in longer spans in student housing projects. 'Some of my clients with long term investment in the development will not allow cellular load-bearing construction because it's a short term snapshot of a building use,' he says.

Flexibility was also a driving factor for engineer Peter Brett Associates (PBA) when

the practice planned the steel structure for Oxford University's BioEscalator innovation centre, now under construction, which has been designed with 14m clear spans using 700mm deep cellular beams.

'We did look at internal columns but opted to go with longer spans for future flexibility and to reduce foundation costs,' says PBA equity director Fergal Kelly, who specialises in higher education projects.

He has noticed that exposed steel structures are increasingly acceptable, and that requires more attention to the aesthetics of the steel structure and connections.

Flexibility of space is also likely to rise up the agenda in tandem with the greater focus on embodied carbon as buildings must become more efficient to run.

'We should either be designing for disassembly or for longevity and flexibility so that you can repurpose a building. For this, long spans give more options,' says BCO's Neil Pennell. 'And while it costs more to have longer spans, this is often a premium worth paying to create better quality space.'

In deciding the best structural solution for larger spans, engineers need to juggle weight, fabrication costs and vibration issues as well as achieving the maximum number of lettable floors at the desired floor-to-ceiling height.

'Longer spans need deeper structural

zones, so the further you go with your span, the more space will be taken up out of the total building height by structure – leaving less for usable floors,' says Michael Heywood of Arup, senior engineer of the new Monument Building in the City of London.

'Thus there is often a balance to be struck between flexibility of internal space planning (fewer columns and longer beam spans) versus more lettable floors with shallower structural zones (more columns and shorter beam spans).' In the Monument Building, 12m cellular beams minimise the structural zone.

So at what point do single flat beam spans stop being feasible? According to BCSA's Dolling, trusses generally become economic for spans of more than 25m when the stiffening required for steel beams makes lighter truss constructions more practical.

'It's a balance of materials and manpower costs. The point where beams and trusses cross over tends to be from 20-25m,' he says, adding that the shorter the span, the less cost-effective the truss because of the increased cost of fabrication.

Fergal Kelly of PBA agrees. 'Conventional wisdom is to look at trusses rather than beams when you're going beyond the 15-18m mark for floors and 20m for roofs.'

'In terms of fabrication cost, that tends to work out cheaper,' he says.

Cost comparisons aren't always straightforward, however. As The Alan Johnston Partnership's Sinclair points out, longer spans can lead to reduced foundation numbers, as at St John Bosco school, the savings offsetting the larger cost of the superstructure.

However, deep floor plates with no internal atriums, where some occupants are further from natural daylight, may also have implications for air-conditioning and lighting and so influence whole-life running costs and overall carbon impact. Installation and transportation must also be factored in.

'A 50m steelwork truss can be transported in multiple sections and spliced together on site. Delivering long span members in alternative materials or continuous rolled sections can become a major operation in itself.'

Longer spans can also be an advantage in controlling vibration issues that can occur in common office grids such as 9m x 9m.

'When spans get longer there's enough mass to keep vibration within limits,' Kelly points out. And while there is a cost premium for longer spans, increasingly clients seem willing to pay it.

'The cost of the frame is a pretty small proportion of the final building cost,' says BCSA's Dolling. 'In effect, you're giving your client long-term flexibility forever, for a fairly small extra cost.' ●

LONG SPAN OPTIONS

PARALLEL BEAM Effective for spans of up to around 14m. Consists of floor grids with two layers of fully continuous beams running in orthogonal directions.

COMPOSITE BEAMS WITH WEB OPENINGS (below)

Suitable for spans of 10-16m with openings to allow services to pass through the beam. Includes cellular beams, formed by splitting two rolled sections longitudinally to form two T sections.



TAPERED GIRDERS (above) Suitable for 10-20m spans. The depth of the girder increases mid-span with scope to hang services under the shallower regions.

STUB GIRDERS Vierendeel truss with a shallow open section forming the bottom chord, on which sit short lengths of deeper I sections. The top chord is formed by the composite slab. Gives spans of more than 20m.

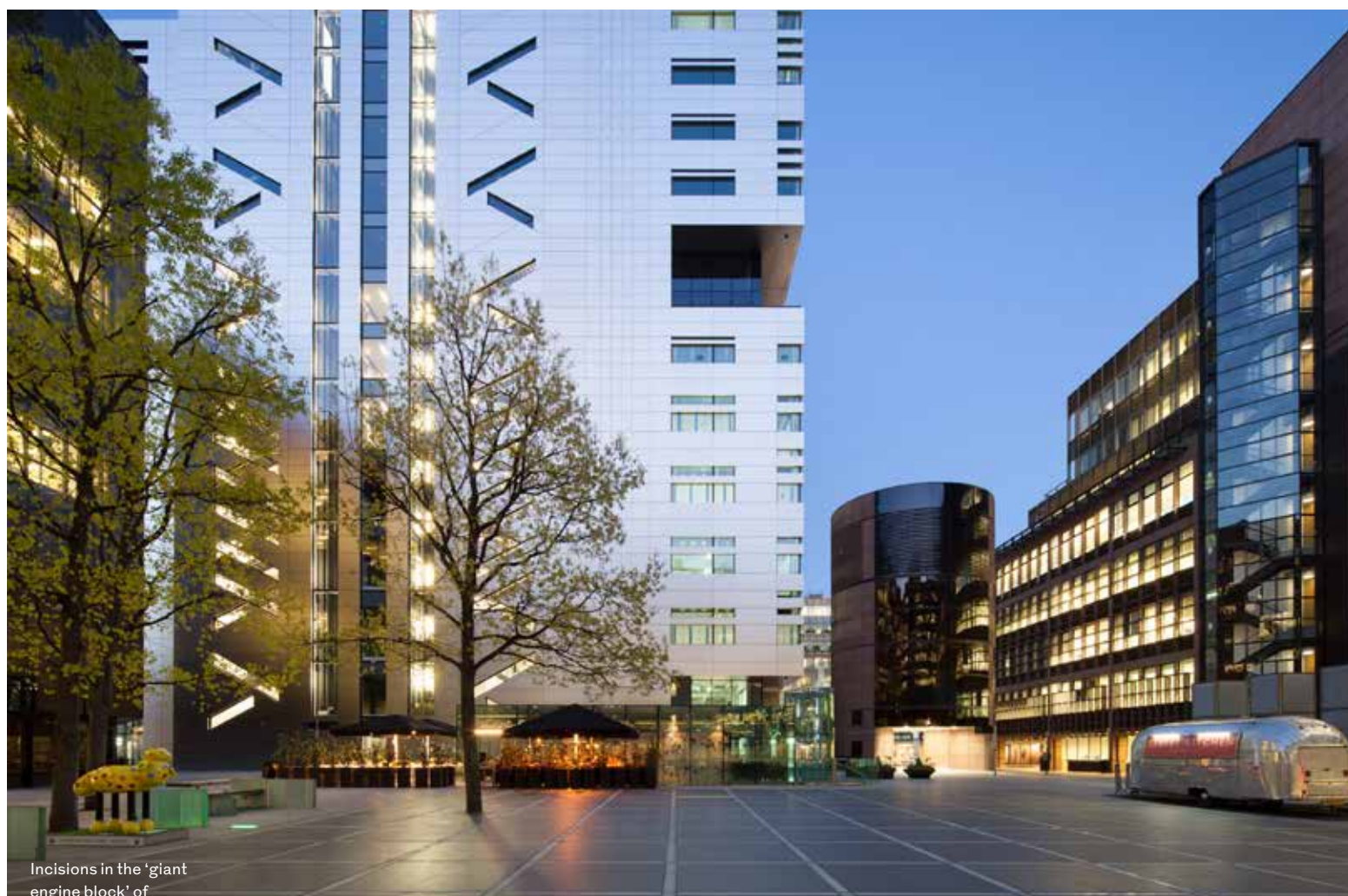
HAUNCHED COMPOSITE BEAMS Haunches at the ends of the beam mean that the rest of the span can be shallower, with services passing underneath. Can span more than 20m.

COMPOSITE TRUSSES These use the concrete slab as the upper chord in the final state and can achieve spans of more than 20m. Services can pass through the gaps between the truss members.

TRUSSES (roofs) AND LATTICE GIRDERS (floors)

Triangular or rectangular assemblies of tension and compression elements formed by bolting or welding standard sections together and with bracing in a W or N form. This system is capable of achieving spans of up to 80m.

SPACE FRAME This option requires the assembly of small structural components in tension and compression. These are connected at preformed nodes and by inclined bracing.



JOHN MADDEN

Making it big in the City

Architect Make's monolithic new 'groundscraper' for UBS at Broadgate utilises a steel structure to accommodate four huge trading floors

Words Pamela Buxton

5 Broadgate is a steel building through and through. Not only does the new City of London headquarters for UBS have a main structural frame of steel but, unusually, so do its basements and most of its cores. Moreover, it's clad with 240 tonnes of stainless steel, one of the most extensive applications of such cladding in the UK.

At 65,000m², the project is Make's largest to date. The architect was appointed in 2010 after British Land decided to redevelop its sites at 4 & 6 Broadgate to provide the larger

premises it needed to bring UBS' 6000 staff together in one office for the first time. UBS preferred this option, which crucially provided four trading floors of 6000m² each for up to 750 traders per floor, to a refurbishment of its old Broadgate premises or relocation to Canary Wharf.

A 120m x 60m 'groundscraper' building was designed to accommodate the extensive trading floors. Make describes its concept for the 13-storey building as resembling a perfectly machined, solid metal object akin to a

giant engine block, which is cut into to allow light in and views out, particularly on the upper office storeys that aren't constrained by the trading floors. After experimenting with other approaches, the architect decided on a single expression with no movement joints, allowing the trading floors on levels 2-5 and the more conventional office space to be read as one. Trading support is on level 6 with client and meeting levels on floors 7 and 8 and offices on floors 9 to 12.

'We set out to achieve an expression of



Right Stainless steel cladding was chosen over aluminium to achieve panels that were as flat as possible.

BURO HAPPOLD ©

quality and timelessness, which UBS could relate to in their brand,' says Make architect Matthew Bugg. 'We wanted to unify the architectural expression as a single form to reflect the single office function.'

The need to accommodate such large trading floors led to the choice of steel as the framing structure. Space planning requirements for 750 traders per 6000m² trading floor drove the design of the 13.5m x 12m structural grid and in particular the position of the four stability cores along each edge.

'It was critical to maximise the inside space so the cores were pushed to the periphery,' says Bugg, adding that the lack of a central core meant that concrete was quickly discounted as a framing option.

'We would have needed to use post-tensioned concrete, which would've been very complicated and not cost-effective,' he says.

The core arrangement meant that the cores on the north and south of the building

provided the restraint while allowing the building structure to 'breathe' horizontally. Because the grid had to be maintained in the two-level basement zone, it was decided to use steel rather than the customary concrete.

The frame uses a primary beam arrangement of pairs of floor beams (see top right) either side of supporting fabricated H section columns, laid out on a 12m x 13.5m structural grid. It creates 5m floor-to-floor dimensions, accommodates a chilled beam ceiling system and yields 3.5m floor-to-ceiling heights – rather more than the 2.8m of typical offices.

A number of transfer structures are incorporated, most significantly on the north-west corner (see bottom right) where the presence of a sewer beneath the footprint of the building prevented any foundations in that area.

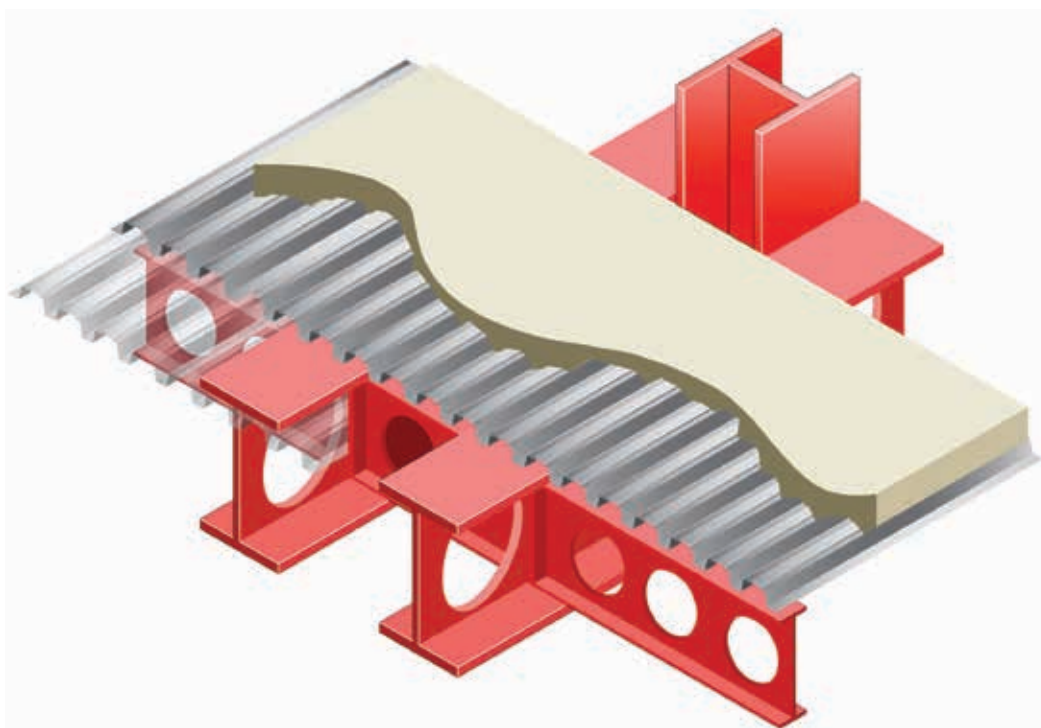
Everything was detailed to take account of progressive collapse issues, which also influenced the use of steel rather than concrete for most of the cores. Buro Happold was

heavily involved with steelwork contractor Severfield for the connection design, defining and prescribing the position and spacing of the bolts and the thicknesses of the end plates.

'We were very prescriptive on the steel to steel connections,' says Buro Happold director Franck Robert, adding that this ensured the connections would be ductile enough and behave the way they wanted them to in the event of one of the unprotected columns being taken out accidentally. 'We provided the client with a resilient building cost-effectively.'

Steel sizes were driven by stringent vibration considerations. In total Severfield fabricated, supplied and erected 13,000 tonnes of structural steelwork, which received 75 and 120 minute intumescent fire protection applied offsite. The steelwork included 270 flights of staircases and 90,000m² of metal floor decking.

Make favoured a metal-clad building from the outset. Large-scale cladding in 6m x 1.5m



DOUBLE PRIMARY BEAMS

5 Broadgate is Make's first steel-framed project with double primary beams. These are spaced 1m apart and span 12m. Secondary beams at 3m centres span 12.5m between these. The pairs of primary beams run either side of the supporting steel columns. They are connected to these via steel stubs that are factory-welded to the side of the columns. The primary beams are bolted to the stubs on site. The dual arrangement enables moment continuity over the column locations and so creates a more structurally efficient system, enabling the engineers to reduce the span of the secondary beam. This cost-neutral solution resulted in a 12% reduction in weight and a 9% reduction in carbon impact for the steel floor structure. Both the primary and secondary beams are typically 650mm deep, with 400mm diameter circular holes and 1500mm wide x 400mm deep slots through the web to allow for flexible integration of services. This system supports a 150mm thick composite floor slab.

panels and the lack of mullions and joints help to break down the mass of the building, according to architect James Goodfellow. Stainless steel was chosen over aluminium because it suited the aspiration for panels to be as flat as possible. These are 380mm deep and after a linear pattern had been pressed into the metal they were bead-blasted to give a less glossy finish. The building is 65% clad, with windows positioned to maximise light but minimise solar gain.

A BREEAM 'Excellent' rating is anticipated for 5 Broadgate with 65% lower carbon emissions than the two buildings that preceded it on this site. The facade and structure are calculated as accounting for 57% of the construction carbon footprint and 28% of the whole life carbon footprint, while building operation accounts for 51% of the latter.

Fit-out by interior architect TP Bennetts is under way and UBS is expected to take occupation towards the end of the year. ●



ROOF TRUSS

A storey-height, 19.5m truss was installed at lower roof level to support the 6m x 9m hung north-west corner of the building. Installation was tricky because the 40 tonne truss had to be positioned in exactly the right place at the corner before the addition of the extra weight of the cladding. This precision was achieved by weighing down the facade with water to mimic the effect of the cladding weight, and draining off water as the cladding was installed.

Credits

Occupier: UBS
Developer: British Land and GIC
Architect: Make
Structural engineer: Buro Happold
Contractor: Mace
Steelwork contractor: Severfield



RICHARD BICKFORD

Brunel's last hurrah



Chris Wise of Expedition Engineering on the Royal Albert Bridge at Saltash

Isambard Kingdom Brunel's bridge at Saltash was one of his last projects, connecting England with the Cornish peninsula over the River Tamar. It's a total one-off – there's never been another quite like it.

I first went down to visit it with architect Alex de Rijke of de Rijke Marsh Morgan, whose mother lived in Saltash. I found it quite inspirational.

It looks beautiful with these two great arches spanning 140m each. The design took a belt and braces approach – there are arches and suspension when you really only need one of them. And they braced it together as well, with more bracing added over the years in a sort of ongoing experiment in how to carry trains.

At the time, people didn't know much

about how trains affected the structure, which perhaps explains the enterprising design. They built it on the bank, propped it up and loaded it up with 1000 tonnes of ballast to simulate the weight of a train and measure how far it sagged.

When the trusses were floated out into the centre of the river before being jacked up into position, Brunel personally presided over the proceedings and stood there signalling with semaphore flags. Twenty thousand people bought tickets to watch.

He was too ill to attend the opening in May 1859 but did cross it in an open wagon before his death in September. His railway still goes across it. For me, the bridge goes way beyond a piece of engineering. It has become part of the landscape. ●



NILEFANION

Above Brunel's design took a belt and braces approach – arches and suspension.

Top The two great arches span 140m each across the River Tamar.

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3: Culture

Using their marbles

Maverick voters have fun with follies



Hugh Pearman

I'm amused, delighted and only slightly disappointed to have come second in a debate. A six-way debate, mind, and one on an utterly subjective matter: so-called Maverick Architecture. This was the conclusion of a season on this topic organised by Owen Hopkins, curator of the architecture programme at the Royal Academy. There's been a book and an exhibition (which I reviewed in our March issue) and various events, culminating in this: 'Britain's Greatest Maverick Building'.

How to choose just one building to somehow represent the whole of architectural maverickness in the UK, however you define that? This ticklish issue was decided in two ways: a first round in which the audience, lubricated by wine, cast their votes by dropping a marble into one of six cups provided, one per building. And then a second round of the three top-marble-scoring buildings/presenters, which was eventually decided by the audience holding up coloured cards, a different colour for each of the three. As you'll have gathered, this was not entirely serious.

The audience, lubricated by wine, cast their votes by dropping a marble into one of six cups provided, one per building

But underlying the fun, we all had good reasons for our choices. Emily Gee, head of designation at Historic England, proposed the remarkable 16-sided 1796 house 'A La Ronde' in Devon as a building which – apart from its refreshing unorthodox layout – was a design for living by women for women. Chris Costelloe, director of the Victorian Society, gave himself the impossible task of championing the demolished 1883 Army and Navy Hotel in Victoria by one FT Pilkington. It was sinister and ill-proportioned but weirdly compelling.

Andrea Klettner, journalist and architecture PR, recounted her astonishment at first seeing the 1923 'House in the Clouds' a water tower/family home, a house on a tall stalk, in the Strangeville of Thorpeness, Suffolk, by Frederick Forbes Glennie. A folly, yes, but a doubly practical one. Phin Harper, deputy director of the Architecture Foundation, proposed one particular house (and occupant) in the 1970s Walter Segal self-build enclave of Walter's Way in Lewisham. Adam Nathaniel Furman, artist and almost-architect at present working for Farrells, gave us his boss's cheap-as-chips conversion masterpiece from 1983, the TV-AM building in Camden, now fully de-PoMo-ised.

Me? I chose the Hilda Besse building (1962-71) at St Antony's College Oxford by Howell, Killick, Partridge & Amis. This is the high point of HKPA's 'vertebrate architecture' period, a glorification of pure structure that marries brutalism with surprising delicacy.

It came down in the final round to Harper, Furman and me. Furman won with TV-AM and as far as we could tell from the shoals of coloured cards (nobody felt like counting), I came second with the Hilda Besse building. Well, at least my candidate still exists in its original form. But I think the audience was right. TV-AM was an astonishing moment in British architecture. Maximum architectural impact for minimum means. It's enough to make me nostalgic for Roland Rat. ●

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Brando and Olivier argued that ego statements here would have been crass

Michèle Woodger at the LSA's Show & Tell: ribaj.com/culture/lsa-show-and-tell-haworth-groarke

There are massive scales and baskets and the cargo-specific trolleys, with different designs for transporting cheeses, tea, sugar or meat

Pamela Buxton goes back to the docklands: ribaj.com/culture/all-hands-on-deck



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If the CAP fits

Will Wiles can't get away from the Place



Will Wiles

I am writing this in the uppermost corner of the library at the University of East London's Docklands Campus. A non-orthogonal window, tucked under the swoop of a Blair-era standing-seam roof, offers me a wonderful view. Centre stage are the towers of Canary Wharf in the blue haze. To the left is the runway of City Airport, its white planes lined up neatly with the odd subdued roar as one takes off or lands. In the middle, the waters of the Royal Docks, which today are as flat and drab as last night's gravy. A giant expanse of weed-infested concrete nothingness lies to the right, between the DLR and the dock's edge.

A classic 'non-place', then, of the kind that gives the psychogeographers a prickly sweat under their fleeces. Hinterland, post-industrial wilderness. But this nowhere is going somewhere. The empty lot will soon be transformed into the Asian Business Port London, an entrepot for investors from the Far East. The mayor promises that in no time at all, it will positively rain Renminbi. 'A new business heart for London,' the promotional site promises. 'Energy and life on an epic scale.' Crikey! Before my eyes, this non-place is going to become a Place.

Its guarantee of Place-ness is the master-planning involvement of Sir Terry Farrell. Place is what Farrells does. Sir Terry's (rather charming) architectural autobiography, published in 2004, was called Place, and he's often called a 'place maker'. The 2014 Farrell Review of architecture and the built environment, commissioned by the government, had the subtitle 'Our Future in Place'. In the introduction, he reveals his role in getting 'Built Environment' added to the name of the late Commission for Architecture and the Built En-

If Cabe was being set up today, rather than in 1999, I'm fairly certain it would be called Cap: the Commission for Architecture and Place making

vironment. 'I passionately believed it had to be about more than just architecture,' he writes.

If Cabe was being set up today, rather than in 1999, I'm fairly certain it would be called Cap: the Commission for Architecture and Place making. It's not just architect-planners like Farrells. Housebuilding giants Berkeley and Ballymore describe themselves as place makers. It's a popular term throughout the property industry, in fact, and among 'third-sector' organisations such as housing associations – Places for People Group, one of the largest, springs to mind. But so does Peabody, now headed by Lord Kerslake, former head of Sheffield council and the civil service. Kerslake recently proposed that chief planning officers be replaced by 'chief place making officers'. Places are on the march.

Where did this obsession with place come from? Happily, that's what I'm trying to find out, squirrelled away here in the university library, as part of my more general work on the 'urban renaissance'. Architectural interest in 'place' as a quality appears in the late 1960s and early 1970s, after 'space' – which the modernists saw as their medium – had fallen into disrepute. 'Space' was windswept concrete tiles, turning circles and grass verges. 'Place' got more sunshine. Whatever 'place making' is, it has been public policy for more than 15 years, appearing in the DETR/Cabe report By Design, published in 2000. And a lot of it comes down to the jolly urban renaissance business of making real life a little more like architects' renderings, with outside seating, children carrying balloons, that sort of thing.

I'm being a bit facetious – in fact architects can congratulate themselves on becoming pretty good at making 'places', which is to say pleasant public spaces. But I want to sound a note of caution. In learning the tricks of place, something of its mystique is slipping away. The early inquiries into what makes a good place all pursued its human, democratic qualities. Now, it is a commercial formula.

When a term like 'place making' turns into a buzzword, it stops carrying as much meaning and becomes a mild sedative. If cracking the place-code is architecture's greatest achievement of the past 20 years – its next job must be to resist the soothing tones of 'place making', to set down the cappuccino, to stop listening to the public piano, and ask who, exactly, is this place for? ●

Will Wiles is a journalist and author. Read him here every other month and at ribaj.com

KNOW YOUR PLACE

One recurring theme in the literature about 'place' and 'place making' is that – Farrell apparently excluded – architects simply can't do it. As Jonathan Meades memorably wrote, asking architects to make 'places' is 'like appointing foxes to advise on chicken security'. Reason enough for architects to be wary of the term. 'Buildings' are your province, 'place' is the realm of the developers, the consultants and the 'regeneration practitioners'.

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RIBA J



Strategy is choosing to be different

Your buy-in is what will make our next five year plan work



Jane Duncan

The RIBA has just published its second strategic five year plan 'Advancing Architecture.' The implications for a change in focus are exciting and aspirational, but success depends on us all buying in to it.

The consultation and shaping of the RIBA Strategy 2016-20 has brought members, staff and colleagues together with purpose and dynamism to outline an inclusive trajectory that makes me quietly optimistic for our future.

The stated vision, 'A global professional membership body driving excellence in architecture', challenges us to use our globally recognised brand to proactively seek and enable the significant international opportunities which exist for our members. It puts at centre stage the support and services we provide to members and prioritises excellent communication, facilitated over the next few years by a new digital interface, as the key to opening and developing iterative dialogue between the institute, members, academia, our clients and government.

Shared knowledge and evidence based practice are imperative to future innovation

In the fast paced world of technological advancement, climate change legacy and mobile populations we need to hold tight to a shared bedrock of values

and intelligent architectural practice, which will facilitate our first core strategic aim of 'A Strong Profession'.

This is an invitation: it calls on us all to contribute to a more mature dialogue and to become a less adversarial, more collaborative and open profession, where students and staff at all stages of their careers are valued, enabled and supported, and diverse practices compete on the strength of their innovative networks rather than the paucity of their fees.

For some this is not the future – it already exists – and the rest of us need to catch up.

Indeed, directed by the messages from our members, equality and inclusivity, social purpose, resourcefulness, professional and ethical core values are the themes which must run through everything we do. In the fast paced world of technological advancement, climate change legacy and mobile populations we need to hold tight to a shared bedrock of values.

The second objective of 'A Strong Voice' reflects a core aim to develop as thought leaders of the sustainable profession which we represent. This means raising and celebrating intellectual debate, collaborating and cooperating with our construction industry colleagues, influencing local and national government and enabling the contributions and cohesiveness of the wider community.

'A Strong Organisation' is our third objective and a vital tool to deliver the success of the others. It ensures that we are a well-run and well-led business and that we provide the right support to our excellent staff team, whose skills, energy and drive are critical to the delivery of this new strategy.

It is disciplined effort that has produced the fundamental decisions and actions that shape and guide what the RIBA needs to become, who it serves, what it does, and why it does it, with a focus on the future. The effective strategic planning now in train articulates not only where the RIBA is going and the actions needed to make progress, but also how we will know if we are successful.

We must continually remind ourselves that this new strategy is an empty document if it does not take performance into account, and bring us all along for the ride. The implementation of the strategy is only the beginning of a long process of activity, measurement, re-evaluation and, most importantly, impact. Together we can and will be strong. ●

@janeduncanPRIBA

TOMORROW BELONGS TO YOU

Help shape the future of architecture by becoming a member of RIBA Council. The deadline for nominations is 25 May. Find out more at architecture.com/councilelections2016



Travelling in time

Shumi Bose, Jack Self and Finn Williams break time into ever expanding periods in their investigation into designs for living at this year's Venice Biennale

Words: Hugh Pearman Portrait: Sarah Lee

We meet at the Isokon Building in Lawn Road, Hampstead, the Wells Coates 1930s experiment in minimal-luxe collective living. The trio responsible for the British Pavilion at the Venice Architecture Biennale, opening at the end of this month, has chosen this place to be photographed. Their show, 'Home Economics', is all about finding new and more flexible ways to live and to afford to live well. But they are fully aware of past efforts in this area. Hence the backdrop of the Isokon which – well maintained following its restoration by Avanti Architects a decade ago – is looking very spruce.

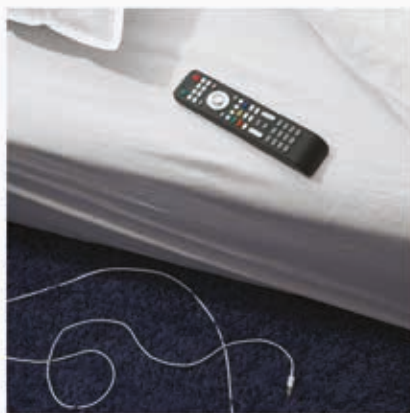
The three in question are Shumi Bose, architecture critic and teacher; Jack Self, fellow architect-trained critic (and joint editor with Bose of the impending new crowdfunded architecture magazine, the Real Review); and Finn Williams, architect-turned planner working at the Greater London Authority. Williams might have had a more orthodox career path than the others but by moving

from designing to enabling (and teaching) has had quite some impact on the planning world. His regeneration patch is north-west London and he has founded a public-sector planning think tank, NOVUS. He and Self have both worked in practice, for OMA and Jean Nouvel respectively. Bose juggles the familiar shifting portfolio of jobs available to the young architectural writer and academic: she is at present teaching 250 students at the AA, the Bartlett and Central St Martin's.

Self is the official full-time director of the project, while the others add their contributions from their differently busy lives. Their office is wherever they happen to be: after the shoot they convene in a nearby café to discuss progress. Their British Pavilion exhibition is being built as we speak. Because the British Council always manages our pavilion at the Biennales, this is also the swansong of Vicky Richardson, its just-departed director of architecture, design and fashion.

The three seem reasonably relaxed in the

Home front: from left to right, Finn Williams, Jack Self and Shumi Bose contemplate Venice from the Isokon building.



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YOU WILL NEVER OWN A HOME



WITHOUT UNPAID DOMESTIC LABOUR
THE FAMILY CEASES TO EXIST

Artworks by photographer Matthieu Lavanchy and designer OK-RM explore the themes of the British Pavilion exhibition.

circumstances. But then all have emerged from, and take part in, the unforgiving environment of the architectural crit where ideas are routinely tested to destruction. They appreciate that it is always hard to get a single big idea across in the aloof, compartmentalised British pavilion. 'It's a condition we decided to work with rather than against, from the beginning,' explains Bose. 'The pavilion itself is a villa,' says Williams. 'It works with the games of scale we're playing, scaling up and scaling down.' Self adds: 'We found a number of design solutions which gave us a lot more control over the plan and volume of space we have to deal with.' The upshot of this is that they use the rooms for a series of domestic tableaux that are treated as architectural models blown up to 1:1 scale. Each is about ways of living determined by a given timespan: hours, days, months, years and decades.

'Hours' is the first, largest room which they have conceived themselves, covering the idea of sharing rooms as a luxury rather than necessity. There'll be just two pieces of furniture, doubtless interestingly imagined: a daybed and some storage. Hot-bedding rather than hot-desking. Then comes 'Days' by the Ayr art collective, which riffs on the Airbnb notion of transitory homes in which one's electronic devices are our real reassurance. 'Months' is by the Anglo-Italian pairing of DOGMA and Black Square, and re-imagines short-term residencies in a way that includes all your domestic needs, not just the space you inhabit: the boarding-house revisited. 'Years' by British-Venezuelan architect

The pavilion itself is a villa, says Williams. It works with the games of scale we're playing, scaling up and scaling down

Julia King, is about minimal-cost homes that are not treated as investment chips: so it's about the design of finance as much as the place itself. Finally 'Decades' by Anglo-Norwegian practice Hesselbrand, proposes an ultra-flexible house for changing generations, technologies and physical mobility. Hesselbrand is also responsible for the exhibition design throughout, with graphics by OK-RM.

Very unusually for the ideas forum of a Biennale, Bose, Self and Williams don't just want fancy concepts, but practicable ones too – each room-concept was vetted by relevant 'industry advisers' including hoteliers, financial institutions, engineers, housebuilders and planners – and top chef Fergus Henderson. With the exception of Henderson and engineer Arup, most of the advisers are of the young and funky variety. You don't get Persimmon Homes, say. You get Naked House Collective Builders. In other words, outfits that are already trying out alternative strategies.

The three want their exhibition to have a legacy in the form of ideas that get tried out for real. Says Bose: 'Being quite young at this game, we felt it would be a good idea to root our ideas with people who are doing gritty things in delivery.' Williams feels that an unfettered idea is irrelevant unless it has some traction with reality.' And Self, ever confident, concludes: 'We'll have influenced the practice of the advisors as much as they'll have influenced the practice of the designers'. ●

The 15th Venice Architecture Biennale, 'Reporting from the Front', under the overall directorship of Alejandro Aravena, runs from 28 May to 27 November

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This summer the V&A will give the back room boys of the built environment their moment of glory

Maria Smith

Architecture has long been hailed as that rare bird that perches equally between art and science, but in its current cowed state – crippled by bizarrely restricted justification methods and severely lacking the breadth of skills that might qualify it as an intelligent generalist – it's arguably not up to the job.

Meanwhile, another discipline has embraced emergent technologies without losing traditional skills, consistently projects visionary futures while keeping pragmatic feet firmly on the ground, is at once fiercely intuitive and technically virtuous, has kept a handle on the value it contributes to projects, and maintains a healthy collaborative attitude internally and outwardly with other fields.

What is this extraordinary field? Why engineering of course. While architecture has been giving it all away, engineering has been quietly getting on with it. Walking into an architecture office is like walking into a coven of disgruntled vampires. Walking into an engineer's office is like walking into a glade of bright cherubs happily skipping between beautiful hand drawings and algorithms, with plans for a run in the daylight hours that magically exist after work is over. But all is not lost, dear vampires, for in truth we are one, and the time is now upon us when we can begin to heal this rift.

Following the death of Prince Albert in 1861, the South Kensington Museum (formally Museum of Manufacturers) was split into the Victoria and Albert Museum and the Science Museum. The looms were taken over the road to the Science Museum, while the things that were made on them stayed behind at what became the V&A.

Ove Arup did not buy into this distinction;

An engineer's office is like a glade of bright cherubs happily skipping between beautiful hand drawings and algorithms, with plans for a run in the daylight hours that magically exist after work is over

one could hardly expect an outspoken philosopher and engineer to accept such a disjunctive paradigm. By placing an exhibition on Ove Arup at the heart of the first Engineering Season to be held at the V&A, the museum too is signalling that it's time for this misguided chasm to be bridged. The show seeks to exhibit engineering as a rich form of design thinking that is innovative, intuitive, inspiring, and indispensable with both mind-blowing technological stories and relatable human stories all worthy of exhibition at an internationally renowned museum.

The engineering season has a new type of programming structure which the V&A is experimenting with. It comprises exhibitions, installations and events around a theme. The exhibition will last from May to November 2016 and aims to bring discussions about engineering back to the museum – which was founded with a mission to support engineering, industrial design and how art and science meet.

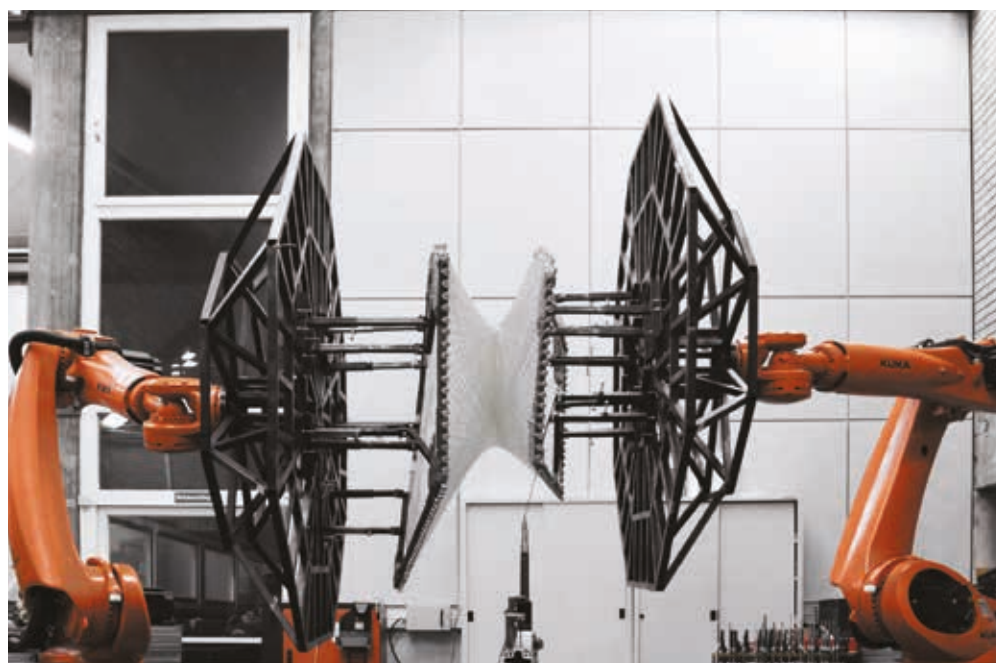
Zofia Trafas White, co-curator of the exhibition, describes its content, objectives, and some of the issues the team encountered when curating a show about engineering – an endeavour with very few precedents.

At its centre is the first large scale exhibition on Ove Arup, whose career spanning the early-mid 20th century provides a historical anchor to explore the emergence of engineering as a creative, disciplined design process. A series of installations will include a carbon



Above Sir Ove Arup (1969).

Below Synchronized robots winding the pavilion's filaments for Achim Menges' pavilion in the V&A's John Madejski Garden – a tribute to engineering.



ICD|TKE UNIVERSITY OF STUTTGART; GODFREY ARGENT NATIONAL PORTRAIT GALLERY



fibre pavilion woven by robots created by experimental architect Achim Menges with Moritz Dörstelmann, structural engineer Jan Knippers and climate engineer Thomas Auer.

The curators' objective for the exhibition is to reveal the invisible; to shed light on objects and processes that aren't normally considered precious or deserving of a celebratory exhibition. Many of the objects to be displayed were made to be poked at and tested, and if they have survived have been casually sitting in drawers, forgotten about rather than formally archived.

Trafas White describes how the show is hoping to redress the balance in terms of the creative credit engineers have historically received by revealing engineering as a unique type of design thinking. Over the course of the century covered by the exhibition, the relationship between architect and engineer goes from creative leader and pragmatic problem solver, to a seamless integration. However it seems that while this collaboration has benefited projects, the deeper embedding of the engineer within the design team has further obscured the profession's contribution and therefore credit. The V&A is seeking to unravel these entangled roles to expose the incredible invisible goings-on.

There are few precedents for large-scale exhibitions on this topic; Trafas White describes the process of curating an exhibition on engineering as breaking new ground.

What's on
There will also be supporting displays around the museum including 'Mind over Matter', an exhibition in the Architecture Gallery showcasing engineering projects from around the world by British engineering firms including AKT II, Atelier One, Buro Happold, Expedition Engineering and Jane Wernick Associates.
Engineering the World: Ove Arup and the Philosophy of Total Design
18 June-6 November
vam.ac.uk/EngineeringSeason

With the first architecture biennales dating only back to the 1980s, curating architecture at all is relatively new and there are similar challenges here where you can't display or even recreate the thing itself, only the story around it. Therefore the artefacts, for example the annotations on a drawing or test model, become evidence from the processes. The curatorial response to this constraint is to embrace the working process by welcoming the audience to a behind-the-scenes atmosphere. Interestingly, this might reinforce the notion of engineering as an invisible machine, toiling away behind the pretty stage sets of life.

Trafas White told me of the dangers of drawing conclusions about the ego of the engineer compared with the ego of the architect. One thing we can say is that Ove Arup wrote himself into history also by writing himself out; by setting up his company so that it could survive and thrive without him. Moreover, his legacy goes beyond his own practice. London's creative engineering practices read like a tree diagram all feeding back to Arup:

Buro Happold, Jane Wernick Associates, Expedition, and via Felix Samuely via Anthony Hunt, Atelier 1, Techniker, AKT, and Whitby Bird, and via Whitby Bird my colleagues at Webb Yates, and so it goes on.

However, while Ove Arup's influence reaches deeply into contemporary engineering, his multidisciplinary philosophy has remained at odds with broader society, until now. In part as a response to the loss of domestic industry, we focussed on our creativity; on our great art, fashion and music – think Tony Blair's adoption of Cool Britannia. But did this healing impulse inadvertently sideline technical capability? As is characteristic of architects and very few others, my (1990s) A-Levels include Maths and Art accompanied by the notion that I was an odd creature, destined to be scooped up by this precious arts-science crossover world.

Do we still live in that world? MRI brain scans have now shown that the same part of our brains light up for sexy equations as for beautiful paintings and pieces of music. Young hip creatives are tech start-ups. The BBC has a big series called How to Build, celebrating 'Britain's iconic and secretive engineering companies.' And the V&A is hosting an engineering season. ●

Maria Smith is a director of architecture and engineering practice Interrobang and curator of Turncoats

Ove Arup's legacy goes beyond his own practice. London's creative engineering practices read like a tree diagram all feeding back to Arup



Above Doodle by Ove Arup.
Top View of Kingsgate Bridge Durham 1963.

Debate kicks off Eye Line 2016

Eric Parry, Jes Fernie and Narinder Sagoo chewed the representational cud to launch Eye Line 2016



Left (left to right) Sagoo, Parry, Fernie and RIBA editor Hugh Pearman in full flow.

Below The crowd gathers at the Anise Gallery for the Eye Line launch.

A large and engaged crowd turned out for the launch of Eye Line 2016, our annual drawing competition, at the Anise Gallery in Bermondsey – part of the premises of our sponsor this year, AVR. The big draw was our three interlocutors, there to discuss the art, craft, science and general all-round loveliness of architectural depiction.

It was a lively discussion, between art curator and writer Jes Fernie and architects Eric Parry and Narinder Sagoo of Foster + Partners, guided by RIBA editor Hugh Pearman. Fernie is curator of the RIBA's 'Creation from Catastrophe' exhibition, including some fine historic drawings from which she highlighted Daniel Burnham's plan for Chicago in the years of rebuilding following the great fire of 1871. Parry talked of the importance to him of the working drawing as opposed to the presentation drawing, while Sagoo – @DrawingMan on Twitter – wondered if we could call an end to individual style in architectural drawing, given the plethora of techniques available and the number of people who tend to work on one image. No, you can't, said the others – though the idea of joint authorship was approved.

Eye Line is one of the highlights of the year for us at RIBA because this is a kind of architecture that exists outside the constraints we're all used to. For a start, there's no fee to enter. Practitioners and students are on equal terms. The drawings can be in any



medium or combination of techniques. They don't have to be buildable. They don't even necessarily have to be presented as buildings or places. When we judge the entries, we do not critic the projects, fascinating though they mostly are. As much as Eye Line is about communicating architecture and imagined worlds, it is also about the joy of drawing for its own sake.

As Royal Gold Medal winner John Tuomey of O'Donnell + Tuomey once observed, it's often the act of drawing that produces the idea, not the other way round.

Our interlocutors kicked around the differences between student-drawing and practitioner-drawing – key to this being that real-life projects bring real-life compromises and time constraints. But a simple detail drawing can be beautiful and both practitioners and students have been Eye Line winners.

So – get out your best drawings and enter Eye Line 2016 at ribaj.com. ●



RULES

All entries must be sent electronically to eyeline@ribaj.com – details below. We want to find the best representations of a building design or concept through visual means. Any medium is allowed – hand-drawn or via keyboard, collage or any combination or overlay of methods. It can be ultra-detailed, close to abstraction or photo-realistic, whatever: it's up to you.

The work must have been produced within the three years up to the closing date in June 2016, and must not previously have been entered for Eye Line.

Entries should be two-dimensional artworks – we will not consider movies or photographs of models – but within that constraint we will judge all methods and media equally.

There is a maximum of three individual pieces per entry, to be sent as medium-resolution JPEGs via a file-sharing service.

Information required

Title of work (if applicable)

A short description of the work

Size of the original work

Date it was done

Organisation where you work or study

Email, postal address and phone number

Deadlines

Monday June 13: Submissions.

Late June: Judging and shortlisting.

August: Winners and commendations announced in special issue of the RIBA J.

September: Celebration party.

Get sending in your work right away, don't wait until the last minute. We want to celebrate the art of architecture.

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A complex arrangement of pumps and equipment create the environment that makes it possible for thousands of visitors to enjoy Portsmouth's remarkable Tudor warship



Visitors to the Mary Rose Museum in Portsmouth Historic Dockyard, just a stone's throw from Nelson's flagship, HMS Victory, can't fail to be impressed by the museum's 'spaceship like' modern exterior. The hull and a small selection of the 19,000 artefacts recovered with the 16th century Tudor Navy warship were displayed shortly after it was raised in 1982. In September 2009 the ship hall was closed to allow the start of construction of a new museum that opened in 2013. Conservation of the Mary Rose hull should be complete this year.

Construction was challenging, with the museum having to be built over a sealed 'hotbox', which housed the hull, without disruption to the vitally important conservation spray process. In April 2013 the polyethylene glycol sprays were turned off and the process of controlled air drying began. In 2016 the 'hotbox' will be removed and for the first time since 1545 the ship will be revealed dry. The museum displays many thousands of the artefacts recovered from within the ship. The Mary Rose Trust has created a world-leading museum in Portsmouth Historic Dockyard for the Mary Rose and the Tudor Navy, and an international centre for maritime archaeology, education and research.

Like all such buildings, the museum



Wilo pumps (**top**) keeping the Mary Rose Museum (**above**) comfortable for visitors and its historic exhibit.

depends heavily on specialist machinery and systems to ensure the environment is maintained within design conservation and visitor comfort parameters. Pumps, which are held in dedicated plant rooms, are critical.

Ramboll UK was engineer on the Mary Rose project, and the prime building contractor Warings (Bouygues UK). Pumps selected from the huge Wilo range were supplied via Pipe Center, Southampton.

The pumps are situated in one of the neatest plant rooms you'll see, a benefit of being able to plan the building from scratch. The plant room incorporates Wilo pumps for the boiler circulation, secondary heating system, secondary hot water system, chilled

water circulation and a secondary chilled water system. The building is designed for dual duty, with two identical pumps operating alongside each other, sharing the load, to ensure guaranteed functionality at all times. Equipment supplied by Wilo for the project also includes two pressurisation units, in line with the design intent to reduce the risk of system failure and subsequent disruption to visitor flow.

'It was an exciting project for Wilo to be involved in,' says area sales manager Sue Claydon. 'Pumps are vital to all projects but these flagship schemes are very rewarding. We were able to provide the pumps specified and deliver them in real time so that the project ran smoothly.'

Sally Tyrrell from the Mary Rose Trust adds: 'We're very proud of the museum and delighted with the huge amount of media coverage we received when it was launched in late May 2013. Visitor levels have been high and we're very much on the map as a key attraction down on the south coast with people coming from all over the world to see the historic ship and the artefacts on show here. Being one of the major attractions in Portsmouth Historic Dockyard – with HMS Victory and HMS Warrior – the Mary Rose Museum has become an important tourist hub for this part of the world. Our visitors see only the exhibits on display, and are totally unaware of the considerable design and financial investment in the building, which creates such a memorable visitor-friendly experience. We are very much aware of the investment and individual contributions of many companies in making this a wonderful museum. Companies like Wilo contribute to the success we are now experiencing, even though our thousands of visitors will not see the plant room and its "heart beat" of the museum's complex systems.'

Wilo pumps are renowned across the world for their reliability and efficiency levels. Here in the UK, Wilo is seeing its market share grow year on year and its involvement in 'stand out' projects like this is increasing as a result. The company has recently been shortlisted in the UK Pump Industry Awards 2016 in the 'manufacturer of the year' category.

www.wilo.co.uk e-mail sales@wilo.co.uk

Cottage industry

Work by Jamie Fobert and Edouard François on village typology is part of the RIBA's next exhibition

Pamela Buxton

What defines a cottage? Is it size, location, architectural style, or a mix of all three? And what form should cottages take in the 21st century amid growing densification and challenges to affordability? These were some of the issues concerning Jamie Fobert Architects and Parisian architect Edouard François in their re-imagining of the cottage typology as part of the new exhibition *At Home in Britain: Designing the House of Tomorrow*, which opens later this month at the RIBA's Architecture Gallery in London.

The exhibition explores the nature of cottages, terraces and flats in the 21st century. It is organised in partnership with the BBC Four series 'Dan Cruickshank: At Home with the British', which takes a historical look at the development of the British home.

'The idea is to spark a debate by using three typologies to consider the future of housing,' says co-curator Anna Holsgrove.

Six invited practices – including Mecanoo, Studio Weave, Mae and VPPR – were given access to the RIBA Collection as a live research tool. Archive material is included alongside exhibits from the contemporary architects.

For his contribution, Fobert explores how villages can be grown sensitively using a contemporary cottage typology as an alternative to typical village expansions, which often involve fields being sold off for suburban-style, pseudo period housing developments.

His research took as its starting point a project on village densification that the practice initially undertook for an unrealized competition project in the village of Waddesdon in Buckinghamshire. He developed this thinking further for the exhibition

Can the cottage typology become a way of adding to villages in a way that isn't the developer method of taking a field, putting on roads and cramming houses on it?

At Home in Britain: Designing the House of Tomorrow, 18 May–29 August 2016, The Architecture Gallery, 66 Portland Place, London.
Dan Cruickshank: At Home with the British, is a three-part series on BBC Four this May

in a self-initiated project for new housing in the village of West Burton in the Yorkshire Dales. Fobert chose this location after seeing the branch-like Fold Houses sketch by Alison Smithson, an unrealized scheme for 11 houses in the village from 1955. This sketch has been a major influence on his project, especially the notion of new growth emerging from existing structure.

'Can the cottage typology become a way of adding to villages in a way that isn't the developer method of taking a field, putting on roads and cramming houses on it? We're looking at how you should build in these very delicate conditions,' said Fobert.

He is exploring the notion of contemporary houses with walled gardens while working in a very gentle way with the grain of property in the village, which derives from Medieval land patterns.

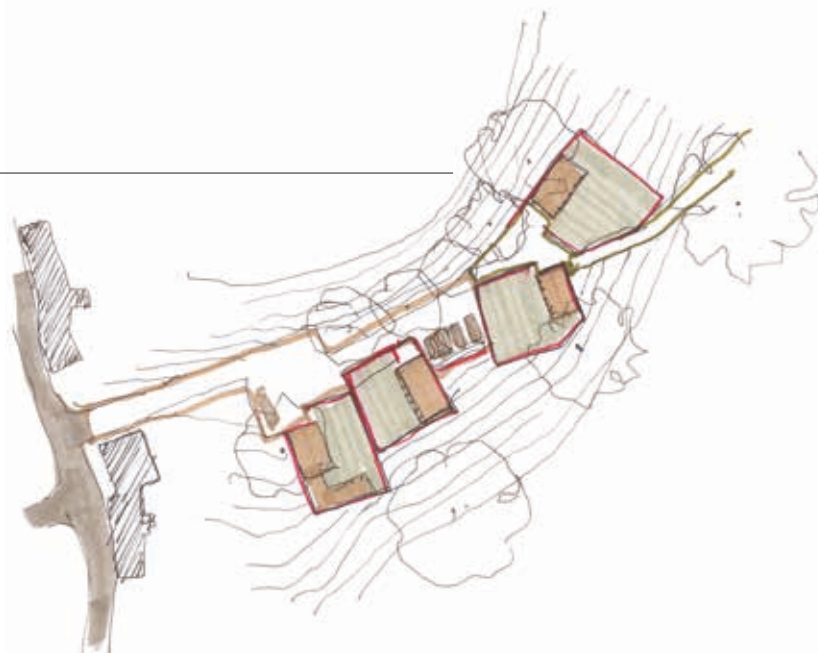
'I want people who live in the new houses to feel they're living in the village,' he said.

François' exhibit on the cottage typology also tackles densification, while attempting to maintain the spirit of what previously existed. His project was informed by flying over the US city of Detroit, and seeing how derelict buildings were being reclaimed by nature.

His cottage concept has four stages. The first is an open field which is then shown with a handful of cottages in it – 'the first primitive way to urbanism'. Gradually this 'mutates' as further development is built and agricultural paths become roads. As the village extends and densifies it begins to resemble a city, but one that retains the original cottages and introduces agriculture within the urbanised settings – on the roofs.

'It returns to what it was. This is the new city,' says François. ●

See a full version and more images at ribaj.com



Above Design for the Daily Mirror Cottage, Sheerwater Estate, Byfleet. Designed in 1910 by Castle & Warren.

Top Lane, cottage, wall and garden by Jamie Fobert Architects as part of the practice's exploration of the cottage typology in the village of West Burton, Yorkshire.

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Zaha Hadid

1950 – 2016

With the Pritzker, Stirling and Royal Gold Medal trophies to her name, Zaha's rare talent should have given us another 20 years of remarkable buildings



Nobody expected to be writing an obituary of Dame Zaha Hadid in 2016, just after she had received the Royal Gold Medal for Architecture, only 22 years since her first significant building, and with what would normally be a realistic expectation of a further 20 years of productive work to come. As with Sir James

Stirling who also died unexpectedly in his mid sixties, there is that sense of future loss: in what direction would these restless, original, awkward-squad minds have taken architecture next?

The shock felt by the architecture community around the world was profound, summed up by Daniel Libeskind: 'Devastated by the loss of a great architect & colleague today. Her spirit will live on in her work and studio. Our hearts go out.' For the RIBA, president Jane Duncan said: 'Dame Zaha Hadid was an inspirational woman, and the kind of architect one can only dream of being.' But equally telling was the reaction from mainstream media worldwide, the saturation coverage. Everybody, it seemed, knew who Zaha was. There are very few architects, no matter how illustrious among their peers, of whom that can be said.

Now the assessment of her work, surely inseparable from her immense and often challenging personality, can begin. For me she was the most gifted of her generation – the golden generation that emerged from beneath the wing of Alvin Boyarsky at the Architectural Association in the early 1970s and challenged the tenets of orthodox modernism. Among them was Rem Koolhaas, who with Sir Peter Cook taught her and with whom, plus Marion Vriesendorp and Elia and Zoe Zhengelis, she worked in the fledgling office of OMA, becoming a partner.

But just as – tiring of the noise and distractions at the AA's Bedford Square base – Zaha had set up her own student atelier in then-neglected Covent Garden, so by 1979

she had left OMA to establish her own practice. There followed the years of not building, despite winning the 1993 competition for the Peak Club in Hong Kong. At the time this was simply astonishing in its gravity-defying jaggedness, and no less perplexing were the paintings she produced to explain it. What was clear was that she was a rare talent. She won – several times, such were the hurdles – the competition for the Cardiff Bay Opera House in the mid 1990s.

By then she had proved she could build with her 1994 fire station for the Vitra campus in south-west Germany. The Cardiff Opera House was a great deal more conventional by her standards and, reassuringly engineered by Arup, perfectly buildable. But the forces of conservatism and misinformation, led by those hostile to her in the Millennium Commission, meant it was finally scrapped: the whole episode affected her deeply. Cultural buildings in Copenhagen and Cincinnati followed at the start of the 21st century, after which she had no need to look back.

The first female recipient of the Pritzker Prize, Royal Gold Medallist and double Stirling Prize winner was born in Baghdad at a time of comparative wealth and tolerance, educated by nuns before studying mathematics in Beirut, and then moving to architecture at the AA. As her style evolved, mutating from its early spikiness to the rounded curves made possible by parametricism, she became a victim of the critical backlash against 'icon' buildings. To be sure you would never expect a functionalist response from Zaha, for whom form-making, and the wrapping-up of ground with building, was almost an end in itself. Her long-term collaboration with her colleague Patrik Schumacher achieved unprecedented results, but she was also criticised for building for dubious regimes.

Zaha made her way with enormous determination, flair and caustic humour, ruling her large office in tyrannical fashion. Her legendary manner of dress was an evolving masterpiece in itself. She had purchased the Design Museum building: what was she going to do with it? Her early death leaves so many questions unanswered. But her impact on architecture is profound. ●

Hugh Pearman

In Memoriam

JUNE HILARY BROOME
ELECTED 1947, LONDON

GORDON YOUNG
ELECTED 1950,
PARADISE, AUSTRALIA

ROBERT JOHN WYATT
ELECTED 1954, DERBY

GERALD DIXON
ELECTED 1960, LONDON

ANGUS MACKAY DICKSON
ELECTED 1962, DERBY

JOAN FOX
ELECTED 1969, FERNDOWN

TIMOTHY JOHN BEACH
ELECTED 1988, LLANDRINDOD
WELLS

CHOYEE SIU
ELECTED 1990, HONG KONG

MARTIN SPRING
ELECTED 2004, LONDON

**PETER ANTHONY CALLEY
SANDERSON**
ELECTED 1952, NORTHAMPTON

PETER ANTHONY CLARKE
ELECTED 1950, KINGSTON UPON
THAMES

ROBIN MARTIN KENNETH DUNN
PLYMOUTH

To inform the RIBA of the death of a member, please email membership.services@riba.org with details of next of kin

Do you have the answer to the housing crisis?

Your design for affordable inner city housing could net you £2500 in SterlingOSB Habitat Award



Habitat 67 is architect Moshe Safdie's landmark 158 apartment building in Montreal. Since it was designed for the City's 1967 Expo it has become one of the key buildings of modern architecture. Safdie started the Habitat project as a thesis, while studying architecture at McGill University and went on to deliver its design as a young architect.

The building was to become a paradigm for how prefabrication could create affordable living space for all, meeting the demands of life in the modern city in the sixties.

The SterlingOSB Habitat Award similarly asks architects to look at the potential for the product to inform the debate on affordable inner-city housing. We are looking for

dramatic proposals for either housing or a single flat of maximum 45m² area. The flat may be on one level or more. It should provide all the amenities for independent living and be constructed in the main from SterlingOSB.

The award winner and commended entries will be published in a special RIBA Journal Supplement published in September 2016. The winner will receive a £2,500 honorarium.

Deadline for entries 5th July



CRITERIA

Flats may be combined to create a prototype community with shared spaces but consideration must be given as to the quality of space their combination might create. Whilst entrants can propose a site of their own choosing, judges will be looking to evaluate the benefits their proposition might bring to that specific site or how the site has informed the design solution. The design should be sustainable, healthy, affordable, energy efficient and commercially viable.

RULES

Judging

Chaired by the RIBA Journal, judges will be looking for innovative applications of SterlingOSB to meet the challenges of high density housing – structurally, acoustically and thermally. Prefabrication, panels or CNC fabrication should be considered. Other materials may be used but structural integrity should be predicated on the use of SterlingOSB.

The winning proposal will be the one that, in the minds of the judges, makes best use of SterlingOSB's properties to create a flat or housing that not only makes an exciting apartment but which does so in a way that promotes social interaction and a better reading of its context.

Entry Requirements

- Please see ribaj.com/buildingssterlingosb-habitat-award

Submissions

Entries must be submitted to sterlingosbhabitat@ribaj.com. The following should be laid out on a maximum of two A3 sheets, supplied electronically as pdfs.

- Plan, including a north point
- Section drawings, explaining space and function
- Scaled elevations, encompassing the look of the building and its environment
- 3D axonometric, outlining construction methodology

Notes

- The jury's decision is final
- No correspondence will be entered into by the organisers or the judges regarding feedback on entries
- Shortlisted entrants will be notified in writing
- Shortlisted entrants will be invited to the prize giving

Winners and commended entries will be announced at a special event in London in September 2016



Left Knauf's SFS infill panels helped speed construction of Ninety4 on the Bristol Channel.

Below The SFS system can be installed from inside the building.

Full speed ahead

For apartment blocks overlooking the exposed Bristol Channel, getting things watertight fast was essential

The final phase of Bristol Ninety4, Crest Nicholson's residential development in Portishead on the Bristol Channel, was built using SFS infill panels from Knauf for speed and quality of construction.

Located alongside Port Marine marina, the 94 one- and two-bedroom apartments are spread across three concrete-framed blocks, raked in ascending order from four to six storeys. The apartments overlook the Bristol



Channel and, because they face north, have a panoramic view of both Severn Bridges.

'It went up with terrific speed,' says Crest Nicholson's site manager, Dominic Hampton. 'The whole project went very well and the Knauf facades team provided excellent technical support in the initial stages, observing the fitting and checking detailing. In particular they did full checks to ensure the whole infill remained secure.'

Knauf SFS infill system has advantages over alternative SIPS and traditional SFS systems because it can meet performance specifications for structural, thermal, fire and acoustic levels and remain competitively priced. It is lightweight, flexible in design, and can accommodate a number of different external finishes without compromising its core performance levels.

The SFS panels are constructed from floor to soffit of the primary structural frame, effectively infilling the external wall, and are insulated on both the internal and external faces. The external face carries 125mm of insulation which is protected by a rainscreen panel finished with Knauf Render Systems.

An advantage of this system is that the SFS can be installed from the inside of the building without the need for external scaffolding, which cuts costs, and it can be installed in all weather conditions – particularly useful for this project which started on its coastal site in January.

Using SFS also cuts down the overall build programme because it rapidly produces a dry weatherproof envelope that enables internal works to start, while its galvanised and zinc coating offers protection to the structure. Offsite prefabrication not only ensures consistent quality and attention to detail but also minimises waste as each section is produced to order and cut to the required length. ●



Top-class performance in Derby

Ceiling and walling products used in Derby's striking new velodrome and sports arena set a high standard of performance for its users to aspire to

Derby Arena is a striking building, built as one of the legacy projects after the 2012 Olympic Games. It also demonstrates the breadth of products and the depth of technical support available from Knauf, one of the UK's leading manufacturers of lightweight building materials and systems.

Designed by award-winning architect FaulknerBrowns, the arena's three-dimensional curves and huge scale set complex challenges for both main contractor Bowmer & Kirkland and drylining contractor Taylor Hart in regard to the installation of the ceilings and internal walls. Solutions were found with Knauf's technical support.

The finished building contains a suite of Knauf ceiling and walling products: Cleaneo Akustik in the gyms, Interior Aquapanel in the showers, Shaftwall for the lifts, and Knauf MP75 Projection Plaster for the blockwork and performance boards such as Soundshield, Fireshield, Impact Panel and Wallboard.

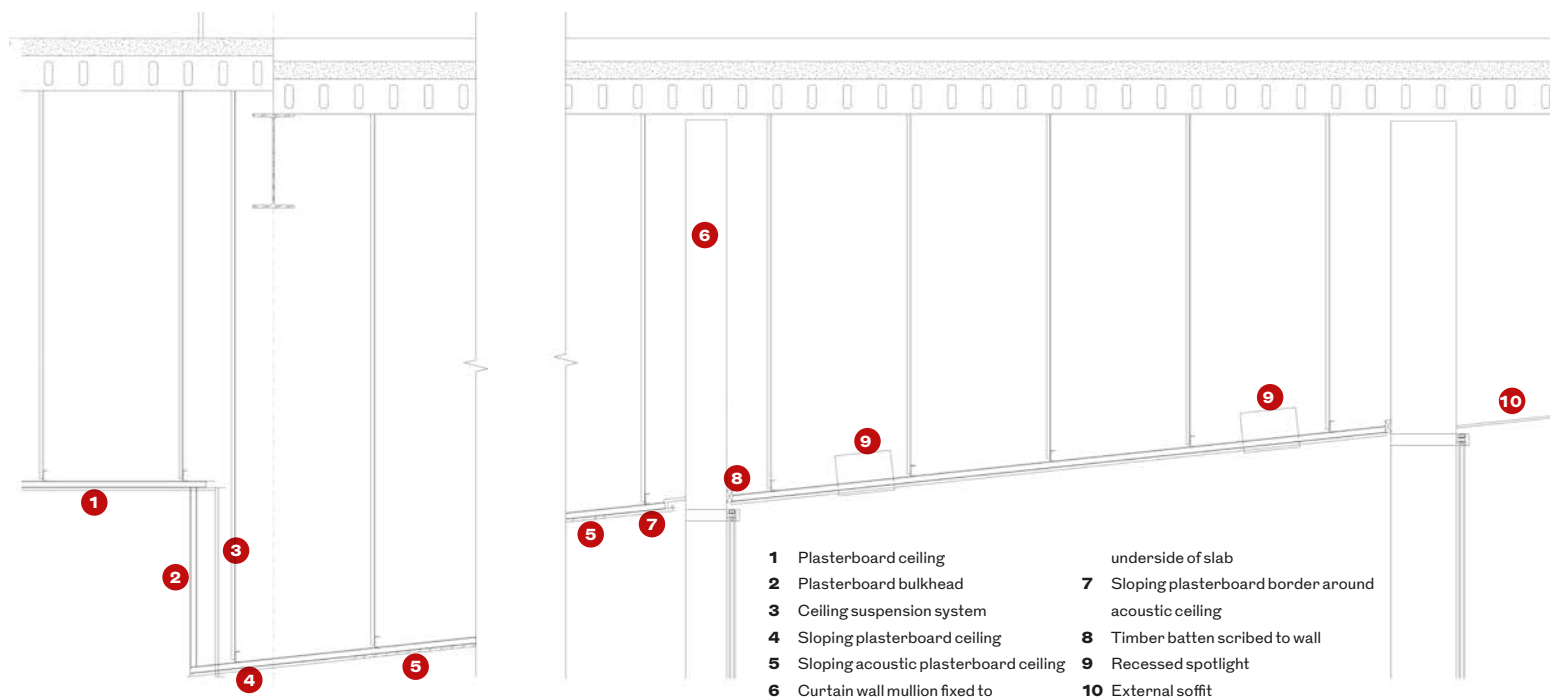
Nigel Tye, the project architect for FaulknerBrowns, says Knauf's specialist products proved ideal for the practical and aesthetic issues raised: 'The Knauf Cleaneo Akustik perforated ceiling products were a perfect visual and technical solution to areas with double curving geometry and requiring enhanced sound absorption, including the

fitness gym and foyer ceilings.'

Designed to absorb sound (reverberant) energy, the perforations in Cleaneo Akustik disrupt the sound's path as it passes through, taking energy out on its return and reducing echoes in a room. Specifiers can effectively tune a space for clarity of speech or music by their choice of pattern, using Knauf insulation or adjusting the void depth.

Used with either Cleaneo Akustik Wall liner or Knauf MF Ceiling, the Cleaneo Akustik range can provide fully warranted acoustic systems that use fast drywall construction techniques to supply unparalleled sound absorption. These ceiling

Section through foyer



systems, used in conjunction with specific boards in the range, can achieve the industry-leading Class B rating, as classified in accordance with BS EN ISO 11654.

Even with a void depth of just 65mm, Cleaneo Akustik Ceiling systems achieve a minimum Class D rating for sound absorption – while increasing the void depth and adding insulation with selected boards will improve the performance as required.

A striking seamless finish is made possible by using Cleaneo Akustik boards with Knauf Uniflott to create a strong, tapeless joint. An FF edge profile ensures the boards are correctly spaced and limits bulging of the paper liner under humidity. This edge detail also reduces the depth of the joint between boards and closes it on three sides, producing a stronger joint, to reduce the risk of cracking.

Knauf was introduced to the project in the design stages at the suggestion of Phil Taylor, director of Taylor Hart, who says input from the technical team was helpful in value engineering the specification to deliver the required performance for the least cost.

Versatile systems

Jean Paul Colback, technical manager at FaulknerBrowns, agrees: 'In addition to ceilings, the versatility of Knauf systems was then shown to satisfy the many varying performance requirements for the internal



Above FaulknerBrowns' striking design provides Derby with a new landmark.

Left A suite of Knauf's ceiling and wall products were used in the arena.

partitions,' he recalls.

'The fire strategy and acoustic design required fire resistance of between 30 and 60 minutes, sound insulation NFR values ranging from 35 to 50dB and heights up to 8m. Also there was a need for impact resistance in certain areas, adding to the technical demands on the systems. Often one partition required several of these.'

FaulknerBrowns says Knauf's excellent technical support was critical in rationalising the performance requirements and making appropriate use of boards such as Impact Panel, Soundshield, Fireshield and Wallboard to reduce the number of combinations, with

subsequent benefits for work on site.

For instance, using one layer of 15mm Soundshield can provide the same acoustic performance that conventionally might be achieved using two 12.5mm boards on either side of a partition. Using Knauf Performer partitions clad with Soundshield each side, and the latest Resilient Bar technology, can achieve up to 65dB (Rw) within an overall width of just 164mm. Impact Panel not only provides a superb, durable finish but is also easily repaired should any damage occur. Impact Panel can also be combined with other Knauf products to give a superior acoustic performance of up to 57dB (Rw).

Derby Arena sets a new standard for local authority sports facilities, providing an aspirational and invigorating place to participate in sport. It incorporates a unique raised 250m indoor cycle track which allows unimpeded access to a multi-use sports infield below, the size of 12 badminton courts. When combined with the 1500 seater grandstand, this area creates a cultural and music events space capable of accommodating 5000 spectators.

Extensive café, foyer, fitness and multi-function rooms flank one side of the cycle track with the spectator grandstand opposite. The dynamic external form, which tightly wraps the internal accommodation, provides a new civic landmark for Derby. ●

Solutions for noisy neighbours

How do you design out acoustic flanking – sound that doesn't travel directly through separating elements – in residential developments? Knauf's Charles Johnston explains

Around half the UK population says noise affects their quality of life and in a recent survey by Neighbours From Hell in Britain, 22% of people cited noise as the most common cause of problems with neighbours. Reducing sound transmission through separating walls requires serious consideration by architects and developers.

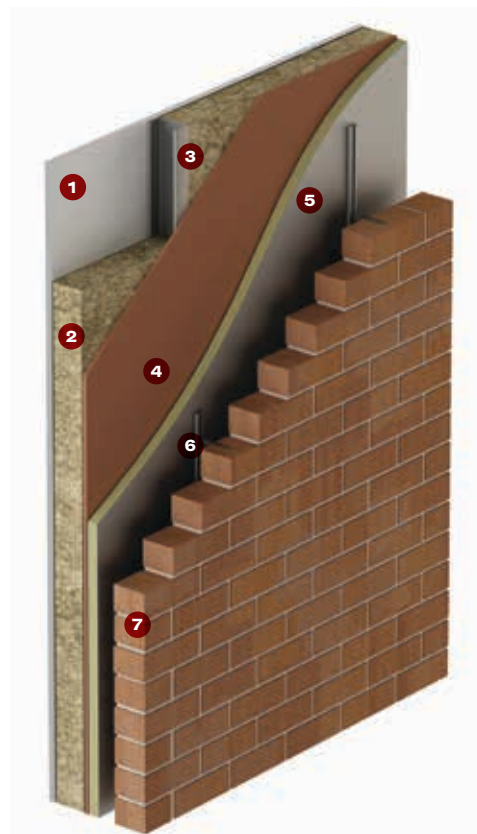
When it comes to specifying the components for separating walls, designers must take several aspects into account to stop the passing of not only direct sound but also flanking sound. Acoustic flanking is a sound which travels in any direction other than directly through the separating elements.

Minimum acoustic performance

For newbuild residential developments, Approved Document E (England & Wales) of the Building Regulations states that walls and floors which have a separating element must achieve a minimum acoustic performance of 45 dB DnT,w + Ctr and 43 dB DnT,w + Ctr in conversion projects. The NHBC regularly conducts site inspections to check for acoustic flanking-related concerns and assist developers in reducing potential problems. It says the most common causes for failure to reach the minimum acoustic performance are poor workmanship, incorrect material supply and incorrect design detailing in the specification process.

In residential developments, acoustic flanking failure is most common at the joint between the interior partitions and the external envelope where several components must be perfectly allied in order for the installation to reach the performance standards required by Part E. This is difficult to resolve as the internal partitioning may be sourced from different manufacturers and installed by different contractors to those providing the external envelope.

But now engineers at Knauf have produced a complete facade solution that incorporates both the exterior infill panel system and interior partitioning. It is the first in the construction industry to be designed and supplied by a single manufacturer in an effort to simplify the specification and



- 1 Knauf Wallboard and Knauf Vapour Panel
- 2 Knauf Earthwool® Building/Omnifit Slab
- 3 Knauf Solid SFS Stud
- 4 Knauf Windliner External Sheathing Board
- 5 Knauf PIR insulation
- 6 Brick tie system
- 7 Brick cladding

installation process.

The ThroughWall Solution by Knauf, one of the world's leading manufacturers of lightweight building materials, is a new system incorporating quality Knauf products in one simple specification. Designed for both steel frame and concrete frame systems, it offers architects a single point of contact to provide the complete external and internal specification.

Having a single specification for both internal and external elements means that should problems arise in the specification

or installation process, remedies can be supplied by Knauf rather than blame being shifted from one manufacturer to another. The ThroughWall Solution allows for accurate design drawings so that contractors know exactly what to expect in construction and it has the added benefit of being supported by a range of insurance-backed Knauf warranties.

The infill panel system can be finished in a number of external facade materials including a range of Knauf renders. Knauf's full system comprises Internal Plasterboard, Mineral Wool Insulation, Solid Steel Frame System (SFS), Windliner and PIR Insulation.

The durable, high quality engineered components of the ThroughWall Solution give not only optimal acoustic performance but also excellent fire, thermal and airtightness performance, as well as providing protection against the elements with Knauf Windliner.

Wide range of applications

Ideal for use in residential developments, the system can also be specified for commercial, healthcare, education and office buildings for both newbuilds and refurbishments.

It is the recent testing and certification that makes the ThroughWall Solution perfect for use in buildings taller than 18m. Knauf PIR Insulation has met the requirements set out in Annex B of BRE and has successfully passed the test as per British Standard 8414-2. The benefit of using PIR insulation above 18m is that, because of its thinner profile, the external envelope has a reduced thickness, providing more internal floor space.

Simplifying the design and specification process for architects has been a major goal for the Knauf research and development team. With the ThroughWall Solution the firm believes it has produced something that will not only facilitate this process but also provide quality assurances to housebuilders.

By combining the design elements for the external and internal features, Knauf aims to take the hassle out of the specification process and significantly reduce the number of problems arising from noise transmission and particularly acoustic flanking. ●

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Following the launch of Phase 2 of the Government's Priority School Building Programme (PSBP), Armstrong's new CPD is designed to help architects better understand the new PSBP designs for schools and meet acoustic and thermal requirements to create a more energy efficient and comfortable learning environment. It earns RIBA members double points and meets RIBA's core curriculum subjects of designing and building it (design, construction, technology and engineering) and climate (sustainable architecture), both at a general awareness knowledge level.



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Title: Wayfinding and Best Sign Practice

The CPD looks at what constitutes 'Best sign practice' and how good signing can help everyone; not just those with disabilities. Specifically:

- how signing for the disabled can be well intentioned but is often poorly thought through
- the choice of typography and colour ways to aid legibility
- why the layout of information on a sign is so important
- helpful and misleading symbols and arrows
- case study Whitley Court - what do signs look like when they are specifically designed to assist a variety of visitors with different disabilities.



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In two RIBA assessed seminars, Comar, one of the UK's leading aluminium systems companies, outlines:

Title 1: Stand & Deliver: a Study of Curtain Walling

The design of curtain walling, its properties and how it is used by specifiers. This seminar aims to offer an understanding of the points of H11 in the NBS specification system, and how best to make use of it.

Title 2: Designing Functions & Reliability into Entrances

The issues that influence the function of main entrance design and technology. This seminar aims to offer an understanding of how user expectation influences door design and links this with hardware selection, entrance configuration and floor finishes.

Exchange

We must treasure Baldwyns

I was thrilled to see Baldwyns featured as your Parting Shot last month. I visited this exciting house shortly after it was built, curious to see what lay beyond the futuristic entrance gate down the curved drive. The owner Fred Kobler magnanimously showed me round and declined my boy scout's offer to mow his extensive lawns as a Bob-a-Job. It was a revelation, a white Ford Thunderbird convertible parked under the cantilevered canopy, the pool with Rodin sculpture viewed through the glass entrance foyer leading to the extraordinary living room with its conversation pit below the hyperbolic paraboloid and views over the Weald to the North Downs. The free plan form with master suite beyond the living room and guest rooms floating over the entrance, loosely packaged in planes of glass and brightly coloured vitreous enamel, was like a space vehicle having touched down carefully in the mature grounds of a ruined manor of which only a tower remains. I think Baldwyns survives though I fear it might be at risk.

Andrew Bain

Conflicting consultancies

Jamie Ashton (RIBA), April, p47) explains: 'On starting A Space Architects, the directors had to support the practice by doing project management on the side...' Interesting mindset here, so I'm curious how, in the same edition that Daniel Susskind explores what we actually do, project management can apparently seem 'beyond'?

Nicholas Waring

Bridge the right gap

The offer of a Garden Bridge across the Thames in London immediately fires the imagination into a beautiful vision. The appearance of the scheme is a sculptured jewel to some and not to others, a decision in the realms of subjectivity.



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The fundamental design decision of the appropriate size lies mostly in the realm of objectivity. The size needs to be adequate to successfully accommodate both a major pedestrian route and a garden with a tranquil ambience. These two essentially incompatible events can only be resolved where plenty of space is available.

The Garden Bridge scheme promoters say it will be the High Line of London. This fails to point out that the two schemes are very different. The impressively successful New York High Line is a walkway with associated planting, five times larger, remote from central Manhattan and converted from a redundant high level industrial railway. At times it is unpleasantly congested.

From my knowledge of the High Line and other urban interventions the Garden Bridge is far too small. The average width is a mere 15.8m, the adjacent Waterloo Bridge is 24m wide. A tranquil and pleasant garden will not be achieved by the current design, it will be more like a Flower Show From Hell.

The Thames frontage of the adjacent Middle Temple Gardens has a width of 8m. A bridge of this width would have scope for a delightful tranquil garden combined with a pedestrian/cycle route, but in this central location would culvert the Thames and be totally unacceptable.

Mike Brown, commissioner of Transport for London, stated in September 2015 that his greatest challenge is the rising population of London, both residential and tourist. A policy of dispersal of any new tourist attraction is therefore essential.

A location away from the central area but adjacent, one that was less disruptive and less difficult to construct, would be ideal. I suggest a large garden bridge linked to the Greenwich Peninsula Ecology Park, crossing the Thames via a swing or lift bridge to Silvertown's Lyle Park. This scheme could include a tourist loop with one crossing on the Emirates cable car and the return on the bridge. This air line would further enhance the tourist viability of the location.

Due to its diminutive size the Garden Bridge is a bad design. It will be congested – to Oxford Street levels on peak summer weekends. Consequently it will eventually be shunned by both tourism and donors, resulting in a big embarrassment for London and a very big cost to the state.

Peter Foulsham

Tweetback

There's a lot of respect for architect Peter Aldington out there, as a new exhibition of his houses opens with a book from RIBA Publishing. We profiled him in our April issue:

Niall Maxwell @Rural_Office

Perhaps we should circulate this to every rural planning department ...

Matt James Hayes @

MattJamesHayes

@Rural_Office Couldn't agree more! #TurnEnd and gardens are such an inspiration!

Our April obituary of Patrick Hodgkinson prompted this reflection on his Brunswick Centre in Bloomsbury ...

Dominic McKenzie @

DominicMcKznzArc

Against the evening light, or on a winter's evening, the tall thin columns standing out against the chiaroscuro background provide one of the few genuinely sublime architectural sights of London. @RIBAJ #brunswickcentre #patrickhodgkinson

and the launch of our annual Eye Line drawing competition (See p100) went down as well as the canapes...

Luke Dewey @

lukedeweyonline

Great evening with @AniseGallery @AVRLondon @RIBAJ opening the #ribajeyeline drawing competition #getdrawing

davidlomax @davelomax

Little gallery all abuzz on Shad Thames for the @RIBAJ Eyeline retrospective. Fun do!



RIBA COLLECTIONS

SS Normandie France, 1935

When the French ocean liner SS Normandie made its maiden voyage in May 1935 it was the fastest and largest passenger ship ever built, rivalled only by RMS Queen Mary. Despite a very short period of service, the ship has acquired almost mythical status thanks to its lavish Art Deco interiors, which were created by several leading French artists and designers including René Lalique. He designed the illuminated pillars in the spectacular first-class dining hall (the largest room afloat), as well as the illuminated columns of the Café Grill – featured in this photograph – which was also the ship's nightclub. Jean

Patou and Émile-Jacques Ruhlmann also contributed to the ship's fittings.

At the outbreak of World War II the Normandie was docked in New York harbour and was subsequently requisitioned by the US Navy. In 1941 it accidentally caught fire and finally capsized. Some of its salvaged interiors are now preserved at the Metropolitan Museum of Art in New York, while original pieces of furniture, such as the chairs from the Café Grill designed by Marc Simon, are still occasionally sold at auction. ●

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St. Pauls Way School London - 3,000m² onto concrete slab in classrooms & corridors
Kelvin Hall Glasgow - 5,500m² of vaults onto DPM fixed to concrete vaults
Colchester Visual Arts - 3,000m² to feature curved soffit
Islington Council Offices & Customer Centre - 976m² onto concrete slab



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