

Products in Practice May/June 2017

Extreme spec

Photovoltaic roof,
Rotterdam station
15

Landscape & Drainage

Palestinian Museum
Nablus
18

Special report

Factory build
eases skills shortage
31

Flooring

Sky Central,
London
36

Interiors

Central European
University, Budapest
48





PROBLEM
SOLVED

Schlüter®-WETROOMS

When specifying a wetroom, you need a system you can trust.



Our **Schlüter®-WETROOM** systems guarantee CE marked waterproofing that is suitable for use in commercial and residential installations with tile and stone coverings.

The complete system offers all the required products for waterproofing and drainage to create showers and wetrooms.

Backed up by expert technical support, whenever, wherever you need it.

Making the decision to choose Schlüter-Systems even easier.

To find out more call 01530 813396 or visit www.schluterspecifier.co.uk





Try as you might . . .

...to be benign, it's never long before politics informs aesthetics. See how the RIBA, like everyone else, scrambled to get a handle on Brexit to try and better inform members. But policy shifts like this are just the thin edge of the political wedge that ends, beguilingly, in places like Bernini's piazza in front of St Peter's, Versailles – or even in the megalomania of Germania.

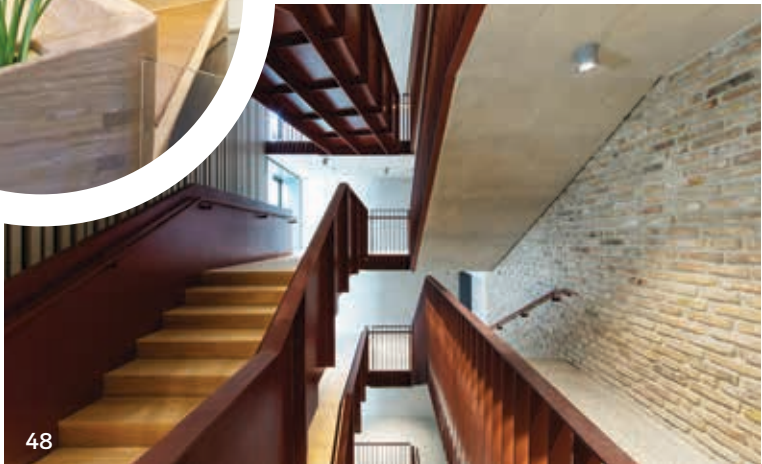
Unlike artists, architects represent the status quo; to effect change in the urban realm they demand patronage, usually from those holding power. John Hejduk knew that when he

posed the rhetorical challenge in an essay once, 'Name me an architect who has lost his head.'

But I read recently that architect Eyal Weizman – whose 'Forensic Architecture' group made detailed studies of methods of spatial control employed in the Occupied Territories – has been asked to reconstruct the site of a murder. Relatives of Turkish victims of a neo-Nazi hate crime in a Kassel internet café made the request to try and shed light on the as yet unsolved case. Here, the idea that architecture can be an active verb rather than just a noun is thrilling.

Art, meanwhile, attempts to fill the void – or the chasm. Turner-prize winning artist Susan Philipsz' Station Clock, marking the site of Birmingham's HS2 terminus, with its 1,000 voices singing the time, is the predictable winner of a contentious commission. Roger Hiorn's shocking proposal to sculpt a train in stone but mimicing human skin, questioning the shaping of our identities via technology, not surprisingly hit the buffers. Life imitating art? In this case, perhaps too much... ●

Jan-Carlos Kucharek, Editor



HUFTON+CROW

TAMÁS BUDJÓVSKÝ

Compendium	06	Specified: Landscape & drainage	24	Interiors	48
Tech IT/Books	08	Analysis: Housing	31	Specified: Interiors	50
Preview: Retail Design Show	12	Flooring	36	Collaborators	52
Extreme Spec: Solar PV array	15	Costed: Flooring	44	Sign Up...Sign Off	54
Landscape & drainage	18	Specified: Flooring	50		


Cover image: The Palestinian Museum, photographed by Iwan Baan

Quantum[®] ~~Theory.~~ *Practical.*



The world's thinnest inverted roof insulation.

ProTherm Quantum[®]'s advanced Vacuum Insulation Panel system has been specifically developed for inverted roofs, balconies and terraces or wherever depth is critical to the overall construction. Quantum[®] can dramatically reduce the depth of a finished roof system, providing the solution to counter low upstands against the increasing thickness of traditional EPS & XPS products specified in order to meet more stringent thermal demands. It delivers an exceptional thermal performance with a 75mm threshold clearance and is the world's first inverted roof insulation to achieve BBA Certification.



Chelsea Creek, London SW6

To meet thermal requirements **ProTherm Quantum** is installed above the **PermaQuik** together with a thermal sheet/water control layer in accordance with ETAG 031 requirements, enabling the achievement of U values up to and beyond $0.10 \text{ W/m}^2\text{K}$.

ProTherm
Quantum[®]

Compendium

UPCOMING

Retail Design Expo 08-09 May, Olympia, London

Design in Mental Health 16-17 May, National Motorcycle Museum, Birmingham

Clerkenwell Design Week 23-25 May, various venues, London

Vision London 6-7 June, Olympia, London



Fabric fabrication

Brought back to refurbish Olivo's, a central London Italian restaurant he designed 25 years ago, architect Perluigi Piu looked to Sardinia's ancient weaving techniques and the island's fascination with the lapwing – a bird seen as a symbol of fertility and prosperity – as inspiration. Produced with stone workers Lithea, the primary feature of

the main dining space is its 'tapestry' wall of stone bas reliefs, the small baubles of stone (pibiònes) emulating the sequences of small loops traditionally executed with the weft thread. The effect is accentuated by high level lighting that throws the pattern into relief. The appropriation of fabric techniques translated into stone make for a curiously compelling result.

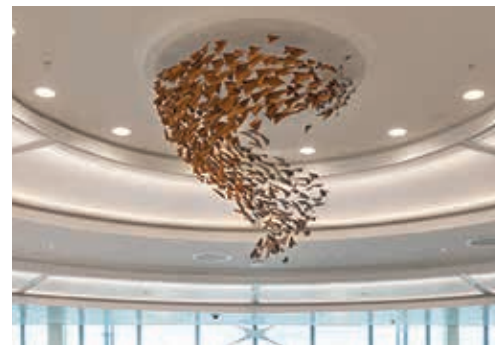


Cross-fertilisation in cross-lamination

Members of the Passivhaus Trust get a 10% discount to a masterclass in cross-laminated timber design being held by Passivhaus project supplier Ecological Building Systems in London on 11 May. Designed for architects, the all-day event at the Building Centre will bring together leading experts on CLT systems and methodologies. The programme will include a review of Peter Rankin's CLT residential property in London, which won the Passivhaus of the Year Award (urban category) in 2016. For the £120 fee, attendees will receive CPD credits. See www.ecologicalbuildingsystems.com/UK for details on discounts.

Plane paper

Long security checks, banning of electronic goods and the queues at immigration mean the golden age of flight is well and truly over. But we can dream – and Dublin Airport's new 51st and Green lounge might help ease the stress. While it's on Irish soil, it is under US jurisdiction, so when you land in America, you have already cleared immigration. This liberation is being celebrated with art collective Acrylicise's installation of more than 600 mirror metal paper planes, swirling in a dizzying vortex above your head.



It's all in the hips

Wilkhan's new stool is bringing a hip aspect, literally, to its new stool design, Stand-Up. The firm believes that the most imaginative ideas come when you are alert and focused, hence this perching stool, which forces you to stay on your toes in every sense. Based on the milking stools of yesteryear, which only worked when both the milker's feet became part of the equation, the design invites users to forget familiar seating postures and to 'swing their hips and be creative instead'. Indeed...





Deco rate

If Gemini tiles were any more achingly cool they'd come with a beard and tattoos. Here, they are declaring themselves bang on trend with the fashion for metro and industrial tiles, as part of Gemini's new Savoy range. We're less keen on the rectangular ones, but the hexagonal ones have a boldness and allure that we're quite taken with – all in a strangely muted colour palette 'inspired by earthy tones and trusty neutral combinations' of Oat, Dew and Noir. The tiles are finished in a sleek gloss surface to reflect the light and make them as robust as they are classic.

Museum piece

Designed by Arup Associates in 1971 in the brutalist style, the building that houses the University of Cambridge's Museum of Zoology, and the Department of Zoology, was recently named in honour of former Cambridge student Sir David Attenborough. To mark the event, the department has been turned from one of the university estate's poorest performing buildings into a model of retrofit, helped by the Pilkington glazed units that replaced expanses of single glazing. The firm not only provided the Optifloat glazing fitted within the new Schueco cladding system, but Suncool for rooflights, Optilam for the atrium roof and Pyrostop where fire protection was required. Nicholas Hare Architects was responsible for all the upgrade works, which involved a major rethink of museum access to make circulation more intuitive for the public.



Veni, vidi, meshy

At a time when stadium design seems to be opting for finer structure and maximum spans, it's exciting to see a project with the uncompromising solidity of Russian football team FC Krasnodar's new stadium, which looks like a modern-day coliseum. The design by German firm gmp architects and Russian Speech Architecture has a monumental facade that's 43m high and covered with light-coloured travertine. German firm Haver brought its own bit of bling to the design, with over 10,000m² of stainless steel architectural mesh on the ceiling soffits.



Honouring the thinnings

It's been a nine-year fundraising campaign to amass the £16m needed to realise the National Memorial Arboretum in Staffordshire, but the new building has finally opened its doors to the public, set within a tranquil 150-acre site studded with 30,000 maturing trees (RIBA J March 2017). Glenn Howells Architects was appointed designer in 2009, with a brief to provide large, high quality facilities for reflection, interpretation and education – as well as catering for the hundreds of thousands of visitors who will pass through its doors annually. With the requirement for large expanses of glass 'to create an appropriate mood for the spaces', Glenn Howells looked to Reynaers aluminium window and door systems in a bronzed anodised finish to augment the centre's restrained solemnity and to complement its timber frame and cladding. The result is a monument to the dead of all the wars that will last for generations.



Artistry never dates



AVR London has just celebrated its 10th birthday. Amid the flowing bubbles on the top floor of City Hall, I snatched a minute to consider how things had changed since I set AVR up at the end of 2006. The skyline for one. Ten years ago, there was no Leadenhall Building, no 20 Fenchurch, and no Shard – which along with NEO Bankside was one of our earliest big commissions.

Within the CGI industry a couple of other big things have changed too. Obviously computers have got faster but it's graphics cards that have been advancing exponentially. Ten years ago a graphics card was what you needed to output to a monitor. It was a pretty mundane piece of essential kit that might make your complex 3D models a bit easier to move around on screen. In 2007, to think you could use this graphics processing unit (GPU) to actually render alongside your CPU was just weird... Now, however, most rendering engines do just that. If you need twice the rendering speed, put in two graphics cards. GPU technology is driving advances in VR and real time rendering.

Then, to think that realistically lit and textured high resolution images could be output in 100th of a second was too weirdly futuristic to comprehend.

All these advances are great, obviously, but there must be some drawbacks. In 2008, when we were working on the marketing images for the Shard, our 3D model was adequate, the rendering was OK, but the Photoshopping was what really made the images come to life.

To create stunning marketing images then took a lot of artistic skill. The computing power to model and texture every bit of geometry was not there, so 3D artists had to do what they do best – improvise and create artwork. Before the prevalence of computer generated images, architectural illustrators were sought-after, often revered characters. Hugh Ferriss, Helmut Jacoby, Carlos Diniz, Steve Oles (apparently Sketchup paid homage to him with their Sketchup Steve character), and on this side of the world the loose style of Don Coe or the photo-realistic work of Carl Laubin or Ben Johnson

– all true masters of their medium.

Often images today are complex and competent but soulless, with too much reliance on 3D geometry, software or cheesy post-production tricks. Making an image brown doesn't make it good (it just makes it look like a student render) and flying birds are still an overused cliché. At least we see a lot less lens flares; the photographic 'imperfection' of choice now is to introduce chromatic aberration (colour distortion caused in photography by cheaper lenses), faking something to 'real' up an image. Photographers abhor it so why do visualisers think it is good?

Despite the overdependence on computers and rendering, true artistry in architectural visuals is again becoming appreciated and revered. The RIBA J EyeLine competition, now in its fifth year, and again partnered with us at AVR London, celebrates just that. We look forward to having our breath taken away by images that last in the mind, if not necessarily on the paper. ●

Joe Robson is director at AVR London

Books

Buy at ribabookshops.com



Neural Architects

Georgina Ferry, Unicorn Publishing, 195pp HB, £30

If you are intrigued by how somebody else's project gets pieced together then this is the book for you. Full of characters, it lays out the anatomy of the Sainsbury Wellcome Centre in London, designed by Ian Ritchie Architects, in an unusual and fascinating level of technical detail. The lead actor is philanthropist David Sainsbury but the cast list stretches to cameos among scientists and the project team. A science writer, Georgina Ferry clearly and precisely captures the consultation, build process and issues. We learn about vibration isolation – and why scientists preferred using air tables to the building structure – and that laboratory rodents hear sounds up to 80Hz (humans just to 20) so that even the LED lighting had to be tested for ultrasound to ensure it didn't interfere with research.



Landscape Architecture and Environmental Sustainability

Joshua Zeunert, Bloomsbury, 320pp PB, £37.99

Zeunert's book, packed with photos, diagrams and short bursts of text on the page, posits itself as a student reference book. At the end of every chapter, it even has study/discussion questions and references for further reading; but it's perhaps too cursory an appraisal. Written by an Australian but drawing significantly on the American landscape tradition, the book in fact approaches the subject from a refreshingly non-Caucasian angle, casting the European landscape (which it covers as well) in a slightly 'foreign' light. It's eminently readable; body text is succinct, captions are extended and informative, pithy quotes are scattered throughout and each subject chapter ends with a longer essay from a noted expert. The result is a well laid out landscape text; informative enough to engage if needed and accessible enough to just dip into.



Green Wedge Urbanism

Fabiano Lemes de Oliveira, Bloomsbury, 285pp, £85

While not being as ungracious as to deny Howard's Garden City diagram and its Green Belt their pivotal place in planning history, this book states that the idea has proved so inviolable that England now has more land demarcated as Green Belt than urbanised. However, the author's own studies have identified the 'Green Wedge', extending out radially from city centres, as a far more understated yet potentially more relevant phenomenon. The book's first section traces its genesis in classic radial planning but sees it inducted into the defined wedge in constructivist city planning. It then appears in post-war plans associating dedicated green spaces with healthy urban life – see Copenhagen's 1947 finger plan. The second section looks at contemporary iterations. Colour illustrations might have helped – apart from the cover there's no hint of green anywhere.



RELIABLE RENDERS

This property was renovated with a water-repellent lime-cement based render reinforced with fibres, and a 2mm layer of a coloured rustic effect finish coat with good breathability, excellent water-repellence and resistance to mould and algae. The end result is a smart weather-proof exterior.



Signed, sealed, delivered: tiles give luxury and reliability

High water resistance and durability were essential for both internal and external floors at the luxurious Pavello House. With Kerakoll's input the project went swimmingly



Left 1.2m by 1.2m porcelain tiles with a riven finish were used externally.

Right The tiling adhesive for the six wet rooms will not fail even in constant contact with water.

As the tiling contractor for this ultra-modern, eco-friendly house, Tip Top Tiling asked Kerakoll to get involved with the architect and client to discuss the tiling specification. Karl Beeden of Kerakoll was often on site to offer technical knowledge and support to the contractor, client and architect due to the demanding nature of the project which needed to run smoothly and on time.

The internal living space featured six bedrooms and ensuites, a huge kitchen and dining space, a gym, spa and an open plan lounge big enough to accommodate four fire engines. The internal floors alone required over 1,300m² of tiles in a large format neutral design.

Adhesives for internal and external floor tiles

For the garden patio and swimming pool surround, 1200mm by 1200mm by 10mm anti-slip porcelain tiles were chosen. Adhesives from the H40 Eco range are suitable for external use on floors exposed to water and are resistant to frost once set. The wettability of the adhesives ensures full coverage of both tile and substrate. They can be applied in thicknesses of up to 15mm, meaning that they can be used to correct surface irregularities, and they have an extended pot life and open time.

The same 1.2m by 1.2m porcelain tile in the standard version was selected for all internal floors. The substrate for tiling was a calcium sulphate screed, it was important to select the correct preparation and product to prevent de-bonding. Once the screed had dried and been moisture tested, it was mechanically abraded and

the underfloor heating commissioned. Kerakoll then advised that two coats of Primer A Eco were applied to neutralise the expansive chemical reaction between the gypsum and cement. The distinctive green colour of Primer A Eco allows the user to check immediately that the surface has been fully and evenly covered.

Waterproofing wet rooms

Before tiling the bathroom/wet room, floors and walls were tanked with Nanodefense Eco and Aquastop 120 tape. This develops water resistance in two hours, meaning that tiling could progress speedily. H40 Eco Tenaflex was used to fix the 60cm by 60cm tiles as it can withstand constant contact with water without failing. It is easy to work with as it has an extended four hour working time and is easily adjustable despite its high-grab properties.

External wall tiling, which was 1.5m by 1.5m in size, also depended on H40 Eco Tenaflex. The ability to withstand constant contact with water is obviously important in the wet British climate and it has been tested under extremely rigorous conditions to ensure that it will not fail even under severe stress.

The project was completed on time and without any problems to the great satisfaction of all involved. ●

Project details

Architect DHA Architects

Tiling contractor Tip Top Tiling, Horsham



Kerakoll UK Ltd
Email: info@kerakoll.co.uk
Tel: 01527 578000
Web: www.kerakoll.co.uk

KERAKOLL
The GreenBuilding Company

Retail Design Expo

Now in its third year, Retail Design Expo, with over 300 exhibitors from all branches of retail design, marketing, visual merchandising and construction, is establishing itself as the go-to event for UK shopfitting, pulling in manufacturers and suppliers from Europe and further afield.

There was a time when retail clients seemed highly suspicious of architects, whom they felt were not versed in the 'dark arts' of retail design and customer psychology. But, with architect Bev Dockray of London-based Coppin Dockray signed up for one of the event's seminars, perhaps that's changing. Since being founded, the firm has openly courted retail clients, and first came to PIP's attention with its unlikely reinvention of a Dartford warehouse shed as a glamorous and indulgent showroom for the high-end Crosswater brand, appended to Threefold Architects' bold timber office fit-out.

Having taken the bathroom showroom all the way from inception to completion in a mere eight months, Coppin Dockray's RDE seminar

is appropriately titled 'Creating retail projects quickly and flexibly' – hopefully allaying two of the main concerns that might be voiced by a potential retail client. Dockray thinks this is probably why most retail firms have their own in-house architects working on their fit-outs; a situation she believes is gradually changing.

'If you'd asked me 10 years ago I'd have conceded that architects were probably not clued up on retail and branding strategies but I think that's changing,' she says. 'There's a lot more information regarding retail strategies and how to design them in so architects can be much more gened up than before – and retail psychology is not rocket science.' Dockray feels architects are well placed to simply think about retail design problems differently and to bring something new to the table. This, she says, has been exemplified in the Regent Street Windows project, the annual summer initiative which sees teams of young architects paired up with high end and high street names to reinvent their window displays. It 'always produces something

surprising and spectacular', she says.

Of course, architects might have their own hang-ups about a sector that, being trend-based, will have the concept of refurbishment and change built into its lifecycle, with the sustainability and waste issues this throws up. Here too, Dockray thinks architects can bring intelligence: 'We're good at building in flexibility to generate designs that can accommodate reuse.'

She cites the firm's work with Crosswater, where the showroom's structural frame system permits facing panels to be changed, modified and rehung; or its trade show installations that allow reuse of elements in ever-changing configurations, as examples of how architects can reduce the potential profligacy in the sector.

But there can be joy in temporariness as well as onus. 'By its nature the retail world is fast-moving. For architects it can be an exciting test-bed for much bigger ideas and agendas,' Dockray concludes. ●

Retail Design Expo runs from 8-9 May 2017 at Olympia, London
retaildesignexpo.com

PIP takes a look at a selection of products exhibiting at this year's show



Hi-Macs Structura

LG Hausys

Exhibited on LG Hausys' stand will be the firm's new HI-MACS Structura 3D textured surface, equally suitable for retail or domestic environments. The solid surface material is available in 10 standard designs and 10 colours but can also be custom formed to suit the needs of any project. While it's ideal for interiors, it's also strong enough to be used externally, where its large-scale patterns can create a dramatic effect, even viewed from a distance.

Stand G31



Surface Finish Range

Surface Styling

Surface Styling boasts over 12,000 products in its extensive laminates, solid surface, decorative panel, flooring and worktop ranges, offering a one stop shop for specifiers. It will be showcasing the latest additions to its range at the Expo, including its Fenix NTM nanotechnology surfacing, Malmo luxury vinyl flooring and Swiss Krono One World decorative panel collection (pictured). If your interest is piqued you can avail yourself of the 24-48 hour sampling service.

Stand P20

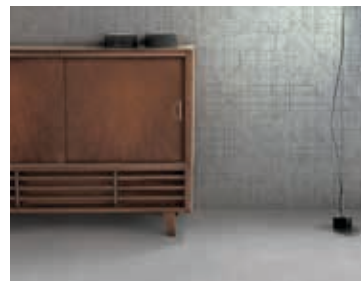


Gyproc Habito plasterboard

British Gypsum

With the robustness suited to retail environments, British Gypsum is exhibiting its Gyproc Habito range, supporting 15kg with a single no 10 woodscrew – reducing the need for plywood pattressing behind it, which, the firm argues, speeds up installation. BG is so convinced of the product, it will be reconfiguring its Expo Habito installation every few hours, transforming it from one kind of retail outlet to another in minimal time: a kind of 'Changing Rooms' for shops.

Stand T20



Layers

Ceramiche Caesar

Technology, interconnected networks and close-ups of circuit boards seem to be the inspiration for Ceramiche Caesar's new range of porcelain stoneware tiles. The range is available in matt finish in eight subtle background tones with highlight 'Wire' colour overlays. But while the aesthetic influence might be the microscopic, the tiles are far from tiny, available in four square and rectangular modules from 300x600mm to 1.2mx1.2m.

Stand H40



ANY SPACE, TRANSFORMED.

**Classic longevity,
classic performance.**

With one of the most comprehensive product ranges on the market, Reynaers really does have a solution for almost any building, from contemporary to traditional.

Thoroughly tested for thermal performance, longevity, and air, wind and water performance, Reynaers' aluminium windows come with a 10-year system guarantee. There's a tried and tested solution for whatever project you have in mind, from public sector to Passivhaus.

Discover more at reynaers.co.uk/anyspace-windows



**“MY PASSION IS
MAKING SURE EVERY
PRODUCT MEETS OUR
HIGH STANDARDS”**

Keith Gay, Production Manager, 32 years with Jacksons

OUR PASSION IS YOUR SECURITY

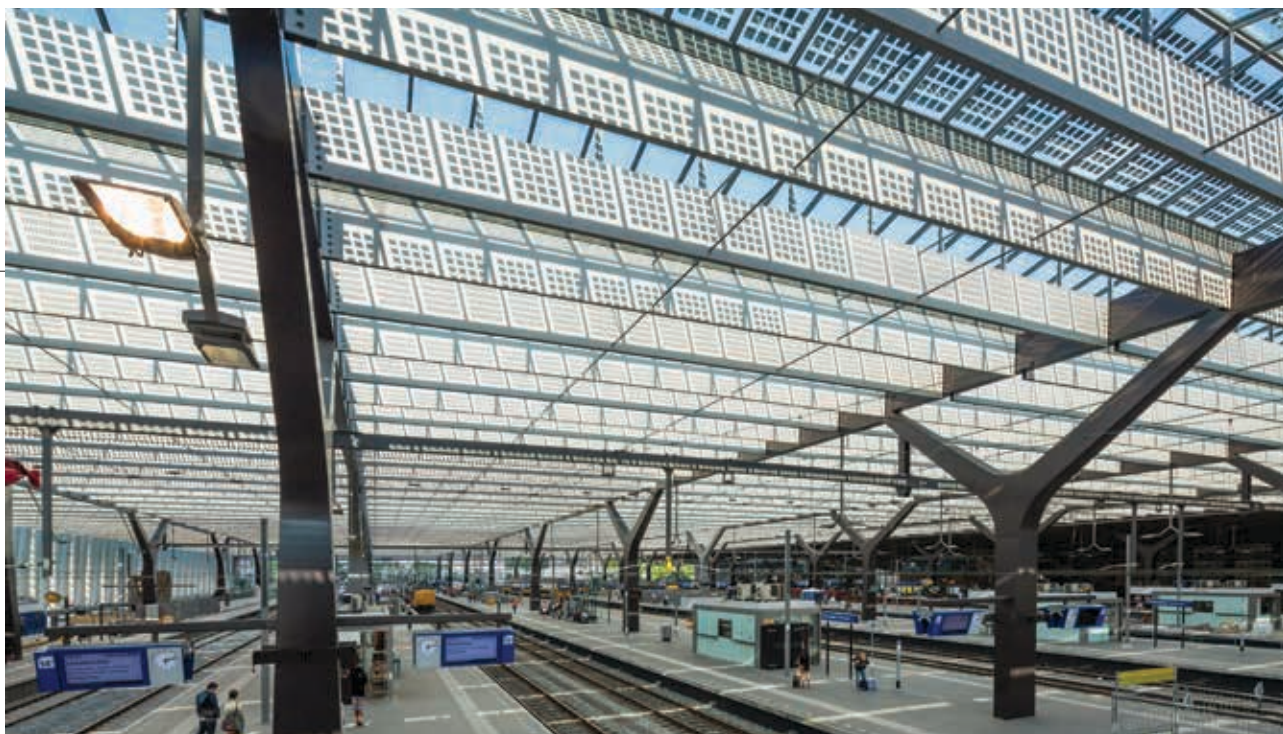
With the design, manufacturing and logistics expertise to deliver some of the largest and most complex perimeter security projects in the UK and Europe, our team is ready to support your project, large or small.

www.jacksons-fencing.co.uk

Jacksons Fencing

Right The enormous new PV glazed roof of the north hall, looking east.

Below The starkly different nature of the north and south halls is evident from the air.



Europe's biggest PV rooftop

What: Huge solar PV array

Where: Rotterdam Centraal station

In the enormous commercial development of Rotterdam's central station and the surrounding area, it was quickly realised that Sybold van Ravesteyn's 1957 station hall, pedestrian tunnel and open platforms, each with their own canopy, were plainly not capable of meeting current standards. They were also not of the stature worthy of a major European transport hub.

Hence, after Benthem Crouwel won the international competition for the station's redesign, came its proposal not only for an enormous new station hall to the south, but for a northern platform zone that did away with the makeshift external canopies. In 2015 these were replaced with a huge, 250m wide state-of-the-art glazed roof, creating an impressive sense of scale for the station.

Architect Jan Benthem says the idea of turning Rotterdam Centraal into the largest PV rooftop installation in Europe was originally an afterthought.

'The design of the glass roof was already complete when the project manager of the railway company suggested actively doing something with the expanse of the roof itself,' he recalls, 'which is when we happily suggested using it as a vast solar collector.'

The upshot of this light bulb moment was

the installation of more than 130,000 solar cells across 10,000m² of the 28,000m² roof. The cells have all been strategically placed to ensure that neighbouring tall buildings do not have a detrimental effect on the efficiency of the solar array.

As it stands, the cells can reduce the station's total carbon emissions by 8%, and generate 320MW of electricity a year.

Benthem says the application of solar cells to the glass helped mitigate the transition from the darker station hall into the relative brightness of the platform area. 'We needed to reduce the transparency anyway to reduce glare, so the coating of the roof was as much about daylight control as it was generating power,' adds Benthem.

With the efficacy of the PV array dependent upon the cleanliness of the glass, the roof facade maintenance strategy was fundamental to the whole proposal: the apex of each roof pitch has an integral rail, to accommodate manual cleaning from a bogey running along between pitches.

At platform level the roof is supported by powerful steel structural trees, and the dappled effect created by the PV cells overhead only adds to the sense of walking beneath a verdant canopy.

The array might have been conceived by accident but it is bound into the bigger myth of the roof's design, says Benthem: 'Its shadows are beautiful to behold.' ●



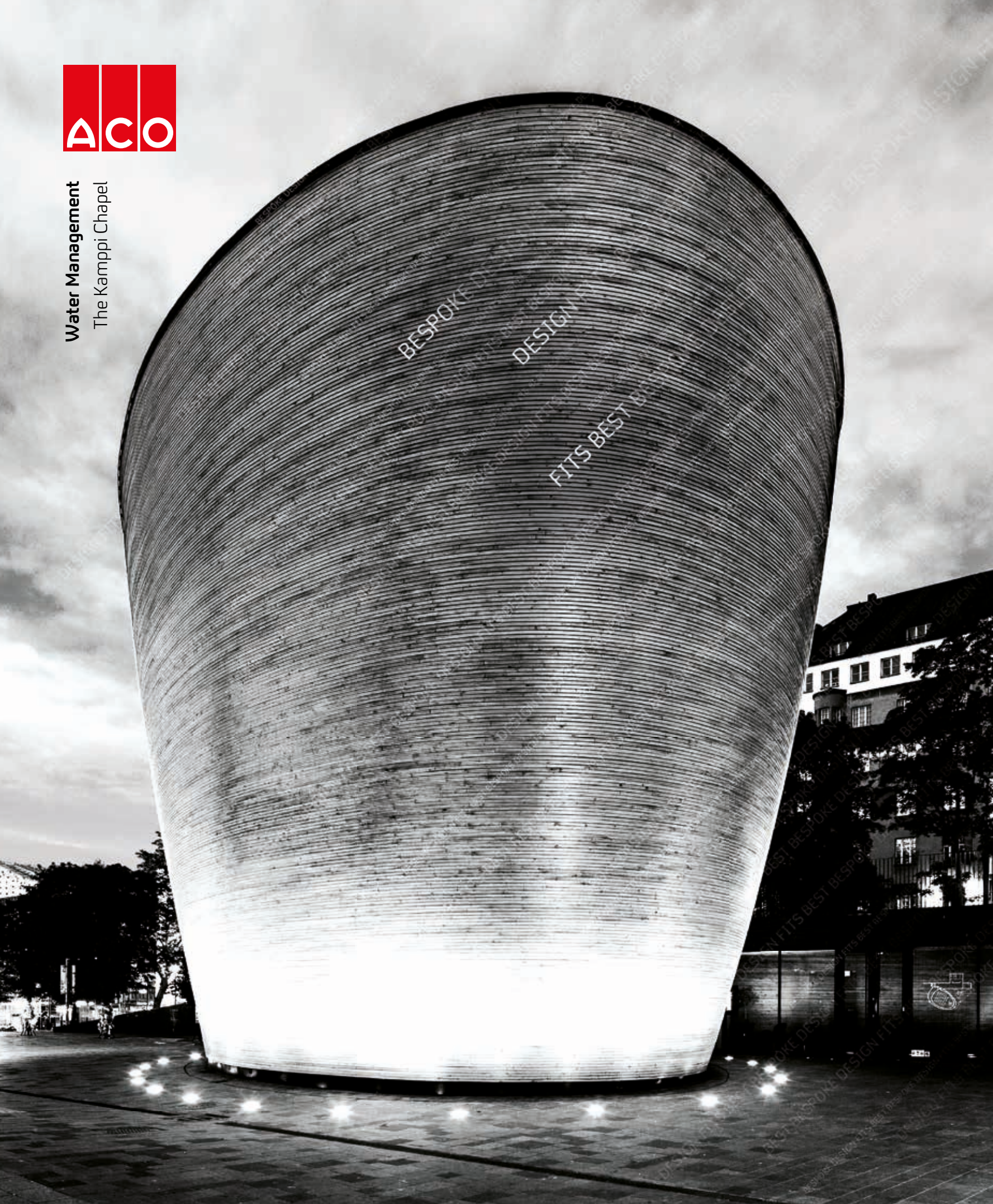
ROOF PITCH

Rotterdam Centraal's remodelling is so radical one needs to remember it is a refurbishment rather than a new build. The original costings only budgeted for upgrading the platforms and canopies in the railway yard behind the new station hall. But Benthem Crouwel had a much bigger vision and looked to indigenous techniques to achieve it.

'The Dutch are expert greenhouse builders,' says Jan Benthem, 'and they have got costs down to about €200/m². We thought if we adapted these techniques, it would be feasible to build a single massive roof for the same amount as the basic upgrade.' Key to this was merging stakeholder interests, split between station hall and railway yard, into a single budget. This allowed value engineering of the station's south hall to transfer directly into the north railway yard budget.



Water Management
The Kamppi Chapel



Bespoke design fits best.

There always has been an interaction between water and architecture.

Nestled in the corner of Narinkka Square, Helsinki, the curved wood façade creates an iconic and contemplative space in the heart of the city. As with all architectural gems, the project required detailed consultancy and a bespoke solution for the water management of the site.

**Great architecture without compromises.
We know the difference it makes.**

WWW.ACO.CO.UK

Looking towards the west elevation of the Palestinian Museum, the building manifests itself as an element in a much wider landscape:



Palestinian museum, Nablus, West Bank

Heneghan Peng has sculpted this museum site into a celebration of the Palestinian land, to bring a rare openness to the West Bank

Words: Tom Ravenscroft

Photographs: Iwan Baan

Palestine has had few opportunities to represent itself through architecture; so finding an appropriate form to tell the weighty story of its history in built form was always going to be daunting. Dublin-based Heneghan Peng's 2011 competition-winning design for the Palestinian Museum responded to this difficult brief with a building that derives its form directly from the landscape.

Established by the Welfare Association, a non-profit organisation that develops humanitarian projects in the West Bank, the museum is a cultural institute that aims to 'transcend borders'. Given travel restrictions and the building's location in Birzeit, 25 miles north of Jerusalem in the West Bank's Area C, visitor numbers were always going to be limited. The institution's role as a centre of research, and its lofty aim to be a symbol to connect Palestinians scattered all over the world, gave the museum's visual appearance added importance.

Adept at working in sensitive locations, including the UNESCO sites at Giants' Causeway and Greenwich, Heneghan Peng turned to the site and the wider landscape of Palestine for inspiration. While for many projects landscaping is an afterthought, designed to fit around a building that has already been determined, on this project it was the landscape that was considered first. The result is a building and its surroundings that truly act as a unified whole.

'The common theme in our work is that we address the problem of the brief by examining

Right In a country whose public buildings are habitually defensive, the Palestinian Museum has a staggering openness.

Below The museum and its landscape have an aesthetic generated by the city edge site, part of a bigger urban and state narrative.

the site,' explains project architect Conor Sreenan.

Like much of the occupied Palestinian territories, the museum's plot was on an inhospitable hillside. Shaping this rough terrain into usable land through terracing, as farmers have done for generations, was the starting point for the design team. 'The design is inspired by the way the land has been traditionally manipulated', says Jordanian landscape architect Lara Zureikat, who worked closely with Heneghan Peng on the project. 'The idea was to represent the landscape of both the natural and the cultural.'

The site's landscape was ordered by straightening its contours to create a series of angular terraces across the site: 'We set up cardinal points along the edges of the property', says Sreenan. 'And what we did was a simple game of joining the dots across the museum's land.'

Visitors to the museum arrive at the foot of the hill and first see the 3,500m² building, a double-wedge that occupies the ridgeline of the hillside, as a continuation of the terrace aesthetic. Although access is from the top of the site – passing through the centre of the building before descending through the gardens on a series of ramps – it is the progression from natural to man-made that ties the project together. 'The strategy works from low to high,' says Sreenan. 'A mixture of cutting and filling was used to complete the narrative with the building emerging from the landscape.'

Don't break the flow

The feeling that the landscape was being brought into the site was essential for this narrative, so to maintain the flow at the site's boundaries, instead of a high wall there is only a fence. Projecting a welcoming air, in obvious contrast to most institutional buildings in occupied Palestine, was also important to the wider message the institution is trying to convey.

Security specialists employed later in the design process recommended 2.4m high walls, but the museum stuck with the architect's vision. 'It was important that the building was accessible to all and communicated a message of openness,' emphasises Sreenan.

This desire continues within the site where the ethos determines the height of each terrace at 720mm, the maximum height permissible without a balustrade. Construction of these



terraces mirrors traditional techniques, with much of the stone extracted from the site used in the retaining walls. While on the lower terraces these are purely from stone, the upper terraces are concrete faced with local stone.

'What we have built is traditional, with some modifications,' says Feras Tubeileh, principle of Tubeileh Engineering & Contracting Company (TECC), the Palestinian sub-contractor with responsibility for the earthworks packages, substructures, super structures, envelope and fit-out works. 'If you go into the mountains you can see these walls. They translate into English as gravity walls, as their own weight will prevent any erosion.'

The terrace planting, led by Zureikat, reinforces the narrative of progressing from the natural landscape to the man-made. 'The higher up the terraces you go the more dense and refined the planting becomes,' she says. The lowest level acts as a meadow, followed by terraces planted with crops local to the region such as pomegranate, wheat, olive, chickpea, almond, apricot and walnut. On the upper terraces is sensitive ornamental planting including lavender, rosemary, rockrose, saltbush and lantana.

This planting strategy has an important impact on the irrigation, as those terraces further from the building require less water. Once the

Client Welfare Association/ Taawon
Consultant Heneghan Peng Architects
Landscape architect Lara Zureikat
Civil/ structural/ building services/ fire Arup
QS Davis Langdon/AECOM
Concept facade T/E/S/S
Concept lighting Bartenbach
Project manager Projacs International
Civil/ structural/ building services/ fire QS Arabtech Jardaneh (local partner)
Project manager Projacs International
Contractors Consolidated Contractors Company, Tubeileh, Al Sabe Landscape Contractors

Suppliers
Dolomitic Limestone Nassar Stone
Schueco curtain walling & brise soleil ALICO
Carpet Waterford Carpets
Lighting ERCO
Ironmongery D-Line
Bespoke furniture Manjorco
Signage/wayfinding Creative Ad Design

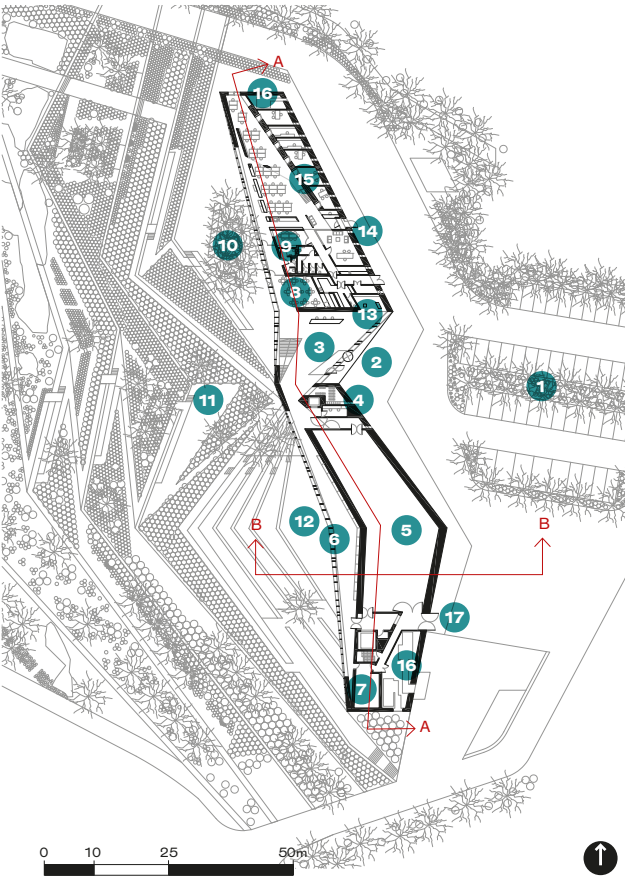


Site plan

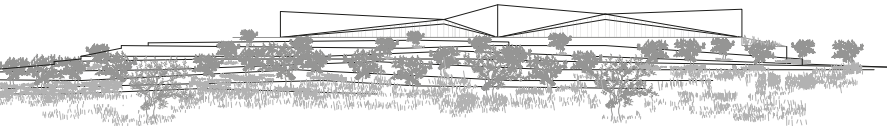


- 1 Car park
- 2 Public entrance
- 3 Reception/information
- 4 Cloakroom
- 5 Main Gallery
- 6 The Glass Gallery
- 7 Screening room
- 8 Café
- 9 Public WC
- 10 Café terrace
- 11 Garden pathways
- 12 Amphitheatre (lower ground)
- 13 Shop
- 14 Staff entrance
- 15 Administration
- 16 Mechanical plant
- 17 Large artifacts delivery
- 18 Education centre lobby
- 19 Education workshop
- 20 Classroom
- 21 AV control room
- 22 Main delivery
- 23 Collections store
- 24 Photographic archive
- 25 Back of house office/ administration

Ground floor



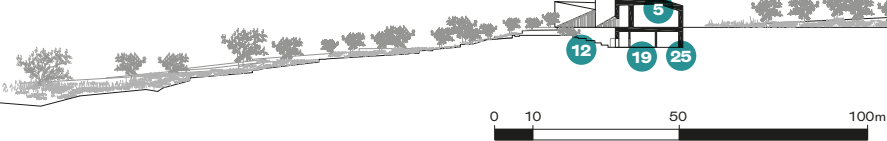
West elevation



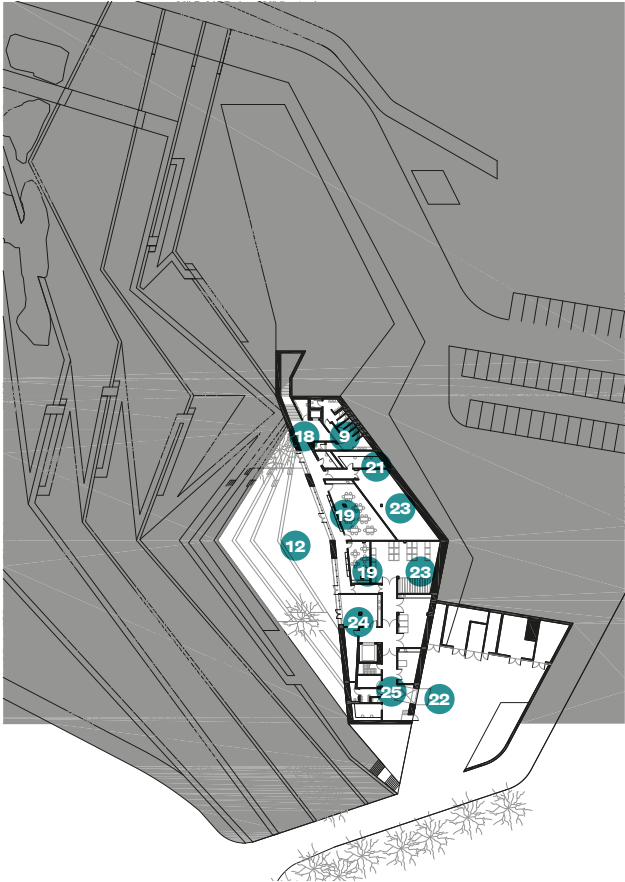
Long section AA



Cross section BB



Lower ground floor





Top Beneath the café terrace, tanks store water as part of the irrigation strategy for the terraces.

Above Sharp geometries expressed externally are translated internally.

Right From across the valley, the museum is barely visible, hunkered into the landscape.

native planting on the lower terraces has bedded in, artificial irrigation can be switched off and these plants will thrive on rainfall alone, further reducing the water requirements.

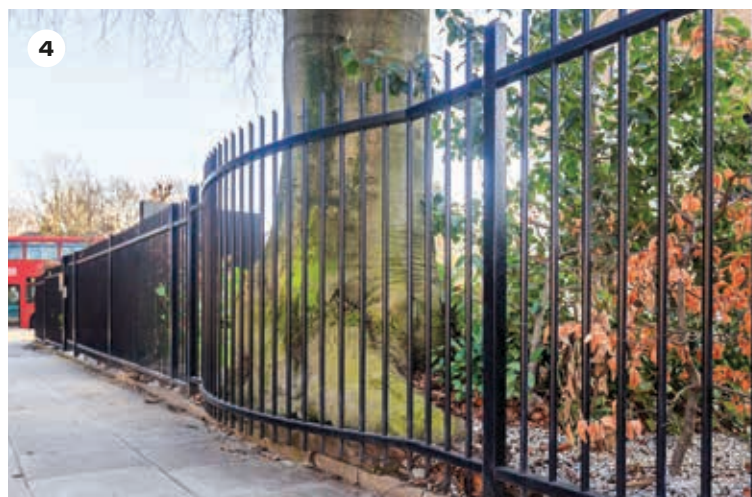
To irrigate the large planted area, Heneghan Peng devised a rainwater harvesting system that stores reserves in three underground tanks beneath the café terrace. In a land where water is a precious commodity the system aims to allow the museum to be water independent.

‘We don’t have enough water reserves, so the building, in a way, represents Palestine,’ says Tubeileh. ‘Some farmers do not have access to [water for] their land and you can see the trees slowly dying. Having control over the water was very important for the museum.’

Visitor access, as well as access to water, aesthetic recognition, and a tumultuous history, have made the success of the Palestinian Museum a robust story. Although at first some Palestinians resisted the idea of a foreign architect bringing an architecture that was vastly different to that already existing in the occupied territories, the commanding narrative has created a building born of the Palestinian land. Tubeileh sums up the current sentiment: ‘Internationally, the building has received a lot of attention. It is in harmony with the context, not a direct imitation of traditional Palestinian architecture, but a reinterpretation of it.’ ●



Specified



1 Half-round guttering FloPlast

No authentic garden cottage is complete without a thoroughly trad-look guttering system. But 'heritage' makes it hard to replace the sprinkly cast iron piping with hermetic PVC. Developer Manortouch, which specified FloPlast's high capacity system for this Kent cottage (a listed erstwhile pub) the listed buildings inspector 'approved [the product] instantly'. Perhaps he thought the guttering was actually cast iron, while doubtless Manortouch was impressed by the PVC system's light weight, cost advantages, corrosion-free, no-paint and 20-year colour guarantee.

floplast.co.uk

2 SuDS and permeable paving Interpave

Me anShazanKev used a go uptha Southwark Orange an hang out intha mallocentric, avvagayma bowls before trolleyin up the ramp into the consumery wonders of the elephunk estate where we were all conceived in the shiny new service entrances come 1965. Glam it was, 'til it went all sinkretro. We're happysome since we viddied all this precast concrete SuDS and permeable paving wot they're downplacing on the old 'hood at new Trafalgar Place with its Interpave prods. Leaves me all calm; like I just audied me heavenly Ludwig van... (with apologies to Anthony Burgess)

paving.org.uk

3 Dirigo LED kerb Linea Light Group

You can, of course, go your own way – but should you choose to tango in the night (reissued 31 March) along a clearly defined and conveniently paved route, it may be prudent to pre-empt any unscheduled inhalation of herbal shrubbery by first installing Linea's rather attractive Studio Rigo-designed Dirigo modular LED kerb. Available in two profiles, and in stainless steel or three aluminium finishes, the system was recently recognised with an IF Design Award. And even the most pie-eyed late night Stevie Nicks wannabe would have trouble missing it.

linealight.com

4 Security railings and gates Jacksons Fencing

You know that thing? That thing when your life is so damnably covetable that overcurious and surly cap children would nosily push through a berberis hedge just for a sniff at your sustainably harvested organic rubber yoga mat? When, to put the little bleeders off, nothing less than robust British-manufactured powder-coated and galvanised steel 'Barbican Imperial Residential' vertical bar security fencing will do?

That.

jacksons-security.co.uk



5
Solar outdoor fabric
Extex

Dear elderly Aunt Circe, and her malign feline, the one-eyed, coal-black Pyewackit, is staying with us. Observing us, pondering the pond and the possibilities of bioluminescent algae, she ventured that it would be more practical to upholster the poolside appointments with Extex's Solar glow-in-the-dark solution-dyed acrylic outdoor fabric. Just 30 minutes' sunlight, she said, would transform the neutral swirls into groovy lights come nightfall – and its lightfast, shrink-proof, water, soil and stain repellent properties will be handy for some important plans she has for the full moon.
extex.co.uk

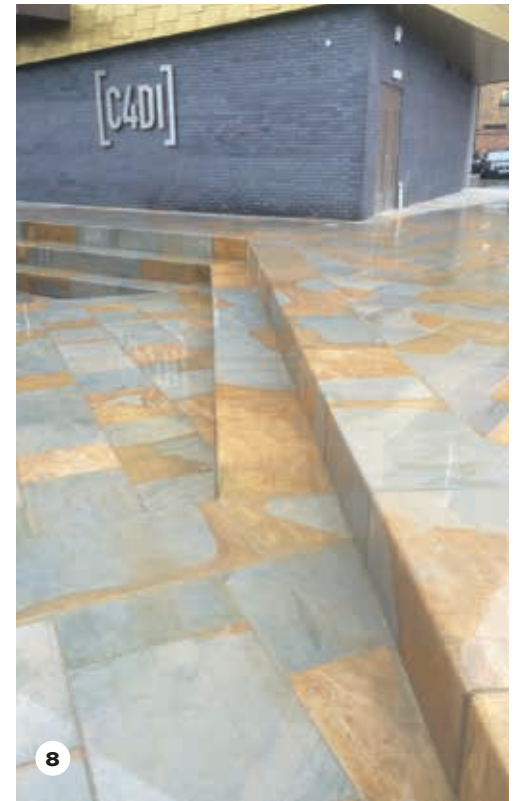
6
Acoustic, thermal products
Saint Gobain

With Saint Gobain on the job your projects will grow like mushrooms. Viz Edinburgh's £28m Portobello School, now complete with 25m pool, games hall, gymnasium and two all-weather sports pitches. But what of the fungi which, as the name suggests, might once have lived here? They'd have preferred a danker, darker, moister vibe to the one on offer, where Saint Gobain brands are keeping the building warm and dry. No nourishing of mycelium here! This product septicification had what shiitakes to keep the school fungal free, and an environmental champignon.
saint-gobain.co.uk



7
Solar street furniture
Townscape

Townscape's solar shelters, noticeboards – and the Intelli Solaris bollards pictured – are sturdy, safe, sustainable, glad to be of service, and guaranteed to stay in the car park without becoming depressed. Running costs are zero, installation quick and cheap, and while motion sensors activate when humans approach, please note that these plastic pals do not feature the Sirius Cybernetics* Genuine People Personality chip, so may not be fun to be with.
*Townscape Products is in no way associated with Sirius Cybernetics Corporation or its products. Particularly not Marvin.
townscapeproducts.co.uk



8
York Mix sandstone
Natural Paving Products

Sandstone = sand = silicon = DIGITAL, OK? ...so it's an obvious choice for the panoramic expanses of York Mix natural sandstone, here as paving, steps, seating and copings at Hull's City of Culture Centre For Digital Innovation (C4DI). A trip to this tech-specific business hub will reward the eye with a grey-and-buff binary vista of 1,500m² of 50mm thick paving in 450 and 750 x 600mm sizes; 190m of steps with accessibility-enhancing granite inlays; 80m of seating units, and over 70m of wall copings. Will you look at that job! I'd rather have that than a MacPro. But not on my lap, Steve...
naturalpaving.co.uk



DENNIS GILBERT (2)



Education in context

Top class education buildings aired at the PIP seminar taught us about the importance of the setting

At a packed PIP Education Buildings seminar at 66 Portland Place on a warm, windy spring day, it seemed the theme was 'context is everything'. It was good to see the room's cross ventilation in action too – a reminder of one of the strategies used in the three lovely educational facilities discussed at the morning event, chaired by Hawkins Brown partner Carol Lees and sponsored by Formica, Oscar Acoustics and Jacksons Fencing.

Sensitivity to listed buildings and a mature landscape on the fringes of London was required of architect DSDHA at its award winning Davenies School, an independent prep school in Beaconsfield. The school was established in 1940 in a now-listed farmhouse surrounded by agricultural buildings, explained senior associate Isabel Moreira.

The firm had to provide 10 new classrooms and a library, weaving around a built-out and undulating site. This challenge, said Moreira,

unlocked the whole project. DSDHA's response opens out to key views while black 'waney' edged timber picks up on the agricultural vernacular.

DSDHA worked with CLT company KLH on solid timber off-site construction, allowing them to meet the deadline of the new academic year. It also resulted in a highly tactile exposed timber interior 'that works both visually and acoustically' and references the sylvan setting.

Regent High School's context was very different – London's gritty inner-city Somers Town Estate, where Walters & Cohen answered Camden Council's call for a £26m upgrade of the 1,300-pupil Victorian secondary school. Director Giovanni Bonfanti said that demolishing everything except the main Victorian block made space to replace dark, internal circulation routes with a convivial three storey internal arcade, while stitching the old back into it.

Its cleaned-up brick, white painted steel and rendered walls are popular with pupils. 'The

counterpoint of old with new creates a great sense of scenography,' Bonfanti remarked. 'The kids have totally taken it over.'

Beethoven was one of the drivers for the facade aesthetic, said practice associate director Rob Hill. Sixty percent of the new facade is glazed, with solar shading provided by aluminium fins hung off the curtain walling. The bright colours of the 54, 10m high fins are inspired by the work of US artist Donald Judd and their rhythm by the notation of Beethoven's Für Elise. Opening vents, part of the natural ventilation strategy, are co-ordinated with fin runs.

There was less stitching in and more standing out from Michael Laird Architects at the 15,000m² Riverside campus for last year's Stirling Prize shortlisted Glasgow City College, carried out with fellow Edinburgh firm Reiach and Hall. 'Near the Gorbels on the south side of the Clyde, there was a clear desire for the new campus to revitalise this part of the city,' said Adam Frickleton, associate



KEITH HUNTER

From far left Regent High School; Davenies School; Isabel Moreira of DSDHA speaking at the seminar; City of Glasgow College.

director at MLA. 'The education building, workshops and residential tower and 7m high colonnade around a garden were all about creating a real sense of civic presence.'

A limited palette of materials unifies the programme functions: precast concrete, stick system cladding of soft-sheen anodised aluminium and glass. Internal materials are also pared back, with exposed concrete soffits and walls and expanses of glass overlooking the atrium. Acoustically, these surfaces needed managing. Frickleton said the acoustic design was 'a triumph', with timber slats and perforated, insulated metal panels soaking up sound from where it's made – the main reception area.

Mitigating bad acoustics in education buildings has been close to Oscar Acoustics' heart since its founding in the 70s, said director Ben Hancock in his talk on the firm's work at the Stirling shortlisted Blavatnik School of Governance in Oxford by Herzog & de Meuron, where the approach was 'to integrate acoustic attenuation with the building form itself'. In the circular atrium, H&dM had faced time constraints that precluded layered acoustic plaster and had struggled to fit acoustic panels to its curves. The solution was Oscar Acoustics' SonaSpray fc, its a fine-textured finish effectively dampening sound in the grand circulation space.

Co-sponsor Formica was more preoccupied

with the exteriors of education buildings. At the Silsoe CofE Lower School in Bedfordshire, David Turnock Architects wanted to use a rainscreen panel of blended natural woodgrain effects to create an abstracted facade, explained Roy Hornibrook, Vivix key account manager at Formica. The practice opted for 8mm thick Vivix panels that, he said, offered 'superior performance' for durability and insulation.

Formica offers advice on specifying panels in schools. 'We'll appraise if gap widths or edges are suitable where kids might put fingers,' Hornibrook said at the post-talk Q&A. 'We always ensure Vivix is robust enough to take a kicking but detailed so as not to harm users in any way.'

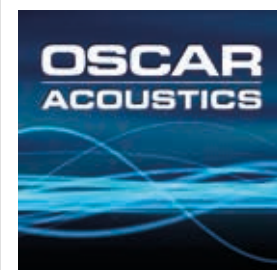
Jacksons Fencing, 70 years old this year, is committed to safety in schools. Its head of commercial sales, Cris Francis, discussed its range, saying it could all be Secured by Design accredited. Bespoke products include cranked steel centre pales off brick piers for more strength; RoSPA approved palisade fencing curved at the top so as not to offer sharp edges; 'hit and miss' fencing to reduce lines of vision; and dampening devices on steel gates to avoid trapped fingers.

But in the end, it came back to context. Francis showed a charming shot of one of its straight steel fences performing a nifty tight arc around the gnarled trunk of a tree – highlighting how, ultimately, nature will always have its way. ●

In association with



**Jacksons
Fencing**



are you
missing so





knauf

Build for the world we live in

Something?

**Think we only do drywall?
Take another look.**

Find out more at www.knauf.co.uk/MoreThanDrywall



energy | design | quality | consulting

Find out more at
VELFAC.co.uk/beinspired

VELFAC®

WINDOWS FOR LIFE

Modular building offers housing hope

As the industry struggles to meet the demand for homes the need for factory build comes with a call for human skills

Words: Josephine Smit



At 28 storeys, Apex House student accommodation is slated as the tallest modular building in Europe.

So here we are again. National media have this year returned to a story that is all too familiar: the failings of new homes and the woes of their unhappy occupants. This time attention has focused on the Orchard Village affordable housing scheme in Rainham, Essex, and the output of housebuilder Bovis Homes. The latter has reported a 3% drop in pre-tax profit in 2016 due to a 'high level of customer service issues'.

These are the most high profile, but by no means the only, indications that the industry is struggling to deliver quality. An all party parliamentary group (APPG) reported last year that in a national annual survey of new homebuyers, 93% had reported problems with their dwellings. In a smaller YouGov survey this year, carried out for housing charity Shelter, half of respondents had found major problems with their new homes.

Government and industry backed reports have said for years that the solution is to move housebuilding into the factory, where quality can be more easily assured and the workforce that proves so hard to source onsite will be more

readily available and highly skilled. It is a point that has been made most recently and forcefully in the bluntly titled report looking at construction labour and productivity – Modernise or die, written for the government by Mark Farmer, founding director and chief executive of Cast Consultancy. The weight of evidence and exhortation has not yet succeeded in diverting the volume housebuilding industry away from predominantly traditional build methods, but some now see a stronger wind of change.

Made this way

UK housebuilders might be falling short in delivering numbers and quality, but putting brick on brick remains a highly profitable business. The financial results of volume housebuilders generally make enviable reading; Persimmon reported a growth in pre-tax profit of more than 20% for 2016. 'They're very good businesses, and have good supply chains, so they're hard to beat,' says Rory Bergin, partner at HTA Design.

Numerous reasons have been given for

present and past failings in workmanship, ranging from the traditional nature of housebuilding – summed up by Bergin as 'assembling thousands of small parts out in bad weather with people who have never worked together before' – to more recent changes in the industry. Andy von Bradsky, chair of housing network the Housing Forum and a member of the commission for the APPG for the built environment – which last year produced the report 'More homes, fewer complaints' – says, 'Housebuilders have driven down costs, and that has seen savings made by the loss of traditional functions such as the clerk of works. There is a need for monitoring, policing and inspection. At the same time, the architect has been pushed to the side, with the loss of its continuing role on projects.'

Add to that a now seemingly permanent skills shortage, and you arrive at 21st century UK house building, where when something does go wrong it can be costly, as Bovis has found, with £7m set aside to deal with its customer service issues. 'The industry was already short on skills,' says von Bradsky. 'It has slowly emerged from a long and painful recession, which saw it lose skilled workers, and is now building more homes. Present issues are the manifestation of deeper problems.' Mark Farmer says the situation is likely to worsen: 'There are systemic problems that are getting more challenging. As we try to raise output it's clear the industry is struggling, and when the industry is stressed, quality is compromised.'

All change

The government is already taking action to build more technical skills generally, with the announcement in the spring Budget of proposed T level vocational qualifications for 16-19 year



Modules being placed at a rate of 10 a day at Apex House in Wembley, London.

olds, and the introduction in April of a pan-industry apprenticeship levy for larger employers. Its former construction advisor Paul Morrell has also been commissioned to carry out an in-depth review of the Construction Industry Training Board (CITB) and the Engineering Construction Industry Training Board.

Alongside initiatives like BuildForce and Persimmon's Combat to Construction – both aimed at encouraging former military personnel into the industry – the CITB and the Home Builders Federation (HBF) are collaborating to develop broader solutions. One issue they have sought to address is the gap in understanding between the industry's small subcontractors and major housebuilders. Steve Radley, director of policy at CITB, explains: 'There has been a lack of co-ordination between major housebuilders in indicating what their plans would mean for skills. So a lot of key skills, such as plumbing or decorating, couldn't be confident of whether they could meet needs in the next 12 months.'

A shift to producing homes in the factory could be a solution, bringing greater certainty while also offering the potential to address issues such as quality control and difficulties in attracting and retaining workers. CITB has commissioned research looking at the skills required for a move to factory-built homes. 'The research looks at the new skills and how existing ones would need to be redefined in a new context, as well as the potential for multi-skilling,

so that training providers understand what it means,' says Radley. 'The next stage is to look at how the training sector can gear up.'

But factory building projects have also had their fair share of high profile failures, like the award winning CASPAR apartment scheme in Leeds, or Oxley Woods in Milton Keynes – the latter built under then deputy prime minister John Prescott's Design For Manufacture scheme. 'The programme was widely praised until Oxley Woods,' says von Bradsky. 'We need to be careful we don't go down a route that fails to deliver. Offsite solutions have to strike the right balance between speed, quality and cost.'

Farmer says that factory build has evolved and needs opportunities to demonstrate that: 'We have developed digital expertise and precision engineering. We need the innovative projects so that customers and funders can get comfortable with what this looks like. The driver for this should be a better outcome.'

While conventional housebuilders may see little reason to abandon traditional building

As we try to raise output it's clear the industry is struggling, and when the industry is stressed, quality is compromised

methods, clients such as local authorities, build to rent developers, student accommodation providers and hotels are turning to offsite. These are the clients that Farmer and HTA's Bergin see driving transformation in the sector. 'Some clients like build to rent developers are taking a different approach. For them the build method becomes a strategic rather than a project question,' says Bergin. HTA has seen a tripling in the proportion of its workload constructed offsite over the past three years, and it now accounts for around a fifth of the practice's work. 'We've been tapping into the market, but at the same time there's accelerating interest,' he says.

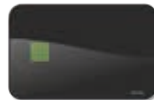
HTA is working with Scape Living, Donban Construction and Vision Modular Systems on Apex House in Wembley, north London, which has been described as the tallest modular building in Europe. Standing 28 storeys high and incorporating some 580 student bedrooms, the scheme's modules have been going into place at a rate of 10 a day. The process means, says Bergin, 'we have a crew of 150 working in the factory and just 20 onsite'.

At the same time as the Construction Leadership Council published the Farmer report last October, the government announced its accelerated construction programme, dedicated to supporting councils wanting to develop homes on surplus land, particularly using modern methods of construction. Since then the government has also published an industrial strategy green paper and the housing white paper – importantly, says Farmer, 'both say skills and training need to be led by innovation'.

With government support and new clients keen to work in new ways, Farmer says he is optimistic that his report can be a catalyst for change. Ask him what makes him so confident and he says Brexit could ultimately tip the scales. A study by RICS estimates that more than 170,000 EU workers could be lost in a hard Brexit, a move that would have a dramatic impact on the industry, should it materialise. Farmer recognises the risks of a hard Brexit, but also looks further ahead.

'Over the medium to long term it could be argued that Brexit could be a positive impetus for change. The industry will need to think more strategically about skills and productivity,' he says. 'I sense this is the right report at the right time.' ●

ADVANCED FLUSHING TECHNOLOGY



FULL FLUSH ACTIVATED
AND FLUSHING



REFILLING CISTERN

Introducing the Wave S3™ Flush Plate, it's attractively styled and like many of Dudley's product ranges is designed to reduce water consumption.

Within our Dudley bathroom product ranges we offer:

- A comprehensive range of Dudley in-wall frames
- Water savings with the latest flushing technology
- A special touch to any project
- Interactive icons



www.dudleybathroomproducts.co.uk
sales@thomasdudley.co.uk | 0121 530 7000

Wave S3™ is compatible with Illusion A wall-hung frames and Vantage and Miniflo cisterns



Reassuring warranties*



Made in the UK



Easy to fit and service

*Terms apply, see website for details



Dudley
Water saving solutions

The largest range of construction contracts for every type of project

RIBA  Bookshops

ribabookshops.com

Sustainable design must be beautiful

The Zip HydroTap – filtered boiling, chilled and sparkling water with a conscience.

Tracey Bamber, managing director, Zip Water UK

Essential to life, water covers 71% of the world's surface. It is also well known that 75% of the human brain is water – it regulates the temperature of the body, carries nutrients and oxygen to cells, cushions joints, and protects organs and tissues.

The significance of how we deliver and consume water in the home and workplace is a microcosm of how important water is to the earth and its people. It boils down to the question, how can we provide water in a sustainable way, improving health and quality of life, while looking after this precious natural resource and the planet that depends on it?

Sadly, when it comes to water, the UK is heading down a very unsustainable path. Consumption of bottled water in Britain is over 3.3bn litres a year, a figure that has more than doubled over the past 15 years.¹ In fact, we now drink more bottled water than we do milk.² Then take into account that for each bottle of water manufactured, its production uses three times the amount of water than what ends up in the bottle – staggering. Not to mention the hugely damaging impact of plastic waste on our environment.

If more people had access to pure-tasting highly filtered water in their homes and offices, unsustainable bottled water would become a thing of the past. As such, there's now a growing demand for mains-fed instant drinking water systems in the UK. As well as being energy efficient and convenient to use, they also boost health and wellness.

But it should not be the case that architects

have to choose between ethics and aesthetics in this arena. Sustainable design must be beautiful – it is the only way to ensure the mass uptake of products and building methods that are beneficial to the environment. We mustn't lose sight of the fact that buildings are responsible for almost half of our global carbon footprint worldwide.

Mindful of this, Zip has developed the HydroTap. A stylish filtered boiling, chilled and sparkling water tap, available in various striking designs and finishes, the HydroTap removes the need for bottled water with its world-leading filtration – 25 times better than a water filter jug. Furthermore, this sleek appliance houses the latest in advanced energy efficient technology, proving that sustainability and design can indeed be happy bedfellows.

Many water delivery appliances use excess water during the chilling process, but the HydroTap's state-of-the-art cooling technology uses air rather than water, meaning not even a drop is wasted. Its PowerPulse technology delivers a precise amount of energy to the heating element, ensuring the temperature is maintained, instead of overheating and cooling. Add to this the clever auto-sleep function, which will power down the unit after a period of inactivity, and it's plain to see why the HydroTap is one of the most sustainable water delivery appliances on the market.

For Zip, sustainable design means respecting the natural resource we all depend on to create an appliance that is beautiful, enduring, good for people and good for the planet. ●

3.3bn
litres of bottled water
consumed in Britain every year

x3
Three times the amount of
water in a plastic bottle
is used in its production

¹ FoodBev Media, UK consumption of bottled water
(Zenith International Report), March 2016

² Global Beverage Forecasts, March 2015





Zip has full WRAS Approval across the entire HydroTap range. Any water fitting, which when installed, will carry or receive water from the public mains water supply in the UK, must comply with the Water Supply (Water Fittings) Regulations or Scottish Byelaws. These require that a water fitting should not cause waste, misuse, undue consumption or contamination of the water supply and must be 'of an appropriate quality and standard'.

Call 0345 6 005 005 to request a brochure and to arrange a free consultation



Left Zip HydroTap Cube in matt black
Below left Zip HydroTap Celsius Cube in chrome
Below Zip HydroTap Arc in rose gold



Sky Central, London

Using carefully juxtaposed flooring, Hassell has created different moods to break down the giant floorplates of Sky's head office to make them navigable and welcoming

Words: Pamela Buxton

You need sensible shoes when embarking on a tour of Sky Central, the new 45,000m² building at the heart of the broadcaster's Osterley campus in west London. For this is one big building, accommodating some 3,500 staff in a ground scraper by AL_A (concept) with interior architecture and project delivery by PLP Architecture.

With three floor plates of 165m by 102m, this would be equivalent to 18 conventional office floors according to Catherine van der Heide of Hassell, which designed the new workplace in Sky Central. Rising some 20m from ground floor to the CLT roof beams, this vast, top-lit space presented quite a challenge. How best to create human-scale neighbourhoods within the expanse so that no one feels they are rattling around? How to facilitate the introduction of a flexible agile-working culture that goes hand in hand with the new building? How to strike the right note between an informal working style and a serious, professional environment? And how to provide sufficient flexibility for changing workplace needs? A key tool used to pull off this balancing act is the flooring.

Below each level, PLP provided 700mm of deep floor void – compared with the 100–150mm found in a typical office. This gives Sky complete flexibility for how it reconfigures the workplace in the future by providing enough capability for heavy IT users all over the floor plate. Aesthetically, the choice of what went on top of this was a significant decision that could significantly impact the ambience of the whole workplace, given the scale of the floor areas. Get it wrong, and there's no way of hiding it.

'We started with a more colourful palette, but after a lot of discussion we thought the base build should offer a more pared-back version so that it doesn't compete with the workplace design and its furniture and joinery,' says PLP director Cindy Lau.

Different flooring is used to distinguish

communal areas from work settings. On the ground floor, a huge 'street' – as wide as Regent Street – runs the length of the building east-west from the main entrance, with amenities such as cafés and a restaurant to one side and the glass-walled news studio visible straight ahead on the first floor. PLP wanted to avoid an over-homogenised effect for such an expanse so specified a 1200mm by 600mm ceramic tile from Domus' Petrology_Stone 2 range, a suitably muted but textured treatment for so busy an environment.

'We felt grey was a good tone to give depth,' explains Lau.

The tiles are laid in stagger bond to delineate the main axis, with perpendicular expanses down the cross axis off the middle of the atrium. For the prominent vertical circulation of grand stairs and ramps and the mezzanine areas, PLP selected satin lacquered, solid oak flooring by Suffolk & Essex Joinery. This complements the

Below Getting material choices right was imperative, as they are replicated at huge scale throughout.

Right 700mm deep service data voids within all the floors effectively future-proof the building.







CLT structure of the roof and reflects the honest expression of architectural elements.

'The oak gives that warm shade that is not too dark, too light, or too washed out,' says Lau.

This is combined with Interface carpet tiles in desk areas, chosen for their anti-static properties and consistent appearance.

Hassell took this base build as the starting point for the workplace design, which was tested in a nine-month pilot installation. The concept is all about creating variety and a human scale across the huge floor plates. To achieve this, each floor has around eight neighbourhoods of 100-150 workers.

'Within these, we have a proportion of different settings to suit different work styles,' says Hassell's van der Heide. 'There aren't a lot of enclosed spaces so the floor finishes start to define those areas.'

Each area has a 'home zone': a domestic-style space with an open kitchen and large tables for group working. These are delineated by Lindner's raised access floor system, finished with factory-bonded oak parquet in a four-plank pattern with exposed knots. Around the kitchen counters, Hassell specified vinyl tile flooring in a geometric black and white pattern akin to those in Edwardian ceramic tiled hallways.

This is no sea of homogeneous desks. At about every 20m, the aim was to introduce a variation in setting without formal enclosing space, says van der Heide. Instead, space is divided with visually permeable devices such as

2.7m high bespoke joinery structures that psychologically give a sense of enclosure, some incorporating high planting (there are an impressive seven plants per person), a grove of olive trees, and spaces defined with vertical ropes.

A lighter tone of Interface's Heuga 727 SD carpet tile (Graphite) is used to indicate different seating settings in addition to the darker Coal tile, which is used more extensively.

'It's an exercise in variety,' says van der Heide. 'Dealing with the volume was the greatest challenge.'

Both the first and second floors have two mezzanine 'global destination areas' for more informal meeting and working. To complement the comfortable, hospitality style seating, Hassell worked with Kathstall to create luxurious hand-knotted overlay rugs, plain or with a bespoke geometric viscose pattern. These help give some softness to the space, says van der Heide. Nearby, another setting of upright chairs and tables is combined with a large custom vinyl floor mat by Chilewich, chosen for its woven

texture and robustness under frequent use.

Different floor treatments also break up the expanse of the 300-seat downstairs restaurant, designed by Sedley Place, the design company responsible for the six food and beverage areas within the building. According to managing director Mick Nash, the biggest challenge was to create a welcoming environment within what was potentially 'a barn of a room'.

'We used flooring, among other techniques, to divide the space into more intimate areas,' he says, adding that it also had to be easy to clean and acoustically not too lively.

Areas of porcelain tiles with a bleached timber finish run down the main circulation route to the server and around the edge of the room.

'We wanted to use it as a subtle signage system and it does that very effectively,' says Nash.

Supplied by Pentagon tiles, the 160mm wide wood effect porcelain is given decorative interest by the inclusion of individually cut and arranged patterned Portuguese tiles.

'It feels like elements of an original floor have been encapsulated in the new one,' says Nash, who was keen to give the traditional Portuguese tiles contemporary treatment.

This tiling is accompanied by a natural wood floor by the Reclaimed Floor Co in the lower traffic seating areas. Here the emphasis was on a quieter solution, achieved with the help of acoustic ceiling panels and careful design of furniture to minimise clanking table and chair legs. ●

We used the flooring, among other techniques, to divide the space up into more intimate areas

Left Flooring materials delineate different areas, breaking up the massive volume to a more manageable and legible scale for users.

Right Sunken velvet seating brings local intimacy and a certain Austin Powers quality.



MARK COCKSEDGE (3)



Left and above 'Home zones' bring a domestic scale and allow space for both informal working and relaxing. In dining areas there are three different flooring finishes: porcelain tiles, bleached timber effect tiles and reclaimed timber, to create a different feel and acoustic to the space.

Client Sky UK
Concept architect AL_A
Executive architect PLP
Architecture
Workplace design Hassell
Food and beverage area design Sedley Place
Engineer Arup



A transformative addition

Lazenby's black polished concrete floor transforms the 1100m² Sainsbury Exhibition Gallery at the British Museum into a global history showcase for an international audience

Photographs: Paul Raftery





Lazenby's black polished concrete was specified by architect Rogers Stirk Harbour + Partners (RSHP) and construction firm Mace to provide a dramatic and imposing backdrop for the British Museum's Sainsbury Exhibition Gallery in London. RSHP chose Lazenby as a safe pair of hands for the prestigious World Conservation and Exhibitions Centre (WCEC) installation in 2013.

The £135 million WCEC wing is the largest redevelopment project in the museum's 260-year history. Set in the north west corner of its Bloomsbury estate, it provides a new public exhibitions gallery, state-of-the-art laboratories and studios, world class stores and facilities to support the museum's programmes. The exhibition gallery, at ground level, displays a rich collection that includes artefacts from wooden canoes and totem poles to coin collections and archeological fragments.

How did Lazenby ensure the consistency of the floor throughout?

A team of eight Lazenby master craftsmen installed the black polished concrete floor in 10 separate pours, creating a 100mm deep layer over A252 reinforcing mesh. That's a total of 110m³ weighing in at roughly 234 metric tonnes of concrete alone. Lazenby's installation process is no secret and can clearly be seen on its website; however the confidence, experience and know-how required for this project was unrivalled. Two members of the team took responsibility for the concrete colour; working together and calculating the exact mix, quality and distribution of the colour across the 1100m² surface area. Colour consistency was key to this successful project.

The C28/35 concrete, to BS EN 206-1 and BS 8500-2, has GGBS/cement substitutes to help with BREEAM certification. The Sainsbury gallery sits

above the basement pavilion at ground level, which made the access and pumping of 234 tonnes of concrete straight forward over 10 days. However, pouring concrete within a pre-determined stainless steel grid held particular challenges.

How did Lazenby work as part of a team to ensure a perfect surface for changing exhibition space?

RSHP required reliable access cover for the interior to provide service points at regular intervals throughout the gallery's 1,100m² floor area, with aesthetics and performance of equal importance.

The 36 carefully planned service boxes, elegant joint plan grid, essential non-slip finish and partition walling glide rails exhibit Lazenby craftsmanship at its best. The circular access covers were designed and manufactured by Howe Green in 316-grade stainless steel. Lazenby's polished concrete floor provides a remarkably flexible solution; capable of withstanding heavy loads and also meeting 21st century demands

'Lazenby supported us throughout the design process and the finished product was everything we had hoped for and more'.

John McElgunn RSHP

Opposite The quality of Lazenby's concrete pour within the steel trays is best seen from the far end of the exhibition gallery.

Above The floor is designed to take heavy loads, giving as much scope as possible for shows.

Right Alignment of the tray grid to other construction elements shows the level of design co-ordination on the project.



with access for technology.

Lazenby's master craftsmen ensured that levels were highly accurate, that the stainless steel was left clean and tidy and that the colouring was consistent. That's no easy task when eight of you are pouring, raking, levelling, checking levels, applying colour, screeding, trowelling edges, smoothing the surface, floating and completing a final pass 10 times in 10 days. That's 23.4 tonnes a day, installed by hand; as well as 1,100m² of a two-layer floor protection system and six-month curing period followed by cleaning, burnishing, sealing and buffing. Our master craftsmen are athletes too, says Lazenby.

National treasure

With its new, high-performance concrete floor, the design of the WCEC building, which consists of five pavilions – including one below ground – is sensitive to the existing architecture and is directly connected to the historic building. ●

EJ Lazenby Contracts Ltd, London Showroom, Unit 1, Victoria Industrial Estate, North Acton, London W3 6UU.

Tel: 01935 700306

www.lazenby.co.uk

Email: visualconcrete@lazenby.co.uk



anything else is just concrete

Specified



NICOLA PITARO



1 Composite flooring planks Esthec

When the chairman of the board said he wanted a new strategy-plank, I was scared stiff as. Still, there was no flooring his logic given the difficult decking we'd got recently. With wood generally going against the grain and PVC hard for him to digest, we were able to come together over choice of a composite material containing fillers in the form of this fibreglass reinforced proposition from Esthec. We are relying on the material found on terraces at hotels, resorts, cruise ships and beach clubs to stop splinter groups forming and prevent any more slip-ups. Carried!
esthec.com

2 Relik reclaimed timber planking Havwoods

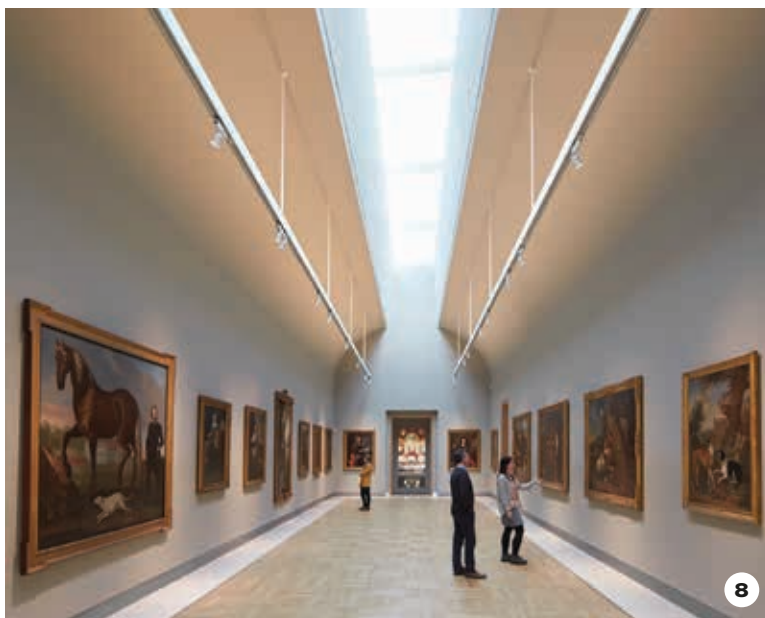
Proper salvage comes only from a squelchy yard, where the squinty one, the lopsided swain and the jolly white-haired owner dive into their rat's nest of stock to dig out a miracle. The charge will, of course, never be more than 20 quid. Complimentary dust is generously provided. By contrast, Havwood's Relik reclaimed boards (solid, reproduction or engineered options) offer replicability and consistency in 18 timbers. These are cleaned, machined and finished for immediate use – while retaining all the character of that long-gone yard (beetle accessory not included).
havwoods.co.uk

3 Parquet tiling Listone Giordano

Ah, but these are topsy-turvy times we find ourselves in. So it's almost comforting to discover that Listone Giordano's 'Biscuit' is not, in fact, a biscuit, but a rather lovely parquet flooring tile. Logically, we then find ourselves entirely at home with the conceptual extension: in Patricia Urquiola's refurbishment of this Bad Ragaz hotel restaurant in Switzerland, she's bizarrely used this on the walls. Just remember not to try and eat the tiles. And do not attempt to walk on the ceiling. And sit properly on your chair – it's better for the digestion.
listonegiordano.com

4 Wood flooring Mapei

I was at a select Select Committee selection tea in a Westminster penthouse when I heard of the forthcoming election; she would be going to the country, hoping, presumably, to turn May into Must. Well, I was as surprised as anyone, especially given her heart-felt assurances that this is exactly what wouldn't happen. I was about to collapse on the floor before someone reminded me that Brexit meant Brexit. In retrospect, I wished I had done so in order to be able to more closely inspect the fine eco-rated wooden flooring from Mapei, surely topping any poll you'd care to run.
mapei.com/gb-en



SALLY ANN NORMAN



RIKA LOOU FOTOGRAFIE



5 Marmoleum flooring Forbo

With Mercury turning retrograde and Gemini ascendant in the House of Calyopi Delta Phi, you might well feel the ground beneath your feet seems less steady than usual. So, you could make the investment in a pair of sturdy galoshes (they're rather hot though) or you could plump for the Forbo Marmoleum flooring specified for far-sighted stargazers at the International Centre for Life in Newcastle to get your fate back on firmer ground. If you can't see exactly what the Heavens have in store for you, at least you can try and planet.

forbo.com/flooring/en-uk

6 Fossil porcelain tiles Ceramiche Refin

I first encountered the work of the 'Refin' Tribes in the caves of the Ardèche. Every surface in this hitherto undiscovered network of flexible workspaces bore a layer of 'Fossil' ceramic tiles, applied by an ancient hand. Here, in Eindhoven, a new discovery reveals surface decoration in five patterns, reminiscent of ammonites, in shades of beige, brown and grey. Scientists hope to find further examples at other locations in northern Europe. Centred around shopping malls, stations and airports, the sites are believed to have had some ritual significance.

refin-ceramic-tiles.com

7 Sports Flooring Gerflor

Right, listen up you 'orrible lot, stand up straight at the back – hunless you hare hengaged in a double pike and twist with an 'alf twist has part of your floor routine. The British Harmy hexpects its lovely boys hand girls to stay nimble, supple, hand protect their soft cartilage. That is why you will find the Territorials training in the gymnasium at this 'ere Prince William of Gloucester Training Barracks in Grantham, vaulting, somersaulting and generally hexercising on that there Gerflor reflex rubber granulate cradle floor, putting a spring in their out-of-step step.

gerflor.co.uk

8 Hardwood parquet Junkers

Welbeck Tiles may be gone, but at least the estate whose name they carry has a new hardwood floor to keep the side up. The Harley Gallery, home to a rotating exhibition of works from the Portland Collection, has yielded its 890m² to Junkers' single stave blocks, as specified by Hugh Broughton. FSC and PEFC certified, they nonetheless rise above such tedious bureaucracy with a durable, low-maintenance light oak parquet which, if one might make an observation, is artful enough to draw the eye somewhat from the works in the vicinity.

junkers.co.uk

Costed

Cosmas Kamasho, head of data management and BIM at RICS, on flooring costs

Floor finishes include all applied, in-situ and preformed finishes which provide a functional and/or decorative surface.

In-situ finishes are laid in a fluid state and allowed to dry and set to provide a seamless firm surface. Applied finishes are supplied pre-formed in tile or sheet form and laid to a suitable base bonded with an appropriate agent. Applied finishes such as ceramic tiles tend to be highly resistant to chemicals and heat.

Several factors determine the choice of finish, including function or usage of the space, aesthetic requirements, degree of comfort required, the type of base and cost.

Floors that require greater impact resistance

– such as factories – may need a special coat or topping. This usually comes as a screed or resilient resin. Floors carrying chemical and food processing plants may also need an extra coat for sanitary reasons and/or to protect the structure from corrosive materials. Wet spaces require damp proofing and in most cases, non-slip finishes like vinyl and glazed tiles.

At the same time, special paints – such as intumescent – can be applied to floors to improve fire resistance. Other special finishes include antistatic surfaces, spark free floors and even conductive properties.

Impact sounds can be considerably reduced by applying a soft, flexible finish like carpet. A

floating layer effectively provides a sound buffer while sprung floors absorb shocks in sport and performance halls to provide comfort.

Some finishes are chosen for their texture, colour and/or aesthetics. A transparent finish can protect or reveal underlying features.

However, it usually comes down to cost and to some extent the life cycle costs of the component. Although the capital cost of floor finishes may be a fairly small proportion of the total cost of the facility, maintenance costs can be significant. For example, although floor finishes account for just under 4% of the construction cost on a typical sports facility, the cleaning bill can reach 25% of the occupancy cost over 20 years. ●

These guide prices, as of 1Q2017, are from the BCIS of RICS. They are based on a medium-sized residential project for products in the low to upper- middle specification range. They do not include contractor's preliminaries, overheads and profit margin. They are based on the BCIS ORDB Schedule of Rates Service (service.bcis.co.uk/bcisonline).

In situ screed and floor finishes; laid level	Range £
Latex compound on existing subbase; over 300mm wide: 3 mm thick	£9.80-11.50m ²
Cement and sand (1:3) trowelled beds; 100mm thick	£29.40-35.30m ²
Granolithic paving (1:2.5) trowelled finish; 38mm thick	£19.10-23.00m ²
Epoxy finish to primed surface: 1.5mm-2mm thick, one coat	£35.20-42.30m ²
5mm-6mm thick, two coats	£63.20-76.80m ²
Resin floor paint: 2 coats for industrial floors	£6.50-76.80m ²
3 part system; polyurethane screed, prime and base coat resin	£35.70-43.90m ²
Anti static epoxy flooring, including priming	£67.80-80.20m ²
Sheet/board flooring	
Chipboard flooring; tongued & grooved joints: 18mm-22mm thick	£14.90-20.30m ²
Wrought softwood tongued and grooved boarding 19mm thick	£40.40-48.50m ²
Wrought softwood tongued and grooved boarding 25mm thick	£43.00-51.70m ²
Softwood skirting, gloss paint finish	£17.90-21.40m ²
MDF skirting, gloss paint finish	£14.00-16.80m ²
Wrought hardwood tongued and grooved boarding 22mm thick	£118.50-142.20m ²
Hardwood skirting, stained finish	£27.30-32.80m ²
Sports quality flooring; T&G plywood 22mm thick on softwood battens and crumb rubber cradles	£141.80-170.10m ²
Sports quality flooring; sprung block floor, court markings, sand and seal	£97.70-117.20m ²
Rigid tile/slab block flooring	
Quarry tiles: 10mm bed: jointing & pointing in cement mortar (1:3)	£50.20-60.20m ²
Porcelain tiles: 10mm bed: jointing & pointing in cement mortar (1:3)	£47.50-57.00m ²
Porcelain tiles (anti slip): 10mm bed: jointing and pointing in cement mortar (1:3)	£53.40-64.10m ²
Porcelain tiles (designer): 10mm bed: jointing and pointing in cement mortar (1:3)	£71.20-85.50m ²
Terrazzo tiles; hydraulically pressed, mechanically vibrated, steam cured; to floors on concrete base (by others); 28mm thick	£68.20-81.80m ²

Marble tiles; 20 mm thick, marble aggregates in resin agent; fixed with adhesive; close butt joints; straight both ways	£214.70-256.50m ²
Wood block; 10mm thick, finished with 2 coats heavy duty oil	£111.00-133.20m ²
Reconstructed stone paving slabs, 40mm thick; spot bedding in cement lime mortar (1:1:6)	£84.50-101.40m ²
Flexible tiling; welded sheet or butt joint tiles; adhesive fixing	
Vinyl tiles flooring; standard tiles 2mm thick	£24.20-29.00m ²
Vinyl safety flooring; 2mm thick	£48.20-57.80m ²
Granite tiles flooring; 2mm thick	£33.00-39.70m ²
Granite sheet flooring; 2mm thick	£30.80-37.00m ²
Linoleum tile flooring; 2.5mm thick	£41.00-49.30m ²
Linoleum sheet flooring; 2.5mm thick	£36.20-43.50m ²
Rubber floor tiles; 4mm thick	£66.60-79.90m ²
Carpet; including underlay, edge grippers	
Heavy domestic duty	£47.10-55.50m ²
Heavy domestic duty; treads and risers	£52.90-63.50m ²
Heavy contract duty	£37.30-44.70m ²
Access floors	
Raised access floors: including 600 x 600mm steel encased particle boards on height adjustable pedestals 135mm - 210mm	
Light/medium grade duty	£42.90-51.50m ²
Heavy grade duty	85.10-102.20m ²
Common floor coverings bonded-access floor panels	
Heavy duty fully flexible vinyl/anti static	£30.80-42.60m ²
Needle punch carpet	27.00-32.40m ²
Under floor heating	
Electric underfloor heating system; 50mm insulation, 150 watts per m ² , 20m ² single rooms	per room £837.00-1,004.30
LTHW system with pipework at 300mm centres for 20m ² single rooms	per room £1,031.50-1,238.80



Introducing Super Matt Alto FENIX ***Available in 15 colours. Including black***

The latest development in Washroom's Iconica Collection, Alto FENIX features our full height Alto cubicle with the unique FENIX NTM® super matt surface material.

Soft to touch, thermally self-healing, impact resistant, hydro repellent, and offering enhanced anti-bacterial properties, as well as being lightfast with an excellent depth of colour, Alto FENIX is the go-to surface for washrooms and changing areas.

Forgiving flooring

Spanish floor tiles offer a wealth of solutions for high-traffic areas, tackling issues such as safety, durability and ease of maintenance, while proposing the latest looks in innovative designs. Hardwearing ceramic and porcelain products include a revival of terrazzo effects, plus highly polished large-formats in intriguing textures, with varied tonality and easy-to-live-with neutral hues.



1

Perfect finish

Large-format porcelains are easy to install, with discreet rectified edges offering a sleek and contemporary look over expansive spaces such as lobbies and entrances. Many Spanish manufacturers continue to push forward the aesthetic and functional capabilities of their products. There's an impressive range of finishes from sparkle glaze or semi-polished to a non-slip silky honed finish with a roughness that's almost imperceptible and subtle to the touch. The elegance of tiles also comes with resistance to stains, chemicals, scratches and cracks.

1 Avenue by Grespania Rectified porcelain floor tile in black, dark grey, light grey and white and three formats including 80cm by 80cm, 60cm by 60cm and 60cm by 30cm. www.grespania.com



2



3



4

2 Portofino by Vives Porcelain floor tiles in a terrazzo effect in four colours including Cemento, Humo, Crema and Grafito (as shown) with metallic edges. www.vivesceramica.com

3 Terrazzo Décor and Natural by Apavisa Porcelain floor tile in black, moss, brown and grey (as shown) in a 30cm by 30cm format in Natural plus patterned designs Décor. www.apavisa.com

4 K-Sintex by Pamesa Durable porcelain floor with an industrial character in metallic effects, available in large-format rectified slabs. www.pamesa.com

Terrazzo for today

An eminently practical and forgiving choice, terrazzo-effect porcelain floor tiles are easy to install, durable and often suitable for indoor and outdoor use. Some new collections are offering sleek metallic edging that gives this popular genre of tile a fresh modernity as well as contemporary designs and colours – for example a vibrant green and blue.



5 Fluorite by Inalco Terrazzo-effect porcelain floor tiles available as 150cm by 150cm, 100cm by 250cm, 100cm by 100cm and 50cm by 100cm formats and various colours. www.inalco.es

Textural innovation

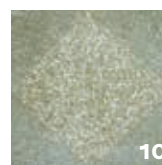
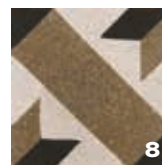
Digital techniques allow for increasingly efficient reproductions of imagery and colour, plus the ability to print to textured and extruded surfaces. Experts in decorative multi-technology pride themselves on achieving a handmade feel of variation in shade and texture, but with a high-performance surface. Some brands offer flooring that is also designed to co-ordinate with complementary 3D textured formats for walls.

Harmony inside and out

A number of the leading Spanish manufacturers have created advanced products that connect the interior and exterior to achieve a cohesive design theme. These include differing formats so the surface can be subtly tailored to the environment and a rationality of style together with ease of specification can be applied to each project.



6 Moon by Saloni Textured stone-effect porcelain floor tiles in three neutral colours including Ceniza (shown here) Gris and Arena. 60cm by 60cm, 45cm by 90cm and 30cm by 30cm formats. www.saloni.com



- 7** Apavisa Terrazzo moss decor
- 8** Apavisa Terrazzo brown decor
- 9** Apavisa Terrazzo black decor
- 10** Apavisa Terrazzo grey decor



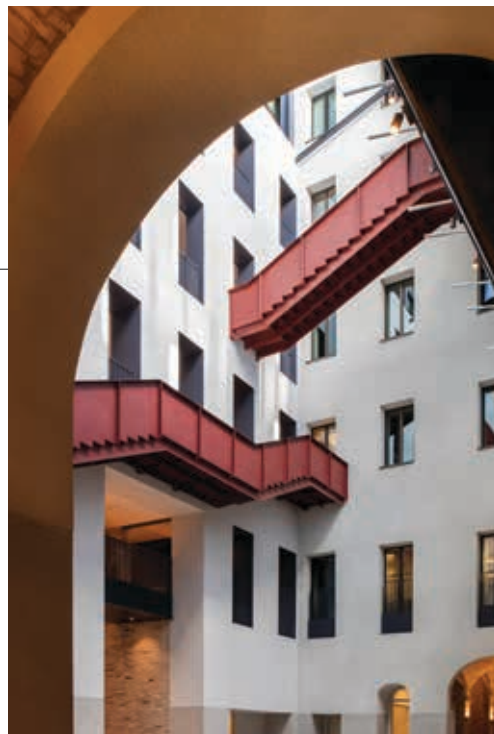
Tile of Spain is the voice of the Spanish tile industry, encompassing more than 100 tile manufacturers. Renowned worldwide for an inspiring blend of aesthetic and technical innovation, Spanish tiles draw on a rich heritage of skill and creativity, while remaining at the cutting edge of design. Manufactured in Spain and widely available in the UK, these products embody the spirit of an industry that prides itself on proposing beautiful, meaningful and high-performance solutions to flooring, wall coverings, furnishing and external paving and cladding. **For further information on Tile of Spain: www.tileofspain.com**



Central European University

Phase 1 of O'Donnell + Tuomey's rationalisation of a loosely connected campus has just completed in Budapest. A simple palette of materials helps turn their old courtyards into new spaces for gathering

Words: Jan-Carlos Kucharek
Photographs: Tamás Bujnovszky



Left and far left The main atrium of the new Nador 15 building creates a sizeable public reception area.

Above The courtyard of Nador 13, once a hotel, is the backdrop to the circulatory interventions.

Above right Ragstone walls and Sutto limestone arches in Nador 15 create distinct spatial experiences.

Below The creased, folded main west elevation of Nador 15.

It's existed for less than 30 years, but the Central European University (CEU), a private academic institution in Budapest, seems to be carving its place in the awareness of both city and state. Hungarian prime minister Viktor Orbán wants to bring higher education under centralised control, so CEU's foreign funding and relative autonomy doesn't sit well with his right-wing government, which has enacted laws that could see it closed. But when your sponsor is billionaire Hungarian-American financier George Soros, there's a sense the university is not going down without a fight.

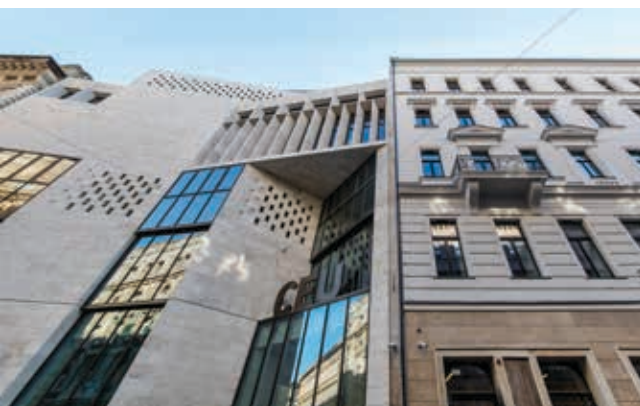
This will please O'Donnell + Tuomey, appointed in 2011 to propose ways of developing CEU's campus of seven adjacent buildings on Nador Utca in downtown Budapest. Phase 1 of the three-phase project has just completed, creating a library and 'learning commons' over a multi-purpose auditorium, a public face for the university and a celebration of its proximity to the Danube. The new building starts to form connections with the adjoining ones, and, by the time it is due to complete in 2021, there will be network of new academic and circulation spaces behind its 19th century skin.

The strategy throws up associations with the firm's work at the London School of Economics, where its Saw Swee Hock Student Centre had to respond to a group of academic buildings playing second fiddle to the public streets and alleys between them. But project architect Mark Grehan says the influences were more contextual than that. The practice was struck by the way Budapest's urban form was defined as much by

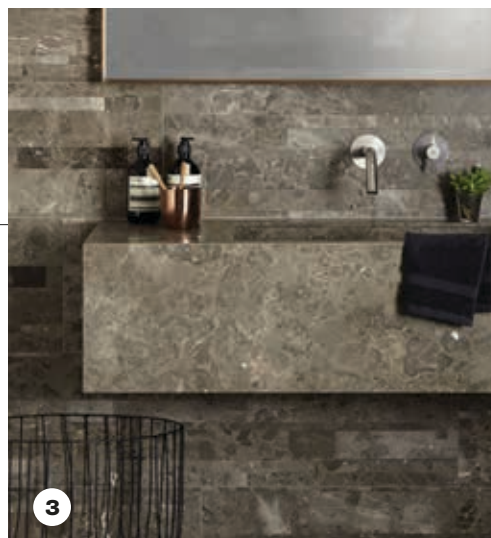
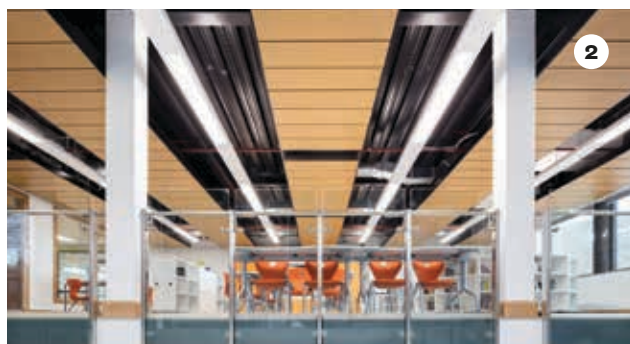
the courtyards behind its classical facades as by the facades themselves. Creation of internalised, connected courtyards as the circulation strategy was born out of this city condition.

Buildings are being stripped back to core materials and refurbished; with all that materiality on show, the firm wanted a common palette to keep the complex intelligible. So the oxidised look of new steel staircases in courtyards is echoed all around in the balustrades. Polished concrete floors unify the ground floor plane despite the stone arches, brick piers and white rendered walls rising out of it. The budget wasn't huge: painted plywood and softwood dictate internal finishes, but the library is impressive nonetheless. Hardwood is reserved for surfaces touched by human hand – desks and worktops.

The courtyards, internalised with huge triangular sections of glazed cladding that pop out at roof garden level like a party hat, are part of the sustainability strategy, using stack effect to draw fresh air in and exhaust air at high level. 'For a city whose climate can range from -20C in winter to 40C in the summer, the campus only goes into air-conditioned "lock-down" during the most extreme times of year,' says Grehan. 'For 70% of the time it's anticipated natural ventilation will work in the public areas.' That's quite a claim for a university that, ironically, faces west. But that would account for its thick-set local Sutto limestone facade; by turns perforate, folded or fin-deep, with a huge window looking out full-square to the Danube. It embodies the new activism of its students; standing their ground, in for the long haul. ●



Specified



1 Enamel baths & shower surfaces Kaldewei

Had Dr Kellogg's sanatorium boasted ablutory appointments of a standard such as these new baths and showers at the Portopiccolo Sistiana, I do believe I might have extended my stay. The four-person foot vibrator proved diverting, the mechanical slapper stimulating, and the oscillomanipulator, at the very least a challenge to pronounce. Yet at the end of a day's 'rational, scientific health building and training', all I craved was the luxurious embrace of a deep enamelled steel bath. Kellogg's offer was more testing: galvanic, electro-hydric, vapour and 'radiant light'. Breakfasts, I recall, were excellent. kaldewei.com

2 Suspended ceiling Armstrong Ceiling Solutions

You'll not be surprised to learn that suspension was rather a theme in my private education. Even the incident with the housemaster's cat and the lit Havana failed to achieve the desired expulsion! Armstrong, by contrast, never had so much as a measly detention, so it was staggering to learn that he became a dominant player in the ceiling field. Now he's back at school, installing a variety of context-specific lay-in and hook-on ceilings to a major comprehensive extension, with thermal and acoustic insulation for each space. He has, in fact, made a profession of suspension. The damn swot. armstrongceilings.co.uk

3 Gris Du Marais marble Domus Group

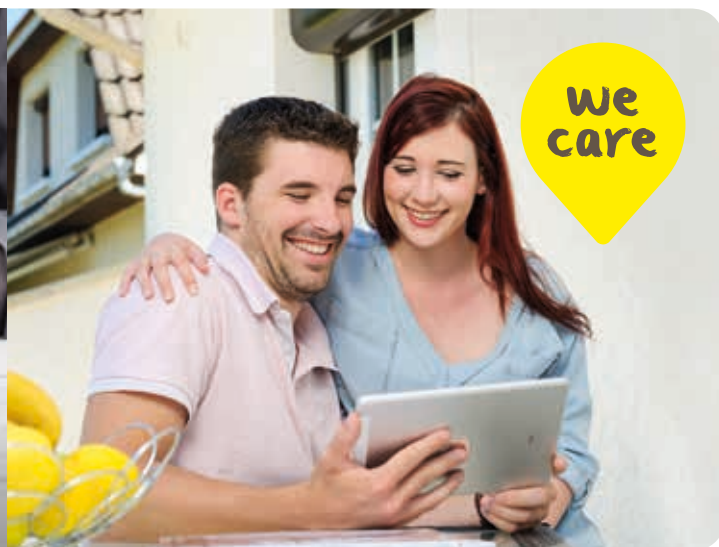
We are now so far through this 'orange is the new black' looking glass that I'm officially declaring the real 'new black' to be 'grey'. It's far more restful, genuinely upmarket, understatedly luxurious – and blessedly uninterested in Twitter. Domus plainly agrees, with tiles in Gris Du Marais French marble named as an exemplar of its 2017 'Umber' emerging trend. Witness the real-life Art of the Tile at its trendy Battersea showroom, where the depth of its natural 'Made in France' lustre communicates directly with its 'Made in Chelsea' clientele. domusgroup.com

4 Angular LED lighting Linea Light Group

Lovers wander the streets of the City of Light, admiring the stately street furniture and paddling palms – possibly even kissing with inside lip – under the smoky glow of an ornate and ancient lantern. But lonely souls in search of romance will head instead into US clothing brand Vince's, new showroom in the 8th Arrondissement, where their hearts will be instantly and irretrievably stolen by the way the minimal Linea range's CRI 95 high colour rendering LED spot-on-track retail display installation highlights garments' texture and detail. Oh yes they will. linealight.com



**Weber makes
specification easy**



Weber offers a selection of tools, information and support to choose the right solution for your project, and provide full technical assistance from design to installation.

- Project Information Packs
- BIM Objects
- U-value Calculator
- Colour Simulator
- Samples
- RIBA approved CPD's
- Onsite application support



@SGWeberUK



www.netweber.co.uk



enquiries@netweber.co.uk

weber
SAINT-GOBAIN

Slick, quick, click, tick.

FOR VERTICAL FAÇADES, ROOFLIGHTS & CANOPIES

Marlon *Clickfix* 1040 is the complete architectural glazing system solution. Its interlocking panels simply click and fix into place for fast and easy installation and a completely seamless façade.

Used together with Marlon *Clickfix* RL or Marlon *Clickfix* VF aluminium glazing bar systems, you can be guaranteed a solid attractive finish.
That's one big tick for Marlon *Clickfix*!

For more information call 024 7660 2022
or email daylight@brettmartin.com

www.marlonclickfix.com

marlon*Clickfix* 1040

marlon*Clickfix* **RL** **marlon***Clickfix* **VF**



Daylight Systems

The collaborators

PIP's regular section showcasing inspired partnerships between manufacturers and architects



Danish floors for Danish design house

Natural, matt, solid wood floors from Junckers suit Republic of Fritz Hansen down to the ground

Danish design house Republic of Fritz Hansen has chosen Junckers' Oak Boulevard for its HQ showroom. The company's classic designs are now displayed against Junckers' widest floorboard – at 185mm – made in solid oak.

The many world famous classic pieces and contemporary designs made in collaboration with leading international designers sit perfectly on Junckers' signature long-length planks, which add a further architectural dimension to the space. Finished with the newly reformulated UltraMatt Lacquer, the floor has a completely natural, matt appearance which looks just like an oiled finish. Developed in response to the growing trend for 'unfinished' looking floors, Junckers' UltraMatt Lacquer protects the wood, making it durable, hardwearing and easy to care for. With no surface sheen, the new lacquer gives the floor

superior protection against spills and scuffs. The natural appearance and highly durable, easy to clean surface has made UltraMatt Lacquer Junckers' best selling finishing product – over 80% of all pre-finished floors are sealed with it.

All Junckers' pre-finished floorboards are available with UltraMatt Lacquer, for immediate use once installed. The new formula enhances the natural beauty of all Junckers timbers including oak, ash, black oak and beech. Junckers specialises in long-length planks, and its floors are suitable for use with under floor heating.

www.junckers.co.uk
01376 534 700

JUNCKERS

Facade details fit for Jesus College

Haddonstone supplies stonework to award winning 51 Hills Road for Jesus College, Cambridge

Haddonstone, the UK's leading manufacturer of fine architectural stonework and garden ornaments, has manufactured bespoke façade details at the award winning 51 Hills Road for Jesus College in Cambridge.

Located in a conservation area, surrounded by listed buildings, the college has moved away from stereotypical office block architecture to provide a high quality, contemporary structure that makes a positive contribution to the area.

Normally associated with classical designs, Haddonstone is also renowned for creating custom stonework to suit individual requirements.

Haddonstone worked closely with architect Gort Scott to design and manufacture bespoke architectural stonework including the



impressive contemporary window surrounds. Haddonstone is a unique form of cast limestone with a surface texture similar to Portland stone or natural limestone. The material meets all British Standards and exceeds those set by the United Kingdom Cast Stone Association (UKCSA). Installation was by Stone Synergy.

The design has received a BREEAM Excellent rating and Best Commercial Building at the Brick Awards 2016. The project also won both a RIBA National Award and a RIBA East Award.

www.haddonstone.com
01604 770 711

HADDONSTONE

Stylish wetrooms at Lalit London

Schlüter-Systems specified in boutique hotel near iconic Tower Bridge, London

A historic grade II listed building at Bankside, London, previously known as St Olave's Grammar School, has been converted into a 70-room boutique hotel, with the bathrooms fitted out



THE LALIT SURI HOSPITALITY GROUP

using Schlüter-Systems' products.

Near Tower Bridge, Lalit London features its integrated CE marked wetroom equipment, including the Kerdi-Line drainage system and Ditra-Heat-E electric underfloor heating.

Schlüter-Systems offers a complete solution for a CE marked waterproof floor-level shower area. Sloping of the tile or stone floor covering to allow appropriate drainage is easily achieved with the prefabricated levelling and shower tray components of Kerdi-Shower. Drainage systems available with the Wetroom range are Kerdi-Drain and the linear Kerdi-Line.

Kerdi-Line was specified for the project and as a system allows low assembly height construction of floor-level showers with ceramic tiles and natural stone. It consists of a formed stainless steel channel body with a grate and frame structure

that can be seamlessly adjusted to the thickness of the covering, from 3mm to 25mm.

For the ultimate finish with a continued field of tile or natural stone, Kerdi-Line-D is a frameless covering support. The floor flows aesthetically to the grate, which is discreetly topped with the same covering. This drainage system has been updated to ensure compliance with BS EN 1253, providing a constant 50mm water seal and meeting flow requirements in line with National House Building Council regulations.

Complementing the contemporary wetrooms is Schlüter's Ditra-Heat-E underfloor heating, which has uncoupling, crack-bridging and waterproofing properties and sits beneath the floor covering for ultimate comfort underfoot.

www.perfectwetroom.co.uk
01530 813396, pr@schluter.co.uk



The Lalit London, 181
Tooley Street, SE1 2RJ
020 3765 0000
london@thelalit.com
thelalit.com

Windows give a better outlook

West Leigh has a new generation of aesthetically pleasing and energy efficient steel windows

Ideal for new build and renovation projects, where energy efficiency and aesthetics are key, the new MTS50 steel window offers narrow sight lines and a U-value as low as 1.4 W/m²K, depending on the glazing unit employed. The use of the system has been pioneered in the UK by West Leigh, working closely with Swiss designer and supplier Ottostumm. It is based on highly engineered, thermally broken steel sections designed to closely replicate the character of the traditional W20 steel window.

The design of the thermally broken profile means that MTS50 steel windows are

manufactured differently from traditional solid, hot rolled steel section windows. With this in mind, West Leigh, which is a member of the Steel Window Association, developed new manufacturing techniques and appropriate paint applications. In the 12 months since launching the MTS50 profile, the company has successfully employed it to fulfill over £1 million-worth of supply and install orders.

West Leigh has introduced the MTS50 steel window to extend the range of solutions available to specifiers, especially in the new build sector where outstanding contemporary architecture is required. Offering all the benefits traditionally associated with steel windows, including slender profiles, large panes of glass, good light transmission and large opening windows, the MTS50 provides incredible versatility.



www.west-leigh.co.uk
020 7232 0030

**WEST
LEIGH**

Sign Up

Stuart Piercy, Founding director of architect Piercy & Co



PETERSEN TEGL - KOLUMBA BRICK

We used Petersen Tegl Kolumba brick to create the skin of our Turnmill building. We mixed our own clay to create three subtle colours, representing the varying stages of aged stone on the adjacent, grade II* Old Sessions House. We didn't want to cut the long-format bricks so used custom moulds to create 27 curved and angled shapes to form the radial arranged window reveals. This extensive use of specials required significant dedication from Petersen, which has an incredibly open minded approach to the possibilities achievable with brick and a willingness to try anything. petersen-kolumba.dk/



BENCHMARK - FURNITURE & JOINERY

Benchmark is expert in timber selection and fabrication with very sophisticated digital tooling. Each piece has incredible tactility and beauty – you can't keep your hands off the furniture in its showroom in Kintbury, Berkshire. Benchmark collaborated on sculptural furniture, inspired by Barbara Hepworth, for our Turnmill project, which combines a reception desk with seating. The five-axis, solid oak piece resolves functional requirements while design features include an integrated brass vase and saddle-stitched leather seat pads by Bill Amberg Studio. benchmarkfurniture.com/



GRYMSDYKE FARM - CERAMICS

We have a long relationship with Grymsdyke Farm, a research facility, fabrication workshop and living-working space for architects, artists and designers. With robotic arms and CNC digital fabrication facilities, The Farm is a place where anything seems possible if you're willing to invest your time. We collaborated with the Farm on our 2016 RIBA Regent Street Windows installation, which won Best Design. We imagined a quinoa plant as a three dimensional macroscopic specimen, with each 'husk' slip-cast from delicate porcelain and arranged around a digitally printed framework. grymsdykefarm.com/

...Sign Off

Jan-Carlos Kucharek enjoys three of this issue's out-takes



TORQUE SHOW

Hands on your DAB dials! Fix radio, the digital station 'aimed at tradespeople', launched last week with a PR campaign – handing out bacon butties at 1,400 building sites during May. That's over a tonne of pig! Fix 'will provide music and cheeky banter' to the UK's builders, plumbers, sparks and roofers. But a word about the schedule. The breakfast show will disappear for a cuppa between 10 and 11.30, the afternoon slot knocks off early on a Friday; and the bandwidth doubles after 6pm or at weekends. Former Capital Radio star Steve Penk will also do a hilarious daily wind-up where he'll randomly ring an architect live on air and tell them the contractor's just gone bust.



SNAGS 'N' LADDERS

Admit it – we've all been there: the contractor's in delay and struggling with liquidated damages and is REALLY KEEN for you to sign the Practical Completion certificate. And where better to do it than at the top of that unfeasibly high ladder, where they also coincidentally need you to check that those final guttering snags are now Part H compliant; oh, and don't worry, they do have a pen. Well, that's what seems to be intimidated at architect Snøhetta's recent 'Portal' piece in Milan – an endless ladder hand crafted and covered in fine stitched leather. But that makes it no less slippery, and beneath that Helmut Lang suit, we are all but flesh and bone...



PLUTO-NIUM

It might be the silver anniversary this year of Mickey Mouse's Paris home, but there's more than just elemental links at play at Hinkley on the shores of the Bristol Channel. Turns out UK offsite firm Caledonian Modular is there busy assembling the 'largest hotel-style development since Disneyland Paris' for workers on the future Hinkley Point C nuclear power station: 1,500 ensuite bedrooms, in fact. We trust that after a hard days work, they'll be able to come back, have a well-earned soak and curl up to enjoy 'Nuka' in The Lion King, sing along to 'Fission's' Let it Glow, and never have to endure a re-make of that 1945 classic 'One Hundred and One Deformations'...

Editor-in-chief Hugh Pearman
Editor Jan-Carlos Kucharek
Chief sub Alysoun Coles
Design Richard Krzyzak
Director
Steven Cross

Telephone +44 20 7496 8300
Fax +44 20 7374 8500
firstname.surname@ribajournal.com

Advertisement manager
Richard Tomlin +44 20 7496 8329
Business development manager
Midge Myatt +44 1902 851645
Account manager
Clive Waite
Digital operations manager
Pete Songi
Digital assistant
Alexandra Kiss

RIBA Journal
www.ribajournal.com
Published for the Royal Institute
of British Architects by
RIBA Enterprises Ltd
Registered Office: The Old Post Office,
St Nicholas Street, Newcastle upon
Tyne NE1 1RH. Registered in England
978271
RIBA # Enterprises

RIBA Journal is published 12 times a year by RIBA Enterprises. The contents of this journal are copyright. Reproduction in part or in full is forbidden without permission of the editor. The opinions expressed by writers of signed articles (even with pseudonyms) and letters appearing in the magazine are those of their respective authors; the RIBA, RIBA Enterprises and the RIBA J are not responsible for these opinions or statements. The editor will give careful consideration to material submitted – articles, photographs, drawings and so on – but does not undertake responsibility for damage or their safe return.
Printed by Acorn Web Offset Ltd in association with
Logical Connections
ISSN 1463-9505 © RIBA 2009



KALDEWEI



CHIP – RESISTANT

ACID – RESISTANT

HEAT – RESISTANT

UV – RESISTANT

EASY TO CLEAN

SUSTAINABLE

The perfect material for perfect design has a name: KALDEWEI steel enamel.

Kaldewei's Perfect Match – offering harmonious design solutions across baths, shower surfaces and washbasins, in one superior, robust and beautiful material.

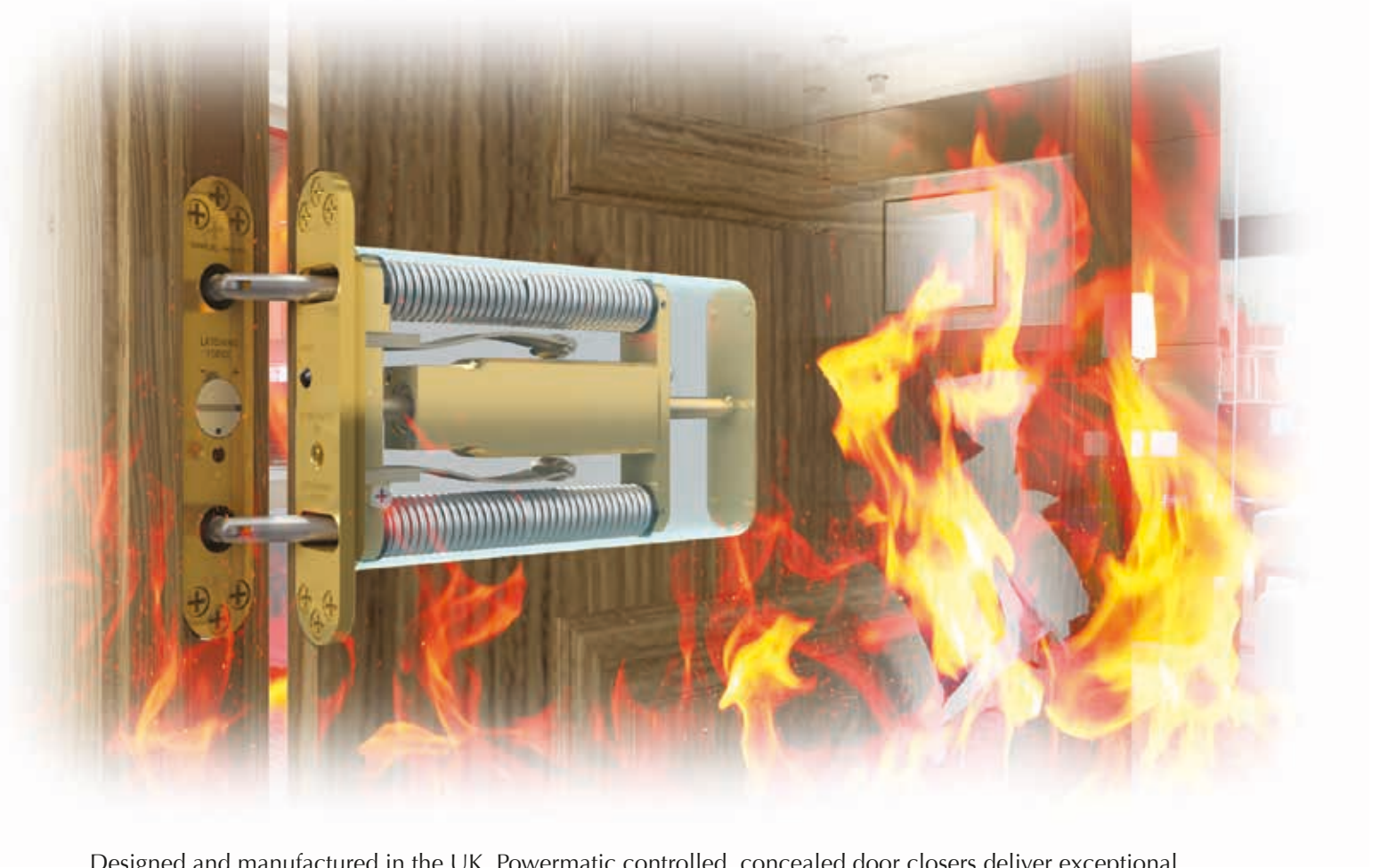
Contact us for further information

Tel. 01480 498053 info-uk@kaldewei.com www.kaldewei.co.uk

30^{YEAR}
GUARANTEE

POWERMATIC®

Concealment when you want it
Performance where you need it



Designed and manufactured in the UK, Powermatic controlled, concealed door closers deliver exceptional performance as well as a host of benefits that surface-mounted closers cannot match:-

- Superior aesthetics
- Reduced risk of vandalism
- Suitability for anti-ligature applications
- Compliance with relevant fire performance standards for one-hour and half-hour fire doors
- Enable doors to meet accessibility requirements
- Perfect for hotels, healthcare, education, care homes, sheltered accommodation, commercial and many other situations.
- Available in standard and Free Swing models

Visit our new website: concealeddoorclosers.com

Tel 0121 766 4200 info@samuel-heath.com concealeddoorclosers.com

SAMUEL HEATH
since 1820