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CONSTRUCTION MANAGEMENT

APRIL 2022
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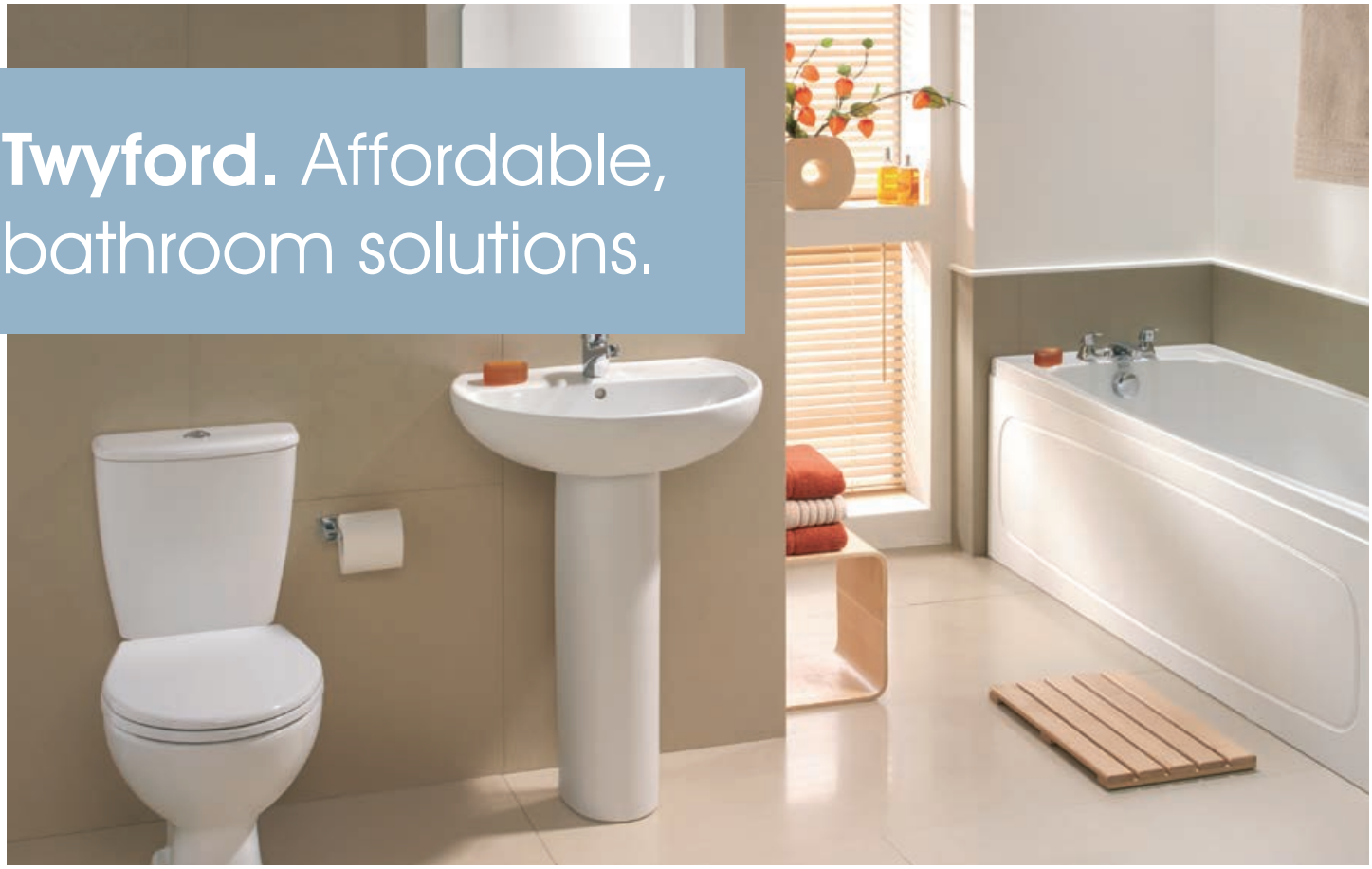

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04/22

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ZSL LONDON ZOO / PAUL NOBLE

Rigging team 're-meshes' London Zoo's Snowdon Aviary

A specialist rigging team has been working to 're-mesh' London Zoo's Snowdon Aviary before it reopens as a monkey enclosure this summer. Designed by architect Cedric Price, structural engineer Frank Newby and Lord Snowdon in 1962, it was pioneering in its use of a tubular aluminium tetrahedral framework and high-tensile steel cables for support.

Kier completes DfMA prison

Kier has completed the construction of the £253m HMP Five Wells in Wellingborough using a component-led Design for Manufacture and Assembly (DfMA) approach. The 60,000 sq m prison incorporates 15,183 precast panels and more than 60,000 sub-components across 13 buildings. Around 80% of the design has been standardised and is applicable to future projects.

Wates to bring 125 more women into industry by 2025

Wates has launched a programme to bring 125 more women into construction by 2025 via four employment schemes, each targeting a different part of the business. It will work with Women into Construction (WiC) to provide training and employment for women at all stages of their career. (Pictured: Charlie Hargreaves, community investment manager, Wates Residential.)

Heat pumps are among the low carbon technologies used on Birmingham's pioneering Future Homes Standard development, p14

Stepnell and Tarmac build 'super-smooth' underground test track

Contractor Stepnell and Tarmac have built a 'super-smooth' 2.7km stretch of automotive test track in Northamptonshire for Aero Research Partners (ARP). The Catesby Tunnel is in an old Victorian railway tunnel. Tarmac laid a specially designed asphalt surface which it claimed is smoother than many Formula One race circuits.

TERI PENGILLEY

Dr Hayaatun Sillem joins Laing O'Rourke board

Laing O'Rourke has appointed Dr Hayaatun Sillem, CEO of the Royal Academy of Engineering and the Queen Elizabeth Prize for Engineering Foundation, to its board. Dr Sillem has been named as one of the 'Inspiring 50 Women in Tech' and one of the most influential women in engineering. She chairs the UK government's Business Innovation Forum.

Willmott Dixon trials net zero pod for schools

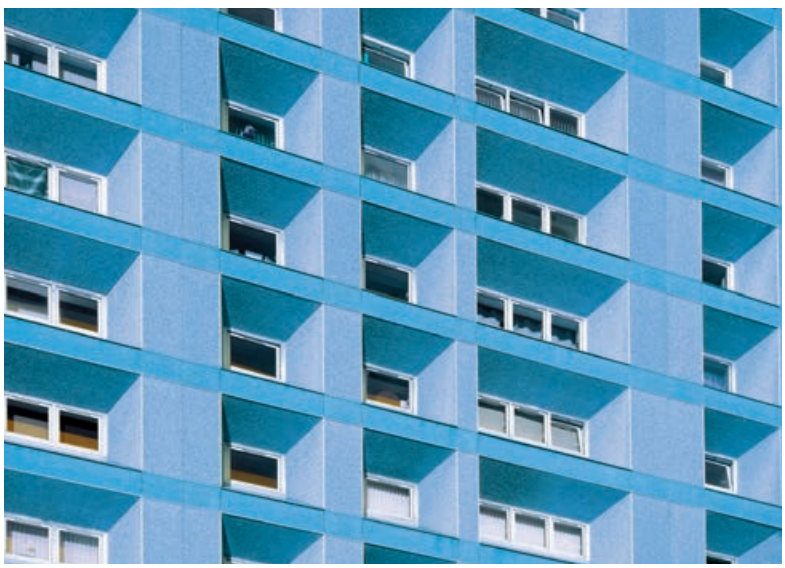
Willmott Dixon has developed an off-grid pod that can be a temporary or permanent net zero learning space at schools. Called the 'Now or Never pod' after Willmott Dixon's sustainability strategy, the timber-frame pod is powered by eight 450W solar roof panels and is designed to meet Passivhaus retrofit standards in terms of the fabric, airtightness and thermal efficiency.

Brompton plans bicycle factory on stilts

UK-based folding bicycle manufacturer Brompton has unveiled plans to build a new factory on stilts on a 40ha floodplain outside Ashford, Kent. The facility would open in 2027 and eventually be capable of producing more than 200,000 bikes a year. The surrounding area would be converted into a 24ha public nature reserve, with the floodplain restored to wetland.

Clients urged to embrace building safety regime

Procurement frameworks SCAPE and CCS praised for adopting Building a Safer Future charter



Procurement frameworks are seen as a means to promote building safety

Construction clients are being encouraged to push building safety to the top of their agenda to ensure there is no repeat of the 2017 Grenfell tragedy.

Ahead of CIOB's Safer Buildings conference next month, key figures on the Industry Safety Steering Group (ISSG) and in the wider construction industry have urged clients to use procurement to promote better building safety outcomes.

"The evidence we have heard on the ISSG shows a mixed picture, with some sectors demonstrating good practice, while others are still waiting for the legislation before they act," said Paul Nash, past president of CIOB and a member of the ISSG. The ISSG monitors the progress of the construction industry in delivering culture change on behalf of the government.

"It is important that government provides leadership on this issue through its procurement practices," Nash continued. "So, it was good to see that the Crown Commercial Service (CCS) and SCAPE will be adopting the principles of the Building a Safer Future (BSF) charter and embedding it within their frameworks."

The BSF charter was established to ensure buildings are safe for those living and working in them, with a focus on driving up standards in design, construction, management and maintenance.

"I am delighted that two major procurement frameworks, CCS and SCAPE, have chosen to adopt BSF as a critical lever of change"
Amanda Long, BSF

BSF CEO Amanda Long, who will be speaking at CIOB's conference, said: "I am delighted that two major procurement frameworks, CCS and SCAPE, have chosen to adopt BSF as a critical lever of change. This development will further support the construction industry to take the critical steps to put building safety first and recognise those that do so. I encourage other procurement frameworks to follow their lead."

"The good practice we are seeing from some clients and procurement bodies is heartening but there is still much to be done if we are to ensure there is never another Grenfell," said CIOB president Mike Foy, who has represented the institute on Working Group 11 of the Competence Steering Group, which focuses on procurement.

Foy will introduce CIOB's Safer Buildings conference, with Long among the speaking line-up. Other speakers at the event include Lord Stephen Greenhalgh, minister of state for building safety and fire, Dame Judith Hackitt, author of the Independent Review of Building Regulations and Fire Safety and Peter Baker, chief inspector of buildings.

CIOB's Safer Buildings conference takes place on 26 May 2022 at the De Vere Grand Connaught Rooms, London. Further information: events.ciob.org. *CM* is running a reader survey on building safety which can be accessed at: constructionmanagement.co.uk.

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Building Safety Bill amendments prompt insurance hike fears

Construction bodies warn that extension of defects liability could cripple small firms

A chorus of construction industry bodies have warned that proposed amendments to the Building Safety Bill could send the cost of professional indemnity insurance spiralling out of the reach of some companies.

The Construction Industry Council (CIC) warned last month that late government amendments to the Building Safety Bill, including plans to extend defects liability from 15 years to 30 years are "unworkable" and could force professionals to leave the sector. The comments were part of CIC's evidence to the Levelling Up, Housing and Communities Committee inquiry which is scrutinising housing secretary Michael Gove's approach to fixing the building safety crisis.

Now the CIC has been joined by several other industry bodies, including the Association for Project Safety (APS), the Building Engineering Services Association (BESA) and the Chartered Institute of Architectural Technologists (CIAT), who have all warned that the bill could create insurance woes for small businesses (see box).

The Building Safety Bill is currently making its way through the House of Lords. It is expected to become law at some point between the spring and summer of this year.

The construction industry's Building Safety Bill concerns

● **Construction Industry Council**
CIC said that the "huge increase in level and extent of liability" under the new plans could force SMEs out of housing development, with the insurance sector potentially concluding that it should walk away from construction.

CIC chief executive Graham Watts said: "These proposals could... [make] it impossible for companies and people to continue in the sector.

"It is vital these very late amendments be given greater scrutiny to allow for the passage of a bill that provides great recompense for consumers but ensures the viability of the construction sector and its ability to help deliver on the levelling-up agenda."

● **Chartered Institute of Architectural Technologists**
A statement from CIAT said: "The proposal to extend liability periods is unrealistic, unworkable and unachievable, and has the danger of potentially persecuting innocent parties without the means to defend themselves. Imposing a retroactive period of 30 years is a reactive addition to the Building Safety Bill and is not the solution.

"The narrative from government is implying that it is aiming these measures at large manufacturers, contractors, and developers. In reality [it will] affect those sole practitioners and SMEs which are the majority in the professional services sector. CIAT would urge the government to continue with its original commitment to fund the remedial works as promised and aim any sanctions or pursue recovery at the right parties."

● **Association for Project Safety**
APS president Jonathan Moulam said: "The Building Safety Bill is a wasted opportunity to make the built environment safer for everyone. The concentration on structural fire risk replays a disaster that should never have happened without looking forward to how safety can be improved more generally.

"The bill as it stands creates dangers of its own and is likely to make homes less affordable while pushing small firms out of business. Potential costs could make the existing skills crisis worse."

● **Building Engineering Services Association**
BESA chief executive David Frise said: "We cannot ignore commercial realities and our members are already seeing a considerable rise in the cost of PI insurance as insurers seek to insulate themselves from the risks – perceived or otherwise."

BESA said a compromise could be found, lying in the competence framework that the government is proposing to underpin the bill. It said this would "increase scrutiny of the professional credentials of firms bidding for work and place increased responsibilities on clients to only appoint competent firms".

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Retail distribution centre, Peterborough
Contractor: F K Construction Ltd
Photo credit: Ivegate Ltd

4%

The proportion by which the number of self-employed construction workers in the UK has risen, as of Q4 2021, compared to the 18-year low hit in Q1 2021. There were 773,000 self-employed workers in Q4 2021.

Regional workforces see recovery, with lingering pandemic impact

Talk of labour shortages can be simplistic as regional data shows substantial variation, writes **Kris Hudson**

Skills shortages are both a long-term theme and an immediate challenge for construction as it emerges from the pandemic, given the importance of a skilled workforce to successful project delivery. However, talking in general terms of UK labour shortages can be overly simplistic and unhelpful for firms that need to invest now in skills and building capacity in regions where they are bringing investment forward. Managing resource relies on understanding nuances across the country, and looking at the data region by region shows substantial variation.

In the four quarters to Q3 2021 data shows a nascent recovery in labour capacity across the majority of regions. Only the East of England, North West, Northern Ireland and South West saw slight decreases – and none more than -3.9%. During the same period areas such as the West and East Midlands enjoyed impressive growth of 12.2% and 9.1% respectively. This is partially due to a low base of employment in 2020 Q3, but also reflective of burgeoning confidence as pandemic restrictions were loosened through the second half of 2021.

> **If you compare the quarterly figures to pre-pandemic levels in Q4 2019, most regions have not yet got back to pre-pandemic workforce levels**

However, the longer-term context shows that the impact of the pandemic still looms large. If you compare the quarterly figures to pre-pandemic levels in Q4 2019, most regions have not yet got back to their pre-pandemic workforce levels. London has been particularly hard hit, with a -17% decrease due at least in part to a steep decline in migrant labour in the workforce following Brexit and pandemic-induced border closures.

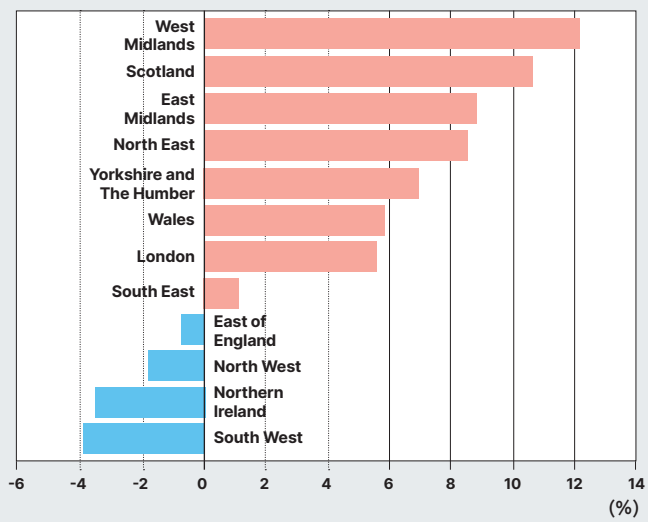
By comparison, Wales now has a labour force 17.6% larger than before Covid-19, and other risers include the North East, Yorkshire and The Humber, and the East of England.

Businesses planning ahead need to build capacity and skills in the right areas at the right times to ensure the successful delivery of major projects and programmes across the UK. When making these investments existing regional disparities in long- and short-term workforce growth need to be considered – particularly as they don't split neatly into the North/South divide, and the picture may change further with the drive towards levelling up.

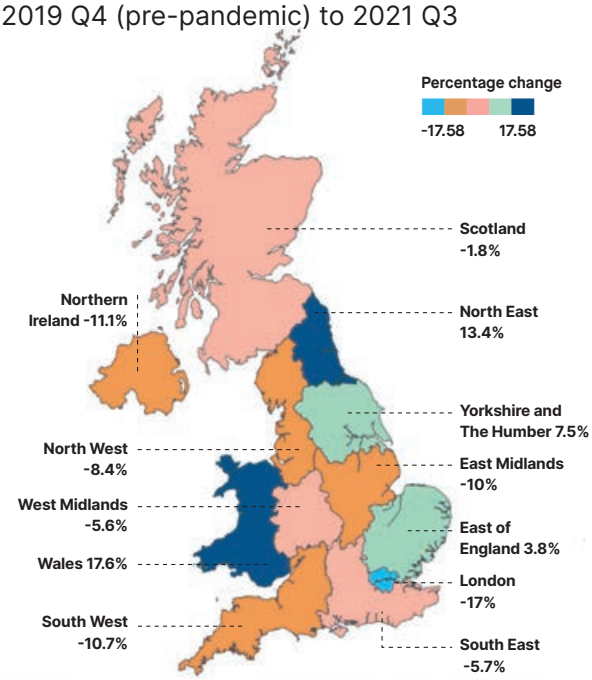
Building diverse and inclusive talent in these regions requires a comprehensive skills pipeline stretching from school all the way to the labour market, but this needs as much early visibility of potential work as possible. If businesses are able to work together to plan out their regional objectives and pipelines, a programmatic approach could then be adopted to ensure that investment can be correctly and efficiently targeted.

Kris Hudson is an economist and associate director at Turner & Townsend.

Quarter on year change in workforce jobs, by region: 2020 Q3 – 2021 Q3



Workforce jobs, by region:
2019 Q4 (pre-pandemic) to 2021 Q3



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Legendary performance

Colin Nicholson
Zero Carbon QS

How to achieve value when procuring net zero projects

Early planning and well managed procurement are key to achieving value for money on net zero projects, says **Colin Nicholson**

Carbon reducing initiatives are here to stay. However, scalable solutions are still in their infancy and requirements to achieve net zero carbon and Passivhaus are adding to build costs at a time of skills shortages and rapidly rising inflation.

While economies of scale will produce savings, these are currently offset by inflation and costs related to the compliance requirements. .

With new zero carbon regulations, including Future Homes Standards, residential clients are uncertain how to achieve net zero, how much it will cost and how retrofit schemes will affect their residents and asset management programme. This is increasing pressure on corporate business plans and cashflows, many of which already face the burden of recladding and fire remediation programmes.

Build cost inflation

Brexit and the pandemic have seen a rapid rise in build cost inflation. Poor availability of good labour and increased material costs result in extended delivery times. Projects must be planned well in advance. Those wanting an urgent response or quick start on site are having to pay a premium.

A common question asked by clients is: 'Are we getting value for money?' When reviewing tender costs, the biggest variance occurs when there is poor information at tender stage and clients are looking for contractors to provide a fixed, all-risk price. Verifying value for money can be challenging on retrofit projects where scope boundaries are not fully investigated, designed and specified.

▲ Environmental retrofits can be initially carried out on pilot houses

Good technical due diligence and progressed design enables clients to know what outcomes are deliverable and enables contractors to avoid pricing unnecessary risk or tender on missing information. We recommend to clients that investing in technical design upfront enables them to procure via competitive tender, with low contractor risk, and a commitment to a firm start-on-site date. This helps them achieve value for money and appoint the most suitable contractor based on both quality and cost scoring criteria.

A phased approach on large housing retrofit projects can often work best and can be achieved by carrying out initial retrofit works on pilot houses. This allows for a better understanding of refurbishment scope, technical requirements, detailed information and outcome measurement before rolling out a sizeable contract. This method results in more accurate pricing and more realistic construction timescales.

> **Good technical due diligence and progressed design enables clients to know what outcomes are deliverable**

There are both opportunities and potential limitations for professionals to meet the government's net zero pledges and this starts with a better understanding of technical requirements and cost. The recent emergence of the International Cost Measurement Standard (ICMS) offers a high-level framework against which life-cycle costs and carbon emissions can be classified and measured.

Adoption of new standards

A science-based, fabric-first approach requires capital investment over and above simply changing boilers to air source heat pumps, loft insulation and new glazing. The Social Housing Decarbonisation Fund (SHDF) requires that to fully retrofit a house to above EPC level C, under the new Social Housing Decarbonisation Programme, involves adoption of new standards PAS 2035 and PAS 2030. Procurement of SHDF-funded works must involve contractors and retrofit coordinators with these qualifications.

Adopting a culture of early planning and preparation together with progressed design, well managed procurement and phased delivery are key in providing a successful retrofit. ●

Colin Nicholson MCIOB CEnv is managing director, Zero Carbon QS.

Caroline Gumble
CIOB

CIOB's role in shaping the Building Safety Bill

Caroline Gumble outlines the work CIOB and its members have done on the Building Safety Bill and what more needs to be done before it passes into law

This year should see one of the most significant pieces of UK legislation to have an impact on the construction industry receive Royal Assent.

The Building Safety Bill has now passed most of the way through the legislative process. When it was published last year, we welcomed it.

We worked through the detail with some of our members and identified areas that we believe the government needs to address. We submitted a detailed response to the House of Commons committee overseeing the Building Safety Bill, including:

- **Intentions and scope:** The bill follows through on the key recommendations made in the *Building a Safer Future* report, however, the success of the new regime is dependent on how the new Building Safety Regulator is constituted and how it operates.
- **Competencies and training:** A key challenge is the availability of experts to deliver building safety managers' training and the cost of implementing and delivering an accreditation scheme taught by qualified professionals.
- **Golden thread:** The bill sets out regulations about how information and documents must be stored as part of the golden thread but clarity on what information is required is critical.
- **Indemnity:** While the programme of regulatory change set out in the bill is welcome, we are concerned about the implications of this change for the availability and affordability of insurance products. Construction work will be unable to go ahead unless contractors are able to obtain affordable cover.

We worked through the detail with some of our members and identified areas that we believe the government needs to address. We submitted a detailed response to the House of Commons committee overseeing the bill

Focus on the bill has been one of the primary workstreams for our Policy and Public Affairs team both last year and this. It has involved compiling and submitting our response to the Building Safety Bill committee and engaging where we can with policymakers to share our views.

Expert contributors

I also want to applaud the contribution to this work – prior to the bill being published and subsequently – of some of our expert members. My thanks to Pete Dawber and Gerald Naylor for their valuable input to the industry working groups and to our policy position development.

I've been grateful for their support for this important aspect of our work and humbled to once again be witness to our members delivering on our public interest remit in such a meaningful way.

CIOB's full written submission to the House of Commons committee on the Building Safety Bill can be found here: https://tinyurl.com/5n77bynm.
Caroline Gumble is CEO of CIOB.

MMC can help cure healthcare challenges

We must stop treating hospital projects as one-off capital investments, argues **Leigh Carter**

The New Hospitals Programme (NHP) is a great opportunity for the healthcare sector to embrace modern methods of construction (MMC).

The programme provides funding for up to 48 hospitals to be delivered by 2030 and will adopt a programme-led approach, standardising design, deploying MMC and incorporating the latest digital thinking around smart hospitals.

To date, there has been slow uptake of MMC in healthcare. We need clients, design teams, main contractors and manufacturers to collaborate early in the design process.

The usual response to this call to arms is that healthcare projects tend to be bespoke – and there is no way of incorporating MMC as volume is required to achieve cost benefits.

We need to stop treating projects as one-off standalone capital investments. We are competing in a strained market for key resources including labour, machinery and materials. Improving productivity is central to mitigating the effects of inflation. Adopting MMC and the programme-led approach is a key part of this.

Without change, the industry risks a bottleneck that will delay critical facilities coming online. The government recognises this and *The Construction Playbook* challenges contracting authorities to maximise MMC use.

Digital technologies will be key to implementing MMC. They will not only play a part in design but will allow accurate sequencing and enhanced logistical planning. Adoption of digital twins will improve the performance, sustainability and value for money of projects.

We need to think big and to work smarter. This means coming together as an industry.
Leigh Carter FCIOB is director and north-west healthcare lead for Turner & Townsend.

MIDLAND HEART

▲ The three-storey houses with PV panels on the roofs

Setting the standard

Housing association Midland Heart is pioneering one of the first Future Homes Standard developments, led by its head of construction Tony Hopkin. He spoke to **CM** about the project

The units were modelled in SAP Version 10 (the latest version) and aimed for an 80% CO_2 emissions reduction

80

The introduction of the Future Homes Standard (FHS) is one of the most significant challenges the housing sector has faced in decades. It demands stringent building fabric requirements, a low-carbon form of heating and hot water, and homes that emit 75%-80% less carbon than homes built under current regulations.

The FHS will become a building regulations requirement from 2025, but one housing association is already embracing the changes. Midland Heart is building a 12-home development in Handsworth, Birmingham, which will meet the new standard. Head of construction Tony Hopkin considers it essential that the housing association learns about the build methods and low carbon technologies involved.

"The combination of change for us – in the way we design and build – and for our residents – in the way they use and interact with the homes – is something we need to understand better to ensure success come 2025," he explains. "This is why we've developed a research and development programme called 'Project 80' to model and understand this."

As there are multiple ways to model the FHS, to maximise the research benefit we have incorporated different specifications
Tony Hopkin, Midland Heart

Project scope

Eco Drive is a £2.2m development of 12 new homes on a former brownfield site in Handsworth. The site consists of eight three-bedroom houses of two-and-a-half storeys, two four-bedroom three-storey houses and a pair of two-bedroom two-storey houses.

The project team Midland Heart has assembled includes main contractor Tricas Construction, Oakley Architects and engineer Patrick Parsons. An industry steering group from product manufacturers, researchers and other industry bodies has also contributed ideas to the scheme. The houses are traditional construction – brick and block leaves, with 150mm CavityTherm full-fill wall insulation, built on trench-fill foundations.

"As there are multiple ways to model the FHS, to maximise the research benefit we have incorporated different specifications," says Hopkin (see box p16).

"While most of the specification is consistent, on specific plots we have altered the block density and manufacturer (Besblock and H+H), and incorporated differing airtightness levels and ventilation strategies. We've also featured various heating and hot water approaches, again using multiple manufacturers for the systems."

Key FHS challenges

The first challenge for the project team was determining how to model the FHS. To establish a baseline, the plots were modelled using SAP 2012 to meet the current building regulations.

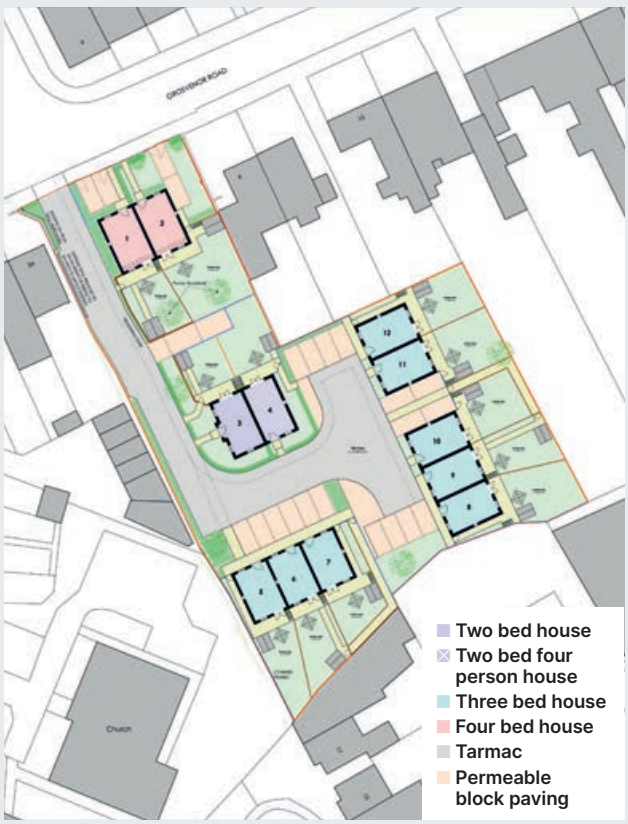
SAP stands for Standard Assessment Procedure and is the government's method for calculating the energy performance of dwellings. The table on p17 shows the results from using SAP 2012 on plot 5 as an example.

The units were then modelled in SAP Version 10 (the latest version) and aimed for an 80% CO_2 emissions reduction. "This enabled us to determine the performance criteria," Hopkin explains. ▶

Project team

Eco Drive, Birmingham
Value: £2.2m
Client: Midland Heart
Main contractor: Tricas Construction
Architect: Oakley Architects
Engineer: Patrick Parsons
Cost consultant: Thornton Firkin
Clerk of works: Derek Evans Partnership

▼ Drone view of the 12-house development in Handsworth



Sustainability features on the Eco Drive project

Varied specifications have been applied for research purposes

Plots 1-2 (four-bedroom houses)
These homes have been designed to achieve a high airtightness of 1.5. "Because of this airtightness, we have incorporated mechanical ventilation with heat recovery (MVHR) from Envirovent to ensure the homes are ventilated property," explains Hopkin.

"The reason for making the homes so airtight is to understand how our residents interact with a highly airtight home which utilises a mechanical ventilation system. To achieve the airtightness level of 1.5 we are utilising Blowerproof Liquid membrane.

"For heating and hot water purposes, we are using Baxi air source heat pumps and hot water cylinders. Other sustainable features include PV panels from QCell and a Showersave QB1-21 waste water heat recovery (WWHR) system.

Plots 3-4 (two-bedroom houses)
These houses have also been designed to achieve a high airtightness of 1.5. "They incorporate MVHR, have PV panels from QCell, and the Showersave QB1-21 waste water heat recovery system," says Hopkin. "However, for heating and hot water purposes we are using panel heaters from Glen Dimplex along with their Edel Hot Water Heat Pump.

"The rationale behind using panel heaters for space heating on these plots is to understand residents' views on their usability and performance when compared to air source heat pumps."

Plots 5-12 (three-bedroom houses)
The largest houses on the development have been designed to achieve a lower airtightness in conjunction with 'natural ventilation'.

"The logic for making the homes less airtight is to explore whether our residents interact differently (or better) to a less airtight home which utilises a natural ventilation system – to inform our thinking come 2025," Hopkin explains.

"These plots also incorporate PV, WWHR and use Vaillant air source heat pumps and hot water cylinders for heating and hot water purposes – which enables us to explore different products."

We have put the residents at the heart of what we are doing, ensuring that they are adequately trained and informed about the properties and how to work them
Tony Hopkin, Midland Heart

The second challenge came in the external fabric and the use of a near full-fill PIR insulation to meet the 0.13 U-value.

"The bricklayers on site had to take extra care and attention to ensure that the cavities were consistent in width, because even a small deviation in cavity width was problematic," says Hopkin.

The third challenging part of the build was achieving an airtightness of 1.5m^3/(h.m^2)@50Pa.

"This high airtightness meant that several aspects of the build were modified (compared to the units with lower airtightness)," Hopkin notes. "For example, joists were installed on hangers instead of in walls, grommets were used to seal any penetrations through the fabric, and Blowerproof Liquid membrane was applied to the internal walls and junctions within the property."

The final technical challenge came on plots three and four. Due to the high airtightness and orientation of these two properties, the TM59 overheating analysis identified potential for these plots to overheat.

"To overcome the potential overheating problem, the g-value of the glazing was changed to 0.37 (from 0.45) – this had an impact on both the cost of the glazing units and also their ease of procurement," Hopkin says.

0.13

A near full-fill PIR insulation was used for the external fabric, to meet the 0.13 U-value

Resident engagement

In addition to the technical challenges on Eco Drive, Midland Heart realises there is likely to be a significant challenge in ensuring the residents can use the homes as intended.

"As the landlord, we are conscious that many of our residents will not be familiar with the technologies in these homes, nor how to live in them so they get the most benefit," Hopkin says.

"Therefore, we have put the residents at the heart of what we are doing, ensuring that they are adequately trained and informed about the properties and how to work them. We will gather residents' feedback during occupation so we can learn from their experience and help shape the way we deliver similar homes in the future."

Midland Heart is also partnering with a company called Covatic to develop a digital home user guide for residents. "They will have information at their fingertips in a format that is easy to interact with," says Hopkin. ▶

Modelling performance using SAP

	SAP 2012 Plot 5 (pilot plot)	SAP 10 Plots 1-2	SAP 10 Plots 3-4	SAP 10 Plots 5-12
Floor U-value	0.13	0.11	0.11	0.11
External wall U-value	0.18	0.13	0.13	0.13
Roof U-value	0.14	0.1	0.1	0.1
Window U-value	1.4	1.2	1.2	1.2
Door U-value	1.4	1.2	1.2	1.2
Air permeability	5.12	1.5	1.5	5.0
Heating	Gas boiler	ASHP	Panel heaters HWHP	ASHP
Ventilation	Natural	MVHR	MVHR	Natural
PV	None	Yes	Yes	Yes
WWHR	No	Yes	Yes	Yes
Y-value	0.05	0.028	0.0274	0.028
Maximum Kg CO_2/yr	1626.71	~352.14	~268.98	~313.52

SAP stands for Standard Assessment Procedure and is the government's method for calculating the energy performance of dwellings. A pilot plot was modelled using SAP 2012 to meet the current building regulations and establish a baseline. The units were then modelled in SAP Version 10 (the latest version) and aimed for an 80% CO_2 emissions reduction.

▼ View of the site during construction

▲ The houses are traditional construction, brick and block leaves, with 150mm CavityTherm full-fill wall insulation

Supply chain challenges

The learning experience from the Eco Drive project identified several skills areas that need focus, says Hopkin.

"First, bricklayers will need to become more familiar with installing rigid insulation products, and there will be significant work ahead to ensure the residents take the additional care and attention these products need," he explains.

There is a significant deficit in the number of people who can install technologies such as ASHPs compared to items such as gas boilers
Tony Hopkin, Midland Heart

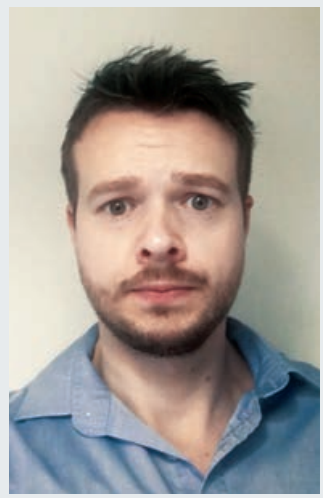
"Second, we need capacity in the supply chain to install low- and zero-carbon technologies. At present there is a significant deficit in the number of people who can install technologies such as ASHPs compared to items such as gas boilers."

Product availability is another potential concern, Hopkins adds.

"We initially explored using triple glazed windows with a U-value of 0.7 for this project," he says. "However, due to the lack of availability within the UK we ended up using an enhanced double-glazed unit. We also struggled to source windows with an enhanced g-value.

"Therefore, we need to see a greater variety of products to satisfy the multiple ways of achieving the FHS."

On completion, Midland Heart will generate 'as-built' SAP reports (in SAP Version 10) to demonstrate the dwellings meet the 80% CO_2 emission reduction. "We will also undertake energy monitoring, working with Birmingham City University," adds Hopkin. "This will establish the actual performance of the dwellings, compared to the design parameters, and identify learning opportunities."



Construction manager CV: Tony Hopkin FCIOB

- Since February 2020: Head of construction, quality and innovation, Midland Heart
- 2018-2020: Quality manager, Midland Heart
- 2011-2018: Technical manager plus various other quality roles, NHBC
- 2010-2011: General manager, First Interiors
- Visiting lecturer at University of Reading and De Montfort University
- Professional Review mentor, CIOB

Education

- BSc Architectural Design Technology and Production, De Montfort University
- MSc Management for Construction, Coventry University
- EngD Housing Defects and Quality, University of Reading

Inspection app helps monitor quality

Captego's digital record demonstrates compliance

The interim uplift to Part L of the building regulations (and the FHS) requires Midland Heart to document and demonstrate that the dwelling aligns with the SAP calculation. The housing association is using digital tech to help achieve this.

"We are working with Captego to trial their inspection and data recording app," says Hopkin. "The app enabled us to set up a 'digital project' for the site, upload the relevant site details, plot specifications and drawings, as well as critical details such as calculated thermal bridging.

"During construction, we can take time- and location-stamped photos of work to demonstrate compliance. We are also using the app to document progress on site and monitor quality."

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Hannah Giebus
Trowers & Hamlins

The Future Homes Standard explained

The first Future Homes Standard projects are under way. **Hannah Giebus** sets out the changes required by 2025 and the interim uplift which comes in this June

From 2025, the Future Homes Standard will require CO_2 emissions produced by new homes to be 75-80% lower than those built to current standards. Homes will need to be 'zero carbon ready', with no retrofit work required to benefit from the decarbonisation of the electricity grid and the electrification of heating. Fossil fuel heating (such as gas boilers) will be banned in new homes, with an expected shift to reliance on heat pumps and heat networks.

The Future Buildings Standard has similar aims and a full technical specification for both standards will be consulted on in 2023, ahead of full implementation in 2025. In the meantime, the government is introducing an interim uplift in standards from 2022.

Interim uplift 2022

These interim amendments to the building regulations will come into force on 15 June 2022. They will require new homes to deliver CO_2 savings of 31% and new non-domestic buildings to deliver CO_2 savings of 27% compared to current standards, through a combination of low carbon heating and increased fabric standards.

The uplift is intended to pave the way for the successful implementation of the Future Homes Standard and Future Buildings Standard in 2025. There are also uplifted Part L and Part F standards for existing homes, to help implement ambitious new energy and ventilation standards across the built environment.

Performance metrics

The government has decided on a 'fabric first' approach to energy efficiency, with a revised package of performance metrics. As the electricity grid is increasingly decarbonised, CO_2 emissions are less effective in measuring the true energy performance of buildings. To tackle this issue, four-part performance metrics are being introduced:

- Primary energy target;
- CO_2 emissions target;
- Fabric energy efficiency target; and
- Minimum standards for fabric and fixed building services.

By delivering carbon reductions through the fabric and building services, new homes and buildings will have a smaller carbon footprint that continues to reduce over time as the electricity grid decarbonises. These performance metrics have been introduced under an updated version of Approved Document L, published alongside the amendment regulations.

Overheating mitigation

A new regulatory requirement for overheating mitigation has been introduced for new homes. This requires reasonable provision to be made to limit unwanted heating during the summer and provide an adequate means of cooling. This has been introduced alongside a new Approved Document O that details the mitigation requirements. The scope applies to new residential buildings, including houses, flats, residential care homes and student accommodation.

Ventilation standards

The updated Approved Document F sets out ventilation standards to be implemented for both domestic and non-domestic buildings. The updated Approved Document provides simplified guidance on ventilation and introduces new measures to mitigate the risk of transmission of infection via aerosols.

Transitional arrangements

Developers can no longer lock in building regulations at the commencement of a development. The Part L uplift will apply to individual buildings, not across development sites, and transitional arrangements will apply only for a 12-month period. Except where transitional arrangements apply, new regulations will apply to individual buildings when work commences.

For transitional arrangements to apply to an individual building, developers will need to both submit a building notice or deposited plans by June 2022 and commence work on each individual building by June 2023. This is likely to create issues for phased developments, as different building regulations may apply over the build programme.

Hannah Giebus is a solicitor in Trowers & Hamlins' energy and sustainability team.

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What can we do about potholes?

Potholes have been the scourge of local authorities for years, if not decades. Can new technology help fight this plague on our roads, asks **Kristina Smith**

Potholes are quite emotive," says Phillip Beaumont, a CIOB trustee and head of the integrated management office for National Highways' Regional Development Partnership (RDP) North at Costain. "They can portray an uncared for and unloved network – although that isn't always the case."

The pandemic has sharpened the focus on potholes, according to Nick O'Donnell, assistant director of traffic and engineering for Wandsworth and Richmond Councils: "Now that more people are working from home, they are much more observant about their own environments. They are picking up on potholes more and reporting them online."

Lockdown has also taken its toll on some maintenance regimes, reports Thermal Road Repairs' managing director Aidan Conway, with his units called in to help catch up on pothole backlogs.

With budgets squeezed from every angle, local authorities need to find new ways to fix potholes more efficiently – and permanently. Technology is likely to play a big role.

For the last 18 months Richmond Council has been deploying a new system from Thermal Road Repairs (see box, p25), one of several technologies which offer alternatives to the traditional method. It may only be a matter of time before connected cars are reporting potholes. Ford has already patented its pothole detection technology to adjust suspension and Tesla has promised pothole detection – and possibly data sharing – with its Autopilot system.

◀ According to the AIA, it would take 10 years to fill all current potholes

▼ Roadmender uses bitumen modified with waste tyre rubber

Funding shortfalls

Central government understands very well how emotive potholes can be. Which is why in 2020 it announced a £2.5bn Pothole Fund to be paid out over five years.

That may not go very far. According to the Asphalt Industry Alliance's (AIA's) 2021 Annual Local Authority Road Maintenance (ALARM) survey it would take 10 years and cost £10.24bn to fill all the potholes that exist now. (The 2022 survey was expected as this article was going to press.)

While National Highways' network of motorways and major roads is well resourced, with five-year horizons, local authorities have competing funding needs, says Beaumont: "Highways wants their share, but so do social care, education, parks and leisure... there's a lot of budgetary friction."

Rural local authorities are perhaps worse placed than urban ones, as the levelling-up agenda directs funds to large towns and cities. In February this year, the County Councils Network (CCN) of 36 county and unitary councils outside England's major cities, reported that its members would receive £480m less this year compared to two years ago.

> **Now that more people are working from home, they are picking up on potholes more and reporting them online**
> **Nick O'Donnell, Wandsworth and Richmond Councils**

But even London boroughs, which are usually better funded, are facing falling budgets. Transport for London's (TfL's) revenues fell off a cliff during the pandemic due to low passenger numbers on the tube and buses during the pandemic.

"TfL funding has dried up of late," says O'Donnell. This means that roads that TfL are responsible for are not being maintained – with boroughs forced to step in and foot the bill on major roads.

Doing things differently

Potholes are generally fixed on either a temporary or 'permanent' basis. A fast, temporary fix might be necessary for safety reasons and would involve filling the void using a cold-mix material. A longer-lasting repair requires the material around a pothole to be cut out using a saw and jackhammer, to form a rectangular hole with vertical edges, so that new material – usually hot – can be poured in and compacted with a roller.

Although the vertical edges around a pothole repair are treated with a tack coat so that the new ▶

JCB's PotholePro machine has a new hydraulic cutting tool

material adheres to the old, this joint is a weak spot and will eventually fail, depending on the workmanship, the weight and frequency of traffic and weather conditions. Alternative methods include heating the material around a pothole to effectively remove the joint, using better tools to improve the speed and quality of the repair, or using new materials.

Thermal Road Repairs has introduced a computer-controlled process to avoid overheating the existing asphalt, which leads to oxidisation and brittleness. Bespoke solar panels charge the heating units and can be remotely monitored using IoT technology.

With no waste material to be carted away and far less new material required, Thermal Road Repairs' technology produces far less carbon than traditional pothole repair methods, which Conway says is an important consideration for local authority customers now.

"In the last two to three years, carbon has moved up the agenda for local authorities. Many of them have declared a climate change emergency and set net zero carbon goals, so any technology that helps cut carbon is interesting to them," he says. "Our technology saves 85% of carbon emissions compared to traditional pothole fixing techniques."

"Highways wants their share, but so do social care, education, parks and leisure... there's a lot of budgetary friction
Phillip Beaumont, Costain

Roadmender's technology also cuts carbon emissions radically – by 85%, according to CEO Harry Pearl – again by removing the need for waste and new material. Roadmender has spent four years and £7m developing a system for using bitumen modified with waste tyre rubber to fill cracks and potholes in roads. The material comes in pellet form and can be heated at the point of use and combined with aggregates.

Pearl reckons that for a 1 sq m pothole, Roadmender technology would require around 20kg of materials, while a traditional fix would require 120kg, once a rectangular box had been cut around the hole.

Roadmender has been trialling its technology for around 14 months, on private roads, such as those at service stations or around ports, says Pearl. Having filled a crack or pothole, a further layer of the rubberised material is used to overseal the repair – once the original material has cured.

Another new system, launched in a fanfare of publicity early in 2021 is JCB's PotholePro. The machine is an adapted Hydradig wheeled excavator,

10.2

Cost, in billions, of repairing the pothole backlog, according to the Asphalt Industry Alliance

equipped with all the tools needed to cut round a pothole and clean out. In addition to the tools the existing JCB Pothole Master has, the PotholePro also has a hydraulic cutting tool.

Stoke City Council was the first local authority to buy the machine in November last year, having previously been involved with trials. JCB reports that the council has fixed 10,000 sq m in four months – an area which it says would take almost three years using traditional methods.

Clearly the productivity rates of any of these new methods depend on the types of road and their condition. A machine working on a closed-off road with a high density of potholes will achieve a much greater area of repairs than one deployed to fix isolated potholes. Country roads with their crumbling edges and limited width are another challenge again.

Digital hope

Getting the strategic planning behind pothole repair and road maintenance right is just as important as finding the right technology. But this too requires resources that just aren't there.

Richmond and Wandsworth invest around £2,000 per borough every five years for detailed visual inspections of roads, says O'Donnell. "It's helpful because it brings you up to speed, but it also gets out of date quite quickly as roads wear at different rates."

Here, digital developments do offer hope. Companies and researchers are developing applications that train artificial intelligence (AI) to search video footage for defects. Amey is working with Kent County Council on a system that uses buses and council vehicles combined with cameras, sensors and AI to collect information on potholes and street assets. Wiltshire Council has been working with Atkins to see how smart drones could help identify potholes.

Armed with more data, highways authorities will be able to make better decisions on which potholes to tackle when. But there is no silver bullet, says Beaumont. "Ultimately, it comes down to the number of potholes, the time required to fill it, budget and the need to take up some network occupancy to do it safely. That's been a challenge for generations."

How Richmond stretched its pothole budget

The London council cut costs by over 30% by switching its repair technology

▲ Richmond Council's Thermal Road Repairs system

In autumn 2020, the London Borough of Richmond upon Thames purchased a Thermal Road Repairs system for repairing potholes. According to Nick O'Donnell, assistant director of traffic and engineering, the quality of repairs being delivered was highly variable.

"It comes down to the gangs doing the work, and we were getting a pretty mixed bag of results," he says. "Some of them were quite bad." Complaints from residents were ramping up.

O'Donnell came across the technology – which uses thermal infrared heaters to heat up the material in and around a pothole before new material is added, mixed and compacted – at a conference. He then spoke to Northamptonshire County Council, which was using the system, before making the case to his councillors.

Aside from the promise of faster and longer-lasting repairs, the fact that the new system cuts carbon emissions was a plus, says O'Donnell. "It's far more environmentally friendly than traditional methods – which is a big selling point for members."

The 85% carbon savings are largely due to the fact that there is no waste to cart away and only a small amount of new material to bring in. Using solar panels to charge the heater contributes too.

O'Donnell reports that between January 2021 and January 2022, the unit treated 21 roads, repairing 4,600 sq m. That equates to a 30-35% cost saving compared to traditional methods – which means more roads are treated. This could be higher, says O'Donnell, as currently Thermal Road Repairs is supplying the crew – rather than the council.

To date, all the pothole fixes are holding strong, he says: "After 18 months, it looks cost effective and longer lasting."

Bridging Barking with the Thames

Structural steelwork has been used for the longest spans of a 1.5km-long viaduct that will carry a new railway extension to the Barking Riverside mixed-use development. **Martin Cooper** reports

Tonnes of structural steel used on the viaduct

3,500

With planning permission for up to 10,800 new homes, along with numerous healthcare, shopping, community and leisure facilities, Barking Riverside is currently east London's largest housing-led mixed-use development.

Located on the site of a former coal-fired power station that closed in 1981, the former brownfield area is not best served by public transport and in order for the new development to realise its full potential a dedicated railway extension and station are being built.

The extension will add 4.5km to the London Overground network, extending the Gospel Oak line from Barking to a new elevated Barking Riverside terminus, which will be situated in the main square of the development. On completion, it will be capable of operating four trains per hour and provide residents with a vital transport link to the rest of the capital and beyond.

Better public transport links go hand in hand with the development's sustainability goals. The new railway, along with planned river transport, will mean there will be less reliance on residents having to drive. Other green credentials at Barking Riverside include over 41% of the site being dedicated to open space, including a new ecology park with all green areas linked by parkland, cycle routes and footpaths.

> **Steelwork was chosen for the northern end of the viaduct as it was the only material that could efficiently create the longer spans, up to 42m long**
> **James Barrows, Transport for London**

◀ The steel viaduct spans the rail line and freight yard

▶ Weathering steel units are supported on concrete piers

Project team

Barking Riverside Viaduct

Architect: Weston Williamson

Client: Transport for London (TfL)

Main contractor: MSVF (Morgan Sindall/Volker Fitzpatrick JV)

Structural engineer: Arcadis

Steelwork contractor: Severfield

A key element of the extension is a 1.5km-long viaduct that carries the final part of the new twin railway line over a number of infrastructure assets, such as the existing London to Tilbury rail lines, a DB Cargo freight yard, High Speed One tunnels, roads and a waterway.

Being able to span these obstacles is the main reason why this part of the new branch line has been built on a viaduct, although a high water table is also a major factor. Meanwhile, the elevated railway and its terminus will create a focal point in the heart of the new town square as well as providing commercial and retail opportunities in the bays under the raised station.

The viaduct can be divided into two parts: a concrete structure with precast beams and piers supporting a cast in-situ deck; and a steel viaduct also supported on concrete piers.

The former creates the longest part of the viaduct and ends at the Barking Riverside terminus, while the latter is approximately 400m long and consists of nine spans at the northern end, with some 3,500 tonnes of steel used in total.

Explaining the reason for choosing two different construction designs, Transport for London's (TfL) head of programme James Barrows says: "Steelwork was chosen for the northern end of the viaduct as it was the only material that could efficiently create the longer spans, up to 42m long, needed to pass over rail, road and river obstacles."

As well as creating the required long spans, the use of steel has allowed the project team to minimise disruption to these infrastructure assets. Less time and equipment was needed to erect the steel part of the viaduct, as prefabricated girders were brought to site, ready to be erected during a series of weekend possessions.

All of the sections used are fabricated from weathering steel, which was specified because the material is durable and requires no future maintenance or painting. This is an important consideration, as any work on the viaduct in the future could cause major disruption to the operational railway assets below. ▶

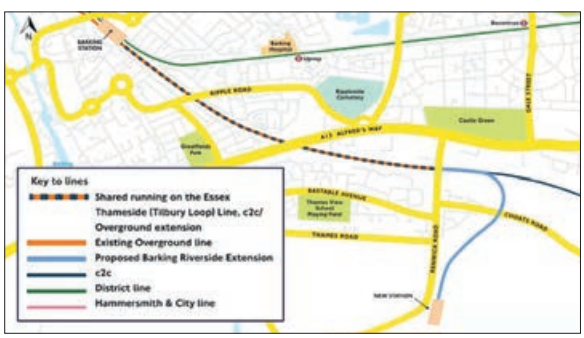
We have built 57 concrete piers to support the deck along the entire route of the viaduct, each one supported on piled foundations which are up to 45m deep
Steve Balliston, MSVF

Working on behalf of TfL, construction of the viaduct was begun by Morgan Sindall/VolkerFitzpatrick joint venture (MSVF) in 2019. As well as the interfaces with existing transport infrastructure, the site is also home to a myriad of underground services, all of which had to be located and then worked around when MSVF started the piling programme.

There are also some services above ground, namely a series of high-tension overhead cables crossing the route of the concrete part of the viaduct. In this location, the structure has actually been designed to dip down and then up again to ensure suitable electrical clearance is achieved for the railway's overhead power system.

"We have built 57 concrete piers to support the deck along the entire route of the viaduct, each one supported on piled foundations which are up to 45m deep," says MSVF project director Steve Balliston.

▲ Installation of the girders using a Sarens crane



▼ Map showing the Barking Riverside extension route

The construction of the piers was followed by the installation of the viaduct's deck. For the steelwork element, this work started with the most northerly steel girders for span five. Beyond this, spans one to four form the ramp of the viaduct that bring the structure up to its regular 12m height.

Span five goes over a DB Cargo siding that forms part of its Ripple Lane depot. Requiring weekend possessions and close coordination with the rail freight provider, steelwork contractor Severfield and its lifting partner, Sarens, installed the span's two main plate girders, each weighing more than 100 tonnes and measuring 35m long x 3m deep.

Each of the steel spans has up to 22 cross beam members, all 12m long (corresponding with the width of the viaduct). Four cross beams were also installed during the span five weekend possession, with the remainder lifted into place during the following week. This initial steelwork, and most of the subsequent lifts, were done using a Sarens 1,000 tonne capacity mobile crane.

The next four spans also go over the Ripple Lane depot and include one span supported by smaller, slender columns designed to allow easier vehicle movements around Ripple Lane.

"The viaduct piers are mostly large solid structures, and would ▶

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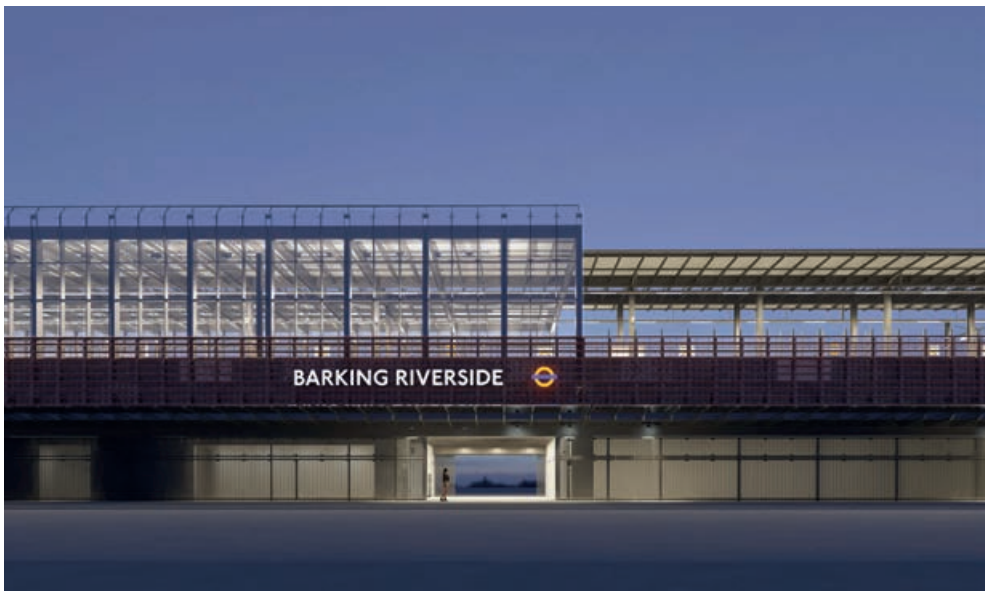

▲ Barking Riverside terminus will provide a focal point in the new town square

be intrusive within the depot and impede vehicle movements," explains Barrows. "For one span, we have installed two slender columns instead of a pier as they allow vehicles to easily pass, while the adjacent pier has been designed with a large opening in the middle for vehicular access."

Largest steel sections

A challenging rail interface occurs adjacent to the goods yard where the viaduct spans the Tilbury to Fenchurch Street lines. Beneath these tracks are the High Speed One tunnels that accommodate Eurostar and domestic trains from London St Pancras station. Pile locations were consequently limited and they had to be installed around these subterranean assets.

One of the final steel spans to be installed was also the longest and because of site constraints, required the use of one of the UK's biggest mobile cranes, with a lifting capacity of 1,200 tonnes.

Two steel girders, measuring 42m long x 3m deep and each weighing 120 tonnes, represented some of the largest sections ever fabricated by Severfield at its Lostock facility near Bolton.

Moving these large steel sections around the yard and onto delivery trucks was a significant challenge, as Severfield assistant project manager Gethin Williams explains: "Our overhead cranes at Lostock have a lifting capacity of 100 tonnes, which is not enough to lift these items.

"The solution was to fabricate each girder on temporary trestles. Once the sections were ready to leave the factory, self-propelled modular transporters (SPMTs), each with a maximum lifting capacity of 140 tonnes, were reversed under the temporary trestles and jacked up towards the steel beams to allow for safe loading on to delivery trucks."

Transporting the girders to east London was also challenging. Severfield had to liaise with local councils and police to temporarily remove traffic lights and other street furniture that would otherwise obstruct their movement – both near the factory and Barking.

Once delivered to site, the girders were installed using a Sarens Gottwald 1,200-tonne capacity mobile crane lifting the 120-tonne girders at a 65m radius, with a 71m main boom, and requiring 350 tonnes of lift ballast.

The installation of this vital span, which crosses the Ship and Shovel waterway, allowed the team to lift the final steel girders into place last April, allowing the follow-on trades installing the deck and tracks to begin their work. Barking Riverside train services are scheduled to start during autumn 2022.

> **Our overhead cranes at Lostock have a lifting capacity of 100 tonnes, which is not enough to lift these items**
> **Gethin Williams, Severfield**

Construction career: James Barrows, head of programme, Transport for London

James Barrows arrived at Transport for London in 2007, after 10 years with Balfour Beatty, which he joined after graduating from London South Bank University with a civil engineering degree.

He worked as a project engineer and project manager with London Underground before moving on to the Barking Riverside Extension project in late 2016, when the design was being completed. Barrows then led the project through the detailed design and contract award phases, appointment of the Morgan Sindall/VolkerFitzpatrick joint venture, and commencement of site works in early 2019.

In January 2020, he was appointed head of programme of the Barking Riverside Extension.

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Automated, mastless machine control

What are the benefits of automated, mastless machine control? Is it worth the extra investment? This CPD in association with Topcon Positioning GB explains

▲ Automated solutions have an optional automatic control mode

Machine control (MC) is advancing all the time and it can be difficult to know which solution suits your site and your team the best.

Automated MC solutions, such as Topcon's MC-Max, help to increase processing power, speed, accuracy and reliability and can be installed on a full range of dozers and excavators, using the same basic modular components. But there are other reasons to invest in an automated machine control solution over older technologies.

A more efficient solution

The latest solutions are linked to cloud software, which means that data can be saved and updated in real time, helping you to keep track of progress throughout the whole project.

This also means that machines can be controlled from remote locations. An operator could be in Portsmouth and control an excavator or dozer on a site in Aberdeen. This has made remote working possible for the construction industry for the first time, because you can trust your machine to do the job without needing to monitor progress on site.

While the software capabilities have advanced, the system functionalities stay the same, so you can jump in and use it straight away if you've used the same operating system on older kit. If you haven't used software like Topcon's before, these systems are simple to understand and full training is provided.

In terms of the physical benefits, newer technologies like the MC-Max offer flexible mounting solutions, as well as optional automatic blade and bucket control for a variety of machines.

In association with TOPCON

One of the most significant differences between older machine control solutions and the latest automated kit is the antennas and sensors. Topcon's MC-Max solution uses two GPS antennas, mounted on the roof of the machine, which provide accuracy and positioning of the blade, working in conjunction with the hydraulics. Unlike older kit, like 2D or LPS systems, there are no masts or issues with getting the receivers off the blade, which offers improved visibility.

Topcon's solutions in the MC-X family use TSi4 sensors: one to measure the pitch and roll on the body of the machine, three sensors to measure the C frame which connect the machine and blade, and another sensor mounts on to the blade itself. These sensors detect the position of the machine in real time. Previously this was done with two sensors, but more sensors offer improved accuracy as more data is available and the machine can perform more quickly.

Flexibility

Manufacturers like Topcon are now utilising components that are used across different solutions for both dozers and excavators. This means that there is now the flexibility to use your solution, like MC-Max, across multiple machines (after a base calibration from the installation team) without needing to purchase multiple components. The excavator configuration can also be used on drills, hammers and compaction machines while the dozer system can also be used on graders. This can give you the ability to take your projects to the next level – with increased accuracy and efficiency right across the workflow.

Machines can be controlled from remote locations. An operator could be in Portsmouth and control an excavator or dozer on a site in Aberdeen

It's critical to ensure there is support and training from your technology provider when taking ▶

▼ Topcon's MC-Max solution uses two GPS antennas

▲ MC-X provides tailored solutions for the way you want to work

on new technologies as it enables upskilling, resulting in your team having greater flexibility in terms of where they can use their skills across the site.

Improved health and safety

Some automated MC solutions, like the MC-Max dozer system, are now often mastless. This means that as well as being a cleaner installation, you don't need to worry about removing 2-2.5m masts when there are working height regulations or restrictions preventing the removal of masts.

These can cause problems when they are an obstruction to specific structures that the operator needs to drive into. The main benefit of mastless systems is that operators no longer need to climb up to remove the receivers, which can be one of the most dangerous elements.

> **The main benefit of mastless systems is that operators no longer need to climb up to remove the receivers**

Newer machines now come with a safety guard around the top too, so that the operator can't fall off the back. The antennas are now mounted within the safety area and there are handles and steps to maximise safety entering the cab.

Secure your site

Security is also a huge factor – older machine control solutions did have masts and obvious antennas which posed a security risk on sites – as theft can cost project owners thousands of pounds and waste a significant amount of time while sourcing replacement equipment.

While smaller sites now usually have security, bigger road and infrastructure projects, like HS2, can't have security along the whole stretch of the works. These newer systems are much less intrusive and it's now difficult to detect if a machine has a GPS system without the obvious poles.

Knowing that there is reduced risk of vandalism, theft and damage as well as the significant health and safety element can be a huge benefit when making such a significant investment and can make all the difference to the success of projects, with less risk of delays through damage or injury.

What does the future of machine control look like?

Automation is just the first step for the next generation of machine control. In the future, it's likely that the whole excavation process will become automated – increasing productivity across the entire workflow. At the moment, deciding whether to use more excavators or dozers is a human-led decision, based on factors like the length of the haul or type of material excavated.

Once construction workflows are fully automated using powerful data management software like Topcon's MAGNET and Sitelink3D, project managers will be able to accurately assess the rate of progress and resource the operation appropriately using the reports from the machines. Fully automated workflows could be the answer to meeting the increasing pressures and targets for the construction industry. ●

Find out more about Topcon's automated machine control solutions at www.topconpositioning.com.

To test yourself on the questions on the right, visit www.constructionmanagement.co.uk/cpd-modules.

CPD Questions

1. Which one is not a key benefit of the latest machine control systems?
a) Fitted to one machine
b) Control your machine from any location
c) Mastless to suit working height restrictions
d) Easy-to-use software

2. Which statement below is false?
a) Machine control systems improve accuracy and efficiency on site
b) Machine control systems use artificial intelligence and don't require any management
c) Machine control systems can be used on all construction and infrastructure projects, from small building sites to national highway maintenance

3. Complete this sentence – Real-time data integration is made possible using...
a) Remote software
b) Cloud software
c) Automation software

4. Automated machine control solutions can be controlled from any location in the world at any time. True or false?
a) True
b) False

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Hong Kong launches new safety drive

The former colony wants to improve its poor safety record and has asked for help from British specialists. **Rod Sweet** explains

After a recent increase in construction fatalities, the Hong Kong Construction Industry Council (CIC) has decided to develop a Design for Safety (DfS) management system. It is requesting insights from industry professionals in UK and Singapore to make sure it is tapping into the best international practices.

DfS is the process of identifying potential hazards at the start of design work to mitigate risk better throughout a construction project. The CIC believes a good understanding of DfS can help improve morale and productivity, prevent injuries and illness among workers and the public, and deliver timely and cost-efficient projects.

It set up a DfS Task Force in May 2020, and appointed Arcadis in June 2021 to review and develop the future DfS management system in Hong Kong.

"The plan is to develop a DfS management system for all construction projects, with reference material and training," explains Alex Katsanos, partner and head of business advisory for Hong Kong & Macau at Arcadis.

In Hong Kong, current DfS practices are based on the UK's 'Safety in Design' approach, shown in the Construction Design and Management (CDM) 1994 model. Its first CDM model was implemented in 2004, while in 2016 the Hong Kong Development Bureau published *Guidance Notes of Design for Safety* and *Worked Examples of Design for Safety*.

While these existing models brought positive changes, statistics from the city's Labour Department reveal that fatalities have increased over the past three years.

"This indicates that there is a long road ahead to improve the adoption of DfS within the industry and to achieve an effective safety culture," says Katsanos.

Projects should adopt a 'carrot and stick' approach to health and safety, using KPIs to recognise and reward good behaviour
Stephen Coppin, CIOB

As with many countries, construction is one of the highest risk industries in Hong Kong. Every year, a majority of workplace accidents happen due to unsafe work practices. While enforcement bodies are inclined to hold the client or developer fully responsible for project safety, there are limits to what they can do to ensure the safety across the project life cycle.

DfS supports a collaborative risk management approach that requires the involvement of all the dutyholders and stakeholders of each stage of the project, from design through to demolition, identifying risks and solutions. They are also responsible for reporting any hazard and associated risk or non-conformance they observe.

"The same principles apply for CDM in the UK and DfS in Hong Kong and Singapore: ensuring the right information is provided to the right people at the right times through the project life cycle," says Stephen Coppin, chair of the CIOB health, safety and welfare group.

"Clients should provide a clear brief on health and safety requirements at the start of a project and assign responsibilities, using the principles of 'RACI': responsible, accountable, consulted and informed.

"Projects should adopt a 'carrot and stick' approach to health and safety, using KPIs to recognise and reward good behaviour."

Arcadis has launched a structured survey for respondents in Hong Kong, the UK and Singapore to learn about and assess the current application of DfS or its equivalent in those places.

"Responses so far indicate that the benefits of DfS are hindered by insufficient resources and time, lack of clarity in the demarcation of responsibilities, and lack of priority of health and safety in business decisions," says Katsanos.

"But we welcome further insights and information on best practice to help shape the future of DfS in Hong Kong."

◀ Hong Kong's Victoria Harbour, looking towards Kowloon

Design for Safety

To take the Arcadis survey on Design for Safety, enter the link or scan the QR code below, according to your location

Hong Kong
https://forms.office.com/r/JUKBGgJZh4

United Kingdom
https://forms.office.com/r/xJ4xYEGq3S

Singapore
https://forms.office.com/r/jpDd4DYmKk

All responses will be treated anonymously. Arcadis will share survey results and findings with participants. Further information: alex.katsanos@arcadis.com or stephencoppin@sjcriskms.com

Digital Construction Awards: early bird booking open

It's time to book your table at the built environment's premier awards for BIM and digital construction

You can join the industry's brightest talents in BIM and digital construction at the Digital Construction Awards this summer. The awards celebrate best practice and reward innovation in the application of BIM and digital technology in the built environment sector. The deserving winners will be revealed at the awards ceremony on 12 July 2022, at The Brewery in London, and you can now book your tables to join them.

There is an early bird discount of nearly 20% for those that book tables or seats before 5pm on 20 May.

Partners for the awards are Digital Construction Week, the Chartered Institute of Building, and media titles *Construction Management* and *BIMplus*. Awards sponsors include Revizto, Bluebeam, Procore and Autodesk.

Judging of the 13 categories gets under way this month.

Ollie Hughes, co-founder of Digital Construction Week, said: "I know our judging panel of more than 20 well-known experts from across the sector have been looking forward to reviewing the industry's best work."

Will Mann, editor of *Construction Management*, added: "We've received a lot of great entries, and we look forward to welcoming those at the forefront of BIM and digital construction to The Brewery in July and celebrating their success."

The category shortlists will be announced online on 9 May.

To book your places at the awards and to find out more, including who the judges are, visit: digitalconstructionawards.co.uk.

Digital Construction Awards: the categories

- Best application of technology
- Best use of data on a project
- Delivering net zero with digital innovation
- Digital construction project of the year – major project (sponsored by Revizto)
- Digital construction project of the year – small project
- Digital excellence in a construction business (sponsored by Autodesk)
- Digital excellence in a construction SME
- Digital partnership (sponsored by Bluebeam)
- Digital innovation in design
- Digital innovation in offsite construction
- Digital innovation in on-site productivity (sponsored by Procore)
- Digital innovation in health, safety and wellbeing
- Digital construction champion of the year

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Paul Gibbons
Decipher

Are paper records enough in a dispute?

In our latest contract clinic question, an SME worries whether its record-keeping system will be sufficient on a larger project. **Paul Gibbons** replies

THE QUESTION

We've just won the largest contract in the history of our firm. We're wondering if we need to improve our record-keeping procedures. We know larger firms use IT systems, but can we rely on paper records as we always have done?

THE ANSWER

Firstly, it's great you've started thinking about record keeping from the outset. This should mean effective maintenance of your records through the life cycle of the project. But why is that so important?

Most standard forms of construction contracts stipulate that project records must be kept. FIDIC defines the specific requirements at clauses 4.21 and 6.10. JCT relies upon a retrospective approach to entitlement, where records and assessments are collated after the event. NEC uses a prospective assessment of entitlement, where the effects of the event are forecast in respect of updating the programme and issuing prospective compensation events.

Not all contracts specify which records you should keep, but where they do, it is important that you comply with your contractual obligations. Even if the contract is silent, it is good practice to agree between the parties what records should be maintained. If you are lucky enough never to have found yourself in a dispute, you may not realise what an expensive mistake not keeping records can be.

So what records should you be keeping? The Society of Construction Law (SCL) Delay and Disruption protocol lists six crucial elements that should be recorded as a minimum: the programme, progress records, resource records, cost records, correspondence and administrative records plus all contract and tender documents. The Construction Leadership Council, at the start of the Covid pandemic, issued its own guidance which builds on the SCL's.

Good records are those which are continually maintained and state what you planned to do and record what you actually did. Most importantly, they should be updated when changes occur. Records should be well organised and structured. Too often we find documents languishing in different folders on a computer or papers in boxes of miscellaneous project documents.

> **The more records we create, the more important it is that we structure them effectively**

Hannah Mycock-Overell of Irwin Mitchell suggests keeping an 'issue store', so as soon as you become aware of an 'issue' that might lead to a delay or disruption, keep a copy of any relevant correspondence, records and diary entries in a single location which can be easily found.

But do you need a document management system to handle all these records?

You will need to categorise your records. Keeping them all in chronological order is no help when we need to pull out information about the piling. This is where a document management system can help. However, the information pulled out is only ever as good as the information put in. As one judge famously said in *Skanska v Egger* in 2004, "garbage in – garbage out".

However you store your records, it needs to work for your project and everyone who will need to update or access them. Make it simple and easy for anyone who is not tech-savvy. Can records be updated from your phone or on site, rather than having to wait until you are back in the office?

As the use of technology increases, we are also seeing the creation of even more records, for example, from hard hat camera and drone surveys. The more records we create, the more important it is that we structure them effectively.

No matter how good your system, electronic or paper, the quality of the data will only ever be as good as the human using it. So the training and culture of the project team are as important as the records system employed.

Paul Gibbons is CEO of Decipher.

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Plotting your digital construction journey

Autodesk and the Chartered Institute of Building (CIOB) have teamed up to create this new infographic. It'll help you visualise your journey, create a roadmap and define your next steps - leading to better project outcomes.

View at: www.autode.sk/ciob-digital-journey

PAUL HARMER PHOTOGRAPHY

This much I know
Jo Weston MCIOB
Operations director, Willmott Dixon Interiors

‘I’m sure the industry will look very different in 20 years’ time’

In nearly 30 years Jo Weston has witnessed dramatic changes in the industry and predicts technology will shape the way we work in the future

What made you go into construction?
Growing up I always had an interest in construction. My aunt was a quantity surveyor, which gave me a good visibility of the role.

During my A-levels I opted for the management trainee scheme at Willmott Dixon, where I have spent the last 29 years of my career.

Starting on the trainee scheme, I progressed into surveying, before switching into customer management and operations, becoming a director for the business just over six years ago.

What do you remember from your first project?
I was seconded to a project on day two of my employment! It was a site in Luton where we were building 75 dwellings for two housing associations. I look back on it fondly. I learned so much about the building process and met so many great people – some I am still in regular contact with now.

Is there anything in your career you would do differently now?
The industry has changed significantly in the last couple of decades. Looking back, I feel I should have embraced digital construction earlier. We need to keep one eye on the future as I’m sure the industry will look very different in 20 years’ time.

What advice would you give to someone starting in construction today?
My daughter has just started out in the industry, which I am extremely proud of! My advice is to ask lots of questions – there is so much to be learned from being proactive – and don’t expect to know everything straight away. Secondly, embrace the many career pathways a career in construction offers.

> **My advice to someone starting today is to ask lots of questions – there is so much to be learned from being proactive**
> **Jo Weston, Willmott Dixon Interiors**

What has changed the most about construction since you’ve been working in it?
The technology we use in construction has changed immensely, not just in the way we design buildings, but how we utilise offsite manufacture to reduce the timescale and cost of projects, how we manage process and procedures and how we communicate with each other.

Through the pandemic we have seen a mini revolution in the way we work. There are a lot of good learnings that will help shape the way we work in construction over the next decade.

What’s the most valuable training you’ve received and why?
Two standout programmes spring to mind. In 2015 I led the creation of a quality training academy in Birmingham, working with British Gypsum and Rockwool, improving knowledge and skills in trade aspects such as partitioning and fire prevention. Working in a customer-facing role, it was valuable to further my understanding of how these requirements fit together.

Secondly, I have found personal development around the softer aspects of leadership to be valuable. It is important to be self-aware and understand your strengths and weaknesses, to identify areas to improve.

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Job spotlight
Rory Smith
Stonemasonry foreman, DBR

Carving out a niche

Rory Smith switched from working in marketing to forge a stonemasonry career which has included carrying out repairs to the Elizabeth Tower

Marketing to stonemason is quite the job switch. How did that come about?
I went to university in 2001 and in hindsight I went for the wrong reasons: I went because the mindset at the time was that if you can go to university, you should. And although I had a great time and enjoyed myself, the direction it took my career wasn't the right one.

I worked for about three years in a couple of different graduate jobs but became increasingly disillusioned. I realised that a sedentary office-based environment wasn't for me, and that I needed something active, creative and outdoors.

However, it wasn't until I read the obituary of a renowned letter carver from the village I was raised in that I even considered such a drastic change in career. That obituary in a local newspaper was a genuine eureka moment, and within hours of reading it I had arranged an interview for a place at the Building Crafts College in Stratford, east London, and told my wife about my intentions to give up my well-paid job and study for my NVQs.

Describe a typical day in your job.
One of the best things about my job is that there really isn't a typical day in the conventional sense. We start early and usually work outside – however, other than that our days are pretty varied. Stonemasonry within the historic building sector takes you to such a wide range of buildings, dealing with a broad array of materials and designs, that no two jobs are the same.

One day you can be working a bit of stone in a banker shop and the next you can be installing stones on the roofs of a UNESCO World Heritage site. I might get the time to put in a shift on the tools personally, or I can be supervising the team I work with to ensure standards are met, or helping the design team with their ever-evolving plans.

You've been a stonemason for over 14 years now. Which is your favourite project?
For no reason other than simply a fascination with the sheer size and

Stonemasonry within the historic building sector takes you to such a wide range of buildings, dealing with a broad array of materials and designs, that no two jobs are the same
Rory Smith, DBR

intricacy of the building, ever since I qualified as a stonemason I've had a strong desire to one day work on the Palace of Westminster.

Since 2011 I have been working there almost full time. Although I've worked on various parts of the estate such at the encaustic tiles relaying project, and the courtyards restoration, my favourite job must be the stonework repair of the Elizabeth Tower.

The iconic nature of the building – not to mention its abundance of highly intricate stone carvings – makes it a stonemason's dream.

What advice would you give to someone thinking about becoming a stonemason?
It is a hard job that takes its toll on your body. Learning the skills needed and getting good at them is not easy, I can guarantee you will become disillusioned at some point. But if you stick with it, it's worth it.

You will never be bored, and you will take great pride in the fact that you are doing an honest day's work and contributing to historic heritage in a significant, and tangible, way.

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CIOB Community

Dublin ceremony for Ireland's award winners

Ireland's CIOB Awards will be presented at Croke Park Stadium at the end of March

▲ 2019 CMYA Gold winner Alan Barnes

The winners of the CIOB Awards Ireland 2022 will be revealed at Croke Park Stadium in Dublin on 31 March.

Construction Manager of the Year (CMYA) is one category of the awards, and is divided into sub-categories based on project values:

- Projects up to €10m/£8.5m
- Projects from €10m to €25m/£8.5m to £22m
- Projects from €25m-€60m/ £22m-£52m
- Projects over €60m/£52m.

Held every two years, the awards recognise the achievements of those leading complex projects.

The judges look beyond the building, at the project as a whole. It's not about being the biggest or most impressive but about the individuals who make these projects possible and the impacts they deliver.

CMYA is seen as a prestigious honour within the industry for its recognition of the excellence and exceptional skills of the recipient.

The awards were open to CIOB members and non-members and award finalists will be eligible for Chartered Membership.

The CMYA Gold award was last won in 2019 by Alan Barnes of Collen Construction (pictured) for his work on Scots Church in Lower Abbey Street, Dublin.

> **It's not about being the biggest or most impressive but about the individuals who make these projects possible and the impacts they deliver**

DOMINIC HALLAU

▲ Dublin's Croke Park Stadium will host the event

CIOB shares good practice learned from HS2

Academy joins forces with HS2 Learning Legacy

Over the course of 2022 and beyond, CIOB Academy will share good practice and innovation learned from the HS2 programme.

Towards the end of 2021 CIOB and HS2 Learning Legacy signed a memorandum of understanding (MOU) to share lessons learned, good practice and innovation.

The academy will create and deliver online CPDs, disseminate case studies and technical papers. It will also explore deeper collaboration on events and new publications in key areas such as project and programme management, sustainability and other areas where HS2 Learning Legacy has a wealth of knowledge and resources.

HS2 Learning Legacy aims to assist in raising the bar in the industry, and this aligns with CIOB's mission to drive up professional standards, push forward innovation and nurture talent.

Newcastle members take a tour of Bank House

On their first face-to-face site tour in two years, members visit Bowmer & Kirkland's city-centre site

After two years without any physical site visits, due to Covid, members of the CIOB Newcastle Hub took a tour of Bank House, on Pilgrim Street in Newcastle-upon-Tyne at the end of January.

The redevelopment of the former Bank of England site at the junction of Pilgrim Street and Swan House roundabout will see construction of Bank House, a 14-storey, 120,000 sq ft Grade A landmark office building, with ground-floor retail, which will form the catalyst for the wider East Pilgrim Street Regeneration Area development proposals.

The project is being constructed by Bowmer & Kirkland for Taras Properties.

Tom Kirk, design manager with Bowmer & Kirkland, took the 15 visitors through the history of the project, the detail of what was being constructed and a bit of history about the land they were building on.

The site was formerly home to the Bank of England in a building that was constructed in the late 1960s but lay empty for some years before being demolished in 2012.

The main building has spectacular views of Newcastle as well as the Cheviot Hills in the distance. Kirk and design manager Hollie Statham answered questions throughout.

Another visit is planned for later in the year as Bank House nears handover.

▲ CIOB Newcastle Hub members take the tour of Bowmer & Kirkland's Bank House site

Guernsey construction winners announced

Packed awards ceremony

The Guernsey Property and Construction Awards winners were announced at a presentation ceremony in February to a packed audience at the St Pierre Park Hotel.

The Lifetime Achievement winner for 2022 was Brian Singleton of the Guernsey Building Trades Employers Association (GBTEA).

Guernsey CIOB representative Paul Le Tissier presented an award and said the awards "fit perfectly with our commitment to encourage the highest levels of professionalism across all sectors".

Rising Star
Koen Le Prevost, Alexander Plumbing

Landscaping Project of the Year
Auburn Gardens

Engineering Project of the Year
Guernsey Electricity – undersea cable project

Property Agent of the Year
Sheppards Estate Agents

Best project under £300,000
DLM Architects – The Pool House project

Best project over £300,000
Hillstone Construction – The Strawberry Farm Development

Industry Supplier of the Year
Tarmac Services

Construction Professional of the Year
Tim Pond, Ravenscroft Construction

Lifetime Achievement Award
Brian Singleton, GBTEA

▼ Winner Brian Singleton (left)

Member sets world record in Atlantic rowing team

Tom Rose and his two teammates rowed 3,000 miles as part of the Talisker Whisky Atlantic Challenge

Tom Rose MCIOB, of Essex-based Rose Builders, recently completed a monumental challenge to row 3,000 miles unsupported across the Atlantic Ocean from the Canary Islands to the Caribbean as part of the Talisker Whisky Atlantic Challenge.

Rose set about this challenge with two other crew members: Taylor Winyard and James Woolley. The team completed the challenge in early January in 40 days. They not only completed it but they broke a world record for the fastest mixed crew to cross the finish line and Taylor was the first woman to cross the line in the race.

Rose, 27, is no stranger to gruelling challenges, having completed the Marathon Des Sables in 2019. Dubbed the 'toughest foot race on earth', it is a multi-stage ultramarathon in the Sahara Desert. Participants run over 250km in six days across endless sand dunes, rocky jebels and white-hot salt plains, carrying on their backs what they need to survive.

Rose said he took on the Talisker Whisky Atlantic Challenge as he "got the itch to push myself to the limits again and I wanted a step up from the challenge in the desert".

The annual race, which sees 30 groups go head-to-head, starts at San Sebastian in La Gomera, one of the Canary Islands, and ends at Nelson's Dockyard English Harbour, in Antigua and Barbuda. The crew suffered sleep deprivation, salt sores and a variety of physical extremes as they battled through the ocean throughout the night.

The construction site manager and his crew trained both in and out of the water for the best part of 18 months. Before setting off on his adventure, Rose said his biggest worry was the isolation and the unknown the ocean presents: "Capsizing in a storm at night while on the oars is a big fear."

IMAGE CREDIT: @ATLANTICCAMPAIGNS

◀▲ Tom Rose, James Woolley and Taylor Winyard at sea

The team's trip raised money for Alabaré Homes for Veterans. They also had to generate £125,000 in sponsorships just to get themselves to the start line. Some of the money was spent on a state-of-the-art 28ft ocean rowing boat called Doris. "The money can be a real block for a lot of people, so we must thank all the businesses and sponsors who have helped us," said Rose.

www.justgiving.com/fundraising/atlanticnomads

> **Capsizing in a storm at night while on the oars is a big fear**
> **Tom Rose, Rose Builders**

Innovation scholarship entries now open

Opportunity for members to carry out industry-based research project

CIOB's Construction Innovation and Quality Scholarship is open for applications. The closing date is 31 May 2022.

During the programme, candidates will be required to complete a research project with a definable, published output that is relevant to the industry. If successful in joining the programme, you will be encouraged and supported to see your idea through to the end.

The scholarship is aimed at sector professionals anywhere in the world. It is a great opportunity for academics, undergraduates or postgraduates who are currently studying at a CIOB accredited HEI and FE institution.

Applicants working full-time, part-time or who are in between employment are eligible to apply. You must be a registered member of CIOB.

To apply and for more details visit www.ciob.org/learning/scholarships/construction-innovation-and-quality-scholarship.

Think smaller

Neil Hennessey explains why graduates have more to gain by working for tier 2 contractors

Students and graduates must gain work experience and they often target the large tier 1 main contractors. But by overlooking tier 2 contractors, they could be missing out. Tier 2 companies are often aspiring and growing, and know they must attract the best people and invest in their future development.

In a tier 2 business, students are not just processed as one of many yearly graduate intakes. At UC Build, for instance, they become part of our team, with direct access to an assigned senior manager who will provide mentorship throughout their time with us. A sandwich student will be provided with a full support package in their final year and often rewarded with a minimum of a one-year contract post-graduation.

UC Build and similar contractors are also able to provide opportunities to work across the disciplines and teams, offering experience in every aspect of the building process. These can be very diverse – at UC Build, the opportunity exists to work in commercial, logistics, retail and living/residential sectors as a project, construction, programme or cost manager. This broad knowledge will assist students and graduates to shape their future studies and career paths.

Big is not always best. An aspiring dynamic tier 2 contractor can offer an environment that is a fertile learning environment. One that is driven by a passion and energy that breeds innovation, real teamwork, investment in people and a desire to grow and succeed – an invaluable learning experience for students and graduates in construction.

Neil Hennessey FCIOB is director at UC Build.

Dublin graduation ceremony set for May

Registration is open for the CIOB Dublin graduation on 7 May 2022. The ceremony, which will take place in the Law Society of Ireland, is an opportunity to celebrate with family the tremendous achievement of gaining chartered membership. Register at https://events.ciob.org/ehome/200237029

NEWS IN BRIEF

Construction firms get on board with CIOB

Several construction companies have become CIOB training partners in recent weeks. These are: BAM Construction at Halesowen, Citizen Housing, SAC Construction, Wilten Construction and Wrekin Housing. Acquiring CBC status are Brada and Cube Construction Consultants.

CMYA nominee continues to build career

Ben Ephgrave MCIOB, a former finalist for the CMYA Awards, has been appointed as construction director of Bedford-based housebuilder Tilia Homes Eastern.

He will oversee the operational side of the construction process on the housebuilder's developments

Ephgrave started his career as a trainee site manager with Wilmott Dixon, while studying for a degree in Construction Management at the University of Bedfordshire.

He later moved to housebuilder Hill Group, where he was nominated for the MCIOB Construction Manager of the Year main industry award, then took a role at Morris Homes, where he was responsible for the construction division in its Eastern region.

Promotion for MCIOB

Durkan has appointed Tim Carpenter MCIOB as its new managing director of construction. He is moving from his role as group new business director to succeed Jim Briggs, who is retiring after 44 years with Durkan.

Conference to explore how to make heritage buildings fit for the future

Resilience is focus of Westminster April 26 event

The annual CIOB conservation conference returns this month as a face-to-face event after a two-year virtual break.

Among the high-profile speakers at the event, titled Our Built Heritage – Lessons in Resilience, are: Kate Mavor, chief executive of English Heritage; Dr Robyn Pender, senior building conservation advisor for Historic England; and Professor May Cassar CBE, director at UCL Institute for Sustainable Heritage.

This year's event focuses on resilience in relation to built heritage. Participants will learn how key organisations in the UK and Europe have responded to Covid. The conference will provide invaluable CPD for anyone involved in the heritage sector.

Case studies will explore how to ensure that built heritage remains fit for future generations without undue compromise; training, education and standards; and how to adapt to meet requirements now and in the future.

The event takes place at Church House Westminster at 9-5.30pm on 26 April. Discover more at https://orlo.uk/zj77T.

CIOB
The Chartered Institute of Building

Safer Buildings UK Conference

26 May 2022
De Vere Grand Connaught Rooms, London

Don't miss out on CIOB's Safer Buildings UK conference, to raise awareness of the culture change that is needed to ensure that the buildings we create and manage are safe for those who occupy them.

Find out how progress is being made on the Building Safety Programme and Building Safety Bill, as well as the work that is ongoing to raise levels of competency across the industry and increase resident engagement.

Meet **Lord Stephen Greenhalgh**, Minister of State (for Building Safety and Fire), **Dame Judith Hackitt DBE**, author of the Independent Review of Building Regulations and Fire Safety, and **Peter Baker**, Chief Inspector of Buildings at HSE, and engage with our expert panel through a series of roundtables and a live Q&A session.

SECURE YOUR PLACE TODAY

http://ciob.me/saferbuildingsuk

One to watch

Lydia McGuinness
Section manager, Wates Construction Yorkshire and North East

Why did you choose a career in construction? What else might you have done?
I chose construction because I get to be part of a team that creates an environment for the local community to have homes, learn, work and make memories.

My first ever project was constructing a helipad for the hospital that treated my grandma, and my last project was refurbishing a building in which my mum told her family she was pregnant with me.

If I didn't get my apprenticeship, I would have gone to university to study business.

You were a CIOB Rising Star last year. Tell us why.
I was extremely grateful to have won the CIOB Rising Star award. I believe it's important to drive change in the industry, by challenging the existing issues we have and making it a more attractive industry to work in. I have always gone above and beyond to help remove stereotypes and improve the image of the industry, and winning this award was a reflection of that.

You're obviously driven – what are your career ambitions
To one day become a project director of a high-profile construction project, while maintaining a good work/life balance.

What do you love about the industry? What one thing would you change if you could?
I love the collaboration and excitement of our industry. When working on a project, you get to work with so many different professions and trades. I find myself always saying "You learn something new every day" because I genuinely do. No two days are the same; it's an industry I will never get bored with.

I think we could improve on how we sell ourselves as an industry. We need more young people (especially women) to choose our industry, so let's shout louder about why they should.

What do you do in your spare time?
I play tennis around four or five times a week – it's a huge part of my life.

CIOB promotes construction to women at Welsh college

Coleg Cambria celebrates International Women's Day with event for pupils

More than 120 young women attended an event designed to attract females into construction and engineering in March.

Coleg Cambria's Bersham Road site in Wrexham invited all secondary schools in north-east Wales to join a day of workshops, seminars and activities ahead of International Women's Day.

Leading names from both sectors attended, including CIOB and CITB.

Pupils enjoyed a tour of facilities and talks from some of the region's top women in industry.

Gemma Booth MCIOB, who recently moved from construction to education with Cambria, said the event showcased what the college and the organisations have to offer.

▲ Pupils get to grips with hammers and drills at Coleg Cambria

Member's book stresses the need for safe design

Andy Painting is co-author of a book based on experiences in the industry

Andy Painting MCIOB, director of Attis, is the co-author of *An Effective Strategy for Safe Design in Engineering and Construction*, published earlier this year by Wiley-Blackwell.

Painting, who is a director of the Institute of Construction Management, and his fellow author David England have worked in design and construction for many years in all the four key dutyholder roles – most recently as principal designer. They wrote the book after witnessing a lack of understanding and implementation of the regulations and tools available to develop and construct all types of design.

More importantly, they saw how the safety of the project, or the asset's construction, or even its eventual use, were frequently not considered until quite late in the project – often leading to expensive redesign or rework.

They demonstrate that safety is of paramount importance and can not only improve the project's output, but also the health and safety of the intended users as well as providing savings in both capital and operational expenditure.

The book is intended for use by all stakeholders involved in construction and is an excellent reference for students of any discipline where design is a component part of their syllabus.

The book is now available in hardback from Wiley and Amazon.

▲ The project includes seven residential blocks and a teaching and learning centre

University challenge

Jake Fellows of Equans talks us though the logistical obstacles and successes of his recent project for the University of Leicester

Successfully working through the challenges brought by a £200m project to reinvigorate the University of Leicester's learning and accommodation offer has strengthened our higher education proposition and opened opportunities within the sector.

Changing the face of a well-known part of central Leicester is no mean feat – and, with logistical challenges and a pandemic thrown in, it has taken grit and expert experience to guide the project to its final stages.

The build – 1,164 new student homes across seven blocks and a new 9,000 sq m teaching and learning centre at Freemen's Common – began in 2019. We've since handed over a multi-storey car park and have restored Grade II-listed Freemen's Cottages on the site. The project is due to complete in its entirety later in 2022.

The business's expertise in placemaking and regeneration at scale helped us guide the project through to financial close and taking an equity stake has assured our partners of our long-term commitment to Leicester. The scheme has been a coup for Equans in that it is coupled with a 50-year facilities management contract, incorporating maintenance of the new buildings and a specialist energy centre.

A key feature of the project's success has been bringing in Ranjit Lall, an experienced project director with expertise in delivering major high-rise developments. He built a 60-strong team though which he has instilled a resilient, collective approach to working.

Changing the face of a well-known part of central Leicester is no mean feat – with logistical challenges and a pandemic thrown in

Putting in place a lead for each operational area – a commercial lead, planning lead etc – meant he was able to set a strong, consistent strategy, cascaded throughout teams on the ground. This came into its own during the pandemic – Leicester was one of the first sites to get back up and running after the initial lockdown in 2020, and having trust in management systems gave teams the confidence to return.

Throughout, it has been imperative to have robust programmes and plans in place. For example, Section 278 road improvements were successfully navigated while contending with the logistics of a busy truck road and town-centre traffic – something that could not have been achieved without thorough planning and close liaison with stakeholders such as the council and planning professionals.

The project has cemented our appetite to explore similar large-scale schemes and allowed us to showcase our broad capabilities in placemaking. Equans, alongside equity partner Equitix, has since secured a project to transform Pritchatts Park at the University of Birmingham into state-of-the-art, low-carbon accommodation.

Jake Fellows is development director at Equans.

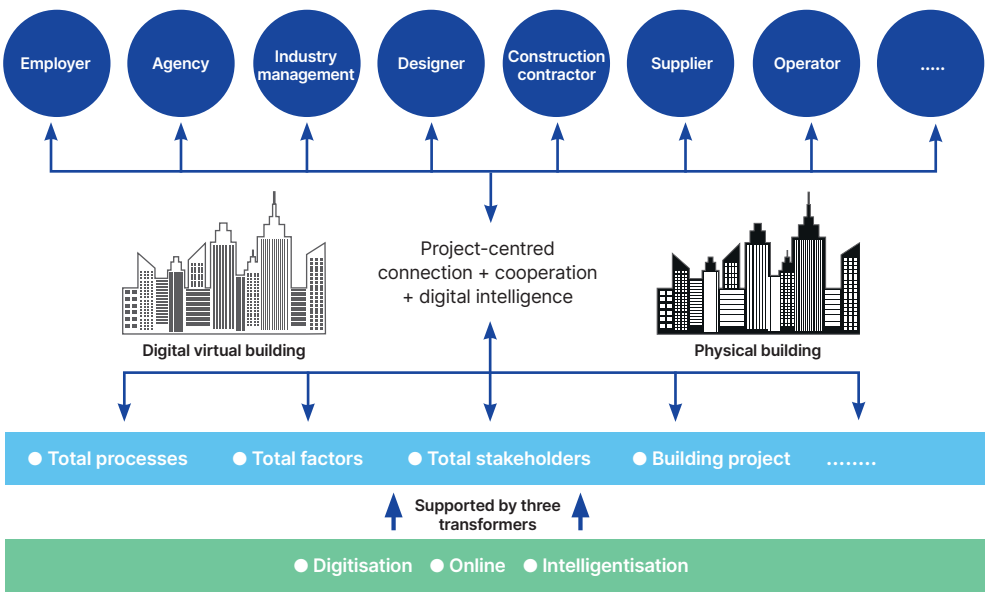
Jake Fellows CV

- **Regional operations director, Equans.**
- **Has held a range of commercial, development and business leadership roles at Equans since joining the organisation (then known as Keepmoat Regeneration) in 2006.**
- **Currently leads Major Projects, as a member of the Central region leadership team (covering Yorkshire and the Midlands). He is also responsible for a number of core business functions, including SHEQ, planning and customer care.**
- **He holds master's degrees in Mechanical Engineering and Business Administration (MBA), as well as being a chartered builder (MCIOB).**

In association with Glodon

Ready to upgrade?

Glodon explores the challenges and solutions of the new digital transformation in construction



▲ Digital building platform features

As one of the largest industries in the world, construction continues to lag well behind other sectors in the adoption of technology, despite its potential to significantly improve project efficiency and quality, save costs and cut waste and emissions.

In the foreseeable future, a changing environment, technological innovation and unpredictable interruptions will keep triggering further transformation. Enterprises need to adapt to stay in the game.

Possible challenges of transformation

This hesitancy is not due to a shortage of innovation in the sector. Indeed, emerging solutions are available to recreate how we plan, design, estimate, construct, operate and maintain built assets.

Lack of motivation can often be a result of a number of factors: lack of alignment and cooperation of all stakeholders, where a project involves all kinds of agencies and units; large and unstructured amounts of data to be processed; the transient nature of projects, which are all unique; a lack of qualified staff; as well as considerations of cost.

Digital transformation requires several adjustments: changing the relationship between upstream and downstream in the industry chain; changing the whole process of collaborative relationship in the project; and changing production relations within the organisation.

> **The digital building platform is coming to boost industrial transformation**

Digital building strategy

These changes lead to the development of the digital building – an industrial strategy that uses BIM, cloud computing, big data, IoT, mobile internet, AI and other information technologies to lead an industrial upgrade that is complemented by advanced lean construction.

This transformation of production methods will drive the construction process from physical to digital twin construction, followed by changes in management and transaction methods and a business model shift towards large-scale customisation and service-oriented construction.

Through the effective integration of personnel, processes, data, technology and business systems, the digital building allows the digitalisation, networkisation and intelligentisation of the whole process – a new digital infrastructure for transformation.

Digital transformation of the construction industry is not the simple application of new technology, but an all-around transformation of development concept, production, management, business and organisation method.

Improving core competence

The digital building platform is coming to close the gap in the industry and boost industrial transformation through a more integrated, holistic and socially driven approach, which allows us to innovate in planning, construction, and management, driving our cities to become autonomous, controllable, reliable and sustainable places.

The future is here. Can you afford to wait?

Glodon – A digital building platform service provider.
www.glodon.com/en

GCR

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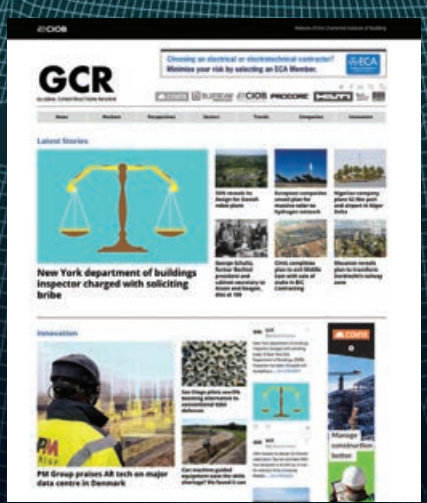

www.globalconstructionreview.com

Diary dates

Highlights of the CIOB Calendar for the coming month. All events are online webinars unless otherwise stated

JCT and NEC Contract Half Day Event
▶ **5 April, 8.45-12.15pm, Bristol**
This face-to-face event in Bristol will explore how each contract differs in its response to the same scenarios.

Expert speakers will take you through the two main forms of contract used in the UK construction industry by applying the same factual situation to each contract.

This is a joint CIOB Bristol Hub and Western Counties Chartered Institute of Arbitrators event, supported by the Institution of Civil Engineers, Chartered Institution of Civil Engineering Surveyors and South West and Wales region of the Adjudication Society.
Contact: nbreakspear@ciob.org.uk

The Pitfalls of Contracting 2
▶ **5 April, 12-1pm**
For this webinar we welcome back Nicola Huxstable, operations director at engineering and construction consultancy Driver Trett, to further discuss the pitfalls of contracting.

Huxstable specialises in client representation and support in the preparation of detailed legal, quantum and claim submissions for support in construction dispute resolution, whether by means of litigation, adjudication, arbitration or mediation.

She is currently representing clients in adjudications involving complex civil engineering and building disputes with values of between £12 and £24m.

Please register and you will be emailed a link to join the webinar nearer the date.
Contact: vcoxon@ciob.org.uk

NEC – Delay and Programming
▶ **19 April, 1-2pm, Leeds**
Join us for this one-hour event with Sarah Wilson, a partner with law firm Bevan Brittan.

We will look at the NEC requirements for programmes, the difficulties that can occur and how you can help yourself through the project and beyond.
Contact: kbarker@CIOB.org.uk

CIOB Annual Conservation Conference: Our Built Heritage – Lessons for Resilience
▶ **April 26, 9am-5.30pm, London**
For its 15th anniversary, the CIOB annual conservation conference returns face to face following a two-year virtual break.

The theme for this year's event is resilience in relation to our built heritage. Presentations and interactive case study sessions will enable participants to learn how key organisations within the UK and Europe have responded to and are coping with recent events – the impact of Covid and climate change being at the forefront.

The event is being held at Church House, in the grounds of Westminster Abbey, a World Heritage Site with over 1,000 years of history.
For details and to register visit **events.ciob.org/ehome/200236690**.

The Sky's the Limit – drone demonstration
▶ **26 April, 5-7pm, Chelmsford, Essex**
Join Greg Monaghan of Sky Revolutions for this live demonstration at Anglia Ruskin University in Chelmsford, which will be Chelmsford's first face-to-face CPD event post Covid.

Sky Revolutions was one of the first UK organisations to realise the benefits of drones in surveying. Monaghan will discuss how drones are an excellent way to generate high-quality, high-resolution data and imagery for the construction sector, energy, renewables and facilities management.

For tickets, follow the link at **events.ciob.org/ehome/200239988**.
Contact: hhosking@ciob.org.uk

UKCW London 2022
▶ **3-5 May, London**
UK Construction Week (UKCW) at London's ExCeL will be the must-attend construction event in spring.

With government support and education on how to tap into major investment opportunities in housing and infrastructure, UKCW will connect the whole supply chain in an event designed to be a catalyst for growth.

UKCW London is co-located with Grand Designs Live, The Offsite Show and Concrete Expo, as well as a series of conferences and awards. This event is supported by: CIOB, RIBA, CPA, CLC, BESA, BMF and Construction Innovation Hub.
www.ukconstructionweek.com

For a full list of events and to register visit events.ciob.org.

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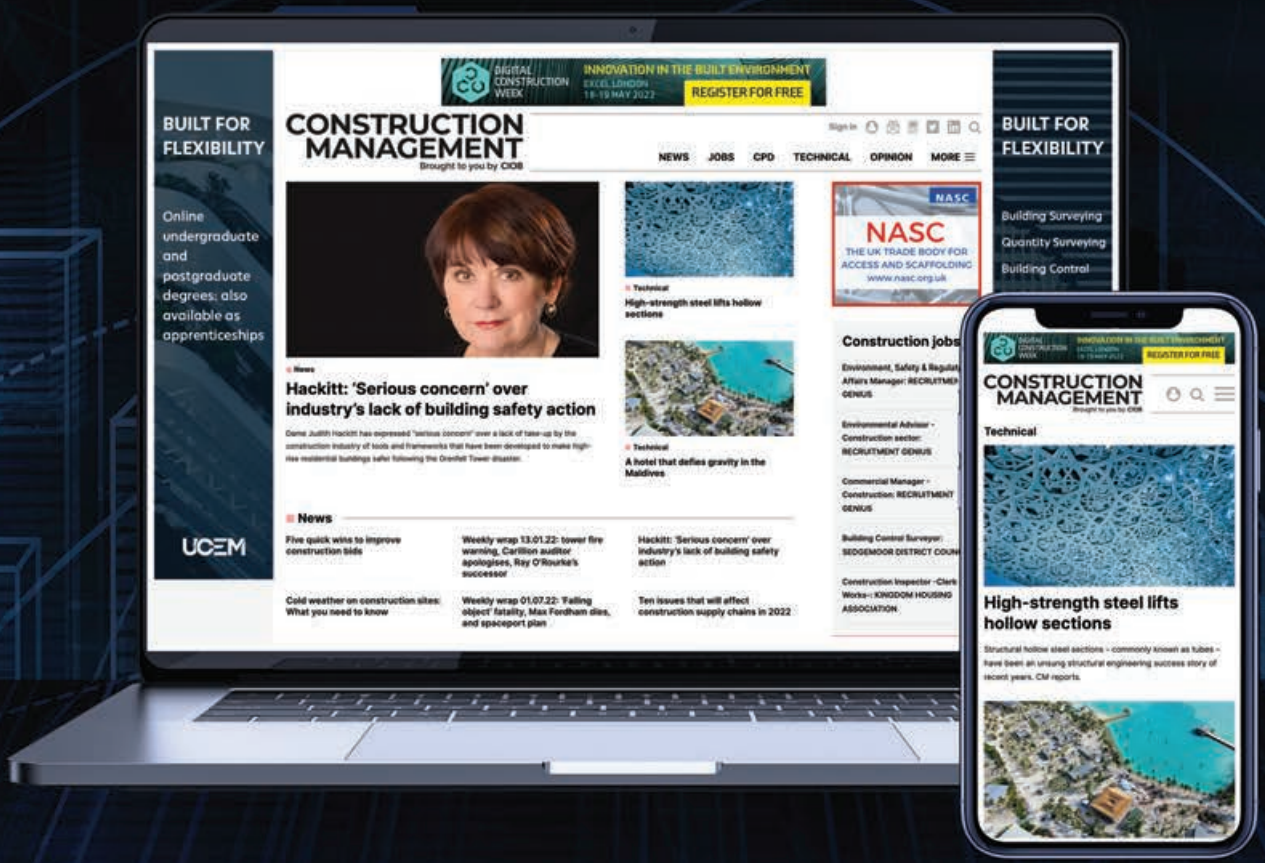

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