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MUSEUM OF LONDON

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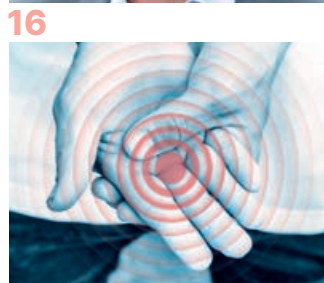
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MERLIN ENTERTAINMENTS

▲ **Keeping an eye on London**

Lambeth Council has confirmed that the London Eye will remain on London's South Bank after its lease expires in 2028. Mace and Tilbury Douglas constructed the 135m high Ferris wheel.

▶ **Arrival of the Renfrew Bridge's first section**

The south section of the 184m cable-stayed twin-leaf Renfrew Bridge, made in the Netherlands, arrives on the River Clyde after travelling for seven days on a barge across the North Sea, English Channel and Irish Sea. Graham is installing it on the Renfrew side of the river ahead of the north section of the bridge arriving this month.



Irina Gales, senior digital construction manager at Sir Robert McAlpine, talks about the contractor's pioneering smart building approach at the new Museum of London (p18-24)



WILKINSON EYRE



▲ Graham to redevelop Lord's Cricket Ground

Graham has been named as the preferred bidder for the redevelopment of Lord's Cricket Ground. The £60m project involves extensive repurposing of the Tavern Stand and the demolition and modern reconstruction of the Allen Stand. It will increase capacity by at least 1,100 seats. Construction is set to start in September and will last until May 2027.



▲ Portugal's first 3D-printed house

Startup Havelar has completed the first 3D-printed house in Porto using COBOD's 3D construction printing technology. The 80 sq m two-bedroom house was printed in 18 hours.

◀ Structural monitoring technology on the M25

Mabey Hire deployed a bespoke package of sensors on the Merstham Viaduct. This allowed Octavius Infrastructure to monitor in real time the movement of bearings against temperature to check if they had seized or were operating sufficiently.

◀ HS2 breakthrough

The UK's high-speed railway project achieved another milestone after completing half of the tunnel network. HS2's fleet of 10 tunnel boring machines has excavated 47km of tunnels between Birmingham and London.





CIOB has welcomed a Construction

Leadership Council report setting out a framework for defining competence in the UK domestic retrofit sector.

The 64-page document presents the foundations of the core overarching knowledge, skills and behaviours required to deliver effective retrofit of homes at scale, both in retrofit-specific roles and associated roles in the industry.

The report identifies a series of ‘statements’ divided into two groups – core transferable and overarching technical – that identify individual competencies. CLC said the competence statements can be used to support the development of competence frameworks for specific occupations involved in retrofit work.

They are also intended to support the development of training and education for the future workforce, both in training new entrants and upskilling the existing labour pool.

Defining competence in retrofit

CLC said the report aims to “provide a consistent and clear definition of the cross-cutting, overarching competencies required for individuals working across the whole retrofit process”.

It added: “These statements can be used to support the update and development of competency

Retrofit work needs to be planned and undertaken by competent professionals and trade specialists to ensure improved household energy efficiency

Eddie Tuttle, CIOB



frameworks and occupational standards for retrofit-related roles, as well as to evaluate and update content for training courses and qualifications.”

Eddie Tuttle, director of policy, external affairs and research at the Chartered Institute of Building, welcomed the framework. He said: “We are fully supportive of the CLC’s calls for a national retrofit strategy and the development of competent people to deliver it.

“Retrofit work needs to be planned and undertaken by competent professionals and trade specialists to ensure improved household energy efficiency and trust in the industry to deliver on quality.”

The UK has more than 28 million homes, most of which will need retrofitting to meet the country’s legally binding target of becoming net zero by 2050.

According to the CLC, the amount of retrofit work happening currently will not meet this target. ●

CIOB welcomes new retrofit competence framework

The Construction Leadership Council has identified the individual competencies necessary to deliver retrofit at scale in the UK

Competence statements identified in the framework

Core transferable competencies	Overarching technical competencies
Retrofit advocacy	Regulatory landscape
Communication	Client needs and advice
Collaboration	Cost
Commitment to excellence	Property assessment
Continuous improvement	Technology and design
Digital	Coordination and integration Evaluation and monitoring

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CEMEX

Inflation is cooling – but pressure on construction prices is not over

Mitigating inflationary risks will require construction professionals to take proactive steps, writes **Pablo Cristi Worm**



Navigating the complex landscape of inflationary pressures within the construction industry

requires a nuanced understanding of the drivers at play.

While global events like the Covid-19 pandemic and geopolitical tensions in Eastern Europe and the Middle East continue to shape markets, clients and the supply chain must remain vigilant of evolving trends to mitigate their risks. It is important to remember that these are rare, shock events and unforeseen by anybody.

Unlike the Consumer Price Index (CPI), which measures general inflation in the economy, the Building Cost Information Service's (BCIS) All-in Tender Price Index (TPI)

serves as the industry standard for assessing tender price inflation.

This index tracks the trend of contractors' pricing levels in accepted tenders, providing a more tailored reflection of inflationary pressures specific to the sector. These indices typically align with the broader business cycle, but can diverge significantly due to various factors driving inflation, including market fundamentals, incomplete information and human behaviour.

Demand is a primary motivator for pricing. Increasing client investment and a growing pipeline of works lead to heightened competition among contractors and upward pressure on prices.

The decreasing construction output in late 2023 and a mixed performance in early 2024 are clearly

reflected by the BCIS index. Projects in sectors including industrial, manufacturing and distribution, defence and commercial office developments have been driving activity up in the first half of 2024, contributing to inflationary pressures.

Input costs, including labour, materials and plant, also exert significant influence on tender prices. Between May and December 2023, material prices saw a consistent decrease over eight consecutive months, followed by a slight uptick since the beginning of 2024.

Conversely, wages have emerged as the primary driver of inflation, with average weekly earnings in construction growing at a rate of 4.4% since the start of 2024. This suggests that TPI growth has predominantly originated from the

labour market since May 2023. The ongoing acute shortage of skilled workers will remain one of the main inflationary drivers in 2024.

Mitigating market uncertainty challenges

Capacity and capability in the industry play pivotal roles in influencing inflationary trends. Larger numbers of firms and employees can lead to a more competitive marketplace, which prompts businesses to adopt competitive pricing strategies. Equally, insolvencies can reduce overall capacity and exacerbate inflationary pressures.

Insolvencies peaked again in Q4 2023 with 1,195 construction new company insolvencies, reaching similar levels to Q2 2023 – the

Vacancy to unemployment ratio in construction, meaning there are more unemployed people than job vacancies (ONS)

0.8

The ongoing acute shortage of skilled workers will remain one of the main inflationary drivers in 2024.

highest value recorded since the measure started in Q1 2010. Performance bonds, which insure against the failure of another party in a construction contract, are becoming more challenging and expensive to obtain. This is adding further inflationary pressure as well as destabilising contractor chains.

Additionally, contractors are having to raise their risk premiums across the board to mitigate potential challenges from the high levels of market uncertainty. Recent increases in TPI may be partly attributed to the response to greater financial instability.

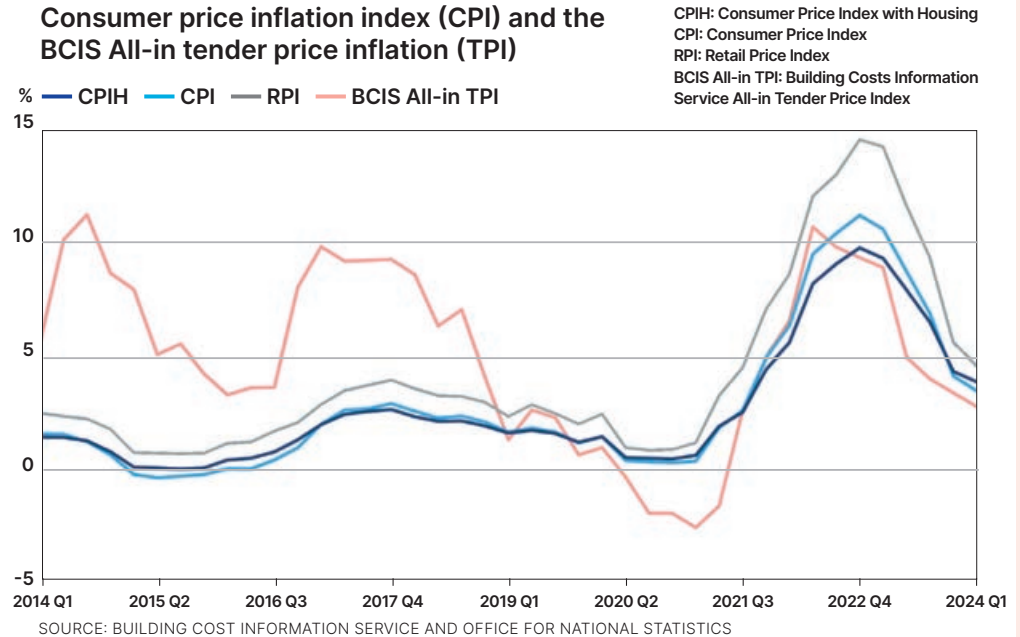
By closely monitoring key indicators such as tender price indices, material costs, wages and regulatory changes, construction professionals can proactively adapt their strategies to help mitigate inflationary risks and enhance resilience in an ever-changing economic environment.

This approach is strengthened if teams have invested in embedding digital tools, better helping to track and analyse these indicators and their potential impacts on projects.

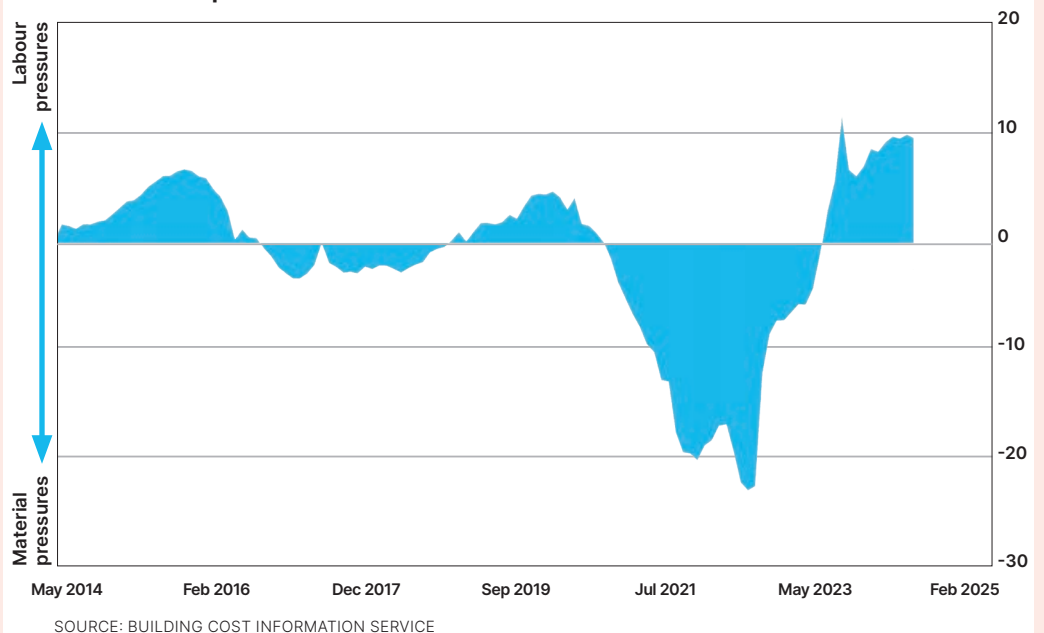
Through this, and by fostering collaboration and transparency with partners, sector businesses can facilitate more informed decision-making and bolster their capacity to navigate challenges effectively.

Pablo Cristi Worm is an associate economist at Turner & Townsend.

Consumer price inflation index (CPI) and the BCIS All-in tender price inflation (TPI)



Difference in the month-on-month change in materials prices and labour costs





Kris Zakrzewski MCIOSB
Working Group 9



Site supervisors competence framework will redefine safety

A new competence framework for site supervisors will raise standards, ensure compliance and foster safer construction practices, writes **Kris Zakrzewski**

Construction industry competence has been under scrutiny since the tragic Grenfell Tower fire of June 2017 and following Dame Judith Hackitt's Independent Review of Building Regulations and Fire Safety.

The Construction Industry Council's Competence Steering Group set up a series of working groups to look at built environment competence. One of these, Working Group 9, focused on site supervisors. Since January 2024, the group has been part of the Industry Competence Steering Group led by the Building Safety Regulator's Industry Competence Committee.

Working Group 9 has developed a framework for the competence

of site supervisors, aligning with industry standards including PAS 8672:2022 *Competence of Principal Contractors*, PAS 8671:2022 *Competence of Principal Designers* and the BSI Flex 8670 *Core Criteria for Building Safety in Competence Frameworks*.

The importance of competence in construction cannot be overstated, particularly in navigating and ensuring compliance with building regulations and the safety of buildings throughout their life cycle.

A crucial aspect of this lies in the competence of site supervisors, the individuals directly supporting the principal contractor, and this is what the framework covers. The framework designates their roles and responsibilities, emphasising their position in ensuring compliance with regulations and safety standards.

Site supervisor role

First, who is the site supervisor? The answer is clearly explained within the framework. This individual, whether employed directly by the principal contractor or contracted to them, may have a range of job titles, but typically they will be a site manager, site agent, construction manager, site supervisor or site foreman.

This individual plays a pivotal role in the supervision of building work and ensuring it aligns with design specification and regulations.

What is groundbreaking in this framework is its clear definition of a competence threshold. It outlines basic competence requirements applicable to site supervisors and additional requirements for those working on higher risk buildings (HRBs). This ensures they possess the necessary skills, knowledge, experience and behaviours to fulfil their duties effectively.



It's not just about who does what. There is a focus on ethical behaviour and professional standards

But it does not stop at definitions. The framework also explains the competence requirements based on the individual's role, discipline, activities and tasks.

This allows for a more tailored approach, providing a roadmap for assessing competence, ensuring it aligns with specific job roles and responsibility.

Furthermore, the document provides clarity on the relationship between those individuals and principal contractors, describing their respective roles and competencies. This helps in streamlining communication and coordination between the two, essential for effective construction management.

Ethical behaviour

However, it's not just about who does what. There is a focus on ethical behaviour and professional standards. Why? Because it is essential for creating a culture of safety and trust.

Additionally, the document provides guidance for the assessment of site supervisor competence. This is so that professional institutions, regulators, and construction organisations can evaluate and enhance the

competency of individuals. Site supervisors can also use this to identify their competence limitations and areas for development.

The framework also puts a spotlight on CPD. Individuals are required to maintain competence by ensuring they stay up to date with industry standards and best practice. But while it gives advice, it does not lay down specific educational or training requirements.

The site supervisors competence framework represents significant advancement in ensuring building safety and regulatory compliance. By setting clear competence criteria and promoting a culture of continuous improvement, it will contribute to raising standards, ensuring compliance, and fostering safer construction practices.

I was nominated as chair of Working Group 9 from January 2024, taking over from Peter Dawber, and I am immensely proud to be part of this group, and to lead this team of experienced and knowledgeable professionals from leading industry organisations. ●

Kris Zakrzewski MCIOSB is a project manager with Colorminium/Envoy Projects and chair of Working Group 9.

Competence Steering Group: Working Group 9, Site Supervisors

- Kris Zakrzewski, Colorminium/ Envoy Projects (chair)
- Simon Pitchers, Institution of Structural Engineers
- Hassana Ahmed and Lyndsey Montgomery, CIOB
- Wayne Ward, Faithful+Gould
- Gerald Naylor, education and training consultant
- John Hall and Noel Chambers, Kier
- Paul Senior, Isle Consult
- John Staves, Michael Aubrey Partnership
- Dawn Hillier and Lynne Morgan, CITB
- James Biggs, London Square
- Nicola Markall, Sir Robert McAlpine
- Damion Guest, McLaren Group
- Steffan Speer, Morgan Sindall
- Graham Thornton, Wates



Caroline Gumble
CIOB

Celebrating the unsung heroes of our industry

Caroline Gumble encourages members to put forward the industry's pioneers and innovators for next year's CIOB Awards



Last month's column was inspired by hearing one of our longstanding members, Saul Humphrey FCI0B, addressing students with a call to live your values and raise the importance of sustainability in construction whenever you can. So it was no surprise to me when, a couple of weeks later, he was named winner of CIOB's Sustainability Award.

Readers of *CM* will already know from the May issue that Barry Kingscote MCI0B was a winner in the commercial category of Construction Manager of the Year. With barely time to return to his seat, he was then called back to the stage to claim the title of Construction Manager of the Year 2024.

We had equally accomplished and worthy winners in the other categories and I want to say congratulations again to all of them.

At the time of writing, I am still feeling inspired and energised by the CIOB Awards celebration evening, where more than 600 people joined us to watch some outstanding construction professionals get recognised for their achievements.

While many winners might still be feeling the momentum and motivation from such a wonderful event, I am delighted to announce we are about to go live with opening nominations for the 2025 awards.

This 1 June will see the official opening of the CIOB Awards 2025

▲ Barry Kingscote MCI0B with June Sarpong OBE and CIOB president Sandi Rhys Jones

We all know there are some amazing people in our industry, doing extraordinary things. Those people deserve recognition and the best should have their stories shared

and I want to urge readers to consider nominating someone.

We all know there are some amazing people in our industry, doing extraordinary things, often on a tight deadline, with a limited budget and maybe even physical restrictions around their site. Those people deserve recognition and the best among them should have their stories shared as learning for us all.

Our awards have been a leading showcase for the best and the brightest in this important industry for more than 40 years now. With your help, next year will be no different and, once again, we will shine a light on some of the construction professionals who are unsung heroes but also leaders, innovators and even pioneers.

With the addition of new categories in recent years, sitting alongside our prestigious Construction Manager of the Year award, we have an excellent opportunity to recognise the broad church of disciplines that make up our industry. So please put people forward and give them a chance to join us next year as part of celebrating the construction community. ●

Caroline Gumble is CEO of CIOB.



architectural acoustic finishes

SonaSpray fcx in the Hard Rock Hotel, London.

"Our experience over the years teaches us that architecture and interior design are so much more than just looks. We consider every factor with each project we work on and acoustics is no exception.

We knew we needed a premium acoustic product that would also work with our designs, which is why we chose Oscar Acoustics."

David Mason, Director of Scott Brownrigg Architects.



OSCAR
acoustics

Feedback

A selection of readers' comments about news and issues in the industry from across the CIOB community and social media



▲ Andy Dodson MCI0B: "90% of reed has thousands of carbon miles attached to it"

CM May 2024

Why thatched roofs have carbon concerns

Andy Dodson MCI0B from Solent University told CM about his research on the supply chain issues concerning reed used for thatched roofs.

Sara Carruthers MCI0B
This sounds very interesting and I hope the final research will be shared widely. Are you also looking at the life cycle carbon cost of reed thatch and comparing it with slate or tile?

An interesting comparison is the Stone Carbon Calculator which has been developed by Historic Environment Scotland and is available free via The Engine Shed website (www.engineshed.scot).

Karen Crouch
It would be wonderful to see what the research brings up. Many reed beds in the UK are now unmanaged but the distance imported materials travel should surely be a part of the case for bringing them back into production.

Ecology is another issue for discussion. Labour cost is often a factor and the machinery which makes it easy to harvest is expensive – without it, it's hard work but not unachievable.

Are you part of the thatching material research which is currently being undertaken, or is it just coincidence? Please stay in touch.

CIOB People 29/04

Older talent could be the new talent you're looking for

Darren Wisbey MCI0B
What a great article. Throughout my career, I have watched highly experienced and capable people disappear with their incredible skills into retirement. Many of these taught me heaps along my journey.

I'm happy for those who want to retire and take a complete break but I can't help but feel many would have loved a role change where they could continue to pass on their knowledge.

In my nearly 40-year career, we seem to have been intent on reinventing the same wheel. Why not learn the lessons from earlier generations and make a better wheel? Win-win.

CM April 2024

Building Safety Act: stepping up on competency

CM looked at how the industry is preparing to meet the new Building Safety Act competency requirements for the dutyholder roles of principal contractor and principal designer.

Peter Bernamont, architect
The title 'principal designer', especially now there is both a CDM principal designer and a building regulations principal designer, is going to be just too confusing, especially to clients, who mostly would regard – if asked – that of course their architect is the principal designer, employed to design the building.

This is particularly likely (I would suggest inevitably) to be the case for all the private, domestic clients and small and single practice architects. The regulations apply to such, as we are constantly reminded – not just to the high-rise build category.

However, the advice received via your webpages and journals, and the decisions out of the consultations to use the term principal designer, have clearly ignored the actuality of the smaller build, smaller client, smaller clients and the smaller architectural practices... who, by the by, still produce the best architecture.

The design will in principle be designed by the architect, appointed by the client to be the principal designer of the building. Anyone else in a team of consultants can't also call themselves the principal designer without causing confusion. I know I am right about this, but it is probably too late.



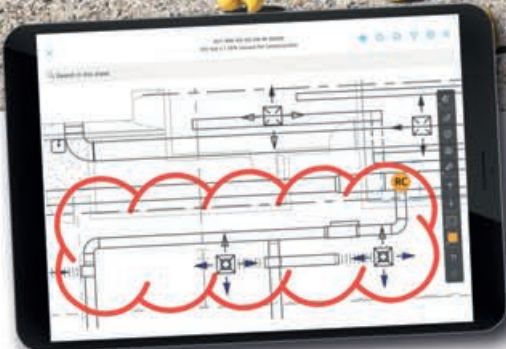
The title 'principal designer' is going to be just too confusing, especially to clients

Peter Bernamont, architect

@ Share your views on the latest industry issues by posting comments online at www.constructionmanagement.co.uk or by emailing the editor at construction-management@atompublishing.co.uk

LEAVE NO ROOM FOR INTERPRETATION

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Superhub supremo

Balfour Beatty's Steve O'Sullivan FCIQB was recently appointed senior project director on HS2's 'superhub' station at Old Oak Common. He tells **Will Mann** about imposter syndrome, 4D planning and what makes a successful major project



You're a local lad, raised in Cricklewood. What does it mean to you, coming home to lead this job?

I started as an apprentice electrician with Balfour Beatty in 1980, when the world was very different! I was on £25 a week. My parents were Irish immigrants and I used to play Gaelic football across the tracks at Wormwood Scrubs.

I know the area well, but it needs regenerating. The HS2 station is going to have such a positive impact; we've seen the way the London Olympics has changed east London.

A large programme of work like this gives social value benefits and career opportunities. There's talent out there, but not always the opportunities. HS2 has given massive opportunities to a lot of people who wouldn't otherwise have had them: 2,000 people will be employed on Old Oak Common.

The Old Oak Common project has been on site for three years now. What are the main challenges ahead for you?

It's a logistically complicated project and interfaces with three railways. That's why we've gone for a 'top down' construction approach of the station box. That part is mostly complete. I'll be looking ahead to the superstructure and the roof, which is complex, and there are 52 lifts and 44 escalators to install. That means a lot of trades to manage. The 4D

model will be important when we look at the constructability.

One important thing I've always found with major projects is understanding and strategically managing the transition of the team through the phases of the project. There are a lot of civil engineers at the start, but then you need a plan to phase the project into the building of the superstructure, the fit out, the testing and commissioning.

You've been at Balfour Beatty 44 years, with tremendous major project experience, notably on Heathrow T5, T2B and on Crossrail. What are the main things you've learned from these jobs?

I was on T5 from start to finish – six years – and it was probably the best job I worked on: the safety culture, the approach to collaborative working, it was groundbreaking for the industry.

I think relationship building is key. On the Whitechapel Crossrail station, London Underground were embedded in our team, plus London Overground. It was probably the most complicated Crossrail station: we had 14 different configurations to manage, and I was there right through the testing and commissioning stage.

But when it came to the handover, it was relatively easy compared to the other stations, because we'd already formed the relationships. So, we learned the importance of having your stakeholders in the team, and not seeing them as a third party.

I had imposter syndrome; I left school at 16, I don't have a degree. Becoming FCIQB changed that
Steve O'Sullivan,
Balfour Beatty

Old Oak Common station in numbers

1,000,000 cu m muckshift	850m long (and 20m deep) station box	1.2 mile diaphragm wall for the box	1,600 concrete piles	25,000 sq m roof	2,000 construction jobs	14 platforms	£1bn value of BBVS JV contract
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◀ On site at Old Oak Common: "The HS2 station is going to have such a positive impact"

CV: Steve O'Sullivan , Balfour Beatty

- 2024 Appointed project director, Old Oak Common HS2 station (BBVS JV)
 - 2021-24 Senior project director, Sizewell C Nuclear Power Station
 - 2017-21 Senior project director, Whitechapel Station (BBMV JV)
 - 2013-16 General manager Dubai (Balfour Kilpatrick Gulf)
 - 2011-13 Change programme director
 - 2007-12 Senior project director, Heathrow T2B; BAA National Framework director
 - 2000-07 Project director, Heathrow Terminal 5 (Balfour Kilpatrick)
 - 1990-2001 Senior project roles in Dubai, Egypt, Indonesia and Hong Kong
 - 1980 Joined Balfour Kilpatrick as apprentice electrician. FCIQB, FCIBSE, City & Guild of London (electrical)
- (All roles Balfour Beatty unless stated)

How has the digital perspective changed your role?

Heathrow T2B was probably the best project I worked on for 4D modelling. We changed our methodology, from 'bottom up' to 'top down' construction, by running scenarios through the 4D model and changing the plant positions to dig from north to south.

We spent a long time reaching that decision, working with designers and supervisors and specialists, and we saved six months on the programme.

Telematics are helping with our carbon reduction. You understand how much plant idling time there has been, how productive the equipment has been. An important part of my role is looking at what we can do to use the equipment more efficiently.

You are an FCIQB. Has that helped your career?

I was reporting to Mike Peasland, when he was Balfour Beatty CEO (2010-13). Mike is FCIQB and he pushed me to apply for CIOB membership and said he would act as my sponsor. I told him I'm an electrician by background, expecting not to be accepted, but when I did

the interview, the assessors were very interested in my project work overseas (I'd worked on power plants in the Middle East and Indonesia, the Alexandria Bibliotheca in Egypt, a rail project in Hong Kong). And they said they felt I could go straight to fellow.

Up to that point in my career, I had a bit of imposter syndrome; I left school at 16, I don't have a degree.

▼ CGI of the finished Old Oak Common station



Getting that FCIQB recognition gave me a great deal of confidence.

After that, I was asked to manage the change programme for Balfour Beatty and manage the Dubai business. That was interesting. But I always felt more comfortable running major projects than a business.

Any career advice you'd give to aspiring major project directors?

Take opportunities, take risks, stretch yourself. Speak up and make your ideas count. Don't get hung up about senior people: they're human beings, go and talk to them and learn from them. Get a mentor, build a network. Don't expect your career to be laid out in front of you – you need to own it and manage it. ●

► Interior of Smithfield General Market showing workmanship on the dome and multiple lantern roofs

McAlpine thinks smart at Museum of London

Can a heritage building be smart too? That's the plan for the new Museum of London in London's historic Smithfield market. **Kristina Smith** meets the client and Sir Robert McAlpine's construction team

The Museum of London has ambitious goals for its new facility at Smithfield market near Farringdon, home to the city's meat markets over several centuries. It wants it to be the world's smartest museum.

"It's about building a new museum which is ready for the future, with the least environmental impact possible," explains the museum's technical lead, Steve Watson.

The smart building will collect data of every kind for AI algorithms to analyse, spotting glitches or faults or suggesting new ways to run systems more efficiently. "It provides the best chance for us to model, manage and control the environment, while emitting the least carbon possible," says Watson. "I don't think we can do that without building a smart building."

Watson sees a time when individuals will be totting up their carbon footprints and planning trips accordingly. "Visitors will be making choices about what they do based on their carbon impact."

Project overview

- Value: £437m
- Programme:
- Sir Robert McAlpine appointed May 2023
- General Market building completion Q4 2025
- Poultry Market building completion Q4 2026
- Construction manager: Sir Robert McAlpine
- Architects: Stanton Williams Associates, Asif Khan and Julian Harrap Architects
- Structural engineer: AKT II
- Building services: Arup
- Cost management: Gardiner & Theobald
- Contract: JCT Construction Management

In practice that means that all the operating systems, building services and technology will be heavily integrated, says Watson. "Typically, software systems that run our buildings are in silos. While that's good for construction, when a building goes into operation, that's a major problem."

Overseeing that integration is Sir Robert McAlpine, appointed under a construction management contract to oversee the works from June 2023. "When we were choosing a construction manager, McAlpine had smart building experience and understood what our aspirations were. That gave us the best possible chance of developing an integrated building," says Watson.

Roman roots

The Museum of London – to be officially rebranded as the London Museum in July 2024 – tells the story of London from its Roman roots. Outgrowing its former 1970s-built home at London Wall, which the City of London Corporation has earmarked

It's about building a new museum which is ready for the future, with the least environmental impact possible

Steve Watson, Museum of London



for redevelopment, it closed its doors there in December 2022.

Just half a mile away from London Wall, the museum's new home will comprise a cluster of buildings in West Smithfield near Farringdon Station: the General Market, Poultry Market, Annexe and Engine House. Sir Robert McAlpine's contract covers the General Market, built in 1883, and the Poultry Market, constructed in 1875.

The General Market has been out of use since the 1990s. The Grade II-listed Poultry Market only became vacant in August 2023 as its traders left – eventually to relocate to a new site in Dagenham.

The design team of Stanton Williams, Asif Khan and Julian ►



JANIE STAMFORD



Key suppliers

- Demolition and concrete structure (General Market and Poultry Market): Keltbray Built Environment
- Structural steelwork (Poultry Market): Severfield Infrastructure
- Facade and roof restoration (General Market): Paye Stonework and Restoration
- Mechanical and electrical (General Market and Poultry Market): Phoenix ME
- Ventilation (General Market and Poultry Market): Imperial Ductwork Services
- Facade (General Market and Poultry Market): Seele (UK), West Leigh, Novum Structures
- Historic shopfront and washroom fit out (General Market): JJ Sweeney

Harrap Architects was picked via international competition back in 2016. Planning was approved by the City of London in 2020 and an updated application green-lighted in November 2022.

When Sir Robert McAlpine came on board, the rehabilitation work on the General Market was well underway. The museum had contracted Paye Stonework and Restoration in 2020 for a £12.5m contract which included the complete reroofing of the building, and Keltbray in 2021 for a £17.5m demolition and structural package.

In 2023, the museum's contracts with Paye, Keltbray and others were converted to trade contracts to sit under McAlpine's construction

▲ Aerial view of the West Smithfield site, showing:
 1. General Market
 2. West Poultry Avenue
 3. Poultry Market
 4. Annexe
 5. Engine House.

management contract. "This was a way to manage the project and line everything together," says McAlpine project director Richard Hill.

"It means we can minimise future risk and maximise programme opportunities."

The museum had looked at the design-build route, rather than construction management, but it wasn't viable for a project with this many uncertainties. "No one would take the risk," says Hill.

Smart puzzle

The big puzzle for this project is not just how to accommodate the building services and systems among the existing, often irregular, fabric of the building.

It is how to transfer the data relating to those elements into asset management software that will optimise the running of the museum.

Arup created the Museum of London's smart building specification, including names for every single item of equipment, cabling and kit, based on the BDNS (Building Device Naming Standards) from the Open Data Institute.

"A key element is that we specify the asset naming conventions and that there is strict governance so that people stick to those conventions. This should happen as early as possible, preferably [RIBA] Stage 2," says Watson.

These requirements were part of the tenders that McAlpine put out

to the market. For the most part, its regular supply chain is up to speed with digital tools and protocols, says Irina Gales, senior digital construction manager for McAlpine. However, the smart building approach here is pioneering.

“We are pushing the boundaries with respect to smart buildings, workflow and data creation processes that are not yet industry standard,” says Gales. “We have established our own way of working, drawing on experience from our supply chain members and from the client.”

Watson is piloting his smart museum approach at the Museum of London’s other branch in Docklands. There, he is using the same master systems integrator as at Smithfield, One Sightsolutions, which he describes as “a kind of digital clerk of works who makes sure people are producing the right data with the right structures”.

“Once the data is in order you send it to a smart building platform,”

▶ The General Market’s frame features Phoenix Columns, a new invention for Victorian engineers. Made from wrought iron riveted together, they were designed to be strong, fire resistant and able to withstand vibration



he says. “We are using onPoint from a company called Buildings IOT.”

During the construction phase, the usual host of software packages are being deployed: Revit, Tekla, Inventor, HiCAD, AutoCAD 3D, SteelWorks, BIMcollab, Power BI, iConstruct, Dalux, Trimble Connect, Autodesk ReCap, Navisworks, Synchro, Solibri, Revizto, Autodesk Construction Cloud, Field View, Viewpoint and Edocuments.

Both Hill and Gales single out Dalux as a newer tool that is working well. “It offers a platform that is simple to use,” says Hill. “Where you federate the model so frequently,

▼ Richard Hill inside the Poultry Market. At 70m by 40m, it had the largest spanning concrete dome in Europe when built in the 1960s by McAlpine



A lot of what we’re doing is bespoke and that’s where modelling and digital tools help

Richard Hill,
Sir Robert McAlpine



you might go into document management and look at a drawing which may not be up to date. With Dalux, you know that the information is common across everything.”

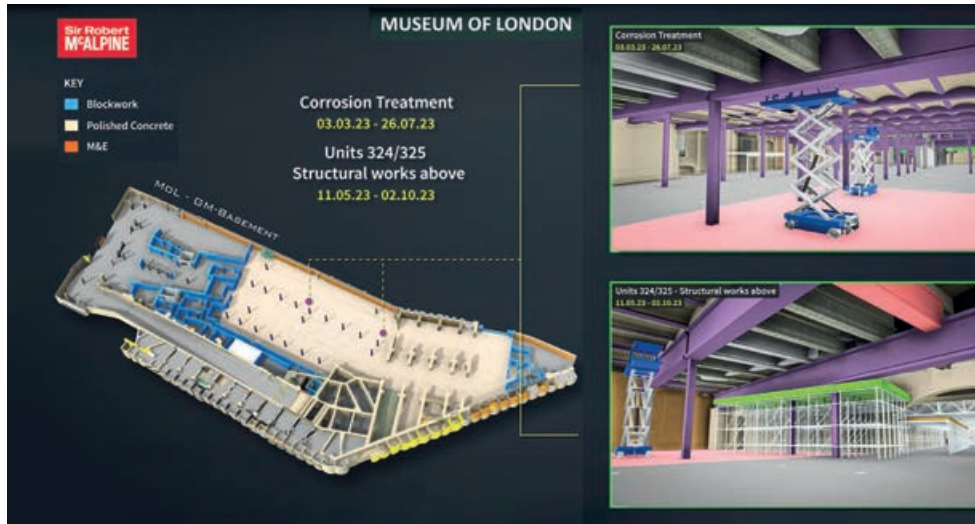
When introducing a new piece of software, Gales sits down with each person on the team to train them in a way that works for them. Next up is Buildots, which will help ensure all the services are in the right place.

“A lot of what we’re doing is bespoke and that’s where modelling and digital tools help,” says Hill. “Buildots will tell us when things are in and out of position. The tolerances are quite tight. That will help us because of the complexity of the building shape and the congestion of services within some spaces like the basement plant room and corridors.”

Out on site

The main entrance to the museum will be via West Poultry Avenue, which runs between the General Market and the Poultry Market buildings. Open from 7am to midnight, the avenue will have a new glass and zinc roof to replace its decayed roof structure.

Turning into the General Market, visitors will find the museum’s ‘Our Time’ exhibition. “This will be exhibits from living memory, from the past 80 years,” explains the Museum of London’s senior media officer Bree Wilkinson. “It will also ▶



We are pushing the boundaries with respect to smart buildings, workflow and data creation processes that are not yet industry standard

Irina Gales,
Sir Robert McAlpine



▲ Digital planning of works in the brick vaults of the General Market basement, where the grime of centuries has been removed to reveal the original colours



be a social space with restaurants and shops. It's like the front room of the museum."

The basement of the General Market, 'Past Time', will contain the bulk of the museum's historical exhibits. "The basement is at Roman street level, so it makes sense to have our Past Time material

here," says Wilkinson. This cool underground space – once home to stores for the markets – will help with energy efficiency too.

Currently, the General Market's ground floor is just a shell. Everything inside has been stripped back, including the shops and offices which sat inside its

perimeter walls. Wall coverings and fireplaces, incongruously sitting halfway up the inner walls, are all that remain now of these elements.

Although clear now, this area has been a forest of scaffolding, providing access and cover for Paye to replace the roof – which was complete by March 2024 when CM visited the site.

There is a huge amount of copper work on the General Market and the Poultry Market roofs. "The big copper dome pretty much used all the coppersmiths in the City, 10 or 12 of them," says Hill. In a wonderful nod to the past, 83-year-old coppersmith Chris Johnson laid the final sheet on the Poultry Market's roof – which he had helped install in the 1960s.

A new staircase between the ground floor and basement in the General Market has already been constructed, featuring layers of different coloured concrete, signalling the layers of city that have built up here over time. Deliveries once arrived by rail to the basement and the Thameslink train tunnel cuts through the site at this level; visitors will be able to watch it pass through a window in the basement's wall.

Paye's works have included cleaning 10,000 sq m of Victorian brick vaults, with Keltbray creating new service trenches and concreting the floor. Elsewhere, ►

CONSTRUCTION MANAGEMENT



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◀ CGI showing interior of the Poultry Market when the Museum of London is complete

blockwork walls have been erected for plant rooms and back-of-house circulation corridors.

Inside the Poultry Market, as from above, the most striking feature is the concrete dome that spans the main central area. At 70m by 40m, this was the largest spanning concrete dome in Europe when built in the 1960s by McAlpine – and one of the main reasons for its listing.

This building will house 'Deep Space' in its basement – mostly stores for the museum. The ground floor will provide exhibition space alongside a lecture theatre and learning centre for schools and other visitors. On level 1, accessible to the public, there will be office space and laboratories, with a perimeter walkway and a central area beneath the dome which will house temporary exhibitions.

Due to its listing, some elements of this building had to be logged before being taken off site for restoration or storage. Here Sir

Robert McAlpine deployed a system of QR codes which it used on the restoration of Elizabeth Tower – better known as Big Ben – and other heritage projects.

Currently, there is some serious demolition underway to make way for a new internal structure, with a team of mini machines moving rubble around. Severfield will install a steel frame that extends up from the basement, tying into the existing structure at ground floor and level 1.

There is still some way to go on the project. Current plans see the General Market open towards the end of 2025 and Poultry Market a year later.

As for whether visitors will know they are walking into a smart building, that's less clear. But the data its systems are producing and munching will certainly become part of the museum's sustainability story, aimed to attract London's younger generations. ●

CV: Richard Hill, project director, Sir Robert McAlpine

Project director Richard Hill started working for Sir Robert McAlpine fresh out of university 25 years ago. "I am very lucky," he says. "I get to work on fantastic projects." Hill appreciates the chance to leave something physical after the hard work of a construction project. "I walk around London, and I think, 'I was involved in that one'. We are leaving this legacy for generations to come."

It's not so often that he can revisit the interiors of the buildings he has constructed. Offices such as Stanhope's Gateway West and Gateway Central,



which Hill worked on prior to this project, become private spaces. But he is looking forward to wandering round the Museum of London as a visitor in years to come.

CV: Irina Gales, senior digital construction manager, Sir Robert McAlpine

As a teenager, Irina Gales wanted to be an architect. Originally from Romania, she studied architectural technology and construction management in Denmark, followed by an internship with a UK architectural practice as a BIM manager.

"Everything I had learned in Denmark was with digital tools. That's the way the Nordics work," she says, now a senior digital construction manager at Sir Robert McAlpine.

After her internship, Gales worked for various contractors on the Battersea Power Station, finishing phase three with Sir Robert



McAlpine, moving to 21 Moorfields and then on to the Museum of London. She is enjoying being part of construction's digital transition: "It's a continuous learning curve. That's what excites me."

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Green machines just get bigger

The recent Intermat construction equipment show showcased the much larger capacity electric, hybrid and hydrogen-powered machines that are now available. **Peter Haddock** reports from Paris



In April, Intermat Paris returned for the first time in six years. The exhibition has always showcased the latest innovations in construction equipment, and this year's event had a very specific focus on low carbon.

And it was not just about the fuel technology, for digitalisation is transforming the productivity of the plant sector and also contributing towards reducing carbon emissions.

The big theme of the show was how much bigger the machines are that run on all-electric power. Some manufacturers offered a glimpse of a future with numerous options to hybridise equipment – not just diesel-electric, but also with hydrogen.

Chinese manufacturer LiuGong has a range of large wheel loaders and excavators that have already spent many thousands of hours working and proving themselves on job sites across the globe. For example, its 856HE electric wheel loader is already being used for full shifts by both Aggregate Industries and Dalecrete readymix concrete to load aggregates.

Product expert Oliver Keates explains: "This model is a 21 tonne machine with a 423kWh lithium iron phosphate battery that can be charged in 1.7 hours. It is powered by a 160kW engine, has a 3.5 cu m bucket capacity and can operate for more than 11 hours on a full charge.



▲ Moog Construction's ZQuip retrofit solution can turn existing diesel equipment into electric machines by adding batteries

◀ Volvo's prototype hydrogen articulated hauler, the HX04, can be charged with 12kg of hydrogen in around 7.5 minutes, enabling it to operate for approximately four hours

"But this is not our largest wheel loader, as we have revealed our new 870HE 24 tonne product at Intermat that has a bigger capacity with a 4.7 cu m bucket as standard and a 423 kWh engine."

Intermat was also the first European show to showcase Volvo's prototype hydrogen fuel cell articulated hauler. The HX04 has been in testing for a number of years since it was announced in 2022. It can be charged with 12kg of hydrogen in around 7.5 minutes, enabling it to operate for approximately four hours. This shows the very real possibility of hydrogen becoming a usable fuel in the future, particularly on larger sites.

For US manufacturer Develon, the hydrogen story came in the form of its DL250-FCEV, a fuel cell wheel loader. It is based on a single platform design that allows it to be equipped with a fuel cell powerpack running on hydrogen but also offers the ability to transition to a battery electric vehicle by installing a battery pack.

This shows how the manufacturer is enabling future machines to be

The 856HE electric wheel loader can be charged in 1.7 hours and can operate for more than 11 hours on a full charge

Oliver Keates,
LiuGong Europe



powered by a range of fuel types, a theme throughout the show.

With the transition to greener and quieter solutions now becoming more popular in Europe, and being mandated for certain cities, looking for a whole-site solution has, until recently, been very difficult.

However, electric machinery specialist Moog Construction used Intermat to present its ZQuip retrofit solution, which can turn existing diesel equipment into electric machines and back again.

Moog director Scott Scheffler says: "With ZQuip, we can help whole sites transition to low-carbon battery power, as the solution can work with a wide range of equipment types from a huge variety of manufacturers. ►

We have designed the batteries to be mobile power stations. You can take a battery to a machine and use it to charge the battery without swapping them

Scott Scheffler,
Moog Construction



“Essentially, ZQuip can be retrofitted to diesel powered mobile equipment, from small mini excavators to larger 20-tonne models, wheel loaders, skid steers and many more machines.

“The batteries are also interchangeable from machine to machine and can be swapped in a matter of minutes. So you can have a bank of them charging and even swap them out if you are not using a particular machine.

“Being modular, you can use a single battery in a mini and four to five in a larger machine, converting the whole site to electric power using one single solution. We have

also designed the batteries to be mobile power stations.

“This means you can take a battery to a machine and use it to charge the battery without swapping them. And you can even take the battery system out and return it to a diesel machine.”

Back in the UK, Peterborough-based Perkins Engines has been using the latest in 3D modelling and fluid dynamic simulation to turn an existing diesel-powered telehandler into a diesel electric hybrid.

The unit in question, called Pathfinder, was a large 18m-reach telehandler previously operated with a 75kW diesel engine. Now, ▶

▼ Perkins Engines has converted an existing diesel-powered telehandler into a diesel electric hybrid



▲ LiuGong's electric loader in action at the Aggregate Industries Bow plant

LiuGong's electric loader

Battery-powered machine works at aggregates plant in east London

The 856HE, manufactured by LiuGong, is the world's first commercially available battery electric loader. It is the very first the company has rolled out in Europe.

The machine has been put into action at the Aggregate Industries Bow plant in east London, where the loading shovel will be used to load aggregates from the site's Bow railhead.

The 856HE will also be used on the London

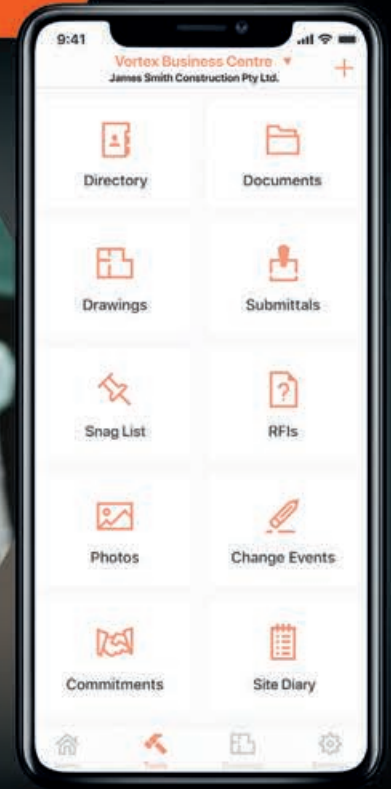
Concrete readymix plant to keep the site clear.

The 21 tonne vehicle has a 423kWh lithium iron phosphate battery with a fast charging capability of 1.7hrs.

The machine has a 160kW engine and 3.5 cu m bucket capacity and can operate for more than 11 hours on full charge.

Most importantly, it uses zero fuel, has zero emissions and produces low noise and vibration.

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10

Perkins' Pathfinder combination delivers the same power as the original engine with a 10% fuel saving and some added benefits

inside the same engine bay sits a new advanced power solution using a Perkins 55kW diesel engine with 20kW of electric power. This combination delivers the same power as the original engine with a 10% fuel saving and some added benefits.

Iain Evans, manufacturing engineer at Perkins, says: "With Pathfinder, we wanted to show manufacturers that it's possible to get the best of both worlds regarding power and fuel choices while ultimately saving fuel and carbon emissions. And for equipment like telehandlers, it's all about optimising the machine to reflect different types of applications."

"For example, you previously had to have a 75kW engine as the machine needed this to perform intensive tasks like heavy lifting. However, when you look at how often this power is required, it's only around 20% of the time, meaning you have a 55kW engine working to deliver all the other tasks."

In addition to fuel savings, a big advantage of this approach is that existing machines can be converted, in this case, to work for some time indoors without the engine required at all. This could eliminate the need for another machine for applications like loading and unloading from outside to inside warehouses.

For plant hirers, this approach could offer customers much more flexibility and for manufacturers, in this case, the design of the machine itself doesn't have to be changed. ●



With Pathfinder, we wanted to show manufacturers that it's possible to get the best of both worlds regarding power and fuel choices while saving fuel and carbon emissions

Iain Evans,
Perkins Engines

Digital tech to avoid collisions

Leica and Xwatch bring together 3D collision avoidance and 3D machine control

While the range of low carbon equipment continues to grow, so too does the digitalisation of the sector.

At Intermat, industry leaders Leica Geosystems and Xwatch Safety Solutions joined together to deliver the first integrated electric Hitachi machine. This showcases 3D collision avoidance and 3D machine control on one machine.

The system's sophisticated design enables the creation or importation of 3D avoidance zones, both above and below ground, directly within the Leica Geosystems MC1 3D machine control software.

The technology solution is already rolling out on site with Costain and Flannery Plant Hire in the UK on the M6 motorway.



▼ Leica Geosystems and Xwatch Safety Solutions have brought together 3D collision avoidance and 3D machine control on one machine



Good luck to this year's shortlist!

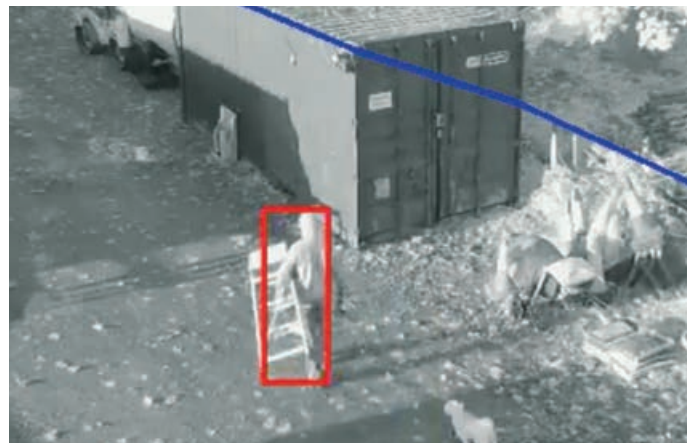
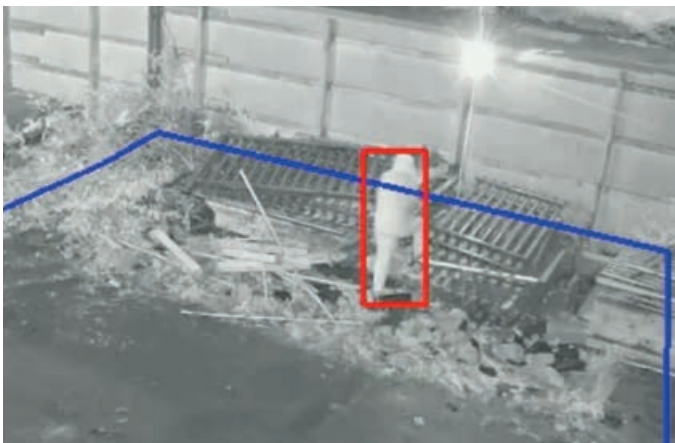
We're delighted to be sponsoring the **Digital Collaboration of the Year Award** at this year's prestigious Digital Construction awards. We would like to wish all the semi-finalists the best of luck for the finals, and we're looking forward to celebrating with you all in July!




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Alexis Potter
BauWatch



How to cut theft on construction sites

A recent survey showed construction's crime epidemic is getting worse. **Alexis Potter** of BauWatch provides a few site security firm pointers

Theft has long been a challenge in the construction industry. But with sustained inflation increasing the price of goods and the cost of living crisis putting pressure on purse strings, the situation is getting worse.

Two-thirds of workers surveyed in site security firm BauWatch's *Unseen Threats: 2024 Construction Crime Index* said they believed crime increased in 2023. Approximately 70% of respondents reported that they had witnessed theft on site at least once a year and a fifth said they experience it every few months.

Approximately 70% of respondents reported that they had witnessed theft on site at least once a year

70

Small tools, fuel and metals are among the most popular targets for thieves (see box). Construction companies need to be extra vigilant and ensure they are reviewing their security protocols regularly.

Site security

Robust site security is the best way to prevent theft. There are a range of pre-emptive measures contractors can take, including checking on the reaction times of security firms.

- **1.** Take timely risk assessments. Carry out a comprehensive risk assessment of your site as early as possible. Identify any weaknesses, such as blind spots where a break-in might be more likely to occur and confirm where high-value items are located on site so you can build in protective forces.
- **2.** Create physical barriers. Physical barriers such as concrete blocks and fences serve as the first line of defence against unauthorised entry. They not only demarcate property boundaries but also make criminals think twice about breaking in, particularly opportunists, which make up around 40% of thieves, BauWatch's study showed.
- **3.** Employ deterrents. Visible measures, such as CCTV towers and temporary fencing, act as effective deterrents because most opportunistic thieves will be put off taking spur-of-the-moment chances. Well-lit sites can also deter thieves from entering, so illuminate dark corners where trespassers might go unnoticed.
- **4.** Communicate with everyone on site. Clear communication and regular, systematic training help empower teams to safeguard construction sites. Introduce a standardised site induction for

any new joiners. Ensure site managers make security providers aware of working patterns, especially when things change, to prevent false alarms.

- **5.** Use real-time monitoring capabilities. Site managers can keep an eye on their site at all times with 24-hour imaging technology, ensuring any suspicious activity is promptly detected and addressed. Apps that allow remote adjustment of CCTV systems and automated alerts that work in synergy with a professional monitoring team make this an easily manageable addition to your arsenal.
- **6.** Be agile. All projects work on an evolving timeline, so threat levels must be assessed and adjusted accordingly. A traffic light system can be an effective solution here. Red lets your team know that the threat level is high, whether that is because of easily lifted or valuable assets, multiple subcontractors and personnel on site, or a quiet project phase with fewer personnel on site.

Last year, UK construction companies went out of business at the highest rate in a decade. This was due to persistent cost inflation, a slowdown in housebuilding and delays to government infrastructure projects. Added to these pressures, the financial fallout from just one strategically planned heist could be crippling, so construction firms must be able to protect themselves against what's to come.

As the last tool is packed away, remember that a construction site's greatest build is its defence against theft. Cement your resolve and turn your site into a stronghold of security and a beacon of deterrence. ●

Alexis Potter is managing director of BauWatch UK.

◀ Thieves breaking into a site last year, captured on BauWatch TV



Site managers can keep an eye on their site at all times with 24-hour imaging technology

What's being taken?

Small tools

Construction sites have a vast range of targets for thieves, including big-ticket items like machinery, vehicles and fuel. Surprisingly, though, BauWatch's survey found the most commonly stolen items are small tools, which are easy to take with stealth. This hurts trade contractors and the self-employed. No one should be made to feel vulnerable in their place of work and, worryingly, many workers have found they've had to replace tools from their own pocket, with a quarter admitting that being robbed is their "biggest fear" on site.

Metals

Copper, as a vital material in short supply, has always been attractive to thieves. Its value is growing, due to its role in the energy transition and widespread use across renewable energy technologies, such as solar panel wiring and electric vehicles. It's an increasingly sought-after prize, it's easy to grab and it can be untraceable. A recent spike in theft of other metals such as lead and steel has also been reported by Historic England and the National Police Chiefs Council.

Fuel

Fuel is another easy target for thieves, who typically look out for fuel bowsers and machinery left unattended on construction sites. Since the government removed the construction industry's access to red diesel in 2022, fuel theft has rocketed.

X DIGITAL CONSTRUCTION AWARDS

Digital finalists unveiled

Big industry names including AtkinsRéalis, Balfour, BAM, O'Rourke are among the finalists for digital construction's premier awards



AIDAN SYNNOITT

AtkinsRéalis, Hinkley Point C, Sir Robert McAlpine and Laing O'Rourke are among the nominees for the Digital Construction Awards 2024. The Digital Construction Awards 2024 attracted 165 entries, 84 of which have been shortlisted.

AtkinsRéalis either leads or features among six shortlisted entries, including twice for its Virtual Site Access technology (in the Best Application of Technology and Delivering Sustainability with Digital Innovation categories).

AtkinsRéalis's work on the National Underground Asset Register is also

▲ Winners celebrate at the Digital Construction Awards 2023

nominated for Digital Innovation in Health, Safety and Wellbeing and Digital Innovation in Productivity.

The firm's work on Sizewell C is recognised in the Best Use of Data on a Project. The AtkinsRéalis-WSP joint venture's work on the A83 is also nominated for Best Application of Technology. Work on and people

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AtkinsRéalis either leads or features among six shortlisted entries, including twice for its Virtual Site Access technology



involved in Hinkley Point C secured four nominations: the combination of EDF UK, Accenture and Dassault Systèmes is shortlisted for both Best Application of Technology and Digital Collaboration of the Year; and EDF UK staff Savannahh Armstrong and Isabella Noble are recognised in the Rising Star of the Year category.

Sir Robert McAlpine features on three shortlists, twice as part of the Integrated Health Projects joint venture with Vinci on Bournemouth Hospital (Best Application of Technology and Best Use of Data on a Project). The contractor's work on 1 Broadgate is also shortlisted in the Delivering Sustainability with Digital Innovation category.

Laing O'Rourke is nominated three times for: the Olympia redevelopment (Best Application of Technology); its GIS work on East West Rail (Digital Innovation in Productivity); and Ben Hardie, one of its digital engineers, who features on the Rising Star of the Year shortlist.

Balfour Beatty's work with its client and key supply chain partners on the Midland Metropolitan University Hospital is shortlisted for Digital Construction Project of the Year and Digital Collaboration of the Year. ●

The Digital Construction Awards are organised by Digital Construction Week, BIMplus, Construction Management and CIOB. To find out more, visit www.digitalconstructionawards.co.uk.

Shortlist

Digital construction project of the year

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- Kingsland Wharves – London & Quadrant/Durkan
- London College of Fashion, University of the Arts – Portview
- Midland Metropolitan University Hospital – Balfour Beatty
- Stockport Interchange – Willmott Dixon Construction
- Transformation of HS2's geospatial approach – HS2/Eiffage Kier Ferroviaal BAM Nuttall/Esri UK
- ULEZ expansion signage – Transport for London/Tarmac Kier Joint Venture/Lattice

Digital contractor of the year

Sponsored by Procure

- BAM UK & Ireland
- McLaren
- McLaughlin & Harvey
- PCE
- SER Contractor
- Zedpods

Digital consultancy of the year

- BIMBox
- DDC Solutions
- Glider
- Majenta Solutions
- One Creative Environments
- Queenswood
- Spanswick

Digital collaboration of the year

Sponsored by Bluebeam

- EDF UK/Accenture/Dassault Systèmes
- HS2/SCS JV/Queenswood
- Balfour Beatty/Sandwell and West Birmingham Hospitals
- NHS Trust/Arup/Gleeds/Stride Treglown

- NHS Lanarkshire/WSP Digital Services/Currie & Brown/Keppie Design
- United Utilities/MWH Treatment, Stantec, J Murphy & Sons
- Network Rail/Method Grid

Digital rising star of the year

- Savannahh Armstrong, EDF UK
- David Caughey, Mivan
- Ehsan Ghasemi, Volker Laser
- Ben Hardie, Laing O'Rourke
- Isabella Noble, EDF UK
- Aron Owen, Mott MacDonald Bentley

Digital construction champion of the year

The winner will be revealed on the night.

Best application of technology

- AtkinsRéalis
- AtkinsRéalis-WSP JV
- EDF UK/Accenture/Dassault Systèmes
- Heathrow/AtkinsRéalis/Mace/Trimble/WSP
- Integrated Health Projects/Buildots
- Laing O'Rourke/Asite/Edocuments
- L Lynch
- Method Grid
- Winvic

Product innovation of the year

- Eleco AstaGPT
- KOPE
- Lattice
- ONE Engage
- ORIS Materials Intelligence
- The Persimmon Way App
- Ramtech
- Invicara Twinit

Best use of data on a project

- AtkinsRéalis
- Disperse
- DMRC
- GMI Construction
- iDEA
- Integrated Health Projects/Buildots
- Skanska/National Highways

Delivering sustainability with digital innovation

- AtkinsRéalis
- Eckersley O'Callaghan
- Ethos Engineering
- Furbnow
- Sweco UK
- Sir Robert McAlpine

Digital innovation in asset management

- Ethos Engineering
- Glass Aftercare
- iDEA
- Kier/Ministry Of Justice/Glider/Future Decisions
- Lattice
- Notting Hill Genesis
- School Property Matters
- Ulster University
- Zutec

Digital innovation in health, safety and wellbeing

- AtkinsRéalis
- Fit for Work
- Graham
- HSE – Industrial Safetytech Regulatory Sandbox
- HSE – Sensors and safety zones with 3D modelling
- Proicere

Digital innovation in productivity

- AtkinsRéalis
- Buildots
- JCB – LiveLink
- John Sisk & Son
- Laing O'Rourke
- L Lynch
- Teknobuilt

What you will learn in this CPD

- ▶ Key standards to follow for biosolar roof installation
- ▶ Best practice guidance from the Green Roof Organisation
- ▶ Case study on a recent biosolar roof project

CPD: How to deliver a biosolar green roof

What are biosolar roofs and how should you design, install and maintain them? **Mark Harris** from the Green Roof Organisation explains



The inclusion of biosolar green roofs within Department for Education (DfE) generic design briefs has raised the profile of this sustainable method of roof construction. But what is a biosolar roof?

A biosolar roof combines a green roof, typically sedum or wildflower (extensive) or biodiverse (semi-extensive) with solar photovoltaic (PV) panels. This merges the benefits of management of surface water run-off from the roof with CO₂ capture and the utilisation of the evaporative cooling of the vegetation to increase the efficiency of the PV panels.

Here are the key technical points to consider when designing, specifying, installing and maintaining a biosolar roof.

1. Biosolar support frames

The purpose-made support frame systems for PV panels are designed as an integral component of a green roof system. They are secured in place by the superimposed load of the green roof build-up rather than being fixed to the roof structure. This avoids the requirement for support fixings to penetrate the roof waterproofing and structure.

Typically designed for use on roofs with a pitch of up to five degrees, a biosolar PV support frame maximises the vegetated



▲ Biosolar roof supplied by Optigreen

area of the roof, unlike PV mounts ballasted with paving slabs or stones.

The support frame system, if manufactured from aluminium, should be designed and tested in accordance with the relevant sections of BS EN 1991-1-4:2005 (*Actions on Structures*) and BS EN 1999-1-1:2007 Eurocode 9 (*Design of Aluminium Structures*). If manufactured from steel, BS EN 1993 Eurocode 3 (*Design of Steel Structures*) applies.

2. Design and specification

When designing a biosolar roof, the following should be requested from the biosolar system supplier as early in the design process as possible:

- a layout plan showing the position of the biosolar supports and panels for each roof area or areas;
- the spacing between panel rows;
- a wind loading report, using local weather data, for each roof – calculations should be in accordance with BRE Digest 489 and specifically BS EN 1991-1-4 (*Actions on Structures*); and

- a plan showing differing ballast loadings if a zonal arrangement is required.

Sufficient substrate depth should be provided to ensure that the dry weight of the green roof build-up provides sufficient ballast loading to comply with the output of the project-specific wind loading calculation.

Solar panels should be positioned to allow sufficient space between each row to allow for safe and practical maintenance of both the PV panels and the green roof.

Minimum spacing should be sought from the biosolar system supplier but the Green Roof Organisation (GRO) recommends:

- minimum 200mm from the low point of each solar panel to the top of the green roof substrate surface;
- minimum 1.5m between solar panels and roof perimeters;
- minimum 750mm between solar panels and rooflights/atriums/features;
- no encroachment of PV panels over roof level fire breaks; ▶

“ The purpose-made support frame systems for PV panels are secured in place by the superimposed load of the green roof build-up rather than being fixed to the roof structure

Case study: St Edward's C of E School, Havering, Essex

Green roof specialist Pritchard & Pritchard installed 180 PV panels in a wildflower biosolar project on an Essex school

Green roof specialist Pritchard & Pritchard installed an 894 sq m wildflower biosolar project on an Essex school. The project features 180 PV panels mounted on manufacturer ZinCo's Solarvert mounting system, ballasted by ZinCo green roof substrate and wildflower mats.

The drainage layer comprises a protection mat, Floradrain FD40 drainage board and

SF filter fleece. The edge protection is the ZinCo ASG ballasted maintenance railing system. The 140m of railing has no penetration through the waterproofing and is ballasted by the green roof.

The wildflower mix aims to attract pollinators and other invertebrates. It includes: birdsfoot trefoil, black medick, bladder campion, bulbous

buttercup, common toadflax, corn chamomile, cornflower, cowslip, devil's bit scabious, field poppy, greater burnet, kidney vetch, lady's bedstraw, musk mallow, oxeye daisy, rough hawkbit, salad burnet, selfheal, small scabious, viper's bugloss, wild carrot, wild clary, wild mignonette and yarrow.

Pritchard & Pritchard completed the project in 2023.



Cabling associated with the PV system running along the substrate or within the green roof build-up should be contained within a closed circuit



- not positioning biosolar base boards within pebble vegetation margins;
- not installing biosolar base boards directly on substrate or aggregate layers; and
- no shading of solar panels from vegetation or other roof features.

3. Key design considerations

Each biosolar support should be located over a stable surface such as:

- a waterproofed warm roof;
- an inverted roof, above the insulation board and water flow reducing layer (WFRL);
- a suitable void former; or
- a green roof drainage board layer with filter fleece.

Manufacturers' installation recommendations should always be followed.

4. Fire considerations

Guidance in the Department for Communities and Local Government's (DCLG) *Fire Performance of Green Roofs and Walls* (August 2013) and the *GRO Code of Best Practice* should be followed to meet the fire performance requirements of the building regulations.

Cabling associated with the PV system running along the substrate surface or within the green roof build-up should be contained within a closed conduit. All electrical works associated with the installation and commissioning of the PV panels is to be as required within MCS guidelines.



Maintenance includes removal of invasive weed species and ensuring depths of substrate remain correct as per the original wind loading requirements ”

5. Maintenance

All green roofs will require regular maintenance and biosolar roofs are no exception. The removal of dead vegetation as part of a planned maintenance programme will help prevent fire risk through increases in organic matter.

GRO recommends that all biosolar roofs are maintained at least twice a year as a minimum to:

- keep vegetation below a height where it shades the solar PV array;
- ensure a minimum gap of 200mm between lower edge of PV panel and substrate surface is maintained;
- remove biomass (old seed heads and dead vegetation) especially in the autumn; and
- check that any fire breaks are cleared of vegetation or combustible material.

Additional maintenance activities should also include:

- removal of invasive weed species;
- removal of individual plants causing shading to the panels;

- ensuring depths of substrate remain correct as per the original wind loading requirements;
- reseeding of bare areas in the vegetation as required; and
- cleaning and inspection of the solar PV panels.

A record of each visit and work completed should be provided to the entity responsible for maintenance of the building. Failure to carry out regular maintenance will affect the performance of the green roof and the power output of the solar PV array and may increase potential fire risk.

6. Irrigation

If an irrigation system is provided, it is important not to over-irrigate the vegetation under and directly around PV panels to avoid excessive growth and potential shading issues. ●

Mark Harris is head of sustainability at SIKA, secretary of the Green Roof Organisation, and a fellow of the Institute of Roofing. For further information on biosolar roofs, go to www.greenrooforganisation.org.

▲ On this project at St James's Road in Bermondsey, south London, completed in 2021, Bridgman & Bridgman installed 62 PV panels supported on 70 solar FKD supports

CPD Questions

- 1) What pitch of roof are biosolar support frames typically designed for?
 - a) Up to five degrees
 - b) Five to 10 degrees
 - c) 10 to 15 degrees

- 2) What standard should be used for wind loading calculations for biosolar roofs?
 - a) BS EN 1991-1-4
 - b) BS EN 2001-1-4
 - c) BS EN 2011-1-4

- 3) How much space should be allowed between solar panels and roof perimeters?
 - a) Minimum 0.5m
 - b) Minimum 1.5m
 - c) Minimum 2.5m

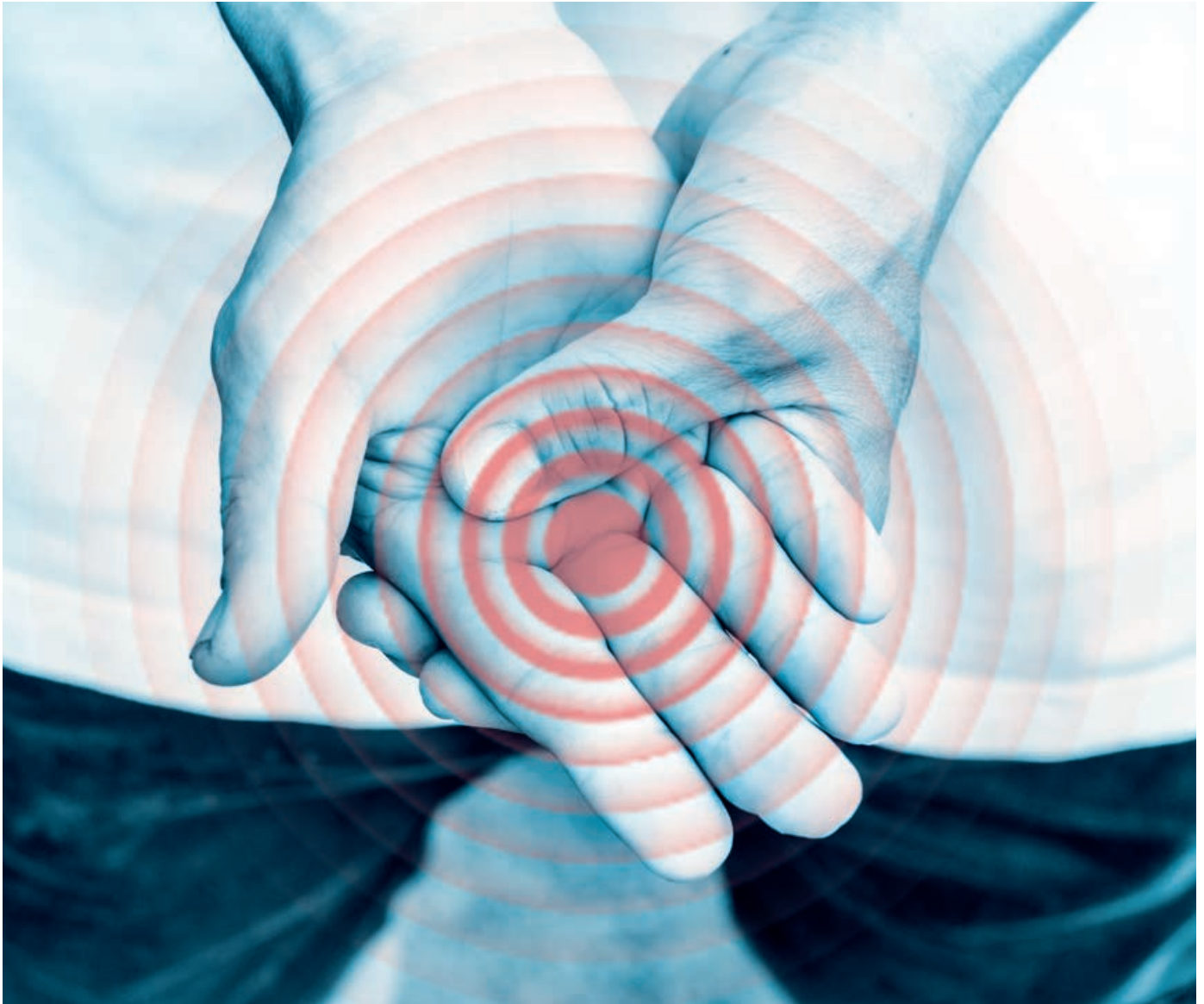
- 4) Should you install biosolar base boards directly on to substrate or aggregate layers?
 - a) Yes, as long as the substrate or aggregate layers are not disturbed
 - b) Yes, as long as they are not too close to the roof perimeter
 - c) No, it is best avoided

- 5) How often should biosolar roofs be maintained as a minimum?
 - a) Once a year
 - b) Twice a year
 - c) Every other year

To test yourself on the questions above, go to www.constructionmanagement.co.uk/cpd-modules

i What you will learn in this CPD

- ▶ What is hand-arm vibration syndrome (HAVS)
- ▶ The legislation that protects workers from HAVS risks
- ▶ How HS2 included HAVS in its health and safety strategy



CPD: Managing HAVS risks

The HSE estimates that over two million workers are at risk of hand-arm vibration syndrome. This CPD explains how to manage the risks, with reference to a recent HS2 project

Hand-arm vibration Syndrome (HAVS) is a health condition caused by the vibration from any handheld or guided power tools and machinery on site, such as drills, torque wrenches and plate compactors.

HAVS causes damage to muscles, nerves, joints and blood vessels, leading to permanent long-term health conditions. HAVS can cause vibration white finger – a permanent and painful numbness and tingling in the hands and arms – as well as painful joints and muscle weakening. There is also evidence that it may cause carpal tunnel syndrome.

HAVS can be prevented, but once the damage is done it is permanent. Regular or frequent exposure to hand-arm vibration is likely to occur when the use of vibrating tools is a regular part of someone’s job.

Over two million people in the utility and construction sectors in the UK are at risk of developing an HAVS-related condition, according to the Health & Safety Executive (HSE).

Each year, over 80 instances of HAVS are reported to the HSE as a RIDDOR (Reportable Injuries, Diseases and Dangerous Occurrences Regulations) reportable disease, under regulation of the RIDDOR Regulations 2013.

The Control of Vibration at Work Regulations 2005 aim to protect workers from risks to health from



▲ Vibration from handheld power tools can cause damage to nerves, muscles and joints

vibration. The regulations introduce action and limit values for hand-arm and whole-body vibration.

These are:

- Exposure action value of $2.5\text{m/s}^2\text{A}(8)$: at this level employers should introduce technical and organisational measures to reduce exposure.

- Exposure limit value of $5.0\text{m/s}^2\text{A}(8)$: this should not be exceeded.

HSE provides a list of alternative processes to avoid or reduce the use of vibrating equipment in construction.

These include:

- mechanised tunnelling methods, to eliminate hand digging;
- use of machine-mounted equipment such as breakers and

On HS2, HAVS was identified as one of the top occupational health concerns in its health and safety strategy

crushers instead of hand-operated tools for groundworks and demolition; and

- designing and planning to avoid the use of masonry drilling.

HSE describes as “not acceptable” the use of hand-operated tools for pile-capping and scabbling. Instead, it recommends alternative methods where technically appropriate, such as suspended hydraulic pile croppers, grit blasting (wet or dry) or the Elliott method, among others.

HSE also provides guidance on management of HAV risks where use of vibrating equipment is unavoidable, which includes better selection of work equipment, limiting daily exposure time, improving information, instruction and training, and health surveillance.

HSE states that “where a risk cannot be eliminated an employer needs to reduce the exposure to as low a level as is reasonably practicable through organisational and technical measures”.

HS2 HAVS risk

On HS2, HAVS was identified as one of the top occupational health concerns in its health and safety strategy.

The condition came into focus during the EKFB (Eiffage, Kier, Ferrovia and BAM) JV’s construction of the A41 onsite batching plant near Aylesbury in Buckinghamshire.

“Often on site a power tool will be used in conjunction with another ▶



◀ Use of a protective sleeve significantly reduced vibration exposure

Data from HS2 HAVS tests on Aylesbury batching plant



EKFB carried out tests on workers using spanners with and without the rubberised insulated sleeve. The results were as follows:

Spanner without protection:
 X= 3.80, Y= 6.35, Z= 6.74
 Overall = 10m/s² (double the upper exposure value limit)

Spanner with protection:
 X= 0.37, Y= 0.19, Z= 0.23
 Overall = 0.48m/s² (reducing exposure to 5% of that without the added protection)

(X axis = forward/back, Y axis = up/down, Z axis = side to side)

static metal tool such as a spanner, for example when tightening bolts to erect a scaffolding tower or metal structure,” explains Timothy Callow, safety, health and wellbeing advisor with EKFB. “In these situations, the vibration source is coming from the power tool but is transferred through to the static metal tool and to the operator’s hand.

“On the batching plant, there was a need for thousands of bolts to be manually inserted. These bolts had to be tightened with a metal spanner and a battery-operated torque wrench which produced vibration. More than 2,500 bolts were needed, potentially exposing workers to regular and excessive vibration. Tests showed that the vibration levels were double the upper value exposure level.”

Concerned that its contractor’s operatives were potentially being exposed to HAVS, EKFB asked for further support from its occupational health provider People Asset Management (PAM) to measure the HAVS exposure level

and suggest ways of removing or reducing the exposure.

PAM provided an occupational hygienist and tests were carried out on the operatives to find out the exposure levels.

Occupational health assessment

The occupational hygienist used a professional HAVS meter manufactured by Pulsar connected to the spanner.

“The tests showed that the vibration levels in the hand holding the spanner (left hand) had an increased vibration exposure compared to the hand holding the vibrating torque wrench,” says Callow.

The exposure levels measured were double the HSE’s accepted HAVS upper exposure value level of 5m/s² when tightening the support frame bolts (10m/s²), so there was an immediate need to remove or reduce the risk to workers.

A simple and cost-effective solution in the form of a rubberised/insulated sleeve was added to the spanner handle, costing

approximately £1.50 per spanner, to see if this would reduce vibration exposure since there was no design solution available.

“This idea was derived from the collected experience of the people involved on site and the knowledge that some tools, such as hammers, often come supplied with a ready-made rubberised sleeve,” says Callow. “The added sleeve did not restrict work from carrying on normally.”

After adding the rubberised and insulated sleeve to the spanner handle, the results of the tests with the additional protection showed that the vibrations then being received were only one-twentieth, or 5%, of those without the additional protection – 10m/s² unprotected down to 0.48m/s² protected.

Learnings and recommendations

“HAVS is a major health risk on most construction sites. However, because its effects are initially hidden and longer-term, it can be easily overlooked or ignored,” says Callow.

“The potential HAVS risks on the A41 batching plant were more obvious because of the volume and intensity of the task over a period of 38 days.

“The project manager of the batching plant contractor agreed to use the new method on the erection of the remainder of the A41 batching plant and to adopt it on erection of

“ After adding the sleeve to the spanner handle, the tests showed that the vibrations then being received were only 5% of those without the additional protection

Over two million people in the utility and construction sectors in the UK are at risk of developing a HAVS-related condition

2m

The adding of a rubberised sleeve to a static metal tool has many more applications on site – for example, when erecting scaffolding or metal structures and in the erection of large plant

Timothy Callow, EKFB



a further batching plant on another EKFB site. They also confirmed that this method would be used on its future projects worldwide.”

He adds: “The adding of a rubberised sleeve to a static metal tool has many more applications on site – for example, when erecting scaffolding or metal structures and in the erection of large plant, such as cranes, or in the repair of plant and machinery on site. These activities typically involve a large number of people on site – labourers, fitters, pipelayers, erectors – who represent 24% of the total HS2 workforce, some 7,200 people.

“This initial learning event has raised awareness of HAVS across

EKFB’s Aylesbury area. EKFB has also produced HAVS support materials to use at inductions and HAVS medical assessments have been introduced for operatives.”

Additionally, Reactec’s HAVS monitoring system has been introduced on EKFB sites. The Reactec system allows the monitoring of daily HAVS exposure levels for all vibration tools being used on site for activities such as drilling, concrete trimming and scabbling, ensuring that the minimum exposure value level for each tool is not exceeded. ●

HS2 case study supplied by PAM and EKFB for the HS2 Learning Legacy library.

▼ HAVS can cause vibration white finger – a permanent and painful numbness and tingling in the hands and arms



CPD Questions

- 1) Which of these processes is not an alternative to avoid or reduce the use of vibrating equipment in construction?
 - a) Mechanised tunnelling methods, to eliminate hand digging
 - b) Designing and planning to avoid the use of masonry drilling
 - c) Use of hand-operated tools for groundworks and demolition

- 2) According to HSE, which of the following methods is “not acceptable” for pile-capping and scabbling?
 - a) Elliott method
 - b) The use of hand-operated tools
 - c) Grit blasting

- 3) How many cases of HAVS are reported to the HSE as a RIDDOR?
 - a) Under 25
 - b) Over 80
 - c) Over 200

- 4) What legislation protects workers from health risks caused by vibration?
 - a) Manual Handling Operations Regulations 1992
 - b) Health and Safety at Work Act
 - c) Control of Vibration at Work Regulations 2005

- 5) Evidence shows that HAVS can cause...?
 - a) Carpal tunnel syndrome
 - b) Cancer
 - c) Mesothelioma

To test yourself on the questions above, go to www.constructionmanagement.co.uk/cpd-modules

Useful resources

- Hand-arm vibration at work:** www.hse.gov.uk/vibration
The Control of Vibration at Work Regulations 2005: www.legislation.gov.uk
Treatment for HAVS: www.patient.info



Caroline Watkins
Thomson Snell
& Passmore



Chris Kirby-Turner
Thomson Snell
& Passmore

‘Should we use WhatsApp for site communications?’

This month’s contract clinic question comes from a construction manager on a housing project, worried about security issues using WhatsApp for messaging the project team. **Caroline Watkins** and **Chris Kirby-Turner** look at the risks involved

THE QUESTION:

We’re starting work on a residential project in Kent. Our employer wants us to use a WhatsApp group for communications on site – is that a good idea?

THE ANSWER:

The use of instant messaging as a mainstream communication tool looks here to stay. Fast communication to multiple recipients is achieved instantaneously. Polls allow quick feedback and rapid document-sharing speeds up record sharing.

At a day-to-day level, messaging software can be a harmless enabler of good working relations. It sits in the same lane as countless other online groups in a multitude of workplaces.

Another asset is that it creates a date-stamped record for receipt of communications for export. This can provide a useful record of the transfer of information for later analysis. Where disputes arise, often the simplest evidence can aid their resolution – a record of when a photograph or a video was shared and seen by each relevant person.

Legal problems

In the legal context, however, communication via WhatsApp has scope to be problematic. A poorly thought-out communication could creep into the territory of constituting a formal contractual notice.

Depending on who is in the group, there could easily be a blurring of the boundaries of who the contracting parties are and who bears responsibility for the issue. It risks creating uncertainty as to who communication is for. This is particularly true where it crosses the line to being a contractual notice.

The contract may specify individuals who must receive notices. If so, it is vital to check that those individuals are within the WhatsApp group.

The sheer volume of messages that flow through WhatsApp groups can mean that more important communications, or those intended to be a formal notice under the contract, simply get overlooked or their impact is diluted.

WhatsApp communication can also present a security risk. Documents sent by text can be password protected, but WhatsApp’s



There is a lack of control as to what commercially sensitive information may be forwarded on to third parties

speed and fluidity can lead to security measures being overlooked.

There is also a lack of control as to what commercially sensitive information may be forwarded on to third parties, particularly when communicating within a wider group.

The data in WhatsApp is not controlled by any of the companies involved in the project. It’s stored individually by each user on Meta’s servers. Recent high-profile public inquiries have highlighted instances where WhatsApp messages may be routinely deleted or claimed to have become irretrievable. This could suit a party wanting to thin out available records when dealing with a dispute.

Change instructions

Should change instructions and other directions and notices be issued through the group and what are the legal implications?

Generally speaking, standard form construction contracts state that change instructions must be either made or confirmed in writing to be effective. Notices can be served by “any effective means”. It falls to the party seeking to prove notification



Question for contract clinic? Email construction-management@atompublishing.co.uk



has been made to establish that service had been effected.

Recent case law is supportive that WhatsApp messages can constitute an effective means. In *Southeaster Maritime Ltd v Trafigura* (2024), Mr Justice Jacobs rejected the idea that a WhatsApp communication should be disregarded as fanciful or less significant because it came via WhatsApp rather than email.

Section 15(1) of the Electronic Communications Act 2000 defines electronic communication as including email, social media, telephone, text, facsimile and websites. If a contract states that notice can be given by electronic communication, this is not restricted to notice by email.

Accepting therefore that you can use WhatsApp to accept change

▲ The volume of WhatsApp messages can mean that their impact is diluted

If a contract states that notice can be given by electronic communication, this is not restricted to notice by email ”

instructions, the question remains whether you should, given the potential consequences of doing so.

Best practice

So how best to make use of WhatsApp on a construction site?

Allowing formal notifications and notices in the mix of general day-to-day communications runs contrary to the well-established use of designated portals for larger construction projects. The benefit of those systems is that communication of formal notifications or notices is restricted to this conduit only. This creates certainty as to what are and are not formal notifications or notices under the contract.

The principle of differentiation would seem sensible to adopt on domestic projects, for the same reason. The contract can make clear what notifications and notices need to be dealt with more formally. This will help differentiate them from the day-to-day communication, for example, by requiring any change instructions to be confirmed in email.

That distinction should provide clarity for all involved and avoid the above complications and inadvertent risks, while still gaining the benefits of WhatsApp for day-to-day communications. ●

Caroline Watkins and Chris Kirby-Turner are partners in the Construction & Engineering team at Thomson Snell & Passmore.

Raising the quality bar in nuclear construction

Paul Hampton from the University of Wolverhampton tells **Nicky Roger** about his work to improve nuclear quality control management



What are you working on at present?

I work on a broad range of research and knowledge exchange activities, but my current focus relates to digital, land remediation, fire safety and nuclear quality control management. These are four of our eight research and knowledge exchange themes, and close collaboration with industry and the sector is maintained.

Through utilisation of digital measurement software packages and modern scanning, drone technology and digital measurement techniques, the research ensures greater accuracy of measurement and 3D modelling and greater financial certainty.

Evidence suggests that between 10-25% greater accuracy can be gained via digital scanning.

▲ Dr Paul Hampton: 'It's vital that students can feel confident to seek out research'

We have just signed a partnership with Nomitech. This will advance research into cost estimating, product development and ensure precise cost forecasting and environmental assessment for optimal project outcomes.

The next piece of research is to solve the national housing challenge. Working with regional and national industry partners, the National Brownfield Institute (NBI) team and I are evaluating the feasibility to unlock brownfield land within a reduced timeline. If successful, this will make a huge contribution.

In respect of the nuclear sector, I am proud to have researched, developed and delivered almost a decade of specialist courses relating to quality control management. This has advanced understanding of quality control processes, systems and increased 'right first time' quality control targets.

The research has advanced knowledge of nuclear delivery and the course secured a national award.

Working with the amazing Hinkley Point team, this will ensure best practices and knowledge advancement are transferred forward on to the Sizewell C project and practices are transferable into the UK nuclear roadmap.

Planning, programming and delivering a nuclear plant is a massive undertaking, and the opportunity to advance quality control management is stimulating and rewarding.

▼ The specialist nuclear delivery courses secured a national award

Planning, programming and delivering a nuclear plant is a massive undertaking, and the opportunity to advance quality control management is stimulating and rewarding

Dr Paul Hampton,
University of Wolverhampton

In fire safety I work with industry and manufacturers to develop new innovative responsive products.

One of the devices will aid faster response egress times for care home staff and occupants and increase evaluation times for phased or full evacuation. By integrating receiver devices into personal clothing, the devices are always at hand.

I am also working with a sprinkler firm, and a group of fire engineers, to better monitor smoke control via computer fluid modelling.

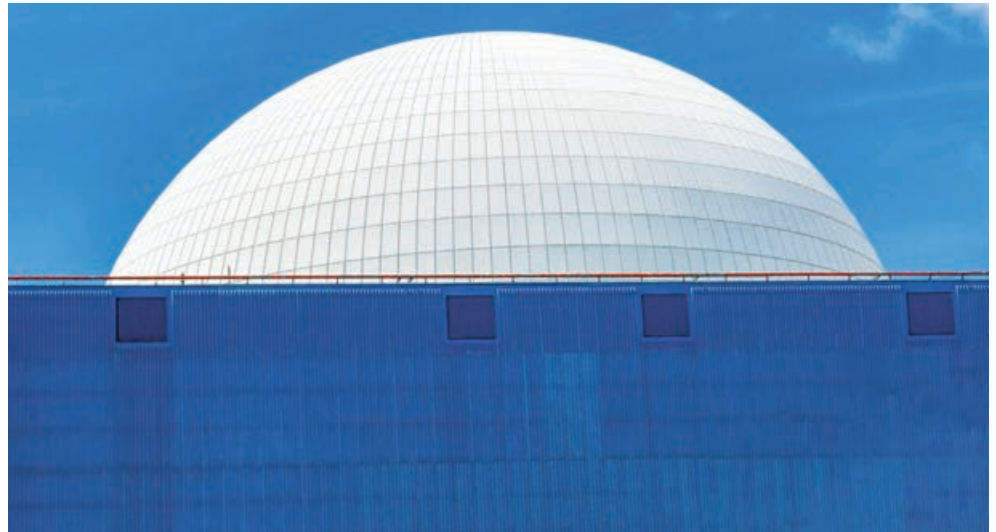
What is new about the research and knowledge exchange, compared to past work on this topic?

The research looks to advance opportunities to work alongside industry and commerce and solve some of the key issues that prohibit advancement of innovative business.

Working with business partners in the UK and Hong Kong, it provides confidence in digital measurement, and increases cost estimating by approximately 20%, giving clients advanced financial intelligence.

In the nuclear sector I am also working with the team on advanced techniques in specialist reactor quality designs. This is in the early stages but will advance quality in design, monitoring and delivery.

The research will also allow retrospective evaluation into past reactor failure. There are numerous lessons to be learnt. The development of 'virtual



reactor modelling' will significantly increase knowledge and advance development of safety in design, construction and operation.

How important is it to bring industry experience into the lecture theatre?

Having transferred across from industry to academia, I feel the ideal solution is to secure a balance of research-led and industry-led curriculum development. Any opportunity to cite real project experiences and refer to case studies of good and bad practices is both informative and impactful.

Importantly, it's vital that students can feel confident to seek out research and knowledge located in research. Through reference to real-life industry case studies, this encourages a greater depth and breadth of knowledge and application of knowledge.

How wide is the gap between academic research and industrial application?

Various stakeholders have differing opinions on this matter. My personal

CV: Dr Paul Hampton

● University of Wolverhampton:

Head of school, Architecture and Built Environment, Jan 2022-present

Head of built environment, Faculty of Science and Engineering, Jan 2016-present

Senior lecturer and business development manager, Jan 2008-present

● Principal surveyor, Birmingham City Architects Department, 1986-2008

Education:
● Middlesex University, PhD in Architecture and the Built Environment, 2011-16

view is that the gap is narrowing. To succeed, it requires dedication and a commitment from both sides to expand their engagement and work closely on projects such as knowledge partnership/knowledge transfer engagement.

As an example, I have been actively promoting attendance of industry practitioners to a global conference, Construction in the 21st Century (CITC).

This conference was historically a meeting of academic minds and sharing of best practice. With the introduction of industry and commerce, this has driven forward knowledge exchange and research collaborations. ●

If you're interested in academic membership visit www.ciob.org/membership/become-a-member/educator.

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CIOB Community



Our team’s remarkable synergy and dedication to teamwork propelled us forward. We owe immense gratitude to those behind the scenes
 Universitas Indonesia team



The team members, who will each take a share of the £2,000 prize, are: Bayu Dewanto, Alexander Ganesh, Fransiskus Adinda Rio and Daffa Aliyo.

“This victory surpasses even our wildest dreams,” the team said. “Our team’s remarkable synergy and dedication to teamwork propelled us forward. We owe immense gratitude to those behind the scenes who helped us shape our creations. As we bask in this triumph, we hope our achievements serve as inspiration for future generations.”

In joint second place were Team Plasfold Home from Malaysia’s Tunku Abdul Rahman University of Management and Technology and ReBuilda from Bahrain’s Applied Science University.

Third place was claimed by Team Blitzford by Solid Build from Hong Kong Polytechnic University.

Teams presented detailed project proposals to an international panel of judges online. They provided a completed design and build programme, with costs, using online platform SimVenture Validate. ●

Universitas Indonesia scoops global challenge for second time

Winning student team from Indonesian university will now present their project at CIOB Members’ Forum in South Africa in June

Construction students from Universitas Indonesia have won the Chartered Institute of Building’s coveted Global Student Challenge for the second year in a row.

The competition saw teams of students studying built-environment qualifications go head-to-head to create a cost-effective, flat-pack type building for use in disaster relief.

Team Santapurna Sactuary fended off competition from 41 other teams from 20 universities around the world to scoop the top prize.

Universitas Indonesia is the first university in the contest’s 11-year history to win it back to back. The team will now head to South Africa in June to present their project at CIOB’s Members’ Forum.

▲ The winning team, Santapurna Sactuary. From left: Bayu Dewanto, Alexander Ganesh, Fransiskus Adinda Rio and Daffa Aliyo (Courtesy of CIOB)

CIOB recognised for commitment to employees

Institute earns We Invest in People Gold accreditation

CIOB has achieved a We Invest in People Gold accreditation from Investors in People, reflecting commitment to its employees and its work to support them at all stages of their careers.

The organisation is proud of its work in embracing hybrid working, significantly improving management support and

resources, creating opportunities to be involved in initiatives and acting to drive improvement.

Joanna Quirk, chief operating officer at CIOB, said: “We’re delighted our people see CIOB as a great place to work and are immensely proud to have achieved We Invest in People Gold accreditation for the first time.

She added: “It’s a wonderful reflection on our brilliant teams and of them living our values and supporting each other. The hard work doesn’t stop here, though, as it’s important we build on this and continuously improve.”

Investors in People provides advice and support on improving workplace culture.

▼ Below from left: Eddie Tuttle, Nick Cuffe, Caroline Gumble and Andrew Spratt

Greendale completes specialist works on historic Christchurch town hall

Comprehensive renovation for iconic Dorset building

Chartered builder Greendale

Construction has completed a major restoration contract on the Old Town Hall in Christchurch, Dorset.

The comprehensive remedial works, carried out for Christchurch Town Council, began in September 2023, addressing the building's deteriorating roof and stonework after concerns over lead corrosion.

The Grade II-listed historic building, also known as the Mayor's Parlour, has had external stonework and building repairs, roofing work, and lead work on the top elevation.

Internally, the Old Town Hall has benefited from a refurbishment with new bathrooms, kitchen, carpets and decoration.

A high-level, ladder beam designed scaffold was erected to allow hoisting of replacement heavy stone elements at roof level.

Rob Hooker, director of Greendale Construction, said: "This has been a very satisfactory project to work on with Elcock Associates for Christchurch Town Council. Our talented team has skilfully restored and refurbished an important part of Christchurch's history."

He added: "Greendale is delighted to have been part of bringing the hall back to its former glory, where it will now be used as a vibrant hub for the community for many years to come." ●



HELEN SMITH PHOTOGRAPHY

Newcastle dinner is a winner

Over 150 construction professionals attended the CIOB Newcastle annual dinner in April, helping to raise over £3,500 for local charity Cash for Kids.

The evening was hosted by Paul Young FCIOW with speeches given by Newcastle Hub chair Tom Lamb MCIOW and CIOB senior vice president Mike Kagioglou FCIOW.

Kagioglou presented the Student Challenge winners with their trophies.

TV's Paul Sinha (pictured) regaled guests with stories from his colourful career.

CDM Recruitment was platinum sponsor, with Competence Matters as gold sponsor and CPC silver sponsor.

The Crowne Plaza Newcastle sponsored the drinks reception.

◀ Christchurch's Old Town Hall

CIOB leaders drop in on ICW Group

Senior institute figures visit chartered company's Belfast HQ



Senior leaders from CIOB visited the Belfast headquarters of chartered company ICW Group to learn more about the building warranty and building control provider.

CIOB chief executive Caroline Gumble and Eddie Tuttle, director of policy, research and public affairs, met ICW managing director Andrew Spratt, ICW operations director Nick Cuffe and other ICW colleagues to learn about the group's expansion throughout the UK and Ireland.

ICW provides both residential and commercial warranties to developers and contractors, including a specialist offer for high-value schemes.

Its building control division has been growing strongly over the past number of years while its bond and surety offering has grown sharply since last year's launch.

Spratt said: "We were proud to host CIOB at our headquarters here in Belfast. We work with many of the organisation's members providing both building warranty and building control services. It has been great to explore how we can work more closely with CIOB in the future."

Gumble commented that ICW's commitment to quality construction processes was "truly impressive", adding that it "aligns perfectly with CIOB's own mission and values to support excellence in construction".

Experts head to Bristol in July for commercial retrofit event

Prominent speakers will address CIOB Hub event at Bristol Beacon heritage venue



A rich line-up of experts will be delivering talks at a CIOB Bristol event in July.

Commercial Retrofit: Playful Solutions, Serious Results will be held 9 July at Bristol Beacon, the south-west's biggest music venue, which opened at the end of 2023 after a five-year £132m complex transformation by Willmott Dixon.

Speakers on the day include Professor John Edwards, who will discuss standards and guidance, and Josephine Bromley from MapMortar, who will talk on uplifting asset values with 3D models and optimised retrofits. Architect Ben Stagg will share a case study of 10-11 Clerkenwell Green, London.

Also in the line-up are Chris Hines from A Grain of Sand,

an organisation dedicated to delivering positive change. He was founder and director of Surfers Against Sewage for 10 years, regularly advises government and appears on TV.

He will be joined by Paloma Hermoso FCIQB, project manager with Ward Williams, who holds accreditations as a retrofit coordinator, Passivhaus consultant and LCA practitioner.

Verel Rodrigues, a climate activist and environmental campaigner, completes the line up of speakers.

The day will include an immersive workshop using Lego bricks. ●

Register at www.eventbrite.co.uk/e/commercial-retrofit-playful-solutions-serious-results-tickets-819968847897.

▲ The Bristol Beacon has been transformed by Willmott Dixon

Correction
In the May issue of Community the story on the Code of Practice for Programme Management should have referred to the sixth edition, not the fifth edition as published.



Bumper crop of eastern events

Region enjoys tours and talks

CIOB members in the east of England have enjoyed a diary chock-full of events in recent weeks.

The Eastern & Midlands region has organised a variety of tours, CPDs, webinars and presentations for members.

These included a demolition safety presentation from Duncan Rudall, CEO of the National Federation of Demolition Contractors and a site visit to phase three of Anglia Ruskin University in Peterborough.

On a tour of the Entopia Building in Cambridge (pictured), members gained insights into its transformation from a 1930s telephone exchange into sustainable office space.

Other events included a Building Winning Teams webinar presented by Steve Hanstock from Vigour Training, exploring innovative approaches to leadership and team management, and a visit to Limebrook Primary School and Nursery in Maldon, Essex, which is being constructed with a strong focus on sustainability and advanced net zero carbon operations.

These events highlight the hubs' commitment to promoting knowledge-sharing, and providing valuable experiences and learning opportunities for its members. ●

▼ The University Challenge winners receive their prizes

University Challenge in Northern Ireland pits students vs professionals

Tomorrow's Leaders event offers competition and connection



Tomorrow's Leaders in Northern Ireland held its first University Challenge in April.

The event consisted of two rounds: a debate on 'Has the construction industry changed for better in last 10 years?' and a quiz.

The event was organised by Northern Ireland Hub TL rep Nouman Qadir MCIQB, and sponsored by Hays and CIOB Northern Ireland Hub.

Roger Gillespie, chair of Construction Industry Council Northern Ireland, and Jonathan Payne, chair of CIOB NI Hub, attended the event as chief guests.

Judges for the competition were Stephen McIlwaine, programme director of the Construction and Project Management programme of Queen's University Belfast (QUB); Faris Elghaish MCIQB, programme director of Construction and Project Management with Internship of QUB; Amanda Stevenson, project manager at CITB; and Jonathan Payne.

Five teams took part – three student teams from QUB, a TL Champions team and a team of

experienced professionals from CIOB NI Hub. The TL Champions team was the winner and the student QUB team the runner-up.

Qadir said the event was a resounding success: "The participants, attendees and students engaged in vibrant discussions, exchanging insights, and forged meaningful connections.

"The expert professionals shared valuable advice on career development and industry trends. The students left inspired, equipped with new contacts and empowered to pursue their goals.

He said: "We will be working to make it a bigger and better success next year." ●

“The expert professionals shared valuable advice on career development. The students left inspired, equipped with new contacts and empowered to pursue their goals
Nouman Qadir MCIQB, NI Hub

One to watch

Ben Hobbs Project manager, We Are Ease. Featured as one of Exeter Tomorrow's 30 under 30 future business stars



Why did you choose a career in construction? What else might you have done?

I inherited a passion for the construction industry from my family. After working for my grandad's business and taking an administrative role in my dad's, I began taking a real interest which was strengthened the more I researched and gained experience.

The industry is exciting and continuously evolving at an extraordinary rate which is inspiring, and I knew I wanted to be a part of this.

If I hadn't joined the construction industry, I would have pursued a career in business management. Alternatively, I might have tried to pursue a career in rugby: I played in the Exeter Chiefs academy for several years.

What do you enjoy about the work and what do you find challenging?

I enjoy working in an operational environment. It is extremely rewarding when you overcome hurdles and see the project progressing.

I enjoy working with trades and the client to deliver a project everybody is proud of in an open and honest environment.

There are challenges such as unforeseen issues and delays. It is challenging to not be dejected by delays but it is even more rewarding once they have

been overcome. It can be challenging when working with trades and individuals that don't deliver and cooperate as they should.

Finding a way of interacting, managing and leading is paramount to the job I do. It is key to develop a unique way of managing individuals and get the full potential out of everybody I work with.

What are your career ambitions?

My ambitions are to be a successful project manager and deliver unique, large and defining projects to the highest quality and with passion in everything I do.

I want to make a change in the industry and deliver projects sustainably and effectively to make the construction industry a better place – which aligns perfectly with the company I work for.

What do you do in your spare time?

I enjoy golf and am a keen sportsman. I enjoy getting stuck into any sport I can.



▲ CIOB head of sustainability
Amanda Williams

'Failure to retrofit will put net zero at risk'

Straight talking at Birmingham CIOB event

Retrofit is the key to achieving net zero, according to industry experts at a recent Birmingham Hub event.

Speaking on retrofit and climate change, Professor John Edwards, CIOB head of sustainability Amanda Williams and Sarah Daly, associate director, Turner & Townsend, highlighted the urgent need to adopt sustainable building practices.


Professor Edwards reinforced the message from the CIOB Technical Information Sheet *Retrofit of Buildings* that

"retrofit will become the largest construction activity if we are to achieve net zero by 2050".

He said: "Everybody is going to have to do an awful lot better if we are going to achieve this target."

Williams agreed: "Failure to deliver a large-scale programme of retrofit for existing buildings, to a high standard and at pace, will put our net zero targets at risk."

The session was sponsored by Turner & Townsend and hosted at 103 Colmore Row, Birmingham's tallest office building.

A close-up photograph of a young woman with voluminous, curly brown hair. She is smiling broadly, looking slightly upwards and to the right. She is wearing a dark green, textured knit sweater over a mustard yellow top. The background is a blurred city street scene with buildings and trees.

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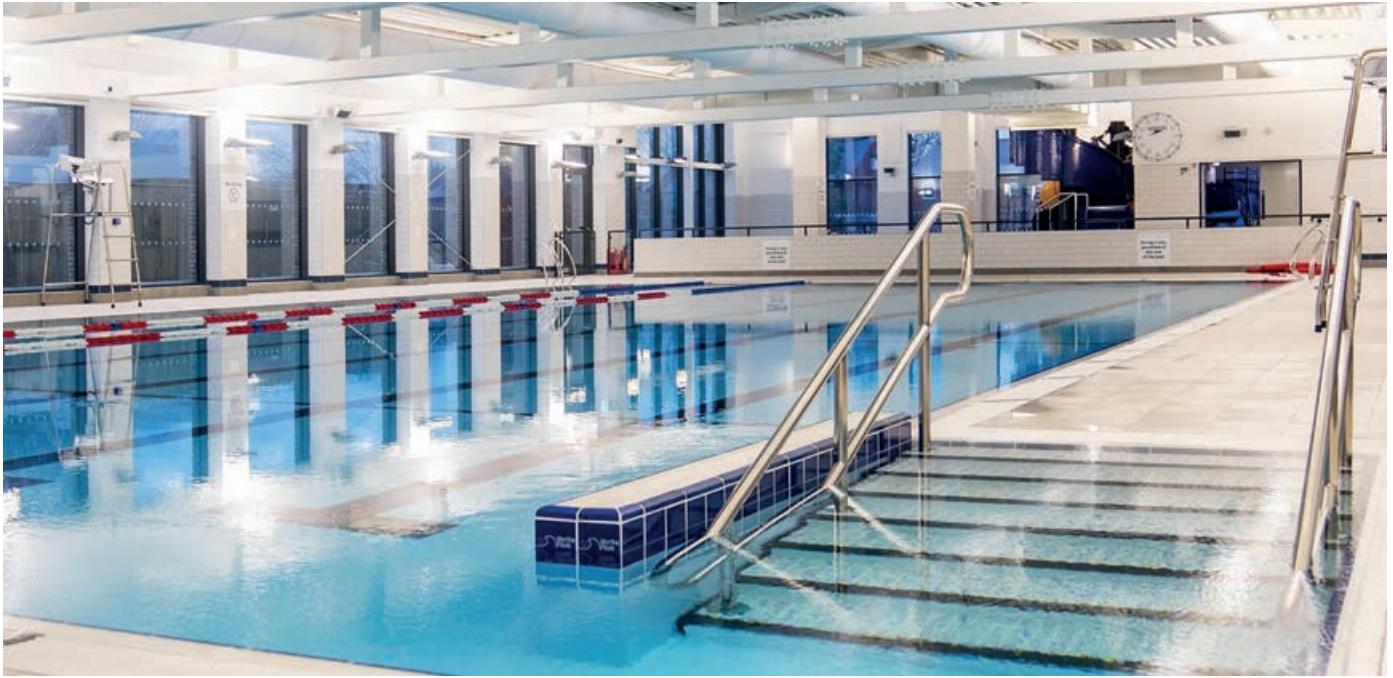
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Sustainability is going swimmingly

ISG's leisure centre build contributes to council vision for net zero



The recently completed new-build Knarborough Leisure and Wellness Centre is setting the standard for sustainable leisure projects.

Overseen by David Dixon MCIQB, contracts manager with ISG and a CIOB North East Hub committee member, the new centre delivers a range of wet and dry facilities, with a six-lane 25m pool – complete with pool pod – a leisure pool with flume and a 60-station fitness suite.

There is also a sauna and steam room, a group fitness studio, an immersive group cycling studio and a cafe. Outside, a children's play area has been constructed from natural materials designed to blend in with the surroundings.

Carbon output has been reduced by more than 60%, when compared to the previous leisure centre

60

Early engagement ensured the best building position considering cost and buildability, and allowed the project partners to develop the design alongside public consultation

Daniel Leigh, ISG



Electric car charge points and bicycle storage have been added to encourage sustainable travel.

The all-electric centre features high-efficiency building materials, air source heat pumps and solar panels, and is designed to achieve a BREEAM Excellent assessment rating. It will contribute to North Yorkshire Council’s vision of a net zero carbon economy by 2038.

Delivered by leisure development specialist Alliance Leisure, alongside ISG and GT3 Architects, through the UK Leisure Framework, the project was handed over to client North Yorkshire Council and operator Brimhams Active in December 2023.

It replaces an existing centre, built in 1990, that was last refurbished 20 years ago, which no longer met the needs of the growing community.

Working with ISG and developer Alliance Leisure, the council designed a new centre in collaboration with the community, using mosaic analysis. To maximise council revenue during the build, the existing centre remained open, with ISG engaged from RIBA Stage 2 to develop the design.

Daniel Leigh, frameworks project manager at ISG, says: “Early engagement ensured the best building position considering cost and buildability, and allowed the project partners

◀ Offsite manufacture was used for the pool

◀ The fitness suite features 60 fitness stations

▲ Membership has grown tenfold in the new building

to develop the design alongside public consultation.”

The centre utilised offsite pool manufacture and features the latest technology to increase sustainability and reduce running and maintenance costs, with 160 sq m of PV generating 38kWh of electricity, LED lighting throughout, two air source heat pump systems and pool filtration to reduce energy and water consumption by 40%.

Carbon output has been reduced by more than 60%, compared to the previous centre.

Working for the community

The new centre has also delivered significant membership growth for the council, up from 117 members in the old building to 1,322 after just two months in operation.

Julian Donnelly, project manager at ISG, says: “We have witnessed during the build, at handover and post handover, so many positive comments about the facility.

“It truly is a building to be proud of – a building that works hard for the community both in operation and in construction.”

He adds: “We have left a legacy of social and economic value, and a leisure centre that encourages people to move and meets the council’s climate change targets.”

The project achieved or exceeded all its social value targets. ISG was

able to offer placements to two T-Level students from York College, work experience for a student from Leeds College of Building, total donations to community projects in excess of £3,000 and volunteering hours in excess of 50.

The highlight for the site team was to host a series of visits from a local primary school for them to produce a newsletter.

ISG’s Leigh says: “The Knaresborough Leisure Centre project has set the standard for leisure projects – delivering a broad facility mix within an efficient building layout which minimised cost and environmental impact.

“It also allowed the new building to be constructed within a small footprint while maintaining the adjacent existing leisure centre operational throughout. This avoided any impact on centre operations and leisure provision.

He adds: “The project is a testament to collaboration between all major stakeholders from conception to completion. During construction it maintained high health and safety standards, sustainability and innovation were at the forefront of the pool construction and filtration systems. The site team embraced social value and met and exceeded targets.

“This project has left a truly positive legacy on the local community.” ●



As the programme at this year's InstallerSHOW has been enhanced, so the content becomes even more pertinent to CIOB members – especially the Housing Hub, the Elemental Arena and the Climate Solutions Theatre

Nathan Garnett,
Lyrical Communications



and exploring the new innovations and technologies being introduced."

She adds: "With the expansion of the show, it is even more relevant than ever that CIOB and its members are in attendance. We look forward to this collaboration in 2024 and beyond."

Welcoming CIOB as a contributing partner to this year's programme, Nathan Garnett, business development director at organiser Lyrical Communications, says: "As the programme at this year's InstallerSHOW has been enhanced, so the content becomes even more pertinent to CIOB members – especially the Housing Hub, the Elemental Arena and the Climate Solutions Theatre.

He adds: "CIOB's partnership with InstallerSHOW 2024 provides an ideal opportunity for its members to network with installers and specifiers. We also look forward to CIOB staging its own member events at the show, and its leadership taking part in our content programme – joining key debates on sustainability, building safety, skills and more." ●

InstallerSHOW 2024 at a glance:

- 25-27 June 2024
- Halls 4 and 5 at the NEC, Birmingham
- 40,000 sq m of floorspace
- 20,000 visitors
- 600+ exhibitors
- 10 live content areas
- Free entry
- Free parking

Scan the QR code to register for FREE tickets.



Get hands-on with sustainable services

CIOB partners with InstallerSHOW 2024 to deliver networking and new tech

InstallerSHOW, the UK event focusing on the sustainable delivery of heat, water, air and energy, returns to Birmingham from 25-27 June 2024.

Following on from the success of the 2023 show, 2024 will deliver 25% more exhibitors and 33% more visitors as the event takes over Halls 4 and 5 of the NEC – an increase in floorspace of 62.5% compared with last year.

Over 600 exhibitors will welcome 20,000 visitors from across the installation and specification sectors.

In addition to the wealth of technologies and services on show, including a record number of new product launches, InstallerSHOW 2024 will incorporate 10 live content areas which will offer an informative and engaging timetable

featuring a roster of compelling hosts and speakers. Big names confirmed include Deborah Meaden, Samira Ahmed and Philippa Forrester, with more to come.

The goal is to ensure that every visitor's experience is enjoyable and worthwhile – whether their priorities are to network with the supply chain, enhance their knowledge, get hands-on with new products or meet up with their peers. There is truly something for everyone at InstallerSHOW.

Julie Walters, business development manager at CIOB, explains the decision to join this year's show: "CIOB is proud to be partnering with the InstallerSHOW 2024, allowing our members to explore all the exhibitors and participate in the seminar sessions occurring at such a critical time for the industry, as well as seeing

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Diary dates

Highlights of the CIOB Calendar for the coming month

Site visit: Bournemouth Hospital

► **5 June, 2-3.30pm**
A tour of the BEACH Building site, led by IHP. The project is a modification and demolition of existing facilities and construction of a new six-storey building to form a new emergency department, critical care unit, ante-natal department, maternity unit and paediatric inpatients department.
Contact: estreames@ciob.org.uk

CIOB and CE site visit: Schwarzman Centre for the Humanities, Oxford

► **5 June, 5pm-6.30pm**
Laing O'Rourke is delivering the Schwarzman Centre for the Humanities, at the Radcliffe Observatory Quarter for the University of Oxford.

The centre will be an inspirational space, which will be the first new building within the university open to the wider community, to include performance and public engagement spaces.

Delivered via modern methods of construction, it features two storeys below ground, four storeys above ground, with a natural stone and brick facade, MEP services and box-in-box acoustic spaces to Passivhaus standards.

More information can be found at www.laingorourke.com.
Contact: ecatalano@ciob.org.uk

Site visit: Paisley Museum refurbishment

► **13 June, 4-5pm**
Kier Group has offered a site visit to the refurbishment of Paisley Museum for CIOB members.

A £42m revamp of this iconic building is underway in the latest stage of the town's regeneration. Work will be carried out on four buildings, including Scotland's first public observatory.

Further improvements in the town include a £22m refurbishment of the town hall and a new library service on Paisley High Street.

Kier is carrying out construction on the museum site, which includes the A-listed Coats Observatory.
Contact: wmarshall@ciob.org.uk

Going Underground – Managing Risk in Tunnelling

► **13 June, 12-1pm, online**
Tom Robinson, construction manager at Coire Glas Exploratory Works, looks at the risks involved in tunnelling projects.

The webinar will examine why tunnelling is essential, the diverse methods employed in underground construction and the risks associated with these ventures.

Robinson will shed light on the critical aspects of risk management, with a primary focus on CDM (construction design and management), health and safety risks and methodological approaches to mitigate these risks effectively.
Contact: sshort@ciob.org.uk

Aberaeron Coastal Defence Project, Wales

► **17 June, 11am-12pm, online**
Last August, it was announced that a new coastal defence scheme to protect Aberaeron from flooding had obtained Welsh Government funding of nearly £27m.

Work is now underway, with the unloading of rock brought from Norway by barge to the town's South Beach.

The £31.6m scheme is being constructed by BAM Nuttall. It includes the construction of a

rock breakwater extending out from the North Pier, refurbishment and rebuilding of the pier head of South Pier, construction of flood walls, construction of a flood gate at Pwll Cam inner harbour and improvements to the existing defences on South Beach.

This webinar is a prelude to a planned site visit in September.
Contact: vcoxon@ciob.org.uk

Site visit: Waterford North Quays development

► **18 June, 2-4pm**
Join us for a site visit to the Waterford City Public Infrastructure Project (WCPIP), facilitated by BAM Ireland.

The North Quays in Waterford has been identified as a strategic development zone (SDZ) and the package currently under construction will enable further development investment.

There are three main elements to the WCPIP: a sustainable transport bridge; a public transport hub and a multi-modal access infrastructure.

Further details of the project can be found at www.waterfordnorthquays.ie.
Contact: shallinan@ciob.org

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



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