

CONSTRUCTION MANAGER

MAY 2021
For members of the CIOB

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05/21

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Welcome

This time last year, when the pandemic had turned most of us into hermits, many commentators forecast that this enforced remote working would accelerate construction's adoption of digital technology.

Our annual BIM and digital construction survey (p24) suggests digital uptake has increased in the past year, but at a modest pace. Some 36% of respondents report BIM is used 'often' on their projects, up two percentage points on a year ago. But 37% say BIM use is rare – "treated like a sideshow, not part of project delivery", is one grumble.

Lack of skills (61%) is cited as the biggest barrier to adoption of digital technology, ahead of clients (48%) who see it as "added cost".

More than half of respondents (55%) still want more evidence of the benefits. "Unless frontline workers perceive the benefits of BIM directly, they are not keen to pay more than lip service to digital adoption," one said.

On a more positive note, other digital construction innovations such as virtual reality (VR) and artificial intelligence (AI) are gaining traction, delivering benefits for 40% and 30% respectively of our survey respondents.

Further evidence of this can be seen in a Laing O'Rourke-led project to explore use of technologies including VR and AI, using Hinkley Point C and its own Centre of Excellence as demonstrators (see p32). AI has also helped Mace deliver One Crown Place in the City of London (p18).

As the vaccine rollout continues, and we return to some sort of normality, it will be interesting to see how this affects industry work patterns and the progress of digital transformation.



Will Mann
Editor,
Construction Manager
and BIMplus



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News



▲ 3D models of Notre-Dame to aid restoration

The French government has created 3D models of Notre-Dame cathedral in Paris with the support of Autodesk. The models will be used for the cathedral's restoration after a devastating fire in April 2019. In the days following the fire, reality capture technologies were able to capture data that the models have been based on.

▶ UK's tallest rollercoaster gets new track

Contractor Taziker has retracked additional sections of the Big One rollercoaster at Blackpool Pleasure Beach, after successfully retracking four sections last year. In February 2020 Taziker completed the retracking of 45m in four sections after working on the project during the off season, after which it was commissioned to fabricate a further 75m.



▲ Readie Construction switches to employee ownership

Readie Construction has become the latest construction company to switch to employee ownership. The move came after Readie's shareholders sold all shares to an employee ownership trust (EOT). An EOT will allow Readie to pay all eligible employees tax-free bonuses of up to £3,600 a year.



News story for CM?
Email neil@atompublishing.co.uk

Find out how powered access is prepared to support a more sustainable future for construction in *IPAF Powered Access 2021* magazine.

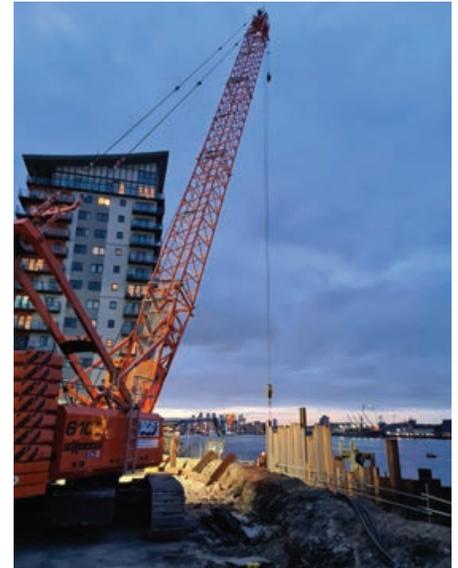


CREDIT: QUINTAIN/PA MEDIA



► **Aarsleff installs sheet piles for a new Thames development**

Aarsleff Ground Engineering has installed temporary and permanent retaining walls to allow for three tower blocks to be constructed for developer Comer Group at the Mast Quays riverside apartments development in London's Woolwich. Aarsleff used a crane-suspended vibrator hammer to install a temporary sheet pile cofferdam around the section of the existing river wall, which required repairs.



▲ **US defence department picks UK modular firm for nuclear 'blast box'**

A modular steel construction system developed by Modular Walling Systems in Scotland has been used to construct an ultra-strong 3 cu m chamber in the USA for explosive testing as part of a research programme on advanced warhead technologies for the US Department of Defense.

▼ **Olympic steps to Wembley Stadium replace pedway**

Contractor VolkerFitzpatrick is set to complete 48 new steps leading to Wembley Stadium in London, in time for June's Euro 2021 competition. The Olympic Steps, which are 40m wide, plus four lifts for wheelchair users and people with mobility problems, replace the steep 1970s pedway that used to bridge open-air coach parks.

▼ **Contractor encourages green-fingered workers**

Contractor Clearly Renovations has encouraged its employees to make planters for site hoardings citing the positive impact of working with plants and nature to workers' mental health. Clearly Renovations said that connecting employees with nature benefits the company as a result of having happier and more relaxed employees and better-looking hoardings.



CIOB sets out new membership pathways

Candidates will now have a clearer and more defined experience on their journey to chartered status

The Chartered Institute of Building (CIOB) is revamping its membership application process, providing candidates with clearer, more personalised and in some cases better value pathways to achieving chartered status. The changes come into effect in Q2 of 2021 and map out seven different pathways for candidates, who will be advised which route to take according to their background (see table).

“These changes do not affect the rigour or credibility of our qualifications but remove barriers to entry and better enable those joining the CIOB to clearly choose their own journey to chartership,” says Amy Gough, CIOB director for membership.



A new mentoring service

CIOB Professional Review ‘champions’ to mentor candidates

“Yes, we want to grow our membership, and that has got to be good for the industry to have more people with better qualifications and working to higher quality standards.”

The new pathways have been introduced following extensive consultation with members and non-members, starting in January 2020, including the CIOB’s Novus network, gaining the views of the younger generation.

“We became aware that barriers were preventing some applicants from achieving Chartered Membership,” explains Gough. “Some people had been stuck in the Applicant grade for five years, not reaching the end goal of Chartered

Many of the new membership pathways offer a structured mentoring service for candidates.

“This was the second most requested service from our consultation (CPD was number one),” says Gough.

“We reached out to our PR ‘champions’ to help us pilot the platform, and about 270 wanted to take part. It makes perfect sense to allow Chartered Members who want to give something back to do so.”

The process matches mentors with mentees and the process is tracked through the new platform.

“Mentor and mentee will set objectives together and then track them on the platform through regular engagement sessions,” Gough explains. “We will monitor that it’s working effectively behind the scenes.”



“These changes do not affect the rigour or credibility of our qualifications but remove barriers to entry and better enable those joining the CIOB to clearly choose their own journey to chartership”

**Amy Gough,
CIOB director for membership**

Membership. Some might leave after just a year. Affordability was an issue, particularly for graduates.

“Our consultation also informed us that we weren’t transparent enough about how long the process would take and how much it would cost.”

Personalised experience

The new pathways move away from the ‘one size fits all’ approach and provide a more efficient, personalised experience including clearer pricing, so that prospective members know the costs involved.

The pathways provide access to CIOB products and services to support candidates’ professional development – including a new mentoring service (see box) – and allow the institute to meet the differing needs of individuals in a meaningful way.

“So, an experienced construction professional, with five years of industry experience and a qualification below degree level, would take our Experienced Practitioner Pathway,” Gough explains.

“They would go on to our Chartered Membership programme (CMP), followed by their Professional Review (PR). Typical candidates for this pathway would have worked their way up through the trades.

“At the other end of the spectrum, a graduate with a built environment degree and less than three years’ experience could take the Structured Pathway and our professional development programme which would include their PR.

“Graduates with non-built environment degrees, and less than five years’ experience, can do our graduate conversion course through the Structured Pathway – it’s important we provide a pathway for these candidates with

Different pathways for different candidates

▶ Learner

Student Pathway, with a choice of paying for a subscription or having a free option

▶ Graduate

Structured Pathway or Self-Development Pathway

▶ Experienced professional

Experienced Practitioner Pathway or Qualified & Experienced Practitioner Pathway or Direct to Fellowship Pathway

▶ Educator

Educator Pathway

transferable skills, degrees such as mathematics for example, given our industry skills shortage.”

The CIOB has included a Self-Development Pathway for graduates who would prefer not to do any more training, instead providing them with professional development support services until such a time when they can do their PR.

There are also separate pathways for students, where they will have a choice of free membership or can pay for an enhanced subscription that includes our *CM* magazine. Additionally, there is a pathway for educators and the existing Direct to Fellowship Pathway.

All candidates can expect a more user-friendly membership portal.

“The application process was pretty clunky before, and we have removed unnecessary questions,” Gough says. “The experience should be smoother and will allow candidates to see how they are progressing through their application and along their entire journey to Chartered Membership.” ●

Further information: www.ciob.org or call +44 (0) 1344 630700.

Enhancing brand CIOB

Our brand relaunch sets a new tempo for the CIOB while reflecting almost 200 years of heritage, writes Kate Macbeth



The CIOB isn't short of ambition. We want to enter new markets, inspire new

audiences, and build on our rich heritage.

To maintain sustained success, though, it is essential that the CIOB identity is adaptable and dynamic, which is why I am delighted to announce our brand relaunch. This work has taken over a year to complete and involved consultation with more than 2,000 members and many different stakeholders around the globe.

The overarching goal has been to enhance the recognition of the CIOB globally, creating clarity and consistency around our messaging and helping us to further stand out from the crowd. Perhaps most importantly, we have been developing our brand to futureproof us, to ensure we are relevant and inspiring for the next wave of construction talent.

A crucial element in this transformation has been to recognise the vital importance of digital platforms. Putting digital first. If you have not recently explored our main CIOB website or social media channels, then have a look around. You will see how our new styling is being applied, with the use of photography, colour gradients, graphical expressions and typography.

The CIOB identity is so much more than a logo, but it is the anchor to who we are and what we do. The single most

important way for audiences to recognise the brand and the stamp on anything we do. Whatever carries our logo takes on all the associations of quality, credibility and honesty that our brand has built up over the years. We haven't reinvented the wheel here – rather we have updated the design to be more impactful and adapted how we use our mark on different channels.

Our masterbrand approach to creating our sub-brands, like the CBC scheme or CMYA, makes our visual identity more consistent and joins up the dots of the many valuable products and services we offer. You will also spot that we have a new colour palette to aid the recognition of brand CIOB by bringing more warmth, vibrancy and vitality to our visual communications.

This work sets a new tempo for the CIOB but it also reflects the successful heritage that has built up across almost 200 years of societal benefit. We have introduced a graphical expression which visually describes a cultural shift within the industry. That moment of change is the central thought at the heart of our identity which uses a shifting angle to portray the way in which we see our world and allows us to see things from a fresh perspective.

Over the coming days, weeks and months you will see more of our new identity released in various forms.

Kate Macbeth is director of marketing and digital at the CIOB.



Our new brand story:

For the foundations of better construction
For re-defining quality
For demanding excellence
For standing up for what's right

For meaningful change
For pressing policy makers
For thinking forward
For the science, data & insight
For transformational tools & tech
For the sake of the planet

For all the creators
For status and recognition
For taking talent further
For brighter mental health
For safer, healthier places

For protecting what matters
For public good
For quality of life
For one voice that benefits many

We are CIOB:
For standards.
For change.
For people.

“The overarching goal has been to enhance the recognition of the CIOB globally, creating clarity and consistency around our messaging”



260

Cost increase (in £) per tonne of structural steel since July 2020. British Steel has imposed six price rises from July 2020 to March 2021

Covid-19 and Brexit hit materials prices

Clients and contractors should plan ahead to ensure material price escalation doesn't jeopardise the recovery, writes **Kris Hudson**



Escalation in material prices is now one of the biggest threats to construction growth as the sector looks to drive forward economic recovery.

Data from the Department for Business, Energy and Industrial Strategy (BEIS) indicates that prices for construction materials and components have increased by 7% in the year to February 2021 (chart 1). Such an increase was last seen in 2016 partly due to the huge depreciation of sterling, and its resulting impact on imports, following the Brexit referendum result.

The cause of this current price escalation is very different. As economies have started to reopen, pent-up global and domestic demand has rekindled. Lingering disruption from the pandemic has led to some shortages of raw materials and manufacturing delays. The aftershocks of Brexit are a key factor too, with material prices rising by 3.1% since the UK left the EU single market on 31 December. The stockpiling of goods, additional customs checks and reduced availability of freight containers have all contributed. This is expected to ease over the coming months.

Material price increases are evident in a number of areas. Imported plywood has seen the biggest surge, with costs jumping 30.4% since March 2020. The price of structural steel has climbed 16.4%, with its key components – iron

ore, scrap and coal – increasing by 87.9%, 63.3% and 14.8% respectively.

Rising global demand for steel and its components has been driven by China with stimulus-backed infrastructure projects. With the covid-19 vaccine rollout advancing elsewhere, demand could be further intensified as other governments look to boost growth.

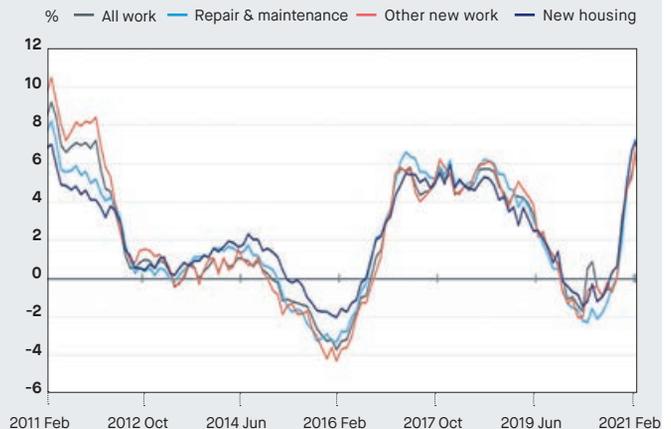
In the UK, domestic material supplies have been relied upon to counter the falling production in European steel mills during the pandemic and Brexit-related issues at ports and with tariff quotas. The uncertainty over Liberty Steel will heighten concerns. Meanwhile, reduced scrap generation has also created an upward pressure on prices.

The IHS Markit/CIPS Purchasing Managers' Index states that UK construction activity grew at its fastest rate for seven years in March 2021. As the economy unlocks, supply chains' ability to meet growing demand will determine whether cost escalation persists.

The Construction Leadership Council has warned that firms should be prepared for further material shortages and longer delays. Planning ahead is critical to ensure that material price escalation doesn't jeopardise the construction-led recovery, remaining alive to issues of affordability and supplier resilience that could impact programmes in the coming months.

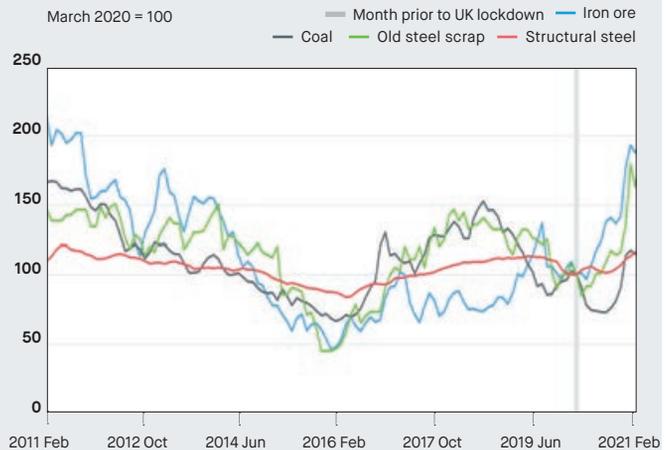
Kris Hudson is an economist and associate director at Turner & Townsend.

Construction material price indices, percentage change: month on year



SOURCE: DEPARTMENT FOR BUSINESS ENERGY AND INDUSTRIAL STRATEGY

Structural steel price index, UK, and indices of steel's key components



SOURCE: WORLD BANK, DEPARTMENT FOR BUSINESS ENERGY AND INDUSTRIAL STRATEGY, LET'S RECYCLE

News in numbers

3,000

Total number of UK jobs at risk at Liberty Steel, as founder Sanjeev Gupta tries to refinance its owner (GFG) after its key backer filed for insolvency in March.

41

Percentage of construction buyers reporting longer delivery times from suppliers in March.

6

Days the Suez Canal was blocked by the Ever Given container ship in March. An estimated 12% of global trade passes through the canal.

650

Percentage rise in shipping prices per container, compared to before the pandemic, according to the Construction Products Association.

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can

be part of the future of construction

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guide our members to
be the future leaders who
will shape our industry.

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CIOB

The Chartered
Institute of Building

Opinion



Why apprenticeship trumped university, p46



Caroline Gumble
CIOB

Support young people, just as the Duke did

The late Prince Philip worked hard to support young people starting their careers; the CIOB'S first Student Festival has similar goals, explains **Caroline Gumble**



Duke of Edinburgh: honorary fellow of the CIOB

“The Duke of Edinburgh Award scheme was established to help young people gain essential skills, experience and confidence – words which could have described what we wanted to do with the Student Festival”

Last month CIOB held its first Student

Festival. I was delighted to see so many of our student community come together.

I am always impressed that many students and young professionals within the CIOB community already demonstrate real leadership, without having a formal leadership role. They drive innovation and speak out about safety, inclusion and diversity; they help keep the topics that drive positive industry change on the agenda.

Among the many people deserving a shoutout from the festival are the first ever gold medal winners of the CIOB Rising Star award: Vasiliki Bowler and Kelly Attwood. I'm pleased we were able to offer them a platform as they aren't just Rising Stars in name.

It also seemed fitting that our event should fall in the week that Prince Philip, His Royal Highness The Duke of Edinburgh, passed away. He was an honorary fellow of the CIOB and well known for his work to support young people at the start of their careers with the Duke of Edinburgh Award scheme. This was established to help young people gain essential skills, experience and confidence – words which could have described what we wanted to do with the Student Festival.

I encourage our students to think about their development – engage with industry

events, take up networking opportunities, build on your experience.

Thanks to everyone who gave their time to support our Student Festival, sharing industry insights with the next generation of employees, managers and leaders.

Racial disparity: a missed opportunity

On a less happy note, the government seems to have missed an opportunity, with the publication of the Commission on Race and Ethnic Disparities report, to properly identify the causes and impact of racial disparities.

The findings of the report don't align with what our members from ethnic minority backgrounds are telling us, while figures show that only about 6% of the UK construction workforce are from an ethnic minority group.

The CIOB has, over the years, examined some of the biggest issues in society and suggested actions that can be done to address them. We have tackled difficult yet important subjects such as corruption, modern slavery, mental health and social mobility. As an industry, we have the potential to effect positive change and one way we can do this is to ensure we promote racial equality and support initiatives which break down barriers, reduce bias and support those from ethnic minority backgrounds who aspire to a fulfilling career in our industry.

Improving racial equality is in everyone's interest. Our own journey as an organisation is just starting, and we will work with members, our networks and our sister professional bodies to promote racial equality and play our part in enacting positive change.

As a first step, we have been working on a charter to promote equality, diversity and inclusion across the sector. We are having conversations with many in the industry about practical actions to identify underrepresentation and address inequality. We will continue with this work and continue to seize opportunities to keep these issues on the agenda and instil positive change. ●

Caroline Gumble is CEO of the CIOB.

Black Lives Matter and construction: one year on, p16-17.

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Grant Findlay
Sir Robert McAlpine

Work with educators to plug construction's digital skills gap

Employers have much to gain from helping colleges develop a digital construction curriculum, says **Grant Findlay**



“Collaboration between employers and educators is key. This means working with exam boards to ensure qualifications reflect the skills needed for a fruitful construction career”

The pandemic has impacted how construction employers invest in talent, but a skills crisis continues to loom, necessitating action.

There is an urgent need to strengthen links between educators and industry. With young people fronting the majority of pandemic-inflicted job losses, and firms in desperate need of new talent, the two groups have a lot to gain by partnering up.

This is especially true of digital skills. The advance of digital technology, catalysed further by the pandemic, is particularly evident in our industry. Be it BIM, offsite construction, digital tools or data analytics, everywhere there are significant time and commercial benefits to be gained from such technologies. But we need to be developing these technical digital skills before people

join the industry. The only real way this can be achieved is through partnerships.

Currently, digital training programmes for construction are lacking; education has failed to mirror the industry's technological developments. We're teaching analogue skills in a digital age.

To remedy this disconnect, collaboration between employers and educators is key. This means working with exam boards to ensure qualifications reflect the skills needed for a fruitful construction career and engaging with students before they've finished their courses.

This is the rationale behind Scotland's first Career College, where Sir Robert McAlpine is working with the City of Glasgow College to develop the first ever dedicated digital construction curriculum at non-professional level. Through our work supporting staff to develop technology skills and an understanding of its impact on the sector, we hope to ensure our industry's continued success.

There is an opportunity of dual benefit here: enhancing youth job prospects and resolving the industry's digital dilemma. Through effective collaboration between educators and employers, we can not only recover from the covid-19 crisis, but thrive. ●

Grant Findlay is strategy director at Sir Robert McAlpine.

Data can deliver better housing

Nearly four years on from Grenfell, it's time landlords got to grips with digital twins, writes **Bola Abisogun**



Within the public sector asset pool, social housing has not quite kept abreast of digital advancement. The Grenfell Tower tragedy, the Hackitt report and the recently published *Construction Playbook* have pretty much mandated that the UK construction sector make better and informed use of emerging digital technologies.

This begs the question for many local authorities and housing associations: where on earth do we start?

Void properties, free from any GDPR (General Data Protection Regulation) obligations during refurbishment, are ideal candidates to pilot, explore and scale the adoption of this data-driven, asset management opportunity.

Predicated on a robust information management framework, the principal focus for any asset owner has to start with the provenance and cleanliness of in-house property data.

Most public sector housing providers maintain a plethora of data sets, often arising from contractor supply chains, external consultants and other advisors. Additionally, various different stakeholders will feed information into this framework, including information from 3D models, which may be derived from laser scans. Therefore, it is critical that a prudent data taxonomy is established early on in the process.

A common data environment approach will be a necessary part of the information management for any digital twin strategy.

A central data repository will also be needed to integrate the data sets, along with external information such as unique property reference numbers.

Compatibility with data management platforms, such as Northgate and Orchard, would also mitigate project level risks associated with a 'bespoke' solution.

A successful data strategy should yield a digital twin, premised upon a robust data governance framework that maintains a series of relevant data standards, along with appropriate security procedures and legal considerations.

Developing and maintaining a dynamic and granular property asset database will likely be a requirement of the new compliance landscape. With the Building Safety Bill imminent, every dutyholder must be aware of their legal obligations.

Bola Abisogun is founder of housing refurbishment consultant Urbanis.



architectural acoustic finishes

Designed by architects Dexter Moren Associates, the five-star Hilton London Bankside near Tate Modern & The Shard, represents the next generation of design-led Hilton hotels.

SonaSpray fc was used throughout the magnificent underground ballroom for its medium texture, speed of installation, superb acoustic performance & unrivalled environmental credentials.

Photo by Jack Hardy Photography.



OSCAR
acoustics

Feedback

A selection of readers' comments about news and issues in the industry from www.constructionmanagermagazine.com



Cladding in the process of being removed from iQ Student Accommodation in Marlborough Street, Bristol

CM 25/03

Poor cavity barrier installation

Responsibility lies with main contractor

Peter Palmer AIOB (retired)
While in agreement with the first paragraph, surely by extending the line of accountability to include the sign-off of a certificate for subcontractors by building control, the client's agent and insurers will only lead to further debate on who is responsible in the event of a problem with the installation.

The responsibility for the correct installation rests

entirely with the main contractor whose supply chain should be employing skilled subcontractors and also have their own checking and recording systems in place to endorse any subcontractor certification so that they are confident and could prove that to the best of their knowledge the work had been properly installed in accordance with the specification and manufacturers' recommendations.

CM 03/03

'Cladding proposals need a rethink'

Keith Hammond

Is the emphasis wrong in "protecting tenants and leaseholders from unsafe cladding"? It should be "ensuring occupants of affected buildings can escape safely from such buildings by simultaneous evacuation, smoke and heat detection and/or sprinkler protection". Subject to the escape provisions being achievable on each property, a cost comparator between the two options may result in the latter being the safer and less onerous funding solution for the protection of the occupants.

CM 07/04

Hackitt praises housing trust for building safety strategy

Eric Beaven

Building safety managers post-development have to be a good thing. However, is anyone considering stage one – the management of building safety when the designs are being put together? Building safety management should be a legal duty placed on those commissioning buildings or building work. When I identified fire-related Building Regulations shortfalls in designs a developer was putting out to tender, the in-house project manager (who holds a very senior position in the industry) said it wasn't their concern but rather it will be the D&B contractor's problem. The instigator of work must be held to account for safety at the outset of what they commission.

CM 15/04

Fixing construction's outdated leadership style

John D Green

Excellent article. In my professional career, I have tried to adopt the same principles and can vouch that it works. This was especially true when working overseas with a culturally different workforce. In the UK, with

the increased diversity within the industry, those same cultural issues now exist here. Coaching is definitely the way to develop one's team. The old adage "treat others like you would like to be treated yourself" is true in leading teams.

Graham Skeer

I have been using this approach for over 50 years. I always said "please" and "thank you" to my staff before during and after completion of their allocated task. Further, I would never ask a person to carry out a task that I had not done myself, or have someone explain the task to the operative first.

Graduates are good at being academic but practical knowledge is also a huge bonus out on site. Put the two together and you have a good manager. Maybe Carillion would not have failed if the people at the top had had construction hands-on experience.

John Lyons

I started in the 1950s as a carpenter on site, worked through the usual promotional route and ended up as a member of the CIOB and RICS, and with a master's degree in construction management, as well as studying and controlling large-scale foundation works. I was lucky that my chief executives all took the view that people were your most valuable resource. This goes for subcontractors and suppliers: pay all accounts on time, pay what they are due, not a penny more, not a penny less!

As one put it: "The man who has not made a mistake has not been invented yet, just do not make the same one twice. Do not set up a blame culture."

Provide your own feedback on latest industry issues by posting comments online at www.constructionmanagermagazine.com or by emailing the editor at construction-manager@atompublishing.co.uk

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RACIAL DISPARITIES IN CONSTRUCTION: 'LESSONS FOR US ALL'

THIS MONTH MARKS THE FIRST ANNIVERSARY OF THE BLACK LIVES MATTER PROTESTS, SPARKED BY GEORGE FLOYD'S DEATH ON 25 MAY 2020 IN THE USA. ONE YEAR ON, **CM** ASKS CONSTRUCTION PROFESSIONALS FROM ETHNIC MINORITY BACKGROUNDS IF THEY FEEL RACIAL ATTITUDES IN THE INDUSTRY ARE CHANGING



'Build tolerance and "oneness"'

Professor Charles Egbu

Vice-chancellor, Leeds Trinity University, past president, CIOB



The last 12 months have been like no other. The death of George Floyd and the disproportionate impact of the pandemic on people from ethnic minorities have exposed longstanding inequalities for minority and marginalised communities. These disparities have been particularly evident in the UK, as a Public Health England report identified, noting that black men and women are two to three times more likely to die from covid-19.

There are lessons for us all from the past year. The pandemic has had an impact on construction output, employment, and the welfare and wellbeing of staff. A diverse workforce is important in seeing the industry through these difficult times. Construction organisations and individuals need to build appropriate cultures and environments and 'spaces' that engender open discussions, tolerance and 'oneness'.

The industry has faced difficult times before and it is through coming together and caring for one another that it has been able to bounce back quicker, stronger and better.

'We're still not being heard'

Dean Jones

Director – strategic projects, Cranfield University



Sadly, in my opinion we're still not being heard. The unjust death of George Floyd and the Black Lives Matter (BLM) movement ignited conversations on issues of representation in the construction

industry. However, almost one year later, from conversations with fellow ethnic minority professionals, there's been little follow-through from their employers.

The recently published Sewell report also missed a big opportunity as it lacks scientific expertise, is highly selective in its coverage and framing, and will sadly do little to address the challenges we face, as it encourages the idea that issues of racism and discrimination are not institutional problems.

Meanwhile, the employment sectors with the highest proportion of furloughed jobs and redundancies have disproportionate numbers of workers from ethnic minority backgrounds. There needs to be accelerated progression and an increase in balanced representation of ethnic minorities in the workplace at all levels.

'Racism is everyone's business'

Kye Gbangbola

Founder, Total Eco Management



It is important to highlight that most people of all ethnicities want an end to racism and inequality.

But the government's racial disparities report weaponises racism; it is steeped in denial, is deeply

divisive, and lacks integrity and leadership.

When there is denial, as we see with climate change, anti-semitism, female safety and plenty more, it is hard to fix the problem – especially when the laws and safeguards clearly do not work. These failures in equality have catastrophic, acute and chronic consequences. But if we want to change the narrative, we must 'build back better' with a system that works for all.

Racism is everyone's business; its removal should be central to a thriving community that lifts humanity and enhances access to the resources we all need. I remain an optimist that George Floyd's death and the demonstrations that ensued will prove to be a landmark moment and a springboard for change to the world Dr Martin Luther King dreamed of.



‘Challenge the social construct’

Alan McKenzie
Project design manager, BDP



At my place of work, I have seen increased awareness in light of the BLM protests in London, and efforts to challenge the social construct that we find ourselves in.

Personally, being part of the equality, diversity and inclusion (EDI) group within the CIOB London Hub has provided a broader understanding and experience. What I have discovered is that despite my mixed heritage, I have benefited from white privilege within my career. I have also had opportunities to host debates at work, not just on the subject of ethnicity but across wider diversity issues, and provide a platform for debate. These have been brave conversations, challenging moral value.

Staff from ethnic minority backgrounds within our workplace need to be encouraged to contribute, as I believe without their voices EDI will become another talking shop or echo chamber. We have an opportunity to make our industry become more inclusive, without it being another token gesture; we need to make this fundamental change.

‘Still unequal and unrepresentative’

Angelene Clarke
Architectural consultant, Bearded Ladies



The BLM movement offered open discussion and opportunity to consider new perspectives in industry, one that entertained equity. But the industry is still unequal and unrepresentative.

The protests caused us all to rethink how we can do things better. Employers implemented tools to drive meaningful change. A lot of companies put diversity and inclusion clauses in their supply chain contracts. However, these policies seem tokenistic, a quick fit to compliance with anti-discriminatory national policy. Suddenly “we are all diverse”, just because the ‘eyes’ are on the company, not because they believe in it.

The question remains, how can we look forward to achieving practical and lasting change? There are still sceptical people in leadership – and this is what stops change. Ambitious black workers, including professionals, are still not promoted on to boards or given executive leadership roles. Diversity in supply chains is rarely monitored or celebrated.

‘Let’s unite to be a progressive industry’

Anjali Pindoria
Project surveyor, Avi Contracts



When I spoke to *CM* last year (March 2020) about my experiences surrounding race, there was a level of negativity in my comments because I was calling out my own experiences. I have since considered whether it

was worth speaking out – and risking my whole career. I also wondered how many other ethnic minority professionals in construction do not come forward – for fear of being singled out even more, or potentially losing business.

This year, I was one of three female guest editors for *CM*’s March issue, focusing on women in construction, and the praise received was beyond positive. Whether it is because of the BLM movement or the pandemic, I sense that people have woken up to the realisation that we are all the same and must unite in everything we do to be a progressive society – and industry.

The cultural change has a long way to go, and time will tell if the past year has created a bigger divide among us – or inspired more advocates for positive change. I know what I want to see, what about you?



Technical

AI HELPS MACE CROWN CITY PROJECT

DEPLOYMENT OF DIGITAL TOOLS AT ONE CROWN PLACE HAS HELPED MACE TO VIEW PROGRESS AND PROBLEMS FROM OTHER ANGLES. **KRISTINA SMITH** REPORTS



Left: The mixed-use scheme on the northern edge of the City is just five minutes' walk from Mace's head office in Moorgate

Below right: The structural frame of the residential towers begins to rise, November 2018

One Crown Place, near Liverpool Street station in the City of London, is a mixed-use scheme in every way. The development incorporates: two residential towers; a podium office space with roof terrace; a boutique hotel, restaurant and members' club hidden inside a restored Georgian terrace; a refurbished 1980s office; retail along the ground floor and the retained facade of an old Victorian warehouse along one side of the scheme.

For main contractor Mace, which is delivering the new-build elements of the scheme, this project was a planning and logistics puzzle which began in 2016 when developer AlloyMTD awarded it the pre-construction services agreement. The challenge back then was how to put the pieces of the puzzle together with little or no storage space, and without causing disruption to the bustling business district around it. Of course, everything changed in March 2020, when the City fell dead, and Mace had to rethink how it could swiftly and safely finish the resource-hungry fit-out phase.

This was always going to be a project where Mace pushed its use of digital technology and, in the early days of the project, the site team was reporting the benefits of 4D visualisation and trialling new artificial intelligence (AI) based technology from Disperse (see box, p22). However, the covid pandemic offered the opportunity to see how

4D

The site team was reporting the benefits of 4D visualisation and trialling new AI-based technology

“Disperse was one of the standout digital tools. It generates a walk-through and allows you to hop in, navigate and see what has happened in different areas”

Cameron Bulloch, Mace

these digital tools could help in the face of unexpected disruption.

Planning manager Cameron Bulloch joined the scheme – and Mace – in March 2019. The former construction manager, who has a natural penchant for digital tools, talked *CM* through the technology used at One Crown Place and the benefits he observed from their deployment over the past two years.

A new landmark

Before Bulloch joined the project, there had been a whole year of activity on site for Mace. And before Mace arrived, O’Keefe had demolished existing buildings and created the box for the two-storey basement which houses much of the scheme’s plant.

Mace’s works involves the two prismatic residential towers, 28 storeys and 33 storeys, a six-storey, 10,650 sq m office building and shell-and-core retail at ground level. The transformation of the terraced houses on Sun Street into a hotel and the refurbishment of an existing 2,000 sq m office building at 54 Wilson Street into contemporary space are outside Mace’s scope.

In what feels like a topsy-turvy arrangement, the concrete frames of the two residential towers sit on top of the steel frame of the office podium building, whose top floor will boast an outdoor roof garden, gym and other posh facilities for residents. This required a huge steel truss to transfer the weight of the concrete

Project team

One Crown Place
 Client: AlloyMTD
 Architect: Kohn Pedersen Fox
 Structural engineer: AKT II
 Main contractor: Mace
 Contract value: £225m
 Form of contract: JCT Major Project
 Concrete frame: Getjar
 Steel: Severfield
 Cladding: Permasteelisa UK/
 Mace Facades
 MEP: Michael J Lonsdale (mechanical shell and core); TClarke (electrical shell and core); Borough (residential)
 Retained facade: Szerelmey
 Start on site: April 2018
 Completion: May 2021

towers to the edges of the steel frame for the offices, so that the office could be column free. 4D visualisation helped the site team understand and plan the steel truss, says Bulloch.

By August 2018, the three slip-formed cores for the residential towers and the office were well underway and the site team was preparing for the start of the structural steel frame. Construction of the basement and ground floor concrete slabs was also underway. Early the following year construction of the concrete frames began, with topping out in January 2020.

When the covid pandemic took hold in March 2020, the scheme’s distinctive cladding was substantially complete. The cladding consists of two contrasting skins: glazed terracotta fins on the external perimeters of the building with screen-printed glass panels on the interior facades, both referencing the history of the area, according to architect Kohn Pedersen Fox (KPF).

But it was the older cladding, the retained warehouse facade, which caused some of the interesting

Construction manager CV: Cameron Bulloch



Before his current role as a planning manager with Mace, Cameron Bulloch MCIQB worked for Laing O’Rourke

as a planner and prior to that as a construction manager with Kier.

The University of Brighton graduate was naturally drawn towards planning and technology. “As a construction manager, I did a lot of planning using various software. It was something I was interested in, it was a natural fit,” he says. His grounding in construction management, which began in 2012 as an assistant site manager on residential fit outs with the Shanly Group, also helps hugely with his planning role today.

At Mace, it’s taken as read that digital life is everyday life, says Bulloch. “Mace, as a business, is very driven by tech and data, so it’s embedded in the culture,” he explains.



technical challenges, says Bulloch. “The key challenge was connecting the facade prior to the removal of the retention system.”

For restoration specialist Szerelmey, the replacement of the sash windows with new windows that had the same appearance was a painstaking task. “They were all different sizes,” says Bulloch.

AI lends a hand

One Crown Place was one of the earliest few Mace projects to start using Disperse, a system that uses AI and 360 images taken regularly on site to measure progress and flag up discrepancies.

“Disperse was one of the standout digital tools,” says Bulloch. ▶

“We had issues with welfare capacity. We had to take into account social distancing; there was a maximum number of people we could have on site at any time”

Cameron Bulloch, Mace

“It generates a walk-through of the project which allows you to hop in, navigate and see what has happened in different areas. It highlights any differences and gives progress updates against the programme.”

This isn’t touch-of-a-button stuff. Setting Disperse up and teaching the algorithms what they are looking at, takes time, says Bulloch, with the Mace and Disperse teams sitting down to identify the required information from drawings and from BIM models. Disperse isn’t a 100% AI-driven technology; humans are also involved in the checking process too (see box).

Once the pandemic struck, Disperse became even more valuable, says Bulloch. “For planning and commercial staff, who were based at home, it became a vital bit of software,” he says. “You can do a comparison between what the construction management team and Disperse are telling us.”

It is great for record-keeping too, he adds: “All the data is stored. You can go back to the first time they scanned the job and see how the building unfolded.”



The cladding features glazed terracotta fins on the external perimeters of the towers

The cladding on the other side of the towers uses screen-printed glass panels

Because this was an early deployment of Disperse, Mace used it only on the residential fit-out elements, although the system has developed so that it can be used on more visually complex areas such as plant rooms.

Mace uses BIM 360 Field to control quality and for snagging. A first for Bulloch was to incorporate quality hold points into the programming and planning. “We were not just looking at critical path and time duration analysis, we were looking at planned versus actual quality hold points,” he explains. “I had not done it before. It was really powerful for us as a team.”

Mace also used BIM 360 Field to track some of the build’s components including steelwork and cladding panels. Elements are labelled in the factory, scanned using the BIM 360 Field app which links to Navisworks and updates it. “It’s great for anything with a lead time,” says Bulloch. “It can tell you when something is on the manufacturing line, when it is about to be delivered, when turns up on site.”

The pandemic also boosted the project team’s use of Microsoft Teams

and analytics tool Power BI, which Mace started to use towards the end of this project.

“Using Power BI means that generating reports from a planning team perspective is a lot quicker,” says Bulloch. “The automation part of it reduces the time spent producing dash boards manually and gives us more time to analyse the data. It also meant that the client was able to make data-driven decisions.”

New lean planning technique

From Bulloch’s perspective, as one of the two planning managers at One Crown Place, the biggest challenge of all was resequencing to cope with the delays and constraints due to the covid pandemic. Mace was one of the first companies to take the decision to close down sites, with One Crown Place out of operation from 23 March 2020 for around five weeks.

“We had issues with welfare capacity. We had to take into account social distancing; there was a maximum number of people we could have on site at any time,” says Bulloch. ▶



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“The idea was it was a shift pattern. We would start an area Monday and finish it Friday. Any delays, we used the weekend to catch up”

Cameron Bulloch, Mace

To sequence the remaining works within these constraints, the planners turned to a lean planning technique called Takt planning (Takt or Taktzeit means beat in German). “Takt planning comes from manufacturing,” says Bulloch. “It focuses on maximising the efficiency of resources by creating a standard cycle time for different tasks, which is the Takt time.

“The idea is continuous flow, consistent work rates for crews, constant rate of production. We set up a cycle time based on the maximum number of resources we could have and safe operating procedures for our welfare capacity.”

Combining Takt planning and Last Planner, where the supply chain sits down together to look ahead to the next eight weeks and agree what will be done, worked well, says Bulloch. “The idea was it was a shift pattern. We would start an area Monday and finish it Friday. Any delays, we used the weekend to catch up. This went hand-in-hand with the critical chain schedule.

“We incorporated the constraint of resource into the programme logic as well. It was very beneficial from a planning perspective, forecasting issues early on so we could take mitigating measures.”

Even with the best efforts of machine and man, the project inevitably fell behind schedule. A final integrated systems testing

(ITS) test had taken place on March 25 with Mace aiming to close out snags and achieve final completion in the first few weeks of April.

But what the raft of digital aids deployed by Mace at One Crown Place seems to add up to is a fuller picture of exactly what is happening on site. Traditionally, project control has been about cost and programme, but technology like Disperse and Power BI, with their alternative presentations of data, help inform decisions and offer insight into the realities of delays.

Will this more information-rich approach help contractors and clients solve the thorny issue of who pays for covid-induced delays to projects such as One Crown Place?

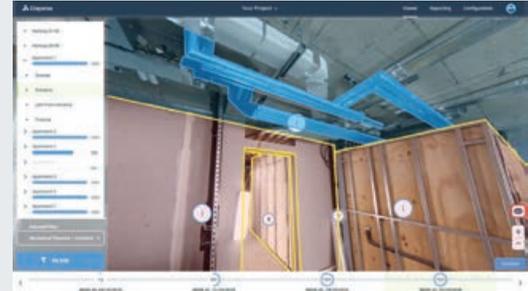
That wasn’t a question that Bulloch was allowed to address. But he does say that Mace has had “a truly collaborative approach with the client”. Perhaps when the data is there to be seen and understood, there is less fear of what may be being hidden. ●

Work on the towers’ envelope starts, June 2019



Construction is progressive, says tech entrepreneur

The industry has a bad name when it comes to adopting new tech, but as far as Disperse’s Felix Neufeld is concerned, that isn’t fair



The Disperse Viewer interface, which functions as an analysable digital replica of the project site

Felix Neufeld, CEO of AI specialist Disperse, has found construction a great environment for tech startups.

“Even the largest construction companies are used to working with small suppliers, so even as a small startup, you can work with a company like Mace,” he says. The vital thing for Disperse is that it needs access to the data, which in other industries can be a huge headache.

When Neufeld set up the business in 2015, his idea was a tech platform that could work across different industries. He homed in on construction because here he felt he could make the most impact.

Disperse started working with Mace and Canary Wharf Contractors in 2018 and has been growing swiftly since. Today it has over 120 employees and is working on projects in Europe, Australia, Middle East and North America.

Disperse works by comparing digital 360 images, taken at intervals, to previous images and to project information such as drawings and BIM models. Initially humans make the comparisons, with the AI learning as patterns occur over and over. Identifying some tasks can be easily automated; others are more challenging.

“As we get more data and as we are annotating through humans, we automate more



Neufeld: supercharging construction managers

and more,” explains Neufeld. Compared to when Disperse started, he reckons that the amount of human input required has fallen by 70-75%.

With employees spanning all the construction professions, and a particularly hefty team of data specialists to make sense of sometimes conflicting data from multiple sources, Disperse is all about reducing the pain of digital transition and adapting to its customers’ processes.

It can also deliver information as a construction manager requires it – if Excel spreadsheets are your bag, that’s not a problem. “That’s one of the reasons we have been successful,” he believes.

Neufeld doesn’t see a fully automated future, more a blend of machine learning and human cognition. “We never think we can replace planners or construction managers. Our goal is to supercharge construction managers and planners so they can focus on the tasks they are really good at,” he says.

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BIM & Digital

COVID AIDS BIM ADOPTION, BUT BARRIERS REMAIN

THE YEAR OF WORKING REMOTELY HAS LED TO GREATER ADOPTION OF DIGITAL TECHNOLOGIES, BUT NOT AS QUICKLY AS MIGHT HAVE BEEN EXPECTED, AS THE ANNUAL CM AND BIMPLUS SURVEY DEMONSTRATES



A year of operational restrictions and working remotely due to covid has undoubtedly resulted in an increase in the adoption of BIM and digital technologies, but critical mass is still some way off.

That's the overview provided by the annual *Construction Manager BIM* survey, in conjunction with *BIM+*, in which nearly 200 construction professionals aired their experiences of BIM and digital technologies.

BIM was more frequently used on projects in the past year than the year before – not by much, but by enough to be worthy of note: more than a third of respondents (36% – those scoring four or five on a

“BIM lowers the stress levels normally related to traditional methods”

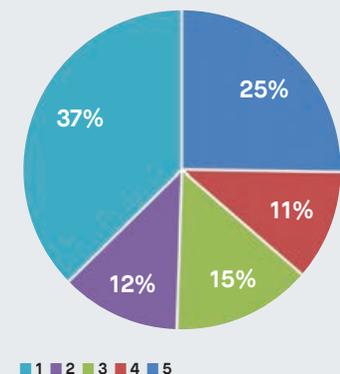
scale of one to five) said BIM is used very often and fairly often on their projects, up from 34% the year before.

There was a similarly small shift in the percentage of respondents either using BIM fairly rarely or very rarely: 52% in 2020 to 49% this year.

We opened out the survey this year, inviting respondents to tell us more about the reasons for their answers. We acknowledge it's something of a self-selecting exercise: only the most passionate respondents will take the opportunity to air their thoughts, but those thoughts are still relevant.

Responses veered from the overwhelmingly positive – “we've used BIM on every project for the last five years” – to the painful

How often do you use BIM on your projects (on a scale from 1 to 5, where 1 is not very often and 5 is very often)?





Digital story for CM or BIMplus?
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– “never used; it’s a marketing tool used by estimators who pretend to use it to win job”.

The following answer may ring true with many readers: “BIM is used on public sector projects where I am able to convince clients of the benefits, which many are ignorant of. For my private projects, only for high value ones.”

Nevertheless, the positive impact of BIM is being more widely felt: nearly two-thirds (64%) of respondents said they were seeing high or fairly high benefit in design compared to 58% in last year’s survey.

Benefits of BIM

Design is the area that respondents are seeing the most improvement in thanks to BIM. More than a third (43%) also cited benefits in construction methodology (down from 44% last year). Benefits were also apparent in programme (36%, down from 39%), FM and operations (37%, up from 34%), and cost (static year on year at 27%).

A couple of verbatim responses add some colour to these bare statistics.

One respondent, seemingly a BIM advocate, said: “BIM is a great solution for clash prevention, helps hugely in collaboration, provides an opportunity to manage and control costs and prevents waste.”

Another said: “Good information management has provided productivity increases, clarity and better quality of work.”

One respondent reported a further, somewhat unexpected, benefit of BIM that is important in light of wider society acknowledgment of the importance of mental health, namely that BIM “lowers [the] stress levels normally related to traditional methods, which cause a lot more

stress due to expected problems on the construction site due to clashes or mistakes in traditional 2D drawings between disciplines”.

Intriguingly, the lack of evidence of the benefits is less frequently cited as a barrier to the adoption of BIM and digital technology: the percentage of respondents citing lack of evidence as a blocker dropped to 36% from 45% in last year’s survey.

The most prevalent blocker was the same year on year and will come as no surprise: the lack of digital skills, cited by 61% this year (63% a year ago).

The lack of client interest, at 48%, and limited funds to invest in new technology, at 47% were the next most prevalent.

One respondent told us: “Clients often don’t want to take BIM beyond pre-contract phase as they see it as a cost.”

In contrast, one FM client told us: “All we want [is] asset data, but seemingly that attracts a huge bill from the supply chain for the privilege of being passed our own data. Sorry to seem very cynical, but that is why BIM is not gaining traction with clients.”

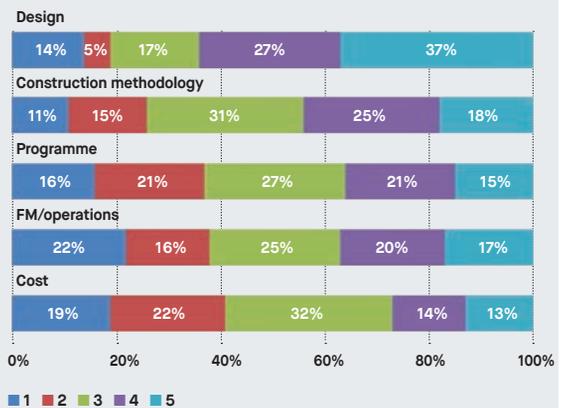
This year, we added two new answer options to this question of BIM blockers and they came in fourth and fifth on the list: issues with interoperability (39%) and too much jargon (37%).

Winning over management

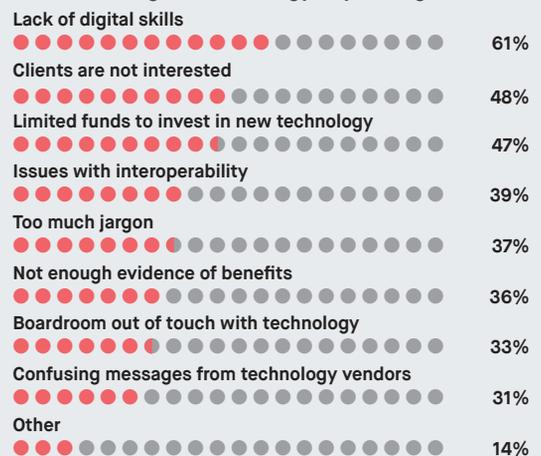
The boardroom being out of touch with technology was cited by a third; one respondent said: “Senior leadership is bought in primarily, but mid-level leadership must be educated enough on the sell, delivery and recovery of BIM/virtual design and construction (VDC) to ensure we are compensated on ▶

“All we want is asset data, but seemingly that attracts a huge bill from the supply chain for the privilege of being passed our own data”

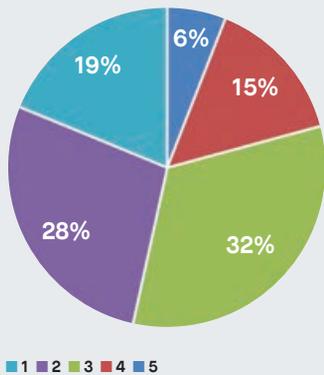
What benefit have you seen from using BIM on projects (on a scale of 1 to 5, where 1 is little benefit and 5 is high benefit)?



What do you think are the main barriers to adoption of BIM and digital technology in your organisation?



How quickly do you think construction is adopting digital technologies (on a scale of 1 to 5, where 1 is slow and 5 is rapid)?



Perhaps reflecting how operations have had to change in the past year, a fifth of respondents felt that the industry is adopting digital techniques rapidly or fairly rapidly, which is a slight improvement on the 17% in last year's survey, although we're surprised this year's figure wasn't a little higher.

“Some have been getting the rough end of the stick: BIM is treated like a sideshow”

each project. Our primary issues are building an early internal relationship and trust to ensure that VDC is part of the project pursuit strategy and costs are factored in for resources to be deployed later.”

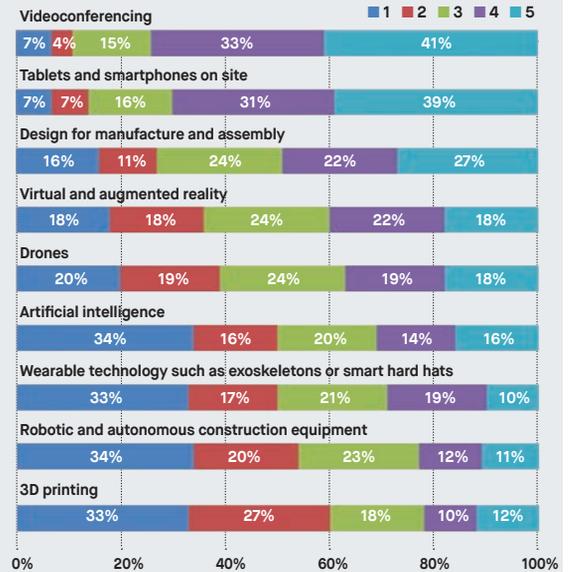
Confusing messages from technology vendors drew the ire of 31%.

Some respondents have been getting the rough end of the stick: “BIM is treated like a sideshow, not part of main project delivery.”

Another said: “There are multiple pain points when adopting digital construction methods and workflows – resistance to change, both by staff ‘at the coalface’ and senior managers is extremely common. Unless frontline workers perceive the benefits of BIM directly, they are not keen to pay more than lip service to digital adoption. Senior management want to have more certainty over costs, and the ‘super-specialism’ of BIM practitioners and vagueness surrounding software product lifecycles tends to obscure this. There is very little chance for the layman to ‘get on board’ as the train has already left the station!”

Possibly as a result of the industry slowdown due to covid and fewer projects completing in the past year, less than a quarter of respondents said they were required to supply digital asset data upon project completion very or fairly often: a small fall from 29% to 24% year on year. ▶

Which of the following technologies are benefiting or are likely to benefit your operations (on a scale of 1 to 5, where 1 is little benefit and 5 is high benefit)?

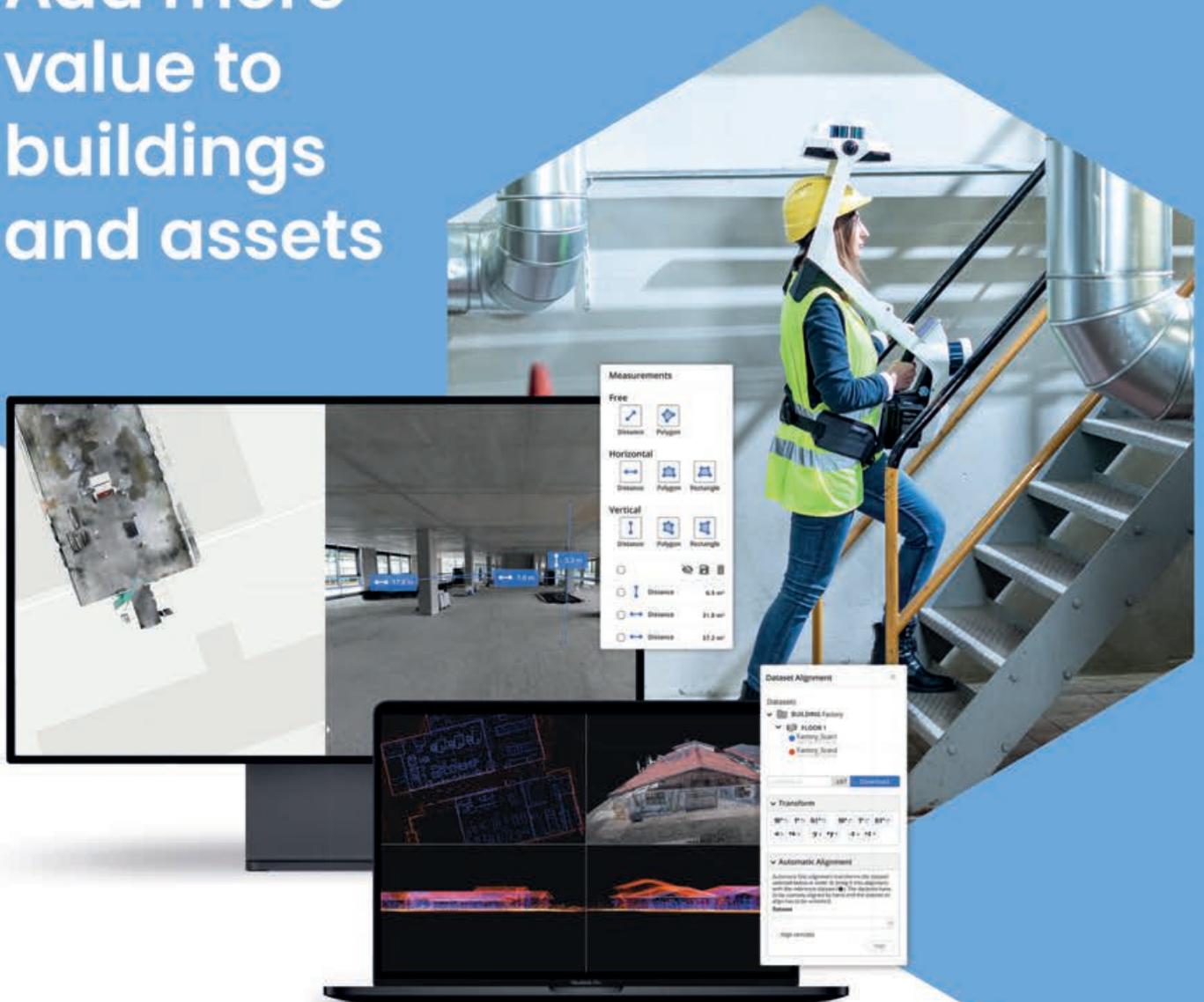


- Reflecting the nature of work in the past 12 months, nearly three-quarters of respondents (74%) cited videoconferencing as either already delivering or likely to deliver high or fairly high benefit to their operations. In last year's survey, videoconferencing was cited by 66%.
- Last year's most popular useful technology, tablets and smartphones, ran in a close second, finding favour with 70% (69% a year ago).
- Design for manufacture and assembly was cited by a static 49%.

- Virtual and augmented reality and drones followed closely behind at 40% and 37% respectively.
- Artificial intelligence was next with 30%, static year-on-year.
- A number of wearable technology innovations appeared on sites in the past year: 29% of respondents cited this, up slightly from 27% a year ago.
- Robots and autonomous equipment are gaining ground with 23%
- 3D printing was the least popular technology at 22%.



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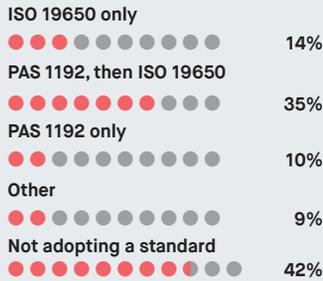


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Which (if any) BIM standards have you adopted?



Upholding standards

It's pleasing to note year-on-year improvements in the adoption of BIM standards.

- Since the introduction of the ISO 19650 suite two years ago, 14% of respondents have adopted it, up from 10% in the 2020 survey.
- The percentage still using the PAS 1192 suite decreased slightly from 12% to 10%, while those transitioning from PAS 1192 to ISO 19650 increased from 28% to 35%.
- However, that still leaves a somewhat surprising 42% that have not adopted a standard, although at least this figure is an improvement on the 51% in the 2020 survey.

So what would encourage organisations to invest more in BIM and digital technology? It seems the ripple effect of the impacts of the pandemic are withering: in last year's survey in the midst of the first wave of covid, 30% said remote working continuing after the pandemic would be an encouragement; now a year on, with everyone having become used to remote working and the onset of Zoom call fatigue, the percentage choosing this option dropped to 17%.

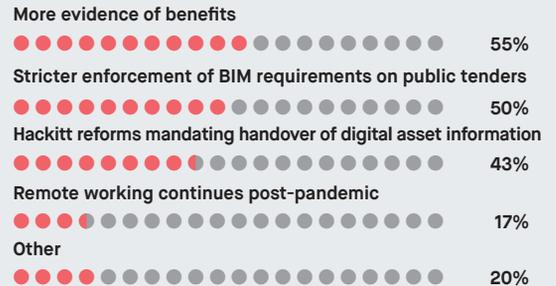
More than half of respondents (55%) said more evidence of the benefits is required. Nearly as many (50%) said stricter enforcement of BIM requirements in public tenders would do the trick.

The Hackitt reforms mandating the handover of digital asset information was cited by 43%, up from 33% in last year's survey, perhaps suggesting a wider understanding of the detail of Dame Judith Hackitt's reforms and their impact.

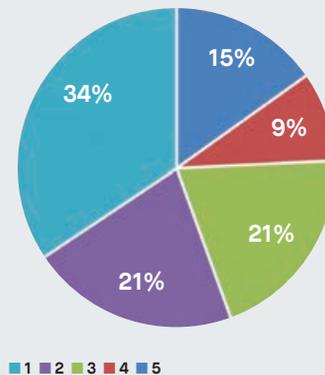
One respondent said: "The government must stop chasing rainbows - digital twins, etc. - and reinforce BIM Level 2 implementation. ISO does not do it."

That may be wishful thinking, but with the 'golden thread' and initiatives like the government's *Construction Playbook* coming into play in the short term, there are grounds to expect adoption to increase at a greater rate. ●

What would encourage your organisation to invest more in BIM and digital technology?



How often are you required to supply digital asset data (on a scale from 1 to 5, where 1 is not very often and 5 is very often)?



"It seems the ripple effect of the impacts of the pandemic are withering"

Respondents

The professionals who responded to our survey conducted in March were drawn from across the UK construction sector, as follows:

- 34% main contractor
- 14% public client
- 11% project manager/QS
- 10% architect
- 10% consulting engineer
- 9% private client
- 9% specialist contractor
- 3% housebuilder

The most popular job titles and roles were:

- 15% BIM manager
- 13% project manager
- 9% QS
- 7% BIM director
- 7% construction manager
- 4% architectural technologist
- 4% building surveyor
- 4% digital construction manager

Organisations they worked for ranged in size from fewer than 20 employees (24%) to more than 1,000 employees (28%).



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TRANSFORMING QA WITH DIGITAL TECHNOLOGY

LAING O'ROURKE HAS BEEN LEADING AN INNOVATE UK-BACKED PROJECT TO DRIVE QUALITY AND PRODUCTIVITY IMPROVEMENTS THROUGH DIGITAL TOOLS, USING HINKLEY POINT C AND ITS OWN MANUFACTURING FACILITY AS DEMONSTRATORS. **CM** REPORTS

The Hinkley Point C nuclear site and Laing O'Rourke's Centre of Excellence for Modern Construction in Workshop have been used to demonstrate new digital technologies which could transform construction productivity and quality.

Known as Augmented Reality for Operative Productivity and Continuous

Quality Analysis (AROPCQA), the project has been led by Laing O'Rourke, working with partners tech giant Trimble, the University of Sheffield Advanced Manufacturing Research Centre (AMRC), and software SMEs Offset and WorkMobile. It got underway in April 2019, backed by funding from Innovate UK.

Hinkley Point C, one of the demonstrators, is the largest construction site in Europe

The technologies explored have included augmented reality (AR), laser scanning, artificial intelligence (AI) and 3D digital design, with use cases such as nuclear concrete reinforcement cage production and the manufacturing of precast units.

"We aimed to address many challenges in the construction industry's current ways of working," explains Dr Scott McGovern, AROPCQA project leader and digital engineering leader at Laing O'Rourke.

"These included moving away from paper drawings to digital models and authoring digital data which could be directly consumed by manufacturing and construction operatives. Other challenges are the

Moving from paper to app

Laing O'Rourke is trialling a mobile-based QA application, helped by WorkMobile

Laing O'Rourke has brought in software firm WorkMobile to help it move away from paper-based QA for precast units at its Centre of Excellence in Worksop.

"The aim was to replace the existing QA process with a tablet-based app for operatives to use, that would integrate with Laing O'Rourke's ERP and feed captured data back into the ERP," explains Colin Yates, WorkMobile co-founder.

Workmobile is cloud based, intended for field-based IT solutions and aimed at non-technical users. It uses a 'non-coding' approach, as opposed to being a bespoke solution, and supports multiple platforms.

The software provides a simple drag-and-drop interface to build forms, including the capability to add photos, videos, recordings, signatures and 'geostamps', plus Excel-style logic and barcode scanning.

The user interface is straightforward and, once the operative has completed a form, the data is sent off the device to the cloud. The data can be reviewed through the WorkMobile portal in real time and reports are generated as PDFs.

"With Laing O'Rourke, we distilled their QA process into a structured form," explains Yates. "This involved reviewing their current process, removing unnecessary fields, changing the order where necessary, allowing for pre-population of some fields."

WorkMobile also introduced customised features for the Laing O'Rourke app. The Schmidt Hammer calculation, a non-destructive method of testing concrete strength, required operatives to take 10 readings and then calculate this themselves, before entering the value on the paper form. This calculation has been automated with the app. "If the readings entered by the user fail the test, then the user has to retake the test," says Yates.

Another customised feature allows operatives to scan a barcode tag on each component to check they are working on the right unit. "A future development will allow users to see where a panel is in the manufacturing process in real time," adds Yates.

Next for WorkMobile is a production scale pilot of the app.

Using AI for QA

The University of Sheffield's AMRC, working with Laing O'Rourke, is exploring automation of QA processes



Operatives receive feedback on the embeds via tablet

Artificial intelligence (AI) is being harnessed by the University of Sheffield Advanced Manufacturing Research Centre (AMRC), with the help of Laing O'Rourke, to automate QA on construction projects.

The technology relies on deep learning to assess the positioning of precast concrete embeds, using a video stream of the manufacture of precast panels and comparing it to the design file.

"This replaces the labour-intensive, multi-step process of current QA methods, which can be prone to errors," says Bikram Baruah, software developer in the integrated manufacturing group at AMRC.

Using a tablet, operatives review the video images of the precast unit and receive direct feedback about the embed count compared to the design file, and

whether or not they sit within their correct positions and acceptable tolerances. The quality assurance report is then automatically generated as a PDF, which can be uploaded to collaboration tool Trimble Connect and is easily accessible in the future.

The system has been tested at Laing O'Rourke's Centre of Excellence in Worksop, where the precast panels are manufactured, plus the AMRC's own research facility, Factory 2050.

"Traditionally, before concrete is poured in and panels are cast, operatives on the shop floor need to verify the position and count of embeds placed into the panels, using a multi-stage paper-based system," explains Baruah.

"The new inspection tool can cut the process down from hours to

minutes using an overhead camera to capture the actual panel before comparing the image to the design file. The tool then reports back on any missing embeds or embeds outside of tolerance."

The tablet device connects to a PC over wifi. The camera itself is also connected to the PC via a GigE cable. The PC then processes the image and compares it to the design file from Trimble Connect.

During the demonstrator project at Factory 2050, the tool achieved an average accuracy of 95% when inspecting precast embeds, compared to 73% at the Centre for Excellence. Baruah says the difference is partly explained by vibrations in the camera caused by gantry crane movements and varying camera heights, which affected picture quality.

need for more effective management of QA data, more efficient inspection processes including systems to compare digital designs with physical objects, and digital creation of as-built records."

The two-year programme had five key project deliverables [see boxes]:

- Create mobile apps for manufacturing QA reporting;
- AI-based feature detection for automated QA;
- Provide mobile accessible digital 'work packs' to operatives;
- Virtual, augmented and mixed reality for QA; and
- Laser scanning and point cloud data processing for as-built verification.

Developing the technology for the demonstrators was not without challenges, says McGovern.

Hinkley Point C in Somerset, where Laing O'Rourke is in joint venture with Bouygues, is the largest construction project in Europe.

"There are large volumes of work in a congested area, with increased rigour over quality standards, such as nuclear concrete requirements, plus greater rigour in tolerances and evidence of this expected at handover," McGovern explains.

"Because of the project's size, design is locked down six months ahead of construction, so workflows are difficult to alter to adopt new technologies." ▶



"We aimed to address many challenges in the construction industry's current ways of working"

Dr Scott McGovern, Laing O'Rourke

Raising rebar QA at Hinkley

Laing O'Rourke turned to Trimble and Viewpoint to help refine its QA processes for rebar on Hinkley Point C

On a nuclear construction project, achieving live continuous visualisation of QA is no easy task.

With rebar, Laing O'Rourke's workflow to get models to the field previously involved exporting an IFC 3D file from Tekla software into Simplebim, where meta-data and component coding was added. This was then exported as an IFC into Trimble Connect for model annotations. However, the process of applying model annotations on such a large project as Hinkley leads to some dizzying numbers and a huge problem, as Dr Scott McGovern, Laing O'Rourke's head of digital engineering explains.

"It takes 1.5 to two days to annotate each drawing; there are an average of 40 drawings per model, five models per building and 50 buildings – the task would take 15,000 to 20,000 person days," he says.

This is where Trimble Connect came in. The software company created a specification for changes to 3D model views. "This enabled the addition of dimensions, such as rebar start and end coordinates, colour, ID for traceability," Steven Jackson, technical manager at Trimble Solutions UK, explains.

The scripting means workflows can be automated with significant time savings. McGovern

estimates that around half a day is saved on annotating each drawing, meaning a saving of between 10,000 and 15,000 person days.

The next challenge was how to connect QA reports to 3D model data. This brought in Viewpoint and its Field View cloud-based mobile access platform for quality assurance.

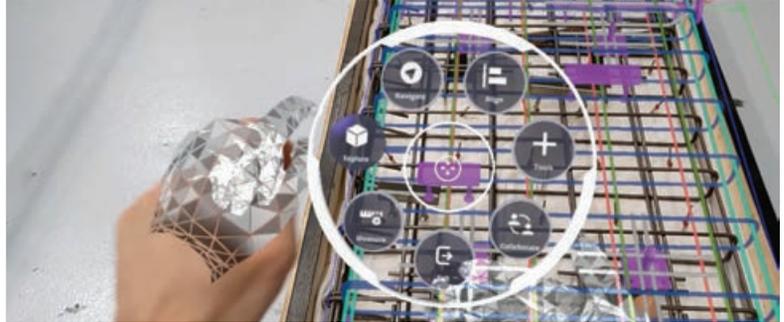
Typically, QA inspectors take their tablets out on site all day, gather data in Field View and sync the tablets when they get back to the office. As there is so much data to upload, it is typically 24 hours old by the time it can be viewed.

However, McGovern notes:

"There are instances where we'd like to see live data. For example, because of the size of the project, we've got some continuous concrete pours that last up to three days – the ability to know where you're at with that pour is incredibly important."

Viewpoint's development work has allowed Laing O'Rourke to visualise live QA data on the model by location, pulling key data such as completion status back to the model, with the added ability to raise forms from the model.

"This will allow us to set up some interesting workflows to manage all the inspections that need to be undertaken," says McGovern.



Inspecting a rebar cage using a HoloLens 2, integrated with mixed reality app Trimble Connect

AR for visual inspection

Laing O'Rourke has been testing augmented reality as a visual inspection tool, with a view to using the technology on Hinkley Point C

How reliable is augmented reality (AR) for inspecting built assets? That was the question asked by Dr James Potter, digital and quality leader at Laing O'Rourke, when trialling two AR technologies from Trimble for use on Hinkley Point C.

"We were interested in their ability to help with workflow, visualisation, visual inspection, dimensional measurement, and their usability and reliability," he explains.

Potter conducted the tests on three existing structures and at the University of Sheffield's Advanced Research & Manufacturing Centre (AMRC).

Firstly, he tested Trimble's SiteVision, a high-accuracy outdoor visualisation tool for spatial data. "It integrates GNSS data with camera tracking data to support AR visualisation of 3D spatial data," Potter says.

He tested two different handheld devices: an Android smartphone with the SiteVision app on it, with a battery-powered electronic distance measuring bracket and Trimble Catalyst antenna (providing the GNSS signal) attached; and the more traditional surveying approach with a Trimble R12i GNSS sensor and a TSC7 data logger.

Potter tested both technologies by modelling and geolocating the three structures, carrying out a virtual to as-built repeatability study, and noting

the time they took to set up and how frequently they required a reset.

"In both cases, the upload to Trimble Connect was quick and intuitive," he says. "It was easy to see a discrepancy between the virtual and the physical."

However, an issue with the handhelds was the amount of time to locate and orientate itself – around two minutes depending on signal strength – and the need for periodic orientation resetting.

"While neither device is designed expressly for dimensional measurement, they have measurement capability. However, they couldn't match the tolerance requirements for Hinkley," he explains.

Meanwhile, at AMRC, Potter tested a HoloLens 2, integrated with Trimble's mixed reality app Trimble Connect, on a rebar cage. He found the upload to Trimble Connect quick and intuitive, and says loading the model to HoloLens was easy.

"However, while it was easy to spot discrepancies between virtual and physical, it was easy to be overwhelmed with information, and it is necessary to turn layers on and off to keep the inspection focused," Potter adds.

Both technologies provided easier and better quality of visual inspection – leading to reduced likelihood of defects being missed, and better as-built evidence – but there is still work on the detail required, he concludes.

A reinforcement cage being lifted into position on site at Hinkley



McGovern's team also had to contend with existing non-digitised processes.

"For example, when we started AROPCQA, the Hinkley project team was using paper drawings for manufacturing rebar steel cages," he notes.

Similarly, in Laing O'Rourke's precast manufacturing plant, a high proportion of QA processes in factory were paper based.

"Most items produced are bespoke, which adds to the QA capture challenges," McGovern adds. "There were also manual, inefficient links with the ERP (enterprise resource planning) system."

And like the rest of the construction, AROPCQA was affected by covid-19 restrictions which came in when the demonstrators were starting. "This affected our ability to link up with our partners," says McGovern.

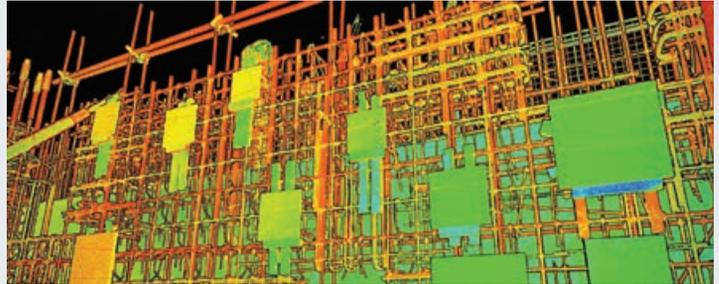
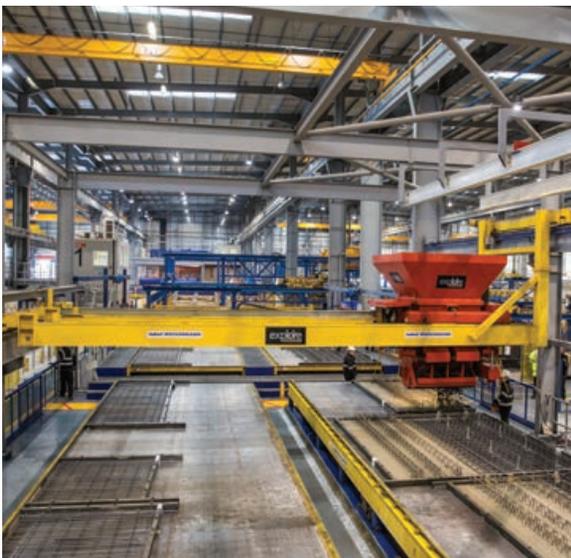
Despite these challenges, the programme completed on schedule in March 2021, with further development and testing planned for the technologies used. ●



"We were interested in AR's ability to help with workflow, visualisation, inspection and dimensional measurement"

Dr James Potter, Laing O'Rourke

Laing O'Rourke's Centre of Excellence for Modern Construction in Worksop was used to demonstrate some of the technologies



A hue intensity image from the laser scan shows the wall plates

Laser scanning for inspections

New software aims to speed up verification of as-built assets

Laing O'Rourke has been working with software firm Offset Services on laser scanning technology to improve and accelerate the as-built verification process.

The Offset software processes point cloud data from laser scans to auto-detect the locations of built assets and has been trialled at Hinkley Point C on concrete embeds.

Gavin Pailing, managing director of Offset Services, provides context. "Concrete embeds are cast in features such as wall plates, which we're focusing on with this study, which provide a secure welding point for equipment," he says. "Prior to the concrete pour, embeds are usually attached to the reinforcement cage. The shuttering is then installed, the concrete poured, allowed to cure, then the shuttering is removed and the embed cleaned up.

"But the embeds can move during the pour. Checking and putting this right is a long process, with surveyors having to work from paper drawings, manually measure the embeds' positions, and record results on spreadsheets. This can cause project delays."

The AROPCQA trial aimed to make this process more efficient, using laser scans to create a point cloud of the built assets – the wall plates – and software to auto-check this data.

The technology used was a Leica RTC360 laser scanner, a Leica TS16 Total Station, a Leica Cyclone Register (for registering and geo-referencing laser scan data), while Offset's Magan application processed the data.

"The workflow comprised the site scan, point cloud registration, E57 export [a special file format] of the point cloud data, then the embed verification," says Pailing. "For the verification, the auto detection is subjected to a manual check loop – it is critical we have the human check to fall back on."

The process was tested at Hinkley Point C in September 2019. A 300m section of a service tunnel was used for testing, with 252 wall plates and 39 scan locations.

"The point cloud created comprised seven billion points and clearly showed the wall plates," says Pailing. "The data also showed the user information about the wall plates positions, including displacements relative to the design. The system knows what the tolerances are and so drew the user's attention to compromises of that tolerance, which are recorded in a report.

"The point cloud image of each wall plate is in 3D so the user can select, lift up and rotate the image to allow enhanced inspection of the asset."

Pailing reports that using laser scanning with the automated algorithms developed on the project was "accurate", and "seven times faster" than traditional survey methods. "Manual correction is intuitive and quick thanks to compelling visual information, that the user can make informed decisions from," he says.

Next steps are to deploy the technology in a larger project environment and test more embed types, Pailing adds.



SPECIFYING MULTILAYER COMPOSITE PIPE

GLEN PETERS, TECHNICAL SUPPORT MANAGER AT VIEGA, DISCUSSES THE GROWTH OF MULTILAYER COMPOSITE PIPE (MLCP) AND WHAT SHOULD BE CONSIDERED WHEN SELECTING BOTH THE PIPE OPTION AND CONNECTION METHOD

Multilayer composite pipe (MLCP) has seen a boost in popularity for applications including heating, hot water and potable water applications. MLCP is made up of an inner and outer layer of cross-linked polyethylene (PEX) with a layer of aluminium between. This design combines the strength of metal pipe with the installation flexibility and corrosion resistance of plastic.

One of the key advantages of MLCP is its flexibility. The pipe can easily and accurately be bent using handheld tools without buckling and it can be used directly off the coil. This can be beneficial on projects that have many corners and long stretches of corridor. By bending the pipe rather than cutting it, the installation can be completed much faster.

Strength of connections

To reduce installation time, MLCP can be paired with press connection technology. Using a press connection process is not only quick but also ensures a strong and permanent seal is generated with a single press.

Despite the attractions of MLCP, one of the most common causes of failure is a damaged O-ring within the fitting when low quality press connections have been used.

However, there are alternative products that provide a solution. For example, Viega Smartpress is a high-quality, flexible system, designed without the need for an O-ring.



The O-ring is replaced in all Viega Smartpress connectors with a robust and durable polyphenylsulfone (PPSU) support structure which, when pressed, creates a seal across the entire connected surface between the pipe and the fitting. There is no need to widen, deburr or calibrate the pipe, and without an O-ring there is no risk of damaging the seal and causing a leak.

Specify the right material

Not all MLCP is manufactured to the same standard and it is vital to select a high-quality product. It is also important to select a pipe that has the correct level of flexibility. If the pipe cannot achieve the required angle, then it might buckle rather than bend when shaped.

One of MLCP's key advantages is its flexibility

“Using a press connection process is not only quick but also ensures a strong and permanent seal is generated with a single press”

Another consideration when choosing a product that will carry drinking water is its suitability for the application. Any material used in the delivery of potable water must have been tested and certified to ensure that it does not contaminate the water.

Finally, during installation it is important that any unpressed connections can be easily identified before further work commences. Some press connection products will appear to be sealed during the commissioning process when in fact this isn't the case. Once the system is up and running, even a minor leak can eventually lead to significant and costly remedial work. This is why the SC-Contur technology included in products across the Viega range incorporates a flowpath channel, meaning any unpressed joints are clearly visible during leak testing or when the system is filled for the first time.

With a wider range of pipe materials now available and press connection options suitable for every type, teams can select the one that best suits the needs of the project while still utilising a familiar and reliable connection method.

Increasingly, contractor teams are looking to press connection technology as a modern yet proven approach that can help to de-risk their projects. ●

To find out more about the Viega's Smartpress connection system and the training and technical support available, visit www.viega.co.uk.



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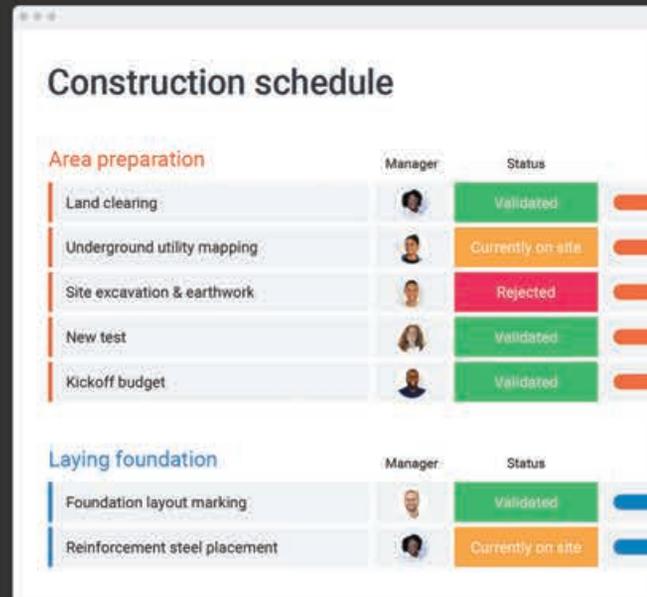
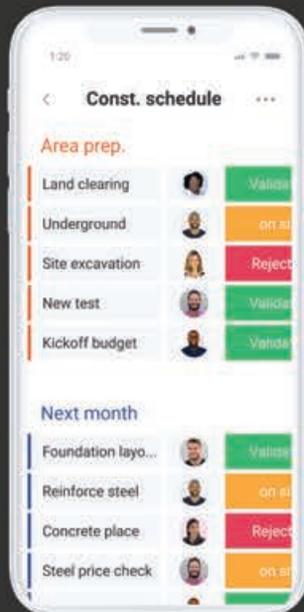
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IVAN SIARBOLIN/PEXELS

Dubai skyline at night

‘HOSPITALITY WILL WIN THROUGH’: VIEW FROM DUBAI

RLA GLOBAL’S MIDDLE EAST MD PAUL BOLDY IS A 17-YEAR VETERAN OF DUBAI HOSPITALITY REAL ESTATE. HE TELLS **ROD SWEET** HOW THE PANDEMIC HAS AFFECTED THE EMIRATE

What’s the mood of investors in the Gulf’s hospitality real estate?

The Gulf region is traditionally bullish in its approach to challenges, be they global financial downturns or a global pandemic. However, the current crisis, coupled with the recent slump in oil prices has affected investment, particularly on government-funded projects.

Visionary leadership in the Gulf Cooperation Council (GCC) has meant that innovation and strategic growth have become watchwords for the region and, as such, there is still an underlying optimism for recovery and for a stronger outlook.

We are seeing some delays in projects as investors are reconsidering previously developed feasibility studies that are no longer relevant. But the hospitality sector still represents a valuable asset class to investors, and while the pace of new construction has not slowed down disproportionately to the pandemic, what is emerging is a stronger movement to repurpose, reposition and renovate.

How has the pandemic affected the hospitality real estate market?

Like all sectors, the hospitality sector has been impacted. From projects under development to operational hotels, the region has experienced delays and falls in occupancy.

But while positive efforts to get back to economic normality have had mixed results, the economy does show signs of improving, driven primarily by domestic demand. With travel restrictions in place, hospitality has been buoyed by domestic tourism.

It has been interesting to see how fast hospitality operators have embraced enhanced guest safety and how fast they have evolved their value proposition. A new guest profile has emerged: people who

are keyed into a more ethical and experiential offering.

It is certainly true that projects have had to be rethought, budgets cut and business models reassessed, but hospitality will win through; people will want to travel.

What has been the effect on projects?

We have seen casualties in the contracting market, and some notable exits, with consequences on supply chains and financial institutions causing liquidity issues for suppliers, contracting parties and developers alike. The upshot is an obvious rise in project delays and contractual disputes.

Contractors also face significant challenges given the increased restrictions on labour movement, increased costs in implementing health and safety measures, and supply chain logistics challenges.

Dubai was particularly supportive of the construction sector during the height of the pandemic, when much of the UAE was in full lockdown. The construction sector was deemed to be a vital sector, exempting it from government restrictions and allowing work to continue.

The new hotel pipeline in the region remains strong, with Saudi Arabia leading the development, closely followed by the UAE.

What developments should we be looking out for in the Gulf’s hospitality sector in the next few years?

The hospitality sector’s response to the pandemic has been inspiring. We’re working on projects now that will shape the sector’s landscape for years to come.

The guest demographic for domestic and international markets is changing. We’ve seen continued growth in the mid-market sector as the region moves from a luxury-led market to a combined leisure and hospitality offering.

The pandemic accelerated progress in hospitality, bringing changes that were long overdue in some areas. A more focused approach to guest needs is driving better returns from rooms and food and beverage, and shaping co-living and co-working concepts.

We are also moving towards greater sustainability as the value proposition has changed. This is manifesting itself in methods of construction for new hotels, with modular hotels gaining traction in the planning of larger properties as it reduces waste and timelines, while complying with new onsite health and safety protocols.

Another trend is the various smart city initiatives. Connectivity within hotels has typically been high on the list of guest frustrations. Technology is now being put at the forefront of the guest experience as the region embraces all things ‘smart’.

What is your outlook for the Gulf’s hospitality real estate, and what is driving change?

We will continue to see progress on the Saudi giga projects, rolled out as part of Vision 2030, including Neom, the Red Sea Project, Qiddiya, Diriyah Gate and Amaala. They will provide a major boost to the construction sector.

The Dubai Expo 2020 will launch in October 2021 and run through to March 2022 and the Qatar World Cup will run through November and December 2022, providing a boost to tourism and leisure.

The signing of the Abraham Accords in September 2020 and the normalisation of relations between the UAE and Israel provide an added opportunity for new tourism markets.

The launch of Dubai 2040 Master Plan signals the country’s intent to make Dubai one of the world’s best cities to live and work, which will add a new dimension to the hospitality sector.

“The hospitality sector’s response to the pandemic has been inspiring. We’re working on projects now that will shape the sector’s landscape for years to come”

You’ve been in Dubai for 17 years. How have things changed?

I’ve witnessed incredible changes over the years. From the Burj Khalifa to the Palm Jumeirah, Dubai has pushed forward with ambitious plans.

As economies move away from a reliance on oil, tourism and hospitality form an ever-increasing contribution to the region’s GDP. The opening up of foreign ownership in real estate influenced a property boom, which continues to mature.

The Emirates’ hospitality sector has grown to be a global player. Dubai holds an enviable position with sustained occupancy and iconic projects and developments inspiring the rest of the region and the world. ●

CV: Paul Boldy FCIQB

(Selected roles, all UAE-based)
 Since September 2020:
 Managing director, RLA Global, Middle East
 2018–20:
 Regional manager for architecture, design and construction MEA, Wyndham Hotels & Resorts
 2014–15:
 Head of hotels, Artelia Group, Middle East
 2009–11:
 Construction director, ISG

Education:
 2014–15: Cornell University, Certificate in hotel real estate investments and asset management
 1990–93: Leeds Polytechnic, BA/MCIOB Construction



Paul Boldy FCIQB is the new Middle East managing director of RLA Global, an advisory and management consultancy to the leisure and hospitality sector



Legal



Olivia Jenkins
Trowers
& Hamlins



Paul Scott
Trowers
& Hamlins

Insolvencies and adjudication: what happens with CVAs?

As insolvencies rise, **Paul Scott** and **Olivia Jenkins** discuss the likelihood of courts enforcing adjudicators' decisions in favour of insolvent companies

The past 12 months has seen an increasing reliance on adjudication due to the inevitable rise in cashflow insolvencies in construction.

Theoretically, any adjudicator's decision – including one which is summarily enforced by the court – could be reversed upon final determination of the parties' dispute, with an order for the enforced award to be repaid by the previously successful party.

Problems arise where an insolvent company succeeds in an adjudication (and enforcement), but the unsuccessful party either wants the dispute finally determined in subsequent litigation or arbitration, or enforcement of any cross-claims it has against the insolvent company.

Will the proceeds of the adjudication (and enforcement) still be available if the other party is insolvent? This was considered by the Supreme Court in *Bresco Electrical Services (in liquidation) v Michael J Lonsdale ('Bresco')*.

Among other things, it was confirmed that:

- Insolvent companies can refer disputes to adjudication;
- The courts may not enforce an adjudicator's decision in favour of an insolvent company where there remains a 'real risk' that doing so will deprive the other party of its right to have recourse to the insolvent company's claim as security for any existing cross-claims; and



“Problems arise where an insolvent company succeeds in an adjudication (and enforcement) but the unsuccessful party wants the dispute finally determined in subsequent litigation or arbitration”

● Liquidators may be able to offer appropriate security for such cross-claims.

Precisely what security might be capable of sufficiently mitigating risk and enabling adjudicators' decisions to be enforced in favour of companies in liquidation has been explored at length in the past 18 months, including: *Bresco*; *Meadowside Building Developments (in liquidation) v 12-18 Hill Street Management Company*; and *John Doyle v Erith*.

Guidance from the courts in those cases indicates that appropriate security is limited to the following:

- An actual (not merely 'intended') third party guarantee;
- An after-the-event insurance policy with no material exclusions; and
- An undertaking from liquidators that any enforced award will be ring-fenced pending conclusion of the solvent party's cross-claims or any final determination of the dispute.

But what happens where a party to the adjudication is insolvent, but not in liquidation? Will an insolvent company not in liquidation be subject to the same burden of proving security, and be capable of enforcing an adjudicator's decision in its favour?

The courts' approach to this was observed last month, in *Phelan Construction v Elliots Construction ('Phelan')*, when an adjudicator's decision was enforced in favour of an insolvent company notwithstanding the other party's existing and seemingly undisputed cross-claim for payable retention.

The insolvent company in *Phelan* was the subject of a company voluntary arrangement (CVA) – an alternative insolvency procedure under which it continued trading. The court concluded that the insolvent company was more likely than not to be able to repay any enforced award, if later required.

In *Phelan*, the existence of an undisputed claim for retention was such that the court felt compelled to order a temporary stay of execution of enforcement of part of the adjudicator's decision (totalling the value of the cross-claim for retention) pending the outcome of that claim.

What the court did not do is subject the insolvent company to the same burden of evidencing security as it had done in previous judgments involving companies in liquidation, lending weight to the possibility that the court's approach to enforcement in favour of insolvent companies post-*Bresco* will be determined largely by reference to the specific insolvency procedure that the company is subject to. ●

Paul Scott is a partner and Olivia Jenkins is a solicitor at Trowers & Hamlins.



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Working for an employee-owned business allows people to take control of their career, Sarah Draper, partner, head of people and culture, tells **CM**

What are your USPs as an employer?

We are an employee-owned business and take great pride in our 'people first' mindset. Being independent means we are able to truly take the employee voice and use that to shape our business and react quickly. Our 'people first' approach benefits our business as we know when people have ownership at work, feel valued and are engaged it drives productivity. I think this has played a large part in RLB receiving a Top Employer UK accolade for 15 consecutive years.

What feedback do staff give you on working at the company?

Our employees really like the way the business is structured, not just that we are employee owned but also that we have a non-hierarchical matrix structure. We get a lot of positive feedback about the level of autonomy and empowerment this brings. One recent new starter posted on socials that we 'care about doing things right' which to me is a great reflection of our culture.

How do you identify and deliver staff development needs?

Our employees are encouraged to own their career development and we support this through the delivery of training, mentoring and other personal and professional development strategies. We are in the midst of digitalising our entire HR system which enables employees to take ownership of their development through updating objectives and asking for 365-degree feedback at any time. It allows a continuous conversation rather than waiting for a set point in the year.



How important are professional qualifications, such as CIOB membership, for your staff?

Professional skills such as CIOB membership and chartered status for relevant colleagues are key to ensure that they are gaining knowledge and insights about the industry as well as being able to show our clients and those we work with that the RLB team is qualified within their specialist fields.

How are you trying to boost diversity?

We are continuing to create an inclusive workplace where diversity is not only accepted but valued and built into our culture. Creating opportunity for all is the foundation to this, ensuring that this vision isn't just a tick-box exercise.

We have had a D&I (diversity and inclusion) strategy and training in place for the past five years and set up a community to support the action plan and calendar to drive forward the agenda. We recognise there is still much we need to do as an industry, but we are making good progress. In the UK, 29% of our team is female and 32% of our senior leadership team, which is well above industry norms.

How do you look after staff wellbeing?

Making sure employees felt connected and valued is paramount. We have introduced agile working with core hours to support our team and have also rolled out a number of new wellbeing initiatives in the past 12 months. These include: an innovative health insurance scheme; 'mental wealth' training; new policies and awareness-raising on subjects from domestic violence to the menopause; a new 'thank you' bonus scheme; and small group virtual catch-ups with chief executive Andy Reynolds.

How do you recruit the best talent?

We have made changes to the way we recruit, from addressing unconscious bias to changing job titles to ensure we widen our appeal.

For example, we know apprenticeships are a great route into our profession for people of all ages – not just those starting out on their career. Our graduates also spend time promoting the career opportunities in our industry and routes to access it as part of our Bucknall's First Rung programme.

We are very proud of our track record of nurturing our employees: two of our managing partners started as graduate trainees and one as an apprentice. ●

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LANDMARK

Job spotlight**Latisha Darling Mattis**

Construction project management apprentice, Aecom

On the job

Why apprenticeship trumped university for a first career step in construction

**Why did you choose apprenticeship as the pathway to a career in construction?**

I joined Aecom after it visited my school as part of an outreach programme. I'd already decided to pursue a career in construction after my A-Levels but thought that university was my only option.

I had a place on a degree course confirmed, but once I met with the team and they offered me a job I deferred. I joined the Canada Water project, which was very exciting as I felt like I was playing a part in helping to transform my local area.

I was given the options to start as an assistant administrator or join as an apprentice. I chose to start in admin first before committing to an apprenticeship. This gave me a flavour of what it is like to work on big, complex schemes and I loved it.

Six months later, I joined Aecom's apprenticeship programme. I now attend the University College of Estate Management one day a week studying for a degree in Construction Project Management, and spend the rest working as a member of Aecom's project management team.

I'm now working on other major projects, including Oriel, which is the proposed new purpose-built centre for Moorfields Eye Hospital NHS Foundation Trust, UCL and Moorfields Eye Charity.

Would you recommend the apprenticeship route?

Going to university is no longer the only option if you want to embark on a professional career in construction, and earning while you learn is an added bonus. Yet there is still very little information about apprenticeships out there for school leavers.

That's why outreach programmes with schools are so important to help attract more people, particularly girls, into our industry. That one meeting with Aecom has changed the direction of my career.

I'd like to help raise awareness of apprenticeships among girls and show that they are a viable route into construction. I think there is still a misconception that a career in construction is all about muddy boots and hard hats, but the reality is very different.

I'm now involved with my company's ongoing relationship with my old school and I've been back to share my experiences. We hope to recruit more apprentices through this channel in the future. ●

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Army leads the way

Construction could learn from the military when it comes to female recruitment, says **Steve Hammond**



Three years ago the British armed forces finally opened all roles to women. Since then applications for the frontline have doubled and 20% of the 80,000 applicants the army received last year were female. Construction needs to learn a lesson or two from the military.

My career began in the Royal Engineers and I spent 24 years in the army, completing tours in Iraq, Bosnia, Kosovo and Afghanistan, rising through the ranks to warrant officer class 1 (military plant foreman).

During that time I was chiefly in the company of other men. Although women held roles in the military, none were in close combat and that only changed in December 2018, when it was decided that our armed forces should be determined by ability alone and not gender.

Since then, the army has upped its game in demonstrating commitment to taking action to create an inclusive culture, recognising that diversity makes them stronger. Last year it was named one of *The Times'* Top 50 Employers for Women. This is quite a feat for a historically old-fashioned and male-dominated organisation but it has set a real example to us in construction.

What it reveals is that huge changes in policy and commitment can take place over a very short period of time to make an industry seem modern, attractive and rewarding – for women as well as men.

Only about 13% of the entire construction industry is made up of women and the majority of these are office-based roles. And yet there is so much potential for growth in the sector, which has suffered a skills gap in recent years.

In order to recruit – and particularly to attract women – we have to change stereotypes. Advertising has been highlighted as one of the problems for the lack of female representation in the industry, so we need to see and hear from more role models.

We also need to engage better with schools so young women start to explore what is on offer, such as positions in design, architecture, project management and technology, as well as groundwork and building.

The army revamped its messaging, enhanced recruitment processes, celebrated diversity and sought buy-in in its ranks. It found that attracting more women broadens the range and number of potential recruits to draw from, deepening the pool of talent.

And this is precisely what the construction sector needs if it wants to future proof itself. Steve Hammond is a former warrant officer, now training manager for Anderson.

GCR

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CIOB Community



ROBERT WADE

Partnership

CIOB and chamber of commerce become partners in Manchester

New link will bring CIOB benefits to 4,500 members of largest UK chamber of commerce

The CIOB has announced a new partnership with the Greater Manchester Chamber of Commerce.

With 4,500 members, the organisation is the largest accredited chamber of commerce in the UK. Its large policy team represents members' views on issues such as

transport, environment, skills and the economy across all 10 Greater Manchester local authority areas. Its membership base ranges from sole traders to large corporates, across a broad range of sectors.

By partnering with the CIOB, the chamber of commerce can offer

Above: The chamber of commerce offices in central Manchester

“We will now be able to share information, offering discounted training courses and working collaboratively on events for both organisations”

Diane Elebert-Morgan, Greater Manchester Chamber of Commerce

members even more industry news and guidance, as well as discounted training courses certified by the CIOB and events designed to support innovation and share globally recognised standards of best practice.

Hazel Yorke, the CIOB's business development manager north, said: “As a like-minded organisation, we are very excited to work together to support members, sharing best practice, providing knowledge and offering more opportunities through these challenging times.”

Diane Elebert-Morgan, property and construction group manager at Greater Manchester Chamber of Commerce, said: “This new partnership will add knowledge and value to our members, particularly those in the property and construction sector.”

She added: “We will now be able to share information, offering discounted training courses and working collaboratively on events for both organisations.” ●

Events

Top speakers at CIOB's first global Student Festival

Delegates hear from industry leaders at virtual event

The CIOB ran its first Student Festival in April, a two-day virtual opportunity for student members across the globe to celebrate being a part of the student body at CIOB.

The event was designed to help student members build their knowledge of the built environment sector, develop skills and sector know-how, and take

away top tips to excel and succeed in their future career.

Delegates heard from high-profile key speakers including CIOB president and vice-president, past presidents and the first ever CIOB Rising Star award winners Kelly Attwood and Vasiliki Bowler.

The event also included talks from leading academics at the

University of Bolton and Sheffield Hallam University as well as past Global Student Challenge winners.

Employers from across the globe discussed the skills and mindsets the construction market demands of graduates, as well as how to maximise employability tools such as LinkedIn. Other sessions included career development tips.



Story for Community? Email Nicky Roger
nicky@atompublishing.co.uk

Ceremony

Honorary doctorate for CIOB vice-president

Heriot-Watt University Malaysia has honoured Datuk Seri Michael Yam in a virtual conferment



Datuk Seri Michael Yam FCIOB has been awarded an honorary doctorate by Heriot-Watt University, Malaysia.

Yam was president of CIOB Malaysia 2005-2007 and subsequently elected onto the Board of Trustees in 2008. In June 2020 he was elected vice-president of CIOB, which will lead him to become the senior vice-president in June 2021 and president in June 2022. He will make history as the first Malaysian and second Asian ever to be president.

Heriot-Watt University has awarded honorary degrees every year since being granted its Royal Charter in 1966. The charter decrees that it may confer an honorary degree on any person whom it may deem worthy of such a distinction.

In the ceremony, Yam was noted as: “Someone who is truly a world shaper... with a successful career in construction, project management and real-estate development spanning more than 35 years, Michael’s knowledge, expertise and values and exemplary impact across

the sector and beyond provide an inspirational example of the futures we seek to open up for our students in this rapidly changing and increasingly connected world...

“It’s clear that Michael is an individual of huge talent and that through his business acumen he has been influential in contributing to the advancement of the construction and real-estate industry.”

Upon receiving the honour, Yam said: “Today is a very special day for me. I subscribe to the principle that: he who sows sparingly will also reap sparingly, and he who sows bountifully will also reap bountifully. Hence my desire to give back to society and the community, and advocacy work in the very industry that has served me so well.

“I want to live life as the famous American writer Maya Angelou once said: ‘My mission in life is not merely to survive but to thrive, and to do so with some passion, some compassion, some humour and some style.’ I want to thank God for his grace to put wind beneath my wings in my endeavours to fulfil my calling, a substantive part of which has been achieved with today’s exceptional honour from Heriot-Watt University.” ●

You can watch the university’s first ever virtual congregation for a conferment ceremony on YouTube by visiting <https://youtu.be/Vnwr7cX4CpM>.

CIOB BEGINS SEARCH FOR THIS YEAR’S RISING STAR TALENT

The CIOB has opened applications for a second year for its international CIOB Rising Star award.

The category is for those who have been in the construction industry for seven years or less and shown excellence in their work, the industry and among their peers.

The award is free to enter and open to CIOB members and non-members.

The judges will look for evidence of contribution within the last 12 months, and your employer must nominate you. More information on entry requirements can be found at cmya.co.uk.

The Rising Star award is presented at the Construction Manager of the Year Awards (CMYA), hosted last year by architect and TV presenter George Clarke FCIOB.

This year CMYA plans to be back at London’s JW Marriott Grosvenor House Hotel on 29 September to celebrate all the finalists and winners.

The closing date for nominations is Friday 18 June. Visit www.cmya.co.uk/rising-star-award.

Events

Novus puts focus on future leaders

Anglia Ruskin University hosts Chelmsford speakers



Clockwise from top left: Bill Hill; Eleni Randle; Craig Shaw; Alina Grigoruta

The Chelmsford Novus committee has continued its work supporting the future leaders of construction by delivering a spring series of targeted events at Anglia Ruskin University.

The series began with an introduction to the CIOB hosted by a panel of speakers from Novus and guest speaker Eleni Randle, director of Eldnar Consultancy. They discussed the importance of joining a professional body and its positive impact on an individual’s career journey.

To celebrate International Women’s Day, Novus also held a Women in the Built Environment event. A panel of female speakers, led by Novus chair Alina Grigoruta, shared thought-provoking insights into their experiences in the industry and advised women on starting their pathway.

Finally, to raise awareness and understanding after a difficult year, they discussed mental health in construction. The event was supported by CIOB staff, Novus Committee member and chartered construction manager Craig Shaw, and Bill Hill, CEO at the Lighthouse Club.

They had a very open discussion about the impact that mental health has on people’s lives, but the positive steps the industry is taking to tackle the issue.

Below: A year 11 student tests out the hands-on virtual reality programme



Education

CIOB pilots virtual reality experience for students

The CIOB and Construction Wales Innovation Centre (CWIC) have launched a virtual reality experience to educate students about construction

The CIOB and Construction Wales Innovation Centre (CWIC) have launched a virtual reality experience to educate students about construction.

The project stems from Skills on Site (SonS), a CWIC initiative designed to provide ‘live on site’ learning opportunities for students to support classroom teaching.

CWIC has worked with partner colleges across Wales to deliver construction-based training courses to address the specific needs of future skills, gaps in provision and to attract the next generation to the industry.

The course, Construct Your Future, enables pupils to work towards an end-of-year design and build project

as well as achieve a City and Guilds Level 1 Award in Construction Skills.

They will also have opportunities to be hands-on with some essential skills required in the industry and undertake tasks using CAD software.

One of these ‘hands-on’ opportunities is a virtual reality programme – using CWIC’s Virtual Built Environment Explorer (VBEEE) software – which aims to increase the appeal of the industry by ‘gamifying’ the construction process.

The programme was piloted at Ysgol y Preseli in Ceredigion with year 11 students in March. Learners explore the construction process by constructing a variety of different buildings virtually – once complete, they compare the performance sustainability and cost measures built into them.

Laura Clarke, regional manager at CIOB Wales, said the CIOB is pleased to see new ways to engage young learners. “This collaborative approach by CIOB and CWIC is spearheading cutting-edge ways of bringing the construction industry to life during the pandemic and encouraging young people into the sector.”

Gareth Wyn Evans, manager at CWIC, said the initiative is valuable during covid-restricted times. “By exploring, gaining familiarity with, and practising in our simulated environment, knowledge and skills can be gained without any interruption of real-world consequences.” ●

FAST-GROWING FIRM ADDS CBC STATUS

Glencar Construction, a five-year-old firm specialising in occupiers, retailers and logistics businesses, has received Chartered Building Company (CBC) status.

The firm said seeking CBC accreditation was a positive step in the right direction.

“We are delighted to attain CBC status and be recognised by the CIOB, an industry leading accreditation. This achievement is aligned with Glencar’s core values, said construction director Peter Goodman.

“We look forward to using the accreditation to the benefit of our business and our industry image across our customer community.”

Glencar supports all colleagues in obtaining their MCIOB accreditation.

Course

CIOB launches international certificate

Programme to recognise global nature of sector

The CIOB has created a Certificate in International Construction Management.

The programme has been produced to reflect the increasingly international nature of the sector and provide construction professionals with the knowledge and skills in global construction management best practice.

The course provides the learner with the skills and knowledge to plan, develop and execute construction projects, whether in foreign markets or within their home countries.

It comprises three technical modules over six months, looking at best practice, the fundamentals of understanding global markets,

rules and regulations, and managing international projects throughout the construction cycle.

The course is led by John Hayes FCIQB, an industry veteran with extensive experience of multi-million-pound global framework and construction projects in the UK, Europe and Australia. www.ciobacademy.org

Below: Malone Associates has worked on the insulation of non-traditional buildings

CPD

The inside track on external wall Insulation

Midlands Region session will talk through case studies

The Midlands Region is welcoming back Joe Malone, of Nottingham-based Chartered Building Consultancy Malone Associates, for another CPD session on 20 May.

Malone specialises in building pathology and carries out expert witness work, particularly in relation to damp and construction defects.

He will talk through a commission for external wall insulation (EWI) surveys for Lancaster City Council, using the case study to run through:

- Non-traditional construction types;
- Access issues in high-rise buildings
- Assessment of the hidden underlying structure;
- Degree of saturation in EWI systems;
- Inbuilt fire safety standards versus current requirements;



- Degree of system failure or aesthetic spoiling, considering likely causes;
- Thermal imaging to review water ingress and thermal efficiency; and
- An overview of the cost of repair and replacement. ●

Join this free online event at 12pm via the CIOB website at: <https://events.ciob.org/ehome/200221260/200527248>.

Refurb

Greendale starts on phase two of Studland House

Project is CBC's third in three years for Bournemouth University

Chartered Building Company Greendale Construction has started work on phase two of Studland House for Bournemouth University – the refurbishment of the ground, first, third, fourth, sixth, seventh and eighth floors of the building.

The £2m works include: demolition and strip-out of existing partitions, furniture, fixtures, equipment and finishes; remodelling of floor plates including toilet provision; new mechanical and electrical installation; and full internal refurbishment of other areas.



It is the third project in as many years that Greendale has taken on for Bournemouth University.

In November 2020, it handed over a £1.5m refurbishment of the north wing of the second floor of Christchurch House on the Talbot Campus.

The works included the formation of new teaching laboratories, new microbiology laboratory with associated prep room and autoclave room, new toxicology laboratory with prep room and new project laboratory.

FELLOW RECOUNTS LIFE LESSONS IN BOOK

In No Sandwiches, No Flat Roofs and Other Lessons for Life, Barry Natton recounts his life story from being an apprentice carpenter and Joiner to becoming the chief executive of Riverside Housing Association, a position he held for 31 years.

Natton tells of his time working for Costain Construction, in Coventry, then Nigeria – during the civil war in 1966-67 when he was arrested on three occasions – and in Leeds, prior to taking up what he describes as his life's work in social housing.

The book is £10 with all proceeds going to charity and is available from nattonbarry@gmail.com.

From left: Greendale's Declan Miles, Chris Cave, Mike Higgins and Chris Kane get ready for work on Studland House

Joanne Graham

Meet a member

Joanne Graham, design manager, Gilbert-Ash



Why did you choose construction for a career?

My choice of construction came from a

drive to improve the condition of the built environment. The standards of the buildings and spaces used to live, study, work, spend leisure time etc has a huge impact on its occupants and the quality of our lives. I studied architecture as a route into the industry, which gave a great grounding to my current role as a design manager.

What are the best bits of your job?

I find the constant learning, problem-solving and no two days or projects being the same incredibly stimulating. For me, this is a great advantage of my job. Unlike some industries, in construction your hard work and team effort get turned into something you can physically see and experience. Knowing that you contributed to the stages of a building coming together and then completing is very rewarding.

What would you like to change about the industry?

I would like to see greater gender diversity at all levels within the construction industry. Most of the meetings I attend have a male majority and it would be fantastic to have many more women around the table.

Why did you choose to pursue chartered member status and how does it benefit you?

I felt after several years in the industry, obtaining chartered membership was a way of formally acknowledging and paying credit to my experience. As a chartered member of CIOB I am part of a wider community that offers further methods of learning and knowledge sharing, ultimately improving the construction industry as a whole.

What do you do in your spare time?

A current spare time activity is learning to speak Irish, a much harder task than I had anticipated!

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CIOB

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Design

Building envelope firm expands offer

Wienerberger moves into architectural services



Archigility brings together services

Wienerberger has launched an architectural services department in response to member demand.

The firm designs and manufactures building envelope materials and works with clients to provide technical support to schemes once they reach site. The new service, Archigility, was launched to bring together a number of services under a new banner. It comprises qualified, experienced architects, technical specialists and BIM experts.

"In 2018, we were asked by one of our clients if we had the capability to undertake the masterplan and full design for his new development of five affordable housing units in Surrey. On the back of the success of this development, Archigility was born," said Charlotte Hamman MCI0B, Wienerberger's head of built environment.

"Combining practical architectural skills with expert technical knowledge leads to fewer unknowns, less risk and early material procurement. Our current schemes now include a 128-unit greenbelt development, a 50-unit village in Somerset and a number of others."

Business

Success amid the pandemic

When CIOB members set up a consultancy at the start of 2020, they could not have predicted what lay ahead

A consultancy set up by CIOB members at the start of the pandemic is celebrating a year in business.

Hive Projects, a project management consultancy, began life in 2020 just as the first lockdown was announced. The pandemic presented huge challenges across issues like

staff recruitment, building a client base and particularly its focus on healthcare and local authorities.

However, under the direction of Liz Hartley, Mackayla Colwell and Paul Roberts, Hive grew to a team of eight within seven months.

The consultancy has provided support to several healthcare trusts and local authorities around the north west and Yorkshire regions, with projects including the redevelopment of North Manchester Hospital, work at Alder Hey Children's Hospital and The Christie.

Hive plans to expand its team and diversify into other sectors such as education or residential. ●

"We would be lying if we didn't say our nerves were shot when we all left our former jobs just weeks before a national lockdown was announced.

"We have our amazing clients and our team to thank for our first year of success.

"A large number of our clients are in the healthcare sector and they have trusted us to maintain stability in the delivery of their capital projects while they have been faced with fighting the pandemic"

**Mackayla Colwell,
Hive Projects**

Hive provided project management services for The Christie at Macclesfield



Award

Investors in People awards CIOB silver

We Invest in People accreditation is global benchmark of people management

The CIOB has been awarded the We Invest In People Silver accreditation by Investors in People (IIP).

We Invest in People accreditation is recognised in 66 countries, making it the global benchmark when it comes to people management. Its framework model measures how well an organisation is doing at leading and supporting its people,

compared to other organisations and companies in the industry.

As the leading professional organisation in construction management, the CIOB sees its role in coming years as the moral compass of the industry. Its vision is to improve the quality of life for the users and creators of our built environment, championing standards and professional ethics in

the science and practice of building and construction, and striving for equity and fairness in its decision making and treatment of others.

The institute pursues the highest standards of quality, and values professionalism, integrity, excellence and respect, and it hopes that this is reflected in its accreditation from Investors in People.



Partnership



Heritage and sustainability

Julie Barry, head of business development at RIFT Research & Development, on how to retrofit sustainable solutions in conservation projects

While alteration restrictions on heritage buildings can make it more challenging to balance authenticity and sustainability, it's entirely possible. Retrofitting is increasingly used to reduce energy, and ideas such as improving the thermal performance of the building envelope, and utilising outdoor air and underground water for heating and cooling, are being adopted, along with 'hybrid' energy systems and trigeneration technologies.

Historical buildings were often designed to respond to climate, so restoring those features and incorporating today's technology can have a huge impact.

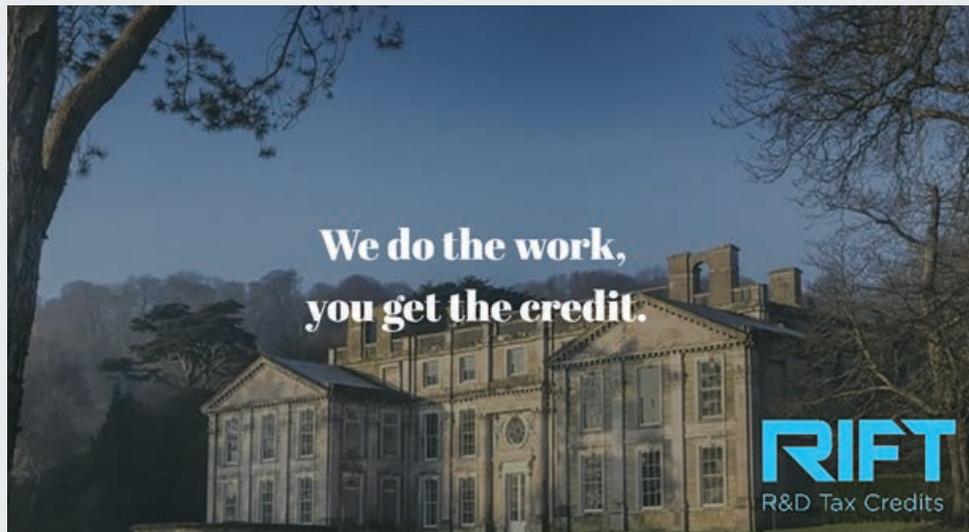
Sustainable preservation strategies

Mitigating climate change is clearly crucial to protecting our planet. Yet there are benefits to our historical buildings and heritage sites too. Environmental degradation and more frequent and severe climate-related natural events are damaging their integrity. And so, to adopt sustainable preservation strategies is to safeguard our cultural heritage.

Whichever we look at it, we need to find a way to carry out conservation works that contribute to sustainability without compromising character.

We really enjoyed being a sponsor for the Balancing Heritage with Sustainability conference and were delighted to have our clients join us in a panel discussion about the strides they are making in achieving this balance. We hope you had a chance to drop in and hear about it, as well as discover how your conservation work could qualify for research and development tax credits too. ●

Find out more about R&D tax credits for the construction sector and deep dive into the world of business innovation with our insights. Speak to us for advice on 01233 653008.



Cultural heritage is central to our sense of identity. A consistent, reassuring backdrop in a changing world, it reminds us of our roots and retells the story to future generations. Heritage properties connect communities through housing, education and engagement. Commercially, they support economic return through regeneration and tourism.

They're not just a nice-to-have; they're integral to our future. We all agree we must protect them - but does it have to be at a cost to our planet?

Conflicts between heritage conservation and environmental sustainability are often debated. But still misunderstanding, assumptions and legislative blame often stand in the way of taking a holistic approach.

"We need to find a way to carry out conservation works that contribute to sustainability without compromising character"

**Julie Barry,
RIFT R&D**

On 21 April, RIFT took part in the CIOB Annual Conservation Conference: Balancing Heritage and Sustainability, which went beyond the theoretical to showcase best practice and explore retrofit standards in conservation and sustainability. Recognising that such projects can hold surprises and offer innovation opportunities, we discussed real-life cases where taking a sustainable approach has required research and development activity.

Is it possible to protect our heritage properties sustainably? Buildings account for around 40% of all energy consumption and construction is responsible for half of all global emissions. Every type of building provides an opportunity to contribute to a better future.

Me and my project

Through the mill

Rob Pell shares his experience of the challenging transformation of a Grade-II listed Bradford wool mill into residential space

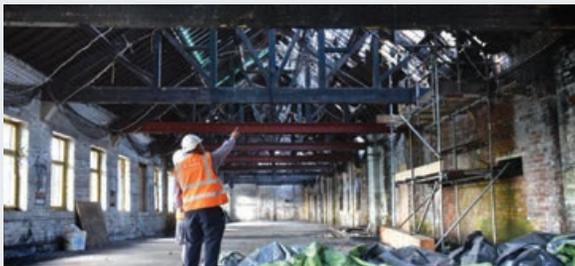
The Conditioning House project in Bradford involved the conversion of a Grade-II listed former wool processing mill into 135 studios, one, two, three and four-bed apartments, office space and a proposed gym.

The 1902 building was constructed in a 'U' shape, with two larger mills for wool testing areas and the smaller for offices, laboratory and canteen areas.

The building had suffered from vandalism, theft of lead and slate, and fire. Several roof areas had been open to the weather over 20 years. The only reasonably safe areas were the stone and concrete stairs. It was possible to access some floors but this required mapping out floor by floor, using support systems from below.

From early 2017 to November 2018, slow but steady access was made in clearing out known asbestos, and clearing out stairs, corridors and some floors, which allowed further surveys.

From mid-2018 up to spring 2019 we carried out several areas of structural propping, which allowed surveys and testing. The propping went from the existing basement right up to the third floor and roof trusses.



Above: The linking atrium was glazed with shatterproof polycarbonate

Below: Some 20 years of decay left the roof in need of extensive repair

Remedial and repair/replacement works were carried out with the structural engineers and our design team. Roof trusses that had deteriorated were part replaced with new jointed oak and steel parallel flange channels (PFC) bolted to existing and repaired trusses.

Existing timber floors were repaired using Douglas fir timber beams, either full beams at 6,500 x 400 x 200 and/or steel universal columns (UC) in lieu of timber beams. Timber floor beams were replaced one at a time with the process taking six months for all floors in each building. As floor beams were repaired, new floor infills were carried out, either repair and replacement or complete new engineered flooring.

The main roof to Mill 1 was re-covered using 80% recalled slates and 20% salvaged slates to the inner roof slopes, while Mill 2 roof was rebuilt - creating duplex third-floor apartments - and the whole roof kept in line with the original roof height. The link roof was re-covered using 100% salvaged and recycled slates.

The glass atrium was re-covered using a shatterproof polycarbonate

roofing system that 'in theory would allow someone to stand on the roof' - we have not put this to the test and have instead designed a safer access and working methodology process.

We had a number of restrictions on the external work due to its listed status, but keeping the lifting wheels is the only condition applicable to the inside. We are looking to make a feature of them - they will be visible from the atrium and some apartments.

Lessons learned

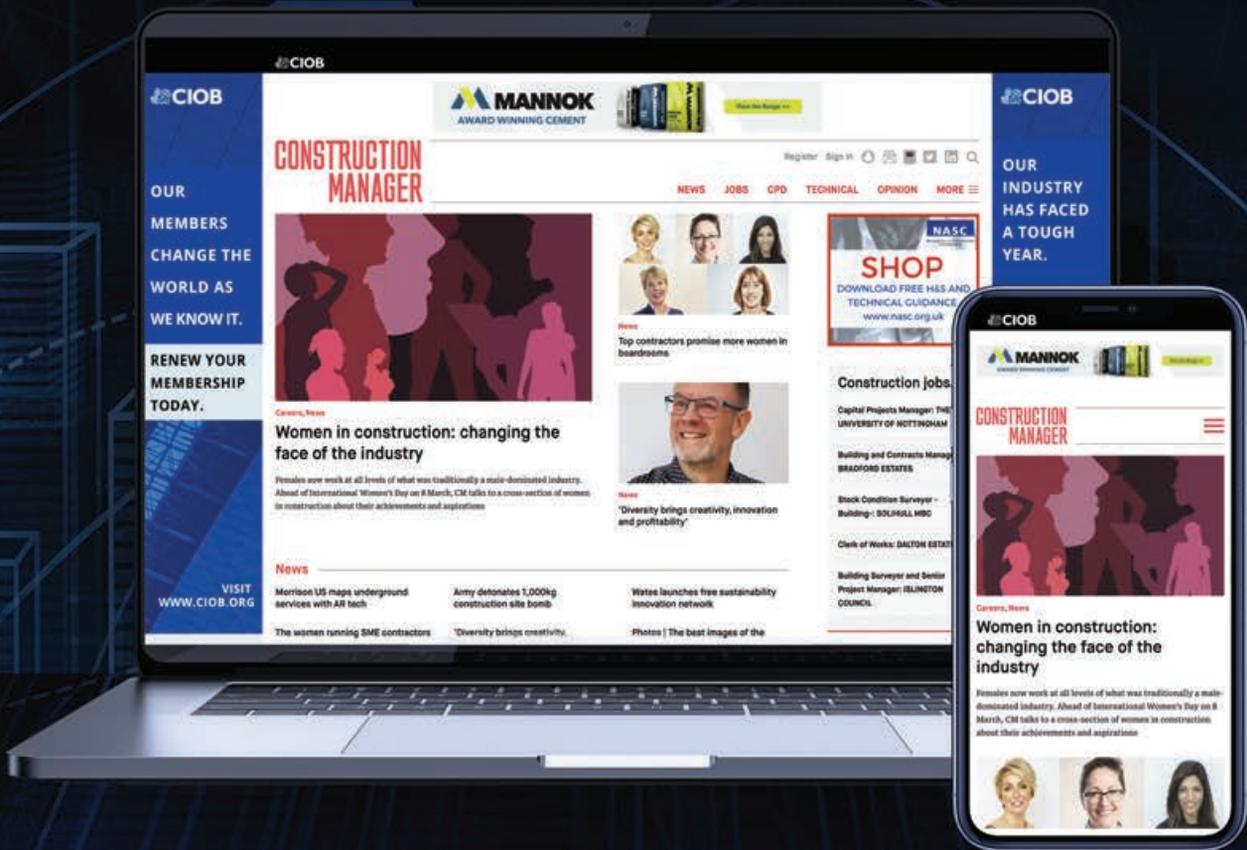
The biggest thing I have learned from the project was not to underestimate the challenges. I have been involved with this scheme since late 2016 and in 2021 we will finally complete. It's been four and a half years of work and, at times, not enough time.

The biggest thing the company has learned is that, as a company and as a team, we have all risen to the challenge and have completed an amazing scheme. From everyone in our company the process of my 'can do' attitude is now a company 'can do'. ● **Rob Pell is head of construction at Priestley Homes.**

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Diary dates

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

EcoWorld London – Kew Bridge Gate phase one 10 May, 6-7pm

Join the London Hub at its next virtual site visit, to Kew Bridge Gate phase one.

The development at Kew is a mixed-use scheme that comprises Brentford Football club's new 17,250-seater football stadium, various commercial spaces and just short of 500 build-to-rent apartments.

The site is surrounded on all sides by Network Rail, with the buildings extending right up to the boundaries. This has a massive impact on the use of cranes, movement of materials and deliveries to site.

Added to the above, the stadium is now live on game days for both Brentford football club and London Irish rugby, and the construction area has to be secured from the shared stadium space to ensure smooth transition from active construction site to sports arena.

CIOB Ireland Brexit Series

12 May, 12.30-1.30pm

The first event in CIOB Ireland's Brexit series, in conjunction with the CIF and the CEF.

In this session, Paul Sheridan, director-main contracting, CIF, and Mark Spence, managing director, CEF, will give an overview of where the construction industry is in relation to Brexit, and will address Brexit-related issues raised by members at the recent 'Meet the CIOB' roadshow in January.

Firestopping and the Golden Thread 13 May, 6-7.30pm

Join the Oxford Hub for a presentation from the Ridge Digital Engineering team which focuses on the 'golden thread' and their recommended approach to demonstrating firestopping compliance utilising digital design processes.

Updates to industry guidance documents since the Grenfell disaster have brought a renewed focus on fire safety through design, construction and operation, for which client organisations should be aware of the enhanced responsibilities placed upon them.

This presentation will explore the activities that should be carried out through key project stages and provide an overview of processes aimed at reducing risk associated with firestop design and installation.

Hastings Heritage Library Restoration CPD Webinar

18 May, 12.30-1.30pm

Graham Tuthill, project manager at Baxall Construction, will be talking about the refurbishment of Hastings Library, a Grade II-listed building over five floors dating back to 1880, which was winner of the 2019 NFB Heritage Project of the Year.

This complex and logistically challenging refurbishment included complete modernisation of the library, including restoration and sympathetic improvements.

Tuthill was nominated for the 2018 CIOB Construction Manager of the Year Award for the refurbishment. He will provide an insight into the nomination process and the road to the finals.

Combatting the Comfort Zone – Martial Arts Stress Relief

19 May, 6.30 pm-7.30pm

Architect Priya Aiyer from Mace will demonstrate basic moves from martial arts such as boxing, kickboxing, taekwondo, karate and Muay Thai.

Participants should wear comfortable clothing. No equipment is needed, apart from a bottle of water, a sweat towel if required and space to move.

Aiyer will demonstrate at an introductory level how to use correct technique when carrying out martial arts moves, as well as playing with combinations and working different

muscle groups in the body. There will also be a chance at the end for a Q&A and to find out more about getting involved in future regular sessions.

An Introduction to Mass Timber Construction

19 May, 4-5.30pm

An introduction to mass timber construction, using CLT and glulam, and the considerable benefits of adopting such a construction methodology.

Health and wellbeing benefits will be discussed as well as the significant carbon sequestration that can be achieved, before some technical background on how to attain excellent airtightness and thermal properties as well onsite panel joint and taping regimes.

Merkinch Primary School, Inverness, the largest volume CLT project in Scotland, will be used as a case study.

All Aboard a Railway for People and Life

21 May, 12.30-1.30pm

This event, run jointly with Women in Sustainable Rail, is presented by three keynote speakers addressing rail biodiversity and vegetation management. The Varley report will also be discussed.

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



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