

CONSTRUCTION MANAGEMENT

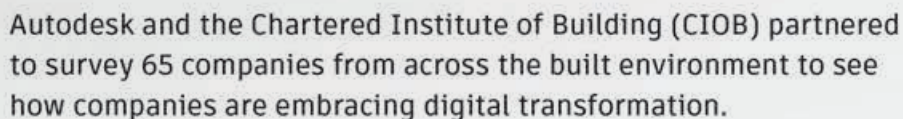
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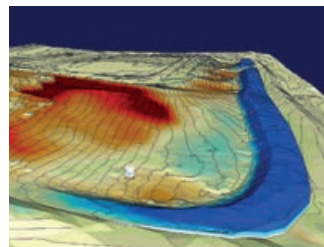
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Highlights of the CIOB calendar



▲ Sounds of the sewer

London-based musician and composer Rob Lewis performed live 70m underground in the 25km-long Thames Tideway super sewer to mark the end of tunnelling works at the end of April. His performance combined multi-instrumental music with the sounds of the sewer construction. Construction is due to complete in 2025.

► Real-life TV series follows young bricklayers

A six-part BBC TV series, *Brickies*, is following the lives of young bricklayers working in the construction industry. Bricklayers of all abilities feature in the programme, from apprentices to experienced workers trying to keep their team on track. Two brickies featured are Georgia and Molly (pictured), who are two of a small number of female bricklayers in England.



Power player: DinoLift's managing director Karin Nars tells *CM* about becoming the first female president of the International Powered Access Federation, p28



▲ 'Tree of trees' to be built for Queen's Platinum Jubilee

Architect Heatherwick Studio has designed a 21m 'Tree of Trees' sculpture featuring 350 British native trees to celebrate the Queen's Platinum Jubilee in June. The sculpture will be built outside Buckingham Palace. After the Jubilee weekend, the trees will be gifted to selected community groups and organisations to celebrate their work.

▼ Solar panels installed at Edinburgh Castle

Edinburgh Castle has unveiled its newly installed solar panels, part of Historic Environment Scotland's (HES) programme to reduce energy use across its historic properties. The solar panels have been installed on the roof of the Scottish National War Memorial. The renewable energy generated is projected to reach approximately 26,500kWh per year, equivalent to around 6,680kg of CO₂.



HISTORIC ENVIRONMENT SCOTLAND



▲ Mosque project scoops ironmongery award

Architect Marks Barfield and architectural ironmonger D Line Eisenware won the Public Health and Education Award at the 2022 Architectural Ironmongery (AI) Specification Awards. They were recognised for their work on Cambridge Mosque. The Guild of Architectural Ironmongers (GAI), presented the awards in conjunction with the Royal Institute of British Architects (RIBA).



◀ 'Robot rat' can inspect underground pipes

Robotics experts at the Manufacturing Technology Centre have developed a 'robot rat' that can scurry through underground pipes and perform inspections. The tetherless wheeled robot has a laser-based navigation module and is aimed at utility companies. Currently, most advanced inspection work uses tethered devices.

Construction modern slavery report 'a harrowing reminder'

Investigation into construction modern slavery ring prompts warning that sector faces particular challenges over ethical labour practices



A major new report based on a large-scale police investigation into labour exploitation in construction is a "harrowing reminder" for the sector.

Dame Sara Thornton, independent anti-slavery commissioner, launched the report, entitled *Operation Cardinas and Beyond: Addressing exploitation risk in the construction sector*.

Operation Cardinas took down a Romanian organised crime group which infiltrated the supply chains of projects across London and the south east for nearly a decade.

The gang put an estimated 300 to 500 victims on to commercial, residential projects between 2009 and 2018. Three members of a

Romanian family were found guilty of modern slavery offences in 2019. Grigore Lupu, then 39, was jailed for 10 years. His older brother Alexandru, 43, received an eight-year sentence while their nephew Valentin, 24, received 10 years.

The Lupus recruited their victims in Romania on the promise of decent wages by local standards. But they were tricked into debt and destitution. In total, the Lupus made an estimated £2.4m from the exploitation. One unnamed construction company contacted by police during Operation Cardinas took action to protect modern slavery victims after unwittingly employing 12 victims.

No organisation can afford to be complacent
 Dame Sara Thornton, independent anti-slavery commissioner

After discussions with police, the company let the workers continue on its sites, allowing the investigation to continue without alerting the traffickers.

Its construction director (who wished to remain anonymous) said: "It's a natural instinct to want to get rid of the risk immediately, but we didn't want to kick the problem down the road. We felt a moral commitment to the people that were being abused."

The director moved all the victims on to one large project and did not give them work that was too physically arduous, and devised a fake pilot scheme to give workers vouchers in the site canteen.

The investigation lasted 18 months, but only four people in the company were aware of what had happened. The construction director said: "Our advice to other organisations is, ask awkward questions. Make sure people are who you think they are. This is a bigger problem than industry realises."

Thornton said: "Construction faces particular challenges in the ethical management of labour. Operation Cardinas is a harrowing reminder that no organisation can afford to be complacent, and that every worker has a role to play in spotting the signs." ●

See Opinion: Caroline Gumble, p13.

CIOB welcomes built environment focus in Queen's Speech

The built environment was a focal point of the Queen's Speech, which marked the official state opening of parliament on 10 May. Setting out the agenda for the 2022-23 session, the Prince of Wales delivered the speech for the first time.

In total, 38 bills were announced, including legislation to drive sustainable investment in public services and empower local economic growth through regeneration.

Five existing bills were also carried over from the 2021-22

session, including the High-Speed Rail (Crewe-Manchester) Bill.

CIOB welcomed the focus on the built environment in the legislative programme, and in particular the alignment of net zero and sustainability priorities with the Levelling Up and Regeneration Bill.

Caroline Gumble, CIOB chief executive, said: "CIOB is pleased that the built environment is a focal point for the government's legislation agenda and will play a pivotal role in addressing the UK's social, economic and environmental ambitions."

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Building Safety Act: ‘Next 12-18 months will be crucial’

CIOB welcomes Royal Assent for Building Safety Bill but secondary legislation leaves much of the detail still to be determined

The next 12-18 months will be crucial

when it comes to preparing construction professionals for the new roles and competencies required by the Building Safety Act. That’s according to CIOB, commenting after the Building Safety Bill received Royal Assent in parliament, bringing it into law.

The Building Safety Act, as it has now become, aims to create “lasting generational change” to the way high-risk and residential buildings are constructed and maintained. It enshrines the Building Safety Regulator into law to oversee a new system with powers of enforcement and sanctions.

Meanwhile, a Construction Products Regulator will have powers to remove dangerous products from the market. Additionally, a New Homes Ombudsman scheme will provide independent redress for new-build buyers who have issues with their new home or developers.

The act will also look to implement a raft of new measures to protect leaseholders from the costs of historic building safety defects. A new ‘waterfall’ system will be established to dictate who is responsible for the funding of

cladding and non-cladding-related remediation. The act will also enshrine a new ‘golden thread’ of information for the storage and dissemination of all safety-related matters in the design and construction of high-risk residential buildings.

But many provisions of the act will not come into force for another 12 to 18 months.

The CIOB welcomed the bill receiving Royal Assent. But Eddie Tuttle, director of policy, external affairs and research at CIOB, added: “This provides long overdue certainty for the industry, though the next 12 to 18 months will be crucial in preparing built environment professionals for the new roles and competencies that will be required.”

And he warned: “Concerns remain that some of the recent amendments, such as removing the duty to appoint a building safety manager, will lead to a lack of clarity over the right competencies and training for those in the ‘accountable persons’ role and potential inconsistency in the implementation of building safety management regimes.”

CIOB said it would continue to help members and the wider industry prepare



for the new regime. To support the implementation of the act, it has launched a Level 6 Diploma in Building Safety and Management, which is designed for construction professionals moving into this key dutyholder role.

The qualification develops the knowledge and skills needed to manage the safety of relevant buildings in occupation, and has been released in conjunction with the Level 6 Certificate in Fire Safety for Construction, which is designed for a range of professions – including dutyholder roles and those working on higher-risk buildings.

The institute will also be creating an asset page to inform members about the act, with links to relevant training and information. ●

Reaction to the Building Safety Act

“Although much of the detail will be introduced in secondary legislation, we are pleased that the act will facilitate the required competence and accountability for those involved in Building Regulations compliance.”

Andrew Leslie, head of membership, Association for Project Safety (APS)

“The act represents a paradigm shift in the way in which residential buildings are to be designed, built, managed and regulated. However, despite the scale of the act and the vast number of amendments, there is still a great deal of detail to be determined through secondary legislation.”

Construction Industry Council

“Those in the sector that ignored Dame Judith Hackitt’s demands since 2018 to ‘get on with it’ now have no excuse not to get to grips with (or face the consequences of) the new Building Safety Act.”

Rebecca Rees, partner and head of procurement, Trowers & Hamlin

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The percentage of small construction companies which have raised their prices in the first quarter of 2022

83

Inflationary pressures risk putting the brakes on construction growth

Market volatility, supply disruptions and rising costs are starting to affect project viability, writes **Kris Hudson**



Despite supply chain disruption over the last two years and an increasingly strained labour

market, pent-up demand has buoyed confidence in the growth of the construction sector's output. That has begun to change.

Activity levels remain robust but Russia's invasion of Ukraine is adding to market volatility. Rising energy costs, commodity price escalation and continued supply disruptions have intensified, pushing tender prices higher.

This combination is feeding into project viability. Compounded by increased interest rates from the Bank of England, the resilience of the sector's growth is being threatened. Investment decisions are now more finely balanced and there is a risk that projects may be postponed or even halted entirely.

This is reflected in revised forecasts. Analysis by the Construction Products Association now places growth at 2.8% for 2022 and 2.2% for 2023, down 1.5 and 0.3 percentage points, respectively, from its January 2022 forecast.

While investors may be tempted to hold back, those looking to postpone decisions might not see tender price inflation reductions materialise.

While investors may be tempted to hold back, those looking to postpone decisions might not see tender price inflation reductions materialise

There are variances depending on project type, location and scope, however tender prices typically increase over time. During the last 50 years, prices have fallen just six times on an annual basis, all of which were linked to recessionary periods.

The Bank of England's May monetary policy report forecasted that Gross Domestic Product might fall in Q4 2022, driven by consumer prices potentially rising to 10% which could also lower disposable incomes and consumer expenditure. Though this demand reduction may place downwards pressure on prices, supply chains remain dislocated.

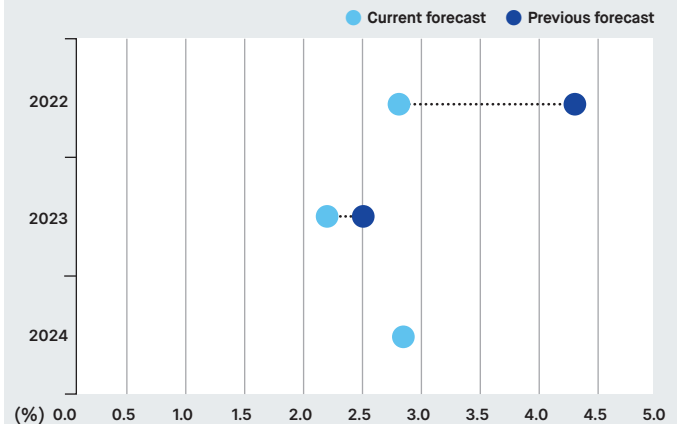
Rising insolvencies continue to reduce industry capacity, which may further escalate prices due to reduced competition. High vacancies and growing wages also add to labour cost pressures.

Even if the UK unemployment rate rises from the 3.8% recorded in the three months to February 2022, skilled labour shortages, exacerbated by Brexit, are persistent in the construction industry and are likely leading to price stickiness.

Rather than assume that changing market forces will combat rising inflation, the more practical advice for projects that are at investment stage is for clients to forecast and assess risk at the outset. Robust cost planning, estimating and value management are also key to making the right decisions. In the face of multiple uncertainties, getting the basics right can be integral when trying to manage price fluctuations and maintain growth in the months to come.

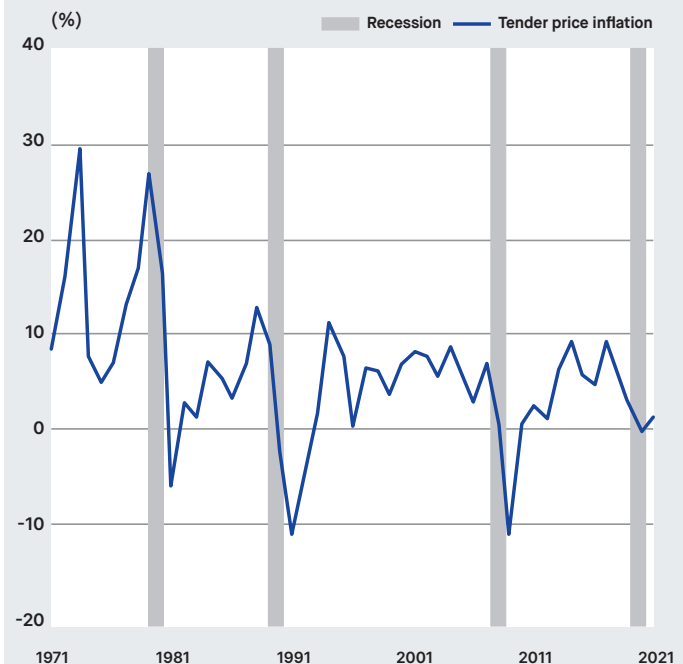
Kris Hudson is an economist and associate director at Turner & Townsend.

Construction output: growth forecasts May 2022, compared with January 2022



SOURCE: CONSTRUCTION PRODUCTS ASSOCIATION

Annual tender price inflation growth over the last 50 years



SOURCE: BUILDING COST INFORMATION SERVICE



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Elizabeth Gardiner
Protect

When should I blow the whistle and how do I do it?

What do you do if you witness wrongdoing at work?

Elizabeth Gardiner offers tips on when and how to blow the whistle

Wrongdoing in the construction industry has the potential to cause serious harm. It is common for staff to see misconduct in some form, yet in many cases they are too afraid to speak up or are ignored.

The importance of being able to safely blow the whistle within the industry may seem obvious: risks of financial wrongdoing or health and safety can affect employers, workers and the wider public. Yet, construction lags behind other industries, with too few companies introducing internal whistleblowing arrangements and employees having to turn to more complex mechanisms.

The Building Safety Act will introduce a new Building Safety Regulator (BSR) to oversee fire and structural concerns in high-rise buildings. Some have expressed fear that the BSR may contribute to the complexity of existing arrangements.

It is true that there are already over 90 bodies on the government's 'prescribed persons' list of regulators. Knowing which to go to can be confusing. Protect can advise whistleblowers who are unsure where to raise their concerns externally.



Don't investigate concerns yourself: it is not the role of the whistleblower to investigate what you have witnessed – just report it as soon as possible

But the first step should be to have an accessible internal whistleblowing policy, with clear routes for workers to raise concerns. Employers may want to include contractors and consultants in their policies: they may be the first to identify risks or wrongdoing.

Some initial tips on raising a whistleblowing concern:

- Consult your company's whistleblowing policy (if there is one): this will detail the steps to be taken and ideally provide further assurances to how you will be protected.
- Get advice: if you are unsure whether or how to raise your concern, contact Protect's free advice line or visit the website.
- Don't investigate concerns yourself: it is not the role of the whistleblower to investigate what you have witnessed – just report it as soon as possible.
- Keep a record: keeping a diary of what you witnessed and when you reported it can be useful, especially where you fear you may be victimised for raising the concern.

Employers should welcome staff raising concerns: whistleblowing is good for business, as workers are raising concerns that the organisation may not be aware of, allowing it to investigate and take action to prevent disaster and damage.

Staff need to feel comfortable speaking up, confident that their concern will be listened to, and that they will be supported throughout. One of the main reasons people don't speak up is the fear of victimisation. ●

Elizabeth Gardiner is chief executive for whistleblowing advice provider Protect.

Top tips for organisations include:

- Lead from the top: senior management must send a strong message that they want people to come forward with concerns and those who do so will be protected.
- Provide options for raising concerns and access to

independent advice: make it as easy as possible for people to raise concerns. Include internal and external options in your policy and ensure staff know where to go for expert advice in complex situations.

- Train your board, managers and staff: make sure managers know how to encourage and

handle whistleblowers, and that staff understand the importance of raising a concern if they see wrongdoing and how to do it.

- Promotion is key: use a variety of methods regularly to ensure staff awareness and understanding.
- Triage effectively: investigate fully and objectively, protecting the identity of the individual.

Feed back the outcomes of an investigation as much as possible.

- Review arrangements regularly: are your staff confident in raising concerns? How do you know your arrangements are working? Enhancing your whistleblowing arrangements is a continuous journey allowing you to learn from past experiences.



Caroline Gumble
CIOB

No room for complacency on modern slavery

A new report on the drivers of modern slavery in construction has shown how construction firms can unwittingly end up using unethical sources of labour. It's essential to remain vigilant, says **Caroline Gumble**

The Independent Anti-Slavery

Commissioner's report on the drivers of labour exploitation in construction makes for eye-opening reading. Part of the report is an analysis of Operation Cardinas, a police investigation into an organised crime group which infiltrated the supply chains of major construction projects across London and the south east for nearly a decade.

One of the things that struck me is that it is possible for businesses to unknowingly get caught up in labour exploitation, or even modern slavery, through links in the supply chain. Hundreds of victims of forced labour, as a result of the criminal gang's activities, were working on construction sites in the period covered by the investigation. There's an interview with the director of a subcontractor that got unwittingly caught up in employing victims of modern slavery elsewhere in this issue of *Construction Management* (see p6), which is well worth a read.

But it is absolutely essential to recognise there is just no room for complacency when it comes to measures

to avoid modern slavery. Labour exploitation – with modern slavery being at the extreme end of the spectrum – has been an issue in our industry for far too long now and, while our comprehensive report on modern slavery in 2018 helped raise awareness and outline a route map to better business practices, criminal gangs are continuing to evolve how they operate.

I want to echo Dame Sara Thornton's comment in the report that collaborative working is so important in combating labour exploitation – and that clients can provide support to their supply chain and be hugely influential as a key part of the construction process.

I strongly urge everyone in the built environment sector to read this report and understand the lessons there are to be learned in the 'Evolving Best Practice' section. Given the skills shortage and the current demand and pressures on the construction industry, it is right that eradicating modern slavery remains a priority, throughout the sector.

The CIOB's Policy and Public Affairs team is analysing the report, with a focus on what progress might have been made since our report into modern slavery published in 2018. CIOB's full response to the new report from the commissioner will be published shortly.

Operation Cardinas and Beyond: Addressing exploitation risk in the construction sector can be found on the website of the Independent Anti-Slavery Commissioner. ●
Caroline Gumble is CEO of CIOB.

Four ways to get involved this World Environment Day

World Environment Day on 5 June is an opportunity to inspire, share and innovate, says **Emma Wilcox**



For World Environment Day 2022, the chosen global theme is 'Only One Earth', emphasising the importance of a shift towards a sustainable way of living for all.

The Society for the Environment (SocEnv) is working to champion World Environment Day in the UK and beyond, alongside key partners, including CIOB.

Here are four ways the construction community can get involved:

- **Get inspired:** Find out why this year's theme is so important to chartered environmentalists, including CIOB members.
 - **Share your good practice:** There is so much good practice out there, which can be shared to inspire others. Be sure to share your good practice in whatever way you can.
 - **Spread the word:** Bring people together by organising or joining an event or campaign to help people take action. You can also engage with the #OnlyOneEarth hashtag on social media.
 - **Increase your professional influence:** Professionals demonstrating environmental expertise via chartered status help to amplify influence and impact. If you're not one already, consider becoming a chartered environmentalist (CEnv) via your CIOB membership to increase your professional credibility and make connections with other changemakers.
- Find out more about this year's theme via SocEnv's dedicated #OnlyOneEarth webpage: socenv.org.uk/world-environment-day-2022.
Dr Emma Wilcox is chief executive of the Society for the Environment.



Collaborative working is so important in combating labour exploitation – and clients can provide support to their supply chain and be hugely influential as a key part of the construction process



'Diversity starts at the top'

ISG's new leadership team of Matt Blowers and Zoe Price tell **Neil Gerrard** what's different about their plan to attract top talent

The guard has changed at ISG. After six years as its CEO, Paul Cossell stepped down at the end of last year to become vice chairman. In his place, Matt Blowers – a 24-year veteran of the business – has taken up the role. Supporting Blowers is Zoe Price, chief operating officer for ISG's UK operations.

Together, Blowers and Price are making diversity within the company's workforce one of their top priorities.

A signal of ISG's intent can be seen in the make-up of its board – three of its seven members are women. But the contractor's leadership wants to go significantly further, while acknowledging that there are obstacles along the road.

Diversity importance

So why is increasing diversity so important for ISG?

"It is widely known that a diverse workforce makes us more efficient," says Blowers. "It gives us better solutions to problems and helps us to think differently. Our industry is at a pivotal point. It is on the brink

of changing the way we are and how we are seen."

Price adds: "All of us want to leave the industry in a better place than when we joined. I think the pandemic put us in a good place for that – we reacted well. We took on board a completely new way of working and it was a catalyst for huge change. Now we must think about how we keep that momentum going. We know that diversity makes us think differently. And if you have people that think differently, then you can achieve more."

To that end, the company is following a five-year diversity strategy called 'Reaching for Balance'. The plan aims to accelerate the recruitment and retention of a balanced workforce at all levels.

That's easier at some levels than others, Blowers explains. "It's simpler to attract diverse talent at a younger entry level. We also have a very diverse executive team. But it's the middle section where we really need to focus," he says.



All of us want to leave the industry in a better place than when we joined. I think the pandemic put us in a good place for that

Zoe Price, ISG

ISG is working to make its recruitment process fairer and more balanced for women and ethnic minorities. But other initiatives will feed into it too, Blowers says. These include ISG's flexible working policy, which he hopes will remove barriers to success that some employees may previously have experienced.

Blowers explains: "The hybrid working policy we have got isn't just restricted to office-based people. It is all about the individual. Everyone's circumstances are different. It is not restricted by saying: 'You will be in the office or on site three or four days a week.'

"It is designed around agreeing with your line managers and your team how best you cover your roles collectively as a unit. When you start doing that, then you can start to understand how flexibility can be introduced into all roles, including site roles."

Price says that feedback from within the business indicates that ISG's people see role models as important. ►



◀ Zoe Price and Matt Blowers: making diversity a top priority

“If people see others from a diverse background in a leadership role, then they are more inclined to believe that there isn't a glass ceiling.”

Zoe Price

“We know that diversity makes us think differently. And if you have people that think differently, then you can achieve more.”

Zoe Price

“Our hybrid working policy isn't just restricted to office-based people. It is all about the individual. Everyone's circumstances are different.”

Matt Blowers

“We are trying to transform the way people perceive our industry... that is the way we are going to attract talent from different industries.”

Matt Blowers

"If people see others from a diverse background in a leadership role, then they are more inclined to believe that there isn't a glass ceiling and that they themselves can achieve that."

The company has moved on from showcasing building projects on social media to highlighting the people involved in the build and the wider significance of a project. For example, if the company is building a lab, ISG emphasises the fact that its workers are, in their own way, helping to contribute to the fight against diseases like cancer.

Blowers says: "I talk to every person who joins the business at an onboarding forum. We use the example that, in all the sporting facilities we have provided, over 240 world records have been broken. That puts into perspective the benefit we can have to society. When you start to do that, you can really encourage people to think differently about what construction is."

Influencing perceptions

Reaching potential new recruits at a young age and influencing their perceptions of the industry is important too, Price says. ISG has been working with colleges on T-levels to make them "more exciting and less traditional in their approach".

The effort extends even into pupils just above primary level, using ISG's WOWEX (World of Work Experience) programme. This offers a taste of life in the industry, with work on imaginary pitches and visits to live sites.

"Around 170 people took part in our latest WOWEX initiative and out of all of those, 70% of those said they would probably consider a career in construction," says Blowers.

Meanwhile, ISG's early careers intake is currently split between

40% female and 60% male. Price is hopeful that this could reach 50/50 by next year. Blowers adds: "Our talent team says that in terms of both gender and ethnicity, the diversity among our intake of 160 early careers entrants is looking positive this year. Hopefully that means some of the tactics we are using to find these people is proving beneficial. But it is the start of the journey. It takes a long time to make a difference to the middle and senior management."

Workforce reaction

In an industry where white male workers are over-represented, how will the wider workforce respond?

Price says that this was discussed at a recent International Women's Day event ISG held, attended by over 300 people. The key message is to respect everyone, regardless of their background, she says.

"They are all individuals, they all have a different view, and their voices are equal," says Price. "If we could all take that away as one piece of learning, how much more diverse would we be?"

She adds: "People find that emotional connection. And I think that was why Covid was important because everybody saw everyone else's personal lives. They realise that everyone else is trying to juggle 10 different things I think that makes them more appreciative and more emotionally intelligent."

Blowers advocates simply talking to people to understand their point of view. "If you talk to people and get their feedback, then you can really shape the strategy," he says.

"We want to be an aspirational place where people want to come and work. Everything we are trying to do is to be different and transform the way people perceive our industry. That is

CV: Zoe Price



- Chief operating officer, ISG, since 2019
- Group director for public sector frameworks, ISG, September 2017 to January 2022
- Business development director, UK construction west, ISG, October 2016 to September 2017
- Account director, Willmott Dixon, January 2016 to September 2016
- Business development director, January 2012 to January 2016
- Business development director, Morgan Sindall, June 2002 to January 2012

CV: Matt Blowers



- CEO, ISG, since January 2022
- Chief operating officer, ISG, January 2019 to January 2022.
- Managing director for UK Fit Out, UK Construction South and UK Hospitality, 2014 to 2019.
- Joined ISG in 1998 as an assistant construction manager.
- Nominated for CIOB Construction Manager of the Year Award for BP's 20 Canada Square.

the important thing for us because that is the way we are going to attract more diverse and better talent from different pools and different industries. It is clearly what we need to do given the rate of change we are experiencing as an industry."

Price concludes: "If people read this and can be inspired about what the future looks like, then that would be great." ●

Sea site

Morgan Sindall is building the new Great Yarmouth Marina Centre beside the beach. **Kristina Smith** hears about the construction challenges from senior contracts manager John Stedman

Viewing the new Great Yarmouth Marina Centre from above, through the eyes of a drone, it looks like five or six linked buildings. In fact, it is just one with nine different roof levels.

This building had to look interesting. It is replacing the previous Marina Centre, a brick-clad structure, and has been designed by Saunders Boston Architects to be more sympathetic to its surroundings. Although the finished building will not be quite as striking as the architectural images released back in 2019 suggested, its variety of shapes and levels, together with a curved glass facade along the side facing the sea, make Marina Centre Mark II more pleasing on the eye.

For Morgan Sindall, which won the design-build contract to build the £26m centre at the end of 2020, the centre’s unique geometry adds to the challenges that this type of project always bring.

“Leisure centres are notoriously tricky,” says Morgan Sindall senior contracts manager John Stedman. “We have had that message instilled into us by the senior management team that we should make sure that no stone was left unturned.”

Some of the stones turned by Stedman and his team have included the specification and treatment of materials for a marine environment, getting the waterproof concrete for the pools right and dealing with the high ground water table that sits beneath the building.

Leisure centres are notoriously tricky. We have had the message instilled into us that we should make sure that no stone was left unturned
John Stedman,
Morgan Sindall

Coastal revival

Like many English coastal towns, Great Yarmouth is a seaside resort which hopes to regain the popularity it enjoyed during the last century as UK families rediscover the joys of staycations over cheap package holidays in the sun. Great Yarmouth Borough Council, which provided most of the funding for the new Marina Centre, hopes that this development will help with that ambition.

The previous Marina Centre was built in the early 1980s, doing over 40 years of sterling service. The council did consider refurbishing it, but in the end decided that a more affordable long-term solution would be to demolish it and start again.

The new building has a significantly smaller footprint than its predecessor but contains many of the same facilities. There is a 25m, six-lane pool, a learner pool with movable floor and a leisure pool with two flumes. There will be a route through the building from road to beach, providing opportunities to attract custom for a cafe on the way through. The building will also house a four-court sports hall, a gym and a climbing wall.

The council appointed Freedom Leisure to run the centre in November 2021. The operator has required some changes, says Stedman, although the building was already high spec: “We have worked together to incorporate ►

Project team Great Yarmouth Marina Centre Client: Great Yarmouth Borough Council Contractor: Morgan Sindall	Architect: Saunders Boston Architects Project and cost manager: Mace Structural and civil engineering consultant: Furness Partnership	Cost: £26m Contract: JCT design and build 2016, two-stage Programme: 79 weeks Start on site: January 2021	Completion: July 2022 Specialist contractors: Vibro piling: Keller Concrete: Acrabuild Steelwork: H Young	Cladding: A20 Roofing: Voland Roofing, S&G Industrial Roofing M&E: Kershaw Mechanical Services, FG Fennell, Allied Building Services	Pool: Barr and Wray Flumes: WhiteWater Movable floor: Variopool
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Morgan Sindall won the design-build contract to build the £26m centre at the end of 2020

▼ The seafront location of the Great Yarmouth Marina Centre site





▲ A CGI showing the building's curved glass facade on the sea side

▼ The contractor installed 'helping hand' brackets off the steel frame to support the cladding

changes as best we can, some as variations and some we have been able to accommodate."

De-risking interfaces

The contract to design and build the new centre was awarded over two stages. Stedman prefers this route because it allows more planning and preparation time: "For me that's better than single-stage bids where you have to react really quickly and have less mobilisation time."

The design team, led by architect Saunders Boston, were not novated over on this project; instead, the council agreed to take responsibility for the design up to Stage 4, at which point

the contractor took over the employment of the designers.

Work on site started in January 2021 with earthworks to reduce the ground level, followed by the installation of vibro piles across the site. The demolition of the previous building had already been done under another contract.

In operation the 'wet' area of the building, which houses the pools, and the dry side, with the other facilities, will be separated by an environmental line: a membrane to prevent the aggressive chlorine-laden air getting through. "The membrane is very expensive and needs a really high level of quality checks to make sure that it is installed and lapped and sealed correctly," says Stedman.

Stedman came up with the idea of separating the wet and dry areas of the building from the earliest stages of construction with a sheet pile wall which then wrapped around the section of the building which will house the three pools and the basement which contains their filtration systems. This meant contractor H Young could

The membrane is very expensive and needs a really high level of quality checks to make sure that it is installed and lapped and sealed correctly

John Stedman,
Morgan Sindall



erect the steel for the dry section as the excavation and concrete work for the wet section was under way, rather than waiting for everything to be ready at ground level.

"Removing an interface means that you are de-risking it," explains Stedman. "You are not reliant on finishing one activity before you can move on to the next."

Another risk was the water table below the site. Morgan Sindall needed to determine what level it sat at and whether it fluctuated with the tides in order to plan its dewatering strategy for the wet side of the building.

The solution was to dig a 1.5m-deep hole and install a prefabricated manhole chamber, monitoring the level for a few months. This showed that the ground water was not tidal; fluctuations were seasonal rather than daily and the water was not saline – something Stedman confirmed with the use of a refractometer, an instrument he is more than familiar with, since he keeps saltwater fish as a hobby.

The dewatering strategy involved digging 1.5m-deep wells around the perimeter of the sheet-piled areas. The plastic tubes that formed the wells were all linked, leading to three pumps, set up to extract water at a certain rate. The water was discharged at the other end of the site in a temporary soakaway. "Because the ground is sandy, it drains really easily," says Stedman.





Getting the concrete mix design right was another upfront activity that required a lot of attention, says Stedman. Not only must the concrete keep the water in the pools, it must keep the groundwater out of the filtration equipment basement. The selected mix has a high amount of cement replacement – ground granulated blastfurnace slag (GGBS) – and an additive from supplier FIS which reduces the permeability and water absorption of concrete.

Stedman decided to test the performance of the waterproof concrete early in the programme. This involved filling the shaft with

water and measuring water loss in line with British Standard BS 8007: *Design of Concrete Structures for Retaining Aqueous Liquids*. “Lots of theory had been applied to this element of works so we decided to test it and mock up the details in the lift shaft. That allowed us to proceed with further confidence.”

Harsh environment

One of the elements which has made this project interesting for Stedman is working in a marine environment. While swimming pools are aggressive environments due to the chlorine and other chemicals deployed in them, the products and

▲ The new Marina Centre building has nine different roof levels

materials used in this build had to endure even harsher conditions during the construction phase.

This has meant interrogating the specifications, ensuring that things are installed and treated correctly and then going through every detail of the warranties and guarantees to make sure they will be valid. “It has been a big journey to understand that,” says Stedman. Measures that came as a result have included additional layers of protective coating on the steel frame and the instigation of annual cleaning on the building’s aluminium cladding.

There’s a variety of cladding materials on the centre: buff ►



What has been nice is that a lot of the subbies have been quite keen to work on the job because of their memories of Great Yarmouth from the past

John Stedman,
Morgan Sindall



equipment in the leisure pool on the Britannia Leisure Centre in Hackney, east London. It is impossible to find local firms to do such work, since the work is so specialist that few of them exist worldwide, explains Stedman.

Those very specialist elements aside, many of the subcontractors on this job have come from Morgan Sindall's established supply chain in the eastern region. That means that quite a few of the people working on the new Marina Centre have fond memories of the old one.

"What has been nice is that a lot of the subbies have been quite keen to work on the job because of their memories of Great Yarmouth from the past," says Stedman.

Unfortunately, one of the contractors on the scheme, M&E specialist Kershaw Mechanical Services of Cambridge – a firm with a 75-year history – went into insolvency earlier this year, something that Stedman does not want to comment on. That just goes to show that it is impossible to turn every bad stone on a project like this.

However, Stedman remains confident that the Marina Centre will be handed over on time in July this year. If that happens, the combination of invested workers, meticulous planning and de-risking of interfaces will have paid off. "It will be the best project of my career when completed," says Stedman. ●



bricks up to a certain level, perhaps to remember its forebear, then VitraDual aluminium cladding and the curved curtain walling. Morgan Sindall removed another interface in planning the cladding construction; rather than having to wait for the brickwork to be complete before installing the aluminium cladding on top, the contractor installed 'helping hand' brackets off the steel frame to support the cladding.

In April, Netherlands specialist Variopool was installing the movable floor in the learner pool. Morgan Sindall has worked with them recently and with Canadian contractor WhiteWater, which is responsible for the flumes and play

- ▲ Variopool installed the movable floor in the learner pool
- ▲ The CGI shows how the pool will look when complete



RICHARD JARMY PHOTOGRAPHY

CV: John Stedman MCIOB

John Stedman didn't understand the point of studying when he was at school, but all that changed when he started working for regional contractor RG Carter and got an appetite for learning.

He followed an apprenticeship as a carpenter with a foundation degree in Construction followed by a first class BSc in Construction Management and later a NEBOSH health and safety qualification.

"Getting a degree was quite significant for me because of the application that was required to get it. I could not have done it after my A-levels," he says.

"People take different times to mature. My advice to anyone starting out would be to find something you are really passionate about and to believe in yourself. That's massive."

After 11 years with RG Carter, Stedman moved to Morgan Sindall six years ago and hasn't looked back. He was promoted to senior contracts manager in 2019. He loves complex jobs with technical details, like the linear accelerator facility for Norfolk and Norwich University Hospital that he worked on when at RG Carter – and the Marina Centre.



architectural acoustic finishes

Oscar Elite in Auriens, Chelsea.

Oscar Elite applied to ceilings throughout the exquisite swimming pool of Auriens - Luxury Later Living Residences in London.

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With our extensive range of recycled and fire-rated architectural acoustic finishes, we enable designers to create beautiful, calm and inviting spaces, that sound as good as they look.

Imager credits to Sim Canetty-Clarke & Auriens, Chelsea.



OSCAR
acoustics

After red diesel, plant's digital future

The construction equipment sector is raising productivity levels through tech investment. **Peter Haddock** talks to plant's digital innovators

Digital transformation has taken the plant sector by storm over the past year. Major clients are demanding machine control technology, while concerns about emissions have forced the industry to focus on improving productivity.

"When both National Highways and HS2 mandated the use of machine control, rental fleets began to retrofit machines," notes Neil Williams, UK director for heavy construction at machine control specialist Leica Geosystems.

"Added to that, the acute shortage in operators, the road to net zero emissions, COP26 and fuel costs have focused minds. The

change from red to white diesel in April 2022 is the latest catalyst for technology adoption."

National Highways used the Futureworx exhibition in March to launch the next phase in its Digital Roads Strategy, through its industry-led Connected and Autonomous Plant (CAP) group. It unveiled a new industrywide scoring system which rates equipment according to its level of automation.

Annette Pass is head of innovation at National Highways. "This standardised measure, the first of its kind, will offer clarity and a clear way to compare different types of machinery to suit different tasks," she explains.

▼ Modelling earthworks using Agtek Gradework software

► Growth in digital tech is helping drive plant productivity



We see a future where the operator may not be in the machine and could even control it from the

other side of the world

Annette Pass,
National Highways



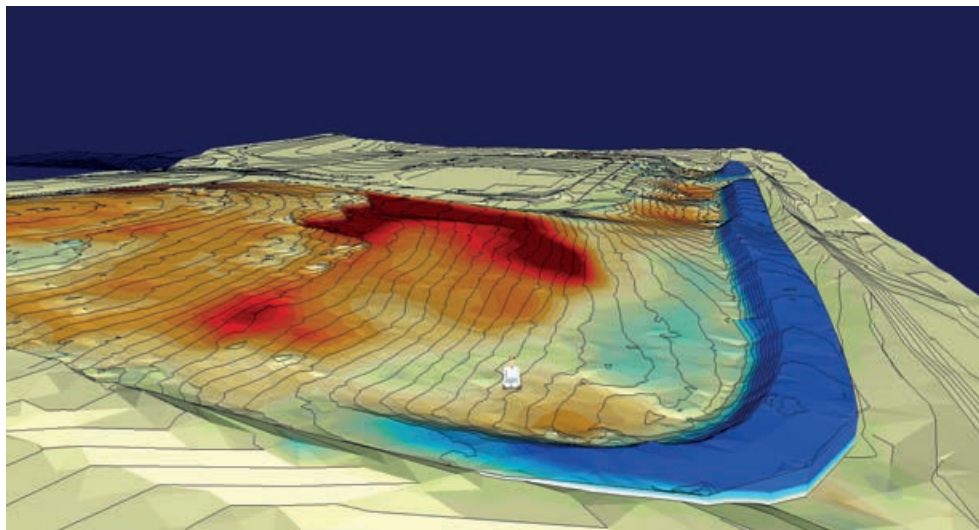
"It's a key part of our CAP Roadmap that we launched jointly with i3P (Infrastructure Industry Innovation Partnership) in June 2020. This supports our goal of making automation business as usual in construction by 2035.

"With our new CAP Levels Maturity Matrix, we can establish a common language and framework so connected and autonomous plant can be deployed on construction schemes. This gives suppliers and manufacturers a simple way of describing the capability of their products, with everyone using the same language."

Pass believes CAP can improve productivity by more than £200bn by 2040 in the construction sector.

"We are committed to making it standard industry practice.

"We have already benefited from mandating intelligent machine control on our projects. We see a future where the operator may not be in the machine and could even control it from the other side of the world." ►



Annette Pass of National
Highways believes CAP can
improve productivity by
more than £200bn by 2040
in the construction sector

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Mark Lawton,
Skanska

The digital inputs for a modern machine are like those of a manufacturing style robot



Tier 1 contractors are supporting the plant sector's digital transformation. Mark Lawton is head of engineering for Skanska. He describes the adoption of machine control as a "herd of elephants" running straight at the plant industry.

"The digital inputs for a modern machine are like those of a manufacturing-style robot," he says. "The machine needs very simple inputs to perform the right tasks and, in turn, output the data to tell us what it has completed.

"The challenge, therefore, is to ensure we have the right data inputs, and that means designing 3D models for the machines, not just the project. This requires new digital skillsets across the board and investment in training. We need to attract digitally minded talent. This needs to happen at every level, from surveyors to engineers and site managers to operators."

Lawton's vision is a digital earthworks twin. "We could then undertake digital rehearsals with the client before a machine is specified for the job," he says. "This would also allow experts from all parts of the world to collaborate, enabling the best possible project outcomes."

This will partly depend on the technology infrastructure, Lawton says. "We need the ability to connect individuals and machines together through a robust GPS network," he says. ●

Connecting machines via one project dashboard

At Futureworx, Plantforce Rentals showed how it is remotely monitoring site work in real time

Plantforce Rentals is one hirer demonstrating the potential for digital tech on heavy construction projects. At the Futureworx show in March, it set up a live 'connected site' demonstration, which linked all machines together on a single project dashboard. The hirer operated this from its training facility, run by LP Training near Stratford-upon-Avon, some 80 miles away from the event.

The company used a fleet including two Kobelco excavators, one with Leica Geosystems' semi-automatic system, the other with

Trimble 3D machine control, and a Trimble-enabled Cat dozer. They were linked together by telemetry specialist MachineMax's equipment management platform.

Plantforce COO Sam Mercer says: "The MachineMax solves one of the biggest industry problems, collating information from different machine types into one dashboard. This allows us to take data and turn it into useful information, which is in turn fed to the people managing the operation."

Plantforce connected each machine to the platform using a magnetised telemetry box that picks up the equipment manufacturer's API. This is a data feed available from the machine, which allows real-time



This solves one of the biggest industry problems, collating information from different machine types into one dashboard

Sam Mercer,
Plantforce Rentals



activity to be measured, whether in operation or idling.

"In this case, our team were monitoring activities like digging, grading and hauling, picking up on productive and idling times, fuel burn and CO₂ emissions," explains Mercer. "Idling is when the machine is being unproductive yet using fuel, so this is a key focus for us. We can alert site managers to excessive idling by setting alerts and best practice benchmarks.

By looking at data in real time, he says, a site management team can work out how much fuel is used for specific tasks. They can pick up productivity issues – such as a traffic jam of articulated dump trucks due to poor weather conditions impacting cycle times – and act immediately.

"Plus, there is the benefit of theft prevention and knowing where every asset is at any time, which was how telemetry first made a big impact in the industry," he adds.



▼ Hirer Plantforce can link information from different machines on a single project dashboard



It's important to constantly look at how we can improve safety on site, particularly

for mobile plant

**Michelle Dearsley,
Countryside**



this across our sites, the first housebuilder in the UK to do so."

One of Countryside's plant hire partners, Arden, has introduced the Safety Shield technology on its JCB telehandlers.

The AI solution uses software and 360 video cameras fitted around the machine to identify the human form, differentiating it from other objects around the site. If an individual moves into the amber or red zone around the machine, or the machine is moving too close to an operative performing a task, it alerts the operator in the cab and sounds an audible alarm.

The active nature of the system also stops the machine, automatically preventing an accident from happening. The cameras, which roll constantly, also record a clip before, during and after an alert, sending information to the Countryside team in real-time. Safety Shield also provides a monitoring service to support customers.

Safety Shield CEO Jonathan Guest says: "This approach makes a huge impact on sites as operators are supported by 360-degree digital eyes around the machine. Because the videos are captured on site, they are impactful and help to change behaviours. Some of our customers have even changed the way they manage tasks to make them safer." ●

Using AI to drive plant safety

Countryside has introduced anti-collision technology from Safety Shield to prevent accidents on its housebuilding sites

Housebuilder Countryside recently mandated AI-driven anti-collision technology from tech firm Safety Shield for construction machines on its sites.

Michelle Dearsley is Countryside's group health and safety director. "We all know that construction is a high-risk environment, so it's important

to constantly look at how we can improve safety on site, particularly for mobile plant," she explains.

"We use a lot of telehandlers around our sites and recognised new technologies were coming into the market. We trialled various systems and ended up happily working with an AI solution from Safety Shield. We've introduced

▲ Countryside is using AI anti-collision tool Safety Shield on its sites

'Learning by doing'

Karin Nars, managing director of Finland's Dinolift, is the first female president of the International Powered Access Federation in its 40-year history. She spoke to **Neil Gerrard**

How did you get into powered access?

I have been in the industry since 2004, in our family business Dinolift. I studied business and entered the company in a sales role, and later took over the leadership of the company after my father passed away. My connection with the International Powered Access Federation (IPAF) started in around 2010 when I started filling in for my father on the IPAF council. In 2014, I was elected on to the board of IPAF.

My career in powered access has been an interesting experience and I would describe it as 'learning by doing'. I was thrown into the deep end. It is easy to connect with people in this industry, form networks and learn from others. That was a very good thing for me since I came from the outside and had to quickly understand what it is all about.

Tell us more about Dinolift.

We are a €40m turnover company and our main markets are the Nordic countries, northern Europe and North America. Our main product is trailer-mounted lifts but during the past few years we have also added some different self-propelled models, a tracked lift, a truck-mounted lift and a 4x4 wheel-mounted lift. We have over 200 people in the company, based in a small town called Loimaa, about two hours from Helsinki.

How does it feel to be the first female president of IPAF?

It's good. Of course, it took almost 40 years but I will use this as a positive thing. If you look at IPAF, the council and the senior team, we have a lot of skilled women who have fantastic careers.

What are your key objectives for your presidency?

I have been part of IPAF's board and working on its three-year plan already. As the first woman in this position, I have launched an initiative called Women in Powered Access, which celebrates women's achievements in the sector and sets out career pathways for women in the industry and those who want to join it.

Digitalisation of the training processes is a good thing for the whole value chain, and then of course there is the ePAL app, which is a huge opportunity in many ways, both from an effectiveness point of view but also when thinking about accident or near-miss reporting.

How do you see the future of the powered access industry?

As IPAF grows in new regions like Asia and North America, it creates opportunities for rental companies and an organisation like IPAF to support customers to create a structure around safety.

With new technologies, we can reach a new audience much better than before. Every operator in a MEWP has a smartphone, which is a really strong communication tool, so through the ePAL app there are powerful opportunities for IPAF to communicate with the users. ●



It's good. Of course, it took almost 40 years but I will use this as a positive thing

Karin Nars,
Dinolift



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Landsec forges ahead

The shortlists for the Digital Construction Awards have been announced and Landsec's Forge leads the pack. **Justin Stanton** reports

◀ The Forge has been listed in categories including Best Use of Data and Project of the Year

The shortlists in full

Best application of technology

- ARC – automated cable routing management system, Bryden Wood with Transport for London
- Social Value Digital Hub, Vinci Construction UK
- Digital progress tracking with automated reporting, Taylor Woodrow
- Improving the operational performance of higher and further education buildings, Integrated Environmental Solutions with the University of Edinburgh and Schneider Electric
- The Living Lab, Ethos Engineering
- Royal Free London NHS Capital Projects PMO reporting tool, Royal Free London Property Services, in conjunction with Royal Free London NHS Foundation Trust and Turner & Townsend

Best use of data on a project

- 51 Moorgate, Skanska UK
- Applying smart data connection at the HCA Cancer Care Hospital,

Vinci Construction

- ARC – automated cable routing management system, Bryden Wood with Transport for London
- 360 real-time reporting, Multiplex
- QFlow on SCS, SCS Railways and Q Flow with HS2
- The Forge, Sir Robert McAlpine and Mace

Delivering net zero with digital innovation

- 51 Moorgate, Skanska UK
- ARES Prism cost and carbon estimation and management, ARES Prism with the Environment Agency and AECOM
- Carbon reduction plans: an exercise – Lynch with Skanska Costain Strabag JV
- Combining IoT with BIM to create a digital twin environment, ONE Creative environments
- EOC ECO 2, Eckersley O'Callaghan
- Printrastructure: low carbon, graphene-enhanced 3D construction printing for HS2, Skanska Costain Strabag JV with HS2 Innovation Programme and ChangeMaker 3D



Landsec's MMC demonstrator project, The Forge in Southwark, south London, leads the nominations for the Digital Construction Awards.

The office development is shortlisted in five categories: Best Use of Data; Project of the Year; Offsite; On-site Productivity; and Digital Partnership. The Forge involves Bryden Wood, Sir Robert McAlpine and Mace.

Bryden Wood scored another pair of nominations in Best Application of Technology and Best Use of Data with its automated

cable routing management system with Transport for London.

Mace dominates the Digital Innovation in Offsite category, in which all three shortlisted entries focus on a different Mace project.

Skanska was shortlisted 10 times in total across six categories.

Multiplex and Vinci Construction secured three nominations, while BAM Nuttall and Taylor Woodrow are each shortlisted twice.

The awards attracted more than 120 entries, of which 63 were shortlisted across 11 categories. Entries were judged by a panel of impartial industry leaders.



The awards attracted more than 120 entries, of which 63 were shortlisted across 11 categories

There is no shortlist for Digital Champion of the Year: the winner will be revealed alongside the other 11 victors at the awards dinner on 12 July at the Brewery in London.

The awards are run by Digital Construction Week, the Chartered Institute of Building, and media titles *Construction Management* and *BIMplus*. Sponsors include Revizto, Bluebeam, Procore, Autodesk, Solibri and the Association for Project Safety. ●

Join the shortlisted entrants by booking your places at: www.digitalconstructionawards.co.uk.

Digital construction project of the year, sponsored by Revizto

- Advanced Research Centre, University of Glasgow, Multiplex with the University of Glasgow, HOK Architects and WSP
- East West Rail Alliance – Bletchley Flyover, East West Rail Alliance (Atkins, Laing O'Rourke, Network Rail, VolkerRail)
- Thames Gateway (Desalination) Recovery Project, MWH Treatment Skanska Balfour Beatty JV with Thames Water
- The Christie at Macclesfield, Vinci Construction
- The Forge, Sir Robert McAlpine and Mace
- Transpennine Route Upgrade – West, BAM Nuttall with Network Rail, Arup and Amey

Digital excellence in a construction business, sponsored by Autodesk Construction Cloud

- AKT II software ecosystem 'Re.AKT', AKT II
- BIM360 Escape the hospital, Hoare Lea

- Digital Driven by Desire, Vinci Construction UK
- SCS Innovation – Leaving a Legacy, Skanska Costain Strabag JV working with HS2
- Skanska GeoBIM: The Geospatial Digital Twin for Infrastructure, Skanska and National Highways
- Working Smart, Ardmac

Digital excellence in a construction SME

- BIMBox
- Cooper Moss Rutland LLP
- MachineMax with HS2 and Align JV
- Nuspan Flooring
- Royal Free London NHS Capital Projects PMO reporting tool, Royal Free London Property Services, in conjunction with Royal Free London NHS Foundation Trust and Turner & Townsend
- Visual 5D

Digital innovation in design

- Analysing human emotional responses to building and space design, Chetwoods
- East Bank, Queen Elizabeth Olympic Park, Allies and Morrison

- East Wick & Sweetwater, astudio & Etude
- Frilford Heath Staircase and Cabinetry, Future Joinery Systems with Casa Architects, JPT Carpentry, 4D Routing and Sydenhams
- LightSIM Controls App, Hoare Lea
- MView: Visualisation to Optimise Water Treatment Process Design, MWH Treatment

Digital innovation in health, safety and wellbeing, sponsored by the Association for Project Safety

- Coventry City Council Retail Quarter Project, Paperless Construction with Eurovia
- Fit For Work, fitforwork.ai
- Rochdale Town Hall Project – Phase 1/1A, Safer Sphere with Rochdale Borough Council, Rochdale Development Agency, and HH Smith Contractor
- SkillShield, Make Real and Keltbray
- The Living Lab, Ethos Engineering

- UCL Pearl Project, A building to house the world, UCL Civil Engineering Dept and Estates Development Dept, Transport for London, with Penoyre & Prasad Architects, AECOM, Volker Fitzpatrick, Atkins, Turner & Townsend, Stantec, BIMSafed and Briggs & Forrester Facilities Management

Digital innovation in offsite construction

- 33 Charterhouse Street, Prism & SES
- KOPE, Mace HRS
- The Forge, Bryden Wood with Landsec, Sir Robert McAlpine, Mace and NG Bailey

Digital innovation in on-site productivity, sponsored by Procore

- Black Potts Weir – Flood Alleviation Scheme, Lynch with BAM Nuttall
- Crane telematics, Skanska UK with Select Plant Hire
- Digital progress tracking with automated reporting, Taylor Woodrow

- SCS JV Temporary Works On Behalf Of HS2
- The Atom on mission-critical projects, XYZ Reality
- The Forge, Bryden Wood with Landsec, Sir Robert McAlpine and Mace

Digital partnership, sponsored by Bluebeam

- Bespoke fitted seating, Future Joinery Systems with South West Upholstery, 4D Routing, Sydenhams CNC
- Clarice Pears Institute of Health & Wellbeing building at The University of Glasgow, Qualis Flow with Multiplex and Zero Waste Scotland
- Goldeni's IoT influencing the design and fit-out for commercial offices, Morgan Sindall with goldeni and Microsoft
- The Digital Cube, Digital Construction Technologies with Collen Construction
- The Forge, Landsec, Sir Robert McAlpine, Mace and Bryden Wood
- University of Glasgow ARC Research Hub, Multivista with Multiplex



▲ Green roofs must be designed to keep vegetation above any standing water

Avoiding common roof defects

Roofing defects are all too common and can occur at the design stage of your project as well as during construction. This CPD, in association with Garland UK, looks at the most commonly encountered problems and how they can be avoided

The best way to avoid roof defects is to gain a better understanding of the commercial roofing systems available on the market today. We'll explore four of the most commonly specified general systems:

- Modified bitumen membranes
- Metal
- Cold-applied liquid coatings
- Green roofs.

We'll briefly cover their advantages/disadvantages and the applications to which they are suited, before looking at the most common design and application defects and how to avoid them.



In association with

Types of roofing systems

Modified bitumen membranes

Flat roofs should not actually be flat; it would be more accurate to call them low sloped roofs



Common roof design defects

Each roofing system has its own particular design considerations, but there are some general design issues that should be kept in mind across all roofing systems:

- **Structural issues:** When the existing structure is questionable it is recommended that a detailed structural survey is carried out before any roof replacement or refurbishment works.

- **Thermal performance:** If an existing roof element does not meet the current Building Regulations then increasing its thermal properties is an essential and necessary requirement.

- **Sufficient falls and drainage:** A lack of positive drainage will cause water to pond on the waterproofing surface. Flat roofing systems should be designed to 1:40 with a view to have a finished fall of 1:80. Drainage including guttering and other rainwater dispersal systems must be designed to comply with BS EN 12056-3:2000, *Gravity drainage systems inside buildings*.

- **Pitch:** Flat roofs should not actually be flat; it would be more accurate to call them low sloped roofs. The current British Standard, BS 6229:2018 *Flat roofs with continuously supported flexible waterproof coverings*, dictates that all flat roofs should in fact be designed with a pitch between 1:40 and 1:80 as a minimum.

Advantages	Disadvantages	Applications
<ul style="list-style-type: none">• Multi-layered – built in redundancy• Torch-on and self-adhesive options• Easy to work/repair• Flexible and durable• Extremely long lifespan• Time-proven performance	<ul style="list-style-type: none">• Skilled installers necessary who are Safe2Torch trained• Not all modified bitumen membranes are equal in performance	<ul style="list-style-type: none">• Commercial and residential• Refurbishment• Replacement• New build

Metal There are three main typical metal roofing systems:

Traditional metal cladding

Advantages	Disadvantages	Applications
<ul style="list-style-type: none">• Single or twin-skin• Very economical• Versatile• Large installer skill base	<ul style="list-style-type: none">• Prone to leaking through fixings• Protective coating can flake/disintegrate over time• Panels are limited by length and therefore the roof must have transverse joints/laps	<ul style="list-style-type: none">• Commercial and industrial• Refurbishment• Replacement• New build

Composite metal panels

Advantages	Disadvantages	Applications
<ul style="list-style-type: none">• Quick installation• Integral insulation	<ul style="list-style-type: none">• Prone to leaking through fixings• Protective coating can flake/disintegrate over time• Panels are limited by length; therefore, the roof must have transverse joints/laps• Poor acoustic performance	<ul style="list-style-type: none">• Commercial and industrial• Refurbishment• Replacement• New build

Standing seam

Advantages	Disadvantages	Applications
<ul style="list-style-type: none">• Quick installation• Aesthetically pleasing• Design freedom• Mechanically attached without penetrations• Long-lasting waterproofing• Curved and tapered panels• No traverse joints• Suitable for very low slope roofing• Exotic metal options, ie copper, zinc, aluminium	<ul style="list-style-type: none">• Generally more expensive• Added complexity	<ul style="list-style-type: none">• Commercial and residential• Refurbishment• Replacement• New build

Modified bitumen membranes

Although the majority of the modified bitumen membranes in the UK use the same basic set of 'ingredients' or formulation, it is important to know the differences in their specification. The important factors are:

- **Low-temperature flexibility:** Allows waterproofing to expand and contract at low temperatures but is also a very important gauge of the amount of modifier in the bitumen compound. Generally, the higher the percentage of modifiers, the better performing the membrane. ►

Cold-applied liquid coatings

Advantages	Disadvantages	Applications
<ul style="list-style-type: none">• Easily applied• Suitable for a variety of substrates• Chemical resistant• Excellent tensile strength• UV resistant• Energy efficient (white only)• Great for waterproofing complex roofs• Monolithic membrane without joints/laps	<ul style="list-style-type: none">• Cannot be installed if weather is too hot or cold• Cannot be applied over silicone-based coatings• Will fail dramatically if substrate preparation is incorrect• Many systems do not have multi-layered redundancy	<ul style="list-style-type: none">• Commercial and residential• Refurbishment• Replacement• New build

The best way to ensure your roof is well designed is to get expert advice. Your roofing manufacturer will have a wealth of experience

Green roofs There are two variations of green roofs, extensive and intensive

Extensive green roofs

Advantages	Disadvantages	Applications
<ul style="list-style-type: none">• Requires minimal maintenance• Hardy species of plant life• No irrigation required• Modest structural load• Wind resistant• Used on sloped/pitched roofs• Improves air quality• Reduce run-off• Desirable aesthetics	<ul style="list-style-type: none">• Only supports drought-tolerant plants	<ul style="list-style-type: none">• Commercial and residential• Refurbishment• Replacement• New build

Intensive green roofs

Advantages	Disadvantages	Applications
<ul style="list-style-type: none">• Boosts biodiversity• Creates additional usable space• Improves air quality• Reduce run-off• Desirable aesthetics	<ul style="list-style-type: none">• Labour intensive• Requires regular maintenance• Requires irrigation• Very heavy structural load• Deep construction	<ul style="list-style-type: none">• Commercial and residential• Replacement• New build

● Reinforcement tensile strength: The stronger the reinforcement within the membrane, the better it is able to cope with the expansion forces and other stresses. Generally, the higher the number the better, but dimensional stability and elongation also have to be taken into account.

Metal

- Roof pitch: Some standing seam systems are capable at pitches of 1.5 degrees. Most will require at least 4-6 degrees of slope, otherwise, leaks will become apparent at laps and joints in the metal panels.
- Wind uplift and loading: Especially important with metal systems that are self-supporting and fixed to a

subframe or steel purlins. The profile, gauge and material will determine the strength of the metal panel, and should be considered along with the span the panel is expected to bridge and its subjected loading.

● Fire resistance: Metal roofs are generally resistant to the spread of and penetration from fire. Steel or aluminium roof sheet with less than 200g per sq m of organic coating automatically complies to Building Regulations, with a Broof T4 classification without testing under European Standard EN 13501-5, *Fire classification of construction products and building elements – Classification using data from external fire exposure to roof tests.*

● Incompatible materials: Different metals tend to react poorly with each other. For example, copper and zinc placed together cause bimetallic corrosion.

Cold-applied liquid coatings

These should be treated in a similar vein to other systems. Roof slope, drainage and fire considerations should be kept in mind. Also:

- Incompatible materials: Must again be avoided. For example, polyurethane or acrylic coatings must not be used over methyl methacrylate (MMA) covering in a refurbishment project and silicone-based materials are generally incompatible with all other coatings.
- UV stability: There are products designed for internal use that if used externally would break down as a result of UV radiation.
- Odour: Some coatings can be pungent during application which can be problematic on sensitive sites such as hospitals or schools, where low-odour coatings should be specified.

Green roofs

- Roof pitch: While intensive green roofs can be installed on a flat roof deck with suitable drainage, for extensive green roofs generally a minimum fall of 1:60 is desirable. The growing medium and drainage system must be designed to keep the vegetation above any standing water.

1:80

Flat roofing systems should be designed to 1:40 with a view to have a finished fall of 1:80.

- **Wind uplift:** Must be factored into the design. One solution is to install a pebble band or paving around the perimeter of the roof. This has the additional benefit of acting as both a vegetation and fire barrier.

- **Waterproofing:** Must extend a minimum of 150mm above the vegetation layer at abutments, parapets or penetrations through the roofing surface. Waterproofing must also be root resistant, otherwise a root barrier must be installed in compliance with BS EN 13948:2007 *Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of resistance to root penetration.*

- **Shade and rain shadow:** Must be considered from any adjacent structures. Sunlight and rain are essential to the continued health of the vegetation.

Common roof design defect solutions

General points to keep in mind that will ensure that roofing design defects do not occur:

- It is always paramount to have assessed and designed out or mitigated any risks. This is a statutory obligation under the Construction (Design and Management) Regulations (CDM) 2015.
- Compliance with Building Regulations can help to guarantee that your roof is defect free. The following Building Regulations are relevant to any roofing project: *Approved Document B – Fire Safety, Approved Document F – Ventilation, Approved Document H – Drainage and waste disposal, Approved Document K – Protection from falling, collision and impact, and Approved Document L – Conservation of fuel and power.*



The best way to ensure your roof is well designed is to get expert advice. Your roofing manufacturer will have a wealth of experience specifying and designing roofing systems.

▲ Modified bitumen membrane varies in specification

▼ Metal roofs are generally resistant to the spread of fire

Common roof application defects

There are a number of common roofing defects that are caused at the installation stages of a project. Some general application issues that affect all roofing systems are:

- **Weather:** Dry conditions are essential so moisture is not trapped within the roofing system once complete.
- **Insulation type:** Should be considered in general. For example,

with modified bitumen membranes suitable insulation should be used if a torch-on application is intended, as non-compatible products could affect adhesion, and/or be a fire risk.

Modified bitumen membranes

- **Ambient temperature:** In lower temperatures self-adhesive membranes can become difficult to install or, worse, fail to bond. Hot-air guns can be used to heat the membrane so application is easier and more secure.

- **Head laps:** For torch-on applications, head laps must be sufficiently bonded, with a minimum lap of 100mm on the head lap or 150mm at any details, and a minimum 75-80mm for side laps. Head laps should be laid in a break bond pattern to assist with thermal expansion/contraction helping to ensure that splits do not occur.

- **Sloped/vertical surfaces:** Must be mechanically fixed. ►





Metal

- Insufficient sealing of joints/head laps: This will inevitably cause water ingress in the future.
- Incorrect fixings/fasteners: The roofing manufacturer's suggested fixings/fasteners must be used. A stainless steel non-corroding specification is used in most high-end systems.
- Insufficient fixings: Ensure that the manufacturer's installation instructions are followed with reference to fixing frequency.

Cold-applied liquid coatings

- Ambient temperature: If too hot then curing may happen very quickly, making installation extremely challenging. Too cold and the curing may not progress properly and may lead to a critical waterproofing failure. Application outside of recommended temperatures can lead to aesthetic curing issues, such as blisters, pin-holes or discolouration.
- Application thickness: Must be the exact millimetre depth specified to meet the longevity

guarantees of the products. This can be checked with core sampling, or with electrode monitoring.

▲ Standing seam roofs are quick to install but generally more expensive

Green roofs

- Improper handling of plant mats: Living vegetation must be both stored and handled with great care. Nutrients may need to be applied. Watering is essential when the vegetation is first applied.
- Season: Green roof installation should be carried out in the spring or summer.

Common roof application defect solutions

To ensure the best installation of your roofing system always:

- Use experienced manufacturing experts: Ensure that your roofing system has been specified by a roofing technical expert and that a comprehensive survey and evaluation of the site has been carried out.
- Use skilled contractors: Ensure your roofing manufacturer provides training and ongoing CPD to your chosen contractors.
- Be mindful of weather conditions.

- Arrange quality assurance inspections by experts. Your roofing manufacturer should have the expertise to assist you with this. ●

This article is by Garland UK's head of technical, Mark Fisher. It has been produced by Construction Management in association with Garland UK.

CPD Questions

- Special care must be taken to avoid the use of incompatible materials with which two systems?
 - Metal and cold-applied liquid coatings.**
 - Extensive and intensive green roofs**
 - Modified bitumen membranes and rubber coatings**
- What regulation obliges you to assess and design out, or mitigate risks?
 - Building Regulations**
 - Construction (Design and Management) Regulations (CDM) 2015**
 - Building Safety Act 2022**
- Which roofing system has the most built-in redundancy?
 - Metal cladding**
 - Fibre cement roof sheet**
 - Modified bitumen membranes**
- How can both wind uplift and the spread of fire be managed on a green roof?
 - Install a pebble band or paving around the perimeter of the roof**
 - Flame-proof grass**
 - Sprinkler system**
- Name two of the general application issues that affect all roofs?
 - Season and application thickness**
 - Weather and insulation type.**
 - Season and improper handling of plant mats**

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

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A new Hong Kong icon

China State Construction Engineering has built the Hong Kong Palace Museum, which is set to open in mid-2022 in West Kowloon's Cultural District. **CM** reports

Located in the West Kowloon Cultural District, the seven-storey Hong Kong Palace Museum (HKPM) is a remarkable building, wide at the top and narrow at the bottom, shaped to resemble an ancient Chinese cauldron called 'Fang Ding' – a vessel with a square body

and four legs – representing strength, power, respect and heritage.

Designed by Rocco Yim and constructed by China State Construction Engineering (Hong Kong) Limited (CSHK), various details of the museum building echo those of the Palace Museum in Beijing's Forbidden City.

▲ After five years in the making, the Hong Kong Palace Museum is set to open in July 2022

To imitate ancient city walls, large parts of the museum's exterior walls are covered with fair-faced concrete along with facade cladding. The unique aluminium ceiling in the atriums extends from the ground to the four-storey exhibition hall, and the atriums connect the different floors of the

The project team optimised wall designs through clash detection analysis, identified about 110 potential problems and resolved them prior to fabrication



museum vertically, referencing the horizontal spatial configuration of the Forbidden City's central axis.

With a 17,000 sq m footprint and a total floor area of approximately 44,000 sq m, the museum has nine galleries, a 400-seat auditorium, activity rooms, restaurants, shops, and offices. It is due to open in July 2022 after five years in the making.

Over 900 works of art are to be displayed – all gems of the Palace Museum collection. After the opening, HKPM will create a dynamic and innovative platform to inspire and engage the community, encourage dialogue and partnership, and foster public awareness and appreciation of Chinese art and culture.

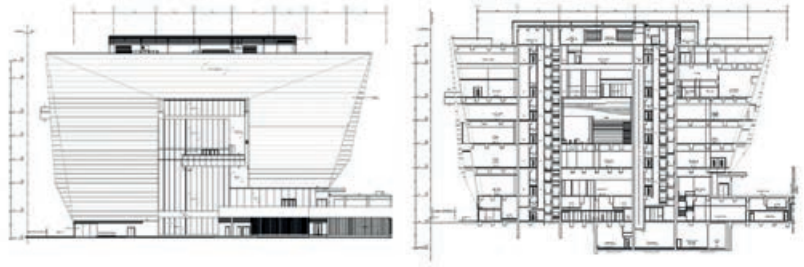
Technical details

In this challenging project, BIM technology was implemented at all stages, from architectural design analysis and detailed design development to construction and operation.

The unique exterior facade is composed of 4,022 pieces of decorative aluminium panels and metal meshes, with a special lighting-effect design and a top-class fair-faced concrete finish as a backdrop reflector. BIM helped to produce shop drawings for each panel, increasing the precision of the drawings and manufacturing of components and avoiding unnecessary abortive errors.

▲ The museum design builds on a concept based around a contemporary interpretation of classic Chinese visual and spatial aesthetics

► The atrium ceiling comprises 6,800 three-dimensional, curved, and perforated aluminium tiles



With the use of Revit 3D modelling, the CSHK project team optimised wall designs through clash detection analysis, identified about 110 potential problems and resolved them prior to fabrication, preventing any unfitted panels being delivered to the construction site.

The team also used Tekla Structures 3D drawing software to produce a complete drawing set for each supporting structure module in just 10 hours, compared to a traditional computer-aided design (CAD) drawing that takes almost a week.

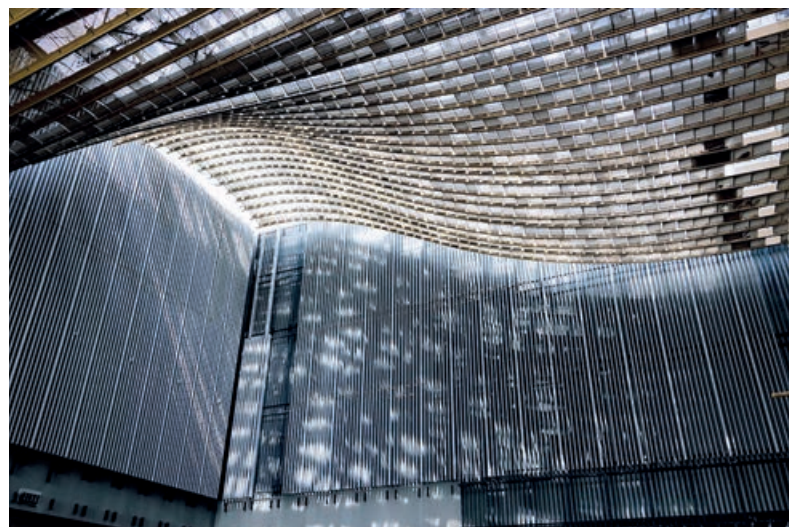
This helped to improve drawing efficiency significantly, providing faster detailed designing of connecting parts, greater installation speed and better quality.

Efficient design

The atrium of the museum houses a breathtaking column-free exhibition hall, which is constructed as a tall space uniquely formed by well-designed walling and suspended ceiling systems.

The atrium ceiling comprises 6,800 three-dimensional, curved, and perforated aluminium tiles, with maintainability and accessibility taken into consideration.

Another factor taken into consideration is compliance. The museum has stringent design requirements for various systems, such as electro-mechanical, lighting, temperature and humidity control, fire alert, vibration monitoring, security and emergency support. ►



Technology helped the team to resolve numerous technical issues, reducing potential design defects by more than 40%

40



◀ Hong Kong Palace Museum's smart site control centre in operation

The CSHK project team fulfilled all the requirements with the help of 3D modelling and BIM technology.

Through more than 50,000 clash detection analyses, the technology also helped the team to resolve numerous technical issues, reducing potential design defects by more than 40%. This means over 1,000 combined services drawings (CSD) and combined builder's work drawings (CBWD) are saved, shortening drawing coordination and production time by nearly 20%, significantly improving overall accuracy, efficiency and productivity of the project.



The CSHK project team used a working procedure with more than 40 steps to monitor surface appearance

Material features

To make the appearance of the building more attractive and natural, on an exterior wall area of about 11,000 sq m, top-class fair-faced concrete was used extensively for columns and walls. Wall sealing joints are sealed seamlessly and surface flatness, cleanliness and colour uniformity are maintained.

The CSHK project team conducted a series of trials to test over 20 concrete samples, created eight self-checking systems and used a working procedure with more than 40 steps to monitor surface appearance and to prevent concrete from cracking.

To create a sense of welcome and add a feeling of elegance,

glass-fibre reinforced concrete (GRC) is used for exterior and interior walls, while glass-fibre reinforced gypsum (GRG) is used for the atriums and the body of the entrance lobby. With the use of nearly 4,000 pieces of GRC vertical fins externally and internally, each with a length of 3m or more and perfectly colour matched, the atrium walling is to be admired.

Wall stones for the atriums are of American white granite, sourced and imported from Vermont, and slab stones are quarried in Angola. Several types of stone surface finishes, including honed, polished and bush-hammered treatments, are used to enrich the material texture, providing a variety of impressions when viewed under different lighting conditions.

Located in the centre of the museum building, the height of the curtain wall ranges from 4m to 10m. It has a distinctive striped pattern with vertical and inclined shapes. Natural gradient

iron decorative panels are placed around the glass curtain walls, fulfilling the architectural and aesthetic intent.

A strong professional team

To keep pace with the market and construction industry, CSHK has developed a smart construction site management platform called C-SMART and had put it into operation in the project.

The C-SMART system uses Internet of Things (IoT) and artificial intelligence (AI) technology to gather all project information onto one platform, allowing the project team to grasp the situation of the entire construction site in real time, helping managers make quick and accurate decisions.

The construction of the HKPM began in April 2019 and the museum building topped out in June 2020. Over the past three years, it has won over a dozen awards in areas such as engineering, safety and environmental protection. ●

▶ The unique exterior facade cladding, with 4,022 pieces of decorative panels in various shapes



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Paul Gibbons
Decipher

'How often should we update our programme?'

This month's contract clinic addresses programme updates.

Paul Gibbons examines the options



THE QUESTION

We are the main contractor on a project. There's nothing in our contract to say how often we should update our programme, but the client wants us to update it weekly. Do we have to do that?

THE ANSWER

Updating is key for good programme management. As CIOB's guide to good practice in the management of complex projects observes: "Updating a schedule is essential to the management of the time model; without it, the schedule is merely a target against which historical failure might be plotted."

However, to answer your question, the first place to look is your contract. It sounds as if your

contract is silent on this. But check anyway. Are there provisions and requirements relating to progress and programme updates? What about other contemporaneous information you must provide?

If the contract doesn't say anything, then discuss with your client what they require. The client may be making a reasonable request, or even an instruction.

If you are working under an NEC contract, you must submit an updated programme every four weeks. In which case, you must meet the requirements or risk the sanctions of the NEC being applied. Additionally, you risk being at the mercy of the project manager for the assessment of compensation events.

Expert guidance

We're aware of at least five sets of guidance that specify programme update intervals, usually monthly. But most guidance refers to 'regular' updates, which could mean anything from hourly to every six months.

The Society of Construction Law Delay and Disruption Protocol, last updated in 2017, provides guidance on issues that arise in construction projects relating to delay and disruption. It says: "The contract should require that the accepted programme be updated with actual progress using the agreed CPM programming software at intervals of no longer than one month."

This suggests updates of one month should be the absolute maximum and perhaps that weekly or fortnightly updates are more desirable.

The Guide to Managing Time in Complex Projects, published by CIOB, gives no hard and fast rule, but states: "There should be a direct correlation between the timing of the schedule update and

the reporting cycle... Legitimately however, there may be an increase in updating frequency depending on the construction phase and/or criticality of work in progress."

This suggests that updates should be adjusted according to need.

Delay and Disruption in Construction Contracts says: "The strategy for schedule review must take account of the development of the schedule as better information becomes available and, as the project proceeds, the increasing density of the schedule as it develops from initiation through the work on site to commissioning the completed project."

It also gives three reasons for updating the schedule:

- The receipt of better information which changes an assumption about what is required under the contract or way in which work is to be performed.
- The refinement of the schedule to achieve a high-density, fully resourced, short-term look-ahead for monitoring purposes.
- The adjustment of contingencies and sequence to accommodate slippage and secure recovery and/or acceleration.

Conclusion

How frequently you should provide programme updates depends on the complexity of your project, what the contract says and what you agree with the client.

However, it is prudent to update your programme frequently. Consider a scenario where a client has requested weekly updates and you fail to provide them. If the project completes behind schedule and over budget, imagine the difficulty you will face putting in a credible claim for an extension of time or additional cost. ●

Paul Gibbons is CEO at Decipher.



Most guidance refers to 'regular' updates, which could mean anything from hourly to every six months



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This much I know

Tim Carey

Chief product director, Collida

‘We’re in a perfect storm’

The rapid advance of technology offers positive challenges for the chief product director of Willmott Dixon’s integrated construction platform, Collida



What made you go into construction?

I was bought Lego every Christmas as a child (I never did get that Castle Grayskull...). I’d build the design properly and then use the same parts to put together something new. What Lego taught me was that – even while using standard blocks – the only limit to what you can create is your imagination.

What do you remember from your first project?

When I first graduated, back in 1997, I produced logistic renders to support Mace Group’s construction of Bank of America Merrill Lynch Financial Centre, which is near St Paul’s Cathedral in London.

To do this, I had to first build every element of the building in 3D using only AutoCAD R14 – looking back, I wish Revit had been invented at that time!

What was the best advice you were given?

“Buildings always get built.” This is a saying by Ip Wong, an architect I used to work with early on. I think that’s very true – as construction projects are often challenging, but I have great faith in our industry’s ability to overcome any obstacle and find innovative ways to respond.

Which project that you worked on are you most proud of?

I genuinely think the Collida Living prototype homes we are now building at the BRE are real proof that you can deliver affordable, highly sustainable housing using MMC. Achieving an airtightness of under 0.2 and delivering to the Passivhaus Plus standard was a really validating moment.

Producing a standard house faster than traditional approaches while only using 60% of traditional labour requirements is a real success story for Collida, which has implications for the wider industry.

I’m genuinely proud of its success and to play such a pivotal role as its chief product director.

What Lego taught me was that – even while using standard blocks – the only limit to what you can create is your imagination

Tim Carey, Collida



What has changed the most about construction since you’ve been working in it?

I think the pace of change, which is no bad thing. It really feels like a perfect storm of rapidly evolving technology, demand – and the ongoing capacity crisis will ensure that we permanently change for the better.

What’s the most valuable training you’ve received and why?

I’ve been lucky enough to receive lots of training during my time at Willmott Dixon – both internally and externally. A highlight was our LEAD course at Royal Military Academy Sandhurst, particularly its key message of “serve to lead”.

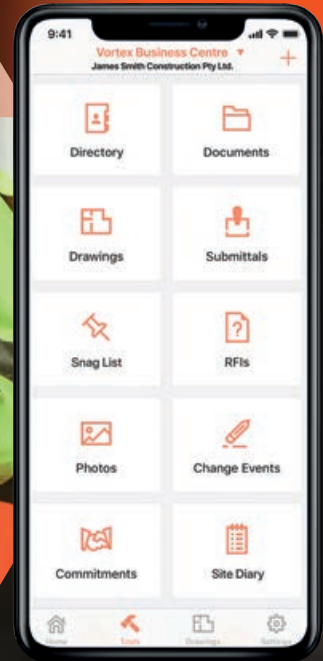
What advice would you give to someone starting in construction today?

Go for it. Construction is an amazing space in which to build a really rewarding career and, with the opportunity to really modernise our approaches through product thinking, digital solutions and factory-based manufacturing, I can’t think of a better time to join.

Do you have a motto that applies to your work and if so, what is it?

I’m a Spurs fan, so I guess I’ll appropriate theirs – “To Dare is to Do”! ●

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Job spotlight

Anne Daw

Head of MMC delivery, HLM Architects

Modern love

Anne Daw's work at the forefront of MMC and digital innovation makes her feel, she says, 'like a kid in a candy shop'



Tell us about a typical day in your role?

My time tends to fall into three categories – MMC project and process support, business development and R&D, so there's no typical day.

In the past two weeks, I went from an Enevate factory tour in Glasgow to an Offsite Alliance dinner in another part of the country, while other days saw me collaborating with the Construction Innovation Hub as part of the 'Healthcare Sandpit' on a project to develop a healthcare platform DfMA solution.

I also spend quite a lot of my time assisting with MMC projects, providing support with category selection, design optimisation, procurement and tender reviews. In addition, I am developing a series of MMC design guides for architects and technicians at HLM.

You have developed expertise in MMC and digital, both of which are fast-growing areas. How do you keep your skills and knowledge updated in these areas?

Working in R&D gives me access to the latest ideas that are being trialled and tested. In addition, I read a lot of articles and listen to podcasts on what is happening in other sectors and around the world.

The pace of the digital development in the construction sector over the past five years has been exhilarating and I'm always researching exciting new innovations in the space and exploring how the evolution of MMC can add value to the wider industry in new ways.

When I was at MIT in the late 1990s, we were using the very early stages of digital modelling and 3D printing. It took 15 years before I

The most rewarding part of my job is when I am able to bring MMC to life for new designers or clients who have never used it before

Anne Daw,
HLM Architects



saw any of those tools start to filter into private practice, but now the private sector's use of digital tools has accelerated and there isn't such a large gap between digital research and development and the industry use of those digital tools today.

What is the most challenging aspect of your job and what is the most rewarding?

Maintaining enough energy to tackle all the amazing possibilities it brings with it. I am like a kid in a candy shop – I want to make the most of each and every opportunity.

The most rewarding part of my job is when I am able to bring MMC to life for new designers or clients who have never used it before. It gives me so much satisfaction to see them gradually understand the benefits of MMC and how it can help us to reach essential environmental, performance and safety goals faster than with traditional construction.

And when I can go that little bit further to show them how they can create beautiful spaces and increase social value with MMC, it's the icing on the cake. ●

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CIOB Community



CIOB Awards expand to recognise EDI

CIOB is opening up the next group of categories in its annual search for the UK's finest construction and built environment talent.

Entries are now open for Rising Star, CIOB Team Award and an EDI – equality, diversity and inclusion – award for both individuals and companies as part of the 2022 CIOB Awards.

This year sees the introduction of these two new EDI awards, six months on from the publication of the CIOB Special Report and

Charter: *Diversity and Inclusion in Construction*.

These new categories have been designed to recognise the importance of diversity in the workplace and to shine a light on those who create an inclusive environment in which all employees feel valued and can thrive. The nominations are expected to

▲ New categories will recognise the importance of diversity in the workplace

highlight examples of a commitment to embedding EDI in the sector.

CIOB will also seek nominations for its Rising Star award, now in its third year. This is an international category which highlights the achievements of those in construction for five years or less.

Companies can also submit their nominations for the CIOB Team Award. First introduced last year, it celebrates the collaboration of groups working together to meet a shared goal. Teams can be any group of three or more people working within the built environment within a single organisational entity.

The highly regarded CIOB Awards include the long-established Construction Manager of the Year title. This annual celebration is an important opportunity to recognise the accomplishments of exceptional professionals.

Last year the CIOB Awards event returned to London's JW Marriott Grosvenor House Hotel after a successful online awards ceremony in 2020. This year CIOB will be at the same location, on 28 September 2022, to find out who will take home the trophies and to applaud the achievements of all the finalists.

The CIOB Awards are free to enter and open to non-members, as well as members of CIOB. The deadline for entries is 31 May 2022. ●

To nominate, please visit the CIOB Awards website: awards.ciob.org.

CIOB Scotland launches first awards

New annual event at Hilton Glasgow in September

CIOB Scotland is staging its first Awards event on 16 September at DoubleTree by Hilton Glasgow. Sponsored by Contract Scotland and Competence Matters, it is set to be the first annual awards event north of the border for CIOB.

Award categories include:

- Graduate Award

- Inspirer of the Year/Mentor
- Construction Innovation Leader (modern methods of construction implementation)
- Site Manager of the Year
- Project Manager of the Year
- Sub-Contractor of the Year
- Open Award (CIOB family)
- Scottish Trailblazer of the Year.

The closing date for entries was at the end of May but table bookings are being taken for the event.

Event fees include a Bronze Package at £750, Silver Package at £1,300 and Individual at £75. For details and to book contact wmarshall@ciob.org.uk.

CIOB supports roofing body on chartered quest

CEO Caroline Gumble tells the Institute of Roofing's annual general meeting about CIOB's chartered role



▲ Kay Rose, CEO of the IoR, and Caroline Gumble, CEO of CIOB

Caroline Gumble, CIOB CEO, gave a talk at the Institute of Roofing's AGM recently as part of CIOB's support to the IoR on its quest to seek professional chartered body status.

In her speech Gumble shared the work CIOB does as a chartered body. "Our Royal Charter commits us to work in the public interest. This means we campaign on the major issues, which today includes – but is by no means limited to – eradicating modern slavery from the industry, improving the quality of the built environment, ensuring the right skills, talent and behaviours are nurtured in construction and



You will be joining with us – and other professional bodies in the sector – in our mission to improve the built environment
Caroline Gumble, CIOB

that our environment is protected through more energy-efficient buildings and less wasteful construction practices. Recently, we've also looked at mental health in construction, wellbeing and safety, and diversity and inclusion."

She concluded by wishing the IoR well on its chartered journey. "This is welcome news as it means you will be joining with us – and other professional bodies in the sector – in our mission to improve the built environment."

In her speech Kay Rose, CEO of the IoR, discussed the goals of the institute and said that chartered status is part of the vision to become more involved in key decision-making groups within the wider sector.

"I see the IoR as the future linchpin for the industry. We must become the go-to professional membership organisation that every person in the roofing industry aspires to join and remain a member of. There is a place for us within working groups and competency frameworks, looking at the gaps in professional training and qualifications." ●

Women into Construction signs CIOB EDI charter

Gender equality organisation makes commitment to CIOB positive diversity initiative



Women into Construction has joined other leading names in the built environment by signing the CIOB EDI charter. This means it will commit to five actions that will change cultures and processes to increase diversity and inclusion in construction.

The organisation commented: "Positive action and initiatives that support equality, diversity and inclusion is key to our mission – building cultures that are welcoming

and supportive for all will promote more diversity within the workforce which, in turn, produces more creative, innovative and successful organisations."

Women into Construction is an independent not-for-profit organisation promoting gender equality in construction.

Find out more about the charter at: www.ciob.org/specialreport/charter/diversityandinclusion.

Member leads deep dive into MMC down under

Martin Fenn's webinars attract global audience



"We need to bring disruptive technologies and practices into mainstream construction," says Martin Fenn

(pictured), CIOB member and MMC lead for CIOB Oceania.

Fenn hosts a series of webinars on modern methods of construction (MMC), interviewing those who are helping to transform the industry.

"The common theme of the MMC webinar series is how we, as an industry, can keep up with Industry 4.0 – the fourth industrial revolution – without completely wrecking our planet, with the aim being to educate and motivate collaboration and knowledge-sharing across the globe," he says.

The series has attracted a global audience, with topics including Building Prefabricated Giga Projects in Saudi Arabia and The Slimmest Skyscraper in Australia by Hickory Group.

The series included a talk from Jamie Hillier from Akerlof, an MMC consultancy from the UK, about the integration of DfMA (design for manufacture and assembly) into traditional workflows and how it is leading positive disruption.

Fenn is an MCIOB, an active Sydney Hub committee member and a CIOB Professional Review mentor. In his day job, he is director of integration for PT Blink, a construction technology company based in Sydney, operating in Australia and the US.

Watch the MMC webinars on a monthly basis by checking the CIOB Events portal Oceania or CIOB in Oceania LinkedIn page.

Emerging talent celebrated at Maidstone dinner

New award presented to William Dean at annual event delayed by Covid

CIOB vice president Sandi Rhys-Jones joined attendees from Kent and all over the south-east for the annual Maidstone Construction Professionals' Dinner, which took place at the end of March after having three dates rescheduled due to Covid.

Maidstone Hub chair Peter Smith welcomed guests at the Marriott Tudor Park Hotel and Country Club.

Finalists for the inaugural CIOB Maidstone Emerging Talent Award were celebrated and the overall winner, William Dean from Jenner, was announced during the evening. Congratulations also go to the other finalists: Maddie Beech from Kier and James Robinson from Invvu.

Magicians Peter Lee and Guy Wade Young entertained guests throughout the evening, while the after-dinner speaker was the Reverend

Richard Coles, former saxophonist with Bronski Beat, keyboard player with The Communards and more recently vicar in a small town in Northamptonshire and presenter of Radio 4's Broadcasting House.

In excess of £2,000 was raised during the evening from a raffle for Donations with a Difference (DWAD), a charitable grant-making trust that works to alleviate physical impairment, poor mental health and homelessness in Kent.

Prizes were donated by local companies including: the Marriott Tudor Park; Kier; Kent Construction Consultants; CA Drillers; Baxall; Teampol; Ash Contracting; Quigg Golden; Invvu; WW Martin; Jenner; Willmott Dixon; Betteridge & Milsom; and Kent Invicta Chamber of Commerce.

Thanks are given to the sponsors: BAM Construct UK; Coniston; Kent Construction Consultants and Quigg Golden.

▼ Emerging Talent finalists with Adam Mitchell MCIOB



PHOTO: GAVIN SAWYER



▲ CIOB chief executive Caroline Gumble (front) with the new graduates

Congratulations to new CIOB chartered members

The CIOB celebrated its new chartered members at two graduation ceremonies in March

In the morning of 25 March the following received their new status:

New fellow
Anojkumar
Canagasundaram

New members
Sunny Bika
Binyomin Chalk
Karl Chapman
James Crowther
Jaroslaw Czaja
Laurence Doherty
Mark Ephgrave
Azarja Evers
Doru Gherghelus
Jenica Higiu
Marcus House
Robert Kane
Rob Little

Tom Lowe
David Morrison
Bjorn Murphy
Louise O'Brien Smith
Shane O'Farrell
Joshua Ramchandani
Stephen Richards
Luke Rowland
Mark Smith
Tony Whyte
Terence Wiggett

Graduates awarded in the afternoon ceremony were:

New fellow
Gerald McGee

New members
Jack Bennion
Melanie Bond
Edem Joy

James Brown
Lloyd Brown
Richard Brown
Andrew Burton
Bogdan Catargiu
Paul Clapcott
John Clarke
Graham Collines
Michael Cornell
Andy Dakin
Ian Elms
Alice Fox
Kristina Hall
Mark Haybes
Christopher Hope
Max Horrill
Mark Howe
Gabriel Ichim
Shiron Kachchu
Sami Kadiri
Conal Kennedy
Nada Mohammad
Stephen Murphy

Jason Newby
Cheka Niasse
Presley Rebelo
Vikash Ruchaya
Dan Saving
Gareth Thomas
Emrah Turhan
Suraj Varsani
Hayden Warburton
Jonathan Whyman
Samantha Williams

New Chartered Building Company
Milestone Contracting

New Chartered Building Consultancy
Total Building Control

One Centenary Way site visit: behind the scenes on complex build

Members get a glimpse behind the scenes at part of Birmingham's vast city-centre redevelopment

CIOB members in Birmingham will have the chance to join the Sir Robert McAlpine project team for a behind-the-scenes tour of One Centenary Way, possibly the most complex of all the buildings on the Paradise site spanning over a dual-carriageway tunnel.

On 9 June, attendees will have the opportunity to take a look at the site and hear from the project team about the work under way and the challenges they have faced during this complex build.

One Centenary Way is the first building to be constructed in phase two of the Paradise development – a vast city-centre redevelopment. It comprises a 16-storey commercial

building, providing office and retail accommodation and public realm works connecting the site to phase one of the development.

The scheme is the most constrained building within the masterplan and has had to address a number of below-ground constraints – most notably the A38 Queensway Tunnel, which runs directly underneath the building and will remain active throughout the construction and future occupation of the building. ●

Read about the Paradise development here:
www.paradisebirmingham.co.uk.
For more information on the visit please contact gflloyd@ciob.org.uk.



Free book on Party Wall Act

A CIOB member and surveyor specialising in the Party Wall Act has edited a new free e-book on party wall issues.

Edited by Benjamin Mackie of The Party Wall Collective, the book contains almost 20 articles written by surveyors, consultants, barristers and other legal experts.

Download your free copy at www.tpwc.co.uk or email ben@tpwc.co.uk.

◀ One Centenary Way is a 16-storey commercial building in the city centre

NEWS IN BRIEF

Karting fun in Kent

The Maidstone Novus Kent Construction Karting Cup, sponsored by Teampol, takes place on 16 June at the Bayford Meadows Karting Circuit in Sittingbourne.

The event is an ideal evening to network while competing in a friendly race on the outdoor floodlit kart circuits. Race entries can be individuals or teams of three.

For information go to <https://bit.ly/3x7JMRf>. To book contact Beverley Lawrence at blawrence@ciob.org.uk or call 01344 630861.

Chelmsford Hub takes to the skies

Members in Chelmsford enjoyed a drone demonstration and presentation in April. Hosted by the Chelmsford Hub at Anglia Ruskin University in Chelmsford, it was given by Sky Revolutions, a lead voice in aerial imaging, surveying, and aerial surveying.

Jenna Gorham, director and HR consultant, and Greg Monaghan, remote pilot and surveyor at the firm, took footage of the audience using a lightweight DJI Mini 2 and discussed legislative updates, regulations and how drones help access complex and hazardous environments.

Value Toolkit webinar

CIOB is holding a webinar, Putting the Value Toolkit into Practice, organised in conjunction with the Construction Innovation Hub.

Participants will hear from Ian Nicholson, Value Toolkit delivery lead at Construction Innovation Hub as well as from Eddie Tuttle, director of policy, research & external affairs at CIOB; David Philp, impact director, Construction Innovation Hub; and Ellie Jenkins, Value Toolkit integrated project lead, Construction Innovation Hub and partner at Akerlof.

To find out more, and to sign up to the online CPD session at 12 noon on Thursday 23 June, search for the event on www.ciob.org/events.

Step
Forward

CIOB Awards 2022

No other awards in construction are regarded as highly as the CIOB Awards, an annual celebration to recognise and celebrate the accomplishments of exceptional individuals and companies who influence and shape our built environment.

Now is your time to step forward.

Enter today ciob.org/awards



CLOB Client Award



CLOB Equality, Diversity & Inclusion Awards:
Company and Individual



CLOB Rising Star Award



CLOB Sustainability Award



CLOB Team Award

28 September 2022

JW Marriott Grosvenor House, London



CIOB
Awards

One to watch

Nyasha Mutezo

Civil servant at the Foreign,
Commonwealth and Development Office



Why did you choose construction for a career?

I think I was always going to end up with a career in construction. My father is a chartered structural/civil engineer and I would always look at CAD drawings with him and hear his stories and I would feel inspired.

I originally applied to study pharmacy at university but changed to quantity surveying and commercial management and I haven't looked back.

You are one of CIOB's Tomorrow's Leaders. Tell us more about that.

I was approached to become a founding member in 2021, after receiving the CIOB Student of the Year Award for achieving the highest grade of my graduating class.

After working with, and being a mentor with, Coventry University's amazing WhatNext? society in my final year (a society focused on providing mentorship and encouragement to BAME secondary school students), I absolutely knew that this is something I wanted to continue to pursue.

What is your role in a government department like?

Having the opportunity to work on a range of domestic and international projects so early in my career is priceless. I am surrounded by a great team that give me great support and responsibility.

I also recently took over the management of a customer portfolio, giving me the opportunity to engage more with our customers and other individuals and organisations I had never considered being able to connect with.

Every day we deal with tasks and crises across the globe. I've never experienced anything like this and having such a unique workplace makes every day exciting.

What are your career ambitions?

I definitely have my sights set on a director-level position and I really want to get chartered and complete a master's degree in the next couple of years.

Another goal is to make higher education opportunities accessible for students of all backgrounds. I am currently working on a personal statement e-book guide to assist those taking the first step towards pursuing higher education.

What do you do in your spare time?

I like to spend time with family and friends. I also love music and spend a lot of my time writing and recording.

Conference addresses early adoption of EDI principles

CIOB Midlands and Eastern event led to a lot of discussion about how to engage young talent



▲ Attendees at the conference held at Coventry University

How to better engage young talent

in the sector and incorporate equality, diversity and inclusion principles early in the careers of construction students was the topic of discussion at a recent CIOB event.

CIOB Eastern & Midlands region held its second academic conference, The Art of Building: Equality, Diversity, Inclusion, following the success of the first Unconference at Coventry University.

Hosted by Sabine Coady Schaebitz, associate professor of architecture and curriculum lead for built environment, and organised by her team along with CIOB senior qualifications liaison manager Hassana Ahmed, the event focused on leadership around EDI.

Stephen Austin, head of school of energy, construction and environment at Coventry University, welcomed attendees. Speakers included: Coady Schaebitz; Mark Harrison, CIOB head of equality, diversity and inclusion transformation; and Matthew Blackett, EDI Faculty Committee for

The event reinforced the importance of establishing EDI principles during the years students spend at university

Sabine Coady Schaebitz,
Coventry University



Coventry University School of Energy Construction and Environment.

Joining them on a discussion panel were Imogen Smazanovich, associate director at Segro; Madeleine Clarke, winner of Women in Property, and a Coventry University student; and Rachel Curzon, Birmingham City University senior education developer.

Coady Schaebitz said: "The event reinforced the importance of establishing the EDI principles during the formative years students spend at university. This enables the next generations in their professions to influence industries in order to create a built environment which in turn contributes to a more equal and inclusive society." ●



▲ The hotel is located in Area of Natural Beauty and a sensitive residential location

High tide

Chartered Building Company We Are Ease recently completed the Tides Reach project in Salcombe, Devon. Project manager **Liam Gooding** reports on his experience

The Tides Reach project adds a stunning facelift to South Sands Beach in Salcombe. We recently completed Apartments 1-9 and the spa section of the development following a successful handover of the main hotel last July.

The project certainly provided a number of challenges for the Ease team to overcome. We started on site in June 2019 and soon found that the constrained site and its location would provide more challenges than we expected.

Given the site's location in an Area of Outstanding Natural Beauty and a sensitive residential location, several restrictive planning conditions regarding traffic and public management were in place

that we needed to comply with and managing these throughout the complex build provided tricky.

The original scheme comprised a new, 50-bed luxury hotel and 10 residential apartments, with We Are Ease initially getting involved to assist with the value engineering and buildability. But in March 2021, an additional aspect was added: the refurbishment of the spa building.

This element really added further complications. We were at a stage of the build whereby accessing the existing spa building at the rear of the site could only be achieved via narrow access routes meaning we really had to consider our working methods.

Of course, one of the main complications was the onset of the

Covid-19 pandemic, which struck just short of a year into the build. We ended up having to suspend works during the first lockdown period and then slowly remobilise, bringing trades back to site gradually to achieve a meaningful restart.

We then had the difficulty of ensuring the safety of the workforce in terms of Covid-19 restrictions while trying to maintain progress. This could only be achieved through close partnerships with the trades on site and detailed programme sequencing to ensure everyone was kept safe and exposure minimised.

The main thing I have learned from the project is a greater appreciation of how getting the right contractors on board for the scheme allows a smoother delivery. I can confidently say that without the understanding and close relationships I built with each of the contractors and the client over the three years involved with the scheme, it would not have been delivered as successfully as it was. ●

We are Ease is a Chartered Building Company.



Liam Gooding CV

● Project manager, We Are Ease 2015-present

● Site manager, Ease Development Services, 2010-2015

● Carpenter, ROK Building, 2006-2010

● Apprentice carpenter, ROK Building, 2003-2006

Education:

● Coombeshead College, Newton Abbot

● NVQ Level 3: Carpentry & Joinery, 2006 South Devon College, Torquay

● Completion of CIOB CMP, 2020

◀ The scheme comprises a luxury hotel with a spa and 10 apartments

Join CIOB in celebrating incredible talent in construction

Sponsoring CIOB events offers opportunities to be part of high-profile ceremonies and exposure to key audiences



ADAM DUKE PHOTOGRAPHY

CIOB believes people are at the heart of any successful business and we take every opportunity to celebrate talented individuals working in our sector.

Graduation ceremonies

After years of study and hard work, those who have achieved chartered membership or fellowship of CIOB can be recognised at a graduation ceremony, which is an opportunity to celebrate with family the tremendous achievement of gaining this internationally recognised accreditation.

● As a sponsor, your company will have an opportunity to engage with new CIOB members at

this significant moment in their construction career.

● Sponsorship is £2,000+VAT for a full year (minimum four ceremonies).

CIOB Awards

With a mix of individual and company awards, CIOB recognises exceptional examples of work within the construction industry. These highly prized awards will be announced on 28 September at JW Marriott Grosvenor House in London.

Awards categories include:

- Client of the year
- Team of the year
- Equality, diversity & inclusion
- Sustainability

▲ BAM Construction's T-Zone 11-21 Canal Reach project team wins the Team of the Year Award at CMYA 2021, with host George Clarke (right)

As a sponsor you will stand on stage at CIOB's flagship event, presenting an award in front of around 800 CIOB officials, key players and influencers of the industry

- Rising star
- Restoration
- Education
- Residential

As a sponsor, you will stand on stage at CIOB's flagship event, presenting an award in front of around 800 CIOB officials, key players and influencers of the industry.

This celebratory and inspiring event also gives you an opportunity to host a table of guests as we shine the spotlight on incredible individuals who have made significant positive contribution to the development of the built environment.

Award sponsorship is £5,000+VAT including on-stage presentation of an award and a VIP table for 10 guests. A full list of sponsorship benefits can be found at awards.ciob.org/sponsors. ●

To raise the profile of your organisation through sponsorship of these events or other CIOB activities, please contact Nicola James at njames@ciob.org.uk or telephone +44 (0)1344 630781.

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Diary dates

Highlights of the CIOB Calendar for the coming month

CIOB Awards Ireland 2022

► 2 June, 6.45-11.30pm, Dublin

Join us at the CIOB Awards Ireland, featuring the Construction Manager of the Year Award Ireland.

For over 20 years, CMYA Ireland has showcased the finest talent, recognising the achievements of individuals who have delivered some of the most innovative projects throughout the island of Ireland.

Join us for an evening of fantastic entertainment, inspiring stories and an exceptional three-course meal. A table for 10 is €1,300.

Tickets from: www.ciob.org/events/ciob-awards-ireland

CIOB site visit: One Centenary Way

► 9 June, 5-6.30pm, Birmingham

Join the Sir Robert McAlpine project team for this behind-the-scenes tour of One Centenary Way.

One Centenary Way is possibly the most complex of the buildings

on the Paradise site in central Birmingham, spanning over a dual carriageway tunnel (see p51).

You will visit the site and hear from the project team about the challenges of this complex build.
Contact: gffloyd@ciob.org.uk

Maidstone Tomorrow's Leaders Construction Karting Cup 2022,

► 16 June, 6-9pm, Sittingbourne

Network with colleagues while competing in a friendly (but hard fought!) race at the Bayford Meadows Karting Circuit (see p51).

Individual entries or teams of three are welcome. The cost (kart £235, maximum three drivers; individual place, £80) includes a meal and drink.

Contact: blawrence@ciob.org.uk

Sheerness Dockyard church visit

► 20 June, 3-5pm, Sheerness

This site visit by Coniston will provide an overview of a complex restoration project at Sheerness Dockyard Church, at the entrance to the former Royal Dockyard on the Isle of Sheppey, Kent.

The Sheerness Dockyard Preservation Trust is working to repair and transform the church, which was built in the 1820s and badly damaged by fire in 2001.

The project was awarded a £4.2m grant from the National

Lottery Heritage Fund in 2019 and in November 2020 work began.

The external listed fabric will be restored, including new windows and replacement of the roof. The interior will be renovated to form an education, leisure and working space including an exhibition area, cafe, offices and meeting rooms.

The completed building will provide affordable business space and associated support for young entrepreneurs starting up new businesses. It will also be a permanent new home for a section of engineer John Rennie's original model of the dockyard.

Contact: blawrence@ciob.org.uk

People, Cities and Sustainability

► 23 June, 11am-1pm, Guernsey

AbuBakr Bahaj, professor of sustainable energy at the University of Southampton, will speak at this face-to-face event hosted by CIOB Wessex and Channel Islands.

The aim is to establish a conversation on sustainability and the UN sustainable development goals (SDGs), and link this to what individuals, organisations and cities can do in relation to sustainability and net zero.

The interactive session will cover a brief introduction to the pillars of sustainability and the SDGs, and ask what adjustments/

actions we need to address sustainability and the net zero emissions transition.

Contact: zlourens@ciob.org.uk

Putting the Value Toolkit into Practice

► 23 June, 12-1.30pm, online

In this CPD webinar by CIOB and the Construction Innovation Hub you will be one of the first to find out how, by embracing the Value Toolkit, you can make balanced and informed decisions, maximising the impact of your investments in the built environment. See p51 for details.

Contact: sshort@ciob.org.uk

Hub in the Pub, London

► 29 June 7-9pm, London

This is a great opportunity to network, have fun and meet other members of the CIOB London Hub.

Hub in the Pub takes place on the last Wednesday of each month, providing an opportunity for members to mingle in the Theodore Bullfrog, near Charing Cross station.

Look out for future dates by following our LinkedIn page: www.linkedin.com/groups/12391073.

Contact: glovell@ciob.org.uk

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



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