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The Chartered
Institute of Building

MEMCOM MAGAZINE OF THE YEAR

CONSTRUCTION MANAGEMENT

FEBRUARY 2022

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▲ **HS2 archaeologists discover Roman trading settlement**

Around 80 archaeologists working for MOLA Headland Infrastructure on HS2 have uncovered a significant settlement dating back to the Iron Age and expanded under the Romans near the village of Edgecote in Northamptonshire. Finds at the Blackgrounds site included a 10m wide Roman road, over 300 coins, glass vessels, pottery, jewellery and evidence of make-up.

◀ **Huge wind turbine blades delivered to tricky site**

Huge components for nine wind turbines have been delivered to Twentyshilling Wind Farm in Sanquhar, Dumfries and Galloway, Scotland. Haulage firm Collett & Sons transported components, including a total of 27 57m-long blades, 170 miles to the site. The company had to create a turning head two miles from the site on approach to the wind farm to give the required clearance for the blades to be delivered safely.

Skanska's mindful idea
Mental health first
aiders in Skanska's
infrastructure business
can now display a sticker
on their hard hat to make
them visible to other
workers in need of help



DIANE AUCKLAND / FOTOHAUS



▼ **Laing O'Rourke to deliver major building for the University of Oxford**

Laing O'Rourke has won a deal to build the new Stephen A Schwarzman Centre for the Humanities for the University of Oxford. The building will be one of the largest single building projects ever undertaken by the university and will bring nine faculties and institutes and seven libraries and collections into one home.



▼ **Jacking system installs five bridges in Belgium**

A jacking system developed by crane firm Sarens was used to install five bridges in the Albert Canal, Belgium (pictured, the Theunisbrug bridge). Sarens' CS350 system can be used where bulky equipment needs to be installed in tight spaces. It has been used to raise loads more than 6m without bracing.



▲ **Wates celebrates its 125th year in construction**

Wates is celebrating the 125th year since it was founded in 1897 by Edward Wates. Originally a housebuilder in Surrey, the business has grown to cover the whole of the UK and now has a £1.5bn turnover.

To mark the anniversary it has released a selection of commemorative images, including (clockwise from top): the latest generation of the Wates family – Sir James Wates (chairman), Charles Wates (director), Andy Wates (managing director), Tim Wates (director) and Jonny Wates (director); founder Edward Wates; the first computer terminal installed at its company HQ in the 1960s; and images of its work in an alliance of companies responsible for the Mulberry harbours used for the Normandy landings in the Second World War.



LUMECORE / TOON GROBET

CIOB sustainability policy to align with UN framework

New external affairs advisory board chair sets out key policy priorities and calls for member input



► Ian Brant, director at Brant Construction Quantum Experts

CIOB plans to align its sustainability policy with the United Nations (UN) sustainable development framework, the chair of the institute's new external affairs advisory board has said.

Ian Brant, director at Brant Construction Quantum Experts, said: "Sustainability, along with quality, will be the top two priorities for the board. The CIOB and its policy team is already doing a lot of great work on sustainability, and it makes sense to follow the best framework out there, which is the UN. This will also help us internationally as we engage on sustainability with the institute's global regions.

"Whilst there are 17 UN Sustainable Development Goals (UNSDGs), not all of them are linked to or influenced by construction. As such, the new policy framework for all the existing (and future) CIOB policies will look to embed a handful of the UNSDGs [see box]."

The new board, formed following the CIOB governance review, will provide strategic direction for the institute on policy and public affairs, with a fresh focus on international policy. Two working groups will contribute ideas to the board, one UK and one global, with representation from all CIOB regions worldwide.

"Besides sustainability and quality, the other topics in the board's 'big five' policy areas are innovation, safety, plus equality, diversity and inclusion," said Brant. "The remit of the board is huge, and we will develop and review strategies in line with industry issues as they arise. An example of this is the CIOB's response on quality after the 2016 Edinburgh school wall collapse. We're now starting the process of

CIOB external affairs advisory board members

Ian Brant FCIQB
(chair)

Tim Barrett FCIQB
(co-chair)

Phil Beaumont
FCIQB

David Stockdale
FCIQB

David Philp FCIQB
Paul Nash FCIQB

Pete Dawber
FCIQB

Thomas Dempsey
FCIQB

Charlotte Hamman
MCIQB

Ada Fung FCIQB
Barbara Entwistle
FCIQB

Harvey Francis
John Edwards
FCIQB

(UK working group chair)

Michael Gallagher
FCIQB (global working group chair)

UN Sustainable Development Goals to be embedded in CIOB policy

SDG 4: Quality education

SDG 8: Decent work and economic growth

SDG 9: Industry, innovation and infrastructure

SDG 11: Sustainable cities and communities

SDG 12: Responsible consumption and production

SDG 17: Partnering for the goals.

communicating all the work we're doing to the membership and the wider construction industry."

He also urged CIOB members to provide input to the board. "There are experts with CIOB membership in our key policy areas who we don't always hear from, but we're keen to find out about the work they're doing, to help shape our responses on the major issues affecting the built environment."

The external affairs advisory board, which meets four times a year, will also work with CIOB trustees on the corporate plan. ●

For further information on the work of the board, please contact: policy@ciob.org.uk.

CIOB seeks head of client development

Build connections with clients around the globe

CIOB has launched its search for a head of client development, capable of building connections with clients in the built environment across the globe.

The new recruit will be tasked with developing an international offering that transforms the institute's positioning, recognition

and relevance to clients. The CIOB is looking for a candidate with a proven track record of working for or engaging with clients on a global scale. It is flexible on where the new head of client development is located.

CIOB is considering applications as they are submitted and is

encouraging candidates to apply as soon as possible before the 14 February 2022 deadline.

Interviews for the role are provisionally scheduled to take place on 21 and 22 February. To find out more about the role and to apply, visit: www.ciob.org/working-ciob.

Hackitt's 'serious concern' over pace of change

CIOB backs culture change message after criticism of industry attitude towards building safety



◀ Dame Judith Hackitt warns of "mixed picture"

The Chartered Institute of Building (CIOB) has supported a call for culture change in construction from Dame Judith Hackitt.

Hackitt warned in the third annual report from the Industry Safety Steering Group (ISSG) that not all companies and organisations are taking the challenge seriously enough. The ISSG was formed in 2018 following the final report of Hackitt's Independent Review of Building Regulations and Fire Safety.

She said there had been a "mixed picture" in terms of the industry's response, with some firms making "excellent progress" while others "hold back" until they are required to make changes as a result of legislation.

Arguing that legislation alone would not deliver the culture change needed, Hackitt highlighted work by the Considerate Constructors Scheme to establish the Building a Safer Future Charter alongside the Construction Products Association's Code for Construction Product Information. But she warned: "The lack of take-up of these vehicles is a serious concern."

“
The lack of take-up of these vehicles is a serious concern
Dame Judith Hackitt, ISSG

Commenting on the ISSG report, Eddie Tuttle, director of policy, external affairs and research at CIOB, said: "The CIOB... will continue to work with industry and government to bring about the culture change that is needed, as well as developing the required competency standards for the dutyholder roles under the upcoming Building Safety Act."

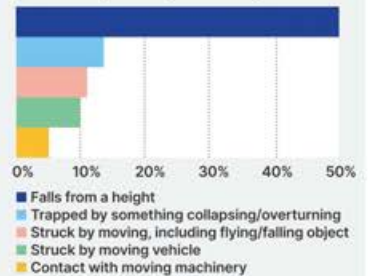
Government response
In a letter responding to the ISSG report and Hackitt's comments, building safety minister Lord Greenhalgh urged the construction industry to "[take] responsibility for remediating safety issues in existing buildings and by changing practice and norms to make safe and high-quality buildings in the future."

Meanwhile, housing secretary Michael Gove announced that developers would have until early March to agree a fully funded plan of action to remediate unsafe cladding on buildings of 11m-18m in height – with a bill estimated to be £4bn, in what Tuttle described as a "polluter pays" approach.

Gove also announced that leaseholders would not have to pay to fix unsafe cladding on their properties and that the government would indemnify building assessors from being sued and withdraw advice "that prompted too many buildings being declared as unsafe". ●

CIOB safety group warns on falls from height fatalities

Fatal accidents in construction percentage 2016/17-2020/21



Falls from height remained the chief cause of fatal accidents in construction, as well as accounting for the second-highest number of non-fatal accidents in 2020/21, the CIOB's safety group has warned.

Analysing the figures, Steve Coppin, chair of the CIOB's Health, Safety and Wellbeing Team said: "Fatal incidents involving a fall from height in construction dropped 13% compared to the previous year's figures but were still higher than all other sectors." (The chart above shows fatal accidents in construction over a five-year period.)

In total, 39 people working in construction were killed in 2020/21, down from the previous year's 42.

Slips, trips and falls on the same level still accounted for the highest number of non-fatal injuries during 2020/21, despite a reduction of 6%.

A total of 74,000 workers suffered from work-related ill-health in 2020/21, compared with 81,000 for 2019/20, a drop of nearly 9%.

Musculoskeletal disorders made up the majority of ill-health cases (54%), compared to 57% in the previous year.

But Coppin said it was not possible to assess the scale of work-related ill health independently of the effects of the coronavirus pandemic.

Percentage of construction workers that had received a vaccine booster job as of December 2021 – the second lowest take-up of any sector, according to the Office for National Statistics

39.8

Inflation pushes sector productivity into the spotlight

Forward planning and investment are key to boosting construction's lagging figures, writes **Kris Hudson**



For governments and businesses, improving productivity is a critical measure

of success and benchmark of competitiveness. Yet UK construction has long been a poor performer, not just lagging behind other sectors, but actually becoming less productive over time. In the two decades to Q3 2021 the industry's productivity fell by 9.1% while manufacturing saw an 89.2% increase in the same period.

Unproductive firms limit the sector's adaptability – making it harder to respond to the sort of demand spikes and supply challenges the past two years have brought. Low productivity also leads to low margins, leaving firms vulnerable at a time when they need to be resilient. The near future will be one of high market unpredictability, and the wider economy will need a strong construction sector as an engine of growth, recovery and the green transition.

Discussion on construction's poor productivity is longstanding because the

“The near future will be one of high market unpredictability and the wider economy will need a strong construction sector as an engine of growth and recovery

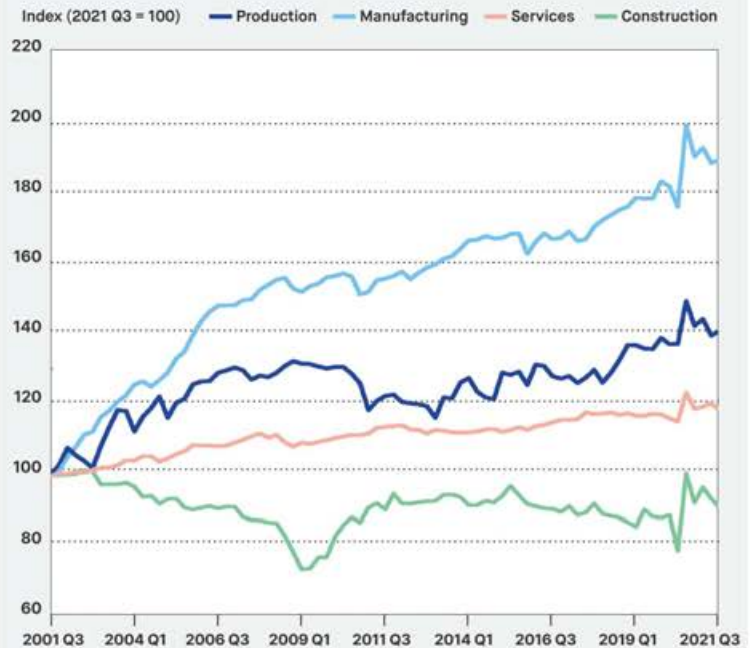
fundamentals of the problem are so entrenched. The sector has a high number of self-employed workers and small firms, with limited means or opportunity to radically improve performance or benefit from economies of scale. Given major challenges ahead in 2022, helping these firms and contractors needs to be priority.

A general discussion of construction productivity can mask the huge differences within its subsectors. At time of writing, recent market intelligence reporting from Turner & Townsend shows that in nearly 15 years to Q3 2021 civil engineering (infrastructure) productivity actually rose by 12.3%. The area dragging the sector down overall is building construction, with a 6.6% fall over the period.

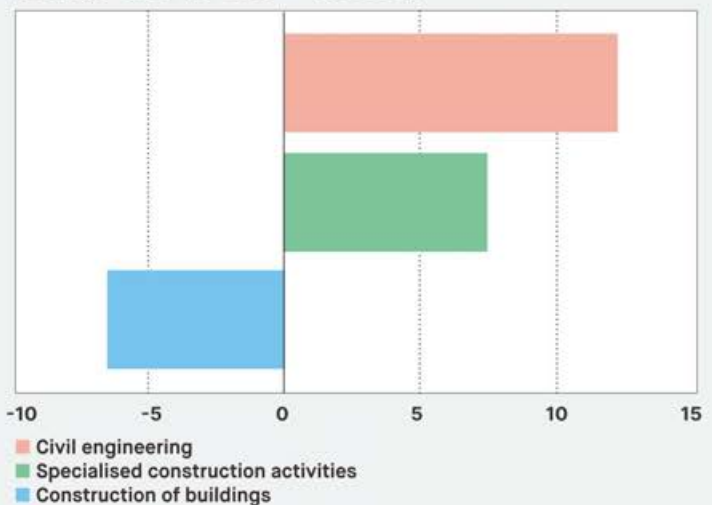
A key difference is how infrastructure approaches delivery: with long-term programmatic thinking, planning and investment. While it may look hard to translate this to individual building construction, there are lessons to be learned. Transparency and visibility are key – so that firms, big and small, know as far ahead as possible what to expect from the market, and have certainty of cost and schedule on individual projects. The industry must move away from a reactive approach to one focused on planning ahead. This will take cooperation from government, developers and contractors of every size.

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

UK productivity by sector (output per hour worked)



Construction sub-sector productivity (change over Q3 2007 – Q3 2021)



SOURCE: OFFICE FOR NATIONAL STATISTICS

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Matthew Goulcher
Housing Forum

Good housing means having a vision and sticking with it

Matthew Goulcher sets out the key ingredients for raising the quality of housing construction, starting with the need for a clear client vision



How can we lift the quality in construction

and refurbishment in housing? We want our buildings to be well designed and sustainable. We want them to be well built, with minimal defects and delivered on time and to budget. We want the investment to deliver social value, resident engagement and a set of other goals that need to be thought about at the time of procurement.

But the sad truth is that too many design and build contracts – the predominant contracting form in the sector – are let at too low a price. Too much risk is being shunted on to the contractor and inevitably that leads to cost-cutting and quality failures and, in the worst cases, safety issues.

There are many examples of inspiring projects delivered on fixed-price design and build contracts. But that's achieved more by luck than any sort of planned process. At the Housing Forum we've been keen to change that. I've recently led a working group where we've looked at the procurement practices over the last 25 years, and reflected on what has worked, and what hasn't. The result has been *Better Procurement for Better Homes*.

Our guide is packed with advice spanning the entire process, presented in six chapters, from when the housing association or council first has the idea for new homes, through choosing the most appropriate contractor and contract, to inspection on site.

Here are our key pointers:

- **Create a vision.** All projects should have a formally documented project vision plan – and we've developed a template for clients tailored for creating this. It asks the basic, crucial questions that clients need to work through right at the start.
- **Appoint the right leader.** Get the leadership right and set the project up properly in relation to governance, advocacy and client ownership.
- **Foster collaboration and procure on shared values.** Clients need to be clear about their vision and objectives, including defining 'quality', and then procure the team

Clients need to be clear about their vision and objectives, including defining 'quality', and then procure the team on the basis of a shared understanding and alignment of values



on the basis of a shared understanding and alignment of values. There need to be clear selection criteria, including a price evaluation model that does not promote a 'race to the bottom', and avoids over-complicated tender processes.

● **Drive quality of design with a clear design brief.** Procuring good design on projects has to start with a clear and realistic design vision setting the degree of aspiration, which is endorsed at senior level, and which also sets out how the client intends to provide continuity of the team to provide design integrity and preserve the golden thread.

● **Appoint the consultants and contractors early.** Early appointment of the consultant team and contractor and early engagement with key suppliers is crucial to drive quality, innovation and collaboration and greater cost certainty. Clients should select a form of contract which allows for early appointment and a process for developing design and price collaboratively.

● **Inspect for quality on site.** There needs to be a clear inspection regime set out before the contract is let, so it's clear on site who's doing what.

We're convinced the values and behaviours set out in our guide, founded as they are on collaboration between client, consultants and contractors, will result in safer, higher-quality homes and far better places to live. ●

Matthew Goulcher is a Housing Forum board member and managing director of the architectural practice Levitt Bernstein. The report can be downloaded at <https://bit.ly/3FpWPJL>.



Caroline Gumble
CIOB

Shaping tomorrow's leaders

Caroline Gumble explains why CIOB is making work to engage younger members one of its top priorities in 2022

One of the many things I'm looking

forward to this year is the development of our Tomorrow's Leaders (TL) community, including all our new representatives and champions, and their integration into CIOB's decision-making structures.

For many years, we ran the Novus network for individuals in the early stages of their career. Last year saw us take the months of work carried out under the banner of the Inspiring Tomorrow's Leaders Project and develop it into a strategy, focusing on what we can do to support new entrants into our industry.

One of the key outcomes of that work is the Tomorrows Leaders community, which will be important in both engaging younger members and those new in the industry and strengthening the diversity of voices we have among our membership.

This is one of my personal priorities – Tomorrow's Leaders is a significant step in helping to shape a positive and progressive future for the institute and the industry. Voices from our community of younger members and those new to the industry need to be an integral part of CIOB.

The current focus is on enabling all those within the CIOB community who are automatically eligible, or who



wish to join, to become part of the TL community. We will also be asking for people to step forward as champions, connecting them with opportunities to get more involved with our regional hubs, or as representatives on our operational committees.

I can't wait to see who comes forward to fulfil these roles, share their views and have the voices of younger members heard by the wider CIOB community and industry.

We are still building our cohort of Tomorrow's Leaders, so let us know if you'd like to step forward and play a more active role within CIOB. I want to thank all those who have already put their hand up and joined. We are so fortunate in that many of our Novus stalwarts were behind the transition to Tomorrow's Leaders and have been brilliant in supporting and encouraging others to join in.

If you'd like to know a little more about who's already involved and what resources we're starting to create for the TL community, just visit YouTube and search for 'CIOB Tomorrows Leaders'. ●
Caroline Gumble is CEO of CIOB.

“ We are still building our cohort of Tomorrow's Leaders, so let us know if you'd like to step forward and play a more active role within CIOB

Feedback

A selection of readers' comments about news and issues in the industry from www.constructionmanagement.co.uk

CM 29/10/21

'The future will be here before you know it'

Bryan Hammond

Having been a CDM professional since 1995, I would like to offer some observations arising from the article in the November/December edition [profile of Peter Baker, chief inspector of buildings, p8-9] and in particular Gateway 3 of the building safety gateway regime.

In my experience, only on very rare occasions has the production of completed project health and safety files been available at practical completion for the client, as has been required by all three versions of the CDM regulations. Late provision of 'as built' drawings by designers and specialist contractors is the primary cause, followed by delayed 'O and M' record documentation.

Firstly, whereas practical completion certificates note that health and safety file documentation has or has not been provided, there seems to be a lack of appropriate wording/clauses within contract documentation whereby retention monies can be withheld until the file is made available to the client.

Secondly, clients have been known to take occupation of their new premises ahead of practical completion. It is to the principal contractor's advantage to be accommodating.

For the above reasons, it is my view that Gateway 3 is an unachievable strategy.

CM 06/01

When does construction 'banter' go too far?

Joe Bloggs

Banter has always been part of people's social development. It's never harmed anyone. There is a major difference between banter and bullying/harassment.

Spiky

There are a large number of arrogant, self-centred people in the world who feel more important by running down those in their social or work environment. I guess the likes of Mr Bloggs! Perhaps he has never had to talk someone back from the brink because the banter has robbed their self-esteem.

Meet construction's new generation

Ahead of National Apprenticeship Week this month, **CM** asked apprentices from across the construction industry why they have chosen a career in the sector



Kyle Marzan, estimating apprentice, Wates

"I was instantly drawn to the great benefits that apprenticeships offer – I can gain my qualification and experience at the same time. The fact that I would have no student debt was definitely a win for me!

"What I love about it is working in a fast-paced environment where everything is developing and progressing very quickly. I love the variety – every project and every day is different.

"What I would say to someone thinking about a career in the built environment is to research all the different career paths that the industry has to offer and to gain as much experience in a variety of different areas

as this will help you find where you fit best and what you most enjoy. But most of all, when deciding on your career path it is fundamentally important to enjoy what you do.

"Work experience is also very valuable – you will never know if your chosen career path is right for you until you have tried it.

"I enjoy being able to work with a range of different people and in different environments, as well having my own responsibilities which make me feel part of a team and that I am making an impact. I am focused on progressing my career forward from an apprentice estimator to an estimating manager."



Alex O'Shea, apprentice estimator, Sir Robert McAlpine

"I have always wanted to go into a professional workplace, rather than doing the typical university experience. An apprenticeship is a great way of both learning about different career paths within the industry while getting stuck in with work.

"Sir Robert McAlpine came across as very welcoming and open and the company is synonymous with building some significant landmarks. It seemed like a perfect place to both work and achieve my degree. The best thing about working here is the knowledge you can draw from a great team of people.

"My day consists of lots of commercial meetings, lots of collaborative work, pricing aspects of construction, interfacing with subcontractors, preparing works packages.

"I have been fortunate to work on numerous projects, some of which include state-of-the-art university accommodation to highly sophisticated research and science facilities.

"I am lucky to have a chance to work in a renowned company that has a family-oriented environment and I really do feel like I am learning about construction at its finest and getting to work on some exciting projects."

What I love about it is working in a fast-paced environment where everything is developing and progressing very quickly. I love the variety – every project and every day is different

Kyle Marzan, Wates



Lauren Cooper, apprentice civil engineer, Kier Highways

"I'm currently an apprentice civil engineer at Kier, working within its Highways business in the structures team.

"I joined Kier in November 2020, straight after my GCSEs. I chose an apprenticeship as I saw it as a great opportunity to carry on with my education, while gaining valuable experience within the industry. As part of my apprenticeship, I attend The Sheffield College, where I'm completing my BTEC Level 3 National Diploma in Civil Engineering. Last year, I was incredibly proud to win the Chair of Governors' Choice Award as part of the Apprenticeship Celebration Awards.

"I help with completing design packs. I've helped out on various different types of projects which involved footbridges, gantries and foundations.

"I have been given so many opportunities, including participating in events. I was really proud to attend Highways UK, I have participated in virtual careers events with schoolchildren and I'm also a member of institutions such as ICE and Women in Transport, as I really want to encourage others to join our industry."

"Once I have finished my apprenticeship, I hope to gain my EngTech qualification and then start my degree, with the goal to be a chartered engineer."



Ellis Moore, apprentice project manager, Gleeds

"I decided to undertake an apprenticeship with Gleeds as I much preferred the idea of learning on the job. I also discovered that Gleeds had many experienced project managers who would be more than happy to mentor me. The motto at Gleeds is that no question is a silly question, and everyone is willing to help, no matter their position.

"I have been very lucky to have worked on some multi-million-pound public health projects in my three years at Gleeds. Health is an area of expertise at the Cardiff office and one I'm hoping to develop during my career.

"My main role across these schemes has been to assist

the lead project manager with their duties to deliver a project, including tasks such as managing design and construction process under different frameworks (D4L, Scape and SBS), alongside a quantity surveyor, tracking and managing a project contingency budget, and assigning project risk scoring and working with project teams to mitigate those risks.

"My five-year plan is to finish my degree, gain further experience and to receive chartership with CIOB.

"Past this, I am aiming to become a fully developed project manager with a wide range of experience in health, education and leisure."

Cutting carbs

The UK's first net zero McDonald's has just opened in Shropshire, built by a supply chain full of low-carbon innovations. **Kristina Smith** reports



ANTHONY DEVLIN

At first glance, there is nothing special about the new McDonald's restaurant on the outskirts of Market Drayton in Shropshire. It could be any McDonald's in any town.

But this is a rather remarkable building. It is packed with low carbon products and technologies, intended to reduce the building's carbon footprint to almost zero in both construction and operation.

"We want to create a blueprint for our 1,400 restaurants across the UK and Ireland," says McDonald's development director and CIOB fellow Gareth Hudson. In fact, some of the products sourced and developed for this restaurant have already been used on other refurbishment projects.

McDonald's has set itself a net zero target date of 2040 for the UK business, and 2050 globally, in its Plan for Change sustainability strategy published in 2021. There is a shorter timeline for its restaurants and offices: they must achieve net zero emissions in operation by 2030. "That's only eight years away," points out Hudson.

Extreme recycling

In deciding what products and systems should go into the net zero blueprint restaurant, Hudson and his team have left no stone unturned. How's this for extreme recycling? All the wall graphics are manufactured from recycled plastic bottles, glued onto the walls with starch produced by the chip manufacturing process.



We want to create a blueprint for our 1,400 restaurants across the UK and Ireland
Gareth Hudson, McDonald's

And there's even art made from waste coffee grounds.

The supply chain, a combination of existing members and new ones, has come up trumps, says Hudson. With long McRelationships behind and ahead of them, suppliers have been keen to innovate. Many firms already had ideas waiting in the wings, with this build giving them the opportunity to deploy them.

"We have incredibly strong relationships with our suppliers," says Hudson. "We generally work with smaller companies, family firms.

"We did bring in new suppliers during this process, but a lot of them came through recommendations from our existing supply chain. A lot of small companies are passionate about sustainability."

Some of the product substitutions on the Market Drayton McDonald's are surprising. For example, the black cladding was made from recycled computer keyboards by a company called The Good Plastic Company. Concrete kerbs have been replaced by recycled plastic bottles from Durakerb, which has removed over 1,000 concrete kerbs from the carbon equation. Cladding around the chillers was made from recycled white goods, while internal parapets on the roof contain material recycled from toasters and blenders.

The imprinted drive-through lane contains only 25% of the concrete normally used. It's mostly a formulation of resin and recycled car and van tyres, from KBI UK. The patios are made in this material too.

Timber plays a significant role. Standard cladding materials such as Trespa panels and brick slips are carbon intensive, says Hudson. Instead, this McDonald's is clad with sustainably sourced British poplar – alongside the recycled plastic ▶

◀ Cladding is made from sustainably sourced British poplar and plastic that was recycled from computer keyboards

▶ The drive-through lane surface contains resin and recycled tyres, reducing the concrete normally used by 25%





◀ Clockwise from top: the building frame is made from low-carbon steel; a modular unit is craned into place; the wind turbines are erected
 ▶ Wind turbines supplied by VWT Power offer a source of renewable energy

We discovered that there is not enough recycled steel in the market to meet demands, so we opted for low-carbon European steel – which is a mix of new and recycled steel

Gareth Hudson, McDonald's



bottle cladding. Aluminium window frames have been replaced with sustainably sourced timber. Inside, all laminates have been banished. "They go straight to landfill," explains Hudson. Instead, there is sustainably sourced screen-printed timber. Finishes such as floor, wall and ceiling tiles are recyclable. "At end of life, the tiles can be ground up and made into new tiles."

Other elements are less unusual. Renewable energy – around 60,000kWh per year – will come from two wind turbines and 92 sq m of solar panels. Mechanical heat recovery recycles heat from the kitchens and harvested rainwater flushes the toilets. All the insulation is British sheep's wool, which otherwise would have been condemned to landfill, Hudson explains, since there isn't enough demand for it at the moment.

Then there's the carbon-intensive materials: concrete and steel.

Usually, McDonald's would use concrete piled foundations. For Market Drayton, the team considered vibro-compacted recycled stone but, on discovering how good the bearing capacity of the ground was, plumped for in-situ concrete pad foundations, which had a large proportion of the cement replaced by pulverised fuel ash (PFA) and ground granulated blast-furnace slag (GGBS).

Lowering the carbon footprint of the modular steel frames for the structure of the building was more

challenging. McDonald's worked with supplier Elliott and with a specialist company called Recycled Steel. "We discovered that there is not enough recycled steel in the market to meet demands, so we opted for low-carbon European steel – which is a mix of new and recycled steel.

"We are working with Recycled Steel, who are looking at ways of mitigating carbon by using different types of furnacing techniques to remove carbon from the production process."

Offsetting?

The carbon number crunching was still under way as this article went to press. McDonald's elected to use an independent specialist, Method Consulting, to carry out the carbon accounting and has been working with the UK Green Building Council to follow its net zero framework.

"The way that carbon is being measured is changing. Since we started the project, the guidance has changed a couple of times," says Hudson. "That's where our

strong partnership with the UK Green Building Council and Method has been really useful."

There may be the need to offset a small amount of carbon, says Hudson: "We will be offsetting an element, but we are hoping it will be minimal." The main culprit is steel, he explains, and while they eliminated as many steel elements as possible, the frame remained.

When it comes to capital cost, Hudson reckons that the build will be around 15% higher than a bog-standard McDonald's. Some items are far more expensive than their carbon-intensive counterparts; for instance, the recycled plastic kerbs are three times the price of concrete ones, although there is some payback in that they are quicker to lay.

Getting to this point has required a lot of additional in-house time and resource, says Hudson. Construction manager Evan Westby MCIQB and Paul May, procurement manager, have put in huge amounts of effort, alongside the supply chain, says Hudson. ▶

Sustainability in the supply chain

SUPPLIER	PRODUCT
SES	Contractor
Elliott	Modular building
Display World	Sustainable furniture, wall art and coffee letters
Enterprise UK	Sustainable patio furniture
Hollywood Monster	PVC-free graphics and potato starch adhesive
Kompan	Play equipment
Enviroclad	PVC-free hygienic cladding
LAUK	Solar-powered/motion-sensitive, energy-efficient car park lighting
Vogue Ceramics	Cradle-to-cradle floor and wall tiles
Durakerb	Plastic kerbs
KBI UK	Resin-bound material for drive-through lane and pedestrian areas
VWT Power	Wind turbines
Good Plastic Company	Cladding
EcoScape	Cladding



ANTHONY DEVLIN

Project team

McDonald's, Market Drayton
 Construction cost: not disclosed
 Programme: July to November 2021 (building handover); restaurant opened December 2021
 Professional services:
 Architect: Scurr
 Carbon calculations: Method Consulting and UKGBC
 Engineering: Gianville
 Planning consultant: Planware

One thing that this project has underlined for Hudson and his team is the importance of listening to everyone involved: consultants, contractors, suppliers, planners. "Everyone has good ideas," says Hudson. "We have an open-door approach; we listen to everybody."

The other important principle has been to take some risks, says Hudson. "We said: 'Let's rip up the rule book.'" Although McDonald's is a global corporation, the UK and Ireland development team has autonomy which allows them to make changes fast, if it benefits the business. For instance, the renewable decor packs created for Market Drayton have already been

used for a few retrofits, as have the recycled plastic kerbs and the rainwater harvesting system.

And there is the possibility that the hard work put into sourcing and using the products and technologies here could benefit McDonald's estates beyond the UK and Ireland. In early December, Hudson was due to meet up with his counterparts from around the world to share details of the project with them.

"This isn't the end of the process, it's the start of a really exciting journey," says Hudson. "We will continue to look at different products and different innovations to reduce the carbon we produce on our builds." ●

▼ Solar panels and two wind turbines will produce around 60,000kWh per year of renewable energy



ANTHONY DEVLIN

Construction manager CV: Gareth Hudson, FCIQB

Gareth Hudson joined McDonald's as a senior project manager 14 years ago.

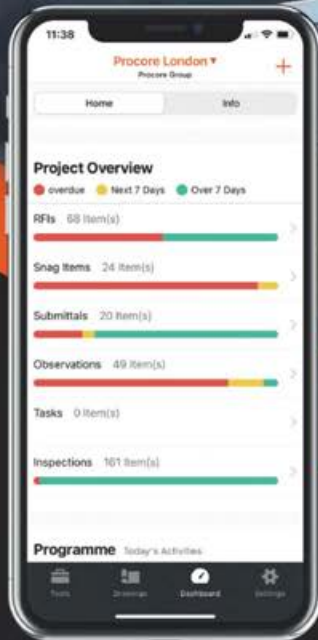
After a career that started as a QS in retail, working on projects for the likes of Harvey Nichols, Louis Vuitton and Selfridges, Hudson moved on to a more general QS role. But he was missing the pace of the retail jobs and McDonald's offered a chance to rekindle that excitement – as well as providing excellent development and progression opportunities.

Having risen to be construction director, Hudson was promoted to be director of development of UK and Ireland in November 2021. Once a RICS member, Hudson is now a passionate fellow of the CIOB and sits on assessment panels for would-be new members. He encourages all his team to go for CIOB accreditation, supported in their training by McDonald's.

Hudson holds an MBA from Henley Business School (2015-2017) and a Master of Laws from the University of Liverpool (2005-2008), as well as his BSc in Quantity Surveying, also from the University of Liverpool (1999-2003).

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Charles Bull, Operations Director,
HBS Group Southern



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'Carbon reduction is a collective responsibility'

The concrete sector has set out its roadmap to net zero carbon emissions by 2050. And there are three ways construction professionals can help, as **Will Mann** finds out

Concrete's carbon footprint is notoriously high. It currently accounts for 2.6 gigatonnes (Gt) of CO₂ annually, around 7% of total global emissions. The Global Cement and Concrete Association (GCCA) is aware that drastic action is required.

"We have a responsibility to change our behaviour and lower our emissions," says Andrew Minson, concrete and sustainable construction director at the GCCA. And in the manufacturing supply chain, that's starting to happen."

The GCCA reports a 20% proportionate reduction in CO₂ emissions from cement production over the last three decades. In October, it published its roadmap to net zero in 2050 (see chart, p22), and as part of this, Minson calls on construction professionals to step up.

"Users of concrete – clients, consultants, designers, constructors – could be doing a lot more currently to reduce the carbon impact of concrete in

their projects. Carbon reduction is a collective responsibility."

These actions, Minson says, break down into three category areas.

1. Use of secondary cementitious materials in client briefs

"We know there are major clients who still insist on a CEM1 mix (which is 100% cement)," says Minson. "So they're not allowing any substitutes such as GGBS (ground granulated blast-furnace slag) or fly ash. Using one of these substitutes is an easy thing to do, which is permitted in standards, and works technically from a design and construction perspective.

"But public procurement has been slow to change. So construction professionals in these clients, or who advise these clients, could make a significant carbon reduction impact by specifying secondary cementitious materials."

While fly ash supplies will dwindle as coal-fired power stations go off grid, other materials have emerged. "Limestone fines can be used for



Construction professionals could be doing more to reduce concrete's carbon impact

in their projects

Andrew Minson, GCCA



cement binding," says Minson. "They are enshrined in standards and widely adopted in North America. They have been introduced to standards in the UK and there is significant scope for their wider use globally. Calcined clays can also be added to cement in place of clinker."

2. Efficiency of design and construction

"Concrete as a material is very versatile," argues Minson. "It can be precast or cast on site, it can be used structurally and architecturally, it performs well across a range of measures including fire protection, flood resilience, acoustics and it has high thermal mass properties.

"Now that we have entered this new paradigm of carbon reduction, we need to rethink how we design projects, using the concrete more efficiently. For example, with global warming we have seen more air-conditioning introduced to buildings – but with its ability to absorb and store heat, concrete can be used to passively cool buildings."

3. Literacy on life-cycle carbon analysis

"Construction professionals need to become fully life-cycle literate," says Minson. "That's the new reality of climate change. Understanding environmental product declarations (EPDs) is part of that." ▶

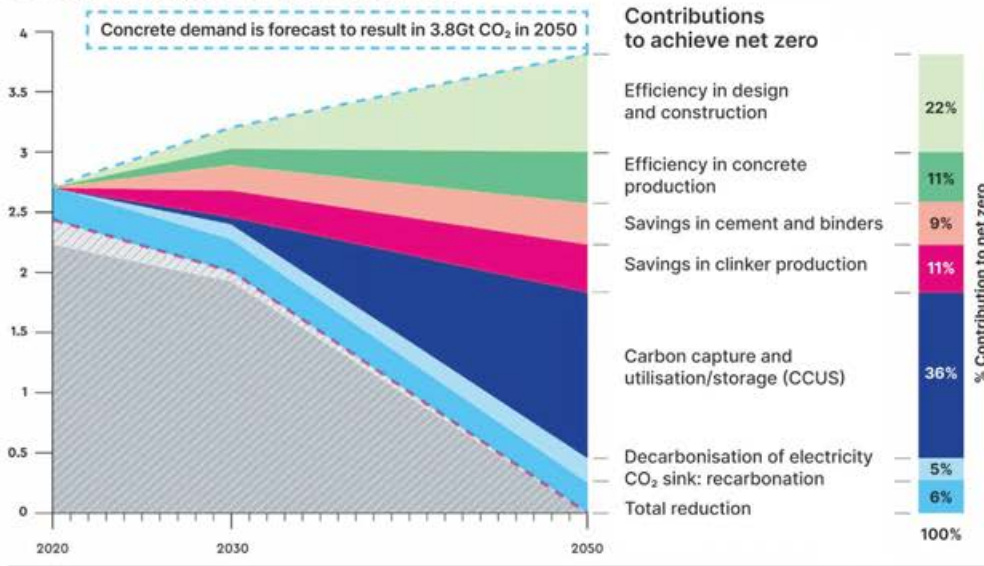
▶ Exposed concrete in London's Tate Modern contributes to the building's high thermal mass



The GCCA reports a 20% proportionate reduction in CO₂ emissions from cement production over the last three decades

20

GCCA roadmap to net zero by 2050



Elaine Toogood
Mineral Products Association

Concrete as a carbon sink

A new study looks at how the material absorbs CO₂

Carbonation is a process where concrete naturally absorbs carbon dioxide from the atmosphere throughout its lifetime, at end of life and in secondary use.

In August 2021, the UN acknowledged for the first time that this uptake of CO₂ in concrete infrastructure is a form of sequestration that balances a significant proportion of carbonate emissions over the life cycle.

The UK government has since recognised the need to measure and understand the process of carbonation and appointed the Mineral Products Association (MPA) in December to research its impact across the built environment. Our initial assessment is that, nationally, concrete carbonation would contribute a 12% reduction in emissions compared to 2018 levels, taking the industry beyond net zero.

We need to understand carbonation to maximise its benefits in the design and construction of our buildings, although it's important to be clear that the UK carbon and cement industry is not relying on carbonation alone to meet net zero commitments.

The UK will become the second country after Sweden to develop a model of accurate calculation of carbonation at a national level. This research will help greenhouse gas accounting and provide an accurate assessment of carbonation across the life cycle of the built environment. Elaine Toogood is head of architecture at the Concrete Centre, part of the Mineral Products Association.

EPDs exist for most construction products and provide information on the environmental performance or impact of the product over its lifetime. The GCCA has just announced the global verification of its EPD tool for cement and concrete manufacturers. A similar tool has been created for the UK market by the Mineral Products Association.

"For construction professionals, they can now ask their concrete suppliers for EPDs and have confidence that this will provide information about the product's carbon footprint," Minson explains. "If they are the client or acting for or advising the client, they can explain how this will contribute to a project's whole-life carbon footprint. This includes both embodied carbon and operational carbon."

Soon, he says, there will be whole life-cycle benchmarks which clients will be able to reference when planning their projects. "The benchmarks will include a whole range of EPDs for project teams to use when assessing the carbon footprint,"

he forecasts. "We're not there yet. The data needs to be collected first. But Arup recently said it would measure the whole-life carbon footprint on all its projects. That's pretty big."

Is there any alternative?

Several alternative binders to Portland clinker cement have emerged recently. However, Minson says: "Their wider adoption is constrained by availability of the raw materials required at a necessary scale. Cemfree, for example, uses GGBS which is activated with a chemical. So you might say, why not use this product on all projects to help cut carbon emissions – but if you did that, GGBS supplies would quickly run out.

"So, while alternative products to cement can help, they won't solve the whole problem."

The GCCA predicts that cement alternatives will be 1% and 5% of the global market in 2030 and 2050 respectively and in 2050 will contribute a 0.5% reduction in overall CO₂ emissions. ●



Arup recently said it would measure the whole-life carbon footprint on all its projects. That's pretty big
Andrew Minson, GCCA

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CENTURION SAFETY PRODUCTS

▲ Mips helmet technology is now available in construction hard hats

Head protection in construction

What do hard hats offer in terms of protection, what materials are they made from, what standards are they tested to and how are those standards changing? This CPD, in partnership with Mips, explains

Safety helmets and hard hats have been protecting people in one form or another for thousands of years. From their humble beginnings as battle armour in 2500BC to today where their use is much more widespread, they have stood the test of time. These common safety items offer far more than you realise in terms of protection, and Mips would like to provide you with guidance on what that means in terms of the modern safety helmet and why our mission is leading the world to safer helmets.

Let's talk plastic

HDPE or ABS or PP – which is best?

- **HDPE (High Density Polyethylene):** This is the most common plastic used to make hard hats/safety helmets, versatile with good chemical and impact resistance.
- **PP (Polypropylene):** This is the second most commonly used plastic in the world and has good chemical and impact resistance also a high melting point.
- **ABS (Acrylonitrile Butadiene Styrene):** This is a thermoplastic with good impact resistance and compression qualities. It also has good chemical resistance.

So, what type of plastic is best?

Most plastics are tested using different methods but here are two examples.

- **An Izod impact strength test:** A pivoting arm is raised to a specific height and then released. The arm swings down hitting a notched sample, breaking the specimen. The energy absorbed by the sample is calculated from the height the arm swings to after hitting the sample. A notched sample is generally used to determine impact energy and notch sensitivity.



In association with

● **Compressive strength (MPa) test:** Compressive strength gives a good indication of the short-term loading capabilities of different plastic materials. It is measured by applying an increasing force on cylindrical or cubical specimens held between two plates, while measuring both pressure and elongation.

All the plastics listed above have good impact resistance characteristics and therefore make great safety helmets or hard hats.

Mips would like to discuss compatibility, in that is the PPE you are wearing compatible and how do we view the question of compatibility as a global leader in helmet safety technology?

Let's talk compatibility

What is compatibility and what does that mean to you as a wearer?

According to most national laws, employers must provide adequate protection for workers and that protection must be suitable. Compatibility is relevant because the UK Personal Protective Equipment at

Work Regulations states that when employees wear more than one item of PPE that the equipment should be compatible and when used together, will adequately control the risks against which they are provided to protect. It is therefore worth considering that even if a hard hat or safety helmet is tested to the standard, say EN 397 for example, does adding ear protection change dynamically the way it would react in an incident?

Compatibility can cause major issues for the user where comfort and safety are concerned. When purchasing PPE, it is not only worth thinking about if they work together but also if the items are tested together and are meeting the requirements of the standard.

Good helmet manufacturers aim to design products that work together in harmony, thus providing increased comfort and optimal performance for the wearer. Mips believes that products should be tested together for performance evaluation. For example, when Mips



When purchasing PPE, it is not only worth thinking about whether items work together but also if they are tested together

Chris Tidy, STCC

▼ Helmets undergo testing at the Mips test centre in Sweden

introduces its low friction layer into a manufacturer's safety helmet or hard hat it is also tested to make sure it still meets the requirements of the standard it is certified to.

This gives the wearer peace of mind that the products are tested to not only work together, but also to perform together. In the varying jungle that is the PPE market, it is worth asking yourself two important questions when selecting your products.

- Do they work together from a comfort perspective?
- Do they perform together according to the applicable standard?

Mips would like to discuss what you could wear and why.

What to wear and why?

All good safety helmets or hard hats are qualified to a recognised standard. The standard describes how they are tested and what areas of the helmet have been tested, for instance, the crown or sides of the helmet. Testing can also include chinstrap retention strength and breakage strain if a chinstrap is fitted.

Mips recognises that there may be confusion over which standard someone should be wearing under different circumstances. For instance, should wearers working at height just add a chinstrap to an EN 397 rated helmet? Mips would like to give you some insight into this issue.

If you work solely on the ground, then an EN 397 helmet could be your primary choice, remembering though that this helmet is only tested for linear impacts on the crown area only. It does not have any extra impact protection unlike helmets that are used for working at height. This standard also has an optional chinstrap, so we recommend that you take advantage of this to ensure your head protection always stays on. ►



749

The number of incidents in the UK in 2018/19 where a loss of consciousness was caused by a head injury or asphyxia

So, what helmet should I choose if I'm working at height? Firstly, when working at height you should always use a safety harness, using a harness can reduce the risk of falls from height, if that is the case then an EN 12492 helmet can be used. The main difference between an EN 12492 helmet and an EN 397 is that the EN 12492 helmet is also tested on the side, rear and front using a 5kg mass which is dropped from 0.5m.

This test is designed for mountaineering accidents when you are attached to a rope and may swing into the side of a rock or mountain wall; it is not a test that would mimic a typical fall accident. According to accident statistics a fall accident is the most common cause of severe head injuries. A fall accident can occur at the same level by slipping or stumbling on the ground or by falling off a ladder two or three steps up.

Studies have shown that if you fall from a 1.5m height the force can be above the level for skull fracture to occur and can result in high rotational forces that could result in brain injuries. It is therefore possible to argue that the EN 12492 test method is not designed for a potential fall accident. It could also be argued that the shock absorption test methods used to test adult cycling helmets (EN 1080 1.5m drop test of helmet and head

More head injuries occur from slips, trips and falls from the same level or one level above than being struck by an object, but until recently the focus has been on protecting against being struck by an object



ZEKLER SAFETY

form) better evaluate the helmet's ability to absorb the impact from a fall accident. All helmets on the market that are equipped with Mips technology are tested using a falling head form.

So, what if you want to work on the ground and at height? Then you could opt for an EN 12492 helmet which is designed for giving protection on the ground and at height. Should you take into account the strangulation risks from the chinstrap that is attached to an EN 12492 helmet or hard hat?

The strangulation risk was based on compression of the airway at 15kg, so have this risk in mind when choosing a helmet. However, this risk could be quite low depending on your work situation, so it is a risk but should be a relatively small one compared to what could happen if your safety helmet or hard hat fell off during an incident!

Remember if it is a risk, it is up to you to provide an adequate risk assessment based on the evidence.

► It is important to ensure hard hat compatibility with eye and ear protection

There are currently changes being made in EN 397 and hopefully when the new standard is released it will fit the requirements of specifiers and wearers globally.

Accidents and statistics

There are a lot of accident records and statistics available online, however, the interpretation of these is key to understanding and evaluating the risk.

One way that displays how we view accidents from a health and safety perspective, is when we put up a board at our building site or factory saying: "It's been 238 days since our last reported accident." What's wrong with that? Potentially accidents may not be reported, as individuals may not want to ruin the company's accident record or statistic.

Perhaps it should read instead: "238 accidents reported in the last three years, thank you. Please continue to report all accidents or incidents." This would then promote a good reporting culture and in turn help us to understand how these accidents and incidents occur.

For all of us, accident reporting and statistics provide insights to help us elevate the issue of better head protection for the world's safety helmet/hard hat wearers. It allows us to constantly challenge the status quo and push technical boundaries to achieve better protection, sending us home safely to our loved ones every day.

Our most valuable asset to protect is our head because that is the bit that works everything else. If something happens to that, then there may be serious implications including anything from brain injury to death. Through accident reporting and statistics, we can gain further understanding on ►



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▲ The yellow Mips Safety System is designed to allow the head to slide 10-15mm in any direction during certain angled impacts

how injuries are caused and therefore how we can prevent them.

However, statistics are only one part of the equation. As an industry, we must continue to analyse and question statistics so that we can address the issues that have the biggest impact on wearer safety.

For instance, we know that in 2018/19 in the UK there were 16 fatal injuries involving being struck by a moving or flying/falling object, but we do not know which ones involved a head injury. We know there were 749 incidents in the UK 2018/19 where a loss of consciousness was caused by a head injury or asphyxia, but how many were caused specifically by a head injury? We know that more head injuries occur from slips, trips and falls from the same level or one level above than being struck by an object, but the focus until recently has been on protecting against being struck by an object.

We must continue to push for better, more detailed, accident reporting and statistics so that we can take the right steps to protect people and ensure we focus on the areas that can have the biggest impact on wearer safety, such as traumatic brain injury (TBI) and rotational injury.

These injuries are far more common than you think, for example 50% of TBI go undiagnosed or detected, while 90% of diagnosed TBI do not involve a loss of consciousness. Accident data and statistical analysis are likely to help us to achieve a higher level of protection for the wearer, but only if we push for better data quality and use it to inform future product development.

- Remember that not all head protection is equal when it comes to types of impacts.
- Remember that head protection may be required to play a vital role in saving your life. ●

To take the CPD module on this topic, go to: [constructionmanagement.co.uk/cpd-modules](https://www.constructionmanagement.co.uk/cpd-modules).

The changing face of standards

Why do we need standards and how have they evolved?

Why have standards? And what are they there for?

The answer to those questions is quite simple. Firstly, for safety and reliability: adherence to standards helps ensure safety and reliability. Secondly, for the support of government policies and legislation: standards are frequently referenced by regulators and legislators for protecting user and business interests. Lastly for consumer choice: Standards can provide the foundation for new features and options.

As far as safety helmets and hard hats are concerned, the standards started when TE Lawrence (Lawrence of Arabia) was fatally injured in a motorcycle accident in May 1935; his doctor, the young Australian neurosurgeon Sir Hugh Cairns realised his life might have been saved if he had been wearing a helmet. Cairns went on to research and campaign for the use of motorcycle helmets in the UK.

Cairns researched head trauma in 1940 which was subsequently published in 1941 in the *British Medical Journal* ('Head injuries in motorcyclists. The importance of the crash helmet.') This all led to the first motorcycle standard in 1952 which was followed two years later by the first hard hat standard (The Light Duty Safety Helmet

Standard) in 1954 – both of which were British Standards. This standard was updated once before the International Standards Organisation tried to unify safety helmet standards in 1977 with ISO 3873.

So today we are left with the most common EU safety helmet/hard hat standard EN 397, which was actually for the most part comprised of the ISO 3873 standard from 1977 plus a few additional tweaks in 1995 to bring it up to date.

There are other global safety helmet/hard hat standards which are very similar to EN 397 that may be updated once the new version of EN 397 is released as most of them like EN 397 were bench marked from ISO 3873.

Mips believes that wearers need to be educated about head injuries and their risk but also to understand how important the wearer's role is in the wear and care for their safety helmet or hard hat.

Education is key in the fight against traumatic brain injury but also participation in an event like Hard Hat Awareness Week will enhance wearers understanding of wear and care for their safety helmet or hard hat.

Low Friction Layer

Allows the head to move inside the helmet, engineered to help reduce the rotational force on certain impacts.



Safety for helmets

Managing biodiversity on construction sites

This CPD, in association with ACO, considers biodiversity in construction and how schemes can be designed and managed to help prevent fragmentation, increase genetic diversity and achieve biodiversity net gains

◀ Road systems may cut through routes used by wildlife



Biodiversity is under threat in the UK. The UK has lost more natural wildlife and wild spaces due to human activity than any other G7 country, according to a 2021 Royal Society for the Protection of Birds (RSPB) report. Owing to its unique position at the forefront of this issue, the construction industry has a responsibility to play its part in mitigating habitat destruction.

Impacts on species decline

The construction industry has had a significant impact on biodiversity loss. Land use and construction practices contribute to the removal of natural habitats. This affects the diversity of individual species, genetic diversity and prevents migration and the occupation of a wider range of habitats.

In particular, transport infrastructure over the past few decades has had a major impact on wildlife populations worldwide, causing habitat loss, pollution and fragmentation as well as substantial rates of road traffic mortality.



In association with

Within the UK in particular, around one in seven of our wildlife species have either become extinct or threatened with extinction within the last 40 years. In its most recent analysis, Natural England has identified that over 40% of our most important habitats and 30% of our rarest species are still declining.

The scale of habitat destruction

It is worth highlighting how urgently habitat protection needs to be addressed. Statistics from the National Biodiversity Network (NBN) *State of Nature* report in 2019 found that more species are decreasing (41%) than increasing (26%) over the last 50 years. The fate of hedgehogs is a visceral example of this. Since 2000, their numbers have halved, according to a report in 2019, with rough estimates suggesting the population has dropped from 30 million to one million since the 1950s.

Tree coverage is also declining. According to a 2017 report, only 13% of the UK's total land area is covered in trees. In comparison, the EU's coverage is 35%, indicating the issues facing the UK and the impact that construction has.

We must design and maintain schemes that preserve habitats and protect biodiversity.

Species protection in the UK

The mobile nature of amphibian species, combined with the majority requiring both aquatic and terrestrial habitats, makes them particularly vulnerable from fragmentation. There are seven native amphibian species in the UK, all of which have legal protection. These are the natterjack toad, common toad, common frog, pool frog, great crested newt, smooth newt and the



palmate newt. All amphibian species are listed on Schedule 5 of the Wildlife and Countryside Act.

Great crested newts and natterjack toads are also classed as European protected species and are further protected under the Conservation of Habitats and Species Regulations 2017 that makes it an offence to capture, injure, kill or disturb them and also protects their eggs, breeding sites and resting places.

Amphibians play an important part in the ecology of our ecosystems; they regulate the number of invertebrates and also sustain many species of bird, including herons and several species of raptor.

Plants are very important for wildlife, providing both food and shelter. Vegetation clearance caused by construction not only impacts animal habitats but can also be detrimental to biodiversity. There are 186 species of plants that are protected in the UK. These are listed in Wildlife and Countryside Act (Schedule 8) and they are protected from picking and sale under section 13.

▲ Native amphibian species have legal protection in the UK

Since 2000 the number of hedgehogs has halved, with rough estimates suggesting that the population has dropped from 30 million to one million since the 1950s

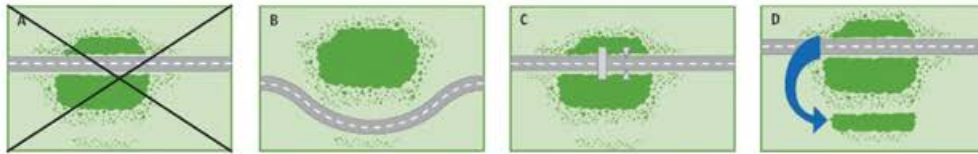


Evaluating development impacts of a development

When designing a scheme, it's important to consider the impact it will have. An Environmental Impact Assessment (EIA) is a means of systematically evaluating the potential impacts of scheme on the environment. It enables any risks to the environment and the scope of reducing them to be identified early in the planning process so they are properly understood by the public and the planning authority before planning is permitted.

EIA in the UK derives from the legal obligations set out in the European Union's EIA Directive. The process of the EIA in the context of town and country planning in England is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. These apply to development which is given planning permission under Part III of the Town and Country Planning Act 1990.

Separate legislation covers EIA for other developments that do not fall under the Town and Country Planning Legislation, including highways. If a scheme is considered a Nationally Significant Infrastructure Project (NSIP) – it would be dealt with under the 2008 Planning Act and a development consent order (DCO) would be required for permission. ►



Road planning and habitats:
 A. Fragmentation
 B. Avoidance
 C. Mitigation
 D. Compensation

Legislative considerations

The UK's long-awaited Environment Act will put environmental principles into law. The act has set a legally binding target to ensure developments deliver a minimum increase of 10% in biodiversity. As part of the act, Biodiversity Net Gain (BNG) must be measured using a recognised biodiversity metric. BNG is an approach which aims to leave the natural environment in a measurably better state than beforehand.

Implementing BNG will help to deliver measurable improvements in projects, by creating or enhancing habitats in association with built environment assets. To support planners in understanding potential BNG, Natural England launched its Biodiversity Metric 3.0 in July 2021. The toolkit can be used by any development project, consenting body or landowner that needs to calculate biodiversity net gain in England. However, sufficient accountability measures are needed to ensure long-term planning is in place.

SuDS design

SuDS design rests on the four pillars of quantity, quality, amenity and biodiversity. In terms of biodiversity specifically, consideration should be given on how best to create and sustain better places for nature to thrive.

Chapter six of CIRIA's *The SuDS Manual (C753)*, ('Designing for Biodiversity' – 6.2.3) – states that habitats within any new SuDS scheme should link with other local and or regional habitats to help build and enhance habitat connectivity. This will help mitigate the problems associated with habitat loss and fragmentation within urban areas. SuDS schemes should aim to have a range of habitat types, as this

will encourage biodiversity and result in self-sustaining and resilient ecosystems.

The UK road network

The UK has one of the densest road networks in the world with a combined length of approximately 247,000 miles and growing. Over 80% of land in the country is within 1 km of a road and road verges comprise almost 1% of the land surface of the UK.

National Highways manages almost 30,000ha of land which makes it one of the biggest land managers in the country. Road systems regularly cut directly across wildlife migration routes and can result in significant mortality, with amphibians and hedgehogs particularly susceptible.

Roads and habitats

Roads by their very nature are responsible for significant loss and fragmentation of habitats and give rise to considerable impacts on biodiversity and species population. This can be seen in picture A at the top of the page. The general hierarchy to be followed when

planning and designing a new scheme is summarised through pictures B to D in priority order.

Wherever possible, impact on biodiversity should be avoided. Where this is impossible or impractical then mitigation measures should be designed into the scheme as an integral part of the design. If such measures are not sufficient, then compensation measures should be considered as the last resort.

The *Design Manual for Roads and Bridges (DMRB)* guidance outlines general requirements for biodiversity design on the highway (LD 118) and procedures to follow when assessing and reporting on environmental effects of a proposed scheme in line with the Environmental Impact Assessment Directive (LA 104).

Design guidance and solutions

In spite of the challenges, the construction industry is in a unique position to make a difference. Where avoidance is not possible, mitigation should be an integral part of a highway design. Correct mitigation depends on a number ▶

▼ Road design can incorporate features such as kerbs and gullies to protect animals and enable migration





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80 The percentage of land in the UK that falls within 1km of a road



▲ A guide wall is built into the roadside verge to direct animals to the safest places

of factors for individual site circumstances, including types of species, population numbers and dispersal, and mitigation routes. An ecologist should be consulted as early as possible in the process.

Important design considerations

● **Animal migration:** It is important to consider the migration patterns of species to determine how they will potentially interact with the road network within your scheme. This will help influence the design and the solutions chosen.

● **Materials:** Mitigation measures should be tailored for the species ecology in particular. For example surface residues on standard concrete can be fatal to amphibians and so polymer concrete material should be used instead.

● **Habitat connectivity:** A variety of solutions can be installed to guide animals to safety. These include guide walls and crossing road tunnels to mitigate against fragmentation and allow the movement of animals species of a variety of sizes to cross the road safely.

“
Escape ladders or mesh can be installed within a gully to allow any trapped animals to climb out

● **Road kerbs and gullies:** Amphibians typically follow the side of the kerb along the road, as they are naturally inclined to proceed along any vertical barriers barring their way. This unfortunately can direct them straight into a traditional roadside gullypot. Relocating a gully from the kerb line can be costly and potentially impact on drainage functionality. Wildlife kerbs with a recess can help prevent tragedy. Escape ladders or mesh can also be installed within a gully to allow any trapped animals to climb out. Studies on escape ladders have shown that such solutions can provide an effective means of escape.

● **Construction areas:** You may also consider temporary fencing around construction areas to prevent animal incursion into the site. This is vital during breeding and spawning times.

It is important to design a scheme with a range of integrated solutions to ensure wildlife is directed away from danger, and ensure that habitats remain connected.

● **Maintenance:** As well as the design and construction of mitigation measures, it's also important to consider maintenance requirements to ensure they continue to function. This often entails simple measures such as:

- Undertaking maintenance activities annually before the migration period begins;
- Repairing any damaged components;
- Removing any obstruction or vegetation that hinders amphibian movements;
- Modifying any elements that could be a trap for small animals for example, nearby gullies; and
- Flushing of amphibian contact surfaces at intervals dependent on the nature of the site, such as buildup of debris, detritus and pollution.

Conclusion
When designing highways schemes, it is vital that wildlife is considered. Avoiding fragmentation should always be the first choice but mitigation measures should always be designed where this is impossible. This will ensure the future of species such as hedgehogs and amphibians in the UK and safeguard essential habitats. ●

CPD Questions

1. According to the habitat hierarchy, when planning and designing schemes, which is always recognised as the best option:
a) Compensation
b) Avoidance
c) Mitigation
2. How many amphibian species are protected in the UK by the Wildlife and Countryside Act?
a) 5
b) 8
c) 7
3. What does the EIA set out to do?
a) Evaluates the potential impacts of a scheme on the environment before planning is permitted
b) Measures the impact of a scheme on the environment after construction
c) Measures biodiversity net gains
4. According to the National Biodiversity Network (NBN) State of Nature report (2019), how much have UK species declined in the past 50 years?
a) 59%
b) 45%
c) 41%
5. When choosing wildlife solutions for a highway, surface residue on which material can be fatal for amphibians?
a) Polymer concrete
b) Plastic
c) Standard concrete
6. Which guidance outlines general requirements for biodiversity design specifically on the highway?
a) SuDS Manual
b) DMRB
c) Town and Country Planning Act 1990

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

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Futurebuild returns for 2022

Futurebuild, the event that has championed a sustainable built environment for the past 16 years, has opened registrations. Taking place on 1-3 March, Futurebuild will connect specifiers, decision-makers and disruptors with major brands and start-ups from across the built environment



In the aftermath of the COP26 conference, Futurebuild, previously Ecobuild, is timed to focus on the key issues and actions needed to work towards net zero. The focus is no longer about ambition – it is about delivery. As the only event to attract 20,000+ senior professionals from right across the

built environment, Futurebuild is the perfect opportunity for the industry to meet and collaborate together, to achieve the transformational change needed if the built environment is going to reach net zero by 2050.

Futurebuild 2022 will be organised into six sections – Buildings, Offsite, Interiors, Resourceful Materials, Energy and Critical Infrastructure.

▲ The Buildings section will explore new build, refurb and retrofit

The Buildings section, sponsored by Procore, will explore all areas of building including new build, refurb and retrofit. Visitors will be able to discover innovations from manufacturers and builders' merchants from a wide spectrum of building products including roofing, cladding, renders and bricks, insulation and glazing.

The Offsite section will return to give visitors the opportunity to meet with offsite construction professionals who are making a significant change in this fast-growing sector. Futurebuild 2022 attendees will have the chance to find the most innovative offsite products, materials, solutions and processes.

The Offsite seminar sessions will explore the use of offsite technology to effectively construct a better, sustainable environment. The leading partner, the Advanced Industrialised Methods for the Construction of Homes (AIMCH), will present key outcomes from its three-year project, which supports the construction industry industrialising offsite solutions. AIMCH focuses on how prototyping, future factory planning, technology and standardisation can help tackle industry challenges such as skills shortages, an ageing workforce and low affordability.

Conference programme

Sponsored by the Construction Innovation Hub, Futurebuild 2022's conference programme will explore some of the key questions and issues around closing the gap between net zero ambition and delivery. It invites panels of industry experts to share their experiences on a range of topics, from embodied carbon to investing in education, skills and diversity.

The first day of the conference programme will focus on ambition

futurebuild

the future of the built environment

In association with

Now it is more important than ever to do business face to face because our exhibitors and attendees are all working towards a common goal – achieving net zero

Martin Hurn, Futurebuild



beyond COP26 and will include a panel discussion about resource efficiency in a circular, post-Brexit economy.

The construction industry is one of the world's largest consumers of raw materials. According to WRAP, the construction industry in the UK uses 400m tonnes of material every year, of which it wastes 100m tonnes. Professor David Greenfield, managing director, Soenecs and RAEng visiting professor of circular economy, University of Brighton will chair a panel of experts as they discuss how the built environment can use fewer resources and bring circular thinking to the centre of all decisions made. This session will explore three key areas where thinking circular can have a significant impact: water, materials, and waste.

Additionally, Robin Nicholson, fellow at Cullinan Studio and convener of the Edge, will chair a panel discussing how the built environment can invest in people to develop education, skills and diversity. To achieve a zero-carbon future, it is essential that we develop a construction industry with appropriate education at all levels, providing individuals with the skills to deliver and perform in all areas. People are the key to delivering our long-term sustainability agenda and integrating climate and ecological education into construction education is going to be critical in giving the industry the necessary tools to make a change.

Spotlights

The event will also feature six Spotlights: Digital Impact, sponsored by Glider; Whole House Retrofit, in partnership with The Retrofit Academy; Circular Materials, in partnership with 540 World; District Energy, in partnership with UKDEA; Future Installer, in partnership with MCS; and Intelligent Buildings, in partnership with KNX. These will include a mixture of presentations, discussions and practical demonstrations that will cover the fundamental issues facing the built environment.

The Circular Materials Spotlight will showcase the materials revolution in the built environment as we work towards a more sustainable future. Visitors will be able to hear from leading practitioners in the circular economy and discover the latest, most innovative materials.

540 World will use this Spotlight to showcase an innovations collection of certified sustainable products. These include Accoya timber, the

world's leading high-technology wood, which is produced using sustainably sourced, fast-growing softwood. Accoya timber is longer lasting and less susceptible to damage than traditional hardwood timber as well as being a net absorber of carbon dioxide.

Collaboration is key

The curated event will showcase over 250 leading brands, the companies who are developing the most innovative technologies, products and solutions. Visitors can participate in the innovation trail, which highlights the event's innovation partners. The winners of the Big Innovation Pitch, a competition that celebrates new approaches to the biggest challenges facing the industry, will also be announced during the event.

By bringing together individuals and companies from all areas of the built environment, we can accelerate innovation and provide everyone with access to the products and processes needed to deliver change.

"Now it is more important than ever to meet in person and do business face to face because our exhibitors and attendees are all working towards a common goal – achieving net zero," explains Martin Hurn, event director at Futurebuild. "To ensure we can deliver a sustainable future we've curated an event that cultivates cross-sector collaboration, addresses key industry issues and inspires transformational change."

If you're interested in visiting Futurebuild 2022 and exploring the most innovative products and solutions in the built environment, register for your free ticket at www.futurebuild.co.uk.



▼ Events and speakers will focus on all aspects of achieving net zero



Taking off into turbulence

Hill International is one of America's largest construction consultants. As the US continues to grapple with the pandemic, CEO Raouf Ghali talks to **David Rogers** about the potential impact of the US's \$1.2tn bipartisan infrastructure bill

America's politicians have finally addressed the issue of crumbling infrastructure.

The American Society of Civil Engineers estimates that an extra \$3tn needs to be spent over the next 10 years to modernise the country's transportation, power and water systems, and \$1.2tn of that was provided by last November's Infrastructure Investment and Jobs Act.

Raouf Ghali, chief executive of Hill International, which provides construction and programme management services in the US and around the world, says this is a big turnaround after the Trump administration's failure to keep its

“With the exception of industrial, new procurement was non-existent in 2020 and we suffered headwinds in the first two quarters of 2021, then we saw a lot of activity”
Raouf Ghali, Hill International

funding promises, which disrupted the infrastructure investment process. By contrast, President Biden's act has been well received by the industry, which is now waiting to find out how the headline figure will be converted into individual projects.

“If the government wants the money to be disbursed quickly, it may be put into extensions and additions to the scope of existing contracts rather than doing whole new procurements,” Ghali says. “But even so we're not going to really see the money flowing through communities until the latter part of 2022.”

The federal money, which will be increased 20-30% by local governments, will add \$284bn to surface transportation spending, of which \$110bn will go on roads and bridges, \$66bn on rail and \$42bn on air and sea ports. Here, Hill stands to benefit from a number of projects, such as its role on the Amtrak Gateway programme to upgrade the US's busiest rail corridor between Newark in New Jersey and Penn Station in New



▲ Hill International chief executive Raouf Ghali

Raouf Ghali CV

- Joined Hill International in 1993
- CEO since 2018
- President and COO, 2015-2018
- President of Hill's Project Management Group (International), 2005-2015
- Senior VP, 2001-2004, and VP, 1993-2001.
- BS in Business Administration/Economics, MS in Business Organisational Management from the University of LaVerne

York City. Ghali adds that aviation is also likely to be a hot sector.

What no one has worked out yet is what happens when this big increase in demand hits longstanding capacity constraints in the labour market and supply chains. As head of a professional services business, Ghali is sanguine about this for now. He says the rash of consolidations in the US consultancy sector had led to cuts in payrolls, which will make recruitment easier than it might have been for the coming year. Beyond 2022, however, even consultancies will have to work harder to staff their new and expanded projects.

Industrial booms while retail falters

The pandemic also brought a sweeping change in construction markets. The shift to home working and online shopping combined to hit the commercial sectors. “Demand for shops and offices has changed tremendously,” Ghali says. “I think there's going to be a lot of revaluation and repositioning of assets on those two fronts. The Amazons of this world are shooting up and I've never

284

Biden's infrastructure act will add \$284bn to surface transportation spending

seen Fifth Avenue in New York with so many [storefronts] emptied out."

By contrast, the industrial sector enjoyed rapid growth, and companies that were alive to market shifts were best able to weather the pandemic. "As far as design engineering and project management goes, the architectural engineers that were fast on their feet really benefited. They had staff working from home and overheads were way lower and the nimble ones went to the industrial sector and performed well and actually made up a lot of the losses," Ghali says.

One of which turned out to be Hill. "We were fortunate enough to

▼ Philadelphia International Airport, one of Hill's clients. Airports will be a hot sector as the US ramps up infrastructure spending

have most of our projects deemed necessary construction, so we didn't have a lot of stoppages. We had probably 8-10% of our workforce being furloughed. With exception of industrial, new procurement was non-existent in 2020 and we suffered headwinds in the first two quarters of 2021, then we saw a lot of activity."

Hill reported year-on-year increases of 34% in operating profit and 60% in net income for its third quarter, the result of wins on the Metro Gold Line project in southern California, a rail project in Kosovo and airport deals in Miami and Hill's home town of Philadelphia.

Happy at home, but...

The pandemic prompted a shift to home working, which taught Hill two lessons, Ghali says. One is that people generally are just as efficient working from home and are happier being in control of some of their time. Balancing that is the importance of face-to-face interactions to nurture esprit de corps.

"In the long term, I think we're going to save some money on our office real estate, but we need the people who go out there [to] say 'we are here, we are the best, we can do this', and they need to know that the people back in the office have their back. If they never see them, they're going to lose that feeling." ●



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Marzia Bolpagni
Mace



Industry 4.0: five key construction skill sets

A new book from Mace's Marzia Bolpagni looks at the digital skills construction professionals must master in the fourth industrial revolution

Digital technologies and methodologies are changing the way we manage construction sites. The decades ahead will see transformation in technology and across industries because of increasing interconnectivity and smart automation. It has been dubbed Industry 4.0, or the fourth industrial revolution, and upskilling for construction professionals is paramount.

This is the central theme of my new book, *Industry 4.0 for the Built Environment*. It has been written for non-experts, to explain how the traditional roles of construction professionals are changing and which new skills are required.

Here are five concepts construction professionals must master to work in Industry 4.0, and remain competitive:

1 Digital leadership through soft skills.

While adoption of technologies is expanding, it is the soft skills – such as emotional intelligence, self-awareness, self-management, communication and resilience – that are increasingly essential. In a world where high levels of automation, customisation and productivity are possible due to new technologies, we will need to be more human. Collaborate, share knowledge, support others and follow the latest trends in a landscape of continuous change.

2 Lean and agile project management.

To embrace innovation and new technologies, new approaches to project delivery are being trialled. Borrowing from the software sector's 'fail fast' mentality, the built environment needs to understand

Borrowing from the software sector's 'fail fast' mentality, the built environment needs to understand lean construction, agile, scrum and Kanban project management methodologies



lean construction, agile, scrum and Kanban project management methodologies. As the construction site moves closer to manufacturing, new ways of working are required; construction professionals must adopt those more fluid approaches.

3 BIM skills as an enabler of data. It is time to understand that BIM is much more than just a 3D model. Industry 4.0 for the built environment is driven by data, and to get good quality data we all have improvements to make in information management, where BIM is the enabling or unifying factor.

4 Modern Methods of Construction (MMC) principles. To enable better outcomes for the built environment, a predictable managed process is required. Construction professionals should be familiar with the latest innovations in MMC and keen to support adoption as the sector moves from construction to production, which includes offsite manufacturing, modular techniques and robotics.

5 Reality capture. Real-time information is increasingly being captured – using photography, videos, laser scanners, drones, and sensors to enable informed decisions. You have a role both to ensure information is captured correctly and, more importantly, acted upon. Monitoring site progress in real time, using a control room or similar setup is not just something for NASA projects anymore; it is already happening on the most advanced construction sites. ●

Dr Marzia Bolpagni is head of BIM international at Mace. Her book *Industry 4.0 for the Built Environment* has been co-authored with Rui Gavina and Diogo Ribeiro and published by Springer.

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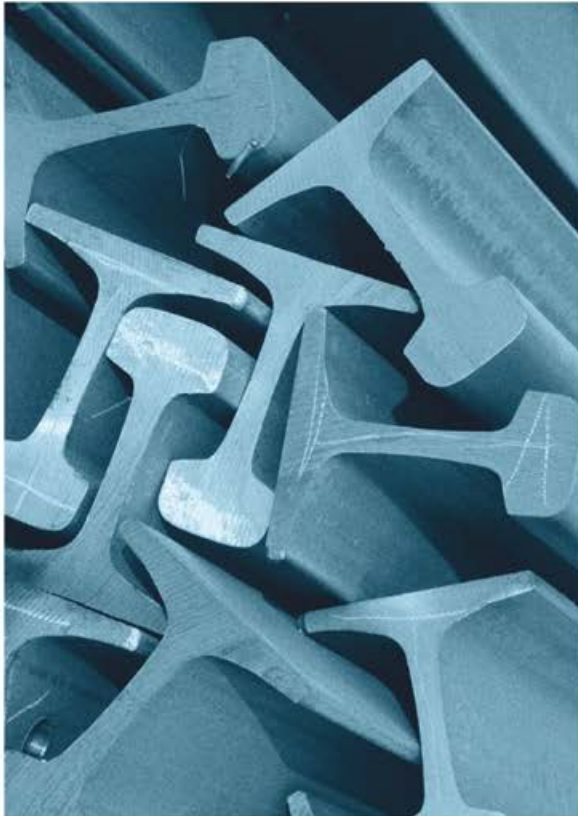


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Bill Bordill
Decipher



'Covid has delayed a steel delivery. What are my options?'

For the latest article in our 'contract clinic' series, **Bill Bordill** answers a question about how contracts treat delays caused by the pandemic

THE QUESTION

I am working on a contract under JCT. A delivery of steel has been delayed due to Covid-19, and prices are changing rapidly. What should I do, and how does the JCT deal with changes in costs?

THE ANSWER

Nobody can have missed the huge challenges faced by construction's international supply chains over the past two years. From ships trapped in the Suez Canal to global lockdowns resulting from the pandemic, via rising fuel costs and Brexit, project delivery is under pressure like never before.

So, what if you have a project that has suffered from delays or cost increases? What are your options, and how can you avoid or minimise the risks?

As always, begin by checking your contract. Is there a clause in the conditions that will allow you to deal with changes in cost or supply chain? In this case, working with JCT, there are three fluctuation clauses that may be included with the JCT form:

- Option A allows for changes to tax or other levies the contractor is required to pay.
- Option B allows for changes in labour and material costs relevant to a 'base date'.
- Option C allows for a formula to be applied – this is the most complex option and depends upon the type of work being undertaken.

Fluctuation clauses exist in many standard contracts, to allow for adjustments to what is usually referred to as the 'base' cost. They will generally not allow for unlimited change, but for a certain degree of calculated risk

to be allocated to the employer. As outlined above, such clauses will often follow a formula or calculation based on price indices or inflation.

If you experience delays to progress or to completion of a project, then you may need to formally apply for a remedy. The likely contractual recourse will be to notify of a relevant event or apply for an extension of time.

But remember the late arrival of the steel by two weeks will be unlikely to lead to two weeks added to your project completion date. You will need to be able to demonstrate:

- Entitlement. Look at the contract, what entitlement do you have to claim for delayed delivery? Is there anything in the contract to help you?
- Cause and effect. Contractors will often think that because things are two weeks late, they're entitled to two weeks extra. That's not the case. You will need to be able to identify why the delay for which you are not contractually liable entitles you to any compensation or extra time. To achieve that, you will need thorough records.

Much will depend on what you can prove, and what the contract says, but if you can maintain good relations with all the parties involved in a project, there's a much greater chance of potential success. ●

Bill Bordill is a director at Decipher.

You will need to be able to identify why the delay for which you are not contractually liable entitles you to compensation or extra time. To achieve that, you will need thorough records



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This much I know
Martin Vella
 Managing director,
 Pexhurst Services

‘Every day you are challenged to learn something new’

After 30 years of working on fit outs and refurbishments, Pexhurst’s Martin Vella tells **CM** that the variety of the industry is what stands out for him

What do you remember from your first project?

On my first high-end office fit-out job, over 30 years ago now, I accidentally ordered the doors in imperial and frames in metric! I didn’t tell the architect and spent all weekend adjusting them. On Monday morning, I received a call from the architect asking how the weekend had gone but I didn’t reveal anything. It turns out my father had told him the week before and I learned from that day forward: however big or small you mess up, it is best to share it with the team, as we all make mistakes.

What was the best advice you were given?

My father, who brought me into the business, once gave me a piece of advice that has stuck with me throughout the years: “Work hard and the rewards will follow.” It’s the same advice I offer to everyone today... But do get that work-life balance right!

Which project you worked on are you most proud of?

It would be wrong to single out one project; I have enjoyed every project whether it was changing a single door handle or a £9m refurbishment of a few hundred square feet.

Is there anything in your career you would do differently now?

There are times in business when decisions are made that are not necessarily pleasant for all involved, but I have no regrets and I’ve definitely learned some lessons along the way.

What do you enjoy most about this industry?

The variety – every day is different, every project you do you learn something new. And the people you meet along the way.

I learned from that day forward: however big or small you mess up, it is best to share with the team, as we all make mistakes



What advice would you give to someone starting today?

It’s a great industry – no day is the same and every day you are challenged to learn something new. Stick with it and I’m sure you will make a success of yourself.

What one thing would you change to make careers in construction more appealing?

We need schools to do their bit. In my opinion the YTS scheme of the 1980s has never been replaced and the construction industry diversity is not promoted to the teenagers enough when they are making choices. The same can be said for colleges that don’t interact with future employers with the passion students deserve.

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

The whole industry has become far more professional over the years: the approach to health and safety, quality, sustainability and impact on the environment are making our industry even more exciting with lots of new innovations to come...

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

Experience.

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

I’m a strong believer that if you get the foundations right, the rest will follow. ●

Plotting your digital construction journey



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

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

Job spotlight
Rahul Tank
 Assistant quantity surveyor,
 Diamond Build

Degrees of change

Feeling directionless after graduating in business and law, Rahul Tank started a traineeship in quantity surveying and is now working towards another degree



After graduating with a degree in business and law, Rahul Tank struggled to find a fulfilling job and worried that he had wasted his time at university. Uncertain about his future career prospects, he agreed to work experience at Diamond Build and is now forging a career in quantity surveying.

After struggling to find a secure job, how different does it feel now you're working in construction?

After leaving university, I watched most of my friends get jobs that directly related to their degrees whereas I had no clear career path. Now that I'm working in construction those worries have gone. As a young surveyor in London there are always going to be new and exciting projects that I could get involved in.

Although I didn't follow a traditional route into construction, taking a step back after university has helped me in the long run. The work experience helped me to get a feel for different departments within construction. I also realised that my degree gave me lots of transferable skills and those have really helped me progress, particularly when dealing with more contractual issues.

Your work experience and the public sector project you're working on with Diamond Build threw you in at the deep end on site. How has that experience been for you?

I spent a week shadowing the site manager and surveyor at a school, which Diamond Build was expanding. I had never done anything like that before and it was a real eye-opener into the reality of what we do.

The experience confirmed that I wanted to focus on surveying.

Although I didn't follow a traditional route into construction, taking a step back after university has helped me in the long run

Rahul Tank,
 Diamond Build



I was offered a traineeship and I'm now working towards a degree in quantity surveying and commercial management.

I've had lots of mentoring and I'm part of the team building a new £10m residential development near Arsenal's football stadium. It's a new-build project on a very logistically challenging site next to a railway track, so I'm learning lots of new skills. I've been given my own packages to manage with subcontractors and help to place orders, organise valuations, payments and procurement.

I've been given a huge amount of responsibility for the project and I'm really grateful for that progression.

What would you say to anyone thinking of a career in construction?

I'd recommend joining an apprenticeship or training scheme. You'll quickly learn whether construction is right for you and the practical experience you gain is invaluable, helping you both academically and in your future career. ●

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CIOB Community



CIOB enters the apprenticeships market

Institute applies to be an end-point assessment organisation

CIOB is entering the apprenticeships market in England, by applying to be an assessment organisation on the register of end-point assessment organisations (EPAOs). Only organisations on the register of EPAOs are eligible to conduct end-point assessment (EPA) of apprentices.

EPA is one of the biggest changes in the new apprenticeship reforms in England. Instead of being assessed throughout their apprenticeship, all apprentices now have to complete an EPA to complete the apprenticeship.

The assessment is designed to test whether each apprentice

▲ Apprentices now have to complete an assessment to complete their apprenticeship

has gained the knowledge, skills and behaviours (KSBs) outlined in the standard and to grade each apprentice by their performance.

Synoptic EPA, which assesses an apprentice's performance across the whole standard rather than for individual tasks, has become a core feature of new apprenticeship standards.

The major difference between the new standards and the old NVQ frameworks is that the apprenticeship concludes after a final independent summative assessment facilitated by the EPAO.

The process starts when the apprentice has met all the training requirements of the standard and their employer confirms that they are ready for assessment.

The EPA must be planned, conducted and graded by a fully trained and competent independent end-point assessor (IEPA) which must be employed by the EPAO.

On successful completion, internal quality assurance and moderation is carried out. The EPAO confirms a final assessment grade to the Education and Skills Funding Agency (ESFA) and a formal apprenticeship certificate is printed and sent. ●

If you would like to know more about CIOB's work in this area, please contact sconopo@ciob.org.uk.

Anglia Ruskin's new campus takes shape

Cambridge Hub visits Peterborough site

CIOB's Cambridge Hub recently had the opportunity to go on a site tour of Anglia Ruskin University's new £35m campus in Peterborough, led by Tony Mitchell from Bowmer and Kirkland.

The campus is expected to finish this year and CIOB is looking forward to working

to support the university's construction students on their pathways into the built environment.

CIOB training partners, CBCs and members will provide opportunities for the students through networking, work experience, CPD and further learning opportunities.



▲ Hub members on their visit to the site

Knowledge Quad arrives in Aylesbury to drive upskilling

CIOB partners with Morgan Sindall training facility for local people

A multi-purpose training and learning facility has been established in Aylesbury as part of Morgan Sindall Construction's commitment to supporting the communities in which it operates.

The Knowledge Quad is located on the site of Kingsbrook Secondary School – one of the company's construction projects – with the mission to upskill the region and bridge the gap between theoretical education and practical experience.

Able to accommodate up to 30 trainees at a time, the Knowledge Quad will provide multi-purpose courses for local people that focus on skills, education and employment. These will include training and lessons for college brickwork students, subcontractors on site or individuals looking to reskill and explore new career options.

Morgan Sindall Construction's Northern Home Counties business has been working with partners, and invited them to use the facility. These include CIOB, Department for Work and Pensions (DWP),

the CITB, the ABC Assessment Centre, as well as Buckinghamshire College Group.

Kelly Attwood, site manager with Morgan Sindall and a member of the Northampton Hub committee, is leading on the project.

David Rowsell, Northern Home Counties area director at Morgan Sindall Construction, said establishing the region's first Knowledge Quad has been a great way to add important value to the local community.

"Having this facility on site has meant that we could work with the project's stakeholders to address a long-term lack of construction skills in the Aylesbury area while offering local residents a pathway into a rewarding career," he said.

"The impetus to set up this dedicated training facility stems from our commitment to enriching the communities in which we're operating. Thanks to the proven success of the Knowledge Quad initiative, we will be rolling it out to other projects in the Northern Home Counties area moving forward." ●



Having this facility on site meant we could work with stakeholders to address a long-term lack of construction skills in the Aylesbury area

David Rowsell, Morgan Sindall Construction

▼ The Knowledge Quad is able to accommodate up to 30 trainees at a time



▲ Specialist skills are used in the restoration of Norwich Castle

CEO enjoys visit to Norwich Castle

Caroline Gumble joins local hub's heritage visit

CIOB chief executive Caroline Gumble joined the Norwich Hub in December on a site visit to look behind the scenes of the ongoing restoration of Norwich Castle.

Led by an expert team from Morgan Sindall and accompanied by a fascinating overview from curator of archaeology Dr Tim Pestell, the visit included discussions about the importance of heritage and conservation knowledge, and how keeping the original fabric of the castle intact – where possible – has been key.

Specialist skills such as stonemasonry have been vital to preserving the original Norman stone that remains at the base of some of the walls.

When completed, the whole building will be completely accessible to all, and visitors will be able to enjoy panoramic views of the city from the roof.

The expert team included Matt Bidewell, Tony Loftus, Adam Glover, Daniel Sherlock, Dr Tim Pestell, Rob Hamilton and Max Briggs. Members of the Norwich Hub committee were Dave Story, Mario Rackham, Richard Varvel and hub chair Kevin Page.





The lord mayor used her address to praise the work of CIOB members in helping to reshape the city



Five new fellows and 41 new chartered members were conferred during CIOB's first graduation event ceremony to be hosted in Belfast for two years.

The ceremony took place at Queen's University Belfast on Saturday, 20 November 2021. Speakers were: Lord Mayor, Councillor Kate Nicholl; Roger Gillespie FCIOB, chair of the CIOB Belfast Hub committee; Caroline Gumble, chief executive of the CIOB; and CIOB Trustees Ivan McCarthy FCIOB and Noel McKee FCIOB.

Councillor Nicholl used her address to congratulate the graduates and to remind everyone that the construction industry is a key driver for the physical and cultural regeneration of Belfast. She praised the work of CIOB members in helping to reshape the city.

CIOB would like to thank Queen's University Belfast for facilitating the event and to congratulate the new fellows and chartered members on their achievement. ●

First graduation in Belfast for two years

New fellows and chartered members are honoured at the first CIOB ceremony in the city since the pandemic

▲ The lord mayor of Belfast stands at the front of the CIOB ceremony

CIOB supports diversity award

EDI panel members take part in BPIC Network presentation ceremony

▶ Nzinga Orgill receives her award



CIOB EDI Advisory Panel members Anjali Pindoria, Mark Harrison and Patrick Edwards presented the Diversity Champion Award at the BPIC Network Awards 2021 in December.

The BPIC (Black Professionals in Construction) Network is a platform for black and ethnic minority professionals in construction to connect with other members in the industry as well as

corporations in order to promote diversity. It sets out to champion the importance of diversity in the industry.

The awards were held at Canary Wharf in London's Docklands.

The winner of the Diversity Champion Award was Nzinga Orgill, CEO and founder at RaCExpert Limited.

View other category winners at www.bpicnetwork.com/winners.

Past president followed his father's advice

Attending the recent graduation ceremony in Belfast, Allen McMullen recalled his CIOB memories



At a CIOB dinner Boris Johnson compared the mayor's dilemma in *Jaws*, on whether to open the beach after the first shark attack, to contractors' approach to health and safety

Allen McMullen, CIOB



CIOB past president Allen McMullen attended the recent graduation ceremony held in Belfast. President from 2005-2006, he was only the second president from Ireland, having served as chair of CIOB in Ireland for two years.

Listening to CEO Caroline Gumble speak about the value of professionalism, McMullen says he was reminded of the advice given to him in 1969 by his father (founder of the family building business J McMullen & Son): to aspire to become a member of the Institute of Building, as CIOB was known then.

"He told me: 'We builders need to get ourselves recognised and accepted as equal professionals

to the architects, engineers and surveyors we work with on a daily basis.' Little did he know then that both his sons – my brother Brian is an honorary life member – would become so heavily involved," said McMullen.

The graduation event also reminded McMullen of the CIOB's prestigious annual dinners – the platform where CIOB presidents would set out their objectives. At one dinner McMullen recalled a certain Boris Johnson – then shadow minister for higher education – as guest speaker. "When Boris was asked who his political hero was, he didn't answer with Margaret Thatcher but cited Larry Vaughn, the fictional mayor of the town of Amity in the *Jaws* movies.

"He compared Mayor Vaughn's dilemma, on whether or not to open the beach after the first shark attack, to contractors' approach to the dangers of health and safety on site.

"Mr Johnson posed the question why the industry needed politicians like Mayor Vaughn to legislate more health and safety regulations. Didn't everyone know there were dangerous 'sharks' lurking on construction sites [beaches] in the guise of working at height, unprotected trenches, lack of protective clothing etc?"

"It was a surprising analogy, which he has used many times since. But it did confirm in my own mind that a change in culture on site in terms of health, safety and wellbeing is still the best way forward." ●

NEWS IN BRIEF

Charity work

Chartered Builder Greendale Construction will be supporting Dorset-based MyTime Young Carers as its chosen charity for 2022.

Founded in 1987, the charity is on a mission to level the playing field for young carers and young adult carers by providing them with the support, opportunities and friendship that every child deserves.

The firm already supports two local charities, Helping Young Minds and Lewis-Manning Hospice Care.

Dublin graduations

CIOB Dublin Hub has rescheduled its recently postponed graduation ceremony. The event will now take place on Saturday 14 May at 12.30pm, in the President's Hall, the Law Society of Ireland, Blackhall Place, Dublin. Please visit events.ciob.org to book a place.

CPD on material supply

The Northampton and Norwich hubs will run a joint online CPD event on 18 February, tackling the issue of fluctuating material supply and prices.

The session will be facilitated by Northampton Hub chair Paul Vega, with a panel of speakers consisting of: John Newcomb, CEO of the Builders Merchants Federation and co-chair for the Construction Leadership Council Product Availability Group; Steve Burditt, director at Steele & Bray; Rory Abel, partner at Archer LLP and Tim Young, regional procurement manager at Lovells.

This lunchtime event is free to members. Register at <https://events.ciob.org/home/200236707>.

Return to normal

The Chelmsford Hub had its first face-to-face Hub in the Pub event since 2019 in December.

Members, local businesses, lecturers from Anglia Ruskin University and representatives from Essex Construction Training Academy discussed collaboration opportunities with the Tomorrow's Leaders community.

Hub chair Thomas Dempsey stepped down after three years, with Malcolm Wallace taking up the mantle.

▼ From left: Charlotte Holyoake, HR manager, Greendale Construction; Maria Seabright, HR/finance director, Greendale Construction; Maria Tidy, community development manager, MyTime Young Carers



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Client of the Year



Team of the Year



Rising Star



Plus two new Awards to be announced shortly!

28 September 2022

JW Marriott Grosvenor House, London

Seddon becomes CIOB training partner

Bolton-based construction firm investing in its employees

Working together with CIOB, we can ensure our employees who have taken less traditional routes are able to obtain industry standard qualifications

Nicola Hodkinson,
Seddon Construction



Bolton's Seddon Construction has become a CIOB training partner.

Nicola Hodkinson, director of business services at the family-owned firm, said that the move is part of the company's policy of "growing our own".

"We are committed to providing employees with the best training and development opportunities for their construction careers," she said.

Hodkinson said the move would enable the firm's professional teams to have access to the latest training, CPD modules and support provided by CIOB.

"Working together with CIOB, we can also ensure our employees who have taken less traditional routes are able to obtain industry standard qualifications," she said.

"We're delighted to be partnering with CIOB and are looking forward to seeing our people 'be the best they can' through the programme." ●

◀ Harper and Keele Veterinary School at Keele University, a Seddon build

Successful students are rewarded at Maidstone Hub

London South East Colleges winners collect prizes



London South East Colleges 2021 student award winners from Bexley and Bromley have been congratulated and rewarded for their hard work and achievement at a recent Maidstone Hub event.

Rajinder Basra and Becki Sinclair were both presented with an Outstanding Student certificate

◀ Rajinder Basra and Peter Smith

and prize from Peter Smith FCIOB on behalf of the Maidstone Hub committee and members.

Faith Rukiya Abudu, from Bexley College, was unable to attend on the evening due to a commitment at COP26 but sent a video message to the members, expressing her gratitude for the award and outlining her hopes and plans for her career.

Global Student Challenge 2022 gets under way

Though the competition is hotting up, there is still time to take your place among the entrants for this year's international competition

CIOB's annual Global Student Challenge (GSC) is now under way, but there is still time to enter – registration closes on 18 February.

Launched in 2014, the GSC is an online construction business game open to students across the world who are studying an honours course within the built environment. Run by CIOB, it provides built environment students with

▼ Last year's winners were Wonders from Massey University



an opportunity to apply their learning to a real-world scenario in which teams of four are tasked with managing their own virtual construction company.

The competition utilises MERIT, an online game which simulates the management of a construction company.

The next six-week phase of this year's challenge will begin on 23 February.

This is the Early Years stage of the competition, in which the first round of data will be released to all teams.

The first phase – the Foundation Years – of this year's competition began on 31 January, when the teams were able to access the game software and to refine their strategy.

Due to the ongoing situation with Covid-19, this year's top six teams will take part in a virtual final, which will commence on 20 June 2022, running for two weeks.

To apply, go to <https://gsc.ciob.org>.

Opportunities and tips at the 2022 Student Festival

Sign up now to get all the benefits from this year's two-day virtual event in March

The second CIOB Student Festival will take place next month. This free, two-day event is a virtual event for all CIOB student members from across the globe. The purpose is to inspire, inform and celebrate student members.

Established in 2021, the festival aims to offer meaningful messages from a diverse community. Student members will benefit from technical and practical insights, professional points of views and personal wisdom for future careers not otherwise accessible in one space.

The festival is themed with headliners including:

- Industry leaders – thoughts, opinions and wisdom from leaders in the sector
- Global careers – a spotlight on career perspectives from global organisations in all areas of construction
- Learning essentials – from dissertation tips via LinkedIn essentials to landing your next job
- Tomorrow's Leaders – hear from the CIOB's early career and future leaders on staying motivated and staying involved in the CIOB
- Student wellbeing – looking after number one
- Networking – make new professional contacts, build like-minded connections from across the globe and get ahead.

The Student Festival 2022 will run on 9-10 March 2022, from 10am to 3pm GMT. Watch events from last year's event at <https://vimeo.com/showcase/8491404>. To register, contact: hahmed@ciob.org.uk.

One to watch

Dale Harris, senior project manager, Morgan Sindall Construction

Why did you choose construction as a career?

I trained to become a bench joiner on a four-and-a-half-year apprenticeship as I loved making things with wood. After qualifying, I travelled all over the UK working on high-end projects. After a few years and after witnessing uninspiring management with various contractors on site, I believed that I could do a better job and I haven't looked back since joining Morgan Sindall Construction.

Is there another career you considered?

I wanted to become an architect but was put off by my careers advisor in school. The advice was not to bother as few practices were hiring and it's seven years to qualify, which wasn't very motivating at the time. However, I definitely think it was a blessing and architecture's loss and construction's gain.

How did it feel to be a CMYA gold finalist?

It was very rewarding, especially considering who you are up against and the fact you are judged by esteemed peers.

What are your career ambitions?

I want to continue to maintain excellence throughout everything that I do. I am currently in the



APOLLO PHOTOGRAPHY

process of being mentored to project director level with Morgan Sindall Construction. I've aspired to this level as I can still experience the buzz of being on site every day while being the person that people look to for support and advice.

What do you do in your spare time?

I have supported Liverpool Football Club since I was three and enjoy swimming. I love interior design, so I spend a small fortune on my home as well as simply taking time to appreciate life.

Why did you pursue CIOB membership status?

It was the natural next step for me. I wanted my clients to feel like they were in good hands with someone who takes their career seriously.

What does being MCIOB bring to your career?

For me personally, it shouts excellence and encourages me to maintain the highest standards within the industry.

Let's work together

CIOB works with partners across many areas, with opportunities for companies and organisations to get involved with heritage events and initiatives supporting budding young professionals



The Chartered Institute of Building (CIOB) works with organisations in a variety of ways, from mentoring new members to supporting businesses to become Chartered Building Consultancies or Training Partnerships. In addition, many companies have special interest areas which support our work.

Heritage sector

For example, we work with companies in the conservation and heritage sector. Events and activities have been created to inspire and support professionals with an interest in the conservation, adaptation and restoration of historic buildings – and our annual CIOB Conservation Conference is a must-attend event.

This year the conference returns face to face on 26 April, in the historic grounds of Westminster Abbey. The theme 'Our Built Heritage – Lessons for Resilience' will focus on resilience in the sector. Participants will learn how key organisations in the UK and Europe have responded to and are coping with recent events – the impact of Covid and climate change are at the forefront of these issues.

Following on from the conference, the institute is hosting a field trip to Malta in November. Delegates will join CIOB leaders to explore the challenges and opportunities of working in locations of historical significance. And this year's CIOB Awards will again celebrate heritage, with a specific category in that field.

▼ The Conservation Conference in 2022 will be at Church House, Westminster

Supporting young people

Organisations that are passionate about supporting young people have also worked with CIOB by supporting and sponsoring events around career development. Through these we reach out to a global audience of diverse, ambitious and emerging professionals who are proactively looking to get ahead in their career and make a difference to society.

The CIOB Global Student Challenge is an online construction business game open to students across the world studying an honours course in the built environment. It is designed to provide skills for a future in the industry, with teams of four acting as the board of directors of a company, in charge of all managerial functions.

After last year's success, March 2022 sees the second year of the CIOB Student Festival, a two-day virtual festival with workshops and talks aimed at our student community.

CIOB's new Tomorrow's Leaders community will also host a series of talks and workshops this year, to help support those in the early stages of their career and help build those links with industry that are so vital when starting on the career ladder.

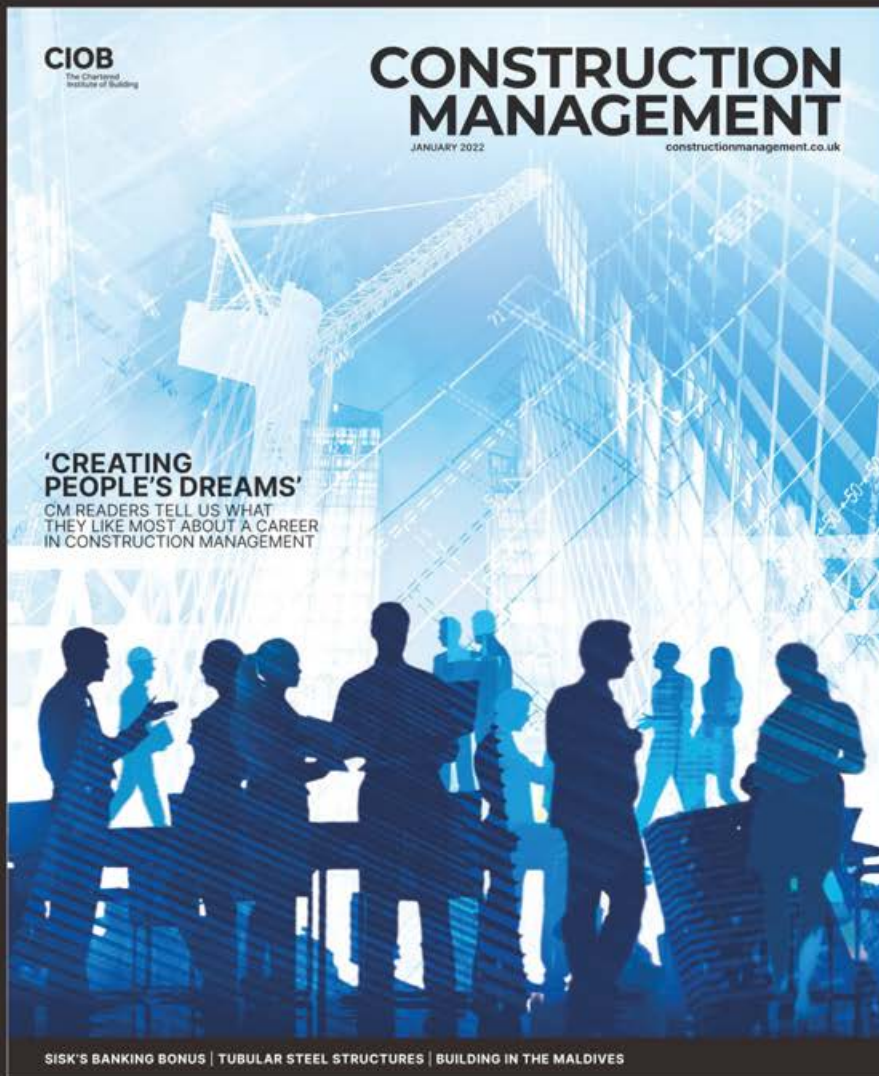
This year the Rising Star Award will again be celebrated as part of the CIOB Awards. This international award is for Rising Stars who have been in the industry for seven years or fewer, who have demonstrated excellence in their work and among their peers. We celebrate their achievements at the awards. ●

If your organisation is passionate about heritage and conservation or inspiring the next generation of construction professionals, you may wish to support one of these activities. For any further information please contact sponsorship@ciob.org.uk.



Organisations passionate about supporting young people have worked with CIOB on events around career development

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► [constructionmanagement.co.uk](https://www.constructionmanagement.co.uk)

Diary dates

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

Materials costs – whose risk?

► **15 February 1-2pm**
Join us for a one-hour online event with Sarah Wilson from Bevan Brittan on Materials Cost – Whose Risk? This webinar will discuss why the cost of materials has always been fluid in the construction industry, but never as they are currently. Whether your project is ongoing or about to start, we will look at how contracts usually allocate risk for material costs, the time element and what you can do to protect yourself.
Contact: kbarker@ciob.org.uk

The Pitfalls of Contracting 2

► **15 February, 12-1pm**
We welcome back Nicola Huxtable, operations director at engineering and construction consultancy Driver Trett, to further discuss the pitfalls of contracting.

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

She is currently representing clients in adjudications involving complex civil engineering and building disputes with values of between £12m and £24m.
Contact: vcoxon@ciob.org.uk

Digital Design and the Drive for Net Zero

► **15 February 6.30-7.30pm**
The drive towards net zero and the reduction in the environmental impact of development will be dependent on the reduction of both operational and embodied energy within built assets.

Digital design techniques give consultants, architects, contractors and clients the opportunity to rapidly explore different design options and interrogate the outcomes against key criteria.

Combined with data visualisation to optimise the material quantities and embodied energy, this will allow project teams to make informed decisions to achieve the best for project outcomes.

The industry has set itself stretch targets for the reduction in embodied carbon and there are challenges to be overcome to achieve this. However, working together to drive innovations and knowledge into our teams will allow us to realise significant reductions to the environmental impact of the built environment.

Join this webinar to hear a panel of experts discuss this topic in depth. The speakers will be: Chris Millard, technical director, Europe Hub R&D lead, Laing O'Rourke; Richard Shennan, group digital delivery director, Mott MacDonald; Roman Baran, CWG project manager, Canary Wharf; and Dr Melanie Robinson (TBC), senior project manager, BIM Academy.
Contact: lbocko@ciob.org.uk

Adapting to the issue of fluctuating material supply and prices

► **18 February 12-1pm**
Join this online panel event run by the Northamptonshire and Norwich Hubs to explore the challenges faced as a result of the continuing

issue of material shortages and fluctuating prices.

Chaired by Paul Vega, the panel of speakers will include John Newcomb, CEO of the Builders Merchants Federation. See News in Brief, p51, for more details
Contact: sshort@ciob.org.uk

Greenwash CPD: What does it mean and what to watch out for

► **22 February 6.30-7.30pm**
'Greenwashing' can be defined as the misleading act of trying to promote environmentally friendly practices, products and services.

Join the Hemel Hub in this panel conversation with industry experts who will cover some of the most basic questions around the topic: what is greenwashing mean for the construction industry, what are the things to watch out for, which are questions you might want to prepare ahead of meeting a provider, and more.

We will be joined by: Anna Baker, head of sustainability at Carey Group; Hyder Mohammad, head of sustainability at The Hillingdon Hospitals NHS Foundation Trust; and Sharon Maynard, sustainable operations director for Skanska.
Contact: lbocko@ciob.org.uk

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



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Circulation: Net average 31,275
Audit period: July 2020 to June 2021

Subscriptions: To subscribe or for enquiries, please contact:

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Published for the Chartered Institute of Building by Atom Media Partners, 26-27 Bedford Square, London United Kingdom. WC1B 3HP
construction-management@atompublishing.co.uk

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