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SEPTEMBER 2020
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09/20

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News story for CM?
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▲ Debut for decorator robot

Construction tech start-up Okibo has demonstrated what it claims is the world's first autonomous plastering and painting robot. The robot is designed to autonomously traverse the potentially rough terrain of a typical construction site with "high precision, while maintaining human and equipment safety". Using 3D scanning, the robot maps its environment without any prior information, enabling progress monitoring, BIM comparison and "reliable understanding" of the plastering requirements.

▲ Skanska adopts digital tech to connect five Norwegian islands

Skanska has adopted digital technology to help manage one of Norway's biggest projects, connecting five islands in Ålesund Municipality to the mainland in Møre og Romsdal county, through a network of tunnels and bridges. Skanska won the bid in autumn 2018 after using Topcon's Magnet software to assess the magnitude of the work in the bidding process, as well as to optimise its entire digital workflow.

▼ O'Rourke and Murphy install modular bridge over M42

A joint venture between Laing O'Rourke and J Murphy & Sons has installed a 65m modular bridge spanning the width of the M42 in just two days. The 2,750 tonne bridge near what will become HS2's Interchange station near Solihull was carried along the motorway on a 448-wheel self-propelled modular transporter.



30,887

Construction Manager's circulation, following our latest ABC audit, remains the highest among construction sector magazines at 30,887 copies

► Mace to project manage innovative rooftop solar PV scheme

Mace will manage the design, supply, installation and commissioning of solar panels to six rooftop locations across West Berkshire, in an innovative pilot project. The project, for West Berkshire Council, is expected to generate around 600,000kWh of energy and reduce carbon emissions by 270 tonnes a year.



▼ Willmott Dixon resumes restoration of historic Civic Halls

Willmott Dixon has restarted work on the restoration of Wolverhampton's iconic Civic Halls after an enforced break due to the covid-19 pandemic. City of Wolverhampton Council has now officially entered into the main contract with delivery partner Willmott Dixon Interiors, which since October 2019 had been progressing works under a pre-construction service delivery agreement. Following the covid-19 interruption, the newly refurbished 82-year-old Civic Halls are expected to reopen to the public in early 2022.



▲ Giant Thames Tideway TBM arrives by boat

A huge tunnel boring machine (TBM), which will be used to create the final 5.5km stretch of the Thames Tideway super sewer towards Abbey Mills Pumping Station, has arrived in London after being transported 800km over the water from Germany. The TBM, named Selina, was delivered to Chambers Wharf from Kehl on a giant vessel called the Skylift 3000.



CITY OF WOLVERHAMPTON COUNCIL



▲ Fully electric skid steer loader launched

Plant firm Kovaco Electric has launched what it claims is the world's first fully electric skid steer loader. The machine is capable of operating for up to eight hours on a single charge. Depending on the size of the battery the machine uses, the Elise 900 has a loading capacity of up to 1,400kg (with a 400Ah battery). Charging takes 3.5 hours for machines with smart batteries or 5.3 hours for machines with standard batteries.



Will covid-19
accelerate offsite
take-up? See p28

Laing O'Rourke wants projects 90% factory-built by 2025

CHAIRMAN RAY O'ROURKE RAISES TARGET AS MANUFACTURING INVESTMENT CONTINUES. BY WILL MANN



Laing O'Rourke's
Centre of Excellence
for Modern
Construction
in Steetley,
Nottinghamshire

Laing O'Rourke is aiming to deliver 90% of construction work on projects inside its factories by 2025.

Currently, the group's goal is to manufacture 70% of a project's components offsite, part of its '70:60:30' strategy, which also targets 60% productivity gains and 30% programme improvements through use of design for manufacture and assembly (DfMA).

"We're now driving towards 80% of our work being factory manufactured," said head of infrastructure Declan McGeeney. "The Grange hospital in Gwent was in the high 70s. Ray [O'Rourke, group CEO] wants 90% to 95% by 2025."

McGeeney, who revealed that Laing O'Rourke's manufacturing facilities have been able to operate at full capacity for most of the covid lockdown

"Getting digital embedded right from tender is key so we can build the project virtually before we reach site"

(see p28-32), said several work packages could become more 'factory-friendly'.

"Structures is one," he said. "We enter projects later than we would like, which can make it harder to change structural elements. Cladding is not consistent across industry. Finishes tend to be done quite traditionally."

"Getting digital embedded right from tender is key so we can build the project virtually before we reach site."

McGeeney said he sensed a "marked shift" in attitudes to offsite, with factory environments making it easier to implement social distancing and clients seeing it as a way of de-risking projects.

"We have to plan for any second wave of covid so our projects are not impacted," he said. "We have more offsite enquiries coming in. Some clients have asked us about redesigning a project to suit DfMA or to prefabricate elements like the structure, the lift shaft, the MEP."

"Even our competitors are asking our businesses about how to embed offsite within their business. Some 50% of turnover at [subsidiary companies] Crown House and Expanded is outside Laing O'Rourke, so we have a chance to shift opinion in the market." ●

Robotics to play key role in O'Rourke's next factory

Laing O'Rourke's planned Advanced Manufacturing Facility, to support its residential business, will feature extensive use of robotics, head of infrastructure Declan McGeeney has told CM.

"The facility will use robotics for 90% of the precision process work," he said. "We are working with ABB and the University of Sheffield to develop the technology."

The plant, which will be located next to the group's Centre of

Excellence for Modern Construction in Steetley, Nottinghamshire (formerly Explore Industrial Park), will aim to manufacture 10,000 homes a year. It is currently at "business case stage", McGeeney said.

"We need to deliver faster, and with fewer people," he added. "Already we use robotics for cutting pipework at our Crown House factory in Oldbury and at our GRC plant near Doncaster we use 3D printing for mould production."

CIOB voices quality fears over planning white paper

CIOB ISSUES QUALITY WARNING AS GOVERNMENT UNVEILS WIDE-RANGING CHANGES TO PLANNING SYSTEM. BY **NEIL GERRARD**



Housing secretary Robert Jenrick launched the white paper

The CIOB has voiced fears that the government's 'landmark' planning reforms detailed in the white paper *Planning for the Future* could harm the quality of new housing developments.

The CIOB warned that there are "clear impacts" on the quality of residential conversions created through permitted development rights (PDRs), with many failing to meet national space standards, lacking amenity space and suffering from low quality design and poor locations.

It added that high volumes of PDRs have wide-ranging impacts on transport, community facilities, play space and green space, and without

Section 106 agreements or Community Infrastructure Levy contributions to offset the costs associated with provision of community infrastructure, local authorities are further financially burdened.

The CIOB also voiced fears that PDRs risked jeopardising the public's trust by creating poor-quality accommodation as standard, in spite of all the work the construction industry has done to reform post-Grenfell.

Eddie Tuttle, director of policy, research and public affairs at the CIOB, said: "The white paper published today highlights the need for reform of the planning system in order to build the homes we desperately need.

"But we are concerned the government's focus on extending permitted development rights, including the ability to demolish and rebuild commercial and residential buildings on existing sites without a full planning – if implemented without significant safeguards – will lock in more unacceptable standard development, the consequences of which we will live with for generations or must rectify later at greater expense." ●

Industry has moral obligation over safety, says Hackitt

The construction industry has a "moral obligation" to step up to a different approach on building safety in the wake of the Grenfell Tower disaster.

That's according to Dame Judith Hackitt, as she presented the Industry Safety Steering Group's (ISSG) second

report on the progress of culture change in the construction sector.

Hackitt, who chairs the ISSG, said she was pleased to "real progress" from some parts of the industry but that it was "equally frustrating" to see others waiting to see what the new regulatory regime will look like before taking action.

DIGITAL CONSTRUCTION SUMMIT 2020

#DCS2020

Digital Construction Summit 2020 to be virtual event

SEPTEMBER EVENT WILL FEATURE INDUSTRY-LEADING SPEAKERS AND TOPICAL WEBINAR SESSIONS

This year's Digital Construction Summit will be a virtual event across 29/30 September.

Originally scheduled for 3 June in the City of London, the event has been rearranged because of the restrictions of the covid-19 pandemic.

The virtual summit will comprise a series of webinar sessions, with topics including: the Building Safety Bill and its digital implications; the role of digital in the built environment's post-covid recovery; the power of data and its potential for construction; common data environments and interoperability; and digital tools to connect site teams.

Speakers include: Mark Enzer, head of the National Digital Twin Programme and chief technology officer at Mott MacDonald; David Philp,

digital impact director at the Construction Innovation Hub and global BIM/MIC consultancy director at Aecom; Neil Thompson, digital construction director at Atkins; and Andrew Gamblen, digital manager at Willmott Dixon.

Event partners are the Centre for Digital Built Britain, the Chartered Institute of Building, Egnyte, i3PT, Atvero and PlanRadar. Construction Manager and BIMplus are media partners.

The summit will feature presentations from industry-leading digital professionals, panel discussions, Q&As and audience interaction.

Over 1,000 professionals from across the built environment with responsibility for driving BIM and digital innovation are expected to attend.

For further information contact: eva@atompublishing.co.uk. www.digitalconstructionsummit.uk





35%

Proportion of construction businesses reporting cash reserves that would last three months or less in July, according to ONS

Why insolvency rises may be postponed till 2021

The unprecedented fiscal stimulus led to a fall in insolvencies in Q2 – but the full picture may not emerge till next year, says **Kris Hudson**



With confirmation that the UK is in the grips of a technical recession, should the construction sector be bracing for mass insolvencies?

As a significant indicator of cashflow concerns and potential insolvencies, the latest data on profit warnings makes for stark reading. EY data shows that more FTSE-listed construction and materials companies have issued profit warnings in the first half of 2020 than over the whole of 2008, when the global financial crisis struck.

Construction also holds the unenviable title of the industry most affected by insolvencies over the past year, with 2,778 new company insolvencies filed in four quarters to 2020 Q2. Yet insolvencies within construction in the second quarter of 2020 have in fact decreased by 38.4% compared to last year. It is a welcome relief and shows that the unprecedented packages of government support aimed at tackling the coronavirus crisis are having a positive impact.

Historic insolvency trends

Before the 2008 financial crash, the trend was that following an economic crisis, insolvencies historically increased in line with improved economic growth, peaking after the recession had ended. As growth resumed, prices and overheads picked

up, legacy contracts became untenable and rising interest rates started to bite.

This was not the case during the 2008 crash, when insolvencies in fact peaked during the recession, and not afterwards. Increased creditor forbearance, historically low interest rates and a raft of government measures helped stem the tide of belated insolvencies.

Fast forward to 2020 and we've now seen insolvencies fall following unprecedented fiscal stimulus.

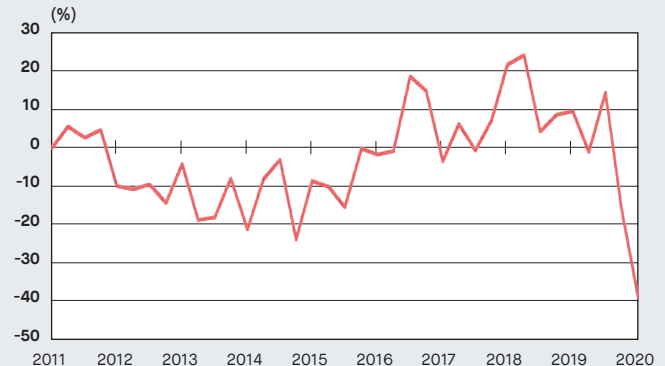
But the risk is that the furlough scheme, which will begin to taper off this autumn, could be keeping companies afloat that might not otherwise survive. This means we're unlikely to see the full picture emerge until next year, with insolvency rises still probable thereafter.

To ensure a healthy recovery, and prevent a domino effect of insolvency, it is imperative that the industry comes together to support a new approach to the 'new normal'. This means staying alert to margin erosion and the capital constraints of suppliers, and ultimately moving closer to delivery models and commercial strategies that prioritise the value drivers of a project rather than piling more pressure on the supply chain.

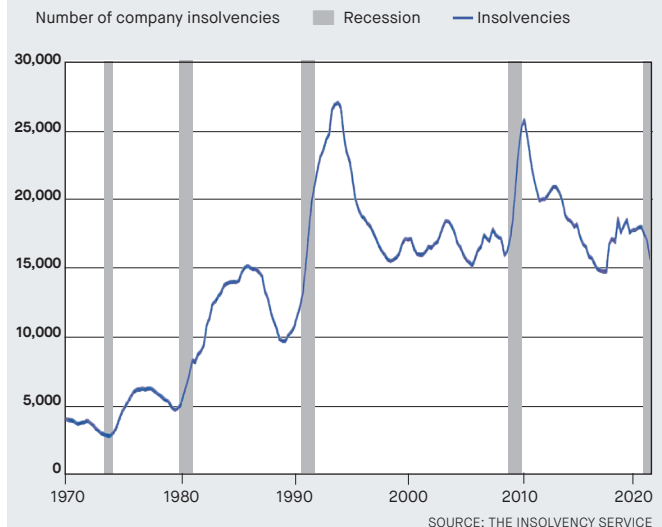
Collaboration will therefore be key both during and in the aftermath of this covid-19 recession.

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

Total new company insolvencies in construction
Quarter on year percentage change



Total new company insolvencies, England & Wales, non seasonally adjusted
Annualised quarterly data



News in numbers

375

Number of jobs being cut at brickmaker Ibstock, after the firm reported a £52m pre-tax loss in the first half of 2020

220k

The fall in UK employment from May to July, reported by the ONS – the largest drop in employment for over a decade

35%

Contraction in the construction sector in Q2 2020, as ONS reports UK GDP overall shrank by 20.4% during the quarter

£14m

Interim loss at Balfour Beatty, the UK's biggest contractor, due to the covid impact. It reported a £72m profit a year ago

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Opinion

 Breaking down the barriers to offsite procurement, p34

Back in April we all watched with a mix of shock and admiration as the London ExCel Centre was skilfully converted into the country's first NHS Nightingale Hospital. Necessity is the mother of invention, and I can't think of a more fitting slogan to describe the situation our sector has found itself in over these recent months.

It is clear to see that the future construction industry will need to look very different to that of the pre-covid era. The growing momentum to achieve a fundamental transformation, rather than just a return to business as usual, has the support of both government and the major voices in the sector, amplified through the Construction Leadership Council (CLC). We have a unique opportunity to lay the foundations for lasting change in how we build. But how do we grasp these pivotal opportunities and maximise impact for all of society?

Early in the crisis, the Construction Innovation Hub shifted up a gear and began to accelerate critical projects to provide industry with the tools and processes to make transformation a reality. We believe the core ingredients for a transformed construction sector are digitally enabled manufacturing solutions and processes. The most effective way we can deliver these at scale is through a platform approach.

Through our flagship Platform Design Programme, the hub is seeking to streamline construction by developing a standardised 'kit of parts' that can be deployed across multiple building types and sectors, reaping significant benefits in terms of quality, cost, delivery time and whole-life value. In line with the prime minister's ambition, platforms will ultimately enable us to "build faster and build greener", in turn delivering the robust and sustainable infrastructure our society is crying out for.

To help us get there, our 40-plus industry partner companies are leading the charge in the development, prototyping, testing and demonstration of a platform construction system that will be able to deliver a range of building types, with the initial focus on social infrastructure. As part of the



Trudi Sully
Construction
Innovation Hub

Why DfMA is key to construction's reinvention

TRUDI SULLY EXPLAINS WHY KITS OF PARTS WILL PLAY A KEY ROLE IN THE CHANGING FACE OF CONSTRUCTION



Construction can learn from the challenges of covid

"In line with the prime minister's ambition, platforms will ultimately enable us to 'build faster and build greener' in turn delivering the robust and sustainable infrastructure our society is crying out for"

platform programme, we're also developing interface standards that support the design of integrated, manufactured components and sub-assemblies, and a 'rulebook' to provide guidance on application, enable wider adoption and support development of future platforms.

The key role of government

As the country's largest construction client, government can play a vital role in ensuring the adoption at scale of a platform approach. As highlighted in the hub's recent report, *Driving Transformation, Delivering Value*, industry and government must work together to create the conditions for construction supply chains to thrive. The report presents nine key recommendations - spanning business models and payment practices to skills and regulation - to support this endeavour.

Building on this, we are working closely with key Whitehall departments like Justice, Education and Health to inform our platform designs and to support how they look to procure and deliver our future infrastructure needs. It is hoped that interface standards and the rulebook produced by the hub will form part of the future procurement options, and as such we are liaising with other active R&D projects to ensure that no-one misses out on these future opportunities. It's crucial that we support the commercial and competitive opportunities afforded to everyone working in this space.

Collectively as a sector, we have faced numerous challenges over recent months and I am in no doubt we have more to come. Yet I truly believe that with the growing appetite for collaboration and innovation, significant long-term support from government, and the new approaches that are being developed, now is the time for construction to not just survive these obstacles, but to use them as impetus to reinvent our sector and thrive. Platform systems will play a key role in changing the face of construction. ●

Trudi Sully is impact director for manufacturing at the Construction Innovation Hub.



Caroline Gumble
CIOB

Retaining skills is vital to construction

THE GOVERNMENT'S CONSTRUCTION TALENT RETENTION SCHEME IS KEY TO KEEPING MUCH-NEEDED TALENT WITHIN THE SECTOR, EXPLAINS **CAROLINE GUMBLE**

For a few years now the CIOB has been raising awareness of an impending skills shortage in our industry. We've raised it with parliamentarians, we've supported industry initiatives to attract new talent, we've even tried to introduce the benefits of a career in the built environment to children via our Minecraft game.

One of the consequences of the pandemic is that, with project slow-downs and cancellations and many companies being forced to make cuts, we face the prospect of losing skills, experience and expertise we already have in our industry at a time when we can least afford it.

Therefore, news of the Construction Talent Retention Scheme is very welcome.

Launched by the Minister for Business and Industry, Nadhim Zahawi, at the end of July, the Construction Talent Retention Scheme (TRS) is a potentially important partnership between the industry and government to try and keep talent in our sector. At the online launch, he said: "This scheme will help to retain vital knowledge within the construction industry, enabling businesses to rapidly recruit talented individuals and reduce skills shortages at this pivotal time in the nation's economic recovery."

The scheme is being run by the Construction Leadership Council which, as many of you will know, is made up of trade and business associations from across the sector, including the CIOB.

The TRS is not just an online portal but is also intended to support the redeployment of staff at risk of redundancy and enable temporary employee loans between businesses. It also offers businesses a platform to find the skills they need, for free, and now allows individuals to list their skills and experience and, hopefully, find the right role and stay in our sector.

At the time of writing, hundreds of companies have expressed an interest in using the scheme and there are over 350 vacancies listed, all of them direct from employers in our industry.

The TRS not-for-profit programme has funding secured until the end of April 2021. It's my hope that the bounce-back in construction will be as strong as some are predicting and that come April next year we will be back to attracting new talent into sector – which we do still need – and not still focused on an exodus of expertise. ●

Employers and individuals looking for a new role can go to:
www.trs-system.co.uk/construction.
Caroline Gumble is chief executive of the Chartered Institute of Building (CIOB).

Schools delivery knowledge gap looms

Greater knowledge-sharing would boost the delivery of SEND schools, says **Peter Whitmore**



Some 15% of the pupil population – around 1.3 million school-age students in England – is classed as having a special educational needs or disabilities (SEND) requirement, and the number is forecast to rise. In 2019, the government announced an additional investment of £700m into special needs education to ensure that children and young people are provided with the buildings and facilities that are right for them.

However, despite the improved investment, councils continue to face immense pressures in providing care and support and educational provision for children and young people with special needs and disabilities.

The *Building Better Futures* report by Morgan Sindall Construction has set out a new roadmap for the procurement, design and delivery of SEND schools.

We wanted to explore what makes a great SEND school, so we brought together experts, partners, clients, collaborators, and influencers from the public and private sectors to look at the factors that make up a truly outstanding SEND school and examine how the delivery pathway could be enhanced.

As a main contractor which has recently delivered six SEND schools in the east of England alone, this is a topic we are passionate about.

A key research finding is the presence of a looming knowledge gap within the sector around the delivery of SEND schools, with no platforms available for head teachers or those commissioning schools to collaborate or share their learnings and experience.

The report calls for the formation of a collaborative knowledge-sharing platform, where headteachers and organisations looking to commission new school buildings can share their experiences – creating an effective method of benchmarking, where examples of innovation and best practice can be explored and communicated within the SEND community.

Our objective for this research is to start fruitful conversations which enable the sector to work collaboratively to enhance the pathway for SEND school design and delivery so that it improves the lives of the young people, teachers, carers and families. Peter Whitmore is managing director construction east at Morgan Sindall.



Tricia O'Neill
Skanska



How construction is helping to build awareness of dementia, p21

Why older workers should be valued

CONSTRUCTION WORKERS ARE GETTING OLDER BUT THEY STILL HAVE PLENTY TO OFFER, ARGUES **TRICIA O'NEILL**

Construction's workforce is ageing. The typical worker in the industry is now aged 45 or older, with the 60+ age group increasing more than any other over the past decade.

But age is just another dimension and should not be a barrier to their continued contribution to the sector. As construction employers, we need to understand how age affects our bodies in terms of capacity and capability and ensure that we have the organisational infrastructure in place to adapt to a workforce with different needs. Indeed, this is a legal requirement under both the Equality (Disability) Act 2010 and the Age Discrimination Act 2006.

Chronological age is not an accurate indicator of physical condition or capability, many of which can be affected by lifestyle choices. Nonetheless, we still need to recognise the health and safety implications of these changes.

There are three aspects of ageing that have health, safety and wellbeing implications: physical work capacity changes; mental health and wellbeing; work hours and sleep pattern changes.

But with attention to just three areas of organisational and job design, we can make a difference to people's workday, health, wellbeing and workability:

Age management approach

- Build line managers' awareness around the impact of age on work capability.
- Consider how contractual hours/shifts can be changed by offering part-time work or shortened hours.
- Ensure your fatigue policy limits the working week – research tells us that people are no more productive working if they work 55 hours+ a week.

- Design out health risks, particularly when it comes to manual handling tasks, given that musculoskeletal power and endurance reduce as we age.

Matching job activities to individual capability

- Adopt a physical demands analysis approach. By understanding the work activity requirements, you can match this with individuals' functional capabilities.
- Where there are concerns about employees' capability to undertake their usual work, introduce functional capacity assessments to establish functional ability rather than being led by a diagnosis or age.

Welfare

- Offer an age-specific health assessment focused on key areas of physiological changes – eyesight, musculoskeletal, hearing, cognition. Give people the opportunity to discuss their concerns.
- With a peripatetic workforce, consider ways for them to access GP care such as technology-enabled services like Push Doctor.
- Good diet and nutrition are key to performance and productivity, so ensure any catering contract you have in place provides the right balance of nutrients to increase performance.

Work is good for people, industry and the UK economy – but unless we actively rethink our approach to our ageing workforce we run the risk of easing out valuable people from business and society. ●

Tricia O'Neill is Skanska's UK head of occupational health, wellbeing and health and safety education and competence.

Four ways to build back stronger

Matt Brooker looks at how construction can make itself the springboard for economic recovery



To advance with the government's 'build, build, build' strategy and let construction drive an economic recovery,

the sector needs to continue to show it can be collaborative in its approach, be innovative in its thinking and rise to the challenge to build for the future.

Here are four areas where construction can improve.

1 Procurement: We all know this needs to be simplified. The recently launched Project Speed by the Cabinet Office, which aims to overhaul the procurement process by September, should support much of this change. Add to this the lessons learned from PPN 01/20, the updated Procurement Policy Note that was revised to help speed up the emergency procurement in March, and we have taken big steps to addressing the procurement puzzle.

2 Payment terms: Projects need to commit to either a traditional or modern method of construction (MMC) approach at the start of the process, so that resources spent at design and tender stage are not squandered by a late switch. The Chartered Institute of Housing's (CIH) Value Toolkit will help with this, providing free software to help value model the process, as will the commercial/delivery model that the Association for Consultancy and Engineering (ACE) is working on. And the government is already removing the blockers of cash distribution, often tied up in tier 1 and 2 contractors, with the PPN 02/20, also implemented in March this year.

3 Productivity and capability: We know there is a shortage of skilled resources in some local authorities, especially at planning and procurement level, hindering the consent pathway to proceed at pace. The Industry Talent Retention Scheme could be used to boost local authority resources in the short term to help with this.

4 Confidence and incentivisation: Confidence in the market, particularly in the private sector, needs to be instilled again. Chancellor Rishi Sunak has promised a Comprehensive Spending Review in the autumn this year, stating it is "our opportunity to deliver on the third phase of our recovery plan". Hopefully this will be the marker for not only reframing the strategy but rallying our industry to collectively build, build, build for the future.

Matt Brooker is national head of commercial UK at Rider Levett Bucknall.



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Feedback

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

Word cloud showing the most common keywords in CM's coronavirus survey, sized by frequency



CM 1/07 A good read

Professor John Bale
I've just finished reading the July/August issue of *Construction Manager* and, rather than just thinking it, I wanted to congratulate everyone concerned on a first class piece of work.

The range of articles, their attractiveness and the depth of content are hugely impressive – as are the ways in which the magazine supports and reflects the work of CIOB members and showcases that work to others.

CM 30/07 Grenfell Inquiry

John Groom
As a member of the timber frame sector, which may potentially pay a price for this debacle if the 11m height ban comes into force, I can't help but wonder how a failure to discharge the most basic duties under CDM regs managed to permeate through every level of this project.

At the heart of the Grenfell disaster appears to be a wholesale abdication of responsibility for the dissemination of design information and risk criteria and how specification changes were then managed through the contractor chain.

I understand the need for an inquiry, but the CDM regs are pretty clear about how things should work and who has to do what and when. It will be interesting to see what comes out the back of this inquiry and whether we will get lumbered with additional legislation or if the CDM regs will stay as they are.

CM22/05 CM Coronavirus survey

Tim Chell
I couldn't help notice the comment in the article from a specialist contractor that read: "We have been disappointed with a number of main contractors enforcing contract law to try to get workers to site."

It has been very difficult for main contractors trying to do the right thing and

keep business and in turn livelihoods afloat. We in turn have had equal pressure from some of our clients and this has disappointingly been passed down the line in some cases. Some clients, however, have been very supportive.

You don't appear to have acknowledged this and it has been, and continues to be, a huge challenge for us all.

CM 04/08 Construction's return 'quicker than expected'

Paul Fitzpatrick
Some good news across the board, but the commercial fit out sector will take time to recover whilst clients embrace the new normal.

The style and nature of central London office space will be questioned over the coming months while clients determine what works for them with homeworking, further covid restrictions.

Businesses will need to determine how this impacts their ability to be productive as well find

balance with the day to day lives of their staff who have cope with, health concerns, children and commuting in uncertain times.

CM 20/07 Draft Building Safety Bill

Peter Hyde
Three years after the Grenfell fire and major concerns have been expressed about both external cladding and the fire safety management systems. Furthermore we have major concerns over buildings with floors under 18m as highlighted in the Bolton students' accommodation fire.

We as an industry need to re-examine the management and control systems at design, construction and FM stage – as well as how fire risk assessment is carried out and implemented.

I've been in building control and construction in both the private and public sectors for 40 years and real lives matter – you cannot bring people back from the dead and the physical and mental effects of the Grenfell and other fires need

redressing by a safer built environment.


The Health and Safety Executive (HSE) also needs to get its house in order as it is under-resourced and its enforcement leaves a lot to be desired.

CM 04/08 Green Homes Grant addresses 'cowboy' fears

Wayne Francis
The scheme only runs for five months! Plenty of time for the cowboys to get in and fill their boots and cease trading before TrustMark's annual audit comes around.

R Wilson
The 'weed out the cowboys' is a bit of a ruse. The real problem is weeding out the council staff and the so-called inspectors and assessors who do not want to check the work, who do not understand what's involved, and within weeks we will have the situation of firms not being paid and payment taking months. Are we excited about this scheme? No we are not.

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



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 Profile

‘A JOURNEY TO A BETTER TOMORROW’

DESPITE THE PRESSURES OF COVID-19, THE GRENFELL INQUIRY AND BREXIT, NEW CIOB PRESIDENT MARK BEARD URGES MEMBERS AND THE INDUSTRY TO THINK POSITIVELY AND EMBRACE THE OPPORTUNITIES THAT LIE AHEAD. BY **WILL MANN**

Like everyone else in construction, the thoughts of Mark Beard have been dominated by covid-19 since March. The chairman of Beard Construction and new CIOB president remains deeply concerned about the pandemic’s impact on the institute’s members and everyone employed in the construction industry – but is hoping to take some positives from a difficult situation.

“For CIOB members and anyone in construction who has been laid off, furloughed or taken a pay cut – it has been a very difficult time and I empathise with what they are going through,” says Beard.

“These are uncertain times for everyone working in the industry; the ongoing Grenfell inquiry is not painting us in a good light.

“Conversely, the covid-19 crisis has shown that construction can step up to the mark when required. Working in unison, through the Construction Leadership Council and with government support, we found a way to keep sites going and delivered the new Nightingale hospitals incredibly quickly.

“We have to look at the positives and find a way forward; we must raise the bar on quality and put professional pride into the industry. Things are not easy at present for many people in construction, but I strongly believe we are on a journey to a better tomorrow.”

Quality is top of Beard’s agenda in his presidential year, along with changing the industry’s image among younger generations and supporting CIOB CEO Caroline Gumble’s international



DIANE AUCLAND / FOTOHAUS

£160m

Beard now heads up the eponymous £160m-a-year turnover property and construction business

work. Quality has been a watchword around the institute since the Edinburgh Schools collapse of 2016, and the work of its quality commission, led by past president, Paul Nash, accelerated after Grenfell. Beard is keen to build on this work.

“Getting things right first time is well worth the investment,” he says. “It saves on snagging, which is costly for contractors, demotivating for staff and frustrating for customers. Getting things right first time raises productivity, profitability and raises our reputation with the wide public – also making the industry a more attractive place to work.”

The CIOB’s Code of Quality Management has set out what is required of construction, Beard believes. “We have done the research, looked at the best globally within our own industry, explored how other industries manage quality – and put together the tools,” he says. “Now it is up to the industry to embrace them.”

This will require a culture change, Beard acknowledges, which he is happy to drive forward. “I go back to the 2002 safety conference chaired by John Prescott,” he recalls. “That proved a real step change in attitudes towards health and safety and made industry bosses accept that any fatality was one too many. I want the same to happen with quality.”

Beard worries that some projects are perceived as “low cost and therefore low quality”.

“Whether delivering a high-profile project for a prestigious client or a new classroom block for a school, all projects should be delivered to the same underlying quality standards,” he says. “The building’s watertightness, the services, the finishes and much more all need to be right, first time.”

“The buildings we deliver affect the lives of everyone who uses them. So, we

need to go beyond the bare minimum and seek out the highest possible quality. That is what it means to be a professional and why we should all take pride in our work. In an age of fantastic technological development, the industry is capable of much, much more.

“Quality needs to be a topic that is talked about at all levels of a construction business – from site to boardroom.”

The motivation to address quality stems from Beard’s own industry experience. Beard worked for two significant UK contractors in the early 1980s, followed by a short spell working for Rider Hunt in Sydney, Australia. He became MCIOB in 1988.

High customer satisfaction

Beard now heads up the eponymous £160m-a-year turnover property and construction business. Projects range from heritage projects for Oxford University to schools, healthcare, offices and leisure facilities. The group has offices in Oxford, Guildford, Swindon and Bristol and was named West of England Business of the Year in 2014.

The firm’s approach to quality includes its own individual ‘Prompt and Faultless Delivery’ ethos that has run for over 10 years, with strict targets of on-time delivery, zero defects and high customer satisfaction. Beard has also placed high emphasis on staff development and supply chain management.

“Quality is not just about the end product; quality is about a way of working,” Beard believes. “Having a safe and well-organised site is also closely linked to delivering good quality. We look after our staff and make sure our supply chain is similarly well looked after and paid on time.”

Beard thinks quality is linked closely to his secondary theme, which is “taking a hard look at how we are seen and heard by the younger generation”. ▶



Mark Beard: CV

- Chairman / chief executive of Beard since 1999
- Fellow of the Chartered Institute of Building
- Chartered Environmentalist
- Oxfordshire Businessman of the Year in 2004
- Member of Construction Manager Magazine Editorial Advisory Board
- Member of Henley Business School Advisory Board
- Patron of Alexander Devine Hospice
- Founder of Beard Charitable Foundation
- High Sheriff in Nomination for Oxfordshire for Shrieval year commencing April 2022
- Keen real tennis player and a playing member of the MCC for the last 30 years

Beard on the covid-19 impact

“We’ve noticed a change in how our people deliver over the past four or five months, since the pandemic struck. We’ve had fewer people on site, but given more attention to their wellbeing, leading to a calmer atmosphere, higher individual productivity and higher quality, albeit overall output is slightly down. There are lessons to be learnt there.”

Beard on offsite and quality

“Offsite construction has the potential to enhance quality control, but it’s not the whole answer. We can now manufacture much higher quality buildings compared to the 1950s, with architectural features that make these buildings difficult to differentiate from traditionally built buildings. Many jobs today will be hybrids, with elements of offsite and traditional.”



Beard on BIM and younger generations

“At Beard, we have put in place a pretty robust IT infrastructure; we find the younger people who join the business bring energy and ideas to help develop our digital processes. Career development used to be about older people passing on skills and knowledge, now it’s two way. Younger people have a key role to play in shaping the industry.”

Beard on ethics

“The CIOB has high ethical standards; It is important to show that you can run a business and make a profit while upholding high ethical standards – ethics and profitability go together.”

Beard on CIOB’s international reach

“CIOB membership is an internationally recognised qualification and that is still incredibly important to people who want to have a global career, not restricted to just one country.”

Mark Beard:
“People join
an industry
because of what
the industry does”

“People join an industry because of what the industry does,” he observes. “And every day, what we do reflects on the reputation of construction. But too many young people never join the industry after taking built environment related courses. People want to join industries that look after its own employees and produces excellent products – and we can be one of these industries.

“We need to create an atmosphere, a look and feel that draws in the younger generation. The baby boom generation will not be around forever and we as an industry, and as an institute, we are in a fight for the next generation.”

Compelling vision

As part of his presidency, Beard launched at this year’s virtual CIOB Members’ Forum an initiative called the CIOB 2030 Visionary Project, which aims to change how construction is perceived – and is urging members to take part.

“The CIOB must challenge preconceived ideas, set a compelling vision for our industry that considers new skills, new processes and develop strategies around emerging technologies,” he says. “This will ensure the CIOB stays at the vanguard of construction in a future that reflects the global needs of the next wave of talent.

“Through this vision we will identify future scenarios in our built environment, understand their impact and pursue changes in the CIOB that mean younger people will find the institute more inclusive and attractive.”

The other theme of Beard’s presidency will be global. He is “desperately sad” that covid-19 has prevented him from visiting international hubs, though he hopes travel restrictions may ease by the second half of his term. In the meantime, Beard has attended virtual meetings with the South Africa, Ghana, Singapore and Oceania hubs, with others planned for the coming months.

“Videoconferencing has actually helped these hubs engage virtually with their fellow members more than they previously did,” he notes.

Beard sees the CIOB’s international network as having a two-way benefit. “On the one hand, the UK is strong in areas such as BIM, quality and safety, and we can spread this good practice abroad,” he explains. “But in many areas of the world, they are ahead of us and we can learn from them.

“Hong Kong has built the fastest high-rise project on record by using modern approaches to construction, but they can learn from our quality management approaches. Australia leads the world in approaches to social procurement and in its health and safety standards. China is going through transformation with new digital tools and offsite construction. The CIOB can both learn and influence the Chinese construction industry.”

Beard believes the “pressures and opportunities” facing the industry are greater now than they have been for several decades.

“The outcome from the Grenfell inquiry and the related quality issues will be horrible, and there is the Building Safety Bill shortly going through parliament,” he says. “There will be a diminishing flow of immigrant labour, other Brexit-related issues, and the challenges posed by the covid-19 pandemic.

“But against that, the prime minister is saying ‘build, build, build’, there is a healthy long-term work pipeline, growing adoption of digital and offsite construction processes.

“So, do we embrace these challenges in a positive mindset, or do we go back to a ‘race to the bottom’, delivering poor quality work? The people and companies that do not may fall by the wayside, but many will embrace new ways of working and thrive.” ●

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Analysis



BUILDING AWARENESS OF DEMENTIA

THE BUILT ENVIRONMENT SECTOR HAS AN IMPORTANT ROLE TO PLAY IN TACKLING DEMENTIA'S GROWING IMPACT ON SOCIETY. **WILL MANN** EXPLAINS

There are forecast to be more than one million people in the UK living with dementia by next year. As the country's demographic gets older, the condition is becoming an increasing strain on society, with care costs around £40,000 a year per person.

Dementia is particularly relevant to the built environment, for two reasons. Firstly, the buildings the industry

designs and constructs are rarely suited to dementia sufferers – 93% of homes lack basic accessibility features. Secondly, with an ageing workforce, many in construction may be affected by dementia before they retire.

The Alzheimer's Society is one of the leading dementia charities – an estimated 60%-80% of dementia cases are caused by Alzheimer's – and will

“There could be a kitemark certification scheme, like BREEAM, so that people buying a home know it has been adapted or futureproofed for dementia sufferers”

David Kelly, BRE

be raising awareness of the condition on 21 September, World Alzheimer's Day. It is also involved with several built environment initiatives.

The CIOB recently became one of the society's 'Dementia Friends' and is working with the organisation to help the construction sector become more dementia-friendly. Meanwhile, dementia design principles are being developed by the BRE, through demonstration houses, and by Skanska and Ikea in Sweden.

“We want to see an increased number of people with dementia able to live longer in their own homes,” says Alice Billin, partnerships officer at the Alzheimer's Society. “This can only be achieved by improving the homes people live in and the public buildings they visit. Across the built environment sector, organisations can make a valuable contribution to support people with dementia facing these challenges.

“Dementia causes memory loss which leads to issues navigating around the community and the home. People can have difficulty recognising familiar places or objects. Dementia can also cause issues with vision and perception. For example, a welcome mat by a front door can look like a black hole, meaning people with dementia may feel unable to go in and out of their own home.”

Two years ago, the BRE Innovation Park near Watford opened its dementia demonstration home. This involved refurbishing an existing Victorian terraced house with accessibility features for dementia sufferers.

93%

93% of homes lack basic accessibility features

Partners include architect Halsall Lloyd and Loughborough University.

“We picked a refurbishment for the demonstrator as there is mounting clinical evidence of the harmful effects caused to dementia sufferers by moving house,” says BRE group director David Kelly.

Interest has come from across the built environment and care sector, Kelly says. The BRE has subsequently developed 12 parameters to provide a consistent and measurable approach to home and building adaptation, covering areas such as decoration, colours and textures, line of sight and views to green.

The house features smart technology. “These include sensors monitoring indoor air quality, automatically lighting control systems, windows which open automatically at a certain temperature, connected to the building management system (BMS),” says Kelly.

“There is other technology that could be deployed, such as biometric sensors worn against the skin, linked to the BMS. As a person’s body temperature changes, the heating system adjusts.”

Then there are behavioural sensors, installed at the dementia house on Scotland’s BRE park, at Ravenscraig.

“These sensors track movement, such as when someone has gone to the bathroom, or how long they have been sat on a chair,” Kelly explains. “We’re looking at identifying patterns of behaviour and flagging up any concerns so carers can respond appropriately. There are legal issues to consider but we do see more and more of this technology being used.”

Beyond adapting existing properties, Kelly is also looking at new housing and is considering a new-build demonstrator home.

“Can we introduce subtle changes to the designs of new homes that futureproof them so that elderly people or dementia sufferers can continue living in them?” he says. “For example, including provision for wet rooms downstairs, demountable partitions, views to green.

“There could be a kitemark certification scheme, like BREEAM, so that people buying a home know it has been adapted or futureproofed for dementia sufferers. Ideally, we would



Top: The Swedish SilviaBo dementia-friendly housing concept by BoKlok



Right: The BRE dementia demonstration house has an open-plan interior with clear lines of sight

like this to be mandated in building regulations and planning requirements.”

Kelly has been promoting the idea to the Dementia and Housing Working Group, a body which includes government departments, the NHS, Homes England, the Alzheimer’s Society and various industry bodies, and says “the response has been positive”.

Abroad, Sweden is also pioneering housing designs that accommodate dementia sufferers. SilviaBo is a housing concept launched by BoKlok, the prefabricated timber homes joint venture between Skanska and Ikea, in partnership with Queen Silvia of Sweden and her foundation.

BoKlok stresses that SilviaBo is a ‘home for all’, designed to allow elderly people to continue living there as they get older or develop dementia. Many design principles are similar to those in the BRE demonstration home, including clear wayfinding and signage and high-contrast colours for fittings such as toilet seats and shower railings.

The first six apartments were completed outside Stockholm last year. ●

Is dementia a concern in the construction workforce?

Dementia onset is most common among the over-65s, but the risks increase with age and the condition can begin as early as the mid-30s. That should be a worry for the built environment industry, with one in every five UK-born construction workers aged over 55.

“With construction having an ageing workforce, the industry is definitely likely to be affected by dementia,” says Alice Billin of the Alzheimer’s Society. “There will also be a lot of people who are carers or family members of people living with dementia who will need support emotionally and to help them continue working.”

There is no specific guidance for organisations on screening workers for dementia nor is it their responsibility to do so, she says.

“What is important,” says Billin, “is creating a dementia-friendly and supportive work environment where people know they can disclose a dementia diagnosis and know that their managers will be supportive of them to help them adapt if they need to. Organisations can also set up carers’ forums and safe spaces to talk about these issues.”

The CIOB Academy’s course, Dementia Friends and the Built Environment, aims to provide industry professionals with a better understanding of dementia and its relevance to the built environment.

Further details: www.ciobacademy.org/course/dementia-awareness.



BAM'S COVID CHALLENGE ON INTENSIVE CARE BUILD

BUILDING A NEW INTENSIVE CARE UNIT AT SOUTHAMPTON GENERAL HOSPITAL, BAM HAD TO RE-ROUTE EXPLOSIVE 'QUENCH PIPES', AVOID INTERFERENCE WITH SENSITIVE MRI IMAGING EQUIPMENT, AND EVEN ALTER EMERGENCY HELICOPTER FLIGHT PATHS. AND THEN THE CORONAVIRUS ARRIVED... **STEPHEN COUSINS** REPORTS



BAM was just a couple of months into construction of a new intensive care unit for Southampton General Hospital when covid hit the UK and all hope of delivering a straightforward job evaporated.

The day after prime minister Boris Johnson delivered his infamous “Stay at home” speech at the end of March, the

extension and refurbishment project lost around 80% of its workforce. “It was horrific, our supply chain just crumbled,” says Matt Crookes, project manager at the main contractor. “I spent the next week continuously on the phone trying to encourage people back, explaining the stringent new safety measures we had put in place.”

The block is squeezed in tightly between the curved (in plan) Cardiac North Wing extension and a main entrance building

Workers soon returned – the project was classified as an ‘essential NHS project’ and letters were issued by the trust to subcontractors and supply chain – but the site’s proximity to the main hospital building and connection to the existing ICU, where NHS staff struggled with the dramatic influx of patients, have made the

£21m

The new General ICU is located on the first floor of a five-storey block being built by BAM under a £21m ProCure 22 Framework project



Technical story for CM?
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“At the height of the pandemic when 1,000 people a day were dying in Britain, I had to use all my interpersonal skills to motivate people, reassure them and keep momentum going”

Matt Crookes, BAM Construct UK

human cost of the virus apparent to everyone involved.

“The human side of things on site was really challenging: at the height of the pandemic when 1,000 people a day were dying in Britain, I had to use all my interpersonal skills to motivate people, reassure them and keep momentum going,” says Crookes.

The new General ICU (GICU) is located on the first floor of a five-storey block being built by BAM under a £21m ProCure 22 Framework project, the remaining floors will remain empty for the time being, subject to separate business case/cost plans.

The job includes the fit out of the new GICU ready for occupation by staff and patients, at which point it will inherit the existing unit to carry out a full refurbishment. The new build element is due to handover at the end of September, followed by the refurb in March 2021.

Coronavirus aside, the project must contend with a complex array of technical challenges that threaten to derail a tight programme. Steel frame construction over a live MRI department had to avoid interference with sensitive imaging equipment, while close proximity to adjacent blocks required a rethink of the construction sequence and cladding.

It has been a logistical juggling act to manage the 12,000 people who walk past the project into the main hospital entrance every day, share site access with ambulances, and divert emergency aircraft landing on a helipad just a few metres away.

Clinical need

Southampton General Hospital is one of only two locations in the south of England to offer adults and children full onsite major trauma care provision, but the existing GICU accommodation had become extremely dated. When assessed against future activity projections and current design recommendations, the layout was inadequate in terms of capacity, bed bay sizes and functionality.

Jeff Belk, head of estates and capital projects at University Hospital Southampton NHS Foundation Trust, told *CM*: “Visitors are frequently amazed that such positive clinical outcomes are achieved in this environment. With the added demands of the coronavirus pandemic, the importance of this new development was brought into sharp focus.”

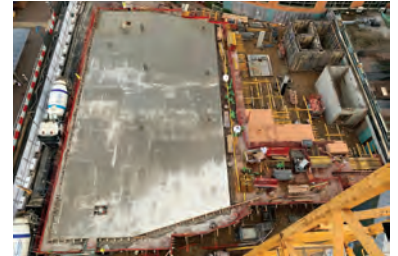
Intensive care design has moved forward in recent years, with an increasing awareness of the impact that an internal environment can have on patients to improve wellbeing and promote faster recovery.

Rehabilitation space

Architect Stride Treglown worked with the clinical team to understand patient needs and incorporate features such as abundant daylight, hoists to aid staff and encourage mobility and central rehabilitation space. A specially designed end-of-life room provides a therapeutic environment for patients and their relatives.

From top:

Progress of the installation of the concrete floor slab



Project team

Client: University Hospital Southampton NHS Foundation Trust

Main contractor: BAM

Architect: Stride Treglown

Engineer: White Structures

M&E design: Hulley & Kirkwood

Client cost advisor: Faithful+Gould

Specialist contractors:

Mechanical: ARB Mechanical

Electrical: Reavey Electrical

RC frame: MJ Gallagher

Steel frame: Stephens and Stuarts

Drylining: AT Jones

Lifts: Orona

Groundworks: Goldmax



The arrival of the pandemic did not trigger a redesign, mainly because of the drive to bring new capacity and bed space on stream as soon as possible. Simon Boundy, divisional director and architect at Stride Treglown, says: “The GICU already incorporates a proportion of isolation and side rooms, which are key to the control of the current pandemic in the short and medium term.”

The project is of particular significance for BAM, whose legacy company Higgs & Hill built some of the original hospital buildings back in 1973. Crookes’ first job working as an assistant site manager was on the North Wing cardiac extension, completed in 2006 and located just 5m away from the new building. ►

Higgs & Hill on the original hospital site in the 1970s



“I’ve really come full circle, I know the hospital quite well, I know the people, how they operate and what they expect from a main contractor, which is a big advantage,” he says.

Construction projects are logistically complex places, but few have to contend with such a varied mix of human, vehicular and airborne traffic.

The site shares access with emergency blue light routes around the hospital, and a no-waiting zone means articulated lorries can only deliver at night by reversing into a special entrance.

The main hospital entrance has to remain open at all times, so a robust logistics and site compound plan was developed to create segregation between visitors and site activities.

With no room for scaffolding, an alternative cladding design was developed

Highly qualified security staff manage the public 24-7 and watch out for local daredevils known to break into sites and climb tower cranes.

Emergency flights to a helipad next to the site would have come in directly over the project, so Crookes liaised with the Civil Aviation Authority and Southampton Airport to move flight paths to prevent potential collisions with the tower crane.

Gas and magnets

Existing hospital departments and functions remained operational, so the building had to be designed with careful consideration to the placement of structure, access for construction and fire escapes.

The new build is mostly reinforced concrete, but a lighter steel frame was erected, by contractor Stephens and Stuarts, over an existing single-storey block containing a live MRI suite.

The suite contains two cylindrical CT scanners fitted with super-conducting magnets that are sensitive to the presence of nearby metal. BAM had to coordinate closely with Siemens, the company that maintains CT equipment for the hospital, to ensure the steel frame would not distort image quality, either in its permanent state or when beams and columns were manoeuvred into position during installation.

If the CT scanners ever go down due to a fault, helium gas used to cool the magnets is rapidly expelled through quench pipes that project up from the roof. At an early stage of the project, the scanners had to be turned off (an extremely rare occurrence) and the pipes extended and diverted to make way for the new build, a process that required months of forward planning with the hospital.

The extension is located adjacent to two levels of operating theatres, which makes noise and vibration a source of concern where operatives had to break through into the existing building.

Patients first

Despite weekly coordination meetings and forward planning, some stoppages were necessary when urgent cardiac or paediatric surgery was taking place, says Belk: “This has been frustrating but everyone involved recognises the importance of the trust’s first value of ‘Patients first’.

To accelerate the programme and enable BAM to get in quickly to fit out on the first floor, a top-down method of construction was devised with columns and slabs for the upper floors erected in advance of the ground floor slab. ▶





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“On the elevation facing the main entrance building we didn’t have the working room for proper scaffolding so we developed an alternative cladding design using composite panels”

Matt Crookes, BAM Construct UK



CGI of the unit exterior (top) and view of the interior of the ICU (above)

The block is squeezed in tightly between the curved (in plan) Cardiac North Wing extension and a main entrance building, with just 300-400mm clearance at the closest point. An intricate strategy for access, material deliveries and cladding installation was required to keep things flowing.

A wide lift shaft, able to accommodate lift cars big enough to hold patients in beds plus medical equipment and staff, was fitted with a goods hoist during construction to distribute materials onto the floorplates. This avoided the need to erect a hoist or scaffolding on the elevations and meant the facade could be left open for temporary access.

“Figuring out a way to clad the building when you’re that tight was difficult,” says Crookes. “On the elevation facing the main entrance building we didn’t have the working room for proper scaffolding so we developed an alternative cladding design, using composite panels instead of full rainscreen cladding.”

These were dropped in by tower crane and fixed into position from the floorplate.

Reality check

When covid entered the picture and normal site routines were thrown into disarray, BAM swiftly reformatted the work space to meet with social distancing guidelines and ordered non-frontline staff, such as design managers, planners and QSs to work from home.

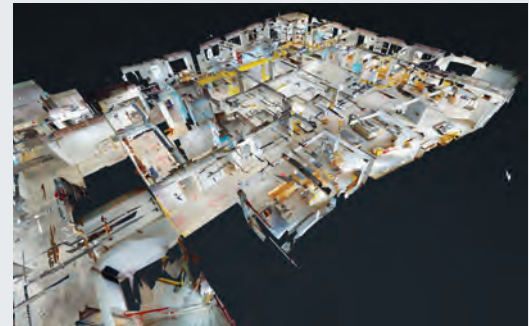
“We picked ourselves up quickly and managed to get the supply chain back one by one,” says Crookes.

Remarkably, time lost during the first wave was clawed back and the project is currently reporting on budget and on programme. It is also encouraging that the number of infected patients in the existing ICU has come down into single figures.

“You talk to the clinical staff, and it’s just so motivating, there are such amazing resilient people here, we want to make sure we give them these new beds because it could be so important for the months ahead,” Crookes concludes. ●

BIM and asset data

The client challenged BAM to maximise its BIM output



BAM used Matterport to roll out weekly virtual walkthroughs

BIM has become a priority for University Hospital Southampton NHS Foundation Trust as it strives to maintain a large and complex estate with multiple projects each year.

BAM Construct UK was challenged by the client to achieve a level of BIM output that was “probably more comprehensive than any of their recent projects”, says Jeff Belk, head of estates and capital projects at the trust.

The scope of asset data and asset labelling was designed to mesh BIM with the client’s computer aided facilities management systems and required significant fine-tuning.

When covid struck and non-essential visits to the project were suspended, the decision was made to roll out weekly virtual project walkthroughs showing works as they progress, created using the 3D scanning system Matterport.

The interactive panoramas cover every corner of the project and are navigated Google Street View-style using a mouse. “It has been great for illustrating the project to our stakeholders, charity fundraisers and other interested parties,” says Belk.

The system is now being exploited for more project-specific tasks, such as importing the 3D data into Revit to produce as-built drawings, which removes the need to physically send people onto site to take measurements. It will provide the trust’s maintenance team with a full photographic 3D record of service installations before they are covered by suspended ceilings.

“It has been a game changer for us and the client loves it,” says Matt Crookes, project manager at BAM Construct UK.

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Offsite Manufacturing

WILL COVID-19 ACCELERATE OFFSITE TAKE-UP?

OFFSITE MANUFACTURING PLANTS CONTINUED OPERATING FOR MUCH OF THE COVID LOCKDOWN. WITH FEARS OF A SECOND WAVE, WILL MORE CONSTRUCTION PROJECTS CHOOSE TO EMBRACE FACTORY PROCESSES? **WILL MANN** ASKS SOME OF THE SECTOR'S KEY PLAYERS, STARTING WITH LAING O'ROURKE

When covid-19 struck in March, it was only a temporary setback for Laing O'Rourke's design for manufacture and assembly (DfMA) plants.

"Our factories were running at 75% to 80% operational capacity during the first two weeks of lockdown, but after that, returned to pre-covid productivity levels, once we'd worked out the rules on social distancing," says Declan McGeeney, Laing O'Rourke head of infrastructure.

"We actually think they have been even productive than before lockdown, which may be due to fewer distractions from project teams visiting – the factories have been left to get on with their work."

Productivity across Laing O'Rourke sites dropped 50% during that first

fortnight of lockdown but its DfMA capability has allowed the contractor to keep projects on schedule.

"On our Soho Place commercial scheme, for instance, we increased the number of MEP components manufactured offsite," explains McGeeney. "Horizontal risers are not commonly prefabricated – unlike vertical risers – because project teams feel there's not enough volume to justify it. However, we do prefabricate horizontal risers in hospitals, and we introduced that approach on Soho Place because of the lockdown restrictions, so we could keep the critical path moving along."

Laing O'Rourke's positive experience is shared by many across the offsite sector (see boxes). The controlled



NEIL WEBB



"We have to plan for any second wave of covid so our projects are not impacted"
Declan McGeeney,
Laing O'Rourke

working conditions of the factory have made it easier to implement social distancing protocols, while key project elements can continue to progress even when work on site is restricted. With fears of a second covid wave, there is anecdotal evidence of projects being redesigned for offsite to speed up delivery and remove uncertainty.

Could this be a watershed moment for offsite take-up?

Rewind to the uncertain days of March. Like all construction businesses, Laing O'Rourke examined the guidance coming from the Construction Leadership Council (CLC) to understand how they could operate.

Sites were challenging, says McGeeney, but it was more straightforward at the group's five manufacturing centres: the Centre of Excellence for Modern Construction in Steetley (formerly Explore Industrial Park), Crown House in Oldbury, GRC near Doncaster, Smartwall in Worksop and Select's accommodation business in Wincham, Cheshire.

"The factory teams have been working together for years and know each other well – whereas there are regular changes of operatives on sites – so we could get the change of culture embedded in our facilities quickly," explains McGeeney.

"We moved the factory teams to a day shift (7 till 3) and back shift (3 till 10) – we could do that because we didn't have to worry about noise affecting neighbours, unlike on site.

"Some tasks require workers to be within 2m of each other, such as



assembling pipe work for plant rooms at our Crown House facility. For this work, we do a full risk assessment and use special PPE including FFP3 masks.

"Workers receive drawings digitally so they are not handling paper. Clocking in is done through mobiles to avoid people touching the keypad. Operatives work in the same cells and take breaks together – we split up the canteens to allow this."

During lockdown, Laing O'Rourke manufactured and then – last month – delivered on site the first HS2 permanent structure, a bridge over the M42 near Birmingham. "It was a completely digital build, which would have taken eight weeks traditionally, but we put it up in five days," says McGeeney.

"With these projects, we are learning what other processes we can move into the factory," he continues.

Famously, Laing O'Rourke has a '70:60:30 target' – where 70% of construction work is delivered in the factory (the pre-manufactured value or PMV), achieving 60% productivity gains, and 30% programme savings.

"We're now driving towards 80% of our work being factory-manufactured," ▶

Laing O'Rourke's
Centre of Excellence
for Modern
Construction
(photo taken before
social distancing
was introduced)



"On a production line, compared to a site, there are very set processes – critically, you don't have different trades working around each other."
John Lewis, Aecom



John Lewis Managing director modular, Aecom

Aecom's modular business is three years old. The company acts as a principal contractor and offers a turnkey service, working with Rogers Stirk Harbour on design, and uses hybrid modules featuring steel structural elements and glulam for the interiors.

Its Tuxford manufacturing facility in Nottinghamshire (top) operated throughout the lockdown, says John Lewis, managing director of Aecom's modular business.

"We have 30 people normally on the production line which we reduced by half initially, then it went back up," he says. "The great thing about a production line compared to a construction site is there are very set processes – we have nine stages with clear instructions – about what has to be delivered and when. Critically, you don't have different trades working around each other.

"So it is much easier to analyse work process and work out where the risk points are. For example, assembling cassettes involves taking panels of sheet material and fixing them to a frame, which requires two people working within 2m of each other. We got round that by creating a bubble – those people only worked together and didn't do other tasks."

Aecom's modular business is currently delivering one of its first projects, a block of 39 single living homes for homeless people in Romford for the YMCA, using modules manufactured in Tuxford.

"We had delivery concerns because the site foundation works were closed for two to three weeks," says Lewis. "But by creating a social bubble, the foundation team of six workers were able to work together and not interface with other operatives."

Lewis says Aecom's modular business has "had enquiries from clients who are trying to make back time lost during lockdown" but thinks the market is turning towards offsite in any case.

"Build quality and sustainability are key factors," he says. "These are highly engineered modules, with low running costs due to their thermal performance. Net zero during operation is achievable for our modular projects."



says McGeeney. “The Grange hospital in Gwent was in the high 70s. Ray [O’Rourke, group CEO] wants 90% to 95% by 2025.”

What other work packages could become more factory-friendly? “Structures is one area,” answers McGeeney. “We enter projects later than we would like which can make it harder to change structural elements. Cladding is not consistent across industry. Finishes tend to be done quite traditionally.

“We must deliver the right architecture. But we need to move more towards standard components and get them into BIM libraries, not reinvent the wheel every time. The government is backing that.

“The build is high risk with offsite. Laing O’Rourke can self-deliver and

Workers at Laing O’Rourke’s Steetley manufacturing centre



Paul Ruddick Chief executive, Reds10



Paul Ruddick, chief executive, Reds10

“AI will drive further efficiencies in the design, churning out the most efficient specification.”

Modular specialist Reds10 has its factory in Drifffield, 20 miles north of Hull. CEO Paul Ruddick says demand has barely slowed – if anything increased – since the covid-19 pandemic struck in March.

“Our plant went down to 50% operational capacity for six weeks but was back up to 100% after that,” he says.

“We followed the guidance from the CLC, who did the best they could in a tricky situation and did at least give us a licence to operate.

“We have 90 operatives working in two factories side by side at the site and we keep the two apart and also have two separate canteens. Teams work in ‘pods’ of roughly 10 workers and have no interaction with others. Obviously some tasks require two or more people, so for these, face guards and other PPE have to be worn, with a break after 15 minutes, in line with the guidelines.”

Reds10’s facility is in East Yorkshire, arguably the ‘heartland’ of the offsite sector, and Ruddick says other factories in the area are currently “flat out, scrambling for skills”.

“That’s an indicator of how high demand is,” he says. “Offsite does help de-risk projects, so that’s a consideration if there is another wave and lockdown. Our teams can keep working, we’ve got

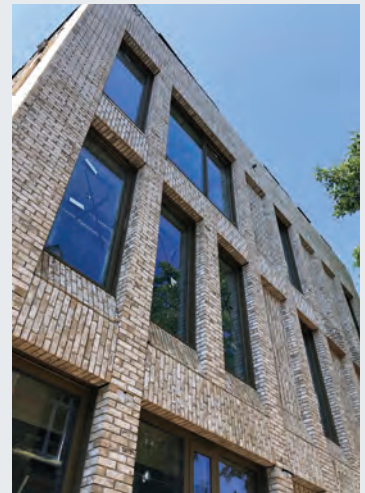
large areas to set down materials, people can drive to work and know who they will be next to every day.”

One of Reds10’s current projects is an office block for the Imperial War Museum in London. Other recent orders include CT scanner buildings and maternity wards in healthcare and it is on the Department for Education’s offsite framework.

Ruddick believes the product will become more competitive. “Our PMV is 85% for a project like an open plan office building,” he says, “though the CT scanner buildings were near enough 100%.

“AI will drive further efficiencies in the design, churning out the most efficient specification, and our suppliers will then feed into the model, providing the most efficient, low carbon solution.”

Reds10 is working on an office block for the Imperial War Museum, London



manage out that risk. But others get put off quite quickly. Getting digital embedded right from tender is key so we can build the project virtually before we reach site.

“We need to deliver faster, and with fewer people,” he continues. The company’s planned Advanced Manufacturing Facility, to support its residential business, “will use robotics

for 90% of the precision process work”, McGeeney reveals. The plant, which will be located next to the Centre of Excellence, will aim to manufacture 10,000 homes a year. It is at “business case stage”, McGeeney says.

“Already we use robotics for cutting pipework at our Crown House factory and at our GRC plant we use 3D printing for mould production,” he adds. ▶

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McGeeney senses a “marked shift” in attitudes to offsite since covid-19 arrived.

“We have to plan for any second wave of covid so our projects are not impacted,” he says. “At Laing O’Rourke, we have more enquiries coming in. Some clients have asked us about redesigning a project to suit offsite or to prefabricate elements like the structure, the lift shaft, the MEP.

“Even our competitors are asking our businesses about how to embed offsite within their business. Some 50% of turnover at Crown House and Expanded is outside Laing O’Rourke, so we have a chance to shift opinion in the market – we know we can’t do it all ourselves.” ●

Above right: Installation of Offsite Solutions bathroom pods on a Berkeley Homes development

Below: Premier Modular extended working hours at its Yorkshire factories



James Stephens Managing director, Offsite Solutions

Offsite Solutions is a specialist bathroom pod manufacturer, with four factories in Somerset, which total 200,000 sq ft (18,600 sq m). Facilities include GRP (glass reinforced plastic) and steel-framed pod manufacturing, steel base frame fabrication and a unit for fitting out, testing and despatch.

“All factories remained open throughout lockdown at slightly reduced capacity,” says James Stephens, managing director.

“The key change to operating procedures created more space between pods. This means fewer units on each production line and only one person permitted to work in a pod at a time. The exception to that is the fitting of cabinets or shower screens. This work requires two people, so they are required to wear PPE.”

Stephens continues: “We installed hand wash stations to all the main points of entry to each factory and appointed staff to monitor hand washing to ensure hygiene processes were adhered to. We also put hand sanitising units on every production line and increased the cleaning regime.

“We generally have one person working on a pod at any one time although it is possible to fit out the inside of a bathroom while another member of our team is installing plumbing or electrics externally and still maintain 2m social distancing. This would not be possible on site where work on bathrooms is much more confined.”

On site, Stephens says it is relatively easy to maintain social distancing requirements for pod installation as only two operatives are needed.

“Some of our clients found it productive to accelerate their pod deliveries during the lockdown,” he adds. “With reduced numbers of trades on site at this time, this allowed pods to be sited much more quickly.”

Stephens says that Offsite Solutions fulfilled all its customer requirements for bathroom pods during the lockdown period, supplying hotels, student accommodation, build-to-rent schemes and a care home project.

“We also achieved a record level of enquiries and quotations in April,” he adds.

David Harris

Managing director, Premier Modular



Premier Modular, also based in Driffield, has five factories spanning 12,000 sq m at its site in East Yorkshire.

“All our factories remained at capacity throughout the lockdown and continue to do so,” says managing director David Harris. “During the peak, we had a range of building types going through the factory for permanent and interim projects, including defence, school buildings and site accommodation.”

“We extended working hours to create more space in the factory while minimising the impact on productivity and output. Work was separated out in the factory by having teams working in specific cells. Extra signage gave clarity on new ways of working along with daily meetings and toolbox talks.

“Our buildings move through the factory in a sequential process, so it is relatively easy to avoid work being carried

out by different trades in the same area at the same time.”

Premier’s PMV is around 80% and Harris says installation work on site is done by small crews so social distancing requirements had minimal impact.

The company worked with BAM at Nightingale Exeter, designing and installing five single storey modular buildings totalling 1,700 sq m in just four weeks.

“Looking forward, we are anticipating increased demand for education projects which were delayed by the pandemic,” Harris says. “The pressure to deliver these buildings in a shorter time to meet the demand for school places is likely to result in wider use of offsite construction. With the government presumption in favour of offsite, even in a smaller economy, we are expecting the number of offsite projects to increase.”



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How the use of exoskeletons will change construction, p42

HOW TO BREAK DOWN OFFSITE'S PROCUREMENT BARRIER

UPTAKE COULD BE ACCELERATED WITH MANUFACTURER AGNOSTIC DESIGNS, ARGUE **GIORGIO BIANCHI** AND **MARK BOYLE**



Offsite manufacturing has recently been enjoying a renewed surge in popularity, helped by government support, innovative clients, environmental drivers, a dearth of skilled labour and the ongoing housing shortage. But there are still many barriers to wider uptake.

One barrier clients face is the conflict between achieving project security by engaging offsite suppliers early in the design process and maintaining commercial competitiveness in the procurement process. On the other side of the fence, offsite suppliers want to invest in production improvements but struggle without an advance order book or high-volume market demand.

Early engagement is important with offsite, allowing the design to capitalise on the supplier's system, including

dimensional arrangements of walls and floors, materials and finishes. However, it locks the project into a single supplier and means the final cost is often negotiated rather than tendered.

Also, as the offsite industry comprises many independent manufacturers, each relying on its own specific method of construction and assembly – usually protected by intellectual property rights, which do not allow interchangeability of products, this increases the risk for clients and investors.

So how should clients decide when to select an offsite supplier, and be confident that it has the know-how and capacity to deliver, while still being commercially competitive?

In traditional build projects, progress and quality can be monitored directly

as the works progress on site. This is different for offsite projects as a significant amount of investment in time and cost is needed before anything turns up on the site. This can mean significant financial and time risk, where clients have a building pre-sold or pre-let only weeks before commissioning and handover – yet the majority of the building is not on site nor tested for fit-up accuracy.

Designers can play a major role in resolving these challenges. The choice of the right offsite technology for a specific project is key. Designers should take full responsibility for this choice and the design associated with it up to tender stage, identifying opportunities for collaboration with multiple offsite manufacturers, thereby reducing reliance on a single supplier. This does require designers to develop advanced offsite capabilities and an in-depth knowledge of the manufacturing processes available.

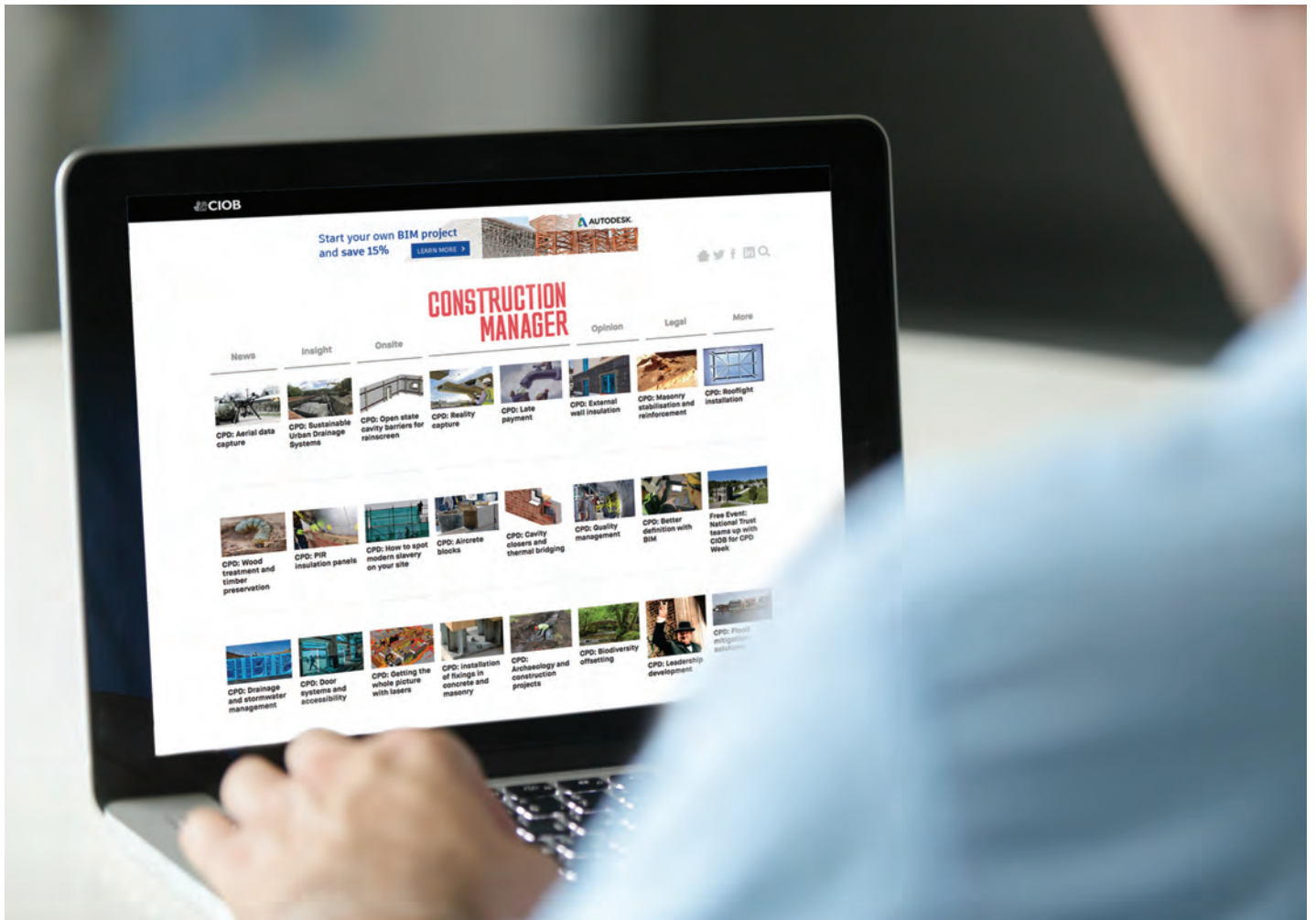
This can be called 'manufacturer agnostic design' (MAD). MAD combines detailed design with knowledge of offsite systems, BIM, advanced visualisation techniques, manufacturing and site logistics. For designers to be successful in offering this service, engagement from the supply chain and know-how sharing are essential.

MAD allows a project to be designed to suit multiple offsite systems, and competitively tendered from a range of suppliers. This gives the client the advantages of an offsite approach on the project while still allowing open tender procurement.

Potentially this would not only drive the offsite industry towards more uniformity and standardisation, but also shift attitudes among developers and contractors, helping move construction towards more innovative and industrialised working methods. ● **Giorgio Bianchi is a director and Mark Boyle is director of engineering and technology at Robert Bird Group.**

Each independent manufacturer has its own method of construction and assembly

"Manufacturer agnostic design allows a project to be designed to suit multiple offsite systems, and competitively tendered from a range of suppliers"



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CPD: AN INTRODUCTION TO PAS 2035

AS THE GOVERNMENT LAUNCHES ITS GREEN HOMES GRANT, THIS CPD, IN PARTNERSHIP WITH KINGSPAN, EXPLAINS HOW THE PAS 2035 STANDARD FOR RETROFITTING HOMES OPERATES, AND WHY IT IS IMPORTANT FOR CONTRACTORS TO WORK IN ACCORDANCE WITH THE STANDARD

The Green Homes Grant, which is due to launch in England in September, will provide grants of up to £5,000 per household (or £10,000 for those on low income) towards the introduction of energy efficiency measures (EEMs) in the country's ageing housing stock. The scheme represents a welcome first step in addressing the carbon footprint of UK

homes as part of a commitment to reach net-zero carbon emissions by 2050.

In delivering it, it is critical that the industry learn the lessons highlighted in the *Each Home Counts* report, overseen by former BRE chief executive Peter Bonfield, ensuring that solutions are suitable for the particular building and form part of a holistic long-term package.

The Green Homes Grant will help to introduce energy efficiency measures to housing stock

It is recommended that contractors be certified under the 2019 version of PAS 2030 and carry out the work in accordance with PAS 2035. These public specifications establish a clear process for assessing properties, selecting and installing EEMs and monitoring their performance – creating a comprehensive Retrofit Standards Framework.



State of housing stock

It is well known that Britain has among the oldest and most draughty housing stocks in Europe. With the sector accounting for around 14% of total UK greenhouse gas emissions, the performance of existing homes needs to be addressed urgently. Central to this is the commitment to raise the Energy Performance Certificates (EPC) of all homes to a C (where “practical, affordable and cost effective”) by 2035 in England and Wales and 2040 in Scotland. This will represent a major challenge, with over two-thirds of UK homes currently failing to reach this target.

At the same time, concerns have been raised about the quality of workmanship on energy retrofits completed under previous schemes such as the Green Deal. This contributed to a performance gap between the expected and actual energy savings in homes and in some cases has also led to property damage. To address these concerns, a review was formed back in 2015, culminating in the *Each Home Counts* report.

Each Home Counts

The report identified 27 key recommendations for raising standards and delivering value for money with energy retrofits. Together, these were designed to provide a robust framework for the end-to-end delivery of retrofit EEMS supported with clear oversight and codes of conduct.

Core to the new framework was a quality mark for operatives. The government board tasked with implementing these recommendations has formalised this by expanding the existing TrustMark scheme to cover the repair, maintenance and improvement (RMI), retrofits and energy efficiency sectors. It is expected that any firm wishing to carry out work under any future government funding schemes, including the Green Homes

Grant, will need to be a TrustMark-registered business.

Registered businesses can currently be certified under the 2017 version of PAS 2030. From 30 June next year, however, it will become compulsory for all registered businesses to achieve certification under the 2019 version of PAS 2030 and to be able to evidence that work complies with the processes within PAS 2035.

New process and roles

The Retrofit Standards Framework also identifies a number of distinct roles, each with specific vocational or professional qualification requirements. These new positions are designed to raise both competency and accountability throughout the retrofit process. It is possible for a suitably qualified individual to fulfil multiple roles within this process, providing any conflicts of interest are highlighted.

To ensure consumer protection, a retrofit coordinator is appointed on each project – either by the homeowner or contractor. They are responsible for oversight of all work, including the commissioning and monitoring of EEMs,

Where external wall insulation cannot be used, internal solutions may be introduced



“It is expected that any firm wishing to carry out work under any future government funding schemes, including the Green Homes Grant, will need to be a TrustMark-registered business”

ensuring all processes are conducted in line with PAS 2030 and 2035. This process is broken down into clear stages:

The property owners meet with a retrofit advisor to discuss options for improving their home’s energy performance, including both EEMs and changes to occupant behaviour.

If they are happy to move forward, the retrofit coordinator then carries out the risk assessment, drawing from EPCs, occupant interviews and site visits/surveys. The property is given a risk path grading from C (high risk) to A (low risk). This grading determines how subsequent steps are approached and must be repeated after each EEM is implemented.

The retrofit assessor then conducts a whole-dwelling assessment requiring an appraisal of factors such as the dwelling’s construction, age, condition, suitability for improvements and any planning constraints. Further assessments must be carried out on projects on risk paths B or C, including analysis of ventilation and air permeability. An assessment of the significance of the building may also be required following the guidance in *BS 7913: 2013 Guide to the Conservation of Historic Buildings*.

Based on the findings in the whole-dwelling assessment, a retrofit designer then creates the package of EEMs, paying attention to construction details and how the different measures will interact. An improvement option evaluation is also required for ▶



It is recommended that contractors carry out the work in accordance with PAS 2035

dwelling on Risk Paths B or C, outlining the payback period and carbon cost-effectiveness of the measures.

The retrofit coordinator then sequences the measures within a 20-30 year medium-term improvement plan and communicates this to the client, outlining any statutory approvals that may be required and obtaining their sign-off for any work. They also brief the retrofit installers on the design intent and sequencing – including an overview of any new technologies.

The relevant EEMs are then fitted, tested and commissioned by the installers in accordance with PAS 2030: 2019 (Note: it is the installer's responsibility to ensure compliance and to evidence this to the coordinator).

The retrofit coordinator then arranges handover with the owner and occupant (if separate individuals), including a physical assessment and guidance on operation and maintenance. All paperwork, such as EEM guarantees, manuals and commissioning records, is retained by the coordinator with copies made available to the owner. They will recommend a new EPC is commissioned and carry this out where agreed.

To ensure expected performance improvements are achieved, all projects are also subject to evaluation and potential evaluation. A retrofit evaluator first conducts a basic evaluation within the first three months after commissioning, requiring the homeowner to fill out a tailored questionnaire and to raise any ►

“The retrofit coordinator sequences the measures within a 20-30 year medium-term improvement plan and communicates it to the client”

PAS 2035

The assessment of properties, specification of energy efficiency measures and long-term monitoring processes all come under the specification

PAS 2035 acts as the over-arching document within the new Retrofit Standards Framework, covering how properties are assessed, the specification of EEMs and long-term monitoring. The 2019 version of PAS 2030 has been condensed, with several sections included within the 2017 version now moved across into PAS 2035. For this reason, once firms achieve certification under PAS 2030: 2019, the TrustMark scheme requires them to also comply with PAS 2035.

Before any measures are introduced under the new framework, each property must be thoroughly assessed to create a package of EEMs which is suitable to its particular characteristics.

PAS 2035 sets out the processes for the risk and whole-dwelling assessments which consider various aspects of a property's design, construction and use which may impact the effectiveness of any EEMs. It is also made clear that

occupant health and wellbeing is the first priority during these assessments and must take precedence over any energy efficiency improvements.

A 20-30 year plan is then created, identifying the level of performance which can be achieved and the selection of EEMs needed to reach this. The plan is stored, and updated, within the TrustMark data warehouse. This online portal allows all parties involved with the retrofit process to log their own work in a single location. A Property Hub (also described as a property passport) is also set to be made available to homeowners so they can view relevant information such as guarantees on EEMs already introduced and potential funding for future measures.

Under PAS 2035, occupant engagement is required at several points within the retrofit process as a way of raising consumer confidence and ensuring occupants understand how to get the most from the new measures.



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“Once fabric improvements are achieved, measures can then be identified to meet the remaining heat and energy demand as efficiently as possible”

concerns. If the owner, evaluator or coordinator feels there are any significant issues then intermediate or advanced evaluations are carried out.

Fabric first

When it comes to identifying EEMs, PAS 2035 states clearly that designers and coordinators should look to prioritise improvements to the building fabric, for example through better insulation, before spending resources on other measures.

The particular fabric measures which can be implemented on the property will then be guided by the risk and whole-dwelling assessments. For example, uninsulated solid walls are often a key source of heat loss, however use of external wall insulation may not be possible on solid walled properties which are listed or located within a conservation zone. In these cases, it may be necessary to consider internal wall insulation solutions.

The thermal conductivity (lambda value) of insulation materials should be carefully considered when specifying envelope improvements. The lower this value, the more effective the material is at preventing heat loss through conduction. This means a slimmer thickness can be used to reach the target U-value.

Close attention to detailing is essential when carrying out improvements to the fabric. *Each Home Counts* highlighted that inaccurate detailing or poor workmanship around junctions often contributed to properties

The fabric measures implemented will be guided by the risk and whole-dwelling assessments



underperforming. It is also important that any improvements to the thermal performance or airtightness of the envelope are matched with similar improvements to ventilation. Once fabric improvements are achieved, measures can then be identified to meet the remaining heat and energy demand as efficiently as possible, including the use of renewable technologies.

Starting right

The Green Homes Grant alone will not be enough to deliver the major changes needed in UK housing to hit the net-zero target as a more holistic approach will be required to achieve this. In addition, its short funding deadline will also make it difficult to fully implement the processes within PAS 2035.

Nevertheless, where possible, it is important that the industry look to begin to implement the Retrofit Standards Framework within these schemes, proving to consumers that these measures can be implemented effectively and deliver lasting reductions in carbon emissions and energy bills. ●

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CPD Questions

- | | |
|--|--|
| <p>1: What percentage of the UK's greenhouse gas emissions does its housing stock contribute?</p> <p>a) 4%
b) 14%
c) 41%
d) 0.4%</p> | <p>certification under the 2019 version of PAS 2030?</p> <p>a) 30 September 2020
b) 1 May 2021
c) 31 January 2022
d) 30 June 2021</p> |
| <p>2: How many key recommendations for raising standards did the Each Home Counts report identify?</p> <p>a) 2
b) 12
c) 27
d) 64</p> | <p>4: When it comes to identifying energy efficiency measures (EEMs), what does PAS 2035 state that designers and coordinators prioritise?</p> <p>a) Improvements to the building fabric
b) Solar PV panels
c) Ground source heat pumps
d) Installation of a new, more energy-efficient boiler</p> |
| <p>3: When will it become compulsory for all TrustMark-registered businesses to achieve</p> | |



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HOW WILL EXOSKELETONS CHANGE CONSTRUCTION?

FROM PRODUCTIVITY TO SAFETY, WEARABLE ROBOTICS WILL HAVE A HUGE IMPACT ON CONSTRUCTION – BUT DOES THE INDUSTRY UNDERSTAND THE IMPLICATIONS? BY **DR GRAEME LARSEN**

The adoption of robotics by the construction sector has been slow, partly because of the cost and partly because of the nature of sites.

Wearable robotics were initially developed for medical and military applications, for use by humans to aid physical performance. Best understood as a mechanical suit, termed an

‘exoskeleton’, they assist the movement and weight-bearing capacity of an operative’s limbs, often powered by a battery pack.

The uptake of exoskeletons is happening across the automotive sector, while some construction enterprises are already using them. Wearable robotics can be used by

Willmott Dixon has been trialling an EksoVest supplied by Ekso Bionics

“The uptake of exoskeletons by the industry will be intertwined with fundamental changes to the way construction operates”

operatives to undertake tasks in a more productive and safe manner, reducing fatigue or injury, and are being trialled in the UK by companies such as Willmott Dixon.

Our understanding of how wearable robotics may impact and shape the sector is still in its infancy. Exoskeletons have been depicted as futuristic sci-fi that is years away. But their uptake by the industry will be intertwined with fundamental changes to the way construction operates.

Are exoskeletons equipment or PPE?

Policy makers and regulators, the sector leaders, companies trialling the technology and the early users wearing exoskeletons will play a part in this process. But at present, there is no discussion, guidance, codes or standards around how wearable robotics will be defined or used – and there are some important questions to be asked.

Does a user ‘operate’ an exoskeleton, like site plant? Or ‘use’ it, like a power tool? Or ‘wear’ it, like PPE?

If wearable robotics are defined as site plant they could come under similar regulations and restrictions to those for a mobile crane or telehandler. Suitable testing procedures would need to be developed and resourced, tests and certificates issued with an established expiry date, method statements for use drawn up, and specialised operators with a valid licence would need to be trained.



Digital story for CM or BIMplus?
Email will.m@atompublishing.co.uk

47%

Hilti's EXO-01 device claims to reduce peak load on the muscles and shoulders by up to 47%

This could lead to the need for specialist insurance, maintenance schedules being established, parameters for use defined – wind, temperature, rain, space, weight and debris – along with overloading alarm warnings and storage provision.

However, if wearable robotics are defined as an operative's own tool, then the responsibility, accountability and financing shift significantly.

The implications change again if the technology is defined as a piece of PPE, becoming mandatory for certain tasks. Then, the responsibility for provision potentially falls to the main contractor's safety management team, or even to smaller subcontractors under health and safety regulations.

Operational questions

The level of investment in wearable robotics is significant. The lifespan is perhaps limited by technological advances, with strict maintenance schedules meaning that service-led procurement may be the preferred choice. Large firms or projects may be most suited to adoption of wearable robotics, providing the right scale for financial commitment and rewards. Repetitious rather than ad-hoc tasks may suit exoskeletons better.

Both the technological and commercial case must be made if wearable robotics are to become commonplace. But most disciplines in the construction sector will be affected by the technology, regardless of how it eventually becomes defined. It will impact on procurement (buy, hire or lease), constructability, pricing of work, how to let subcontractor work packages, payment systems and safe working practices.

If wearable robotics lead to some site operations being done more quickly, then construction's productivity and logistical benchmarks will need to be re-evaluated.

The uncomfortable scenario of an exoskeleton malfunctioning and injuring the user or other operatives will also have to be addressed.

The construction sector needs strategic leadership for the uptake of wearable robotics and CIOB members must play a role here. Wearable

robotics is not sci-fi. It is amazing technology and the sector needs to learn how to use it. ●

Dr Graeme Larsen FCIOB is associate professor of construction management and innovation at the School of the Built Environment, University of Reading.

Construction companies trialling exoskeletons



From left: Hilti's EXO-01; Colas and RB3D's Exopush; Amey's EksoVest; Morrison Utility Services' EksoVest

Amey and Transport Scotland

Amey is one of several companies trialling a robotic vest for construction workers supplied by Ekso Bionics. The EksoVest is designed to elevate and support arms during manual, chest-high-to-overhead handling tasks.

The 4.3kg vest, which costs approximately £5,650, is an external metal frame that mirrors elements of the human skeletal structure. It is powered by a series of springs and provides between 2.2kg to 6.8kg of lift assistance per arm.

Transport Scotland, in partnership with Amey, has purchased an EksoVest suit to be trialled in its Forth Bridges unit.

Willmott Dixon

Willmott Dixon has been trialling the EksoVest on its Cardiff West Community High School project, after purchasing

the kit through Eureka, the company's central research and development fund.

The contractor's operatives reported positive feedback from using the bionic vest, particularly for tasks above the head, such as lifting plasterboard and screwing into soffits.

The company hopes the EksoVest technology will lead to workers on site feeling less exerted, with improved wellbeing and productivity.

Skanska

Skanska's Swedish business is trialling an exoskeleton from Hilti, which teamed up with German prosthetics firm Ottobock SE to develop the technology for the construction industry.

The passive exoskeleton transfers the weight of the arms to the hips via the forearm supports using mechanical cables.

Independent studies and Ottobock research claim that the device can reduce peak load on the muscles and shoulders by up to 47%.

Hilti said it expected the device to be particularly useful for overhead work, reducing fatigue and increasing productivity. The EXO-01 will be introduced to the UK this autumn.

Colas

Colas has introduced a new exoskeleton designed to give power assistance to operatives working on levelling with a rake during roadworks.

The Exopush has been developed by Colas with French-based firm RB3D. Two of the tools were trialled last autumn and deployed on UK sites in January this year.

The kit weighs 8.2kg, with a runtime of five to seven hours from two electric batteries. The carrying kit takes under two minutes to get ready,

according to Colas. It can push or pull up to 50kg and Colas has claimed it reduces repetitive movement up to fivefold for the user.

Morrison Utility Services

Morrison Utility Services is also trialling the EksoVest. Workers on the company's Yorkshire Water contract team are exploring the potential health, safety, wellbeing and productivity benefits of the exoskeletons.

The trial programme includes lifting and handling activities in the company's Normanton stores depot and around hoppers used by site clearance support teams.

It is also being used to support reinstatement teams using the company's purpose-built Roadmender asphalt unit and supporting backfill teams loading and unloading rammers onto the sides of vehicles.

HOW TO SIMULATE DAYLIGHT IN COMMERCIAL BUILDINGS

GOOD DAYLIGHT AND AIR QUALITY ARE CRUCIAL IN COMMERCIAL BUILDINGS. IN ASSOCIATION WITH VELUX COMMERCIAL, **CM** EXAMINES HOW USING DAYLIGHT SIMULATION TOOLS CAN SUPPORT A COMMERCIAL BUILDING AND ITS USERS' NEEDS THROUGH DAYLIGHT DESIGN



The importance of daylight and air quality within commercial buildings cannot be overstated. Not only can natural light reduce the need for electric lighting during the daytime, and lower the energy use of the building, it can also influence both heating and cooling loads, which makes it an important parameter of an energy efficient design. Additionally, recent research has proved that adequate daylight provides an array of health and comfort benefits that make it essential for the wellbeing of building occupants.

Daylight simulation tools can support a commercial building's compliance and its users' needs by providing critical overviews of building performance prior to construction. These tools make it possible to evaluate the quantity and distribution of daylight in a room, whilst considering key influential parameters such as window placement, building geometry, external obstruction, interior divisions and material properties.

Supporting the implementation of EN 17037

EN 17037, the new European Standard for daylighting in buildings, is helping change the focus of commercial building design, and the role of glazing in those designs, to improve occupant comfort and overall energy efficiency. The need to provide glazed openings and well distributed daylight to interior spaces, whilst reducing artificial lighting use, must be considered with the balance between heat loss and solar gains.

We all understand the importance of light in terms of being able to see and being able to use buildings and spaces for what they are intended. We also understand that artificial light – however well designed it is – is less able to meet these needs than daylight. When we allow natural light to enter our buildings, we are also maintaining a view out and a connection with our wider environment – something that artificial light cannot do.

Light impacts our mood as well – a concept that is not easy to measure through mathematics and physics. The proliferation of technology, and the amount of time we spend staring at screens, is beginning to raise awareness of the types of light we expose ourselves to and the effect it has on sleep and the body's natural rhythms. We need that same increased awareness when it comes to buildings.

Beyond the provision of daylight for people to be comfortable and able to undertake tasks, there is also the balance between energy use and daylight provision to think about.

Daylight simulation tools can support a commercial building's compliance with EN 17037 and ensure that from the early stages of design and specification commercial buildings will perform and adhere to the required standards.

Velux Daylight Visualizer

Where high levels of daylight are intended in a public, industrial or commercial building, the daylight design

95%

In EN 17037 two daylight factor targets need to be achieved over 50% and 95% of the work plane area



In association with

“This free-to-use simulation tool helps to predict and document daylight levels as well as the appearance of a space prior to realisation of the building design”

should be assessed at an early stage when it is easiest to make changes.

If daylight design is undertaken from the early stages of a project, it means roof glazing products can be specified in the right size and quantity from the outset. The project therefore benefits from greater certainty, and the glazing can be priced with confidence.

Nicolas Roy, architect, is part of the Daylight, Energy and Indoor Climate team at the Velux Group and specialises in the field of building performance with a focus on daylighting. Over the past 15 years with the Velux Group, Roy's extensive knowledge of building design, 3D modelling and lighting has helped to shape the development of one of Velux Commercial's most useful daylighting tools – the Velux Daylight Visualizer.

This free-to-use simulation tool helps to predict and document daylight levels as well as the appearance of a space prior to realisation of the building design. The Daylight Visualizer goes above and beyond the more commonly used 3D visualisation programs by accurately simulating and quantifying daylight levels in interiors.

The Daylight Visualizer can:

- Calculate daylight factor levels: You can use the Daylight Visualizer to simulate the daylight factor (DF), a commonly used performance indicator for the evaluation of daylight provisions in buildings. The daylight factor is a measure of the amount of diffuse light available at different points inside the

building – in relation to the amount of diffuse light available outside the building under unobstructed overcast sky conditions.

- Evaluate requirements for daylight provisions in the new European Standard for Daylight in Buildings (EN 17037): Daylight factor simulations can be used to evaluate requirements for daylight provisions in EN 17037, where two specific daylight factor targets need to be achieved over 50% and 95% of the work plane area. The daylight factor targets were defined based on recorded climatic data in each country and relate to a desired illuminance level for the space.

- Create or import 3D models: The Daylight Visualizer can import detailed 3D models of buildings from a wide range of CAD/BIM software – including Revit, AutoCAD, ArchiCAD and SketchUp – with one of the supported file formats DWG, DXF, SKP and OBJ.

- Perform luminance and illuminance simulations: With the Daylight Visualizer you can run these simulations under different



The Daylight Visualizer applies false colour mapping to highlight daylight distribution

Opposite: Velux modular skylights in the atrium of the Genmab research facility in Utrecht

Below: Availability of light impacts on occupants' mood



International Commission on Illumination (CIE) sky conditions and apply false colour mapping to visualise the quantity and distribution of daylight in the space.

Instead of using rules of thumb or gut feeling to set out the initial number and size of roof glazing solutions, daylight simulation tools help to eliminate uncertainty.

The building design proposal is then passed to the M&E consultant for compliance verification but, with the bulk of the assessment already done, and with greater certainty that the proposed design is already adequate, the whole process is made much quicker – and with less risk of further design work to accommodate changes. ●

Learn more about the Velux Daylight Visualizer and how Velux Commercial provides daylight expertise to help you design compliant roof glazing solutions by visiting veluxcommercial.co.uk.



St Francis Tower in Ipswich



Barry Hembling
Watson, Farley
& Williams

Combustible cladding case turns on cover-up

A RECENT JUDGEMENT IN THE TECHNOLOGY AND CONSTRUCTION COURT SHOULD BE WELCOME NEWS FOR BUILDING OWNERS WORRIED THEIR POST-GRENFELL CLADDING CLAIMS MAY BE TIME-BARRED.

BARRY HEMBLING EXPLAINS

Since the Grenfell Tower tragedy of June 2017, there have been numerous legal claims after landlords discovered their buildings were also clad with combustible materials.

One of these cases centred around St Francis Tower in Ipswich: *RG Securities (No 2) Ltd v Allianz Global Corporate and Specialty CE, Building Lifepans Ltd and R Maskell Ltd*.

RG Securities purchased the freehold of the tower, built in the 1960s, in 2015. Previously, the property was refurbished by the third defendant R Maskell between 2006 and 2009. During these works, the tower was clad with a Trespa cladding system, largely using polyisocyanurate insulation underneath. There were also some aluminium composite material sections.

The claimant alleged that the cladding system used on St Francis Tower was even more combustible than that used on Grenfell, and raised other concerns about the internal fire compartmentation and safety of the windows. It said that the refurbishment was not compliant and did not have a Building Regulations completion certificate.

The claim

RG Securities brought a claim that the works were not carried out in a workmanlike or professional manner, or with proper materials, causing the tower to be unfit for habitation and in breach of section 1(1) of the Defective Premises Act (DPA) 1972.

Maskell argued the claim was statute barred under the Limitation Act 1980. This meant any claims based on breaches of contract, or breach of duty under the DPA 1972, that occurred prior to 16 December 2013 – six years before the date the claim form was issued – were time-barred. Maskell therefore applied for summary judgement.

In response, RG Securities asserted that Maskell concealed the fact that Building Regulations approval had not been obtained at the time of the sale in 2015 and as a result, time did not start running – under the terms of the Limitation Act (see box) – until it discovered the concealment in 2018.

The Technology and Construction Court found that RG Securities had an arguable case and dismissed Maskell's application.

Mr Justice Fraser said "the court can take into account that further relevant evidence on this issue may become available upon the more full investigations of the facts that will take place at the trial" and the "state of evidence on concealment is still not at its final stage".

Analysis

The case provides important guidance on how the clock is effectively reset for limitation purposes where information material for bringing a claim has been concealed.

It is also interesting in the context of the ongoing scandal of buildings constructed with combustible cladding systems that do not satisfy health and safety requirements. While the UK government has made funding available to progress remedial works, this is contingent on building owners committing to pursue responsible third parties. In many cases, the cladding systems now known to be combustible will have been installed years ago and full details of their safety may not have been known or made available until fairly recently.

A report from the National Audit Office highlighted the failure of that fund to progress remedial works. The government subsequently acknowledged that only in a minority of cases would it be financially justifiable for building owners to bring legal action to recover money and in a significant number of cases some claims could be time-barred.

For those able to pursue claims, the decision in *RG Securities v Allianz* should be welcome. The case confirms that the limitation period within which cases must be brought is extended where relevant information has been concealed. The extension applies even where the primary limitation period had expired and not merely after the cause of action had accrued. ●

Barry Hembling is a partner at Watson, Farley & Williams.

Under the Limitation Act 1980:

- An action to recover any sum recoverable by virtue of any enactment shall not be brought after the expiration of six years from the date on which the cause of action accrued; and
- Where any fact relevant to the plaintiff's right of action has been deliberately concealed by the defendant, the period of limitation shall not begin to run until the plaintiff has discovered the concealment or could have with reasonable diligence.



Liam Tumulty
COINS

Q&A: Reverse VAT

AFTER SEVERAL DELAYS, THE DOMESTIC REVERSE VAT CHARGE WILL FINALLY COME IN NEXT MARCH. **LIAM TUMULTY** EXPLAINS WHAT TO EXPECT



Why is the domestic reverse VAT charge being introduced?

HMRC has been experiencing substantial levels of fraud from criminals who have taken control of subcontractors within the construction industry. They have been VAT registered, so charging VAT on their invoices to contractors, but have then disappeared without paying this VAT over to HMRC. This is a type of 'missing trader' fraud which has cost the UK government many millions of pounds. The 'reverse charge' system is designed to combat this.

How will the VAT charge work?

From 1 March 2021, subcontractors in the UK construction industry will no longer add VAT to their invoices when working for other contractors. Instead they will just indicate on the invoice that the VAT needs to be dealt with by their customer – the main contractor – under the 'reverse charge' system. Their customer will enter the VAT amount on their VAT return as if they had raised the sales invoice, as well as entering it on their VAT return in the normal way.

Why has HMRC not zero-rated construction services for VAT?

If HMRC had zero-rated construction services, it would have lost a significant amount of VAT. Although it may appear that the VAT cash flows for the reverse VAT charge are the same as if zero rating had been applied, this is not always the case.

How will this impact the industry?

Firstly, this is a huge administrative change for the UK construction industry. The industry is very diverse and comprises a very large number of small subcontractors in addition to medium and large contractors. Those without specialist tax, accounting and IT expertise will find it hard to understand the changes. There is likely to be confusion and misunderstanding, which will result in errors on invoices, payments and VAT returns. These, in turn, may cause disputes between contractors and subcontractors on whether the reverse charge should apply.

"There will be a cash flow impact which will adversely affect subcontractors and could cause financial difficulties"

Secondly, there will be a cash flow impact which will adversely affect subcontractors and could cause financial difficulties. Under the current rules the subcontractor has the cash flow benefit of receiving VAT from customers which may not need to be paid over to HMRC for around three months, but from 1 March 2021, the subcontractor loses this benefit. This will be a particular problem in the first few months following the change.

Will there be penalties for not applying the reverse VAT charge?

Yes, HMRC will be able to impose penalties if construction businesses do not apply the construction reverse charge rules or apply them incorrectly. However, according to the published guidance: "HMRC understands the difficulties businesses may have in implementing the domestic reverse charge and will apply a light touch in dealing with related errors that occur in the first six months after introduction, where businesses are trying to comply with the new legislation." ●

Liam Tumulty is a financial consultant with COINS.

How construction firms should plan for the reverse VAT charge

- Understand the rules and how they apply to your business.
- Put in place appropriate business processes for the reverse charge.
- Identify subcontractors and customers impacted by the change (subcontractors will need to be notified in advance).
- Implement and test software changes.



CIOB Community



Winners

DGC Toronto team wins CIOB's seventh Global Student Challenge

FOUR FINAL-YEAR CONSTRUCTION MANAGEMENT STUDENTS FROM GEORGE BROWN COLLEGE COLLECT 2020 AWARD VIRTUALLY

George Brown College in Toronto is home to this year's winners as well as finalists in 2019

A team from Toronto has been announced as the winner of the seventh annual Chartered Institute of Building (CIOB) Global Student Challenge competition, after facing a fiercely competitive international field.

The winners are DGC Toronto, a team of four final-year students studying for the Honours Bachelor of Technology (Construction Management) at George

Brown College, a university which also made it to the 2019 finals.

The award was collected virtually due to the worldwide covid-19 pandemic. However, this did not impact the incredible efforts made by each team, the standard of which has been just as strong as previous years.

The winning team receives £2,000 in prize money, along with access to

a unique mentoring programme, with industry leaders offering advice and guidance to support their professional development.

More than 50 international teams entered this year's competition before the top six best performing competitors were chosen to go through to the final. The other finalists were:

- CIOBNB – Chongqing University
- Base Build – RMIT University
- Skywalker Construction – Hong Kong Polytechnic University
- Sang Nenggala – Universitas Indonesia
- Glasgow Construction Corp – Glasgow Caledonian University.

Mark Beard, president of the CIOB, said the challenge will set up the students for the world of work. "This is a challenge not for the faint hearted. All the teams showed their ability and potential by reaching the finals. As students they now have a greater sense of what it is like to work in a construction company making high-level decisions. I have no doubt that all of our finalists will be able to reach that level when they leave university."

The CIOB's annual Global Student Challenge, which is open to full-time students, is a real test of construction industry know-how, taking place in stages over a number of months. The competition provides a realistic simulation where teams, made up of three or four people, act as a board of directors running their own company.

Teams from universities all over the world entered the 2020 competition, and normally the six teams scoring the most in the early stages would be invited to the finals, held as part of the CIOB's annual Members' Forum, which was a virtual event this year. ●

Entry for the 2021 challenge will open later this year. Find out more about the Global Student Challenge at gsc.ciob.org.



Visit

Labour leader visits CBC site

KEIR STARMER DROPS IN ON ASHE'S STEVENAGE SCHEME

Earlier this summer, Keir Starmer made his first visit as Labour leader to see the work being done to transform Stevenage's town centre. ASHE Construction, a CIOB Chartered Building Company is creating Park Place – a mixed-use regeneration scheme in the heart of the town that is set to kickstart wider urban renewal in the area.



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

Skills

Construction Manager of the Year finalists revealed

FINALISTS ANNOUNCED AHEAD OF GLITTERING CEREMONY AT THE JW MARRIOTT GROSVENOR HOUSE HOTEL IN LONDON ON 25 NOVEMBER



The shortlist for the Chartered Institute of Building (CIOB) Construction Manager of the Year Awards (CMYAs) 2020 has been revealed. A total of 60 of the best construction managers in the UK have been named in the shortlists for nine categories.

The finalists will be whittled down to one winner in each category, with the overall Construction Manager of the Year winner chosen from the category winners.

Further details can be found at www.cmya.co.uk.

The CMYA 2019 winner was Sir Robert McAlpine's retail refurbishment at The Plaza, Oxford Street, London

Covid-19

CIOB strengthens financial support

MEMBERS' FEES FROZEN AND NEW FUND SET UP

The CIOB has confirmed that there will be no increase in subscription fees for individual or company members for 2021.

The prices for annual membership will be frozen at 2020 levels. The institute has also confirmed the set-up of a 'covid-19 support fund' for members facing financial difficulties as a result of the pandemic.

Since the pandemic started to impact the industry across, the CIOB has been trying to offer, on a case-by-case basis, financial support for members in need, primarily via the organisation's Benevolent Fund.

The new covid-19 support fund is now formalising the support available to members with a concession on the 2021 subscriptions available to those who have been furloughed, on reduced pay or facing redundancy.

Other membership costs, such as admission and Professional Review fees, will also be held at 2020 prices.

The covid-19 support fund is available to the following grades of membership: MCIOB, FCIOB, ACIOB, ICIOB.

The CIOB Benevolent Fund is also available to support all members and past members with financial advice and support and mental health and wellbeing support: www.ciobbenevolentfund.org.uk.

The finalists are:

Residential under 10 storeys

Tony Gallagher
Durkan
Matt Hamilton
SEACON
Dominic Jankowski
JJ Rhatigan Building Contractors
Paul Jeal
St George West London
Tomasz Magiera
WRW Construction
Michael Saunders
Lovell Partnerships
Mark Woollen
Willmott Dixon
Residential over 10 storeys
Brendan Conway
McAleer and Rushe

Caroline Heraghty
Ardmore Construction
Terry Kirby
Berkeley Homes East Thames
Alistair MacPartlin
JJ Rhatigan Building Contractors
Anthony Mitchell
ISG
Patrick Phillips
Durkan
Gerald Ward
Bennett Construction
Primary education
Laura Allison
Morgan Sindall
Mike Castle
Knights Brown
Mark McElwee
Morgan Sindall

Michael Pyatt
Morgan Sindall
Stephen Sear
Morgan Sindall Construction
Thomas Prince
Willmott Dixon Construction
Massimiliano Crea
MID Group
Schools
John Blundell
TJ Evers
Andrew Miles
Kier Construction
Daniel Morrish
Morgan Sindall
Mark Prince
Eric Wright Construction
Graham Thompson
Willmott Dixon

Higher education
Neil Adams
Willmott Dixon Interiors
David Clarke
Wates Construction
Frank Connolly
Mace
Anthony Cooper
Interserve Construction
Karl Crisp
Willmott Dixon Construction
Glyn Jones
Willmott Dixon
Lee Mullett
Willmott Dixon Construction (Midlands)
Adam Price Beard
Ian Rainbow
BAM Construct UK

Lee Wayper
Sir Robert McAlpine
Richard White
ISG Construction
Leisure
Jamie Beard
Willmott Dixon Construction
Theresa McErlean
Heron Bros
Danni Oliveira
WRW Construction
Jonathan Roberts
VINCI Construction UK
Nick Stoyles
Willmott Dixon Construction
Paul Turner
VINCI Construction UK
Offices
Kevin English
Lendlease

Paul Epton
Robertson Construction Central East
Richard Kirkpatrick
Skanska
Daniel Miller
Wates Construction
Ian Rowe
Oakmont Construction
Craig Stokes
Laing O'Rourke
Public and infrastructure
Kevin Alden
Sir Robert McAlpine
Kristian Cartwright
Willmott Dixon
Paul Clarke
Willmott Dixon
Brian Hanlon
Willmott Dixon Construction

Russ Parks
Willmott Dixon Construction
John Stedman
Morgan Sindall Construction and Infrastructure
Simon Whittingham
Willmott Dixon Construction
Healthcare
Matt Gavin
Kier Construction
Tom Millard
Willmott Dixon Construction
Lewis Blake
Willmott Dixon Interiors
Robert Palmer
Kier Regional Building London and South East

Chartered status

CBC marks dream come true for Yorkshire fit-out specialist

BRADFORD-BASED CARDINAL TAKES UP CHARTERED STATUS AS FIRM TURNS 30

Cardinal Project Management is celebrating becoming a CIOB Chartered Building Company.

A family-owned company based in Yorkshire, Cardinal invests heavily through employee engagement, apprenticeship schemes and significant social value in the wider community. The accolade comes as it turns 30 years old.

Michael Brearey FCIQB, construction director at Cardinal, is delighted with the new status. "This has been a number of years in the making and is something that we all, not just the directors but stakeholders at all levels, are extremely proud to have been awarded as it is a massive achievement.

"Being recognised as a company that is able to uphold the integrity and professionalism of the CIOB is

an incredible accolade which we will uphold. This is a massive milestone in the Cardinal journey and one that we will look back on for years to come as game-changing moment."

David Newlove MCIQB, contracts director, agreed. "Achieving CBC status is something I have aspired to achieve ever since myself and Michael Brearey first met back in 2009 and started on our journey to becoming chartered members of the CIOB."

The CBC status continues a run of success for Cardinal this year. The firm has won or is waiting to hear on a number of awards including: winner of RoSPA Silver Award; finalist in six different categories for NBCA awards (awaiting final decisions); finalist in Best Use of Technology in Construction at the



A Cardinal fit out in Leicester University's Lasdun Hall

Yorkshire Property Industry Awards (awaiting final decision); Green Apple Award winner, Green World Ambassador and put forward into the Green World Awards (awaiting final decisions).

It has been shortlisted in the Serving the Community Category for the International CSR Excellence Awards and its HSQE manager was shortlisted for a Construction Role Model Award. ●

Research

Scholarships open for applications

CIOB OFFERS BACKING FOR TWO PROJECTS



Sir Ian Dixon, head of Willmott Dixon and past CIOB president

Two of the CIOB's trailblazing scholarships are open for applications this month.

The Sir Ian Dixon Scholarship, named after the head of Willmott Dixon and past CIOB president, is designed to provide an opportunity for companies to develop the potential of their staff through a research programme.

Also open to applications is the Sustainability Scholarship.

Whether you are interested in the advent of carbon accounting on projects or the importance of water conservation in the future, the Sustainability Scholarship encourages a company to carry out research using one of its employees.

Established in 2007 jointly with the Worshipful Company of

Constructors and the University College of Estate Management, the scholarship is awarded annually.

For both scholarships the scholar will continue to work full time during the scholarship year, carrying out a research project which will benefit the scholar, their company and the industry.

They will discuss progress with their company and mentors from the Worshipful Company of Constructors every few months, producing an end-of-project summary to be made available on the Worshipful Company website at the end of the 12-month period.

Scholars will give a presentation at an event hosted by their company and on successful completion of the project will receive a £3,000 award.

The application process:

- The candidate must send their CV and a brief summary (200 words maximum) of their chosen research topic, confirming if the project is new or will build on existing work.
- A member of the selection committee will then arrange a time to discuss the proposal in more detail over the phone. Applications should be made via email to either dixonscholar@constructorscompany.org.uk or sustainabilityscholar@constructorscompany.org.uk.

The closing date for applications is Friday, 30 October 2020. Winners will be notified by 27 November.

To view past work visit <http://constructorscompany.org.uk/what-we-do/scholarship-awards/scholarship>.



Novus members in Manchester and Liverpool set out to walk five miles on 19 July

Fundraising

Novus members put in the miles for CIOB Benevolent Fund

WALK WITH NOVUS IN YOUR LOCAL AREA TO BOOST MENTAL HEALTH AND RAISE MONEY

Throughout July, Novus members and their friends headed outside, walking as many miles as they could on a virtual walking challenge.

The original challenge was to walk the distance from Land's End to John o'Groats as a group. With dedication and effort from the walkers, they reached this target by the middle of July. But they haven't stopped there – virtually hopping across the pond, they are now walking from Toronto to Quebec.

The aim of this challenge has been to get members exercising outside to improve their mental and physical health as well as raising awareness and donations for the CIOB Benevolent Fund cause. However, the event has

had an unexpected social element with Novus members from across the globe getting to know one another through online chats and sharing pictures.

Manchester and Liverpool Novus went further – organising a socially distanced walk.

“For the past two years, the Manchester and Liverpool Novus Hub have put on their walking boots and walked up a mountain in aid of charity. This year we didn't want to miss out,” said Nicola Hodson, Manchester Novus chair.

“Most of us took part in the Global Novus walking challenge in July but we wanted to dedicate a day just for our Novus hub so we set a date, 19 July, and a target to do five miles each member. We achieved a combined total of 28 miles in one day, almost the distance between Manchester and Liverpool.

“It was lovely at the end of the day to see such wonderful photos of where everyone went, all with the Novus logo. We are proud to be part of such a supportive professional network and to raise awareness and money for the CIOB Benevolent Fund.” ●



CBC

Driving the message home

CONSULTANCY PUTS CBC LOGO ON ITS VANS TO SPREAD THE WORD

Chartered Building Consultancy FR Consultants is so proud of its ‘stamp of approval’ that it has put the CBC logo on its vans.

“We believe so strongly in the CIOB's mission to promote the science and practice of building and construction for the benefit of society,” says Jessica Green from the firm.

“Our goal is to make Britain's buildings safe and mortgageable by providing expert consultancy on facade safety. The Chartered Building Consultancy status is a recognised and trusted ‘stamp of approval’ that shows our customers at a glance that we are qualified, professionally run and committed to upholding the highest business and ethical practices.

“Our vans take our consultants nationwide, so putting the CBC logo on them is a quick and effective way to spread the word.”

Opinion

Viral change

IAIN THOMAS SHARES HIS VIEWS ON HOW THE COVID-19 PANDEMIC IS AN OPPORTUNITY TO TRANSFORM THE CONSTRUCTION INDUSTRY



I am a programme manager leading the project delivery of numerous multi-million-pound schemes in the rail, highways and energy sectors.

I work for a global leading engineering consultancy (SYSTRA). We entered the lockdown phase, as many others did, with no real understanding of the implications or effect the pandemic would have on the business.

The figures to date paint a picture that the impact encountered has had a negligible negative effect on the utilisation of our staff throughout the pandemic – in fact the opposite has been seen trending, in that utilisation figures have increased.

This led the proactive senior management team to issue a general ‘stay at home’ directive, which has been extremely well received by the staff.

The business has been providing regular updates to all members of staff, explaining the situation, and the forward plans. We are currently preparing

offices for staff that would like, or need, to return – albeit the general message remains “If you can stay at home, then please do so.”

The business uses Microsoft Teams, which has seen the continuation of business effortlessly. Digital modelling and file-sharing collaborative processes have minimised any potential impact on performance. An added benefit is the significant reduction in photocopying and printing. This can only be a longer-term benefit for the wider environment.

I feel that this is the chance to make a seismic shift in working patterns, the like of which we won't see again in our lifetimes. This is an opportunity for those that can work from home to do so. A once-in-a-lifetime opportunity to drag the image of the construction industry from being a last resort for the young, to show the world that you can have a real work/life balance, spending quality time with your family and loved ones.

Now is the time to be strong as an industry, change our approach and ensure we don't fall back into historic working practices which challenge the work/life balance on a daily, weekly, monthly basis. Iain Thomas FCIQB is programme manager (Energy) for TSP Projects.

REPRESENT YOUR PROFESSION LOCALLY

'Being a Hub Chair is a way of giving back the expertise and skillset that I have gained in my construction career to date and passing that on to the next generation that is coming through. This is important as it encapsulates in a single and neat example of how the CIOB can benefit people at all levels'

John Sweeny MCIQB – Dublin Hub Chair

*'I get to be active at the heart of a dynamic industry, contribute to its identity and inspire the next generation to make it their future.
#Loveconstruction'*

Sam Dibaj MCIQB – Leeds Hub Chair



You've worked hard to become a Chartered Member of the CIOB, so why not share your knowledge and experience by becoming a member of your local Hub Committee?

As a local Hub Committee member you'll have the opportunity to represent your profession in your local area, develop local networks, build your leadership skills and expand your own knowledge and expertise.

We open for applications in October, so don't miss out on the chance to make a real difference and have a voice.



Register your interest today by emailing:
localhubrecruitment@ciob.org.uk



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Professional development

South-west construction firm Eases into CBC status

HARD-WON GAIN IS JUST ONE OF MANY FOR AN UP-AND-COMING DEVON CONSTRUCTION FIRM



We Are Ease, a construction and project management firm in the south west has gained its Chartered Building Company status.

The company is only four years old but already has a great track record – one project in 2018 won the LABC Building Excellence awards and another scooped the RIBA South West Awards 2018.

Directors Andy Cook (MCIOB) and Dafydd Hollyman (C Eng) wanted to elevate the professional accreditation for the company and its staff, which led to the CBC achievement and support for staff on their journey to MCIOB.

Achieving CBC status was a massive achievement, said Cook. “It is the product of a lot of hard work from our

We are Ease delivered an £800k project in 15 weeks for the Eden Project

“It means our professional construction management approach to project delivery is more widely recognised and gives clients greater confidence in our ability”
Andy Cook, We are Ease

team. It means that our professional construction management approach to project delivery is more widely recognised and only serves to give our clients greater confidence in our ability to deliver their projects.”

The next step for the firm is to get their staff onto the various different professional development routes offered by the CIOB, so that their employees can become chartered members themselves.

With several younger employees in various stages of university education, a number of senior staff began going through the professional review process to achieve MCIOB accreditation.

Quantity surveyor Jason Parfey was the first to pass his professional review in early April and is also an active member of the Exeter Novus committee. “I am very proud to have achieved full MCIOB status,” he said.

“I hope that by continuing to be an active member of Novus I am able to show both my colleagues and young people looking into construction careers the benefits of being a CIOB member.” ●

Events

Northern Region catch up at virtual Hub in the Pub

MEMBERS SHARE THEIR STORIES ABOUT LOCKDOWN

Members from all over the north of England came together for a virtual catch-up in the summer, sharing stories about their time in lockdown and discussing their hopes for the future of CIOB.

Hub Committee members from the seven regional hubs were joined by Novus representatives, local members and some newer student

members at the session chaired by CIOB Trustees Paul Young, Tim Barrett and European Region Hub chair Derek Humphreys.

“It was great to put faces to names and offer help and support to new members and for them to get to know their local hub and Novus members from all over the north of England,” said Young

Further sessions are planned through autumn with the next event on Wednesday 23 September with Manchester Novus chair Nicola Hodson leading the session.

If you are MCIOB or FCIQB, either living or working in the region, this will also be an opportunity to find out more about standing for your local hub committee.



The first bridge to be installed on the HS2 route spans the M42

Events

See HS2 bridge on a virtual site visit

MIDLANDS AND EASTERN REGION OFFER LIVE VIRTUAL VISITS AMONG AUTUMN EVENTS

The Midlands and Eastern Region is organising a number of live virtual site visits for this autumn, starting with HS2: DFMA Bridge Construction hosted by Laing O'Rourke and Murphy.

The session will include drone footage of the construction phases of the DFMA precast bridge across the M42 – the first permanent bridge

to be installed across the HS2 route – built using an innovative SPMT (self-propelled modular transporter) method. It will be followed by a live Q&A session with the senior project manager and members of the team.

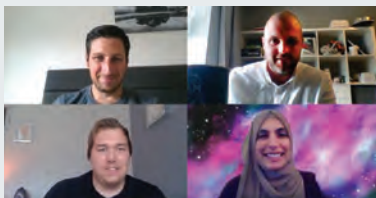
In October Willmott Dixon will host a virtual site visit, including walk through and drone footage, of the University of Warwick Gibbet Hill Campus development. The new building will house a £36m Interdisciplinary Biomedical Research Centre and is a great example of offsite manufacture.

Other live webinar topics will include green roofing, delivering net zero carbon, business continuity planning, ground works drainage and quality and Building Regs. ●

Awards

Bradford students achieve recognition for outstanding achievement

CIOB HOLDS VIRTUAL CEREMONY



Clockwise from top left: Dibaj, Stockdill, Noor and Boyes at the Teams presentation

The CIOB has given special awards to four hardworking Bradford College students on construction and engineering courses.

Sam Dibaj, chair of the CIOB Leeds Hub Committee, presented certificates and prizes in a virtual award ceremony held via Microsoft Teams. He told the winners: "You've all been recognised for the skills that you have, that are pivotal

to working within the construction industry: communication, teamwork, having a positive attitude and maintaining high standards."

The recipients were: **James Boyes**, Level 6, BSc Construction Management, for outstanding achievement, teamwork, leadership and resilience; **Martin Mortimer**, Level 5, HND in Construction, for outstanding and positive attitude; **Hussein Sanglay**, Level 5, Civil Engineering, for excellent communication and teamwork skills; **Adam Stockdill**, Level 4, Construction Management, for outstanding achievement and maintaining high standards while overcoming difficulties.

Tooba Noor, senior academic team leader for construction and engineering at the college, said she was "very proud".

"It's thanks to the hard work of the students and the support of the CIOB that we have been able to produce award-winning students who will go on to play important roles in the industry." ●

Trevor Drury FCIQB

Meet a member

TREVOR DRURY IS MD OF MORECRAFT DRURY AND CHAIR OF THE CIOB'S BRISTOL HUB



Was law a calling? What else might you have done?

In my youth I did not consider a career in law. At school I went to a careers event and one of the professions represented was surveying. I decided at that relatively young age that was what I wanted to do. My first job was as a trainee quantity surveyor for a national contractor and worked my way up the career ladder, working for a number of well-known main contractors. It was dealing with contractual issues on projects that got me interested in construction claims, dispute resolution and law.

I then moved into expert witness services, working for a large firm of surveyors in London and then, after a return to contracting, became an executive director of an international consultancy specialising in construction dispute resolution.

Seventeen years ago I set up my own consultancy, Morecraft Drury, specialising in quantity surveying and project management expert witness services, adjudication, procurement and commercial management of projects, plus management consultancy, troubleshooting distressed projects.

Given the work I was doing, I decided to undertake legal qualifications and was called to the Bar in 2011. I managed to secure a pupillage (training in chambers) in 2016 and have been a practising

barrister at 12 Old Square Chambers since 2017. So, I now have two jobs.

I am not sure what else I would have done careerwise. I do recall, like many a teenager, at one point wanting to be a rock guitarist, but on assessing my talent and earnings potential, I decided to go for a sensible professional job that my parents would approve of!

Why are you actively involved with CIOB?

I enjoy being involved, organising events and using some of my knowledge to hopefully serve the membership for the better, and in a small way help develop the industry, which I have now been in for 38 years. It feels good to give something back.

I am currently the CIOB Bristol Hub chair, and I have also served on the CIOB Innovation and Research Panel for many years, plus a number of other CIOB panels and boards. I have also been involved in working groups which have generated a couple of codes of practice/guides.

What do you love about your job?

I like the intellectual challenge of finding solutions to problems and the variety of work. In this industry you also get to meet all sorts of people and some great characters. With my background, I can talk my clients' language and I can relate to their problems, as I have been there myself.

What do you do in your spare time?

I am an avid follower of Formula 1 and occasionally get to a Grand Prix, plus I love football, these days mainly from the comfort of my armchair. I still have the electric guitar and amplifier in the loft!

Me and my project

Church and state

ALAN BARNES WON IRELAND'S CONSTRUCTION MANAGER OF THE YEAR IN 2019 FOR HIS WORK ON A COMPLEX CONSERVATION AND REFURBISHMENT PROJECT ON SCOTS CHURCH IN DUBLIN. HERE HE TELLS US ABOUT HIS EXPERIENCE OF THE BUILD

"Fully integrating both the church buildings into the overall envelope was a demanding challenge"

Alan Barnes,
Collen Construction



DONAL MURPHY PHOTOGRAPHY

Collen Construction was awarded the tender to build the new corporate headquarters for VHI Healthcare in Dublin. I embraced the role of project manager. The project scope included the expansion of the existing VHI Healthcare offices and the restoration and adaptive reuse of a 150-year-old Presbyterian church 'Scots Church' on Abbey Street in Dublin's busy city centre.

The project planned to incorporate the existing church hall within the belly of a new innovative and contemporary diagrid exoskeleton office block with a unitised curtain wall envelope. Scots Church was a protected structure and the primary challenge for me was to respect and preserve all the significant historical and architectural heritage of

the church, while meeting the client's specific requirements. Fully integrating both the church buildings into the overall envelope was a demanding challenge.

Once completed, the newly expanded office fully integrated the existing office space, enabling the new structure to seamlessly connect with the original buildings. The design created a glazed ground floor link between the main church building and existing office which lies adjacent to the new reception entrance for ease of circulation throughout new and existing buildings.

In-situ concrete floor plates were suspended above the existing church hall, internalised within the triangular diagrid steel framework and unitised curtain walling systems which together

provided the structure and envelope. This created a building that provided innovative office space, communal breakout/meeting areas, innovation hub space and a contemporary energetic workspace for the VHI staff.

In my experience, organising the logistics of any city-centre project, including access to work in restricted spaces, is a complex challenge. The site was enclosed on three sides with train tracks along the northern boundary, the Irish National Theatre to the immediate west and the client's offices bordered the eastern boundary.

This extremely restricted footprint meant the building had to be constructed with a single tower crane - erecting 500 tonnes of steel, 220 facade panels and seven floors of in-situ concrete. It was crucial that I communicated clearly to all the stakeholders to ensure the coordination of major tasks.

Every aspect of the project created challenges: planning and executing city centre demolitions; piling next door to the National Theatre; respecting the interests of businesses and residents; and honouring the conservation and restoration of a 150-year-old church.

As project manager, I am proud to have led a skilled and dedicated team through these challenges, and personally and professionally it has been enormously satisfying to deliver a high quality, unique project that has exceeded the client's expectations. ●

Alan Barnes is project manager at Collen Construction.



Top: The building occupies a tight, city-centre site

Above: Collen's project manager Alan Barnes

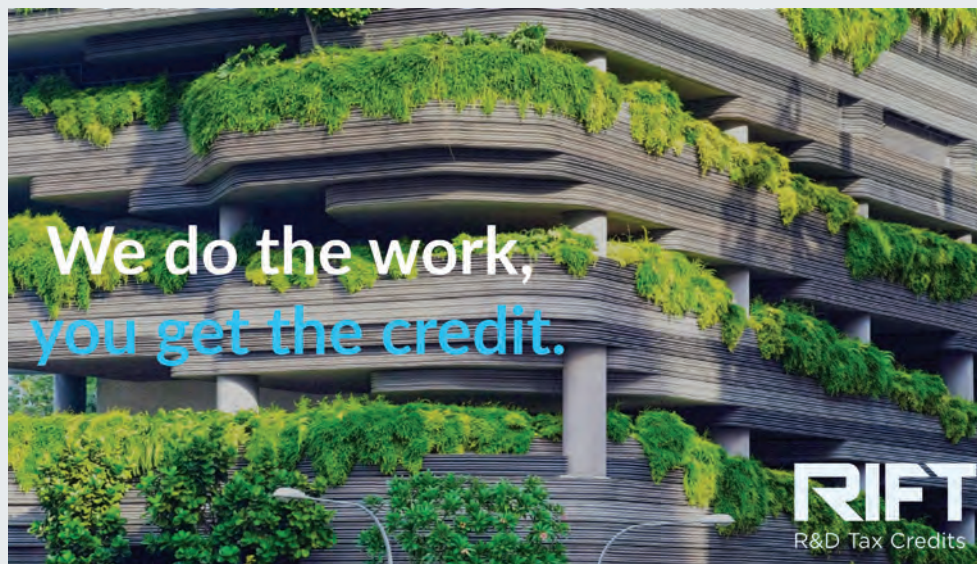


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Building efficiency and the future of construction

THE DEADLINES SET BY CLIMATE CHANGE ARE DRIVING A REVOLUTION IN SUSTAINABLE CONSTRUCTION INNOVATION, SAYS R&D TAX CREDIT EXPERT **RIFT**



With 2030 presenting a hard deadline for mitigating the worst, most irreversible effects of global climate change, the clock is most definitely ticking. Within the next decade, according to a report from the UN Intergovernmental Panel on Climate Change, we need to drop our carbon emissions by half on a planetary scale. In fact, in real terms, the cliff edge we're approaching may be a lot closer than we realise.

Given that the UK's built environment is responsible for an estimated 45% of the country's total carbon emissions on its own, it makes sense to focus a significant amount of attention, investment and innovation there. Building efficiency is becoming an

increasingly high priority throughout the construction sector, and rightly so. Innovation has always been a crucial factor in energy efficiency and sustainable 'green' construction, and with pressure mounting and the world paying attention, there's never been a more critical moment to push back the boundaries of what we can accomplish in the sector.

Sustainable construction techniques tick all the boxes for bringing carbon emissions down and improving energy efficiency. We're talking about more than just good insulation and the occasional solar panel here, of course. Across the entire industry, innovative businesses are switching to more sustainable materials, finding better

ways to transport them and reducing the waste they generate. The resulting buildings are becoming more efficient to put together and power – and less expensive to live or work in. Along the way, we're learning to do more with our existing resources and manpower, while technologies from machine learning to augmented reality are expanding what it actually means to work in construction. Older processes and techniques are falling away, while workers are building new skill sets to adapt and progress.

As the world drags itself out of a pandemic-induced lockdown, it's essential that we continue leaning into sustainable, energy-efficient construction to avoid an explosion in carbon output that takes the 2030 carbon reduction target permanently off the table.

Innovation, through the forward-thinking nature and determination of upcoming construction managers, is the force driving these changes – whether that means new forms of glass that filter harmful solar radiation while harvesting energy or using modular and offsite construction techniques to reduce construction times and increase cost-effectiveness. As an aggressively innovative industry, construction managers have a key role to play in the global 'green recovery' that we need to meet our 2030 commitments.

Climate change is a threat that's arguably more pressing and all-encompassing than anything else we've faced, and the green revolution taking place within construction is right at the cutting edge of our attempts to tackle it. That's why innovation matters – and why RIFT continues to fight to bring its full benefits to UK businesses. ●

“With pressure mounting, there's never been a more critical moment to push back the boundaries of what we can accomplish”

To find out how you can make the most of the R&D scheme, visit RIFTcredits.com or contact Julie Barry on 07908 542441 or by email at JBarry@RIFTgroup.com.



Training & Recruitment

Job spotlight

Melissa Barber

Head of marketing and communications, Beard

SPREADING THE WORD

MELISSA BARBER EXPLAINS HOW THE PANDEMIC HAS CHANGED HER JOB



What does a typical day in your job entail?

I was just two months into my new role as head of marketing and communications with Beard when covid-19 struck. Every day since has been dominated by dealing with that: keeping the show on the road as far as possible on site, and the transition to remote working for our office-based teams.

We set ourselves the task of keeping colleagues fully informed about government announcements, how Beard was responding to the situation, and what that might mean for them.

The key has been collaboration – with colleagues at every level of the business. The construction industry tends to be focused on bricks and mortar but communications and marketing are all about people.

Has your role become more challenging during the covid crisis. If so, how?

At times of crisis, most people long for some certainty – but that's difficult to give when the world has been turned on its head. We need to keep people motivated and engaged, while also managing expectations.

We have needed to communicate some tough messages, and it was hard not to be able to do that face to face.

As offices begin to open up again, many businesses will have to deal with the risk of a more fragmented workforce. We are used to having to communicate across our four regional offices, and of course multiple sites, but this presents a new set of challenges.

The trick is to stay true to your values. In Beard's case, that means helping people feel they are part of something bigger.

Is construction trickier to 'market' than other industries?

As we emerge from the pandemic, the priority will be winning work. Beard is fortunate that a lot of our work is repeat business. We're over 100 years old, so reputation and relationships play a key part.

Some clients may hold back on placing orders due to the wider economic uncertainty. The response to that needs to be a collective and collaborative one, with the industry as a whole working with government and other partners.

Increasingly we are faced with marketing ourselves in a digital world. We need to be able to set ourselves apart when we can't be in the same room. That will be a challenge but I think an exciting one: a learning curve for me, for the firm and for the industry as a whole. ●



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Get with the tech

Gareth Randle examines a roadmap to innovation in post-covid UK construction



Construction was one of the first industries that returned to work during the covid-19 pandemic. The key to the sector bouncing back to full strength will be adaptations, not just to personal protective equipment (PPE) and health and safety, but to improved ways of working too.

Modern construction technologies can help in the short term with improved productivity and, in the long term, encourage more young people to the sector to address its skills gap.

Lockdown has swiftly revolutionised how we work; it has exposed the vitally important role that technology plays across all industries – including construction.

While the sector was one of the first to get back to work out of necessity, more construction firms than ever before have found new, agile and innovative ways for their workforce to be able to plan, design, build and deliver.

Construction firms which had invested in technology before the pandemic are likely to be far more financially robust and resilient today than those still using outdated construction methods and techniques.

However, many construction firms often don't feel ready to revolutionise the workplace, as they're already working to tight budgets and margins.

And yet, if they can innovate now, and invest in the right skillsets, then they can futureproof themselves even as economic stormclouds gather.

Even now, the government's research and development (R&D) tax incentives can provide construction firms with the funding needed to embrace cutting-edge technologies – like machine learning and automation, which will see many repetitive low-skill jobs on site replaced, and existing job roles adapted to become more fluid, efficient and dynamic.

The construction industry therefore needs to recruit from a broader talent pool which should include tech-savvy problem-solvers.

That will reposition the sector as a desirable career to attract the right talent by highlighting the changing face of the industry.

Gareth Randle is a specialist at R&D tax credit consultancy ForrestBrown.

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architectural acoustic finishes

Crossway, Birmingham (formerly Civic House).

SonaSpray fc applied to the ceiling throughout the impressive foyer area of Crossway, Birmingham. Chosen for its attractive, lightly textured & seamless finish, SonaSpray fc achieves superb acoustics without design compromise.

Credit to Associated Architects.



OSCAR
acoustics