

INFRASTRUCTURE Intelligence

INNOVATION SPECIAL

UK's largest housing association adopts
innovative software for site development

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Message from the guest editor



Welcome to the latest edition of Infrastructure Intelligence, where innovation is the key theme.

In the short time I have worked with Infrastructure Intelligence, it's been amazing to discover just how innovative the organisations in the built environment sector really are, whether they're embracing all that's good about Artificial Intelligence and machine learning, or finding new ways to create a more sustainable future for construction and the built environment.

In this issue, you can find out about a number of innovative projects, from the development of a "Google maps for the underground" to Qflow's mission to decarbonise construction through its digital platform.

It's been great to see the efforts around attracting more women into careers in consultancy and engineering and it has been a pleasure to meet some inspiring female role models in the sector. Read more about them on pages 8 to 9.

This issue also includes insightful features from Jacobs, exploring the true worth of social value projects to businesses who embrace them and Jason Pavey of Atkins outlining the future of operations and maintenance in the sector.

We hope you enjoy this issue.

Sarah Walker
Guest Editor, Infrastructure Intelligence

Ray of sunshine as £2bn awarded to infrastructure contracts in July

Hopes for a positive end to 2023 as construction sector returns to growth.



The construction sector returned to growth in July, bringing hopes for a positive end to 2023, which had seen much turbulence so far.

In the last issue of Infrastructure Intelligence, a mixed picture for the sector was reported, with housebuilding continuing to decline amidst rising interest rates and concerns about the broader economic outlook.

However, in July, the latest analysis from Barbour ABI showed contract awards provided a £7.6bn boost to the construction sector and contracts awarded to suppliers reached the highest monthly value of the year in July.

The milestone followed a negative period which saw awards fall 21% between Q1 and Q2.

Barbour ABI said a 184% monthly increase in the industrial sectors, including manufacturing, warehouses, and military projects was the driving

force behind the uptick, alongside a positive month for infrastructure.

Infrastructure contributed with £2.0bn in contract awards, mainly from renewable power generation - and the commercial sector also had a good month with £1.1bn awarded in large office projects.

It was also a good month for planning approvals, posting £5.1bn, thanks to the £2.6bn Hornsea Project 4 and other renewable generation projects, contributing to £13bn of approvals in total - up from £8.4bn in June.

Meanwhile, the industrial sector saw its highest planning approval values in over a year and the hotel and leisure sector saw the highest since January 2021 thanks to the Gateshead Quay Arena redevelopment.

Despite the good news elsewhere, residential construction continued to struggle against various market factors including high interest rates, inflation

and the gridlocked planning system.

July's £4.7bn in approvals provided a glimpse of sunshine, but contract awards remained low at £1.8bn - 15% down compared to 2022.

Barbour ABI chief economist Tom Hall said: "Our latest analysis shows some respite after a difficult period for the construction industry.

"However, given the uncertainties in the wider economy, these improved levels are unlikely to continue over the coming months. Meanwhile, the residential sector, hammered by high-interest rates and inflation, continues to struggle to keep its head above water.

"Planning applications, which are a strong indicator of future output, saw a very weak end result of £7.5bn per month in Q2, the lowest quarterly result since the first Covid-19 lockdown.

"Overall planning application activity was 23% lower in Q2 compared to last



year. We also saw a 45% decrease month on month in infrastructure planning applications in last month's figures, so this sector is unlikely to prop up the industry for much longer."

The latest research was in line with July's PMI index, which signalled a renewed expansion of overall construction output, following the marginal decline seen in June.

The S&P Global/CIPS UK Construction Purchasing Managers' Index® (PMI®) - which measures month-on-month changes in total industry activity - was 51.7 in July, up from 48.9 in June and the highest level for five months.

This was led by the strongest rise in commercial building since February and another solid contribution to growth from civil engineering activity.

However, the latest figures showed another sharp reduction in residential construction activity.

Robust increases in commercial building (index at 54.4) and civil engineering (53.9) were offset by a steep fall in house building (43.0).

Tim Moore, economics director at S&P Global Market Intelligence, which compiles the survey said July data indicated that some parts of the UK construction sector gained momentum, notably commercial building and civil engineering activity.

"This led to a renewed rise in total construction output which, although modest, was the fastest for five months," he said.

"Survey respondents commented on increased infrastructure work, office refurbishments, and resilient demand for a range of commercial projects.

"Meanwhile, another steep reduction in house building acted as a severe constraint on construction growth.

"Around 35% of the survey panel reported a decline in residential work during July, while only 18% signalled a rise."

A note of cautious optimism came from Dr John Glen, chief economist at the Chartered Institute of Procurement & Supply (CIPS), who said there was a question mark over the sustainability of this growth and the "challenges that lie beneath the floorboards," as UK interest rate rises and cost of living pressures have dealt a "hammer blow" to the housing sector.

"In spite of more uncertainty and thinner margins, builders kept their confidence up and focused on resilience in their operations as optimism about the next 12 months remained fairly steady," he said.



IPA says major infrastructure projects will drive growth for the rest of the year

The UK has recorded its biggest-ever portfolio of major projects and programmes - worth £805 billion - and major infrastructure projects will continue to drive economic growth for the remainder of 2023, according to the Infrastructure and Projects Authority (IPA).

In its annual report, the IPA detailed the 244 projects (up from 235 last year) currently being delivered under the Government Major Projects Portfolio (GMPP).

It outlines the UK's biggest-ever portfolio of major projects and programmes, stating

these are delivering on government's commitment to drive economic growth, innovation and net zero in the years ahead.

However, there is also a warning that amidst global economic uncertainty, we now "have to do even more with less".

Baroness Neville-Rolfe DBE CMG, Minister of State, Cabinet Office said: "The increased size of our portfolio shows how this government is improving the way we deliver major projects; providing confidence that they will achieve their aims and deliver better public services for the British people."



UK's largest housing association adopts innovative software for site assessment

The UK's largest housing association, Clarion Housing, has partnered with leading smart city and planning platform, VU.CITY, to use its innovative technology to help assess potential sites for new housing and community facilities across the country.

Clarion will be using SiteSolve, which was conceived and designed by the computational design team at engineering

giant, Ramboll, and is exclusively interoperable with VU.CITY, bringing together engineering and technical acumen to address real-world problems.

A major blocker for development is often understanding the potential of sites and what can be delivered. However, SiteSolve will allow Clarion to understand the viability of various sites before acquisition - providing the ability to

perform hundreds, and even thousands, of detailed capacity studies at once.

Dave Lee, director of digital design and offsite manufacture at Clarion Housing Group, said: "At Clarion, we are constantly advancing our digital capabilities to achieve a higher quality product for our residents.

"Using VU.CITY and SiteSolve will allow us to create fast and reliable feasibility studies based on more robust information, meaning our early decisions are more informed.

"This new partnership puts us at the cutting edge of digital design, not only for a housing association but in the entire construction industry."

£1.5m to build 'Google maps for the underground'

Delta g, the quantum technology gravity sensing company, has raised £1.5m to fast-track the commercial availability of its groundbreaking quantum sensors for mapping the underground.

The technology aims to counteract the billions of pounds cost of lost hours which arise from delays and reduced productivity, caused by the fact the underground is poorly understood.

Delta g's groundbreaking quantum sensors aim to transform the efficiency

of major infrastructure and repair projects by mapping complex unseen locations quickly, accurately, and without the need for disruptive excavations.

Leading venture capitalists, including Science Creates Ventures and Quantum Exponential Group, have invested in Delta g to enable their vision of creating the 'Google Maps for the underground'.

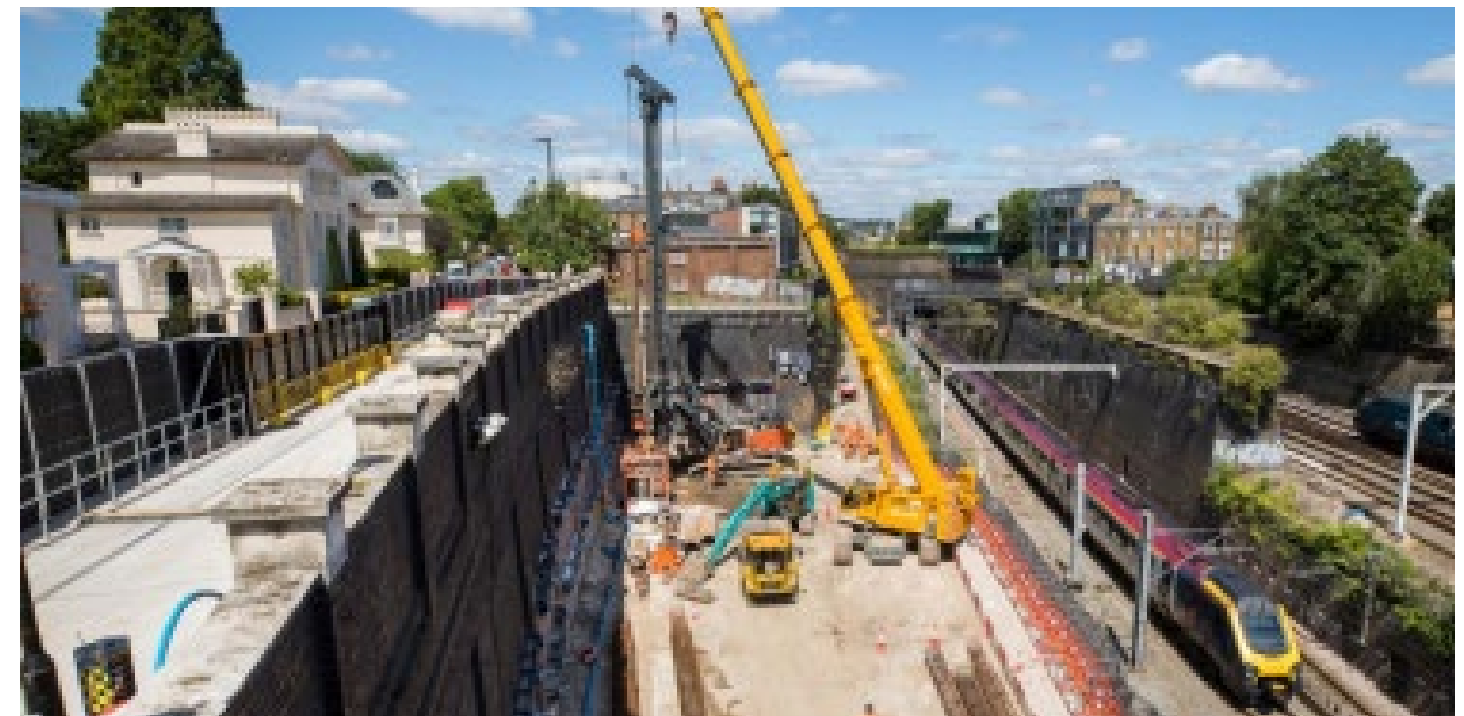
Newable Ventures, Bristol Private Equity Club and several angel investors, including Hitesh Thakrar and Howard Covington also made investments.

Pete Stirling, co-founder and CEO at Delta g, said the UK would "massively benefit" if major infrastructure projects were delivered on time and on budget and through increased productivity, by reducing the time it takes to bring such projects to the point of benefitting people.

"A big part of this is the difficulty found in mapping the complex unseen



environments and hidden critical infrastructure that resides under the ground," he explained, adding: "Our technology is the culmination of decades of academic research into quantum sensors and their real-world applications, so it's extremely gratifying that leading VCs have recognised its vast commercial potential."



SCS JV partners with ALICE Technologies to speed up HS2 tunnel construction

SCS JV - a joint venture of Skanska, Costain and Strabag - and ALICE Technologies are working together to optimise the construction of the London tunnels of HS2.

ALICE'S construction optioneering

platform helps companies use the power of generative AI to plan, bid and build their capital projects more efficiently.

SCS JV is constructing 13 miles of twin-bore tunnels on the HS2 route to its southern terminus at Euston.

The company has divided its tunnels work into three areas - west, central and east.

It is now using the ALICE platform in the western area to optimise the construction schedule for the Mandeville Road ventilation shaft and headhouse.

Through "what-if" analysis with ALICE, the SCS JV team was able to identify a way to trim the build time for the Euston shaft by 86 days working days, which represented a significant saving in associated overhead expenses.

Inspiring women into consulting and engineering

Network Rail has launched a new campaign aimed at attracting more women into the rail industry, in a bid to fill roles across Network Rail's Southern region that has a disproportionately low percentage of female colleagues.

This closely follows International Women in Engineering Day, which opened up the conversation about attracting more women into crucial consulting and engineering roles.

Sarah Prichard, chair of the board of the Association for Consultancy and Engineering (ACE) says it has been "wonderful" to see the significant increase in diversity throughout her 20-year career in the construction industry - but admits there is still a long way to go.

She believes there is now a significant number of senior women in the industry to act as role models for women joining the industry, with two out of six people on the ACE group board being women.

Dr Prichard, who is also UK managing director of Buro Happold, also points to the fact that the firm now has 11 female partners - including seven in the UK - as evidence that there is something of a sea change occurring in the industry, which she believes stands to significantly benefit from having more diverse teams.

"It is well known and proven that diverse leadership teams lead to better business outcomes, a decrease in group-think, and have a more inclusive leadership ethos," she says.

"It should therefore be a no-

brainer for firms across the sector to look to increase the diversity of their leadership."

According to Dr Prichard, diverse teams are also more marketable, as she believes clients are increasingly diverse in their leadership and are looking for this to be mirrored in their consultant teams.

She believes it is important to promote careers in engineering and STEM to girls at a young age, with schools, parents and other adults all having a role to play, as people who can strongly influence career choices - even at an early age.

"All members of the construction industry can find ways to be influential in this area, and should be encouraged to lean in," she adds.

"We need to increase diversity



A ten-strong panel of female experts discuss a wide range of topics for International Women in Engineering Day at CPW

in all of its guises, whilst not disenfranchising our colleagues already in the sector," she said.

"We need to help them be allies and advocates for a more inclusive and diverse workforce which will have positive benefits for us all."

Dr Prichard admits it can sometimes feel like change is happening at a frustratingly slow pace, but adds it is important for industry leaders to keep plugging away and working together to make a difference.

Meanwhile, an all-female panel of built environment experts gathered recently



"You can't be what you can't see"

Lauren Johnston
of Harley Haddow

for international M&E consultancy CPW's 'INWED 2023: Sustainability in the Second City' roundtable, to discuss the importance of retrofitting to tackle net zero and why sustainability is a significant opportunity to attract more women to the engineering industry.

Inspiring female engineers from building services engineering experts Harley Haddow were also aiming to flatten misconceptions associated with our industry, as part of International Women in Engineering Day.

The multi-disciplinary engineering firm says people automatically assume engineers are based on a building site or within construction and is looking to challenge these misconceptions.

The firm is also conscious young girls are often unaware of the available career routes and is calling for the industry to "step up and put this to rest", as women account for just 16.5% of the UK's engineering industry.

Brightly

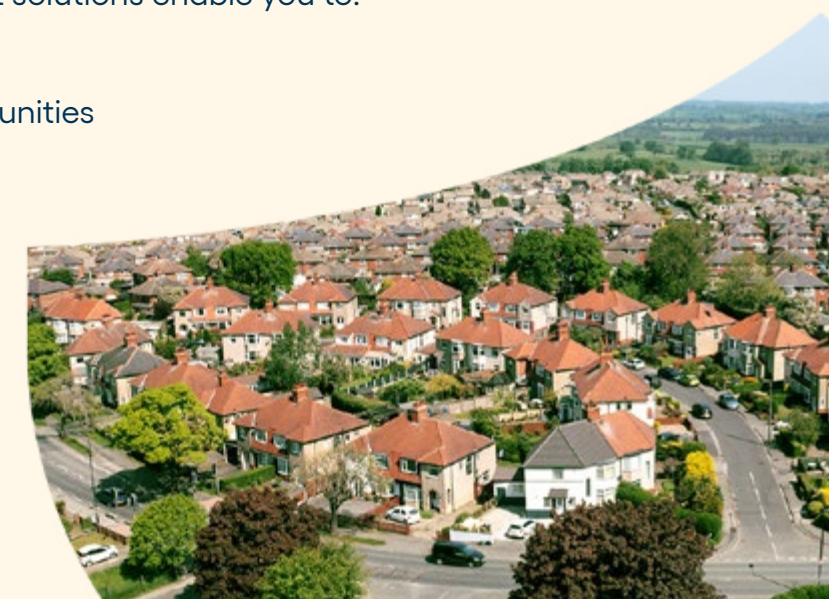
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True value creation starts with leadership and vision

Jacobs' Emily King, global principal of social value & equity advisory, explains how driving social value using four proven lessons can earn triple-bottom-line benefits.

With stagnant economies and bleak forecasts, 2023 is a year scarred with scepticism and tighter budgets. As we face inflation shifts, tightening regulations and geopolitical impacts, the pressure on delivering and evidencing the value you offer your clients and end users has ramped up. Add in the increasing impact of climate change and it creates a complex operating environment. The challenge is that value must now be defined (and proven) in social and environmental terms – not just financial. The good news: improving financial results and delivering social value are not mutually exclusive. There is increasing demand and opportunities for social value from government policy, impact investment, and broader trends of employee expectations, environmental awareness, and increased understanding of inequality.

Articulating a clear approach to social value is more likely to attract talent and investment, drive a more resilient business, and leave a lasting community legacy.

According to Social Enterprise UK, levels of awareness and adoption of the idea of social value have increased over the past decade, with

increasing importance in central and local government guidance. In 2016, Social Enterprise UK reported 24% of councils had a social value policy; by 2019, this had increased to 45%.

Social value is a growing field punctuated with different definitions, standards and approaches. Within most companies, there are pockets of maturity on social value, but with a lack of a clear vision and collaboration, there are varying approaches to government policies and teams going in different directions. At best, you're duplicating effort; at worst, you're missing vital opportunities.

Companies must also be wary of creating noble social goals without backing them up with discernible, authentic action. Delivering social value that benefits people, communities, the environment and the business requires a strategic approach connecting every employee on social value and harnessing four key lessons.

Success starts with empowered leadership and an overarching vision

Top management must define bold, measurable goals that are clearly aligned to your broader strategy, tied to material ESG issues, and tailored to your organisation's unique offering, industry and context. These must be effectively cascaded throughout all projects, programs and procedures and embedded into your organisation's DNA.

The more successful you are at clearly articulating, measuring and evidencing social value, the greater your impact on

people and communities. It's a partnership built on trust and shared understanding. At the start, you may not have a clear idea of what you need and want; involve the right people from the start to create, test and deploy the best approach.

Partner up to strengthen your approach

Social value is a fast-evolving field, and its successful delivery requires a wide range of specialisms in unique areas.

Simetrica-Jacobs offers access to the best minds in social value, impact evaluation, and wellbeing analysis. As the global leaders in social value, they deploy unparalleled expertise to give clients the confidence they are making the right decision, the first time. Simetrica-Jacobs has contributed to internationally endorsed methods set out by the Organisation for Economic Co-operation and Development (OECD) and government-produced guidelines, including HM Treasury's Green Book.

Collaboration between businesses, governments and civil society is also critical to long-term growth and success. To help gain momentum here, we've helped launch the Social Value 2023 Roadmap with Social Enterprise UK (SEUK), which will help ensure that social value remains a priority in value-led procurement for the next decade.

Technology is only as good as the prompt

Artificial Intelligence has proven this year that even though it wields incredible iterative potential, the quality of the output is still defined by human prompts and the fit for purpose. The same can be said for the fast-growing technologies within social value. While off-the-shelf



HS2 Ltd has awarded £13,445,843 to 236 community projects since 2017, including Brackley Town FC

technology can be hugely informative, it must be tempered with research, testing and tailored approaches. These three domains are still best served by humans, as they help to define the how, when, and, crucially, the why that's paramount to making the digital tools work effectively and not become an expensive investment that's hard to justify.

Attract the next generation of leaders

Younger generations are actively choosing occupations that most closely align with their values. A global study in 2022 of over 17,000 employees by Ernst & Young found that Gen Z and millennials are the most likely to leave their roles in the short term.

Attracting and retaining this talent starts with an inclusive organisational culture, flexible working, and a human-centred, empathetic employee experience. However, the real crux requires ensuring younger generations feel directly connected with a broader purpose, which goes far beyond corporate social responsibility. Research shows that younger employees expect your business to stand for something meaningful today and have a clearly defined vision to create social value in the future. If we create and reinforce a culture that rewards the right behaviours – putting people at the centre of decision-making – it will generate better business outcomes.

The power of people-centred decision-making

Harnessing the right specialists, partnerships and industry collaborations empowers Jacobs in several ways, but the most important is that we can help our clients define and measure what matters most – the positive value their work can bring to communities and society. If this strategy is done correctly, it also improves business outcomes, offering true triple-bottom-line benefits.



Emily King is global principal of social value & equity advisory at Jacobs.

Lessons from Denmark's new sustainability targets

In a world first, Denmark has introduced a new national strategy to reduce the environmental impacts of construction, including limits on greenhouse gas emissions for new buildings. **Natasha Watson**, who leads Buro Happold's approach to reducing embodied carbon in its structural engineering work, explores what they mean for design and construction, and how Denmark's strategy differs from the UK's approach.

To make progress towards its targets, Denmark has formulated an embodied carbon policy that aims to reduce the carbon footprint of its building stock. The policy requires all new buildings over 1000m² to meet an embodied carbon target of 12kg of CO₂e/m²/year, while buildings smaller than 1,000m² will be required to conduct a Life Cycle Assessment (but without a threshold limit value). Refurbishments of existing buildings must also be considered in a holistic manner, with climate considerations prioritised when choosing solutions and materials.

These new requirements came into effect this year. Whilst not initially stringent – with limits comparable to an environmentally responsible new-build project in the UK – the targets will, over time, set a higher bar that developers must meet. These embodied carbon targets will fall every two years, and by 2029 they will be as low as 7.5kg of CO₂e/m²/year.

In addition to setting mandatory targets, Denmark has engaged with business to help create and support low-carbon solutions. This began in 2020 with a voluntary consultation

period. This was an important process, allowing business time to get to grips with calculating embodied carbon, and giving government time to establish best practice for interpreting and assessing the data. It also allowed time for a broader conversation around low carbon materials and reform to construction processes, allowing the Danish government to listen to stakeholders before enacting policy.

Denmark's new policy will have implications for engineers, contractors and developers alike. Now that targets have been set, it will be incumbent on project teams to meet the challenge. With the thresholds clear, the challenge will now be to analyse and understand the carbon cost of design decisions as early in the design process as possible.

There are also financial and planning implications that clients and developers will need to understand. The environmental performance of a project will have a much greater weighting than before, when considered in relation to functionality and cost.

A building project that meets environmental requirements is now essential to receiving a permit. Form,

function, cost, the environmental impact of materials and operational efficiency will therefore now all need to be considered much more equally.

The UK approach

In contrast to Denmark, the UK government has not set mandatory targets to tackle construction emissions. Beyond top-level net zero aims, and the legal commitment to reach net zero by 2050, there are no nationwide limits on construction projects, or indeed on any other sector.

This brings both advantages and challenges. Across the UK, it's clear what we collectively need to achieve, however how we get there is less certain. The response from business has been positive, and in the construction sector there has been a real self-starting drive to change and reduce carbon emissions. With commitments and change underway, is a 'top down' national government-led policy needed? Or is something driven by

the construction sector, regional councils and planning teams just as effective?

At Buro Happold, we have committed to design all new build projects to be net zero carbon in operation by 2030. We are also committed to reducing the embodied carbon intensity of all new buildings, major retrofits and infrastructure projects by 50% by 2030.

There are also nationwide campaigns such as the 'Part Z' project, which Buro Happold supports, proposing to introduce the requirement for Whole Life Carbon Assessments to building regulations on projects with a gross internal area of more than 1000m², or that create more than 10 dwellings. An upfront embodied carbon limit on building projects has also been proposed, but the details for the limits have yet to be confirmed. The UK Green Building Council (UKGBC) has also created a **Net Zero Carbon Buildings Framework**, setting out a pathway for the industry to reach net zero carbon in construction and operation.

Regional councils are reacting

too, in a more localised, bottom-up approach. Some authorities have already taken the initiative to create bespoke environmental frameworks for their areas.

Reaching net zero

What is clear is that regardless of differing approaches, we all still face the same overall challenge. Change needs to happen faster, and the UN's recently published climate survive guide has brought this, and the dangers of inaction, into sharp focus.

Irrespective of government policy, there are steps the construction industry must take to ensure it meets net zero targets in time. Limiting upfront embodied carbon is the most pressing.

My message to developers in both the UK and Denmark – and indeed everywhere else – would be to focus on initial upfront embodied carbon. These figures can be more accurately predicted, and the ones that have the biggest impact on our emissions before 2030; when our predicted '**carbon budget**' for a 1.5oC increase in temperature is set to run out.

If the construction industry can do this, regardless of who has set the targets, only then will it really begin to speed up progress towards net zero goals.



Welcome to our innovation special

Welcome to our innovation special, where we explore how new technology is supporting the growth of the built environment sector and driving the sustainability agenda.

Here, you can discover the latest good news from Qflow, which aims to decarbonise global construction through its digital platform and how new methods of construction in industrial hubs like the West Midlands can also help us to build greener.

The section also explores the use of AI

and the importance of closing the digital skills gap to the future of the sector.

BAM has become the first contractor in the world to use nPlan's AI and big data to quantify and manage schedule risk across a portfolio of projects and you can find out more about this on page 24 and 25.

If you'd like to share any examples of innovation in your consultancy and engineering or construction business, we'd love to hear about them. Email sarah@infrastructure-intelligence.com.



Qflow digital platform aimed at decarbonising construction receives £7.2m funding

Construction tech scaleup Qflow has received £7.2m funding to support its mission to decarbonise global construction.

The funding round was led by Climate Tech VC Systemiq Capital and includes an impressive group of investors across the construction industry and technology.

The funding will scale Qflow's operations in the UK and grow its presence in the US and Australia.

Amongst the investors for Qflow's Series A are Ascension Ventures, Bridge Investment Group, Gravel Rd, Greensoil Proptech Ventures, Grosvenor, John Emrey; CEO of Alder properties and former CEO of Lendlease; MMC, and Suffolk Tech.

Qflow previously raised £2.4m across two seed rounds, with investment from PiLabs, MMC, Goldacre, Entrepreneur First (EF London 10) and angel investors.

Qflow, which was founded in 2018 by Brittany Harris and Jade Cohen, is a

digital platform enabling construction teams to collect real-time materials and waste data at the source, which in turn enables project teams to make informed decisions on cost, carbon and quality.

This drives transparency and efficiency cost and quality control and sustainability management.

Its unique features and benefits include reducing waste by providing real-time data and analytics; increasing efficiency by automating and digitising a currently manual process; providing transparency over carbon savings; enabling the circular economy; and enhancing performance.

Companies already using Qflow include Berkeley Group, Canary Wharf Group, Grosvenor, Landsec, Morgan Sindall, Multiplex, Workplace Futures and more.

Brittany Harris, Co-Founder & CEO of Qflow, said: "Jade and I love the construction industry, it literally builds the world around us.

"But for it to build the sustainable future we need, it must change and reduce its negative impacts on our planet.

"To us, it was clear we had to tackle our own industry to have a chance of leaving this world in a better place, and this is why we founded Qflow."

She added the pair are "thrilled" with the investors that have joined Qflow in this round.

"The support we've received from big players in the sector shows they also see the importance of changing processes and accelerating this transformation towards a more sustainable future," she said.

Construction is the world's most carbon-intensive industry, accounting for 11% of global carbon emissions, due to the linear way it extracts, refines, transports, builds with, demolishes and disposes of materials.

To decarbonise construction, there is a need to turn this linear approach into a circular one.

BIM software delivers architecturally striking hydroelectric generation project

Featuring a striking canopy structure, the River Ness Hydroelectric generation project is both a geometrically complex build and also a key part of the local infrastructure.

With a project as intricate as this requiring a high level of attention to detail, Trimble's constructible BIM software was a key part of bringing the artistic vision to life.

Located on the banks of the River Ness in Scotland, the Hydro Ness is a hydroelectric generation project, designed to generate a clean source of energy for the Highland Council.

The structure itself houses a 93kW hydroelectric power twin turbine, which will generate an estimated 550,000 kWh every year.

To suit the location, an architecturally striking steel canopy structure was designed to house the generators, with the initial design concept created by local artist Claire Maclean, before being developed further by Inverness architect, Les Hutt.

Working on behalf of project developer and main contractor, Hydro NI - Bradley & Company JV, the canopy geometry definition, structural design, detailing, and fabrication model development was completed by Hasson Engineering Solutions.

The roof canopy design was inspired by the shape of a diving salmon.

As such, some form of texture was needed to create the illusion of 'scales'. It was decided to achieve this through the use of thousands of circular perforations and polished swirls in the 386 faceted stainless steel cladding panels that made up the canopy structure.

Speaking about the project, Michael Hasson, Director at Hasson Engineering Solutions, said finding the balance between being respectful of Claire's original design concept and delivering a high-impact look, worthy of its location beside the banks of the beautiful River Ness - all while being capable of safe and efficient fabrication was "quite the challenge!"

Achieving the design brief would have been an extremely time-consuming process if done manually.

Michael said it was decided using Tekla Structures software would be the most efficient way of meeting the brief and the definition and execution of countless perforations in the

cladding panels was automated.

"This was a process of using a defined algorithm to consider, analyse and interrogate each facet and proportions with a rule set; allowing for parametric definition of the perforations and full control of their size, number, and distribution within every panel," he said.

"This unsurprisingly saved us a huge amount of time.

"The Tekla Structures software really is limitless in terms of its geometric capabilities - while it's great for routine detailing jobs, the software is very powerful indeed when you need to go up a few gears."

BIM software was also fundamental to the success of the detailing and fabrication of the steel frame and stainless steel cladding panels, with four major openings and the roof canopy's curved form all having to be rationalised in Tekla Structures.

The complex geometry was achieved by modelling the curved 'ribs' on a curved grid pattern, with each unique prism-shaped cladding panel then



fixing to the primary roof structure.

The ability to define blended circular and elliptical forms was absolutely essential, thanks to the geometric capabilities of the 3D modelling software.

Given the complexity of the Hydro Ness project, it was important that there was a high-level of communication maintained between all parties involved at all times.

Michael explained: "Trimble Connect is a software tool that's going from strength-to-strength and is ideal for facilitating effective coordination and collaboration.

"No matter where everyone was, it was as if we were all in the same room together.

"More specifically, as an engineer and detailer, the transparency enabled by

the software is especially powerful.

"It made it possible for me to easily and visually present all my reasoning and the decision-making process behind each choice, as well as showing a great level of detail - right down to the individual fixings and fabrication details."

He added at the end of the day, someone has to fabricate the structure that's been designed and engineered, so communicating and providing a clear design intent is critical.

"As engineers, we have to take and deliver true responsibility in giving fabricators a finished product," he said.

"Tekla Structures enables you to create and deliver a fabrication-ready model; a

model that the fabricator can then work off of with minimal further input or tweaking."

Michael concluded when it comes to architecturally and geometrically complex projects, such as the Hydro Ness, BIM is essential.

"You are able to clearly express your design intent in a visual and highly detailed manner, as well as demonstrate the buildability of the structure," he said.

"Not having to wrestle with 2D drawings to achieve such a complex 3D form, and making use of parametric capabilities and custom components, frees up more of your time and thinking for other things; being able to focus more on how to make the structure as easy as possible to fabricate and as safe as possible to erect on site."

The Hydro Ness is now generating clean energy for the Highland Council, as well as providing a striking architectural landmark for the region.

The project has won numerous awards, including Small Project in the UK Tekla Awards, Small Project of the Year in the British Construction Industry Awards (BCIA 2022), Scottish Highlands & Islands Renewable Energy Award for Best Onshore Renewable Energy Project 2022 and was also commended with a Merit at the Structural Steel Design Awards 2022.





Why closing the digital skills gap is critical to drive infrastructure projects forward

National infrastructure projects such as HS2 and the Lower Thames Crossing are essential to boosting the future prosperity of regional economies and creating jobs across the UK – but recent years have been fraught by delays.

With the government citing significant inflationary pressure, supply chain disruption and increased project costs, it's clear there are significant global factors at play.

However, our recent Business Transformation Index research found that – of nearly 1,400 global business leaders surveyed – 76% of organisations will miss at least one target for business transformation initiatives this year.

It's therefore clear that meeting transformation deadlines are an

issue across all industries. When examining the broader economic landscape and the difficulties impeding progress, one key barrier to progress stands out: the skills gap.

Skills gaps and talent shortages

With 53% of UK firms indicating that talent shortages in technical disciplines are having at least a moderate impact on business transformation plans in 2023, there has been a clear increase in the amount of operational disruption this dynamic is causing.

Across industries, businesses are looking to harness the power of artificial intelligence (AI) and machine learning (ML) to revolutionise their operations. However, 77% of business leaders said a lack of skills/experience to manage these key emerging technologies was a problem for their organisation.

If those leading infrastructure projects fail to pay attention to this, they face the prospect of not having the capabilities or people to deliver the work in a quick and efficient manner. With AI already being used to transform the infrastructure development process – from project design and planning to the automation of construction – it's critical that this technology is used to its full potential to help avoid further delays.

Addressing the digital skills shortage

From our research, it's clear that becoming self-sufficient in terms of skilled resources is a focus for large organisations – with many prioritising internal training and establishing their own training academies to create solutions to this challenge.

But this isn't a short-term fix, so how can infrastructure project leaders close this digital skills gap quickly to help drive projects forward?

Firstly, when it comes to hiring, job losses in the technology industry provide new opportunities for employers. Amid a wave of high-profile layoffs from tech giants such as Meta, Google, Amazon and Microsoft, there will be a deeper pool of talent becoming available on the market.

Our research found that businesses in the transport, energy and utilities sectors are more likely to remain in hiring mode. For those that can do so, this release of talent from high-tech

firms represents a rare opportunity to bolster their ranks with individuals skilled in crucial emerging technologies.

However, the current economic landscape means that acquiring new talent may not always be possible.

This is where external partnerships come in – and making use of contract labour or outsourcing certain functions to third parties can bring considerable competitive advantages.

External partners can help infrastructure projects adapt to changing market circumstances and provide more 'traditional' organisations a much-needed skills boost in the latest advanced technologies. Vendors can also draw upon experience from delivering complex transformation programmes across other industries to help project leaders avoid common pitfalls. A successful partnership will provide flexibility and scalability to projects, and foster the harmonious blend of innovation, discipline, experience, and effective collaboration that is required for success.

Sustainability is key

Finally, sustainability needs to be front and centre of any transformation project. With 71% of transport leaders reporting their transformation programmes have met targets for improving sustainability, the sector is leading the way on the road to net zero – with new innovations such as hydrogen-powered trains already a reality.

Continued government investment will be key to ensuring that infrastructure projects meet green goals moving forwards.

Overall, infrastructure project leaders must focus on remaining adaptable and streamlined amid the current uncertain business environment. By doing so, they'll be able to respond rapidly to new market demands and adopt new technologies more easily.

The challenges limiting the effectiveness of transformation initiatives will likely persist for some time, so taking definitive action now to address technology skills gaps will leave projects in the best position to succeed moving forwards.



Stephen Magennis
is Managing Director,
Technology at Expleo.

Making the West Midlands a DfMA Hub

New methods of construction in industrial hubs can help us build greener, say *Luke Strickland*, building and cities net zero lead and *Paul Webb*, lead for design for manufacture and assembly, both at Mott MacDonald.

As the UK strives to meet its net-zero commitments, the way we think about construction continues to change.

Gone is the traditional trifold time-cost-quality management focus.

We now think more widely: time-cost-quality-carbon.

New methods of construction will be key in delivering the green, sustainable, and cost-effective built environment we need.

Built environment professionals are now increasingly familiar with the concept of DfMA – Design for Manufacture and Assembly – as a way of helping us meet that requirement.

This is a collaborative design approach that emphasises ease of manufacture and efficiency of assembly through selecting the best construction approaches that are standardised and offsite, such as modular and platform approaches.

Imagine a world where, for example, a kit of parts, easy to make and assemble, goes together in a standardised way, that can be scaled up and down and applied to as many different assets as possible. Configuring and deploying at scale will then truly unlock the benefits of DfMA and provide the certainty and economies of scale needed to invest more in the needed manufacturing capacity.

Beyond ease and efficiency of construction from DfMA, we must also develop circularity – ‘DfX’ (Design for Excellence) – using DfMA thinking and tools to go a step further and integrate the use, reuse and value of resources in perpetuity.

We need to design in a way that makes it easier to reuse assets and the resources within them without requiring large new resource inputs when they are moved, altered or recycled.

DfX requires a fundamental rethink of the way we plan and design assets and their constituent parts, so that they can be adapted, added to, taken apart and reassembled, operated and maintained with ever greater efficiency, and be used again and again.

Utilising existing industrial hubs can help us to realise the benefits of new approaches to construction by exploiting the already existing key ingredients necessary to develop production hubs: an industrial heritage, a manufacturing and digital skills base, strong backing by policy makers, good geography and proximity and alignment of the supply chain.

Such production hubs will be required to evolve to deliver the Government target of a developed and disaggregated supply chain, capable of producing at scale what is needed in our space-constrained cities.

A region such as the West Midlands, is well positioned to be a production hub.

It enjoys a centralised geography, industrial heritage and strong manufacturing capability.

Because of the innovative manufacturing ecosystem in the West Midlands, the region has the right skills pipeline to make the further take-up of DfMA and offsite construction a success.

This includes a 211,000-strong manufacturing workforce and 41,950



Luke Strickland building and cities net zero lead at Mott MacDonald.



Paul Webb lead for design for manufacture and assembly at Mott MacDonald.



STEM and business graduates each year that could be reskilled in the technique.

This would support the Government's UK2070 report that highlights the region's high-carbon economy and the urgency to repurpose roles across its workforce in order to achieve a low-carbon future.

In addition, the West Midlands is home to the UK's first 5G testbed which will bring a different dimension, as this will play an important role in facilitating the region's adoption of new approaches to construction.

This technology has the potential to help track the performance of key

construction materials throughout their lifecycle, as well as enabling better monitoring of existing assets.

Digital assets also have the power to disrupt existing behaviours in UK construction by improving visibility around the use of carbon, driving greater accountability and informing decision making.

Use of the West Midlands and other suitable regions around the UK as strong regional industrial hubs, can act as a centre of gravity, bring all the necessary elements together and help accelerate the green industrial revolution.

Brightly bringing benefits to Kent County Council

A software solution that enables local authorities to manage their public infrastructure more efficiently has been reaping rewards in Kent for almost 20 years

Brightly's Confirm Enterprise Asset Management Solution is helping local authorities manage their public infrastructure more efficiently and effectively.

And one organisation that knows just how transformative the system can be is Kent County Council (KCC), which has been using the technology for almost two decades.

Confirm brings together huge volumes of information from across an organisation, provides instant data which can then be used to make informed, efficient decisions on repairs, maintenance and investment – critically important when both budgets and timescales are under increasing pressure.

Brightly, which was acquired by Siemens in August last year and now sits in Siemens Smart Infrastructure business, has been developed over

the last 30 years and has worked with a number of county councils.

As one of the largest in the UK, Kent's assets are vast.

Covering 3,737sq km of land and home to more than 1.5m residents, the county also takes in 350 miles of coastline.

And when it comes to assets to manage, we are talking big numbers.

Kent has 8,690km of carriageways, 6,276km of footways, 122,00 streetlights, 2,800 structures and bridges, 275,000 roadside drains, not to mention 80,000 trees. All must be maintained, repaired and replaced when needed.

But many of these assets are now controlled efficiently thanks to Brightly Confirm, as the company has been working with KCC since 2006.

Carol Valentine, business, innovation and technology manager highways and transportation at Kent County Council,

said: "We are a big authority, and we need somewhere to record our assets.

For example, every time a pothole is repaired, that's got to be recorded, we need to know that it's been done because it's a statutory responsibility and also for insurance purposes.

"So, we have to have a repository that can accurately record all of our assets and have what we call a 'single source of truth', so we know that if it's sitting in WAMs (the Confirm works assets management system) we can understand what's happened."

Start to finish, from logging of a job to it being completed and paid for, the whole process is tracked in detail.

Working with Brightly has also ensured streamlining of the system to improve customers' experience so they are updated on critical data when working with the authority – something



that previous systems didn't allow.

Ryan Chantrill-Smith, Kent County Council's business systems manager, explained: "We can share things such as different schedules, gritting routes – basically anything we have in the system. It enables us to compile the data and have that transparency between us and the contractor."

Since 2006 Kent County Council has continued to work with Brightly to develop systems that work for the authority.

A programme board was established to bring more assets under the Confirm system. Managers working within the authority were asked what they wanted the system to do to ensure best results.

Many of those programmes have now become business as usual for Kent.

KCC continues to work with Brightly to test the functionality of the system to get more value. Around 10 further projects are currently being considered and discussed at the programme board.

With all data in one place, and accessible to those who need to use it, it ensures a much smoother and more efficient process.

New technology has been embraced positively within the authority with staff adapting to new ways of working. A group of super-users helped train staff

in the early stages. This has now been followed by the setting up of a user group.

"The user group involves the asset teams," explained Ryan. "Anyone that uses the WAMs system nominates someone from their department to come and sit on the group. That enables them to discuss any issues they have when they're using the system. It's very helpful for discussing any projects, changes or issues."

So, what have been the big benefits of Confirm for KCC?

"Finance is always a driver, we're very conscious of costs and it is public money," said Carol. "For us, we also want efficiency and safety. Our critical purpose is to keep people using our networks safe. This system helps us to do that."

KCC has continued to take a proactive approach to new technology, adopting new systems and seeing what else it can achieve for the authority.

One example of this continuous improvement is the introduction of new software – Brightly's Community Central – which enables users to access and report issues in their local communities and receive updates on progress, reducing pressures on resources and improving service outcomes.

This system, being used by the authority under the banner of My Kent Highways,

is currently a pilot project and will come online towards the end of October.

Initially, it will start as a place to report issues with potholes before another 35 areas are added over the next 18 months.

"There's a lot of focus on highways so we are able to use the Brightly system and its partners to enable us to deliver a better service to our customers," added Carol.

"The more we can improve that process the more it helps us save money and time – and helps the customer."

Reporting a pothole using the system, residents will be updated at certain points – when the job is raised, when it's complete, if it's being passed to the district authority. Plus there will be a chat function to allow you to ask further questions.

Using Brightly's technology is constantly evolving for KCC which recently signed another three-year contract with Brightly. It is now exploring how other assets could be managed by the technology.

Carol says Brightly's technology has made a massive difference to how the authority works.

"The first thing all our frontline staff do in the morning is log into WAMs, the dashboard shows them where the work is, what the inquiries are, have they got any phone calls to make – so it's a fundamental part of delivering our frontline services.



Using AI and big data to quantify and manage project risk

BAM has become the first contractor in the world to use nPlan's AI and big data to quantify and manage schedule risk across a portfolio of projects.



The use of nPlan comes in response to BAM clients increasingly moving towards outcome-focused capital programmes, resulting in a shift in the firm's leadership focus to the risks to delivery of outcomes, rather than just the risks to project delivery.

nPlan is the global market leader in forecasting and de-risking large-scale construction projects with AI.

The core of nPlan's technology is a patented process that involves using 'deep learning' to model project outcomes on large volumes of historical construction data.

nPlan Portfolio also nullifies the human biases which hamper the quantification of portfolio risk and cause portfolio

managers to focus on the wrong projects.

It incorporates a rich feature set, starting with a summary showing a portfolio's overall health score, number of delayed projects and a breakdown of the health of projects within the portfolio.

David Bunn, Portfolio Director at BAM, explains: "Applying nPlan's AI capability at a portfolio oversight level allows us to quickly target our leadership interventions to the right areas across a large portfolio of projects, to mitigate risks to outcomes being delivered when they are needed."

"In this initial deployment we are assessing the capability in parallel with our existing approach to offer an additional view of schedule risk without the influence of typical human biases.

"We expect this to enable greater optimisation of integrated portfolio schedules, which will ultimately benefit our clients."

BAM, the construction and civil engineering specialist is the launch partner for nPlan Portfolio.

It will employ nPlan's newest product to oversee an initial portfolio of 50 projects, while also working closely with nPlan to guide the future roadmap for the product.

nPlan's advanced technology means that BAM will be able to analyse a whole portfolio through an AI lens for the first time, providing unbiased insight into potential risks to schedule and cost, and enabling prompt preventive action.

Applying nPlan's machine learning

capability at a portfolio level will help BAM focus high-level attention on the right areas, to identify the efficiencies and opportunities that can be realised through portfolio schedule optimisation.

Ultimately this will enable more affordable outcomes for clients during a time of increasing cost pressures and funding constraints.

nPlan and the true value of forecasting well

Since its founding in 2017, nPlan's core contention has always been that big construction projects can only be effectively forecast and de-risked by studying large volumes of past project data - a task for which a machine is best suited.

nPlan set about assembling the world's largest dataset of as-planned and as-built schedules from past projects (which currently includes over 740,000 programmes and counting) and used this data to train an AI to model project performance - with a degree of accuracy unattainable by human operators.

When one of nPlan's customers uploads a project schedule to nPlan Insights (nPlan's SaaS platform for forecasting and de-risking individual projects), nPlan's AI uses its model to generate a probabilistic forecast for every activity in the schedule, and the software then turns this into a whole-project forecast and surfaces the activities most likely to drive delay.

nPlan has long argued that the value of its innovative patented process is in enabling contractors and owner-operators to proactively manage risk to get the project outcome they want (rather than in passively adjusting contingencies or producing reports).

This argument has already won over project teams at the likes of Network Rail, Shell, HS2, Transpennine Route Upgrade, Kier, SCS and beyond, and these same principles (and technologies) are the foundation of nPlan Portfolio, the SaaS product nPlan is unveiling today.

Dev Amratia, CEO of nPlan, said nPlan made its name solving the forecasting and risk identification problem for single projects.

He added senior leaders at the firm are now incredibly excited to also have a system which can enable portfolio managers to solve the portfolio risk problem on behalf of their organisations.



"Accurately forecasting and effectively de-risking a single large-scale project is extremely challenging - doing the same for a whole portfolio of projects is an order of magnitude more difficult," he said.

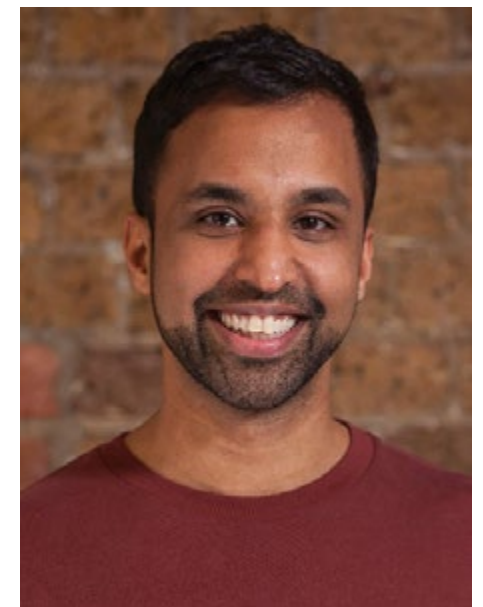
"It is also arguably an order of magnitude more important, because unrecognised portfolio risk has led to the demise of many contractors—and the loss

of the jobs they provided—over the years.

"This was a problem which many people said was a fact of life within the construction industry, but we've shown it can be addressed - and we'll continue to work on the really thorny problems limiting growth and development, because ultimately that's what gets us out of bed in the morning."



David Bunn, Portfolio Director at BAM



Dev Amratia, CEO at nPlan

EIC Manifesto highlights link between prosperity and environmental sustainability

Economic prosperity and environmental sustainability can go hand in hand in the UK, if the future government is prepared to work with businesses who make up the environmental industries

That was the message from Stephen Marcos Jones, chief executive of the Environmental Industries Commission (EIC) as he revealed the organisation's highly anticipated policy manifesto, at a parliamentary reception during Net Zero Week.

The manifesto 'Green Growth, Skills and Prosperity: Priorities for the Next UK Government' provides a comprehensive framework for positive change, drawing on the expertise and experiences of business owners working across SMEs and large multinational companies.

In his speech, Jones described the need for strong leadership as "axiomatic" as he outlined a recent Climate Change Committee report which stated that, despite some progress, the committee was markedly less confident than a year ago that the UK would reach its

targets for cutting carbon emissions.

He added the concerns raised in the report were also consistently raised by EIC members and "now more than ever" a collaborative relationship was needed between the businesses working in the environmental industries sector and policymakers across government and competent authorities.

"We need to work as a team to solve the climate crisis," he said.

"EIC members have the expertise, experience and technical knowledge to support government in these areas prioritised by the Climate Change Committee."

Philippa Spence, Chair of EIC and UK managing director, Ramboll, added: "It can be hard to stay optimistic in the face of science, which is irrefutable in terms of the challenge to reverse damage done.

"But I am optimistic, because within the environmental services and technology sector, we have the knowledge, we have the innovation and we have the absolute passion to make a difference.

"These are the ingredients

of positive change."

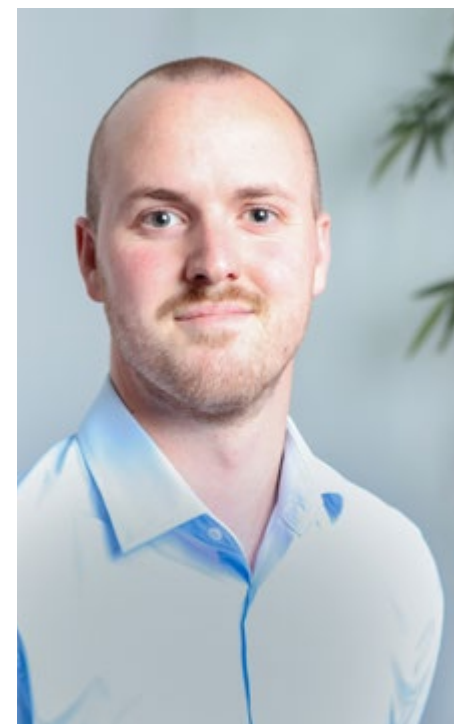
The parliamentary reception was attended by several keynote speakers including Rt Hon George Eustice MP, former Secretary of State to DEFRA and Baroness Bakewell of Hardington Mandeville, Lord Spokesperson for Liberal Democrats for the Environment, Food and Rural Affairs and Nusrat Ghani MP, Minister of State in the Department for Business and Trade and the Cabinet Office.

The EIC's manifesto was also officially launched, outlining the significant role the UK has to play in shaping global efforts towards environmental sustainability and recognising the environmental services and technology sector turns over £89 billion in the UK, creates 349,000 jobs and contributes 3.9% of GDP.

The manifesto draws on the wide-ranging expertise and experiences



Philippa Spence, Nusrat Ghani MY and Stephen Marcos Jones at the EIC Manifesto's parliamentary reception.



Guto Davies, Director of Policy at the EIC

of its members to present a number of recommendations around the implementation of stricter air quality targets and building resilience in water management and supply.

The manifesto also examines ways in which biodiversity action and green infrastructure should be prioritised and levelling up should be supported through "brownfield first" including the introduction of a greenfield surcharge as part of the infrastructure levy.

The policy recommendations also look to drive collaboration and implementation of key policy frameworks and streamline regulations for environmental growth.

The EIC specifically chose Net Zero Week for the launch of its manifesto, as the global initiative is dedicated to raising awareness and accelerating progress towards net-zero emissions.

With nations and industries intensifying their efforts to combat

climate change, the EIC's policy roadmap aims to shape the conversation and drive tangible change across sectors.

Guto Davies, Director of Policy at the EIC said; "Our policy manifesto is the culmination of extensive research, collaboration, and expertise from our members and stakeholders.

"It presents a bold and pragmatic vision for a sustainable future, outlining actionable policies that can drive real change.

"By releasing it during Net Zero Week, we aimed to catalyse meaningful conversations and inspire decisive action towards a net-zero carbon economy."

[Click here to read the manifesto](#)



Double awards celebration for ACE.

ACE is recognised for its diversity and inclusion initiative and Wojciech Szewczak chair of the ACE Emerging Professionals is also shortlisted in FIDIC awards.



The Association for Consultancy and Engineering (ACE) has been shortlisted for a FIDIC member association excellence award, in recognition of its successful diversity and inclusion campaign.

The judges at FIDIC recognised how ACE's Building Inclusivity campaign is supporting consultancy and engineering businesses to create inclusive environments, where individuals from all backgrounds feel valued, respected, and empowered.

Stephen Marcos Jones, chief executive of ACE and the Environmental Industries Commission (EIC) said the awards were a testament to the hard work of a number of staff at ACE and EIC, as well as member organisations, who have embraced the Building Inclusivity campaign.

"In order to make this campaign a success, ACE and EIC undertook a significant amount of research around the challenges our members face when it comes to building inclusivity in their workplaces," Jones said.

"Through our work with member representatives, we have been

able to identify barriers and strategies to overcome them and create inclusive workplaces.

"We are delighted that the consultative and collaborative efforts we have made, involving key stakeholders, such as organisational leaders/senior management, young professionals in member organisations, HR professionals, and diversity and inclusion experts, has been recognised by FIDIC."

The Building Inclusivity campaign has resulted in the creation of a programme of initiatives, including events and a suite of practical tools and advice with expert commentary, which remain open and available to everyone looking to build inclusivity in their workplaces.

Wojciech Szewczak, Associate at Ramboll and chair of ACE's Emerging Professionals Network, has also been shortlisted for the prestigious FIDIC International Federation of Consulting Engineers' Future Leaders Award 2023.

This recognises Wojciech's high profile work in strategic sustainability with clients in the infrastructure sector at Ramboll and his work developing ACE Emerging

Professionals, the group for the next generation for industry leaders working in the natural and built environment in the UK.

The ACE Emerging Professionals have produced a series of successful video podcasts and these have attracted up to 15,000 views on LinkedIn after two seasons in 2022.

The third series of these videos is running now and there are now more than 100 emerging professionals working within the network across the UK and Northern Ireland.

Wojciech paid tribute to fellow Emerging Professionals Network members, as he acknowledged teamwork had been the key to his place on the awards shortlist.

"It's been made possible because of all those people within ACE Emerging Professionals and the influence they have in the industry," he said.

"I consider being shortlisted as a success for the whole ACE Emerging Professionals group.

"I am pleased to have had the opportunity to chair the emerging professionals group and the fantastic leadership development opportunity it has provided me with."

FIDIC is the International Federation of Consulting Engineers, the global representative body for national associations of consulting engineers, representing a total of more than one million professionals in 40,000 firms across 100 countries worldwide.



Next steps on climate action in Northern Ireland

The Association for Consultancy and Engineering (ACE) is calling on its members to actively engage in the public consultation on carbon budgets, led by the Department of Agriculture, Environment and Rural Affairs (DAERA).

This significant consultation aims to gather valuable insights and feedback regarding Northern Ireland's proposed emissions targets for 2030 and 2040, as well as the carbon budgets for the periods 2023-2027, 2028-2032, and 2033-2037.

As well as consulting on the Carbon Budget, the department is working collaboratively with all NICS departments and is seeking views on the Climate Change Committee's Advice Report: The Path to Net Zero Northern Ireland.

ACE is encouraging its members to contribute their

expertise and perspectives.

Guto Davies, Director of Policy at ACE, said: "ACE members possess invaluable expertise in developing innovative solutions to combat climate change.

"By actively participating in DAERA's consultation, our members have the opportunity to shape Northern Ireland's emissions targets, carbon budgets and net zero approach, paving the way for a

greener and more sustainable future."

Working with DAERA, ACE also intends to take part in a series of stakeholder engagement sessions, providing further opportunities for members to actively participate and provide invaluable insights, experiences, and recommendations.

ACE members can contribute their initial views and feedback to the consultation process, by emailing the policy team directly at policyteam@acenet.co.uk.



Views sought on strategic transport objectives

The Association for Consultancy and Engineering (ACE) is calling on members to share views as part of the ongoing transport select committee inquiry on strategic transport objectives.

The inquiry aims to examine how the government establishes its long-term transport goals and how these objectives influence investment decisions and cross-government planning of services, networks, and infrastructure.

To actively engage in the consultation, ACE will be writing a submission to the Transport Select Committee, collating the perspectives and recommendations of its members.

The ACE submission aims to investigate the extent to which the government adopts a long-term, national, and multi-modal approach to predicting, maintaining, and developing the country's transportation needs.

It will emphasise the potential impact that clear and national strategic objectives for transport

can have on shaping policy and investment decisions, as well as driving sustainable growth and connectivity.

Guto Davies, Director of Policy at ACE, said the expertise and insights of members will "help create a comprehensive, multi-modal transport strategy that addresses the country's present and future needs effectively".



Email your views to be fed into the report to policyteam@acenet.co.uk.

Operations and Maintenance – why we need to stay ahead of the curve

The remit of Operations & Maintenance (O&M) contractors is evolving, becoming increasingly complex and broader in scope. Jason Pavey, Atkins UK Managing Director of O&M, outlines the future of O&M and why innovation is essential.

In the past, simply ensuring infrastructure remained in working order was all that was expected from an O&M contractor. But today, it's a more complicated picture. The cost of operating and maintaining infrastructure often exceeds available funding and asset owners are under immense pressure to maximise the value of their assets and squeeze every

possible penny of efficiency. This is against a backdrop of pressures to decarbonise and build climate resilience.

O&M providers can play a significant role in supporting organisations and Public Private Partnerships (PPP) to navigate these challenges, helping them make strategic decisions and unlock value from their infrastructure. But it takes innovation, forward-thinking and long-term commitment.

Intelligent O&M

Digitalisation should be front and centre of O&M contracts. It will be through

harnessing the power of data, AI and intelligent systems that organisations will be able to maximise the performance of their assets and model net zero and climate resilience challenges.

But there's work to be done. Asset owners are already collecting vast amounts of data to inform O&M and asset management decisions, but often they don't possess the right data schema, strategy and operating models to use it productively. By taking a more intelligent approach to O&M and deploying tools like machine learning, those terabytes of data can be used to make the right decisions at the right time, optimising spend and efficiency.

Digital twins are also providing extremely comprehensive insights into an asset's performance. Atkins' asset management teams are already working with highways authorities and water companies for example, having developed digital twins for roads and sewage works. Digital twins are now helping us make step changes in preventative asset management. In North America, we've created a digital replica of Vancouver's Skytrain rapid transit Canada Line to improve performance and maximise availability. Utilising the digital twin, more operations have been automated and the AI is being trained to schedule maintenance automatically, freeing staff to work on higher value elements of O&M.

Fit for the future

The cost of maintenance and ensuring an asset is performing effectively are no longer the only KPIs for asset owners. O&M

contracts are increasingly recognising the opportunities to contribute to net zero targets and focus on end customers. For Atkins, this has meant amending proposals and adapting how we work to reduce our carbon footprint and that of the assets that we manage. For example, I've been involved in research and development programmes such as Live Labs 2 which is seeking innovative ways to decarbonise highway maintenance. We need to keep pushing the envelope and be brave in adopting new ways of working.

Moreover, as we begin to see the effects of climate change over the next 15-20 years, O&M contracts will need to consider how to operate and maintain an asset, or keep it in service, with the variability the climate is throwing at it, from higher temperatures to extreme flooding.

Likewise, we need to factor in changing use of an asset. If we look through a transport lens for example, post-Covid, there's been huge changes in demand and use of public transport. The question for O&M is; what degree of service will people need from an asset going forward and how do we maintain it to that level?

Through intelligent O&M and digital twins it's possible to test an array of possible scenarios.

Collaboration and investment

Greater collaboration between contractors, clients and partners could be fundamental in driving innovation in O&M and achieving better outcomes. There's a huge opportunity for more co-creation; where risk and investment is shared.

Longer term O&M contracts will

also support this. It's those clients with whom we have the certainty of a long-term relationship, that gives us leverage to innovate and an incentive to invest and trial data analytics, automation, AI and other tools. It can also strengthen outcomes, including social value, which is taking greater prominence in O&M contracts.

O&M requirements will no doubt continue to increase in complexity in the coming years, which is why providers must stay ahead of the curve.



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