



# Awards showcase women in construction

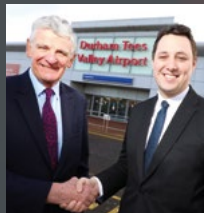
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# I INFRASTRUCTURE Intelligence

Produced for the industry by the Association for Consultancy and Engineering



**Infrastructure Intelligence**

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**Message from the editor**

There's a distinctly Scottish flavour to this issue of Infrastructure Intelligence. It's not before time as there is so much going on north of the border. It should have a beneficial impact on the construction sector. We talk the new Infrastructure Co for Scotland (IICo-SD) and the new Infrastructure Co for Scotland Futures. From the Scottish Futures Trust, as ever, industry is working with the ongoing work of Carillion and Interserve and also the rising cost of infrastructure delivery.

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**Message from the editor**



The summer issue of *Infrastructure Intelligence* is traditionally where we report on the winners of this year's Consultancy and Engineering Awards. Once again, this year, there were some brilliant projects and people rewarded for excellence and potential and it was great to see the awards presentation put women centre stage too (p21-27). More of this please.

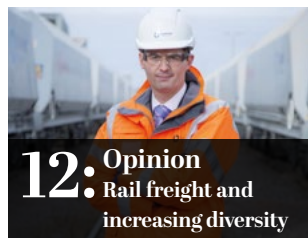
We give politics an airing this issue and report on an airport in Teesside that helped to win a mayoral election (p16-17), a road in Wales that's been failed by devolution (p6), an environment threatened by the fall-out from Brexit (p19) and Scottish engineers and consultants taking their message to the Holyrood parliament (p7).

We can't get away from industry change and articles on new business models (p8), the changing face of BIM (p18), rethinking how consultants charge for work and valuing natural capital (p30-31) offer much food for thought for our readers.

Technological change also features prominently in this issue, with the government's infrastructure digital tsar calling on the industry to work more closely together to avoid digital chaos and confusion (p9) and a fascinating interview with experts from Bentley Systems, who talk transformation and digital twins (p14-15).

Much on which to ponder then, as you contemplate a week or two on the beach or some time spent relaxing in the country. However you spend your holidays, I hope you get a decent summer break. We'll return in print in September and continue to update you constantly online at [www.infrastructure-intelligence.com](http://www.infrastructure-intelligence.com)

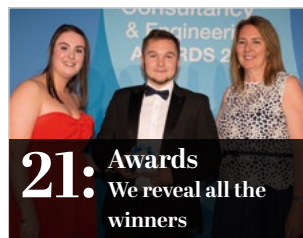
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We reveal all the winners

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London Bridge station has received another prestigious architectural prize for its redesigned layout.

# London Bridge station scoops top architecture award

**L**ondon Bridge Station has been named Architects Journal Building of the Year 2019, the third prestigious architecture prize which the station has received. Last month it won the RIBA London Award 2019 and was also named RIBA London Building of the Year 2019. It must now be a very good bet to make the RIBA Stirling Prize shortlist when it is announced later this year.

Based on a design by Grimshaw, the station re-opened in May last year following a £1bn transformation as part of the government sponsored Thameslink Programme. Structural and acoustic engineers and landscape architects on the project were WSP and Arcadis and main contractors were Costain and Balfour Beatty.

The station earned high praise from the judges who said it was “hugely impressive – a giant of a project” and “does

grandeur with huge modesty”. They also praised the scheme for being successful not just as an infrastructure project, but as a civic development.

In a five-year build, the Thameslink Programme, a partnership between the Department for Transport, Network Rail, Govia Thameslink Railway, Southeastern and Siemens, created the largest street-level station concourse in the UK. Work included a major track upgrade, a new rail underpass on the approach to the station and platform widenings and extensions, all of which means 30% more trains can use the station than before.

Throughout the rebuild the station remained open to ensure rail services were maintained for the 50m customers who use it each year. Engineers on the project have been widely praised for their work and visitors to the transformed station cannot fail to notice the stunning engineering on display.

John Halsall Network Rail’s managing director, southern region said: “I am delighted that the London Bridge station project has once again been recognised as an example of great design and delivery. This award recognises the vision of those who designed and planned this transformation and the skill and dedication of those who carried out the work. It is a breathtaking building in its own right and is also helping bring new life to this area of London.”



# Commonwealth Games stadium design unveiled

The proposed stadium design for the 2022 Commonwealth Games has been unveiled for public consultation.

At the heart of the wider Perry Barr regeneration effort, Birmingham City Council plans to redevelop Alexander Stadium into a high-profile venue for diverse sporting, leisure and cultural events. The redeveloped stadium will be the focal point of the Commonwealth Games, hosting the opening and closing ceremonies as well as the athletics competition.

The £70m investment will increase the stadium's capacity and provide new facilities for both athletes and the local community, with the council determined to "create a legacy asset the city and its residents can be truly proud of." The redeveloped stadium will increase its permanent seating capacity from 12,700 to 18,000, allowing up to 40,000 during the games through additional temporary seating.

Ian Ward, leader of Birmingham City



Image of the proposed design of the Commonwealth Games stadium in Birmingham.

Council, said: "The team has designed a redeveloped stadium which will meet the needs and aspirations of the community for generations to come. This is about creating a destination venue, shaping a legacy beyond the Commonwealth Games."

A planning application will be made this autumn and redeveloped stadium should be ready ahead of the games which take place between 27 July and 7 August 2022.

## Obama digital advisor to speak at FIDIC 2019 conference in Mexico City



An advisor to former US president Barack Obama on big data has been announced as one of the keynote speakers at this year's FIDIC International Infrastructure Conference, taking place in Mexico City from 8-10 September.

Stephen Brobst, chief technology officer for Teradata Corporation, will speak at the conference in Mexico City where, given his big data background, he is well placed to address a number of issues around the event's main theme of "Technological Innovation Impacting the Industry".

During Barack Obama's first term as US president, Brobst was appointed



**Stephen Brobst,**  
chief technology  
officer for Teradata  
Corporation.

to the Presidential Council of Advisors on Science and Technology, where he worked on the development of the big data strategy for the US government. He co-authored a report to the US congress which recommended that all federal agencies should have a big data strategy and initiated government investment in this important area for infrastructure.

Brobst is uniquely placed to share his insights and knowledge to delegates in Mexico City. FIDIC's flagship annual conference always attracts a good turnout of delegates from the UK and they will join around 800+ attendees at what is traditionally the largest and most influential gathering of the international engineering and infrastructure industry.



For further information and to register for FIDIC Mexico City 2019  
visit: [fidic2019.org](http://fidic2019.org)





# Devolution fail over M4 relief road scrapping

The decision to scrap the M4 relief road around Newport exposes the folly of devolving powers that impact on strategic routes, says *Simon Shouler* in this personal view.

**W**ales first minister Mark Drakeford's decision to scrap the new M4 around Newport came as no surprise. Vacillation over what to do about this section of M4 has run through all ministerial terms of office since devolution. The M4 study has been on the books from about the time of devolution and has been shelved twice and reactivated twice over the years before landing in Mark Drakeford's lap.

His decision is not only bad news for the Welsh economy, it will have a ripple effect along the M4 corridor and beyond. Consequently, the first minister's decision exposes the folly of devolving powers that impact on the UK's strategic and trans-European routes.

The decision of course is a major blow to the Welsh infrastructure industry and the training opportunities that this scheme would create. But, more worryingly, the announcement seems to demonstrate naïve optimism about what else we might try, and how quickly we could deliver it.

The M4 study has a rigorous pedigree. For the first time in Wales, a study such as this was multi-modal. It considered an array of road-based interventions alongside options to enhance public



**Simon Shouler** is ACE Cymru Wales manager.



**Wales first minister, Mark Drakeford.**

transport and a hybrid approach combining infrastructure and public transport interventions. The options were subject to public consultation and compared using a Common Appraisal Framework - a forerunner to WelTAG (Welsh Transport Appraisal Guidance). Later investigative work was subject to contemporary Welsh appraisal guidance and further consultation.

Yes, the political imperatives are changing, but it's difficult to see what Mark Drakeford's "Commission of experts" might come up with that will deliver the scale of congestion relief needed. The original study looked at, amongst other things, new road routes to the north and south of Newport, widening the existing motorway, introducing and enhancing an array of rail and bus services and hybrid options. Three were short-listed - enhancing public transport, a hybrid approach or building a new motorway.

A new motorway out-performed the other two options and appraisal highlighted the reality that pound for pound, enhancing public transport could not compete. In addition, there has been follow-up work to optimise the New M4 Preferred Route and revise cost. However, before finally committing to the project, there must have been exhaustive investigation of making better use initiatives such as local widening, building a third tunnel at Brynglas, widening the twin bores to three lanes and introducing measures to reduce local access onto the M4 in the Newport area by closing on slip-roads or ramp metering.

The lead-in time to develop an alternative strategy from the new commission could exceed a decade. In the meantime, we still need swift action to safeguard Wales's economy and inward investment. The M4 scheme is 'ready to go' and we have the reassurance that the project was scrutinised in detail throughout an exhaustive and open process that included public consultation and public inquiry. It has the mandate to go ahead.

# Taking a positive message to Holyrood

ACE Scotland's well-attended summer reception at Holyrood in June, attracted a diverse audience that included politicians, clients and contractors, as *Andy Walker* reports.

The Scottish Parliament Building at Holyrood in Edinburgh hosted a very well attended and successful Association for Consultancy and Engineering (ACE) Scotland summer reception on 13 June 2019, as engineering consultants, their clients, contractors, legal professionals and politicians gathered to listen to ACE chief executive Hannah Vickers and other speakers talking about the state of the industry and its future prospects north of the border.

Vickers said she was keen to take ACE out of London and into the UK nations and regions to highlight the benefits of the consulting engineering sector to stakeholders and opinion formers. She spoke about ACE's Future of Consultancy campaign, which was giving a voice and a platform to engineers to talk with confidence about the value they can provide in a changing industry. "Our campaign is all about trying to set out our stall about what we're trying to achieve and where we want to be as an industry," said Vickers.

She said she was especially keen to reach out to Scotland's young professionals, who "were the future of the future of consultancy", and she said she was pleased to see representation at the event from ACE's emerging professionals' network.

ACE Scotland manager, Sam Ibbott, was delighted at the turnout for the event. "This is the first time for a number of years that we've had a summer reception and I'm delighted with the turnout this evening," he said. "It shows that ACE Scotland and the engineering consultancy sector is in excellent health and it's great to see so many of you at Holyrood tonight. ACE's Future of Consultancy campaign is a real opportunity to raise the profile of our industry in Scotland and I'm delighted that we have representation from the Scottish parliament hosting us this evening," said Ibbott.

Other speakers included ACE Scotland chair Mark Arthur,



ACE chief executive Hannah Vickers speaking at the Holyrood reception.



ACE Scotland manager Sam Ibbott speaking at the reception in Edinburgh.



Clare Adamson MSP speaking at the event at Holyrood.

Read more online at  
[www.infrastructure-intelligence.com](http://www.infrastructure-intelligence.com)

Emil Rangelov, founder and CEO of HV Systems and Brian Graham of insurance brokers Brunel Professions, sponsors of the event.

The evening's host, Clare Adamson MSP, chair of the Scottish parliament education and skills committee and convenor of the science and technology cross party group, made a passionate case for the importance of science, technology, engineering and mathematics (STEM) education to Scotland and its future. "As we enter the fourth industrial revolution, STEM careers will be more needed than ever and we need to ensure that we are making the case for excellent science and technology education in schools from the earliest stage," Adamson said.

That fourth industrial revolution would be about more than just technology-driven change, said Adamson, it was an opportunity to help everyone, including leaders, policy-makers and people from a diverse range of backgrounds to make a difference to society. Adamson said the industry in Scotland needed to engage with politicians, through the cross-party groups and through events like this one, to ensure that they were well informed about the issues affecting businesses and could influence decision makers and opinion formers.

# Why utilisation has had its day



Utilisation. The number one metric for running an engineering consultancy. But in the new digital world, is it fit for purpose? *John Priestland* shares his thoughts.

**A**t the recent ACE Digital Leadership Conference, I shared a platform with ACE's chief executive, Hannah Vickers, to discuss new business models. Hannah set out some of the thinking that is coming out of ACE's Future of Consultancy initiative and I shared some of my frustrations around utilisation, based on 20 years in the industry.

As a young consultant, you rapidly learn that, if you have a quiet week and your utilisation drops below 70%, you'll get a call from your operations director by lunchtime the following Tuesday. Allow this to happen a couple more weeks in a row, and the conversation gets really tricky.

So, what do you do if all your client-chargeable tasks for the week can be done in 20 hours? Do you do them diligently and well, and then go and do some other useful things (like writing up a case study or going on a training course)? No, you stretch the work - to 30 hours or more. You design the structural steelwork reaaaally sloooowwwly. Even if this time is not charged to the end client, it is charged to the project. So, some poor project manager sees the margin on her job fall. (We used to call people who did this margin munchers).

What other sector would set up itself up in this way? How would it be if the garage servicing your car incentivised its

mechanics to take twice as long if they weren't very busy that week?

Unlike efficiency, utilisation is easy to measure. It is a simple fraction (numerator = chargeable time; denominator = total time). Efficiency requires some objective view of how long a particular task should take. It works well in the garage, where the time taken to check the oil or change a tyre is clear. But how long should the structural steelwork design actually take? Well, every building is different. Who is to say that it should not take 30 hours? (Not my ops director, anyway).

Engineering consultancies have been trying to talk about value-based pricing or charging for outputs for as long as I can remember. But digital transformation is a game changer. Utilisation looks very different when I could choose to use a steelwork design package connected to the BIM model (with key parameters entered via a configurator) and do the entire task in, say, 20 minutes. But then my utilisation for the week would only be 0.8%!

The winners in digital transformation will be the firms that incentivise their staff to use tools at their disposal efficiently. Provided it is to the right quality, quick = good. And (almost) instant = better.

These companies will then differentiate themselves through their ability to optimise design. Better data and better algorithms = better economic outcomes for the client.

They should be able to show why and how their solutions are better and be prepared to be rewarded by a share of the value they are creating.

Lucky clients. Who will have their problems solved faster, more cheaply and more safely. Maybe more so than they and we can currently even imagine.



**John Priestland** is a director of Priestland Consulting.

***“But how long should the structural steelwork design actually take? Well, every building is different. Who is to say that it should not take 30 hours?”***



# Industry must collaborate to avoid digital chaos

The government's infrastructure digital tsar has called on the industry to work more closely together and share information to avoid digital chaos and confusion.

**T**he man leading the government's drive to guide the development and adoption of a digital framework for infrastructure data, Mark Enzer, said it was essential that the industry collaborated on data sharing to avoid chaos breaking out.

Mott MacDonald chief technical officer Enzer, who also chairs the Centre for Digital Built Britain's Digital Framework Task Group, was speaking at ACE's Digital Leadership Conference on Thursday 20 June 2019. Referring to the development of digital twins and a national digital twin, Enzer said it was crucial to get the whole of the industry working together and sharing information.

"Creating an ecosystem of connected twins – it's all about enabling secure, connected data sharing," Enzer said. "Working across a common vision and common standards, we absolutely need to collaborate. The Darwinian approach of letting everyone do their own thing would only lead to chaos, so bringing people together is essential," he said.

Enzer highlighted the importance of the new Digital Twin Hub (DT Hub). "This will enable an open, collaborative learning community that will define the standards for digital twins going



**Mark Enzer,**  
chief technical officer  
at Mott MacDonald.



forward," he said. "The hub can become a forge for growing standards – learning by doing – and for business case studies. It can be a real engine for creating for what the industry needs and it's open to everyone. There are low barriers to entry and large medium and small firms can all input, so everyone benefits," said Enzer.

Enzer also praised the government for taking a unified approach to digital infrastructure. "We are getting some well aligned messages from government in this area, with the Industrial Strategy and the national Infrastructure Commission's Data for the public good report. This approach will help us move towards having a national digital twin and bring together parties across government, industry and academia to achieve that," he said.

The Digital Framework Task Group has been developing the basic planning that will underpin digital transformation in the infrastructure sector and its road map charts the first few years of what could be a 30-year journey, Enzer said. He also outlined a number of key areas that were informing the task group's thinking.

"We need to recognise infrastructure as a system of systems. New projects are interventions on a system that is already there and it's all about making people's lives better and improving societal outcomes," said Enzer. He also stressed the importance of digital assets and seeing infrastructure as a cyber physical system. "Better analysis and data gives us better outcomes and all the products and services in infrastructure have a role to play," said Enzer.

His comments were well received at the packed-out conference at the Royal Academy of Engineering in London, with many contributions from the floor commenting on Enzer's and the conference's refreshingly open tone and approach to a subject that will have a profound impact on the future of the infrastructure sector.



# Over-design is a waste of money and resources

Over-design is bad for business, bad for people and bad for the planet. It's time for the industry to do things differently, says *Andrew Henderson*.

Currently, buildings are responsible for more than 40% of global energy usage and as much as one third of greenhouse gas emissions. The case for change is compelling. The Committee on Climate Change recently set out recommendations for a zero carbon UK by 2050, we have an impending ban on new homes connecting to the gas grid from 2025 and productivity and skills challenges make it an ideal point at which to push for industry transformation and innovation.

At Ramboll, we recently conducted some of our own research and analysis, which found that on new build office schemes in London alone, we could conservatively save 23,000 tonnes of CO2 every year and £70m in capital expenditure by changing the way we design. In the industry's efforts to achieve technical compliance and adhere to current codes and guidance, building systems are being designed with approximately 50% more electrical capacity and 30% more heating and cooling capacity than is ever needed! And of course, the space required for all this unnecessary plant that will never run will exist for the lifetime of the building, and never be monetised.

Over-design is wasting capital investment for building owners and driving higher energy consumption for building occupiers. The reality is that nobody wins. It's bad for business, bad for people, and bad for our planet. It's clear our industry needs to do things differently. Driving this over-capacity in our building systems is the significant gap between predicted performance and reality. Normally, designers look to buildings codes, occupancy levels and the extremes in environmental conditions to inform design. But this is causing



Building systems are being designed with 50% more electrical capacity and 30% more heating and cooling capacity than is ever needed.



**Andrew Henderson** is executive director, buildings – UK at Ramboll.

significant waste and inefficiency in plant operation.

Key to addressing this is data driven design that leads to leaner buildings with better outcomes. Easy to say, but very few are putting this into action. To deliver efficient design we need to really understand how a building will perform, by simulating its operation early in the design development and allowing more informed decisions to be made, and in doing so, deliver leaner buildings.

Whilst building owners and developers might make some savings on initial design fees and take comfort in having a building 'designed to the codes', they get a sub-optimal outcome for tenants, users of the building, the environment and, of course, for themselves.

This challenge of over-design isn't limited to buildings systems, the same holds true for structures. We're participating in a really interesting initiative, led by the University of Cambridge, seeking to improve material efficiency across the construction industry. So far, our research has demonstrated that design loading in offices may be more than double the loading that the building will ever experience in its lifetime.

We have the tools, the know-how and, more importantly, the data to address these challenges. We can turn design on its head and enjoy the fruits of more economical, sustainable, safe, comfortable and compliant buildings.



# Skills shortages set to fuel tender price rises

Brexit uncertainty and labour constraints will raise construction inflation to 4% from 2022, Arcadis predicts in its latest *UK Construction Market View*.

The UK construction market is continuing to tread water, with further delays to Brexit making a post-deal 'bounce' now increasingly unlikely, UK consultancy Arcadis has warned. The depressing prognosis comes via the firm's latest *UK Construction Market View: Treading Water*, in which the consultancy has held its short-term inflation forecast at just 2-3% to 2021, with many clients opting to take a 'wait-and-see' approach and sit-out the current political turmoil.

The Arcadis quarterly market view provides a comprehensive analysis of the UK construction market. It looks at each sector and region to deliver a tender price forecast to inform clients about what is going on in UK construction, helping to inform financial decision making for projects and programmes.

While growth in construction output was flat in 2018, activity remains close to record levels. However, ongoing questions around political leadership and a potential election are affecting investment decisions, with business planning impacted by uncertainty and expected to extend well into the last quarter of the year.

Delays in converting pipeline into turnover are adding competitive pressure to the market, although the trend is highly sector specific. Markets such as data centres are particularly

busy, while others including offices, industrial and schools are on a downward curve. While there is enough competition to put a partial brake on input cost inflation in the short to medium term, an anticipation of tighter labour markets from 2022-23 means costs are predicted to rise by 1% per annum, reaching 4% by 2022.

Despite increased levels of uncertainty, Brexit appears to have been the trigger for further employment growth across the UK economy, with businesses preferring to hire people rather than invest in plant and equipment to deliver long-term productivity gains. As a result of skills shortages, earnings growth for construction employees has averaged 4.2% over the past year, up from 2.1% in 2017. Earnings inflation for the self-employed, who make up 41% of the entire construction workforce, could be higher still.

Overall in the UK, nearly 100,000 jobs were created in the three months to March 2019. Given growing concern as to whether EU migrants will continue to want to work in the UK, combined with the accelerated retirement of older workers from 2024 onwards, labour pressures are anticipated to intensify.

Simon Rawlinson, head of strategic research and insight at Arcadis, said: "UK construction has a long-established skills and training problem. With skilled EU labour making up 8-10% of the workforce, specialist contractors and employers have been shielded from the necessity of developing and maintaining the skills

of their workforce. However, with the prospect of post-Brexit restrictions on migration, we're now facing a real crisis in terms of future labour capacity.

"The supply chain will need to look at other options for increasing productivity. Off-site manufacturing currently delivers around 8% of industry output, but with the introduction of a government mandate,

this could increase significantly. Adopting new technologies to improve processes will help to eliminate waste and duplication, while a renewed focus on training and re-training – particularly with the introduction of T-levels in 2020 – will further help to support a much-needed flow of talent."



# Construction should increase use of rail freight

It's time to pay attention to smart logistics. Flagship projects like Heathrow's expansion and HS2 are demonstrating the need for early planning and innovative models like regional hubs that can deliver significant cost and productivity benefits. However, our challenge is to make this best practice standard across the construction industry, not only on the major projects grabbing headlines.

This needs to begin with policymaking that supports sustainable and efficient infrastructure delivery. It was pleasing to see the National Infrastructure Commission's Better Delivery study recognise rail freight's "inherent energy efficiency" and "low carbon intensity". Despite this, it's the NIC's proposed ban on new diesel HGVs by 2040 that has dominated discussion. While we should always look to cut carbon wherever possible, encouraging continued modal shift must be the industry's goal.

We've already made significant strides in the last five years. The number of trains has risen from by more than 23% as benefits including congestion reduction and air quality improvement become more widely recognised. While the 2040 HGV target has been simultaneously criticised as not ambitious enough and not achievable,



Chris Swan is head of rail at Tarmac, one of the UK's largest private users of rail freight.



there is an immediate opportunity to step up construction's use of rail freight. This is particularly important in the context of another significant deadline – the government's target to halve the construction sector's carbon output by 2025.

Using current analysis, transporting materials by rail produces around 70% less carbon dioxide per tonne compared with the equivalent road journey. While HGVs will likely always play a role in going the last mile to deliver materials from freight hubs to sites, over longer distances, a tonne of materials can travel significantly further on a gallon of fuel by rail compared to the same journey by road.

*“The NIC’s interim freight report explicitly referenced the need to protect key mineral product facilities such as rail connected terminals, depots and wharves close to urban centres where materials are used from inappropriate adjacent development.”*

connected terminals, depots and wharves close to urban centres where materials are used from inappropriate adjacent development. Competing land use pressures are putting these critical strategic sites at risk. Encroaching residential development can lead to retrospective operating constraints due to noise and traffic when these sites need to be active 24/7.

National policy intended to safeguard these sites is being sorely tested by the political pressures of the housing crisis. It's encouraging that Better Delivery calls for new planning guidance to support intelligent development control in the context of freight. This must be developed with urgency and – crucially – with sufficient representation from our sector.

By working closely with policymakers, we can continue to drive modal shift towards a more efficient and sustainable construction industry. Let's not waste the opportunity.

More and more projects are taking advantage of these benefits, with record volumes of aggregates, cement and other construction materials moved by rail freight last year and further growth of over 3% annually predicted. However, achieving this will require more capacity to be built into the network, improved access to new terminals and certainty from policymakers.

The NIC's interim freight report explicitly referenced the need to protect key mineral product facilities such as rail

# Businesses need to invest in a more diverse workforce

**W**hy do men want to work in the industry and women don't? The term civil engineering is often misinterpreted and commonly associated with being a career for men. However, the definition of an engineer is someone who designs, creates and connects the world around us. They enable towns, cities and people to thrive. If this is true, why would men want to pursue a career in the industry and not women?

With only 12% of females following this career path, the UK engineering industry has faced great difficulty in inspiring young women to become engineers. The most likely reason for this is a lack of understanding about what engineering involves and how broad this area of study can be. It's also fair to say that growing up, people often associate engineering with construction, building and men.

Society has often stereotyped this field as male dominated, which can be a damaging perception for aspiring female engineers. Although society plays a vital role in influencing women, there are other factors that must be considered. Businesses need to act and invest in a more balanced workforce and encourage diversity. There is a lot of pressure on women who decide to settle down and start a family during their career. They might fear they will not be as skilled to do the job after time away on maternity leave.

Several companies, including AECOM, now offer return to work programmes, which can be hugely beneficial. To attract more women into the profession, more businesses will need to come on board with this idea and support similar initiatives. In addition, flexible working is another key factor that must be considered.

Women bring a different perspective and can add to the creativity needed in our industry, but there is still a lack of information available to sell the sector to prospective new joiners. Civil engineering opens up great career opportunities and it's about finding your niche. Having worked in the industry for seven years, I have experienced a lot of these amazing opportunities and want to encourage more aspiring young females to join it.



**Kristina Scheibler-Frood** is a principal structural engineer at AECOM.

Read more online at  
[www.infrastructure-intelligence.com](http://www.infrastructure-intelligence.com)



# “We’ve been the digital twins for

Last October, Bentley Systems launched a new campaign to help firms in the infrastructure sector to embrace digital change. *Andy Walker* spoke to three Bentley experts about the progress of their Going Digital initiative and what they’ve learned to date.

The recent ACE Digital Leadership Conference saw Bentley Systems chief communications officer Chris Barron, chief information officer Claire Rutkowski and principal application engineer Glen Worrall, speak about their Going Digital campaign, specifically around the issue of digital twins. I caught up with them at the event and asked them how the initiative was progressing.

“There are some firms and organisations that embrace digital fully and are moving quickly and we are learning from them and there are also others that say: ‘I don’t even know where to start – I think this is a good thing, but can you help us?’” said Chris Barron. “Our digital assessment tool has helped us to start the conversation and the first iteration of that was fairly generic and now we’ve taken we have learned and doing more industry-specific questionnaires, refining that to come up with an assessment that is even more useful to the user based on what industry they are focused on,” he said.

I asked how they take people with them on that digital journey, recognising that some are at different levels. “It depends where they are on that journey,” said Glen Worrall. “We have an example of a European company where they approached us to say ‘let’s work together to deliver our business outcomes and then look at how we apply those technologies’. In those instances,



**Chris Barron,**  
chief communications  
officer, Bentley  
Systems.

we put a success plan together and we work with them on their outcomes.”

Barron stressed the important role of leadership in the process of digital transformation, something that Claire Rutkowski is also keen to highlight. “There has to be a roadmap and there has to be an overall plan and if it’s purely bottom-up everybody’s going in 50 different directions,”

she said. “I think you need some leadership to set the overall strategy for the firm and then everybody can play their

*“If you look at the level of thought that’s going into the processes and standards that need to be developed, particularly here in the UK, it’s quite encouraging - we aren’t shouting in the dark any more!”*

**Chris Barron,**  
chief communications officer, Bentley Systems

*“I think you need some leadership to set the overall strategy for the firm and then everybody can play their part, but there has to be leadership.”*

**Claire Rutkowski,**  
chief information officer, Bentley Systems

part, but there has to be leadership. It doesn’t necessarily have to be a chief digital officer, it can be a commission of passionate people who come together, but there has to be some leadership to get everybody moving in a similar direction,” said Rutkowski.

Given that the government’s infrastructure tech tsar Mark Enzer has highlighted the need for firms and suppliers to work together to avoid chaos in the digital space, how does a technology firm rise to that challenge of collaborating and sharing information in a highly competitive industry?

Worrall said it was normal for them to collaborate. “We are a major technology supplier to HS2 and their JVs but we have to work together because we would have a conflict of interest if we were to say ‘this is the best way to do it’” he explained. “So, we are working together with all the JVs and they are now coming up with



# Thinking about for a long time”

good practice, rather than four or five different practices, to say this is a better way of delivering the programme and information in a more common way to help the overall project,” said Worrall.

Barron was in full agreement. “Our reality is that virtually every one of our user organisations use our competitors’ software as well as ours, so we understand the need to have interoperability, to be able to make our information sharable with others,” he said. “We exchange data libraries with Autodesk to help our users because if you don’t make users successful, then we won’t be successful. Sometimes it’s painful and a little scary when we issue open source for our iModel.js, but we also believe that if we do the right thing then at the end of the day we will come out ahead,” Barron said.

The digital twin agenda is been spoken about more and more and Bentley has been instrumental in pushing it for quite some time. In that



**Claire Rutkowski,**  
chief information officer,  
Bentley Systems.



**Glen Worrall,** principal  
application engineer,  
Bentley Systems.

light, I asked Barron what he thought about the issue becoming increasingly talked about in the industry and by government.

“If you look at the level of thought that’s going into the processes and standards that need to be developed, particularly here in the UK, it’s quite encouraging - we aren’t shouting in the dark any more!” said Barron. “This year at our Year in Infrastructure conference we’re going to be showing real examples of our users’ digital twins and there’s no better way to bring others along than to highlight successes and what’s been learned,” he said.

“Our Year in Infrastructure conference awards programme is about identifying projects that were successful and innovative with the leverage of new technology, whether it’s in the design and development, project delivery or asset performance. The engineering community is unique. They do like to share information and to learn from their peers’ successes, so we try to leverage that in our awards programme to shed light on those projects.”

Finally, I asked Rutkowski, why should firms partner with Bentley on their digital advancement programmes as they look to transform their businesses? What would her message be to those firms? “My answer would be that we have had a vision for a number of years and that vision is becoming a reality,” she said. “So, we’re not new to this game of talking about digital twins; we’re not new to the game of iTwin services. They should partner with us because we’ve been thinking about this for a long time,” said Rutkowski.

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*“We are a major technology supplier to HS2 and their JVs but we have to work together because we would have a conflict of interest if we were to say ‘this is the best way to do it.’”*

**Glen Worrall,**  
principal application engineer, Bentley Systems



# Airport plan to help Teesside take off

The proposed nationalisation of a northern airport became a major political issue and helped a local mayor win a closely fought election. *Rob O'Connor* reports from Teesside on plans to revitalise Durham Tees Valley Airport.

It's not often that a local mayoral election is decided on a potentially key infrastructure project, but that's exactly what happened in Teesside in 2017.

Once a buzzing regional hub, Durham Tees Valley Airport had endured a torrid 15 years; buffeted by falling passenger numbers, controversial surcharges, crippling passenger duties and a string of airlines that had withdrawn their services.

The airfield began running passenger flights in the 1960s and became Teesside International Airport, owned by an amalgamation of local authorities, later to be Cleveland County Council. After the abolition of the county council in 1996, the airport ownership transferred to the remaining five Teesside authorities of Darlington, Hartlepool, Middlesbrough, Redcar and Cleveland and Stockton-on-Tees.

In 2002, the authorities controversially decided to sell off the airport, and Peel Airports Ltd was selected as the preferred partner, taking a 75% stake in the airport. Hopes were high that Peel could kick-start a rapid development programme on Teesside and double passenger figures to 1.5m in five years. But a re-brand in 2004 and controversial new name - Durham Tees Valley - divided opinion among Teessiders, who branded it a "backward step" and a "crazy waste of money".

Fast forward to 2017, the airport was losing around £2m a year and had seen passenger numbers collapse from a peak of 910,000



**Ben Houchen,**  
Tees Valley mayor.



**Durham Tees Valley Airport.**

in 2006 to 140,000 just over a decade later. And that's when the newly created Tees Valley Combined Authority (TVCA) came into the picture.

Creating the role of Tees Valley mayor unlocked £513m of government funding to be spent in the region, with key spending decisions being made locally, rather than by civil servants and politicians in London. Convinced the airport could be a significant economic asset, Conservative mayoral candidate Ben Houchen launched his campaign by pledging to take the airport back into public ownership. The pledge was the stand-out feature during the election campaign and brought shockwaves when Houchen was elected on 4 May 2017.

For a previously solid Labour area, the role the airport played in a Conservative mayor being elected was hugely significant, but there was still plenty of work to do. Despite ongoing losses, Peel initially insisted the airport was not for sale, and the leaders of the five local Labour authorities all dismissed the new mayor's ambitious plans as a "vanity project".

Then, last December, news came that Houchen and Peel had agreed a deal to bring the airport back into public ownership, with the TVCA buying Peel's 89% shareholding and 819 acres of land for £40m. With a total investment fund of £513m, the mayor's plan would see just over 6% of that fund being used to bring the airport back into public ownership, meaning, he said, "zero impact on people's council tax bills, zero impact on public services and zero impact on businesses".

"Taking back control of our airport







Tees Valley mayor Ben Houchen with Stobart Group director Kate Willard and Peel Airports chair, Robert Hough.

presents a once in a generation opportunity for the Tees Valley to find its voice again,” Houchen said. “We won’t just be competing with Newcastle, Leeds or Birmingham - success depends on our ability to work, trade and collaborate with old friends and new allies around the world. With a new plan, new leadership and a new vision, the People’s Airport will pay for itself,” he claimed.

However, the plan still needed unanimous backing from the five leaders of the sceptical Labour-led authorities at a special TVCA cabinet meeting in January earlier this year. But a hugely positive PR and social media campaign won overwhelming public and business support, putting the five council leaders under unprecedented pressure, with Houchen stressing that, should the deal not work, the land value itself would outweigh the price paid to take the airport back under public control.

40 leading Teesside businesspeople wrote to the local Labour leaders, urging them to back the plan and Peel also admitted that, unless the deal went through, the airport’s future was extremely uncertain after 2021. Public support was so overwhelming that the five council leaders had no option but to finally back the plan,

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***“We won’t just be competing with Newcastle, Leeds or Birmingham - success depends on our ability to work, trade and collaborate with old friends and new allies around the world. With a new plan, new leadership and a new vision, the People’s Airport will pay for itself.”***

**Ben Houchen,**  
Tees Valley mayor

which saw the airport transfer back into public ownership.

“It was the reason I got elected and I’m delivering on the one single thing that got me elected,” said Houchen, speaking to the Financial Times. Six months after that landmark vote, ownership has transferred to the mayor and TVCA and the airport’s long-term future is looking positive.

Stobart Group were appointed as airport operator in March, a new management team is now in place, and a ten-year masterplan is currently being developed. The plan aims to deliver a ten-fold increase in passenger numbers, ten new routes, a low-cost carrier and increased freight.

TVCA say that Stobart has a proven track record, having successfully run London Southend Airport since 2008, increasing passenger numbers from 5,000 in 2009 to 1.5m in 2018. Houchen said: “Stobart is a huge company with significant experience, knowledge and expertise in the aviation sector. They will hold a minority share in our airport with a clear and overwhelming incentive to turn it around.

“This airport has been run into the ground and was just months away from closure, but we will bring it back from the brink and turn it around. We have the plan and we have the right partner on board to make it happen. Teesside is taking off!”

Plans are also underway to change the airport’s name back to Teesside International Airport by the end of this summer. Will the airport and the local economy take off as mayor Houchen claims? Time will tell.

# Nice, but BIM...

BIM is undergoing both a subtle and expansive change. If truly embraced, it could be the disruptor the built environment sector has been waiting for, says *Rajiv Sudan*.

**T**he BIM (Building Information Modelling) acronym has been with us for so long that it is now pretty much embedded in the infrastructure vernacular. But do we – as developers, designers, builders and operators – actually understand its true significance and enable real benefits to be achieved? There is a common misconception that equates BIM to just developing 3D models which now needs to be debunked.

As a self-confessed BIM layperson, I have been impressed and comforted by the fact that there is strong momentum to



**Rajiv Sudan** is a vice chair of the Association for Consultancy and Engineering and is an independent strategy advisor in the infrastructure space.

internationalise the current suite of BIM standards. This is important on several counts. Firstly, the UK has been a leader in this field, but the BIM community is large and has many voices. This needs convergence and a single, coherent model can be communicated across all sectors and their respective communities.

Secondly, the true benefit of BIM is not so much about 3D visualisation but more about better managing information during the lifetime of the project and beyond. This leads to better decision making, which in turn, leads to better outcomes and mitigates risks. I believe this assurance piece that the new international BIM standards bring is a game changer. We are currently in an environment where the project management of big UK infrastructure has received negative publicity and this trend needs reversing.

Finally, with a couple of the Level 2 Standards have already been published earlier this year as International Standards (via ISO) along with transition



guidance, we now have the beginnings of framework for information exchange in a global context, thereby enabling better collaboration across supply chains, irrespective of geography.

This move to a new set of international standards with its focus on managing information should bring

about a real cultural shift in the way projects are designed, delivered and operated. This also ties into the way project teams are set up – the organisational psychology of the project is as important as the project brief and protocols.

A footnote to this is to ensure that SMEs do not miss out on the BIM revolution, even more so given the changes outlined above and the economic climate. Trade bodies such as the Association for Consultancy and Engineering are offering digital outreach via seminars and special interest groups, but we as a profession need to increase the BIM awareness of SMEs. Skill sharing with SMEs is becoming a key tenet of public procurement and this needs to continue with the appropriate KPIs. In addition, there are third party providers of BIM technology that are set up to support SMEs or new entrants to the sector.

BIM is undergoing both a subtle and expansive change. If truly embraced, I see this as being the disruptor' the built environment sector has been waiting for. BIM has so far been a nice to have but it has so much more to offer.





# No resources, not no deal, is post-Brexit danger

As the UK prepares to leave the EU, the big risk is not environmental regulations being weakened, but a lack of resource to update and deliver them, says *Matthew Farrow*.

As the Conservative leadership campaign gathers pace, in terms of Brexit – all results are still possible. Boris insists that ‘no deal’ on 31 October is an option, a negotiated deal (probably following a further Article 50 extension) is also clearly possible, leading to a ‘medium’ or ‘soft’ Brexit, while a second referendum which could lead to remaining in the EU could also happen.

Strong support for remaining in the EU and for EU green policy in general has been the norm in the environmental community for many years. So how worried should we be that our environmental standards are under threat, particularly with Michael Gove probably in his last weeks as environment secretary?

My view is not all that worried. While we must avoid complacency, most scenarios do not seem likely to lead to the much-feared ‘race to the bottom’. Clearly if we remain in the EU, we will continue to be subject to the union’s green laws (possibly with some loss of influence depending on whether the EU-27 are delighted we’re staying in or wish we’d never joined in the first place).

Let’s look at the other options. Under the so-called ‘Norway’ option, (EEA membership), we will still be subject to nearly all EU environmental directives. Norway also has significant informal influence on drafting new EU green regulations, though again the

aftertaste of Brexit may make that less likely for us.

If on the other hand, something like Theresa May’s deal does become the basis for leaving, then there will be a two-year transition period when EU green policy still applies and is enforced by the EU. This would then be followed either by the infamous Northern Ireland backstop arrangements, in which the UK has committed to ‘non-regression’ from EU environmental standards, or by a future trading relationship in which the EU and UK have both already pledged (in the ‘political declaration’) to work together to ensure high environmental standards and discuss “continued level playing field commitments”.

But what about ‘no deal’? Surely then we might see a bonfire of regulations? Maybe, maybe not. It’s unlikely a new PM would repeal the new legal commitment to net zero emissions, so a strong decarbonisation drive seems likely, especially with London expected to host next year’s international climate change conference COP 26. We would also still be subject to international obligations e.g. the Biodiversity Convention. And we would still want some sort of free trade deal with the EU, in which the EU parliament is already insisting on environmental regulatory alignment.

In practice, the bigger risk is not regulations being weakened, but a lack of resource to update and deliver them. Just last week Defra admitted it needed to make further changes to the transposition of EU chemicals regulation as it had underestimated the complexity of the task. Environmental policy is complicated, and a regulatory framework that becomes dated and under-enforced is not going to help anyone.



**Matthew Farrow** is director of the Environmental Industries Commission, the leading trade body for environmental firms.

EIC’s Matthew Farrow says it’s unlikely that a new PM would repeal the new legal commitment to net zero emissions and a strong decarbonisation drive seems likely.



# Changing mindsets for better procurement

Consultants spend a disproportionate amount of time engaging in bidding, contracting, or settling disputes. It doesn't have to be this way, says *Hannah Vickers*.

**I**f consultants spent 30% less time engaging in the bidding process, contracting, or settling disputes, we could double the research and training time available to our staff. Imagine the difference that would make to productivity and fee-earning potential? An ambitious target, surely?

As I recently stressed to the public administration and constitutional affairs committee, time spent on bidding and procurement is increasing, often because of commercial strategy development. This phase, including market sounding, is crucial to setting up the commercial environment to support success and involves determining the need for outcomes to be delivered by any potential procurement.

Such decisions need careful consideration to develop a clear brief for procurement to deliver against. Project 13 sets out some existing best practice ideals, however it is not always appropriate



**Hannah Vickers** is chief executive of the Association for Consultancy and Engineering.

to include these in each commercial engagement and strategic conversations with the market will help to prepare both parties to enter a successful proportional procurement exercise.

In responding to the procurement process, businesses need to carefully consider how they utilise their bidding resource. In deciding what to bid for, businesses must balance the time needed and their confidence in awards/pipeline of work. If this is wrong, it can undermine the client's ability to attract the most suitable businesses to bid, benefitting no one.

And, of course, this isn't just about cost and time. Risk is also a consideration when putting together contracts. If there is no limit of liability in an appointment, then the consultant's liability is unlimited. This exposes the consultant to liability in excess of their professional indemnity (PI) insurance cover, which could result in liquidations and little or nothing being recoverable in the event of a claim.

Additionally, limited company directors have a duty to protect the company's assets. Sometimes, this is serious enough to discourage bidders. This may also limit opportunities for SMEs to bid if they are unable to assume unreasonable risks. Consider the negative effect on the tenderer if risk-conscious firms are put off bidding - they are effectively selecting against themselves.

The approach should be more akin to that taken by an investor working in partnership, rather than seeking to fulfil a contract. This would enable clients to support a sustainable market and incentivise risk mitigation, rather than its transfer down the supply chain, as well as avoiding unintended consequences like accelerating the hardening of the PI insurance market.

In the short term, ACE has launched a best practice guidance note to lead consultants through the procurement minefield and we'll be offering market sounding to help all parties manage risk and achieve their aims. In the medium term, we'll work with the industry to drive change which rewards value-added, rather than work volume, leading to a long-term shift in the mindsets through our Future of Consultancy campaign.

We can't remain silent. We need to mitigate risk, and support clients to make informed decisions about their work, enabling both clients and consultants to better understand each other's drivers and constraints to agree on a balanced route. ACE is bringing its members together to change the sector's mindset and push best practice forward.





# Women take centre stage at industry awards

The winners of the 2019 Consultancy and Engineering Awards were announced by an all-female presentation team at a glittering event in the capital.

**A**t a ceremony that bucked usual built environment trends, an all-female presentation team championed the best people, initiatives and companies from across the industry and presented the winners of the ACE 2019 Consultancy & Engineering Awards.

The winners, chosen by a panel of expert industry judges headed by Roger Bailey of Tideway, were announced at ACE's black-tie dinner on 6 June in London. The event, hosted by CBRE's Amanda Clack and AECOM's Charlotte Jones, who won last year's Apprentice of the Year award, featured Heathrow's Emma Jane Houghton, Huda As'ad of the Infrastructure Projects Authority, the DfT's Catherine de Marco, Dr Tauni Lanier of Eco-Capital, and Georgia Hughes of Arcadis, who chairs the ACE Emerging Professionals group.

ACE chief executive Hannah Vickers challenged attendees to spot the difference between the ACE's awards and every other industry event they had attended, saying: "To those of you who say there aren't enough women in the industry or you just can't find female speakers, I'm sorry, but you're just not moving in the right circles. Try harder."

Vickers also challenged attendees to use every business situation and opportunity to develop and celebrate the success of staff at every level.

"Instead of focusing on the usual corporate entertainment for tonight's celebration, we felt it more productive and intuitive to invest that money in further training and development for our co-host this evening, Charlotte Jones of AECOM," she said.

"As business leaders, we should be supporting our teams from the ground up. I'd like to congratulate all of our winners and nominees, who have shown that the future of consultancy and engineering is incredibly exciting," said Vickers.



## The winners

### Future of Consultancy -

#### Integrated Project Team of the Year, Public Sector Client

Winner: Arup – DNRC project team

### Future of Consultancy -

#### Integrated Project Team of the Year, Private Sector Client

Winner: Arup – Welsh Water Alliance

Highly commended: BuroHappold Engineering

### Best UK Business Performance -

#### micro organisation (less than 10 employees)

Winner: Rail Power Solutions

### Best UK Business Performance - small/medium sized

#### organisation (10+ employees but less than 250)

Winner: Geo-Environmental Services Ltd

### Best UK Business Performance -

#### large organisation (more than 250 employees)

Winner: Pick Everard

Highly commended: Curtins

### Future of Consultancy -

#### Strategic Planning & Placemaking Champion

Winner: WYG

Highly commended: Arup

### Future of Consultancy -

#### Data Led Asset Performance Champion

Winner: Amey Consulting

### Environmental Initiative of the Year

Winner: IMC Social and Environmental Safeguarding Team for Freetown Landfill Feasibility Study

Highly commended: Mott MacDonald for Embedding PAS2080

across a global business

### Emerging Professionals Employer of the Year

Winner: WSP

Highly commended: IMC Worldwide and Stantec

### Emerging Professional of the Year

Winner: Philippa Jefferis, IMC Worldwide

Highly commended: Elizabeth Side, Jubb Consulting Engineers Limited

### Apprentice of the Year

Winner: Elliott Webb, Arup

Highly commended: Willow-Athena Hempell, WSP



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# Rail Power Solutions

## Best UK Business Performance (micro organisation)

**R**ail Power Solutions (RPS) won the prize for Best UK Business Performance (micro organisation) after impressing the judges by improving the efficiency of rail maintenance work and achieving financial success. RPS provides electrical design consultancy services for the railways and plays a key role in the rail industry.

Their entry highlighted their work with Network Rail to maximise the productivity of the outage windows for rail maintenance and they achieved this by developing time-saving technology that allows them to be more productive in carrying out vital maintenance work, giving passengers more reliable journeys.

One of the contractors that RPS has worked with praised the firm for the continued support and expertise they have provided on various projects.



“Commitment to detail and a willingness to fully engage has been shown from the outset,” said Kier and “in particular their knowledge of substation earthing design and their ability to work closely with us on construction has helped us achieve ‘Route to gold status.’”

Between 2016 and 2018, the company increased its annual turnover by 148% and achieved a similar increase in profitability. The judges praised RPS for improving productivity and efficiency whilst “demonstrating significant growth in annual turnover and profitability, providing a platform for sustainable business”.

# Geo-Environmental Services

## Best UK Business Performance (small/medium organisation)

**T**he award for Best UK Business Performance (small/medium organisation) went to Geo-Environmental Services, a firm that has operated for 35 years offering infrastructure and buildings design, transport planning, site supervision and flood risk management to a wide range of public and private sector clients.

Like the winner of the micro-organisation award, Geo-Environmental Services has increased both turnover and operating profit. They cited four key reasons for this achievement. The firm has invested time, money and effort in improving its IT systems and business processes to drive efficiencies, it has a strong team of employees who work



competently and effectively and their industry profile is higher, enabling them to win work because of their reputation for several clients. As a result, they have been able to raise fee rates without impacting on competitiveness.

The judges said: “This company has invested in improving and digitising their internal and client-facing processes, in their staff training and in improving retention, all of which has resulted in a better client service. This investment in staff and systems and in provisions to weathering marketing conditions, as well as being established on a number of blue-chip frameworks, has provided them with a platform for repeat business and future growth.”



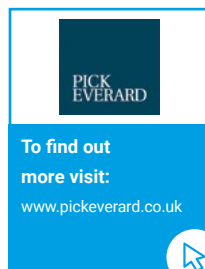
# Pick Everard

## Best UK Business Performance (large organisation)

**W**ith more than 500 staff in 13 UK offices and 150 years history in the UK property market, Pick Everard was a worthy winner of the Best UK Business Performance (large organisation) award.

Pick Everard had its most successful year ever in 2018, with a 19% increase in turnover and based on business performance they forecasted a turnover of £53m by the end of the financial year in April 2019. They also recorded an increase in profitability of 108% during the same timescale, a success, they said, underpinned by an increase of around £8,000 in average sales generated per fee-earning staff member.

In 2018, the firm also prioritised staff training and professional development,



with the employment of a learning and development advisor dedicated to developing and delivering bespoke training courses and assessing their outcomes. The first round of training saw a 55% increase in self-rated knowledge across the firm.

The judges said: "After much deliberation this company was chosen because they demonstrated a significant improvement in turnover (both in absolute terms and by employee) whilst maintaining a healthy profit margin. We were also impressed by the firm's investment in staff and its commitment to diversity and inclusion and in addressing the gender pay gap."

# IMC Worldwide

## Environmental Initiative of the Year

**D**efinitely a firm to watch, having won a number of awards in recent years, IMC Worldwide won the Environmental Initiative of the Year prize, an award which recognises an initiative or technology which has most innovatively and effectively delivered environmental value to society.

IMC Worldwide's entry was the Freetown Landfill Feasibility Study. Ongoing, rapid uncontrolled population growth in Freetown, Sierra Leone, has led to environmental consequences of significant magnitude generated by poorly managed waste. Poorly managed sites located in an area at known risk of flooding had reached their capacity limit, yet they continued to receive waste, posing significant environmental risks and contributing to public health and infrastructure challenges.

The advice given by IMC Worldwide



has been vital in preventing environmental damage taking place in three potential sites for landfill and in stimulating the city council to limit the environmental damage and pollution in existing sites. The firm also identified scope for sustainable waste management by providing recommendations on youth and community engagement, capacity building and scaling up solutions for recycling safely.

The judges were certainly impressed, saying that IMC Worldwide had "demonstrated an innovative and pragmatic approach in a challenging context on a project which has and will benefit the lives of the local community".

## Arup - DNRC project team

### Future of Consultancy - Integrated Project Team of the Year, Public Sector Clients

The winner of the Future of Consultancy - Integrated Project Team of the Year (Public Sector Clients) award was Arup for its work with Defence and National Rehabilitation Centre (DNRC) project, in which it has been involved for almost nine years.

The DNRC programme is unusual, being organisationally complex, funded by private donations, delivered by a commercial developer and occupied by a government department to carry out specialist treatment which is, in some respects, unique in the world.

Success was achieved because the entire project team shared a common purpose and worked together by putting achievement of the programme first. The integrated team culture was established and led by the client but grew into something much greater, generating a positive project culture which



was adopted by everyone from the board room to the construction site. Arup's role in that was a key one and the resulting quantitative successes of the project were significant.

With a £300m budget, the project is remarkable in charitable terms. The budget could not be exceeded and was not underwritten by government and the project was completed within budget with no residual claims or disputes. The supply chain worked together to deliver astonishing cost savings of £50m through genuine value engineering.

The judges said: "Both innovative and impactful, this integrated project team made a real difference, getting the leadership and governance spot on to deliver a truly worthwhile outcome."

## Arup - Welsh Water Alliance

### Future of Consultancy - Integrated Project Team of the Year, Private Sector Clients

Arup sealed a memorable double by winning the Future of Consultancy - Integrated Project Team of the Year (Private Sector Clients) award for its work with the Welsh Water Alliance.

The project involved migrating the alliance's existing collaboration environment, including 103,000 documents, to Welsh Water's collaboration platform of choice called Source. The project allowed alliance partners to seamlessly access the platform to manage their work and share knowledge and has delivered a new Welsh Water collaborative platform for the capital alliance.

Arup engaged with users, researched the application with Microsoft and trailed new out-the-box SharePoint features to develop and implement an exciting modern online cloud-based



technology. They provided the positive and secure end-user experience that was essential to the success of launching the new environment and realising the benefits of collaborative working.

They also engaged with end-users to define a clear scope to develop features, functionality, and governance in response to their business requirements. The judges were impressed with the work of the alliance, commenting: "While many projects use collaboration as a tool we felt that this entry took this one stage further by putting open shareable data at the heart of their delivery and leadership approach."



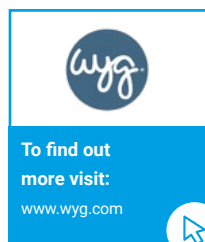
# WYG

## Future of Consultancy - Strategic Planning and Placemaking Champion

The Future of Consultancy – Strategic Planning and Placemaking Champion award is given to an ACE member firm judged to have demonstrated the most innovative and integrated use of placemaking principles during 2018. WYG met the key criteria for the award, impressed the judges and deservedly walked away with the winner's prize.

WYG's entry in this award covered the consultancies work on two projects – The Jennings, Porthcawl and George Street, Edinburgh. On the Porthcawl project, the firm's Cardiff planners coordinated planning delivery and listed building consent for the restoration of an abandoned historic building to bring it back into public use, provide new premises for local businesses and inspire further regeneration initiatives.

The Edinburgh project saw WYG



working in a complex urban environment 'locked' by a world heritage designation setting. The redevelopment of George Street and First New Town (GNT) delivered a high-quality, adaptable public realm design focusing on people, place, heritage and economy. The design team's approach centred around understanding the interrelated city centre projects which both inform and are informed by the GNT design.

The judges were impressed, saying: "A proactive approach to placemaking with authentic community engagement has led to the integration of both old and new to deliver high quality public realm."

# Amey Consulting

## Future of Consultancy - Data-led Asset Performance Champion

The Future of Consultancy – Data-led Asset Performance Champion award celebrates outstanding achievement in technology in the built and natural environment and recognises exceptional achievement by a company in opening up new markets. Amey Consulting were named winners by the judges for their entry, "Integrated Smart Management Systems on the Forth Road Bridge".

As I recently stressed to the public adIn December 2015, not long after commencing a five-year operations and maintenance contract for the Forth Road Bridge, Amey engineers were forced to close the structure following the discovery of a critical failure in one of the eight 'truss-end links' that support the deck at the main towers. At the time, some questioned whether the bridge would open again, but engineers, working day and night, designed



and delivered a unique repair scheme to resolve the problem.

At the time, no structural health monitoring (SHM) existed on the bridge. SHM was installed during the closure and used to support the safety case for re-opening the bridge. With its arrival, came an opportunity for Amey engineers to gain valuable insights into the behaviour of the bridge.

Amey Consulting developed a service that has now grown into a fully-integrated smart management system for major bridges that could be deployed to digitally-enabled structures across the world. The judges praised the firm for its "great use of modern technology and methods including artificial intelligence (AI). These methods represent a new value stream for consultancy."



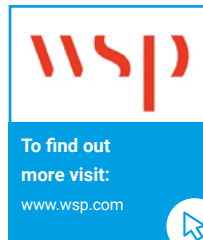
# WSP

## Emerging Professionals Employer of the Year

The Emerging Professionals Employer of the Year award rewards a firm's investment in training and commitment to the continual development of their workforce. WSP impressed the judges for the leadership the firm demonstrated in this area and for showing clear aims and positive, measurable outcomes and impacts on staff and the business.

WSP approach training and development from every angle they can - bottom-up through programmes for apprentices and graduates; top-down via programmes for leaders; a range of discipline-specific training and developing soft skills and confidence. The firm strives to make the options as flexible as possible, using different formats, methods and approaches.

The judges were impressed with the



range of development opportunities on offer at WSP. There is something for everyone, in every role and at every stage of their career. Staff clearly like that offer. In 2018, WSP's staff engagement survey asked people if they would recommend WSP as a good place to work and 88% said that they would.

The judges said that all three finalist employers were extremely strong contenders. However, they felt that "culture and values start at the top and WSP had provided strong evidence that they value the skills and ability of their staff rather than the number of years spent in the company".

# Philippa Jefferis, IMC Worldwide

## Emerging Professional of the Year

The Emerging Professional of the Year award is always hotly contested and this year was no exception, with a shortlist of eight candidates vying for the winner's prize. In the end though, Philippa Jefferis shone through and was a clear winner for showing passion and enthusiasm and a real desire to show how engineering can positively touch and affect people's everyday lives.

Jefferis's entry and subsequent appearance before the judges on judging day were deeply impressive. She wowed judges with her experience working on complex international projects, technical expertise, management and leadership skills and her work to promote engineering through a variety of avenues, including stand-up comedy!

The judges were impressed with



Jefferis's enthusiasm and passion for engineering "and for reminding us of the crucial role engineering and construction plays in enhancing people's lives". They commented: "A great communicator, this is someone who is clearly keen to 'bring engineering back to everyday life' to illustrate its benefits to society."

Judges also praised Jefferis's "keenness to engage with the media and her dedicated work as an ambassador encouraging the next generation of engineers, especially women, to pursue a career in a sector that really makes a difference to people's lives. A very worthy winner".



# Elliott Webb, Arup

## Apprentice of the Year

This year's Apprentice of the Year award was won by Elliott Webb, an apprentice highways engineer employed by Arup, based at the firm's Midlands office in Solihull.

Webb's engineering story started when he was 11 on a family holiday in France and passed over the Pont Du Normandie. "Upon seeing this magnificent bridge, I had so many questions about why it was just standing there and I wanted to learn more," he said. His first work placement was at a local engineering firm where he started to learn about the industry, both the technical and commercial aspects.

After completing his A levels, he joined Arup at the age of 18. "The thought of joining a consultancy which is globally renowned for the cutting-edge projects it delivers at such a young age was daunting," Webb said.

See more photos of the evening at: [www.acenet.co.uk/news/gallery](http://www.acenet.co.uk/news/gallery)



"That feeling was only enhanced when on my first day I was given the opportunity to work on HS2, the largest infrastructure project in Europe at the time," he said.

Notwithstanding his daunting start, the judges clearly held Webb in high regard. "We were impressed by this year's winner due to their breadth of engagement across the industry with the aim of championing the value of apprenticeship at all levels," they said. "We are confident that this year's winner will be a strong advocate and role model for others who are looking to enter our industry as apprentices," said the judges.

Pictured from left to right: Stantec (Highly Commended, Emerging Professionals Employer of the Year), Willow-Athena Hempell of WSP (Highly Commended, Apprentice of the Year), IMC Worldwide (Highly Commended, Emerging Professionals Employer of the Year), Curtins (Highly Commended, Best UK Business Performance - large organisation) and ACE chief executive Hannah Vickers and awards presenter, Charlotte Jones of AECOM.



# Inspire people and good things can happen

The final event in a series of three *Infrastructure Intelligence* industry roundtables, looked at a long-term vision for smart infrastructure and encouraging collaboration through the procurement process. *Andy Walker reports.*

The third and final *Infrastructure Intelligence* roundtable looking at different approaches to infrastructure delivery, focused on how to foster a clear government long-term vision for smarter infrastructure and what the industry to deliver that might look like.

Attendees at the roundtable, sponsored by Costain, heard Darren James, executive board member at Costain Group, ask “how do we create an environment where we can procure in a clever way and work much more smartly than previously?” The industry needed to be much more flexible and open to new ideas and people needed to “fail fast” if necessary, Jones said.

The example of autonomous vehicles was raised as an area where there has been much discussion about future technology but, as yet, no major progress towards a sustainable solution. This needed to change if the industry and the country was really to move forward in a vital area that was key to reducing the nation’s carbon emissions.

WSP’s Rachel Skinner took a more optimistic view on the issue. “Every vehicle sold since 2016 has the potential to become connected,” she said. “We have more appetite to try new things and our attitude ought to be ‘succeed fast’ not just ‘fail fast’,” said Skinner.

Costain’s Tim Embley argued for a more rounded approach. “We need an enterprise approach to innovation - you might not solve a problem on a particular project, but the experience may be helpful on others,” he said. He cited the example of HS2



where innovation was written into the contract so there was a constant process of learning.

Embley said that the industry was moving towards this more collaborative way of working as a result of client leadership and the march of innovation across the construction sector. “We also need to work together at the research stage to embed improvement and innovation and there is real potential for this in the UK,” said Embley.

Keith Waller from the Construction Innovation Hub said that it was important not to focus on the large major projects when looking at innovation as, important though these were, they did not represent the bulk of UK construction. “It’s not all about transport and the big sexy projects – we need to find other projects too,” Waller said. “There’s a lot of good things happening in the education and healthcare space and





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we need to learn from that work. We need to talk to each other more across the industry and stop inventing things that have already been done," he said.

The challenge, said Waller, was "how can we be more collaborative across the industry?". Things would only improve if people talked to each other, he said.

Alasdair Reisner from the Civil Engineering Contractors Association agreed but said that in his view "the industry is broken" and there needed to be much more discussion, debate and collaboration at all levels to fix it. Other attendees highlighted the conflict between having a long-term vision for what needed to happen and short-term cost constraints which were hampering the industry's ability to move forward.

The debate needed to move beyond the construction sector and into the social and political sphere, said a number of attendees. With £65bn a year of public money being spent on infrastructure, people needed to become more engaged in what they were voting for. This theme of public engagement around infrastructure has been raised at all the roundtables to date and it

***"Consultants can be rewarded beyond an hours-based contract and more for the value and difference they make as a result of their work."***

**Hannah Vickers, chief executive, Association for Consultancy and Engineering**

is clearly an issue that merits further discussion and debate.

Whilst the importance of engaging citizens was seen as important by all those present, given the fact that most UK infrastructure is delivered by private sector organisations, it was also crucial to put in place commercial arrangements to enable firms to make an adequate return. Only then could the right environment be created to deliver projects efficiently and effectively.

Martin Buck of Watling Fosse wanted the government to be more ambitious. "The government should find something exciting and run with it," he said. "Ambitious projects can lead to all kinds of benefits and spin offs and we can create some good things if we inspire people," Buck said. Of course, this was something that the UK used to do in the dim and distant past but not so much now, lamented several attendees and such ambition needed to be rekindled.

There was also a need for more engagement with politicians to convince them about the sustainable value of good quality infrastructure. The industry had been somewhat reticent to engage opinion formers in the past but now, at a time of political ferment and change, it was more important than ever to be talking with MPs, councillors and local mayors about the future and how best to shape it.

ACE's Hannah Vickers said it was crucial to stress the whole life benefits of infrastructure, including societal benefits as this was key to raising the strategic position of construction professionals in the industry and in society more generally. "Consultants can be rewarded beyond an hours-based contract and more for the value and difference they make as a result of their work," Vickers said.

Central to all this was creating an industry environment where innovation, cross fertilisation of ideas and working closely together was second nature. This would mean a change in the current ways of working and to the industry's structures to foster a more collaborative sector that was capable of delivering the world-class infrastructure the country so badly needs.

As ever, this latest roundtable threw up more ideas and questions than solutions, but the conversation is ongoing and with the right people in the room, good things can happen.

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# Natural capital valuing the e

ACE's Emerging Professionals London and the South East group held a round table event in May asking: "How can we 'value' the natural environment?" The discussions were illuminating, as the following report shows.

The event began with an introduction to natural capital before participants divided into four groups to discuss specific topics. There were some common themes which recurred throughout the event – namely the benefits of natural capital, how to measure it and ultimately, its monetary value.

Natalie Cropp from ACE's sustainability group gave a conversation-inspiring introduction to sustainable development – development that meets the needs of the present without compromising the needs of the future. She highlighted how the many sustainability frameworks which exist are all underpinned by the environment. However, even with these systems in place, there is a disconnect between investors, with no consistency throughout a project's lifecycle, said Cropp. She encouraged the audience to think about how they can influence and make an impact on a project and to contemplate the unintended consequence in design when only considering one aspect.

Head of sustainability at Hoare Lea, Ashley Bateson, chaired a discussion on "How can we communicate the idea of increasing natural capital in our projects?". Bateson said the challenge was "convincing the clients and the community to be

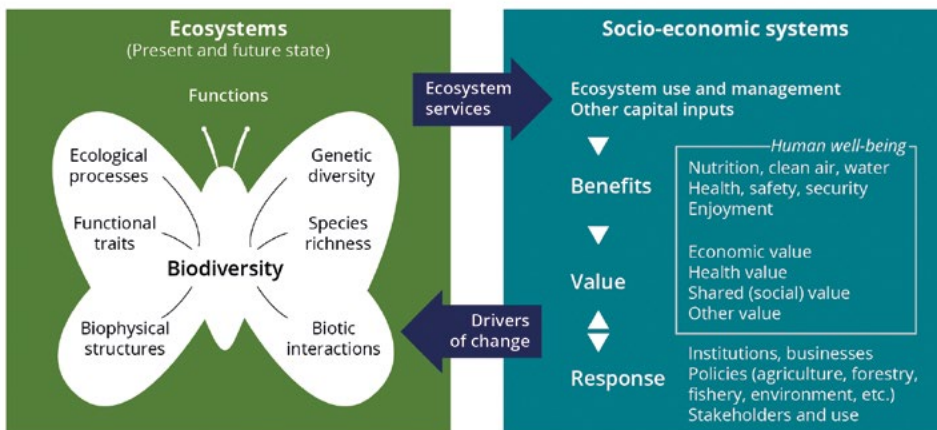


Tahira Newaz, chartered sustainability consultant at Stantec.

on board with the potential additional investment required to achieve a sustainable development".

It was quickly decided that increased messaging is required on the value to all parties that natural capital adds to a project. This chimed with another round table discussion led by Jacqueline Fookes, natural capital and ecosystem services lead at Mott MacDonald, who hosted the event, which asked "How we should value the natural environment?". Both groups were in no doubt that natural capital and sustainable development provided significant benefit to the wellbeing of the occupants of any project, however, more quantitative data is required to educate clients, project teams and communities.

Alongside wellbeing, another hot topic at the moment is responsibility





# tal and environment

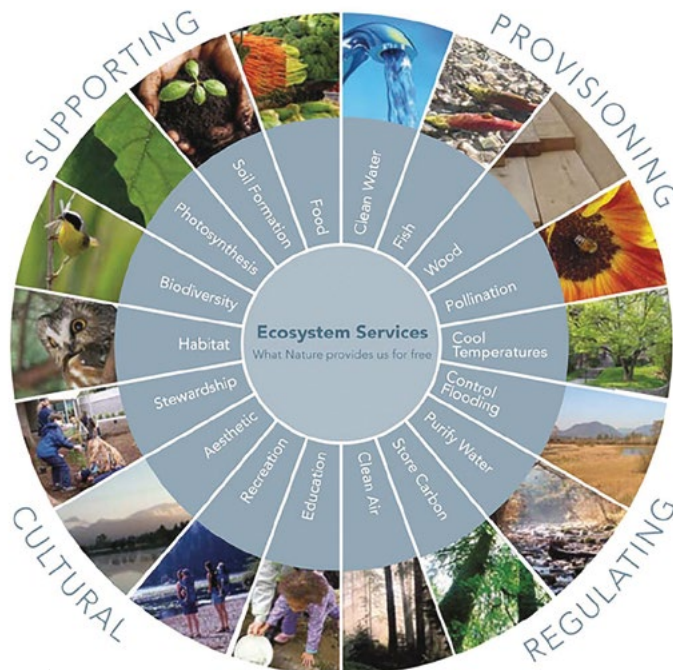
to the resources and environments of the planet. Using this influence, the communication and value of sustainable development can create a legacy for projects and a positive reputation for clients. However, the overriding consensus was that a project is predominantly driven by money, so a way of communicating the monetary value of natural capital is paramount.

Valuing the environment from a financial sense poses the risk of undervaluing the importance of the environment, but we shouldn't underplay money's ability to engage people and businesses. Participants discussed how data could be used to show direct correlations between sustainable development and monetary value.

For example, is the cost of greener technologies, such as green or brown roofs, cheaper in the longer term than traditional alternatives, or can natural capital be linked to a decrease in tenant turnover in developments. A combination of stakeholder engagement and a monetary value metric could be used to value the environment in a positive way which can lead to data-driven design solution which benefits all parties.

An alternative route discussed by participants was asserting higher accountability through legislation, standardisation and award schemes. This drives a lot of current values within the built environment, for example the value of protecting some species but not others, but is this a fair measure? With the discipline of natural capital in its infancy, do we need to take inspiration from more mature schemes, such as BREEAM?

Tahira Newaz, a chartered sustainability consultant at



Stantec, led a fascinating discussion on the challenges in measuring natural capital and how can consistency be achieved across the board. Her group agreed that there is currently no consistent way to measure and compare natural capital.

It is, of course, currently possible to compare two different options but this only allows the focus for a specific area. A green space in the centre of a city is likely to have much more value than the equivalently sized green space in the countryside, but how can we measure this difference? In addition, removal of natural capital in one location may increase the value of another area - the value of one city park following the removal of another may change.

In conclusion, participants were all agreed on the importance of natural capital and its benefit to local wellbeing of users of the project, the environment and wider issues such as climate change. There was also a resounding view that money is the predominant driver to projects and therefore research into the monetary value of natural capital or legislations and rewards schemes need to be in place to ensure this discipline is embedded within the design process.

How to measure this proved to be a more difficult question to answer and will require development as the discipline of natural capital grows. However, even with legislation, it is incumbent on all parties involved in projects to consider what each of us can do to promote natural capital in our roles to benefit the built environment.

*Thanks to ACE's Emerging Professionals London and the South East group committee members for compiling this article.*




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