

I INFRASTRUCTURE Intelligence

My crusade to transform project delivery

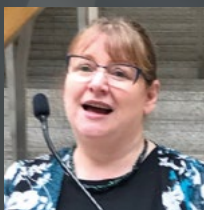
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Why construction
can no longer ignore
low profit margins

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itself heard

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WALES

The journalist
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one industry | one voice | one future

 #FutureOfConsultancy

ACE is launching the outputs of the first phase of Future of Consultancy.

Tuesday 15 October 2019
9am-11.30am

Kings Place, London NW1

ACE chief executive Hannah Vickers will be presenting the **Domestic Opportunities strategy**, which recommends how consultants can modernise their existing service offerings to support clients as well identifying and introducing new services. She is also launching the ACE **Exports Opportunities strategy**, which examines where in the world we can add UK consultancy expertise to give most value and sets out the most productive and expedient route in these markets.

Join your industry for the launch by registering for
YOUR FREE PLACE AT: bit.ly/FoCLaunch

or contact: events@acenet.co.uk

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Message from the editor



In normal times, when the chancellor of the exchequer stands up in parliament and promises an "infrastructure revolution", the whole of the construction sector would sit up, take notice and get very excited. However, Sajid Javid made his spending review pledge in the middle of the latest Brexit political maelstrom, so we'll have to see whether his promised spending bonanza actually happens.

More than three years on from the UK's vote to leave the EU, Brexit continues to dominate politics and affect business confidence. The latest construction figures are dire and there are reports from businesses up and down the country of confidence plummeting, staff lay-offs and workloads drying up. And all this before the further uncertainty of a potential no-deal exit from the EU.

Against such a background it can be hard to be optimistic, but the construction sector by its very nature is optimistic and forward thinking. We build things from scratch where previously there was nothing and we shape the future of our built and natural environment. The industry instinctively knows that it is infrastructure development that will drag the country out of its Brexit malaise and see the economy flourish again.

We need to continuously press the case with politicians - preoccupied though they may be - for good and sustainable infrastructure that will improve the lives of citizens and provide a much-needed shot-in-the-arm boost for our embattled economy.

We might not be living in normal times, but that's no reason not to stand up and make a positive noise about infrastructure.

Andy Walker,
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Gatwick sets out £1.1bn five-year investment plan

Gatwick Airport has set out its new five-year £1.1bn capital investment programme, highlighting more investment in automation and technology as an enabler of sustainable growth.

Gatwick is the UK's second largest airport, with 46 million passengers a year, and the airport's total investment since 2009, combined with this new five-year plan, rises to £3.21bn.

The plans are being backed by Gatwick's



How Gatwick's Pier 6 western extension will look when complete.

owners, VINCI Airports and Global Infrastructure Partners and the single biggest project to be delivered within the next five years is the Pier 6 western extension, which will offer over half a million more north terminal passengers the opportunity to embark and disembark their aircraft via a jetty-served stand.

Other new projects include:

- Check-in automation
- Expansion of both international departure lounges in north and south terminals
- Biometric auto-boarding technology development and next phase of testing
- Main runway technology optimisation
- Rapid exit taxiway
- New car park in the north terminal for 3,250 additional spaces from summer 2021
- Robotic car parking
- Infrastructure to support greater use of electric and hybrid vehicles

As part of the plans, Gatwick is also investing £37m to complement the £150m that the Department for Transport has committed to upgrade the airport's railway station. Work starts in spring 2020 and is expected to take two years.

Scotland's £7.5m EV boost

A new Scottish £7.5m public and private sector partnership is aiming to deliver more electric vehicle charging points and support infrastructure across the country.

The partnership includes Scottish government funding of £5m via Transport Scotland and at least an additional £2.5m from SP Energy Networks and Scottish and Southern Electricity Networks (SSEN). It will deliver trial projects to take place in 2020-21.

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SSEN will examine what electricity network infrastructure will be required to support the increasing number of people travelling to the north of Scotland by electric vehicles. Infrastructure needs for new charging points along the route of the Electric A9 will be also be identified and mapped.

In central and southern Scotland, SP Energy Networks will deliver additional public electric vehicle chargers integrated with the electricity network. The pilot project will develop a model to increase the pace, accessibility and efficiency of the deployment of public chargers.

Scotland's first minister Nicola Sturgeon said: "This partnership highlights the critical role that electricity networks have to play in delivering a zero-carbon energy system and in facilitating an electric vehicle revolution and the provision of clean energy for transport. This project will develop a new model for delivering both EV charging and electricity network infrastructure which can more effectively satisfy Scotland's ambitions, including delivering inclusive universal access to the benefits of the decarbonisation of transport."

"We have invested over £30m since 2011 to establish one of the most comprehensive electric vehicle charging networks in Europe. There are now over 1,000 points across the country as part of our commitment to help people make the move to low and zero carbon vehicles."



There are now over 1,000 electric vehicle charging points across Scotland.

Infrastructure 'revolution' could be frustrated by political events

An infrastructure revolution has been promised by the chancellor, but the current political crisis could scupper it, says *Julian Francis*.

The chancellor's spending review announced to parliament on 4 September promises a series of spending commitments which will benefit the construction industry, however we will need to await the outcome of current political events to find out whether these promises are worth anything or not.

Sajid Javid outlined a one-year spending review that aims to stabilise UK government spending in the lead up to and in the immediate aftermath of Brexit. Coming as it does so soon on



Julian Francis is the director of policy and external affairs at the Association for Consultancy and Engineering.



The chancellor Sajid Javid is promising an "infrastructure revolution", but will politics get in the way?

the heels of the loss of the government's majority and the possibility of an impending general election, it will carry less weight than a statement of this kind should.

The overall aim of the review is to ensure a real term increase in government spending of around 4.1% between 2019 and 2021. As part of this, the chancellor has called for an infrastructure revolution that will power British growth in the years to come, but that statement like much else besides, seems to lack the detail one would expect from the chancellor of the exchequer.

For the infrastructure sector, the true meat will come later in the year as Javid announced that he will publish the National Infrastructure Strategy ahead of the budget with, one assumes, far greater detail into how this revolution is to take place.

Our industry can take some heart from the announcement that the government will accept the public value framework as recommended by Sir Michael Barber's report. This is good news for ACE and its members as we have campaigned for this to happen. We feel that a focus on outcome rather than cost will lead to better delivery of infrastructure projects in the long term as it will allow the correct level of investment in design and planning at the start of a project which is currently lacking. We also welcome the announcement of the continued investment in the strategic road network and our rail infrastructure to the tune of £1.1bn and £275m respectively.

Although the chancellor's statement was light on facts for our sector, there is some hope that it might herald a new approach to infrastructure investment in the budget in November. However, given the state of our politics at the moment, we can be forgiven for not getting too excited at this time. There is a lot that needs to happen between now and then including the government winning a majority in a proposed general election.

Far from providing the certainty we would expect from a spending review statement, the chancellor has merely placed a promissory note before our industry and we must await the outcome of events to find out whether it is worth anything or not.

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HS2 to be delayed by up to five years



The transport secretary has informed MPs that that HS2 services between London and Birmingham will be delayed by up to five years to 2031.

Following a stocktake report from HS2 Ltd chair Allan Cook, transport secretary Grant Shapps has told parliament that the HS2 project from London to Birmingham will be delayed by up to five years until 2031. He also admitted that final completion of the northern section of the network is likely to be delayed by seven years until 2040.

Shapps's announcement to MPs, which comes before the outcome of a government review into the project which is due to report next month, also revealed that the budget for HS2 had ballooned from £56bn at 2015 prices to up to £88bn at today's prices. According to HS2 chair Cook, the main reason for the escalating costs and delay was ground conditions along the route. He also said that a staggered opening between 2028 and 2031, with an alternative London terminus of Old Oak Common rather than Euston until 2030, was probably a more doable plan.

The statement by Shapps will cast further doubt over the project, especially given the government's impending review. A "go or no go" decision by the end of 2019 has been promised once the government review submits its conclusions. That review is being led by former HS2 chair Douglas Oakervee and Lord Berkeley, a



Grant Shapps,
transport secretary.

longstanding critic of the scheme.

Commenting on the minister's announcement, Hannah Vickers, chief executive of the Association for Consultancy and Engineering, said: "ACE and its members welcome the clarity that the chairman's stocktake and the forthcoming Oakervee review will bring to the project. They recognise that we are delivering a different scheme, where both costs and, crucially, benefits are greater than initially envisaged."

"HS2 will be transformational to the country and it is right to be investing the time now to develop all phases of the scheme and to further reduce risk and uncertainty around the cost, benefits and schedules within the windows the chairman has provided. To deliver on this, HS2 needs to be engaging directly with our world-class consultancy and engineering expertise to support the development and planning for the scheme. We welcome the written commitment to collaborate more with the supply chain over the coming months and ACE and its members will continue to offer the best route and value in doing this."

Darren Caplan, chief executive of the Railway Industry Association, said: "This project remains vital for the UK, its economy, cities and regional communities. It will still more than pay for itself in GVA for the country and will support 30,000 jobs at peak construction." The CBI's director of infrastructure Tom Thackray commented: "The announcement of the delay is disappointing. But the message from business on the project remains consistent – build it, back it, benefit from it."

Shapps said the government remained committed to investing in modern infrastructure to ensure the future prosperity of the country but they needed to "subject every project to the most rigorous scrutiny and, if we are to truly maximise every opportunity, this must always be done with an open mind and a clean sheet of paper."

A wind of change for onshore wind development?

Increasing demand for electricity means addressing the regulatory and planning restrictions to encourage the development of renewable energy, in particular onshore wind, says *Adrian French*.

The government's commitment to its 2050 net-zero carbon emissions target has been widely welcomed however, to avoid this being an ex-prime minister's parting gesture, this now needs to be matched with a clear and coordinated action plan. Without positive and proactive policy, enabling regulation and industry support, the opportunities that clean growth can deliver could be diluted and the world-leading 2050 target compromised. This is a key challenge for the post-Brexit government to embrace as a matter of priority.

As championed by the business select committee recently, investing in energy efficiency is a key part of the roadmap to the 2050 target. Whilst improving energy efficiency in new builds is essential, the greater challenge is dealing with the existing residual stock, alongside the significant work required to de-carbonise the heating of new and existing homes.

National Grid has projected that electricity demand is expected to almost double by 2050 as we de-carbonise heating and transportation systems. The increased demand for electricity requires delivery of significant new low-carbon generation and this needs an urgent and fresh look at the planning and regulatory restrictions that have been holding back the onshore wind sector.

Alongside other new low-carbon and renewable energy

generation, the government needs more new onshore wind in the UK energy mix. It also needs to facilitate standalone and co-located energy storage assets which will assist the grid with integrating more decentralised and intermittent generation.

The government should amend the National Planning Policy Framework (NPPF) at the earliest opportunity, in particular to promote new onshore wind development and positively support existing wind farm re-powering and extension of life proposals.

Planning for onshore wind is still 'hamstrung' by business secretary Greg Clark's 2015 ministerial statement, which placed significant additional tests on these proposals. These included a requirement for new proposals to be located in areas identified in local plans or neighbourhood plans as being suitable for wind energy development.

Having located in areas identified as being suitable (a significant challenge in itself), proposals face a second and potentially very difficult test, namely that following consultation, applicants are required to demonstrate that the planning impacts identified by affected local communities have been fully addressed, and that the proposal has their backing.

Whilst the latter is left to the local planning authority to judge, for an authority not kindly disposed to new onshore wind development, it presents an easier route to refuse rather than approve. These unnecessarily onerous and inequitable policy tests, which were encompassed in the 2018 NPPF, combined with the removal of subsidies for onshore wind, have created a high risk and unfavourable climate for investment in new onshore wind development.

Much has changed since 2015. Indeed, a recent survey of Conservative party members suggests that onshore wind now receives significantly greater support than fracking. Perhaps this is a realisation that having committed to a clean-growth agenda and the significant challenge of achieving net-zero carbon emissions by 2050, a change of policy on onshore wind is now justified.



Adrian French is director of planning (energy and infrastructure) at WYG Group - A Tetra Tech company.



Construction can no longer ignore low profit margins

Low profit margins in the construction industry are not enough to invest in the future. Investment and change are needed, says one industry leader in the consultancy and engineering sector.

Striving to adopt a more reasonable 5% profit margin would help the industry build better client relationships, deliver higher quality projects, spread risk more equally and invest positively for the future, according to Geoff Hunt, Arup's chief operating officer for UK, India, Middle East and Africa.

As a key leader in the consultancy and engineering sector, Hunt's call for the industry to strive for a standard 5% profit margin to help ensure a positive future for both the industry and clients alike is welcome.

Construction can hit the headlines for all the wrong reasons, with high-profile budget issues and contractor failures all adding fuel to the fire in recent months and years. But ACE board member Geoff Hunt is confident that the industry can seize the initiative by offering realistic solutions to future client expectations, thereby ensuring better outcomes for both future delivery outcomes and investment.

"The industry can occasionally appear to be flawed and not capable of designing or building anything either on budget or on time," said Hunt. "And that's palpably not the case. We all know of - and are



Geoff Hunt, Arup's chief operating officer for UK, India, Middle East and Africa.

"When things go wrong, the industry can often find itself in lengthy, hostile and expensive disputes, a situation that has plagued the sector for many years."

proud of - projects that are delivered on time, to budget and which deliver great value to our clients' business. However, the industry and its clients are at the point in time when change is necessary, driven by the realisation that very low profit margins in the construction industry and in some areas of consultancy are not enough to invest in the future," he said.

Describing current low profit margins throughout the industry, Hunt said: "You can't do much with 1% profit. That barely covers enough to replenish your reserves. You can't invest on the basis of that and you can only make an investment if you make a reasonable profit," he said.

Falling victim to increased risk burdens is one reason why businesses get into trouble. "One of the reasons businesses fail is that they do not or cannot price risk properly and have insufficient opportunity to benefit from an upside," said Hunt. "That sounds obvious and has been the case forever, but I think

we're at a point where we cannot and should not ignore it any further," he said. "Moving forward, those risks should not get passed down to the contractor and supply chain, without a more balanced approach to risk and reward, as the contractors may have limited means of mitigating the risk to their business if they materialise," Hunt said.

When things go wrong, the industry can often find itself in lengthy, hostile and expensive disputes, a situation that the sector has experienced for years. "Everyone suffers from that, clients included," Hunt said. "And the time and costs of dealing with disputes can be extensive.



High-profile construction failures like Carillion have damaged the reputation of the industry.

If you totted that up across the industry it would be very significant,” he said.

Determined to make a positive change, Hunt is currently playing a leading role in industry discussions to map a clear way ahead. “ACE and other organisations across the industry are currently talking about more equitable risk allocation and proper recognition and rewards for the risks that you take. And part of that is an understanding that the industry needs more money to be able to invest in itself,” said Hunt.

“That self-investment has to come from profit; it can’t come from anywhere else. And if companies are expected to invest in the future then it needs to come from good solid predictable margins, rather than what can be an uncertain trajectory of making losses one year and making wafer thin margins the next. You can’t invest on that basis,” he said.

“And for that, there has to be more profit that is capable of being earned in the industry. That would lead to less disputes, higher quality, better predictability, and better long-term outcomes for stakeholders, owners, operators, users and funders. It might also help the industry attract the new skills we need,” said Hunt.

Looking to the future, Hunt said: “There’s a discussion piece we need to accelerate around how would we help a client or project funder accept the environment where more profit can be earned and the industry has more predictable outcomes.

For that added certainty of outcome, clients can hold us to account for long-term and whole-life value-driven contracts, so long as there is a real opportunity for upside benefit as well as risk taking.”

“Would that really make the project unaffordable from the client’s perspective? Potentially not, if it avoids downstream dispute and also avoids the risk that the output of the project does not deliver the actual aims and targeted outcomes - that needs a much longer

term view of how value is delivered and that’s what our industry has started to discuss,” said Hunt.

Hunt’s comments are straight and to the point. They certainly deserve further discussion by an industry that is currently examining its working relationships with all its stakeholders and considering new business models in the face of technological change. The status quo is clearly not an option.

“Moving forward, those risks should not get passed down to the contractor in the normal way at the moment, as the contractors have no means of staying in business if those risks materialise.”

Scotland's Emerging Professionals network

ACE's newly established Emerging Professionals group in Scotland is already off to a flying start, building active professional networks and raising the profile of their members, as *Rob O'Connor* reports.

Scotland's Emerging Professionals network has quickly earned itself an influential voice within the industry and beyond. Group co-chairs Callum Kerr and David Livesey spoke to Infrastructure Intelligence recently about the group's future plans and were keen to invite potential new members to join them on their professional journey.

Every successful industry needs a strong supply of fresh emerging ambition and talent to grow and thrive and Scotland's newly established Emerging Professionals group is already providing a great platform for new ideas to shine. Previously known as the ACE Progress Network, the new group has quickly laid strong foundations for growth and is looking forward to a bright future ahead.

"Although we've only just begun to get started in Scotland really, we're already building our presence and are getting a growing number of like-minded people together," said Callum Kerr, senior engineer at Goodson Associates. "We're working with ACE, building our own programme and organising events, looking to produce research papers and understanding how all those remits can have a positive impact in Scotland," he said.

The group have already held their first events, the first of which focussed on professional development and included WSP's UK CEO Mark Naysmith as a special guest. "We had a great turnout and we were really happy with that," said David Livesey, senior principal engineer at Jacobs. "The theme was kind of looking at the point in people's careers where you've maybe achieved chartership and we focussed on what people can do in that moment in time to help continue their professional development, at a time when

maybe the career structure falls away a little bit," he said.

"There's a really positive feeling around the gatherings," added Kerr. "And a really healthy active conversation, much more than a typical 'oh, how are you' type of event – a real and energising spirit."

Kerr and Livesey are both crystal clear that a mix of positive networking opportunities, engaging peer support and, more importantly, building an increasingly influential voice within the industry are all great reasons for new members to get involved in the group.

"I think a big part of it for me is raising profile and exposure," said Livesey. "Certainly, through being involved so far, everyone has had a chance to meet people at the leading edge of the industry. And I think in time it's going to open up more and more opportunities to go and do things, see things, meet people and to build an influential professional network. I think those things are there for the taking," he said.

"I think when I was younger, I was maybe a bit sceptical, thinking that these kinds of groups don't really get listened to," said Kerr. "But right from Hannah Vickers, CEO of ACE, right through to key and emerging influencers here in Scotland, they're



ACE chief executive Hannah Vickers and ACE Scotland manager Sam Ibbott speaking at a recent reception at Holyrood.

gging make their mark



David Livesey (left), senior principal engineer at Jacobs and Callum Kerr, senior engineer at Goodson Associates.

all really supportive of our new Emerging Professionals group.

"They are all keen to hear what we think, what we say and the Infrastructure Scotland Commission is actively looking for our opinions. So, it's quite refreshing not only to be sitting at the table as an equal, but also being asked what we think and where do we see things going in the future," Kerr said.

And it's with a sense of optimism, clarity and purpose that Kerr and Livesey see new technology, sustainability, the environment, and diversity and inclusion as some of the big issues facing the industry in the months and years ahead.

"I think, for me, sustainability is becoming more and more of a key issue," said Kerr. "And defining what that means for each different area of consultancy and how they can play their part in a much

bigger picture. And from a public point of view it's becoming more and more of a demand, rather than an expectation or a box-ticking exercise.

"Look at how houses are built now, and there's not much difference to how they were built 50 years ago. The problem is, too often now the cheap option isn't always the best ecological or environmental decision. So, harnessing new technology and new ideas and not just doing the standard thing is definitely a fresh way to start making a positive impact," Kerr said.

"One of the big things is the rate of change in technology, and how the industry can use that technology," said Livesey. "These things are just accelerating at such a rate that modern technology gives us huge opportunities. The other thing we need to challenge is diversity and inclusion. I think as an industry we're probably not particularly diverse and I think we need to be taking steps to try and increase diversity and benefit from all the fresh creativity that diversity brings," Livesey said.

For further information or to get involved with the Emerging Professionals group in Scotland, contact Callum Kerr at callum.kerr@goodsons.com or David Livesey at david.livesey@jacobs.com



Meeting the challenge of the 'i-generation'



Jeannie Edwards is HR director at Stantec.

Digital transformation will require businesses to embrace the post-Millennial i-generation and the challenges - and opportunities - they bring. Businesses in the built environment sector are facing some of the biggest and most profound challenges in its history as a result of the changes brought about through increasing digitisation and the effect this has on the workforce.

The younger generation are more demanding than ever, switch between private life and work life quicker than ever and expect employers to understand that. Digital developments and the generation that has grown up taking them

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“The younger generation are more demanding than ever, switch between private life and work life quicker than ever and expect employers to understand that.”

self-taught candidates, but also evaluate the risk of working with inexperienced people. Make no mistake about it, getting some firms to accept that is going to be a challenge, but it is going to have to be done.

The 'i-generation' comes to work, wants to innovate, wants more face-to-face involvement and wants to be involved and can be frustrated by traditional working methods and systems. This is a serious challenge that the industry is facing and there is a real need for firms to understand how the work culture is frustrating people. Companies needed to grasp this challenge by understanding what frustrates people and then deliver the skills that help them to work with other colleagues.

We can all think of examples of organisations down the years that have become irrelevant in a changing world because they had failed to use new communication tools effectively. That should be a warning to all firms in the construction sector. And, the changes and challenges brought by younger, more digitally native employees will only increase. A tsunami is coming and we are at the beginning of the change.

Digital transformation will require changes in many areas of construction businesses who will in turn have to embrace accommodating the post-Millennial i-generation and the challenges they bring, but also the benefits they offer. If we get this right, it could be the making of the industry and help to attract the skills and knowledge it so desperately needs.

for granted are leading to major staff challenges that construction firms need to be aware of and work with. This is happening now and we need to be prepared.

Traditional educational qualifications are now being challenged by online learning and this means that we have to think again about established routes into our industry. We have to rethink how we view



Benjamin Cunningham
is a trainee architectural
technologist at AECOM.

Apprenticeships – a great foundation for success

Many students are led to believe that going to university is the only way to secure a successful career. However, there are very few who are encouraged to pursue apprenticeships, and it's perhaps fair to say that in recent years apprenticeships haven't been given the respect they deserve.

Having studied at a school where going to sixth form was practically essential, it was automatically assumed that students would apply to further their studies and eventually go to university.

With a clear lack of understanding and information available in schools, a lot of people are unaware of the different options that are available to them. Some apprenticeships combine both A Level and degree level courses which enable people to complete the same degree as someone who goes to university.

Students are encouraged to learn on the go as well as receive a monthly salary. Some employers even pay for additional educational courses. Having said this, there is also a responsibility on businesses to improve the quality of careers advice in schools by working in partnership with various industries.

In November last year, AECOM combined its apprentice and

graduate development programmes. Apprenticeships are valued equally with full-time education as a route to achieving a bachelor's degree and a chartered status. To attract and retain the best talent, it is important businesses offer apprentices much more than competence training and provide them with the opportunity to develop wider business skills.

“Students are encouraged to learn on the go as well as receive a monthly salary. Some employers even pay for additional educational courses.”



Jacqueline Hughes
is a senior risk analyst
at risk management
consultancy, Equib.

Understand risk to improve infrastructure resilience

Large-scale UK infrastructure programmes can't afford to ignore calls from the World Bank Group for more investment to mitigate the risks posed by climate change. The World Bank Group estimates that \$90 trillion needs to be spent globally by 2030 on building and updating infrastructure.

And the Environment Agency's Draft National Flood and Coastal Erosion Risk Management Strategy for England highlights the need for greater resilience in order to mitigate climate change risks. However, as many project managers know, it can be difficult to build-in such resilience and set aside the contingencies required to protect critical infrastructure from disaster risks such as flooding.

Project managers must ensure that stakeholders understand the whole-life cost of the project and aim to address risks at an early stage in the design process. It is also important for project managers to prepare a detailed cost-benefit analysis, taking account of each proposed risk mitigation strategy.

For example; Environment Agency estimates suggest that a storm surge on the east coast of England in 2013 could have caused £37bn in economic damage to local businesses and homes had it not been for investment in flood defences. Such calculations provide compelling evidence that investment in

climate change resilience is worthwhile.

If stakeholders understand the impact that climate change risks can have, the easier it will be to secure funding for materials and methodologies which will deliver better whole-life outcomes.

“Environment Agency estimates suggest that a storm surge on the east coast of England in 2013 could have caused £37bn in economic damage to local businesses and homes had it not been for investment in flood defences.”

Be **bold** and claim our place at the

The leader of the world's largest business association representing consulting engineering firms is Linda Bauer Darr. She arrived at the helm of the American Council of Engineering Companies just over a year ago. She spoke to *Andy Walker* about her first 12 months in charge.

One year after she arrived at the American Council of Engineering Companies, I ask Linda Bauer Darr how her first year has been as ACEC's new president and CEO and what she had discovered about engineers after working with them for the past 12 months. "It's been a fabulous year and I hope my members are as happy as I am with the last 12 months," she said. "There's been a bit of a learning curve for me, because although I'm not totally new to the infrastructure sector having worked in transportation, working for an industry that represents a specific profession, engineering, that has been new to me."

Darr said she had spent her time at ACEC not only getting to know the organisation but also getting into the hearts and minds of engineers. She said it was an industry that has a real personality. "Engineers are smart, logical, problem solving, not totally risk averse but aware of risk, but at the core they want to help people, to fix things and make things better. For me that speaks to the humanity of engineering and it's been important for me to tap into this to be a convincing advocate for the



ACEC president and CEO, Linda Bauer Darr, pictured in Washington DC.

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industry," she explained.

An interesting and perceptive take on the engineering psyche from someone who clearly thinks deeply about the industry she represents. So, what about the opportunities and challenges facing that industry? The biggest, Darr says, is the commoditisation of engineering. "This commoditisation of engineering is attached to so many of the challenges and issues we are dealing with that we call by other names – for example quality-based selection – and it concerns how we value engineering and whether society appreciates the contribution of engineering as something that is unique," she said.

"The question of the commoditisation of engineering resonates through everything that we do, all of our policy issues and to some extent it also touches on the personality of engineering because there is a genuine sense of humility amongst the engineers I have met. This humility runs very deep and there is a challenge for engineers because it doesn't necessarily serve them well with their clients in a noisy environment like Washington DC, where

m table



so many important policy decisions are made that affect their businesses. This humility is a blessing and a curse and it's linked to engineers claiming their place in the business world and with clients. We need to find a way of using that to our advantage," she said.

As the leader of FIDIC's largest member association does Darr think that puts more responsibility on ACEC and its role within FIDIC? "I'm aware of the role that we play in FIDIC and I'm very honoured to be part of the FIDIC group. I'm very much a globalist and appreciate the challenges of being part of a global organisation. The opportunities are huge because of the perspective that you gain, but at the same time there are challenges because people



Linda Bauer Darr with USAID administrator Mark Green and former ACEC chair, Manish Kothari (right).

"There's been a bit of a learning curve for me, because although I'm not totally new to the infrastructure sector having worked in transportation, working for an industry that represents a specific profession, engineering, that has been new to me."

are coming at these same issues from so many different perspectives. FIDIC is such a unique and diverse group," she said. "I also want to make sure that, especially in today's political environment in the US, that I am a very strong representative of the United States," said Darr.

In terms of future focus, Darr again mentioned the value of engineering and fighting against the commoditisation of engineering. "As an industry across the world we are feeling the impact of people that don't appreciate the work that we do and the impact of our history of not speaking up for ourselves perhaps as loudly as we could have in the past. We need to change. Our voice needs to change. Our voice needs to be stronger and we need to talk about things that resonate," she said.

"The issues that the engineering industry deals with are central to societal issues that are making headlines in every paper across the world – resiliency, sustainability, extreme weather – all these things are what we do! We are thinkers, we are problem solvers. We really need to claim

our place at the table as thought leaders. We need to be more bold and able to speak in terms that resonate with the average person and when we do that we can address this issue of whether or not people truly value engineering and this challenge of the engineering industry being commoditised in a world where it's already ready noise and we see so much change and disruption. We need to cut through all that," said Darr.



Linda Bauer Darr co-moderating the infrastructure panel at the ACEC annual convention.

On a crusade to change project delivery

Emma-Jane Houghton, the commercial delivery director for Heathrow's expansion programme, is passionate about championing a different commercial response for 21st century infrastructure investment. She spoke to *Andy Walker* about her plans.

Straight-talking Emma-Jane Houghton is passionate about her job and someone determined to make a difference to the way that major projects are procured in the UK. As the person leading the commercial delivery of the Heathrow expansion programme, she is in pole position to pioneer a different approach to commercial strategy and procurement and to champion it.

"We are really engaging with the market to inform our commercial strategies, asking for input where expertise exists to inform how we should approach this and where the commercial risk sits," says Houghton. "We are discarding hierarchical supply chain thinking and evaluating supplier networks so that we get the very best of suppliers and advisors to respond to the delivery complexities and risks that we have," she explains.

Houghton has a steely determination to do things differently



Emma-Jane Houghton is passionate about championing a different

for the benefit of everyone who works on the Heathrow project. Collaboration is key to the approach she and her team will adopt. "We are approaching this as a capable owner where we will have different types of commercial models to reflect the delivery risk and complexities from one package to another, so it's not a 'one size fits all' approach," she says. The project will also embrace digital, putting it at the heart of everything and invest time and energy in monitoring and measuring suppliers to ensure that the project really does realise important regional benefits for the UK. "We are going to track data so that we can see that we have involvement from SMEs and we will streamline procurement in a way that is meaningful for both us and for our future potential suppliers and partners," Houghton says.

It is clear that Houghton's untypical background - she has a music degree rather than a construction degree - is relevant to the collaborative approach she



rent way of designing a commercial response to infrastructure investment.

is pioneering. “When I worked at T5 as my first job in the industry, I was surrounded by construction professionals in a team and I was so lucky that I was invested in left right and centre. It was wonderful and because of that good start and those wonderful people, from contractors, sub-contractors as well as from client organisations, it built confidence in me that I had something to add and I have always felt that I want to give something back to this brilliant sector that I care about so much,” she tells me.

As someone who has worked in a range of roles in the industry – as sub-contractor, contractor, QS, and latterly doing big four consulting work advising infrastructure boards – Houghton believes she has the experience to understand procurement from different levels. “Now, as a client, I can draw on all of that experience. I’m in charge of designing a fit for purpose model and that’s what I am on a crusade to do,” she says.

Houghton’s passion and enthusiasm shines through during our conversation and she is crystal clear about why she is taking such a pioneering approach. “Because I know it’s what will work,” she says. “I’m excited by the challenge that I see at Heathrow expansion and I know that this

“I’m excited by the challenge that I see at Heathrow expansion and I know that this approach is absolutely necessary if we are to meet all of our delivery challenges and deliver on our broader socio-economic objectives.”

Emma-Jane Houghton, commercial delivery director, Heathrow expansion programme

approach is absolutely necessary if we are to meet all of our delivery challenges and deliver on our broader socio-economic objectives. It is the commercial model and the market and supplier engagement that makes all of this happen. We can say all the aspirational stuff we want, but if we don’t engage with our partners and suppliers in the right way and incentivise performance around the risk that we have, then none of it ever happens.”

So far, the reaction from those partners and suppliers has been very positive. “I have done some market engagement with ACE and CECA and we’re building a very big network of all of the trade associations to get access to suppliers in the right way. We have had fantastic feedback and the market is excited about bringing their innovation and investment to collaboratively look at the delivery challenges that we have,” says Houghton.

According to Houghton, suppliers on Heathrow expansion will be working on a project that will enable them to do what they do best and one that will eschew the tried and failed methods of the past. “Typically, the industry has had contracts where a lot of risk has been placed on the contractor and it’s been their problem to sort it out when it shouldn’t be. In the past, we’ve engaged them late in the process, they can’t really help us design what we should be buying and they end up inheriting something that is not really fit for purpose - and so in part they have to build into the way that they deliver, mitigating and managing that mess. What I am doing is creating the right environment so that partners and suppliers can bring the best of what they do to bear on this programme, be truly successful and gain a legacy from that,” says Houghton.

It’s a strong message and if Houghton’s passion, desire and enthusiasm are any guide, then you sense that she will succeed in her aims to transform procurement. “I am determined to champion that there is a different way of designing a commercial response to infrastructure investment. We can do this in a much smarter way, she says.

Houghton wants to see her approach copied by other major projects. “If it isn’t, I will feel like I have failed because I won’t have proven that the model works. Part of me being successful is that this becomes the exemplar for how you do infrastructure delivery,” she says.



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Diversity is a journey

Diversity and inclusion in the infrastructure sector needs to be about diversity of thinking as much as it is about diversity of people, says *Jilly Calder* of Atkins.

A few years ago, we were in the position of having to convince our industry that diversity and inclusion was an area worth investing in. Today, it is almost a given. The skills shortage in engineering has made it an imperative for infrastructure businesses – we know if we continue to recruit only from the same pool we always have, we won't tap into the full potential of the workforce. We also know this isn't just about recruitment or attracting people into industry but keeping people there once they're in.

I am keen to share the diversity and inclusion journey we've been on at Atkins in the hope that it encourages more sharing of what's worked, and more importantly what's next, across industry.

When we first started looking at diversity and inclusion our immediate focus was addressing the gender imbalance – there were some stark numbers there we couldn't ignore. At Atkins, the focus on recruiting more women into early careers' programmes has paid off – in 2018 31% of our graduates were



Jilly Calder is vice president human resource at Atkins.

female and 26% of our apprentices.

When I speak to people in other industries they aren't always impressed by those numbers, but considering only 15% of undergraduate engineers are female, they are good figures. Increasing the number of women in engineering at the early career stage is essential if we want to get the gender balance right later on.

We have also started to see an increase in women in mid to senior level roles in the business due in part to initiatives like our award-winning women's development programme and unconscious bias training. But as always with diversity and inclusion, there is more work to be done here.

Atkins has started to see an increase in women in mid to senior level roles but there is still more work to be done.





Diversity and inclusion in the infrastructure sector can't just be about gender; it's a much broader issue, says Jilly Calder.

What I do find promising is that we've reached a point now where all our senior leaders at Atkins appreciate that a diverse and inclusive workplace is a must to deliver our growth and strategy. They see this not only from a commercial perspective, but from one of integrity - they recognise it is the right thing to do. This has been a real shift in the conversation, and in my view, a good one.

This senior buy-in has helped us created a solid diversity and inclusion strategy that aligns with wider national and global plans, as well as our own business plans. It's also given us the green light to appoint senior people, like Victoria Jones, head of talent and recruitment and David Jenkins, practice director, to hold us accountable and push our agenda forward.

Over the past years, we've worked hard to address the gender imbalance, but we know our focus going forward needs to be much broader. Yes, there is an imbalance of women entering the work force, but there is also an imbalance of ethnicity, disability and age. We've also recognised that our diversity and inclusion plans shouldn't just be aimed at leaders but at our whole organisation, empowering everyone to create a more diverse and inclusive workplace.

Our plan going forward focuses on three areas - recruitment, development and engagement. On recruitment, we're launching a new campaign based on strengths. This is founded on our predictions of what the work force will look like in 10-20 years and the different kinds of qualifications and skillsets

"We have also started to see an increase in women in mid to senior level roles in the business due in part to initiatives like our award-winning women's development programme and unconscious bias training. But as always with diversity and inclusion, there is more work to be done here."

we'll need to match that. A key part of this will be retaining our status as Gold Award Holders of the Defence Employer Recognition Scheme for serving or former members of the armed forces. We've also set ourselves stretching targets around diversity of intake - 40% female intake in early careers, as well as 30% BAME.

For development, we've started a pilot that pairs senior sponsors with talented employees from under-represented groups to provide support and guidance to ensure they continue to progress and accelerate their careers. We're also starting reverse mentoring schemes where senior leaders are mentored by people with a different background, whether that's gender, ethnicity, age or skillset. We hope this will provide new insights for our existing and future leadership within the business.

With engagement, our focus is on sharing great stories and identifying role models and raising their profile, recognising and reinforcing the right behaviours. We're also trying to grow and support our staff networks around BAME,

Disability and LGBT. We see our staff as the most important group we can engage with - consulting them when making decisions for the business will be critical.

So, while we've had some success, we recognise there is still much work to do.

We want to be more transparent with our employees around the realities of diversity in our business, sharing our data and targets with them. We want our employees to take ownership of this agenda and drive it forward, knowing that senior leadership is behind them. We also need a better understanding of the range of disabilities our employees have to create a better, more inclusive environment for them.

Diversity and inclusion in the infrastructure sector can't just be about gender; it's a much broader issue. It needs to be about diversity of thinking as much as it is about diversity of people. And it needs to be about a continuing, collaborative journey to create a more diverse and inclusive work place, rather than a race to see how quickly we can get there.

Prioritising a natural capital approach

A natural capital approach should take priority when planning and designing future infrastructure and should be a key component of all decision making, says *Campbell Howe*.

Earlier this year, the UK parliament declared a climate emergency and debated how best to confront two of the world's biggest environmental issues - biodiversity loss and climate change. Whilst some may argue the challenge is predominantly up to government to tackle, businesses and private sector organisations will also need to implement workable solutions to help address these urgent issues.

Sustainability has become a focal point for many businesses as they recognise the vital importance of collaboratively working towards mitigating and adapting to climate change. Adopting a natural capital approach is one way for companies to develop resilient business models and sustainable value chains, as well as build more positive relationships with customers and important stakeholders.

For this to happen in the infrastructure industry, businesses must have a stronger understanding of how its practices impact (and are impacted by) natural and social capital assets. A natural capital approach will allow businesses to communicate the environmental and social benefits of their practices to their partners, clients



Campbell Howe is an assistant environmental economist at AECOM.

and the wider community more effectively. For this approach to be truly successful, it must be central to all decision making and be implemented during the early stages of planning - particularly when building and designing new infrastructure.

The UK's population continues to grow and new infrastructure is being mandated at an increasing rate to accommodate demand. However, it is up to industry professionals to adapt innovative solutions that address the interlinked societal and environmental challenges of today. This means there must be a consideration of all environmental components to maximise the benefits of future infrastructure.

By designing and implementing green infrastructure, such as green roofs, and prioritising nature-based solutions for flooding, for example, we can create habitats for biodiversity and generate ecosystem services that will provide cleaner air and carbon storage. The potential for nature-based-solutions is limitless. As well as addressing environmental challenges, this approach would improve mental and physical wellbeing for local communities.

As new infrastructure develops, the industry must look beyond short-term costs and instead, explore how a project can adapt to climate change and provide long term benefits. To confront the growing challenges of climate change and biodiversity loss, all new projects must consider the potential to create wider environment and societal benefits - ideally demonstrating a net increase in natural and social capital value.

A natural capital approach needs to take priority when planning and designing future infrastructure and should be a key component of all decision making. While the initial cost of this innovative approach could be one of the biggest current barriers to its integration, the cost of ignoring harmful social and environmental outcomes is far worse. Luckily, emerging technologies are increasingly being used to streamline various natural capital approaches, making it easier for businesses to incorporate this approach.

Climate change and biodiversity loss is accelerating, and it is more vital than ever that the industry works together to ensure that new infrastructure protects and sustains the environment and human wellbeing.



All new infrastructure projects should ideally demonstrate a net increase in natural and social capital value.



MSP encourages industry to make itself heard

An influential Scottish parliamentarian stresses the importance of STEM education, gender diversity, sustainability and the need for the industry to engage purposefully with the political process to make sure its voice is heard.

Clare Adamson is the MSP for Motherwell and Wishaw and the convenor of the Scottish parliament's education and skills committee. The busy politician also convenes the cross-party group on accident prevention and safety awareness and the cross-party group on science and technology.

Passionate about education and STEM subjects, particularly women's representation in these sectors, Adamson stressed the importance of STEM subjects to the future prosperity of the country in an interview with Infrastructure Intelligence.

"I think it's hugely important," said Adamson. "We have to ensure that Scotland is leading in that and also that young people are getting the skills they need to go forward in the future. We need to be innovative about what happens in schools if we want people to have highly productive and highly paid jobs in Scotland and not to be falling behind the rest of the world," she said.

And, bold as ever, Adamson is clear that early years education is the place to start when encouraging more young people, and especially women, to choose a career in the industry. "You only have to look around the industry to see we have a major problem in terms of gender balance. Some very authoritative research shows that unintentional gender bias starts at nursery, and that's something we need to address. The



Clare Adamson MSP speaking at the recent ACE Scotland reception at Holyrood in Edinburgh.



committee has heard some brilliant evidence from a mix of primary school teachers, industry practitioners and university lecturers and one of the main findings is the need to tackle unintentional gender bias as early as the nursery years," said Adamson.

"We have to ensure that Scotland is leading in that and also that young people are getting the skills they need to go forward in the future. We need to be innovative about what happens in schools if we want people to have highly productive and highly paid jobs in Scotland and not to be falling behind the rest of the world."

Clare Adamson MSP

Another major part of the cross-party committee's remit is continuing to bang the drum for technical expertise across the industry. "We have a wide range of expertise working with and supporting the committee, including a lot of companies at the forefront of high-tech industries," said Adamson. "We've had a theme of big data, what's to come in the digital economy and the opportunities there. And sustainability is a major issue for us, as global sustainable development goals are absolutely key to many of the works going forward in terms of renewables," she said.

Adamson also highlighted the importance for the industry to engage in the political process and make sure its voice is heard positively by key influencers and decision makers across the board.

"It's really important that we hear from as many people as possible to make the best decisions moving forward," she said. "For example, the Developing the Young Workforce Programme is absolutely key and that will not work without involving employers and industry professionals. The all-party groups are a great place to start and there's lots of opportunities for any organisations who'd like to get involved. I may not be a member of the government, but my door is always open," Adamson said.

Making a noise about infrastructure

The former editor of two of the UK's biggest regional daily newspapers is playing an important role advising the Welsh government on infrastructure strategy, as *Rob O'Connor* reports.

Rob Irvine was editor-in-chief of the *Manchester Evening News* between 2012 and March last year. Prior to his time in Manchester, he edited the *North Wales Daily Post* for seven years. Now, as a commissioner with the 12-strong National Infrastructure Commission for Wales (NICfW), he is looking forward to raising the profile of infrastructure and helping the industry gain the recognition and influence it deserves.

The commission has been established as a non-statutory, advisory body to provide advice and recommendations to Welsh ministers on the economic and environmental infrastructure needs of Wales over the next five to 30 years. It will also consider the interactions of these needs with social infrastructure, including schools, hospitals and housing.

An expert in multimedia communications, driving structural transformation, and understanding the long-term needs of organisations and developing structures to fulfil them, Irvine is proving to be a perfect fit for his new role after deciding the time was right for a career change.

"Much as I enjoyed my time in journalism, I felt it was time to do something different," said Irvine. "I decided to have some time off, but I became aware that the Welsh government were setting up this new commission and were looking for commissioners. I had a look at the outline, what they intended to do and the kind of people they were



Rob Irvine,
commissioner,
National Infrastructure
Commission for Wales.

looking for, and I felt there was quite a lot I could offer. Firstly because I'm from Wales, I know about and care about the place and I live here. Secondly, as a senior journalist, infrastructure comes up on the news list a great deal."

And it was that consistent reporting on infrastructure issues that sparked a keen interest in infrastructure, and the often-unnoticed benefits it can bring to society on a day-to-day basis.

"Certainly, the campaigning side of journalism quite often brings you in touch with the need to improve public services and transport networks and you actually see the difference infrastructure makes," said Irvine. "It's also a great unifying experience. The great thing about infrastructure when it works well is that lots of people get involved and that's the kind of thing that newspapers like. So, from a campaigning perspective, I'd taken a keen interest particularly in transport and connectivity, so I had a reasonable knowledge and a big passion for it."



A train service operated by Transport for Wales, a not for profit company, wholly owned by the Welsh government.



The Swansea Bay tidal lagoon project, which is still not certain to get the go-ahead.

From a business point of view, Irvine's experience of planning and driving change is also proving invaluable in his new role. "As an editor-in-chief these days, you're involved an awful lot in strategy and development, and a lot of journalism from my side these last few years has been about reorganising and restructuring a business," he said. "There's a lot of similarity there with infrastructure, where you're taking existing infrastructure, re-purposing it and moving it forward, there's a lot of change management and project management that fits in quite nicely, so I felt I had that experience to offer."

Having representatives not from an engineering background has also given the commission a wide range of skills and perspectives to keep its idea as fresh and inclusive as possible. "I didn't go in there with an engineering degree," said Irvine, "and it became very clear during the process of putting together a team of commissioners that they wanted a really wide range of

skills, and you'll see that in the make-up of the team. It really represents all of Wales – the urban, rural, the digital experts, comms experts, people who really are top end engineers and business people – and we're from all the various regions of Wales, which is a big sprawling place in many ways, with a lot of connectivity with England. I think I fit into that jigsaw, they like what I have to say, and it feels like we all have something to offer," Irvine said.

Good communication and public and community engagement are also subjects close to Irvine's heart. "I think it's really important that we put the word out about the commission," said Irvine. "It would be easy to become just another talking shop, but we don't want that to happen. Something I do have a lot of experience of is bringing the public into projects and getting different points of view, whether that's business groups, community groups and more. We want to aggregate lots of views into a concerted plan to present as our advice to the Welsh government, but it's early days so far," he said.

Irvine also places huge importance on the long-term value of infrastructure and highlighted Manchester as a great example of how well the city has grabbed infrastructure as a key driver of positive change.

"I was very conscious that Manchester, as a city, really has grabbed infrastructure better than many," he said. "And it's a really well-connected city, with a decent public transport network, Media City, sports and all kinds of things happening. The underpin of all that is an organised infrastructure, and you can see the positive difference it makes. I think that's something worth celebrating, absolutely!"

It's that passion that drives Irvine's mission to help raise the profile of infrastructure to a much wider and influential audience. "Looking at schemes that already help Wales succeed, you can get people excited about it but it's stuff that's not often front and centre in people's minds. But why shouldn't it be? Wales has got to compete in a global world now, it's tough, and we've got to fight our corner.

"Infrastructure professionals have a huge range of expertise and opinions that need to be drawn out and included in the decision-making conversations. We've got so many natural resources and talented people, so why not make a noise about it?"



The Welsh government is reviewing the country's rail network with a view to improving service provision.

For further information on NICfW, visit www.gov.wales/national-infrastructure-commission-wales



A reservoir of talent

A new approach is needed to overcome skills shortages and a lack of diversity in the industry, says *Paul Jackson*.

The National Centre for Universities and Business Talent 2050 project reported in July on future skills needs in engineering and how to secure the quantity and quality of talent for the UK's future success.

However, if we're honest with ourselves, the delivery and operation of critical infrastructure over the next few decades will be dependent on getting this right. We risk that all sectors will be chasing digital skills for higher productivity and that the models of the past, in education, in recruitment, and professional registration will serve us poorly in the future.

The *Talent 2050: Engineering Skills and Education for the Future* report highlights six recommendations covering recruitment barriers, changes to education and support for "intersectoral" mobility, which is a term we use for opening up recruitment into engineering at later career stages.

We drew on 40 sources to assess current supply and future demand and heard from 150 engineers around the



country, including a distinguished advisory group. Material from Pearson (*Commission on Sustainable Learning for Life, Work and a Changing Economy*) and Universities UK/CBI (*Skills needs in England – the employer perspective*) emphasised the need for lifelong learning through a more effective and flexible system and the commission estimated a £108bn gain to the economy in getting the right mix.

STEM initiatives have helped increase the supply pipeline from education, but demographic trends and migration effects have outweighed those impacts. We found significant barriers and bottlenecks persist, and the engineering sector's poor diversity record has not been addressed.

A series of workshops highlighted the potential to recruit from alternative sectors and provide the engineering knowledge through a mix of training and access to the knowledge base, potentially through AI.

Today, individuals build a mass of engineering knowledge, through university or apprenticeship, later developing wider

Talent 2050: Engineering Skills and Education for the Future

PHASE 1

A REVIEW OF EXISTING STUDIES AND WORKSHOPS AROUND THE UK ON CURRENT AND FUTURE ENGINEERING SKILLS DEVELOPMENT

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Executive Summary

Ensuring global competitiveness

For Britain to compete globally in the middle of this century it needs high-level engineering skills within a diverse workforce, ready to lead through unprecedented disruption and global competition.

This Talent 2050 programme identifies areas of potential disruption, explores changes required to meet today's, and future, challenges with relevant and effective education, and recommends changes to enable future prosperity.

A review of existing studies and NCUB workshops around the UK have set a baseline for current and future engineering skills development. Input from those in or using engineering skills, including early career engineers, looked at the changes required to meet the needs of a dramatically changing society with skills for the next industrial revolution, to serve an ageing population within dramatic environmental changes.

A summary of the results are published here, and will inform further exploration in workshops and strategic roundtables. A final report, with recommendations, will be published early in 2019.

THIS TALENT 2050 PROGRAMME IDENTIFIES AREAS OF POTENTIAL DISRUPTION, EXPLORES CHANGES REQUIRED TO MEET TODAY'S, AND FUTURE, CHALLENGES WITH RELEVANT AND EFFECTIVE EDUCATION, AND RECOMMENDS CHANGES TO ENABLE FUTURE PROSPERITY.

Method

The baseline Rapid Evidence Assessment (REA) for STEM (including digital) skills focused on current supply and potential future demands using 40 sources.

Workshops were held in Edinburgh, Sunderland and London and included senior individuals from public and private sectors, trades unions, education and professional bodies, early career stage professionals and researchers.

National Centre for Universities and Business

A business collaboration for a prosperous and inclusive economy and society

The National Centre for Universities and Business (NCUB) is an independent and non-for-profit organisation that promotes, develops and supports priority business areas in the UK.

Phoenix

at Universities and Business

South Bank University

The full research pack for the Talent 2050 project is available at <https://bit.ly/2jZ1HSI>

waiting to be tapped



The Sky Academy trains and recruits into the company's IT workforce without demanding computer science or IT qualifications.

skills. It is a T shape which creates the 'leaky' pipeline of talent with no potential to top up later. Key qualifications in that pipeline are skewed towards male participation – A-Level physics has a 4:1 male-female ratio and computer science 9:1.

Three skills pillars were suggested in the workshops – people skills, creative thinking and enterprise – alongside core technical knowledge. It was also noted that ethics will become increasingly relevant as technology changes and artificial intelligence creates opportunities to exploit the existing knowledge base across all occupations.

Intersectoral recruitment can work – the Open University requires no specific qualification requirements to take a degree. The Sky Academy trains and recruits into the company's IT workforce without demanding computer science or IT qualifications and has challenged stereotypes to find a diverse group with talent.

We believe engineering can do the same. This doesn't mean that the depth of knowledge in structural engineering should be reduced in critical roles, but it does mean that there are many roles already and more to come where wider skills will be essential and some STEM



Paul Jackson is executive director of Jasia Education and a co-author of the *Talent 2050* report.

skills can be added later.

The funding system could build on employer schemes, career development loans and the apprenticeship levy. Proactive recruitment could be supported by the professional engineering institutions as mentors to a more diverse group entering the profession at different stages of their careers. It will work best if we can embrace digital tools for learning at all stages of education, including in schools.

Talent 2050 has identified that the profession could look very different in the future and the change has already started. It will need to accelerate if the UK is to be at the leading edge of the next industrial revolution.

Hannah Vickers, chief executive of the Association for Consultancy and Engineering commented: "The evolution of our service offering, and of our business models, will in turn alter the skills profile of the workforce we employ as businesses. This report highlights a number of challenges ahead and solutions through greater retraining opportunities and mobility across disciplines. The sooner we face these, the faster we can build upon the UK's world-class expertise.

"As businesses, tapping into the reservoir of talent will be critical to our future success and through its Future of Consultancy campaign, ACE will be supporting companies in this. We now need a partnership from academia and the professional bodies in developing students and staff to become the engineers of the future."

The challenge for today is to explore, identify and implement ways to increase the provision of well-educated, well-trained and well-motivated entrants into engineering. The year 2050 might seem a long way off, but it takes just 20 years to take a generation from early years to graduation. We therefore have just ten years to identify what works and what we need to put in place.

ACE CEO gives evidence to major projects inquiry

Parliamentary select committee takes evidence on the government's handling of major projects.

ACE chief executive Hannah Vickers was recently called to provide oral evidence to the public administration and constitutional affairs select committee on the government's management of major projects.

Vickers acted as a witness alongside Miles Ashley, former director of construction at Transport for London and discussed a number of issues relevant to the committee's study (outlined opposite), including how decisions to commission and deliver major projects are made and what represents best practice.



ACE chief executive Hannah Vickers giving evidence in parliament.



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

Importance of project development

Vickers highlighted how difficult it is to measure the benefits of major projects, due to a lack of strong methodology and good data throughout projects and also stressed the importance of early planning in the process of valuing major projects.

Barriers to SMEs engaging directly with government projects

While covering the issue of getting realistic project costs within a framework, Vickers was asked if she had seen examples of higher bids being accepted and raised the issue of some SMEs being excluded from the bidding process due to the perceived risk.

She also discussed with the committee how vital it was to have a clear sight of the aims of a large project, in order to ensure that the specialist capabilities of smaller firms were utilised more fully and explained how what may be perceived as a small role in a project could have a huge impact on its value.

Use of frameworks

The committee raised the issue of how public sector frameworks are impacting on the market, and if these frameworks were to the detriment of obtaining value for money. In response, Vickers said: "There is a better need for alignment of the procurement frameworks being set up across government. From a market perspective, they do not look well-aligned, and there is a limited pipeline of work behind it."

Collaboration with the markets to understand risk

Vickers pointed out that there was an "oversight" in not having a cross-departmental view of portfolio risks across government departments. She stressed that while there are pockets of good practice, there was a lack of visibility across government clients, which reduced the opportunity to leverage a continuous pipeline of skills and innovation across departments and projects.

The value of engineers to projects

During the session, Vickers was keen to highlight the importance of ensuring that engineers are involved throughout the life cycle of a major project and not just bought into the frame as project managers. Throughout her evidence, she gave a number of examples of where engineers could add value to a project and how clients could be missing out on this vital expertise.

Attracting and retaining talent

Finally, Vickers discussed ACE's Future of Consultancy campaign, in particular, concentrating on the need to develop the skills needed for major projects and to adapt business models in order to give the best value.

No-deal Brexit could cost construction £12bn

ACE has joined other leading industry institutions to warn prime minister Boris Johnson of the risks that a no-deal Brexit will pose to the construction industry.

ACE, Build UK, the Civil Engineering Contractors Association, the Construction Products Association and the Federation of Master Builders have written to the prime minister warning that leaving the EU without trading agreements could lead to a fall of £10.5bn in construction output by the end of 2020 and that leaving the EU with a deal could see growth in output of £1.2bn in the same period.

The letter says that the organisations believed “the UK must leave the EU in a considered, managed way in order to avoid the likelihood of massive short-term disorder and potentially long-lasting damage”.

Forecasts undertaken show that with a deal in place and a smooth Brexit, construction output would rise by over £1.2bn by the end of 2020. Leaving in an unplanned way with a no-deal Brexit however could lead to a fall of £10.5bn over the same period, with the greatest impacts felt on the house building and commercial sectors.

ACE chief executive Hannah Vickers said: “The immediate effect of leaving without a deal in place is not knowing the cost of the materials and goods that construction projects rely on, or

if they will arrive on sites across the four nations to keep projects of all shapes and sizes on track.

“With the impact of the previous financial crisis not forgotten in an industry that experienced countless business failures, plant closings and nearly half a million job losses, the resilience of our industry has its limits. We trust that the government and parliamentarians will agree the arrangements for trading with the EU as a matter of urgency. In the meantime, we are ready to reaffirm our willingness to work with the new administration to make a success of the years ahead.”



Helping to navigate procurement best practice

ACE has released a new guidance note aimed at helping ACE members and their clients to navigate the best practice that exists surrounding the complicated world of the procurement process.

The guidance is aimed at distilling down existing best practice from both public and private sectors and providing simple advice in relation to the more challenging areas of commercial strategy, the procurement process and contracting. The purpose of this is to enable both clients and consultants to better understand each other's drivers

and constraints in order to discuss and agree on a balanced way forward.

ACE is supporting the release of the document by providing the opportunity for clients to come to a single source for consultancy market sounding. Through convening its members, ACE is able to offer input to commercial strategy development on the following areas.

- A consultancy industry view on risks to delivery of the project which should be considered in the development of the commercial strategy;
- Convening consultancy businesses to provide feedback on a draft commercial strategy;
- A view on the current market conditions and how this might impact on business appetite to bid e.g. professional indemnity at present;
- An understanding of the structure of the market and how to access the right areas of capability the client is looking for.

Delivering the vision in the crystal ball

ACE's Future of Consultancy campaign offers a real chance to deliver a vision for the future that will carry the industry forward, says *Hannah Vickers*.

I've spoken at length recently about our Future of Consultancy campaign and the activity we've been undertaking to achieve our aims. We invited you look at the future of the industry and work with us to develop ways to streamline and shape the work that we do.

It became clear over the course of our summer conferences that change is everywhere and affecting the industry here and now, particularly around technology and the rise of digital. However, it was evident across the research we have been undertaking that technology is not the only challenge we face.

Firms will also need to step up and take a leadership position in the face of political uncertainty. With the pressures of Brexit, a new prime minister and a potential general election on the horizon, we can't always look to civil servants and politicians for guidance – we're going to have to take the lead ourselves and we need to be confident and ready for that responsibility. We have a huge amount of value to add, and in the words of one client at our conference, "engineers and consultants should be at the top table on projects".

We've been working since the start of the year to get a clear picture of how you see the industry, and what the 'Future of Consultancy' means to your work. We've been holding workshops and webinars, large conferences and one-to-one meetings, in order to get a view of how we can shape our own future.

As this edition goes to print, we're looking ahead to the next pivotal event in our campaign – the presentation of our phase one research, taking place at Kings Place on 15 October. We'll be presenting a strategy for consultancy businesses on domestic and export opportunities, including case studies and a blueprint for the future business models and contracts firms should be using.

We'll be setting out a vision, whereby our quality and productivity is improved through investment in developing our staff and higher quantities of R&D and



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



innovation, while partnering with specialist digital firms to support our professional services. This will provide more of what emerging professionals expect from their workplace in terms of flexibility, rewarding work and personal development. We'll also be focusing on the ability of professional bodies and training providers to deliver a different blend of skills, and, in response to Grenfell, a high standard of assurance of competence.

We'll be laying down a shift in business models, from being time- and materials-based, to a range of output and outcome-based models, which don't incentivise staff utilisation on bespoke individual projects in quite the same way. We have an opportunity to develop alternative models to sell a blended offering, focused on what the client values and in turn rewarding performance through incentives – financial, or long-term client relationships based on trust and repeat business.

As this work has developed, we've seen that this isn't a whimsical rose-tinted vision in a crystal ball. It is a real chance to deliver the vision and carry our industry forward.

I look forward to seeing you on 15 October. If you are interested in attending the launch event, please visit <http://bit.ly/FocLaunch>

"We've been working since the start of the year to get a clear picture of how you see the industry, and what the 'Future of Consultancy' means to your work. We've been holding workshops and webinars, large conferences and one-to-one meetings, in order to get a view of how we can shape our own future."



Fresh thinking needed on 'green data'

The data systems underpinning air quality, emissions and noise policy could benefit from fresh thinking if the UK leaves the EU, says *Matthew Farrow*.

One of Michael Gove's skills in his much-lauded tenure at Defra was his ability to spot issues where the department could plausibly use its freedom of manoeuvre outside the EU to create better policy. CAP reform and tougher air quality targets based on World Health Organisation guidelines were promoted as examples of this and thus the concept of the 'Green Brexit' was born.

Unsurprisingly, in doing this Gove chose areas of policy that voters could relate to – looking after the countryside and cleaning up the toxic air blighting our urban centres. In addition, though, there are more technical areas of Defra work which could also benefit from fresh thinking if we do leave the EU.

One of these is the data systems underpinning air quality, emissions and noise policy. While the data collection in these fields in the UK is very good by international standards, it is driven by EU reporting requirements – i.e. we measure what we are legally bound to report to the EU rather than what would be most useful to help us design and test better policy. It is also relatively siloed e.g. noise mapping, air quality data and GGH emissions data are all looking to monitor a cluster of similar activities – transport, energy production, industrial activity etc. The lack of a coordinated system makes it more labour intensive as work is duplicated.

The current data infrastructure which underpins the national assessment of climate emissions in the UK had its origins



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

“The system has to make assumptions about localised contributors and lacks the details needed to be able to target emission reduction measures at a local level.”

in the early 1990s as climate change became a more salient issue. It comprises more than 600 spreadsheets and was originally designed to measure carbon emissions to a single national value. The system has to make assumptions about localised contributors and lacks the details needed to be able to target emission reduction measures at a local level.

The same system has underpinned Defra's national

air quality evidence base over the last decade, but the data is not consistent with that used by local authorities in undertaking their local air quality management and clean air zone duties. Consequently, it is currently impossible to get a consistent and coherent understanding of air quality and who is contributing what.

In some areas progress is being made – for example the Environment Agency's NaFRA2 project to develop a single scalable flood risk assessment tool for England, moving away from the non-standardised 'patchwork quilt' of the previous system. But we need to be more ambitious. If the government is serious about a 20-30-year programme to both deliver the 25 Year Environment Plan and deliver the net zero emissions target, we can't risk policy makers and businesses working with a data system that is simply no longer 'fit for purpose'.

We need a digital infrastructure for understanding environmental trends and impacts capable of being interrogated at a granular level. One that would integrate with the emerging plans for a data-driven national 'digital twin' of hard infrastructure being developed by the Centre for Digital Built Britain. EIC's annual Green Data conference on 9 October 2019, run in partnership with the Natural Environment Research Council, will help scope out what is required.



Winning local buy-in for transport projects

A new study by Copper Consultancy has found a disconnect between government and public priorities for urban transport development, particularly when it comes to sustainable forms of transport.

Following the government's commitment to reach 'net zero' carbon emissions by 2050, the report, *Public attitudes to urban transport*, has highlighted that people are more willing to support infrastructure that presents tangible benefits, as opposed to meeting broader national needs.

Specialist infrastructure and development communications consultancy, Copper Consultancy, this year conducted a survey of 1,600 people across the UK, following a period where large rail and road schemes have dominated the conversation around the country's transport network. The study found that despite the current government's zero-carbon agenda, respondents were more invested in direct, tangible benefits of new developments.

Only 28% of respondents prioritise improving sustainability and air quality in new transport architecture, as opposed to the following top three priority benefits - more reliable journeys (37%), greater access to public transport (33%) and easier commutes to work (31%).

"With urbanisation on the up at the same time as a global climate emergency top of the news agenda, the smooth delivery of greener, more efficient urban transport infrastructure is crucial," said Andrew Weaver, director of infrastructure and major projects at Copper. "To do that, urban planners need to get better at setting out a vision to communities to build support for new urban transport projects.

"Our research shows that it's important for promoters to form long term, meaningful relationships with the public to build trust from when projects are proposed through to delivery. A successful

project needs to be aligned with public objectives, telling a story that resonates with national audiences as well as local communities," said Weaver.

It's not the first time that public attitudes towards transport have been out of step with the government. In 2017, Copper Consultancy's second *Public Attitudes to Infrastructure* study focused on understanding the relationship between infrastructure investment and recognised societal benefits. Its findings showed a publicly perceived disconnect between infrastructure investment and the societal benefits it brings.

All too often, people feel infrastructure is something that is 'done to them' rather than 'done for them' and it's clear that government and the construction industry need to build public confidence by explaining infrastructure in a way that is meaningful to how it affects daily life.

"Investment into transport infrastructure like heavy rail only tend to be supported if the public can see how it will benefit their own communities by adding tangible benefits. Investors and planners therefore need to change their approach by communicating the benefits of their schemes, and to get better at bringing opportunities to life for communities in order to deliver significant projects for the UK," Weaver said.

Project promoters will fail to get local buy-in if they simply retell a national narrative on a local level when advocating for transport developments. Instead, communications strategies need to be micro-targeted both locally and nationally to communicate the direct benefits that matter most to different people.

Read more online at
www.infrastructure-intelligence.com

Download *Public attitudes to urban transport* at <https://bit.ly/2lBt84Y>



A-Level results bust myths about girls and science

Campaigners for gender balance in science, technology, engineering and maths have welcomed the positive A-Level results achieved by female students this year.

This year's A Level results have broken down the myths about girls and science, according to new analysis from WISE, the campaign for gender balance in science, technology, engineering and maths (STEM). The group has called on employers and academia to do more to inspire girls about opportunities in engineering and technology.

A new report from WISE says that more science A Levels were awarded to girls than boys for the first time and, in physics and computing, the percentages of girls who were awarded A* and A grades were higher than the percentages of boys.

Commenting on its analysis, WISE says that while there is much to be excited about, urgent action is needed to speed up the pace of change and they called on employers and academia to work together to inspire girls about the opportunities in engineering and technology.

The results show 1,930 more core STEM A Levels have been awarded to girls in 2019 than in 2018, while the number awarded to boys has dropped by a similar amount (1,792). Girls achieved 130,121 core STEM A Levels in 2019 compared to boys who achieved 169,638.

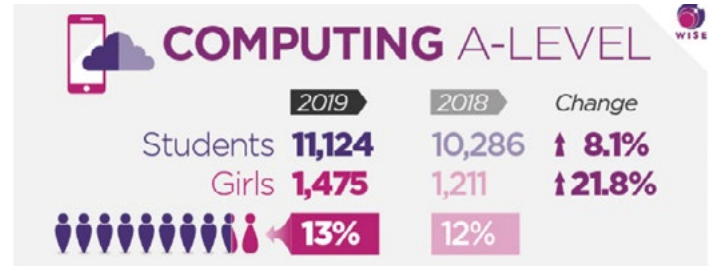
Helen Wollaston, chief executive of WISE, said: "This year's results are a fantastic testament to all of the work which has been done over the last few years to encourage more girls to study core STEM subjects. These results should encourage girls, their families and teachers because they show girls are interested in science and they are good at it.

"I want to see teachers sharing this message with girls who are considering which subjects to take at A Level. It's commonly thought that girls don't take science subjects because they are 'too difficult.' These results prove this isn't true."

WISE has also called for action to halt the year-on-year decline in the numbers of maths A Levels awarded to female students and a year-on-year decline in



Helen Wollaston, chief executive of WISE.



the number and percentage of female students of A Level Design & Technology. They have also called for more female students to be encouraged to study computer sciences, with less than half the number of female students than males currently taking the subject.

"This has serious consequences for the UK," said Wollaston. "Given what we know about the future of work, with computing skills becoming critical across all sectors, improving this figure must be a priority for government and schools."

Earlier this year WISE launched an online career resource - My Skills My Life - with the aim of reaching 200,000 girls in the next five years, collaborating with schools and employers to help girls, their parents and teachers understand the career opportunities open to them by studying STEM subjects.

WISE has built a powerful network of more than 200 member organisations. Membership resources are aligned to the WISE Ten Steps, which provide a framework and best practices to help organisations improve the attraction, retention and progression of women.

For further information, visit www.wisecampaign.org.uk




Encouraging A-Level results in STEM subjects should mean that more women embark on a career in construction.

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