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Produced for the industry by the Association for Consultancy and Engineering

HEATHROW EXPANSION GETS GO-AHEAD

**“The right
decision, not
a moment too
soon” pages 3-6**





INFRASTRUCTURE Intelligence

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MESSAGE FROM THE EDITOR

Unsurprisingly this issue, we have given a lot of coverage to the government's decision, finally, to give the green light to Heathrow expansion (p3-6). It's rightly been described as a landmark decision, not just in terms of airport capacity, but for what it says about the government's attitude towards major infrastructure projects. Many in our industry will hope that it will be a portent of further announcements in future, as politicians finally get to grips with building the much-needed infrastructure that the country needs to help boost economic prosperity and rebalance the economy.

The perils of not investing in infrastructure in a timely fashion are shown by the delays to projects that are costing the country billions (p7) and we also take a timely look ahead to November's Autumn Statement and what the chancellor might have in store for our industry (p10).

We take a trip across the pond to speak to Turner & Townsend's new managing director for North America to find out about his new role and the developing opportunities stateside (p8), while our centre-page story looks at Birmingham New Street and the lasting legacy of this major infrastructure project (p16).

The Improving Behaviours Improving Performance programme is a new initiative in the roads sector that is identifying and embedding the good behaviours that make collaboration work and we have the low-down on that (p18), a feature on the Environmental Industries Commission annual conference that is sure to be a must-attend event post-Brexit (p20), and a special focus on knowledge management following a recent industry forum on the issue (p24).

I also wanted to mention that *Infrastructure Intelligence* is celebrating its third anniversary on 14 December 2016 with a drinks reception in London. I and the team look forward to meeting many of our readers and contributors at the event to say a big thank you for your continued support. We couldn't do what we do without you.

Finally, as this is the last issue of 2016, may I be the first to wish everyone a merry Christmas and a peaceful and prosperous New Year.



Andy Walker,
editor, *Infrastructure Intelligence*

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“The right decision, not a moment too soon”

The government’s decision to approve the building of a third runway at Heathrow is a massive boost to the construction sector that is being seen by the industry as a sign of further infrastructure development to come, writes *Andy Walker*.

So, finally and at long last, the government has given its backing for a third runway at Heathrow, the first full length runway in the south-east since the second world war. It’s a significant announcement for the construction sector and one that is rightly being seen by many as a vote of confidence in the industry and hopefully a harbinger of further infrastructure developments to come.

There’s still a long way to go of course before work starts at Heathrow, with a draft national policy statement to be issued for public consultation in the New Year followed by a vote in parliament, but the government has at last made a decision on a landmark project that transport secretary Chris Grayling said would “improve connectivity in the UK and crucially boost our connections with the rest of the world, supporting exports, trade and job opportunities”.

Industry reaction

The construction and infrastructure industry has welcomed the decision to expand Heathrow. Dr Nelson Ogunshakin chief executive of ACE, said: “The professional engineering and construction sector can now begin to work with clients

to develop the supply chain, allocate the resources, and develop the workforce vital to delivering this strategically important investment project.”

However, Ogunshakin also criticised the delay in reaching the decision and called for lessons to be learned. “That we have taken this long to arrive at the same decision taken by previous politicians over the past decade and a half is disappointing, however, and indicates a continued issue around uncertainty in the political process around large-scale infrastructure investment projects,” he said.

“The delay we have seen over this issue has cost the UK economy billions of pounds in inward investment, and at a time when we need to be highlighting that Britain is open for business to the world, this is clearly unacceptable and should be avoided in future. We hope the government learns the lessons from this

and puts measures in place to ensure that much needed infrastructure decisions are not held up by political fluctuations,” Ogunshakin said.

Jason Brooks, UK head of aviation at WSP | Parsons Brinckerhoff looked forward to the Heathrow decision ushering in other improvements to the UK’s aviation capacity. “Whilst our firm fully endorses the proposed expansion at Heathrow, we very much hope that expansion at Gatwick and potentially at other airports in England and the wider UK won’t be forgotten about,” he said.

Mott MacDonald’s aviation director Paul Fairbairn said: “The new third runway plans for Heathrow will provide much-needed additional capacity to support growing passenger demand in an environmentally responsible, timely and cost-effective manner. The expansion of

continued on page 4 >>>



“Whilst our firm fully endorses expansion at Heathrow, we very much hope that expansion at Gatwick and potentially at other airports in England and the wider UK won’t be forgotten about.”

Jason Brooks, UK head of aviation at WSP | Parsons Brinckerhoff

“The right decision, not a moment too soon”

>> continued from page 3

Heathrow will improve the connectivity of UK regions and businesses to international markets and support economic growth across the whole of the country. Mott MacDonald has a long-established relationship with Heathrow Airport and we look forward to supporting them with their expansion plans.”

Turner & Townsend were project managers of Heathrow’s Terminal 5 and the new Terminal 2. Patricia Moore, the firm’s managing director of UK infrastructure, said: “It’s a sound business decision and the right thing for UK plc. We are delighted to have been part of the Heathrow team for 20 years and we are looking forward to helping them deliver their expansion programme.

Moore praised the government for making another significant infrastructure announcement so soon after the decision to give Hinkley Point the go ahead. “Our industry has suffered from a paralysis of decision making when it comes to major projects and this does not lend itself well to driving efficiencies which is the government’s long-term objective,” she said.

Certainty and predictability

“One of the easiest things that government can do is to give business certainty and predictability. What is really positive is that since the new government has been in place they have taken the decision on Hinkley, they have now taken the decision on the third runway and HS2 is looking favourable as well, so we are starting to see a bit of the turning of the tide and the government is making some tough decisions and moving things forward. Some of these big decisions are now being made and it’s really positive for our industry,” said Moore.

Moore said that the Heathrow expansion decision would also help the industry in the UK on the international stage. “We will be able to leverage and benefit on a global stage from the experience we get on Heathrow so this will be a massive



“We are starting to see a bit of the turning of the tide and the government is making some tough decisions and moving things forward.”

Patricia Moore, Turner & Townsend



“This is a welcome fillip for the UK’s infrastructure sector and the businesses that rely on it.”

Richard Robinson, AECOM

potential future export in terms of capability for UK plc because all of the aviation clients across the world all look at Heathrow. The fact that we are developing a new runway here I think is a model that is not just relevant in a UK context, it is absolutely a global differentiator for the UK,” Moore said.

As a company with a long-term relationship with Heathrow, Moore said that Turner & Townsend were looking forward to what happens next. “We are really excited about helping set the project up for success. The front end of major programmes is a real distinct skill set and we think we are really well placed to help Heathrow do that. We have done it already on Crossrail, we are doing it currently on Hinkley Point C and we are looking forward to helping Heathrow get fit for purpose and delivering against the business case,” said Moore.

Now focus on delivery

Reflecting the views of many in the industry, Richard Robinson, chief executive, civil infrastructure, Europe, Middle East, India and Africa at AECOM said: “This is the right decision, not a moment too soon. As the UK prepares for post-Brexit scenarios, decisive action to increase aviation capacity where it is most needed is all the more critical. This is a welcome fillip for the UK’s infrastructure sector and the businesses that rely on it. The collective sigh of relief following

today’s long-awaited decision is almost audible. The focus now must be on accelerating delivery. Quickly securing the right legal mandate via the necessary environmental and planning approvals is vital.”

Atkins’ UK & Europe CEO Nick Roberts also saw the decision to expand Heathrow as a statement of intent post-Brexit. “It is a positive statement of intent that the country is open for business and a further indication of the government’s commitment to developing the



“It is an indication of the government’s commitment to developing the infrastructure we need to be a world-leading economy.”

Nick Roberts, Atkins

infrastructure we need to be a world-leading economy,” he said. “The focus for government must now be to build on the work of the Airports Commission and develop the national policy statement that both underpins expansion at Heathrow and supports aviation more widely across the UK,” said Roberts.

The decision meant that the industry could now press ahead with the planning needed to deliver the extra capacity quickly, efficiently, considerably and with minimum disruption, said Roberts.

Amanda Clack, head of infrastructure at EY, was another who called for further airport expansion following the Heathrow decision. “In the longer term the UK will need even more capacity. The parallel

expansion of Gatwick and other key regional airports should not be ruled out if the UK is to maintain its attractiveness in the eyes of international travellers,” Clack said.

Commenting on the impact of the decision on the local communities affected, Chris Selway, head of the national infrastructure and compulsory purchase team at BNP Paribas Real Estate, said: “With a scheme of this magnitude the local impact is going to be immense and extremely sensitive – up there with HS2! In providing the necessary infrastructure and facilities to cope with the development there is much to be done in terms of further consultation and provision of mitigating works and compensation packages commensurate with the years of disruption local communities will endure for the greater good. Forward funding of land acquisition and provisions for hardship cases are major priorities,” Selway said.

The skills challenge

Reflecting on the skills challenge arising from such a major project, Grahame Carter, operations director at engineering recruitment specialist Matchtech said: “The expansion of Heathrow will inject a great sense of confidence into the infrastructure sector. There is a substantial pre-existing talent pool in the UK, particularly within the buildings and highways sectors, and this coupled with transferable skills from other infrastructure markets as well as the upskilling of existing workforces means we are well prepared to deliver this flagship aviation project.

“While we are well prepared within the UK, the scale of the Heathrow expansion will inevitably call for skilled professionals from overseas. Depending on the nature of the UK’s departure from the European Union, we may face challenges importing qualified engineers, which would significantly narrow the talent pool available for this scheme,” Carter warned.

Opposition to Heathrow

Despite the overwhelming positive response from the infrastructure sector, there is of course opposition to Heathrow expansion, including from inside Theresa May’s own cabinet in the shape of foreign secretary Boris Johnson and also the education secretary Justine Greening, both of whom have been given licence by the prime minister to continue their campaign against the project.

The Conservative MP for Richmond Park, Zac Goldsmith, the constituency is under the Heathrow flight path has resigned his seat triggering a by-election and is running for re-election as an independent MP in

protest. He called the decision to expand Heathrow “catastrophic”.

London Mayor Sadiq Khan is also opposed and has confirmed that he is looking at how to support a legal challenge to the third runway. “This is the wrong decision for London and the whole of Britain,” he said. Khan, who is a supporter of a new runway at Gatwick, also said that the government now had to set out how it will limit the extra air and noise pollution from Heathrow.

Shadow chancellor John McDonnell, whose Hayes and Harlington constituency is close to Heathrow, called the decision “devastating” and said that for 30 years Heathrow had failed to win the argument for expansion and that was still the case today. “I’ll continue to support my constituents in campaigning against this runway so that it never sees the light of day,” he said.

Government determined

Despite the opposition, the government has clearly made up its mind to proceed with expanding Heathrow. The draft national policy statement setting out why the government believes the Heathrow scheme is the right one for the UK will be published in the New Year when the public will also be consulted on the proposals. Once MPs have voted on it, Heathrow will then bring forward a planning application.

Having made the decision to approve Heathrow expansion, the government is determined to see it through. “If we do nothing the cost to our nation will be significant,” transport secretary Chris Grayling told MPs on the day of the announcement. The construction industry will be hoping that it will be the first of many announcements in the future as the UK gets to grips with revitalising and modernising its infrastructure.

Cities and infrastructure initiative

New initiative to highlight infrastructure

A new initiative, based on industry research and opinion, will help raise the profile and importance of economic and social infrastructure in the future of the UK.

In *Infrastructure Intelligence* is collaborating with WSP | Parsons Brinckerhoff on a new initiative aimed at identifying infrastructure priorities to allow cities to be competitive in the new global landscape, following the EU referendum.

Through an industry leaders’ survey, a series of roundtable events and the publication of a white paper in the New Year, the *Cities and Infrastructure* initiative will focus on raising the profile and importance of economic and social infrastructure in the future of the UK.

Peter Sharratt, head of strategic consulting at WSP | Parsons Brinckerhoff, said: “A lot of the current discussion on infrastructure gets couched in uncertainty over the Brexit decision but irrespective of the decision to leave the EU there is a need to develop infrastructure; we are on this journey anyway and we want to help influence positive outcomes. Working with the industry, we want to raise the profile of infrastructure development with politicians and decision makers so the right decisions are made.”

The results of the leaders’ survey conducted as part of the initiative are currently being collated and a series of roundtables from now until the end of the year will discuss the headline findings and start to map out a way forward. One key area already identified is the public’s attitude to infrastructure development and the link between infrastructure and creating economic prosperity.

Head of development at WSP | Parsons Brinckerhoff, Ian Liddell, said: “It’s clear that we need to do more so that the public understands the connection between infrastructure spending and economic growth. That’s the direct benefits in terms of employment of jobs in infrastructure and also the indirect benefits like improved competitiveness, greater connectivity and the long-term boost that this gives to the economy.”

Future issues of *Infrastructure Intelligence* will report on the outcomes of the industry survey, the roundtables and the launch of the white paper early in 2017.



Heathrow expansion is a vote of confidence in construction

It's a monumental decision that the government has decided to progress with Heathrow as a full length runway. This has laid to rest much of the debates of previous years and brings clarity to the project and how it might shape up. It really is a landmark moment for UK aviation and it is right that the industry is celebrating.

As with the go ahead for Hinkley Point, the biggest boost Heathrow expansion provides to the construction industry is to our confidence. Our business plans and recruitment drives can now continue with conviction and this brings further certainty to the industry which is very welcome indeed. However, Heathrow expansion should be seen as just the first step to increasing airport capacity in the south east. The strategic importance and growth potential of London Gatwick remains critical and should not be forgotten. We also need a new runway there too in due course to enable the UK to maintain its position as a leading global aviation player and economic powerhouse.

The building of a third runway at Heathrow will provide enormous logistical, engineering and environmental challenges. We know sustainability will rightly play a crucial role for the duration and legacy of its construction. The industry's response should be to seize the opportunity, continue working hard to attract the best and the brightest minds,

"I see this as a real vote of confidence in the construction industry and the role it has to play in the future economic growth of the UK."



The government's decision to back a third runway at Heathrow should lead to further development of the UK's aviation capacity and infrastructure generally, says *Jason Brooks*.



and use this platform to become the world leader for major infrastructure design.

Of course, there will now be a large-scale public consultation process, involving all the stakeholders affected. It's important that due process is gone through to make sure that the evaluation around the project and the scheme as implemented is correct. I hope that this time around the government, Heathrow Airport and any other stakeholders will ensure that we get through that process as correctly, efficiently and as quickly as possible, so that it leads to the implementation of a much needed project.

Whilst our firm fully endorses this significant step on Heathrow, I hope it will also lead to further expansion at Gatwick and aviation capacity being examined elsewhere. This may be needed to provide the full capacity for movement of goods

and people that the UK will require.

From a wider industry point of view, I see Heathrow, Hinkley Point and other major infrastructure projects as a real vote of confidence in the construction industry and the role it has to play in the future economic growth of the UK.

Undoubtedly, Heathrow expansion is going to present some significant challenges for the engineering and construction industry but they are challenges that the UK industry is more than capable of rising to. The UK hasn't built a new runway in the south east for a very long time, since the second world war in fact, but the good news is that UK businesses like our own have been involved in major airport schemes around the world in the recent period so we have an industry that is superbly placed to build Heathrow's new runway.

We now look forward to seeing the National Policy Statement on Heathrow and to understand exactly the process that the government will use to implement the project and take it through the planning system. I really hope that this development won't just be a third runway, but that we will take the opportunity to implement at Heathrow world class, cutting edge facilities that represent an airport of the future both from an environmental and technology perspective.

Jason Brooks is UK head of aviation at WSP | Parsons Brinckerhoff.

Delays costing UK economy over £48,000 per minute

A mere one-month average delay in the transport infrastructure pipeline will see the UK economy miss out on around £2bn of investment-related GDP over the next five years, equivalent to £48,425 for every minute of delay, says Arcadis.

The Arcadis *Spiralling Cost of Indecision* report compares the 2015 and 2016 National Infrastructure Pipeline datasets and calculates estimated costs – such as missed GDP from investment and additional design and build cost – associated with delays and cancellations. It estimates that over the next five years, the cumulative impact of stalling on those projects identified in the 2015-16 pipelines could see the UK economy miss out on up to £35bn of investment-related GDP.

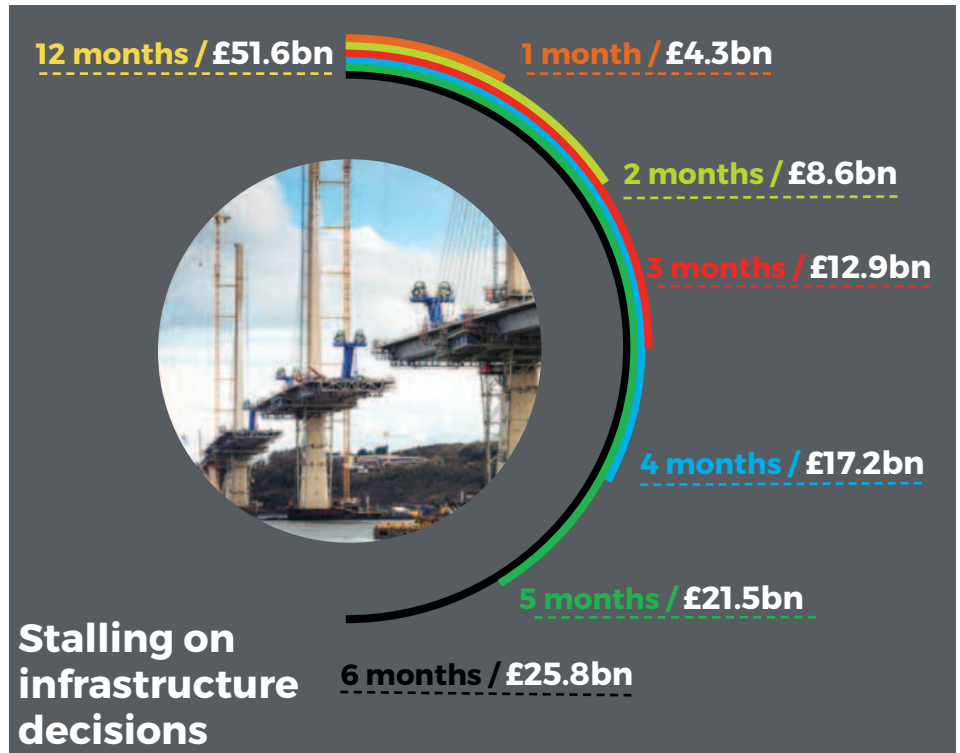
The report also estimates that, as a result of a one month delay, the costs involved in delivering all transport projects in the pipeline would rise by £241m over five years, equivalent to around £8m for every single day of delay. With rail having been identified as the greatest cause of stalled or cancelled transport infrastructure spend, a postponement of just one month could result in as much as an extra £4.2m being added to the total delivery cost of all rail projects for every single day of slippage.

The report puts some perspective around the challenges the industry is facing, making it imperative that it restructures quickly. It also provides a further prompt to the government to clarify its plans and properly back the National Infrastructure Commission in its long-term planning role. Equally, the report sheds some light on why infrastructure projects can appear to overspend.

The National Audit Office has suggested that over a third of major government projects due to be delivered in the next five years are in doubt and the calculations from Arcadis underscore the scale of lost benefits.

Chris Pike, Arcadis infrastructure client development director, said: “Some of our most ambitious projects, from energy to state-of-the-art transportation, have huge potential to bolster the national economy. With delays being such a recurring issue when it comes to British infrastructure, we are potentially missing out on around £48,000 each and every minute. These are big numbers and we simply can’t afford to delay unnecessarily.

Cancelled and delayed infrastructure projects are costing the UK economy tens of thousands of pounds every minute, claims a new report from Arcadis.



“Clearly, there are a number of reasons for projects not going ahead on schedule but, all too often, stalling could potentially be avoided or, if the impacts were clearly understood, decisions may be taken differently. It is clear that government needs to send a clear message to the world that Britain is open for business by progressing vital infrastructure projects at the earliest opportunity, without compromising safety or security. Equally, infrastructure owners and industry need to work together to deliver on these commitments, allowing post-Brexit Britain to reap the full benefit, along with the inevitable bounce effect that will result.”

Pike said that since the EU referendum the government has been slow to recognise the importance of committing to infrastructure. “When it

comes to finally pressing the button and getting major schemes moving the conviction appears to be lacking,” he said. While Pike sympathised with the new government taking its time to get its feet under the table, the time for action was now he said.

“One might argue that it is only fair to allow the new government time. However, with nervous financial markets and industry already suffering as a result of construction activity being at a seven year low, delaying existing projects or failing to commit to new ones is damaging. In light of Brexit, making strong, positive and timely decisions both as an industry and as a government would better reinforce investor confidence in UK infrastructure,” he said.



Download the *Spiralling Cost of Indecision* report at <https://goo.gl/pWzjsu>

Turner & Townsend has appointed infrastructure expert Murray Rowden to lead their North American business. He spoke to *Andy Walker* from his office in New York.

A land of opportunity for infrastructure

With infrastructure opportunities growing significantly across the pond, global head of infrastructure at Turner & Townsend, Murray Rowden, seems an ideal choice to take over as the firm's new managing director for North America covering the US and Canada.

Under his leadership, global revenue in infrastructure at Turner & Townsend is set to treble – from £59m to £150m – by the end of this year so he's well placed to take on such an important role stateside. Since joining the consultancy in 1990 as a graduate, Rowden has risen through the ranks to spearhead strategy and drive business growth in its infrastructure and real estate sectors. He's certainly looking forward to his new challenge in a market where his firm is not traditionally strong.

"In North America, our income largely comes from real estate and natural resources, with only 5% of our income coming from infrastructure," he explained. "However, we are seeing some real opportunities to accelerate growth, so the logic was to put somebody from the executive board with infrastructure experience into North America. That's how I got here, with the aim of accelerating our infrastructure income

over the next few years from the 5% we currently have," he said.

Rowden sees a number of opportunities in the region arising from the need to upgrade infrastructure. "What's interesting about North America is that infrastructure assets are not in great condition," said Rowden. "That is recognised and there have been a number of initiatives to improve the situation in the US, such as a federal loan to Amtrak to upgrade the rail system. We are currently working on programme management on Houston Airport's redevelopment and at Dallas Fort Worth. Our role is to be an extension to the client providing executive programme management and project controls. At Dallas we have been establishing project control methodologies for how they deliver their portfolio and programme of work," he explained.

Rowden told me that in the US in particular, infrastructure is increasingly being looked at on a more long-term basis. "Things have tended to operate on annual budgets because it's largely a state-based system but they see that longer-term planning is the way to go," he said. "Looking at alternative sources of funding and building up asset management capability and getting more from existing

"What's interesting about North America is that infrastructure assets are not in great condition. That is recognised over here and there have been a number of initiatives to improve the situation."



assets will be important. They do reference the UK and Australia as a model to follow and what's also interesting is that ISO for asset management is getting applied to all authorities so they have to be qualified and measured and certified against ISO 55000, which is also creating a market opportunity," he explained.

Rowden said that there were differences in attitude towards infrastructure development in North America. "Canada is committed to rail with long-term infrastructure plans and big developments particularly around the Vancouver and Toronto areas, with the state very much into funding it," he said. "What we are seeing in rail in the US is the federal loan to upgrade the Amtrak lines with a big development around the eastern seaboard corridor. In Texas there's Lone Star Rail, in California there's high speed rail, so rail is becoming more prevalent when in the past infrastructure development was more around cars and planes. Now more and more it's rail, both intercity and also commuter lines, and there's opportunity there," said Rowden.



Those opportunities include challenges around who owns the land near rail lines and helping to map a route through. “The US is joining with Canada, who are one of the global leaders, in looking at PPP and how to create innovative funding models,” he said.

Rowden also highlighted the connection between infrastructure and real estate development and the opportunities that are coming to Turner & Townsend. “In New York there are a number of station developments that are integral with mass real estate developments,” he said. “We are programme managers on behalf of Time Warner on a good proportion of the Hudson Yards development, which will have the fifth tallest building in New York. Sitting beside that is the Moynihan Station redevelopment, so understanding the development opportunities on that is a real test bed for future urban environment work we hope,” said Rowden.

“If you link infrastructure development with urban planning the economic stimulus it brings and the attraction to invest in cities and towns can make a major

“You can see the difference that urban development intersecting with infrastructure makes. I’ve only got to look out of my office window here in New York to see that.”

impact. You can see the difference that urban development intersecting with infrastructure makes. I’ve only got to look out of my office window here in New York to see that,” he told me.

On a global basis, Rowden thought there was a trend towards infrastructure development being looked at more strategically by governments. “More and more internationally, we are seeing the approach of setting an infrastructure plan. There is a lot of interest in the UK model around the world and a number of countries including South Africa, Australia and Canada have adopted strategic

planning and investment in infrastructure as a powerful economic lever. This is less the case in the US because things differ state by state,” he said.

So should the industry be doing more to make the case for infrastructure, especially in the UK? “The US political system is markedly different from the UK,” Rowden said. “The US system involves lobbying and putting a commercial case forward, that’s very much in their culture. The concept of a lean state is still prevalent here whether the Democrats or the Republicans are in power. The US also values its industry and with construction being 8% of GDP here, it’s one of the largest sectors,” he said.

“In the UK we haven’t been particularly good at advocating for more investment in infrastructure but with the recent announcements in the UK it’s encouraging that we are now beginning to get more valued as an industry,” said Rowden.

Turning back to his new role, Rowden said he was relishing the challenge. “I’m looking forward to bringing my knowledge to bear in a marketplace where we are not a big player to gain us influence and bring new ideas,” he told me. “It’s perhaps a little grandiose to say it, but I want to find a way of helping the US and Canada really look at global learning and to think about how they can drive efficiencies in asset management, investment and better set up and execute large projects.

“If we can combine the great things that have happened over here with the learning from 20 years of infrastructure development in the UK, building on experiences from clients like Heathrow, Anglian Water and Highways England about how you better do programmes, better get value and efficiency and about how you better use technology and deliver infrastructure, then I’m really looking forward to that. You have to do it client by client so that as an organisation your reputation is enhanced by the client you are working for,” Rowden said.

“There some great opportunities here to accelerate the growth of our business while applying new alternative models that would better serve the US and Canada,” said Rowden. “Through our experience on high-profile projects over here, such as Time Warner’s New York headquarters, San Francisco International Airport, the Toronto Metrolinx Regional Express Rail programme and Freeport LNG’s natural gas liquefaction project in Texas, I’m sure that we will continue to extend our position in the region,” he said.

With Rowden’s experience, determination and drive at the helm, it will be interesting to watch Turner & Townsend’s progress and success in North America in the months and years ahead.



An Autumn Statement with a difference



As the Chancellor of the Exchequer Philip Hammond prepares for November's Autumn Statement, we should expect a less gimmicks and more substance approach than his predecessor, says Julian Francis.

It's that time of the year when the country begins to look to the chancellor to set out governmental priorities and spending commitments in the Autumn Statement. So far so good, but this year's statement looks like it may be a bit different from the style that we have been used to in previous years.

Although Philip Hammond has confirmed he will be delivering the Autumn Statement as planned on 23 November, the chancellor is said to have told colleagues that he wants to move away from gimmicks and micromanagement and return the Autumn Statement to be focused on fiscal forecasting.

This approach was foreshadowed at the Treasury select committee meeting on 20 October in which the chancellor told the

committee that he plans to downgrade the Autumn Statement, or rather take it back to its roots.

The Autumn Statement was originally part of a plan by which government would give two economic updates a year, enshrined in legislation by Labour during the mid-1970s, with Denis Healey giving the first such statement in 1976.

Healey's original statement included an announcement of his spending plans. When Ken Clarke became chancellor the best part of 20 years later, he put the spending and tax announcements back together again in the Budget, moved it to the autumn, and introduced a brief summer statement focused on forecasts.

Clarke believed that it was sensible for tax and spending plans to march in step together, but Gordon Brown, who succeeded him, wanted a second

annual bite of the announcement cherry – and so went back to a spring budget and re-introduced the Autumn Statement in the form of a Pre-Budget Report.

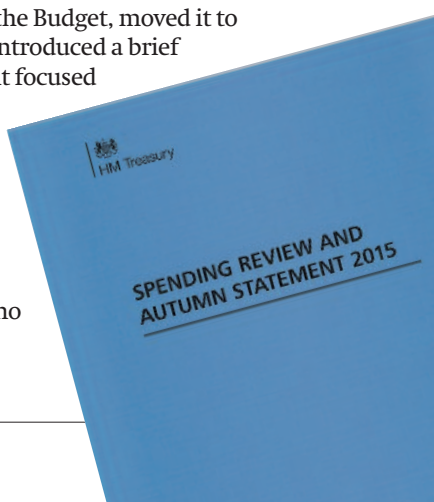
Alistair Darling had originally planned to scale back the Autumn Statement when he became chancellor but he found he needed both the Budget and the Autumn Statement to cope with the fallout of the financial crisis. George Osborne decided to continue with Gordon Brown's approach and to treat the statement as a way of maximising his political impact, using it in effect as a second Budget opportunity each

year in which to gain some vantage, or attempt to.

Hammond evidently prefers a more Clarke-like substance over spin-focused style, and wants in future years to move closer to the original vision of the statement. This has the advantage in that it will avoid the political



“Hammond wants to return the Autumn Statement to be focused on fiscal forecasting.”



fallout from policy announcements that then fail to live up to their billing. Remember the pasty tax anyone?

What this means is that the industry must prepare itself for a very different statement this year that will focus more on the dry economic data of how the government is meeting the objectives of the budget than a Christmas giveaway for the lucky few.

The last two decades have seen a proliferation of policy announcements in budgets that have led to extremely long and complicated finance bills. This is because we were getting in effect two budgets a year and this made finical policy very opaque and hard to follow.

This chancellor is making the process much simpler and to some respect is taking the politics out of the budget process to the degree that this is possible. This fits in line with Hammond's belief that the Treasury has become too big and involved in too much policy making in Whitehall and so is a visible demonstration of the new priorities of the May government.

Out will go the gimmicks and the micromanagement of the past and in will come solid, stable decision making that will be focused on practical results over political opportunism. At least that is the plan according to Downing Street. Make no mistake this is a gamble as the Autumn Statement is the government's one big pre-Christmas opportunity to take the economic initiative and this was why it was so loved by Brown and Osborne.

Given the current economic situation facing the country, Hammond may need such a chance again in the coming years. With the forthcoming Brexit negotiations, the uncertainty about what will come out of them and the need to react quickly, a platform to seize the initiative and reassure markets and industries may well be seen as vital to the survival of the government. What looks at first glance like the stripping-away of a gimmick may be seen in retrospect as the casting-away of an opportunity.

Although this approach may well disappoint some in our industry, we should welcome it as it fits with our request for more certainty and less politics in the development of infrastructure policy. This new fiscal approach combined with the NIC assessments and the industrial strategy have the potential to create a stable policy platform that will enable our industry to invest with the confidence it needs.

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

Appointing a new commercial secretary must be a priority for PM



With infrastructure supposedly high on Theresa May's agenda, why has a top Treasury position not been appointed more than a month after the last one resigned? asks *Dr Nelson Ogunshakin*.

It is a political truth universally acknowledged that ministers come and ministers go. This is a reality that new prime minister Theresa May has been confronted with, perhaps earlier than she hoped, or even anticipated.

At the end of last month, Lord Jim O'Neill of Gatley resigned as commercial secretary to the Treasury. He is yet to be replaced by Mrs May, who did have warning that his resignation was imminent when, at the start of the summer, Lord O'Neill signalled he was considering it. The construction and engineering industry finds itself disappointed at this situation.

One of the key aspects of the role of commercial secretary is with regards to infrastructure and under Lord O'Neill and his predecessors; the development of the National Infrastructure Delivery Plan (or National Infrastructure Plan in old money) was their responsibility. Now the most recent incumbent might not have had as much interest in infrastructure for its own sake, but it remained a key part of his portfolio, and of his Northern Powerhouse and foreign direct investment priorities (FDI).

The pronouncements that Mrs May has made since she received the keys to Number 10 have all indicated that infrastructure, the Northern Powerhouse, and FDI remain high on the list of the government's concerns. It is therefore baffling that she has not acted to replace Lord O'Neill swiftly, to assure those involved in infrastructure that this is the case.

A plethora of meetings have taken place between industry and the various people that have fulfilled the role of commercial secretary, with the latter providing a vital liaison function between government and industry. Issues in the delivery of critical infrastructure have been identified, noted and action taken to overcome them thanks to the holders of this senior position.

ACE members alone employ 90,000 people and contribute £15bn directly and £90bn indirectly to the economy. On top of this, there are contractors, architects and financiers, all involved in the delivery and



Why has Lord Jim O'Neill not been replaced as commercial secretary to the Treasury?

operation of our infrastructure, all of whom are now asking who will they be dealing within government if they have concerns and will any issues be taken as seriously as they were before.

In just a few short weeks, chancellor Philip Hammond will be delivering the Autumn Statement, his first big address from the despatch box as chancellor. This is an event that had become synonymous with infrastructure under the Coalition/Cameron governments and early indications are that it will be similarly a key diary date for our sector.

Unfortunately, the prime minister's failure to appoint a replacement commercial secretary in a reasonable amount of time threatens to cast a long shadow over what promises to be a key moment in the definition of this government's attitude towards infrastructure. Industry will not just want to see more announcements, but a real sign that government prioritises the delivery of the various programmes being developed.

I would urge the prime minister to appoint a suitable candidate to this vital role as soon as possible, to provide the engineering sector with the confidence that she will take their concerns seriously and does seek to work closely with firms. That way it might be more Sense and Sensibility, rather than Pride and Prejudice.

Dr. Nelson Ogunshakin OBE is the chief executive of the Association of Consultancy and Engineering.



Linda Taylor, managing director, Copper Consultancy

Getting the public onside to support UK infrastructure

Engaging people in infrastructure planning and its delivery is a big opportunity for the industry which can lead to a surge in public support for projects of all sizes across the country.

As Theresa May's government signals a change in direction from monetary to a fiscal policy, using low interest borrowing to fund infrastructure is likely to be a real possibility going forward.

If the political will is there to fund infrastructure and developers seem to generally agree with the consenting regime, then surely the problem is solved? Well not quite. There is one major challenge left to overcome which is at the same time an exciting opportunity.

Does the public know what infrastructure means for them?

Copper Consultancy's own research (*Independent Survey of Attitudes to Infrastructure in Great Britain 2015*) found that almost nine out of 10 people in Britain want to see investment in new infrastructure, but many also want more of a say in how it's planned and delivered, with only 6% aware of any form of a coordinated national plan.

This demonstrates a huge public appetite for infrastructure development and a desire to be involved in shaping it, but due to the perceived lack of a strategy, projects appear to come out of the blue. The almost inevitable result is that if people feel infrastructure is happening outside their control - that it's happening "to them", not "with and for them" - they will react negatively. This leads all too often to

objection, rejection and mistrust, not to mention damaged promoter reputations, increased project costs and delays.

The alternative is to turn this into an opportunity. The industry, government, the National Infrastructure Commission and politicians can prepare the public for infrastructure by sharing the first chapters in the infrastructure story. We can capture the public mood and imagination by communicating a clear, co-ordinated national need case for infrastructure, which increases public understanding, help to visualise the benefits and creates a springboard from which each project can be brought forward.

Instead of schemes dominating the headlines in controversy, we can create an environment of greater acceptance and positivity around the engineering challenges we face to maintain and develop our country's infrastructure.

A growing surge of public support would encourage a more efficient consenting process and provide more certainty around investment and delivery. It would also give the sector an opportunity to create a positive legacy for the infrastructure of the future, one which recognises the social value it creates.

"Due to the perceived lack of a strategy, projects appear to come out of the blue."



Ben Marshall, research director, Ipsos MORI

Public says: "Get on with infrastructure plan, but do it right"

Hinkley Point. HS2. Heathrow, Gatwick. Little Plumpton. Infrastructure has been in the news of late and the government's in-tray includes some big decisions about big-budget projects. Thinking in Whitehall is apparently edging towards borrowing to build and a more pragmatic, civic-minded approach to infrastructure; more about jam today (or at least not decades hence), balancing the needs of consumers and citizens.

The changes in emphasis and rhetoric have followed a Brexit vote which brought into sharp focus the need for government to stimulate national and local economies in efficient, equitable ways. Laying track, building runways, upgrading our roads and energy sources, can all help, but if we build it, will they come?; how should we do it?; and will it be worth the effort and money?

With these questions in mind, Ipsos MORI undertook a survey in Britain and 25 other countries asking the public in each how they rated infrastructure, additionally gauging their priorities for

improvement and attitudes towards delivery.

Infrastructure leaders, including the government, will be cheered that:

1. The premise is clear. 76% are of the view that investment in infrastructure is vital to future economic growth. This sentiment is shared by different geographies and demographic groups.

2. There is recognition that action is needed. 60% agree that we are not doing enough as a country to meet our infrastructure needs.

3. There is backing for borrowing to fund investment. 44% support this – substantially higher than the global and

"76% are of the view that investment in infrastructure is vital to future economic growth."



Charles Oldham, strategic consulting and technology director, Amey

What do you get when you cross an engineer with an astrophysicist?

It's not a joke or a riddle. It's the question that all businesses working in the infrastructure sector should be asking themselves.

According to the Organisation for Economic Co-operation and Development, public spending on UK infrastructure has been less than countries like France, Canada, Switzerland and the US since the 1980s and when we combine this with today's increased demand on our transport networks, it's clear that the right asset management strategy has never been more important. A blend of skills is now needed to meet the enormous challenges our infrastructure is facing.

Everyone's talking about data

Data is the hot topic of the industry right now. Almost everyone who works for or with an asset owner will be talking about using data to make smart decisions, but what does this really mean? This will differ from business to business but for us, at Amey, it's about really understanding the assets we manage, using cutting-edge technology to harvest data that matters and then having some of the brightest talent interpret what the data is telling us and translating it into action.

For instance, working with London Underground, we've used real-time data to predict equipment failure in sufficient time to deploy a maintenance team and pre-empt down time. This technology, developed jointly by an

engineer and an astrophysicist, is being deployed in Europe's biggest data centre and busiest airport where up-time is crucial.

Is data more than a phase?

There's always a risk when something new comes to market, that not everyone will get on board – that some might dismiss it as a fad and carry on doing what they did before hoping that it will all blow over. We see data differently and we're making some bold moves to really embed this change into the way we do business. One of the things we're doing is to build the biggest infrastructure team dedicated to data, technology and analytics in the UK, thereby cementing our commitment to making data more than a trend.

The new multidisciplinary team of infrastructure analysts is made up of a growing team of almost 100 remarkable individuals with a huge range of skills and experience including backgrounds in engineering, history, neuroscience, architecture and economics to name a few.

With over a dozen PhDs and 16 languages between them, they are definitely an intelligent bunch but it's their combined knowledge and experience that will enable us to find out things we never expected about the assets we look after and really make a difference to the work that we do – and that's what you get when you cross an engineer with an astrophysicist!

G8 averages (34% and 31% respectively) – while 16% are opposed and 40% are unsure either way.

4. Twice as many are comfortable with the idea of foreign investment as are not. 42% say they are fine with it if projects can be delivered more quickly as a result; 20% aren't. This makes Britons fairly pragmatic and a little more comfortable with foreign investment than G8 countries, but government caution is warranted by the 38% who aren't sure.

There are several challenges (and opportunities). In particular:

1. The image of infrastructure. 48%, agree that Britain 'has a poor record at getting national infrastructure projects right' (12% disagree), despite only 29% dissatisfaction with the country's infrastructure.

2. Many just don't know. At every turn, our survey picked up a large chunk of people struggling to give an answer one way or another. Infrastructure is not a word on everyone's lips and opinions are often very conditional on the detail.

3. All infrastructure is local. 67% justify delays to infrastructure projects if it means that local communities' views can be heard properly, a higher proportion than the 59% in G8 countries. The public are very sensitive to winners and losers. This can be seen in some of the reaction to the approval of plans for fracking in Little Plumpton. More generally, we find people anxious about change but also fearful of stagnation.

4. New housing supply and flooding. Both of these are among top priorities for Brits, probably because of extensive media coverage and their wide reach, but neither fit neatly within the

“Building a narrative about better infrastructure for a better Britain will take a concerted effort.”

National Infrastructure Commission's remit.

These factors make up a complex and changing socio-cultural backdrop that infrastructure leaders must navigate to 'land' projects so that they are welcomed and cherished. November's Autumn Statement will be a key moment in taking the story about Britain's infrastructure forward, but building a narrative about better infrastructure for a better Britain will take a concerted effort.

This isn't just about communications, PR and reputation management, important though these are. It also about the way infrastructure is done; the way it is planned, delivered, managed and evaluated.

The message from the public is 'Get on with it (but do it right)'. The infrastructure story must be well told, but in the years ahead that story must turn into fact, not fiction.

Download the survey at www.ipsos-mori.com/infrastructureurvey

Better collaboration could save infrastructure sector £50bn



The UK has a huge amount of capital infrastructure on its horizon and while this brings enormous opportunities, there are also considerable challenges ahead for the industry, argues *Paul Taylor*.

An infrastructure boom is coming to the UK. Over the next five years, there will be some £250bn spent on programmes across energy generation and transmission, nuclear decommissioning and water. This vast amount of investment offers our industry a wealth of opportunity, but it will present us with numerous complex challenges to overcome.

We need to start addressing some fundamental questions that sit at the heart of these challenges. Particularly pressing questions are: Do we go for replacement before renewal? Are the manufacturers and suppliers in place to deliver the equipment and materials needed for at least the next 10 years? Are there enough skilled people to manage and deliver all these programmes of work?

Answering these points will go a long way to giving UK infrastructure the necessary ammunition to deliver these multifaceted programmes. However, managing delivery is only part of the

puzzle. The infrastructure sector must deploy smarter strategic programme thinking by bringing technical experts into the fold from day one.

The role of strategic technical experts cannot be underestimated. They work to create efficiencies and value by concentrating on outcomes within the first development stages of a programme. By closely linking programme management to technical excellence, the benefits of the investment will be maximised. Programmes will be carried out in the optimal way, thereby significantly reducing risk.

This approach is vital now more than ever. Regulators are increasingly concerned on outcomes rather than outputs. The water sector is very much a leader in adopting this methodology. Deploying programme management in close partnership with technical expertise has enabled the sector to deliver greatly improved outcomes without the need for higher investment.

Regulation is a driving force in this case, but it has meant that all parties involved in infrastructure projects – asset owners, programme managers, engineers and contractors – have to work together to deliver the desired outcomes.

Bringing technical excellence and programme management under one roof brings further benefits that can serve our industry in other ways. It offers the chance to share knowledge cross-sector and identify trends and different ways of working.

There are a huge number of similarities in the way that programmes are executed in different sectors. However, little has been done to take advantage of this. For example, the nuclear and rail infrastructure share a number of characteristics: both rely on having heavy engineering specialisms in the UK and rely on a limited supply chain.

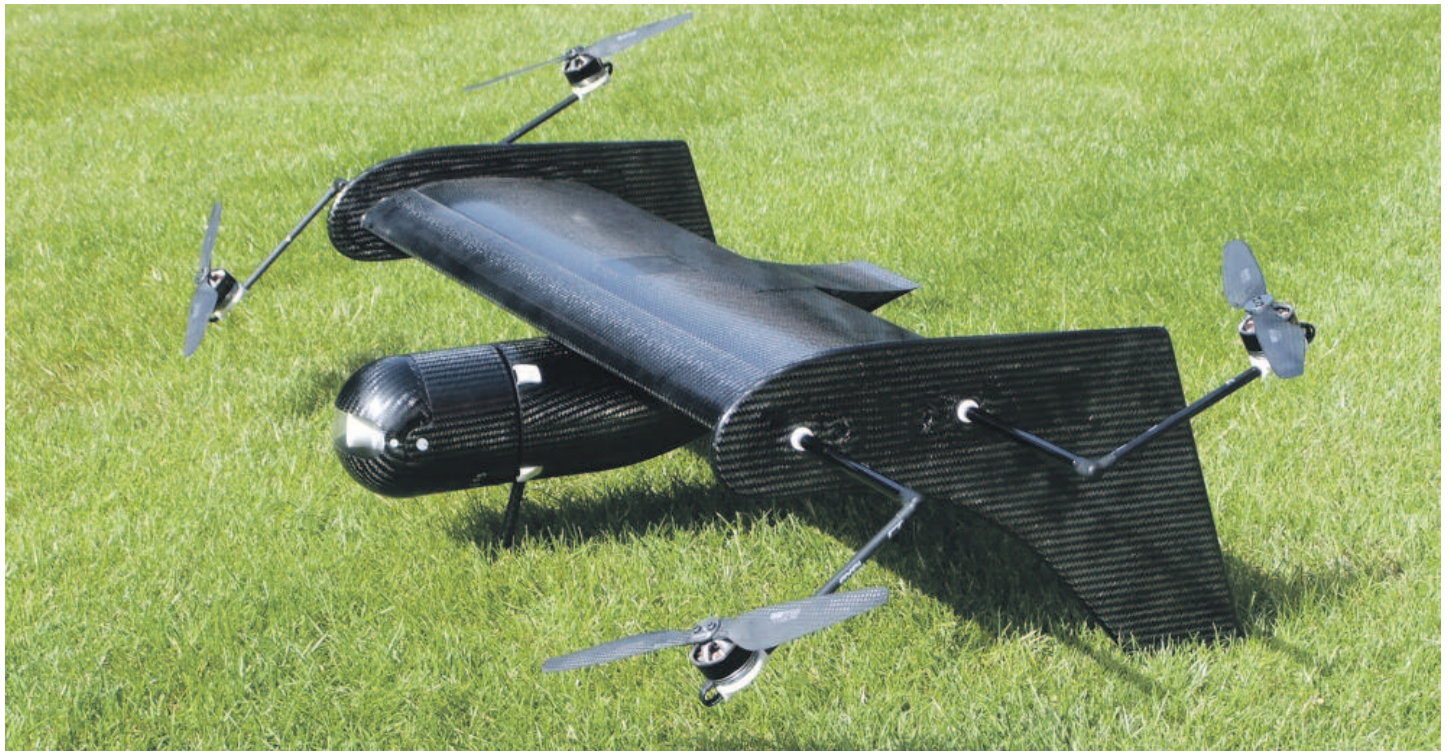
Or take the nuclear and water industries. Both have large-scale process plants, treat massive volumes of contaminated water and solids and have a strong regulatory requirement to protect the environment. It is clear that, given these similarities, there is an opportunity for greater knowledge-sharing between the sectors.

Closer collaboration and open transfer of ideas is a good way of generating the innovation needed to solve the challenges of delivery listed above. It also offers the chance to make significant savings. Adopting this way of thinking could potentially see the infrastructure sector successfully deliver £250bn worth of projects for £200bn.

However, for this to happen, we must look beyond managing delivery. We need to think deeply at the very early stages about how programmes should be developed to achieve desired outcomes with the minimal combined capital and operational costs, using sharing cross-sector knowledge to root out innovation.

Paul Taylor is head of programme development at MWH, now part of Stantec, which has 22,000 employees working in over 400 locations across six continents.





A day in the life of the Flying Wing

We spend a day with one of the newest additions to the infrastructure inspection sector.

There's no such thing as a typical day for me. No two days are the same and there's no telling what tomorrow will bring – and that variety is exactly why I love my job so much.

As a Flying Wing, I'm on the cutting-edge of drone technology worldwide so the limits of what I can do haven't really been tested yet. But I do know I can do all sorts of things that other drones fall short of and I'm going to make a big difference to how some of the infrastructure and services we take for granted are looked after.

My job takes me all across the UK, inspecting and assessing key infrastructure. My day could involve just about anything from covering 100 miles of rail track, looking for potential issues that could slow down passenger or freight trains, to inspecting the overhead lines that keeps power flowing to homes and businesses.

Safety is my number one priority

The most important thing I do is helping to keep people safe. Today, if we want to know what's happening on the UK's networks, someone has to go and

physically look and this can sometimes be hazardous. I work as an extension to the wider team to remove this safety risk – allowing my inspector colleagues to review data from the network in the comfort and safety of the office. This also allows the rest of the team to focus on adding value to the analysis and providing smarter solutions to our clients to help them make better decisions about their infrastructure and assets.

Making asset management inspections quicker and easier

I'll be starting a new project from 2018 to make risky manual inspections of the rail network a thing of the past. Historically, these inspections are also expensive and time-consuming but I'm geared up to deploy from anywhere, at the touch of a button to deliver repeatable, consistent and accurate inspections that could save millions of pounds for our clients. But it's not just about inspections, it's also about the data that I collect and I work alongside a bunch of remarkable individuals at Amey with a huge range of skills and experience that will enable us to find out

things we never expected about the assets, which really makes a difference to the work that we do.

But my work can touch all aspects of Amey's business such as roads, utilities and gas industries. I've also got the potential to help grow the business into new markets like agriculture, maritime, logistics, wind farms and much more.

My talents don't stop there! I'm also tasked with passing the benefits of quicker, easier inspections onto our clients and customers. For example, quicker rail inspections mean shorter closures on the network and therefore less disruption to journeys.

Uniquely, I also use a range of sensors to capture multiple data that we then interpret to make smart recommendations to asset owners. Inspections can also be repeated, whenever needed which is great news for asset owners who are constantly challenged with delivering cost efficiencies for clients while increasing inspections to meet the growing demands on the UK's networks.

Bringing together international expertise

Everything that I do has been generated by the partnership between global asset management consultancy, Amey, and world leading drone technology experts, VTOL Technologies. Together, AmeyVTOL represent the future of aerial inspections, with an ambition to transform the world of asset management.

To find out more about the work that I and the rest of the team do visit www.amey.co.uk/ameyvtol



New dawn for New

Almost 12 months after the opening of Birmingham's redesigned New Street Station, *Simon Dale* takes a look at the lasting legacy of this major infrastructure project.

It is almost exactly a year since the iconic £776m redesign of Birmingham New Street Station was officially opened by the Queen. The re-purposed concourse, flooded with daylight from its vast and brand new signature atrium, became an instant hit with the hundreds of thousands of passengers who use New Street every day. The immediate reaction from the public was all the more significant because only 18 months previously, New Street had been named "Britain's worst passenger station" by industry watchdogs Transport Focus, after a survey revealed it had the lowest satisfaction levels among UK passengers.

Since it was last rebuilt in the 1960s, New Street, the busiest railway station in Britain outside of London, had outgrown its outdated building, creating a dismal first impression of Birmingham as the second city's main gateway. The old station had been designed to cater for 650 trains and 60,000 passengers per day.

Just before Mace began the re-construction in 2011, New Street received more than 1,350 trains a day and had a

regular flow of 130,000 daily passengers, however, this could reach a peak of 250,000 during events such as the Cheltenham Festival and Christmas markets making closures and overcrowding on safety grounds more prevalent.

The UK's second city deserved better.

Whilst New Street desperately needed a face lift, if it was to provide any lasting regeneration for Birmingham it also needed open heart surgery to improve train and passenger flow, as well as a complete internal reorganisation in order to attract shoppers to a flagship city development.

While legacy is an oft-repeated mantra these days, if infrastructure is to provide any widespread and lasting benefit for society it is crucial that it is engineered with the end goals in mind. For New Street these were:

- Community buy-in – gaining the backing of local residents and businesses with New Street to be the spur for a much wider regeneration of a core area of Birmingham city centre;
- Efficiency and innovation – pioneering new demolition and construction techniques in order to deliver a complex redevelopment on time and in budget;
- Employment – providing a legacy for the workforce and the SMEs working on the project including setting and exceeding targets for the recruitment of local apprentices.

Community buy-in

With such high levels of criticism already directed at this inner city development,

there came equally high levels of expectation. There was also an inevitability about the station's redevelopment. With the need to keep disruption at an absolute minimum during the day, much of the heavy demolition work had to be carried out at night. To make a success of a major infrastructure development it is vitally important to have the buy-in and trust of the local community. As such a significant amount of community and stakeholder engagement took place prior to both demolition and construction, with the consultation of nearby residential properties, two large hotels, and almost 70 businesses.

Building trust with the local business and residential community was key to the success of this.

Holding regular face-to-face meetings in the on-site offices meant residents and businesses could find out exactly what would be happening over the course of the next three to six months and beyond. At the Arcade opposite the station were retail properties, shops and a hotel. We would meet with many of these stakeholders regularly and provide daily updates if required. If the nearby hotels were fully booked for major events, sometimes one or two night stoppages had to be planned into the build schedule to ensure these businesses continued to thrive during a four-year build programme.

On other occasions the hotels would accommodate our work by moving guests to the back so that we could continue without complaints. Lorry movements in the city centre, particularly at night, were kept to an absolute minimum by opening up a local sidings which meant a Mace project train could bring building material in and out by rail.





Street

Of course residents and businesses also had to be told bad news – for instance that health and safety tests, smoke alarms and fire alarms being tested would be done at night. By communicating exactly when and how long a particular piece of work would last, people were more accepting of it, as long as they knew when the work was taking place so they could organise their lives around it.

Efficiency and innovation

Prior to beginning the works, Mace set up noise monitoring stations on local buildings which were designed to notify key members of the construction team if levels went beyond those that the city's environmental department had set. On any occasions where monitors were triggered, Mace could then respond within 10-15 minutes. Mace also hired a sound engineer to design acoustic walls which sat behind the assigned demolition area, further reducing the noise output.

The team devised an innovative way of using enclosed tunnels to work around the daily flow of passengers. This was done by creating a modular tunnel on wheels which could take the impact of falling debris and materials. It incorporated AV screens and had a plug and play system to direct the station's main tannoy announcements. This meant that 180m of tunnels and walkways could be easily jacked up and moved along at any time whilst passengers had an impression they were still walking through a station rather than a building site.

Even with the most robust plans in place, there are always surprises. The discovery of a huge amount of asbestos at New Street during the second phase of development put our programme into delay. In total 60,000 hours were spent

removing the asbestos at a cost of £40m.

We had already removed the original internal structures and existing retail level floors to create the new atrium before this became apparent. As a temporary solution we widened the beams out and put them on a hover track system but as this was quite slow so we looked to significantly reduce the time it took.

Working with the local company JCB, we developed a bespoke machine for the team. The adapted 360 excavator was designed to effectively munch around the beams with oversized jaws, using a remote control. It did this at a phenomenal pace. Even factoring in the setbacks, we managed to reduce the overall demolition process from 13 months, to five months and three weeks. As a result, Mace won a world demolition award for the work carried out in New Street's Atrium. The unique piece of demolition machinery is now used by Colmans and JCB across projects where they have similar constraints.

Employment and overall legacy

Working with Birmingham City Council's Working Access Team and Network Rail, we had set a target of placing 100 apprentices onto the New Street project through the supply chain. The 42 contract partners on the scheme together with Birmingham College, signed a pledge to

take on local apprentices. We had appointed exactly 124 apprentices by the end of the scheme. Most of the apprentices have now gone on to work in the industry, whilst all 12 apprentices who were appointed by Mace are still working with the business on new projects.

A year on from the launch, Mace and the many construction partners involved in New Street's redevelopment are still receiving praise from business leaders and passengers. Members of the public can still be seen taking pictures of their reflections at the station's main entrance while more importantly, people now come to the station to meet and use the new facilities. The creation of the new Grand Central retail centre has rejuvenated shopping in the city. Now more than 6,000 retail jobs are supported by the Grand Central and neighbouring Bullring.

As a result, the city has moved from 12th to third in the national retail rankings and seen an 11% increase in its visitor economy. Now 88% of passengers who used the station between March and May 2016 were satisfied with their station experience, a rise of 23 percentage points from 65% two years ago.

Simon Dale is business unit director (Central & South West) at Mace



Anyone expecting to work on a road improvement project for Highways England (HE) in the near future can look forward to having some frank conversations about behaviour. Fear not, the HE is gathering views on what makes collaboration work, or fail, with the promise of anonymity. Project teams are getting opportunity to talk openly about the subject without fear of reprisal, but in return, everyone is being asked to take responsibility for their own behaviour.

The concern for the HE and its supply chain is tacitly understood: England's roads sector needs to up its game if it's to successfully deliver all £15.2bn of investment planned for 2015 to 2020.

As the HE came into existence in April last year, it set up an engagement council with over 70 of its suppliers. The first meeting came up with five priorities for success with delivery of the government's Roads Investment Programme (RIS). Embedding collaborative behaviours throughout the supply chain was one (along with defining good value and performance; best practice in planning; incentivising and supporting innovation; and building capability and capacity).

Since then, a new initiative has emerged: the Improving Behaviours Improving Performance (IBIP) programme. "It's clear to us that better outcomes result where projects are truly collaborative," says the HE's lead on IBIP, Tracey Collingwood.

"We've invested in lean and used different types of contracts and processes, but productivity has not materially improved across our industry for a generation. However, we also have evidence of a direct correlation between collaboration and project performance, which is why we're focusing on collaborative behaviours."

The HE is driving IBIP; the intention is to introduce it to every one of the 113 projects of the RIS; in partnership with its supply chain. Individuals from companies on the HE's Collaborative Delivery Framework (CDF) have volunteered to drive improvement in each of the five priorities. Facilitators are being trained up to deliver IBIP workshops to project teams that their own companies are not involved in. So far, over 1,000 people at around 30 different sites have seen what it's all about.

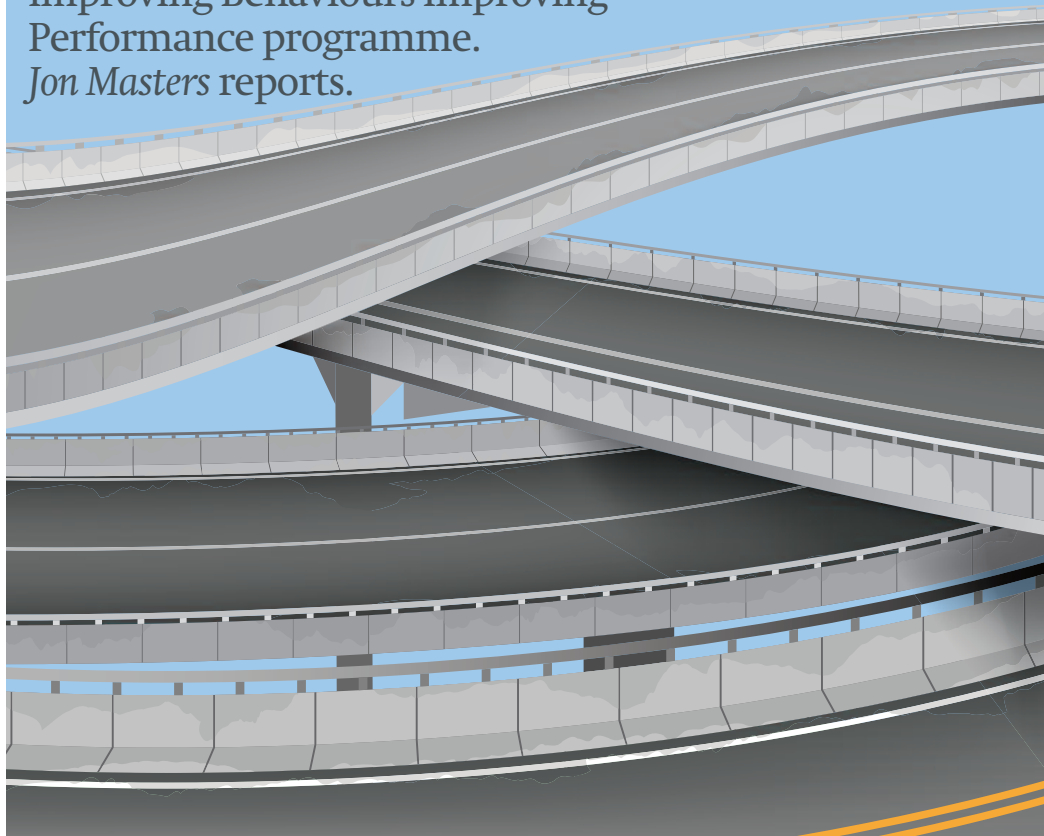
Andrew Jones is a technical director and IBIP leader for WSP Parsons Brinckerhoff. "Having seen what needs to be delivered over the next four to five years, it's clear that as an industry, we cannot carry on as before," he says.

"Collaboration is commonly described simply as companies or organisations working together with a common objective, but it needs more than that if it's

Upping the game

A new initiative is spreading out across the roads sector in England, identifying and embedding the good behaviours that make collaboration work: the Improving Behaviours Improving Performance programme.

Jon Masters reports.



going to work. We all know it can get tough when projects don't go well or problems occur. What's needed, to prevent delays or disputes, is the ability to have honest and productive conversations when things get difficult," Jones says.



"It can get tough when projects don't go well. What's needed is the ability to have honest and

productive conversations when things get difficult."

Andrew Jones, WSP Parsons Brinckerhoff

This is the nub of it. Everyone involved in IBIP seems to have their own take on it. But what keeps coming up, is the importance of people being given opportunity to talk, in a safe environment, about what the good and the bad of collaboration look like; and then having the personal skills, or 'maturity', to recognise what they can do to improve their own behaviour.

"It's not a soft and fluffy subject. It's about having the ability or skills to have the open and sometimes difficult conversations – getting people talking about behaviours," says Matt Stacey, a board member of BAM Nuttall Morgan Sindall Joint Venture, which holds a place on the Major Projects Lot of the CDF.

There is also some systematic process to all this. Individuals and companies pushing the IBIP message are being assisted by a

team from JCP Consulting led by behavioural specialist Amanda Crouch. "The industry has picked out eight key collaborative behaviours that are needed to make projects successful. We've helped them put all this into behavioural language," Crouch says.

Under each of the eight headings or categories – including engagement, accountability, trust and respect – multiple different descriptions have been determined, of what that behaviour looks like when it is 'damaging', 'contributing' or 'leading' towards success.

The resulting matrix has been called the Behavioural Maturity Framework (BMF). At project level, anonymous surveys are gathering views of all team members' 'experience' of the different key behaviours.

In the long run, there's intention to use the data to map out how the damaging or leading behaviours occur commonly at certain positions or points within project teams. For the time being, however, the survey results are being used to inform how IBIP workshops are set up: in the process, giving project teams an understanding of where they're at with 'behavioural maturity'.

"There is real value in having a straightforward explanation to help people understand why behaviours, such as the positive or negative tone they adopt, are important," Matt Stacey says. "In the past we have often hoped too much that people would figure all this out for themselves."

Amanda Crouch says: "The IBIP workshops are designed to show which different behaviours are having a positive or negative impact, and to allow people to then have important honest conversations about these actions, or inaction, based on anonymously gathered views."

For example, she says, quicker decision making comes from people relying more

on face to face discussions and less on emails. The resulting more rapid resolution of issues stops people making assumptions.

"Face to face meetings and direct communication prevent time being wasted by stopping people from going off in their own direction with critical tasks. All of these things are important for helping things to be done more effectively, with a big impact on cost and delivery," Crouch says.

Darren Griffin is a lead bid manager for Osborne – a contractor of CDF Lot 2 for schemes up to £25m. He's also now a trained IBIP facilitator. "The behaviours of the BMF for discussion are not tightly prescribed. It's about individual teams deciding what's important rather than us dictating any answers," he says.

"The surveys test what the focus of each workshop needs to be. From that

point, with a nominated leader on site, we work out the necessary theme."

Quizzed on levels of scepticism he's encountered: "not a lot", Griffin replies. "The behaviours have generally been well thought out. And project managers, they get it.

"There is a tendency for people to revert back to talking about process, because behaviour is more difficult to talk about. Workshop discussions often focus on how to talk about it. Trust and permission are important. People need to feel safe talking about it."

Crouch gives a good example that she's encountered when talking to one of the HE's project teams. "They recognised that they needed to better understand the time pressures each was experiencing and how these were affecting them personally," she says.

"A team member has subsequently told me they have been having wider and more frequent conversations about people's availability and key dates on other schemes, so getting a better appreciation of when the work peaks will arise. The result is better resourcing and the project team hitting its weekly completion targets."

It's also not just the HE and its CDF suppliers that are getting to grips with collaborative behaviours. According to Tracey Collingwood, how to enable the right ones that lead to improved performance, is now being talked about by a number of major infrastructure providers.

"We're all now talking about this agenda together, about behaviours and their importance for delivery of programmes of projects. This is the hot topic for quite a few major clients within the infrastructure sector, which are all facing the same challenges around delivery, efficiency and resources. And so there's a lot of appetite for IBIP, for a concerted approach focused on collaborative behaviour," Collingwood says.

The individual members of the IBIP group have also stated their intentions to spread the message by running their own in-house workshops.

"Connect Plus which is running the M25 DBFO contract, it too has its own similar variation of IBIP," says Darren Griffin. "We're a Tier One supplier to Connect Plus and now we have got to bring our subcontractors into the same work on collaborative behaviours. The facilitating ideas are different but they're aiming at the same principles."

Mouchel's managing director for highways and transport, Jeremy Wray, is also part of the IBIP group, as well as a member of the HE's collaboration board.

He says: "This subject of how to improve performance through genuine collaboration is taking on a lot of importance. We now have the BMF as a bespoke model for raising awareness, which we're intending to run internally and across other sectors.

"It develops a language in relation to collaborative behaviour – this is the real value of it. Once people get that vocabulary, they can have the open and honest conversations with constructive comments about behaviour. But it's just the start of a process that has to be repeated. It's not just a tick-box exercise," Wray adds.

"We're working project by project with teams already put together, which makes sense, but those teams will tend to get broken up. It's going to take some time, possibly a generation, to imbed completely across industry and deeply through the supply chain."



Amanda Crouch:
"We've helped them put all this into behavioural language."



Jeremy Wray:
"It's not just a tick-box exercise."



"Workshop discussions often focus on how to talk about behaviour. Trust and permission are important. People need to feel safe talking about it."

Darren Griffin, Osborne



"There is real value in having an explanation to help understand why behaviours, such as the positive or negative tone they adopt, are important."

Matt Stacey, BMJV

This year's annual conference of the Environmental Industries Commission will focus on the factors that drive growth in environmentally focused businesses and the significant implications that Brexit will have for the environmental sector.



Going for green growth post-Brexit

There is no getting away from the fact that Brexit poses a significant risk for the UK environmental sector. This is because most environmental markets, unlike, say, markets in retail, are heavily influenced by regulation. And with over 500 pieces of EU environmental legislation having been passed over the last 40 years, there are few aspects of the environmental sector which are not in some way influenced by Brussels policymaking.

Of course, public and political attitudes to the environment have shifted greatly since the UK joined the then EEC in 1975 and it is hard to imagine that there would be a wholesale scrapping of standards for clean bathing water at beaches for example. But there is real uncertainty about how Brexit will impact on UK environmental policy.

Tackling uncertainty about Brexit

A lot of this uncertainty relates to the Brexit process itself. Clearly no-one knows how the Article 50 negotiations will unfold, nor how long they will take, nor what the UK's final relationship with the EU would be like. If the UK ended up as a member of the European Economic Area which brings Single Market Access (the so-called 'soft Brexit' option), then we would be required

to implement all EU environmental law apart from the Bathing Waters, Habitats and Birds Directive, but in the event of a hard Brexit there would be much more discretion.

The government has made a small but much-needed step to clarify one issue – the 'Great Repeal Bill' announced by the prime minister at the Conservative party conference will ensure that EU legislation does not lapse on the day we formally exit the EU but will instead be transferred to UK statute en masse.

In these uncertain times, the EIC is seeking to do three things:

- Emphasise in our contacts with ministers and senior officials the vital need to maintain high environmental standards and broad regulatory stability
- Help EIC members navigate the uncharted waters ahead. As part of this we have set up a series of members' seminars to help members understand the nuances of how Brexit might work. The next one in late November will feature the deputy head of the Norwegian Environment Agency and discuss what the UK can learn from the Norwegian experience of implementing EU environmental law as a non-EU member.

- Analysing EU environmental regulation in each sub-sector and assessing which elements are crucial to our environmental wellbeing and must be retained long term, and which elements now have less value or could be usefully reformed.

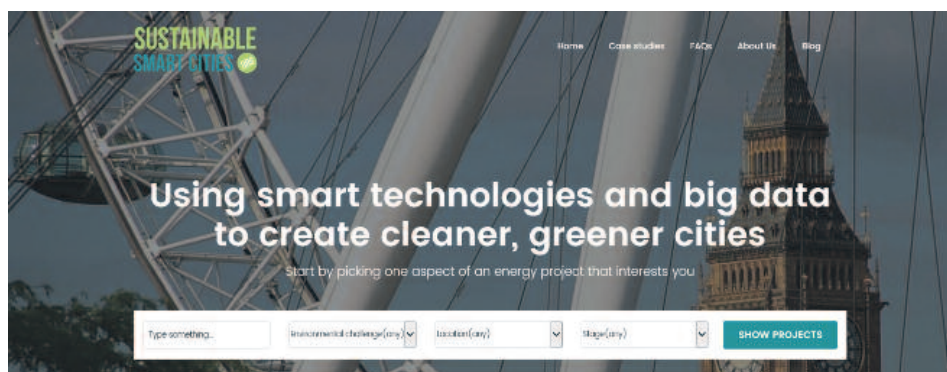
We will use this work in discussions with Defra and the new Brexit department as the Article 50 process develops.

The EIC annual conference will also feature an expert panel discussing the risks and opportunities that lie ahead for the environmental sector in a post-Brexit world.

Exporting Environmental Expertise

With the historical need to tackle pollution that resulted from the industrial revolution and the continual development of environmental best practices within regulations, the United Kingdom has a notable reputation world for environmental expertise. With specialised UK skills in low carbon and renewables, many countries around the world are looking at utilising UK skills and technology.

In 2015, EIC became an accredited trade partner for UKTI. UKTI has now been absorbed into the new Department for International Trade, but the accreditation



continues, meaning EIC gets preferential access to DIT export market intelligence in UK embassies around the world, and is often invited to meet visiting trade delegations.

As Brexit approaches and the government is encouraging UK businesses to export, it is vital that the environmental sector is included in these efforts.

The EIC conference will be an opportunity to discuss how EIC members can prosper in these markets and hear from business that have already done so.

Smart Cities

EIC's Head of Smart Cities, Sam Ibbott, will chair a breakout session at the conference looking at the role of smart technologies and big data in helping our cities and urban areas to function more efficiently – reducing pollution and creating more sustainable environments, both financially and environmentally.

Over the last two years, EIC has carved a niche in understanding and promoting the use of smart technologies to help cities meet core environmental challenges – air quality, carbon and energy management, waste and recycling, and water management. This work has led to the launch of new website, sustainablesmartcities.org.

EIC's research to date has highlighted the significant potential for this

environmentally-focussed smart industry – some \$92bn globally by 2020 – but also many challenges in reaching this potential. Chief among them is the relative immaturity of the market for these solutions – with no established business models, several disruptive technologies, and a set of city government buyers who are cautious about investing large sums of money in exciting, but often untested technologies.

The core of sustainablesmartcities.org is an international case study database, which will highlight international best practice and help to connect those responsible for dealing with environmental challenges with those who can provide technology-based solutions.

Guided by an industry taskforce of companies, cities, academics and policy makers, the website will act as a central hub to bring together and promote a currently disparate industry. With the aim to create tangible commercial opportunities for innovative companies whilst enabling an increased quality of life for those living in cities, and the breakout session at EIC's conference provides the perfect platform to progress this conversation.

Make sure to sign up for your place at EIC's Annual Conference 2016 to discuss the above topics, and many, many more.

About our Gold Sponsor - Lancaster Environment Centre

The Lancaster Environment Centre at Lancaster University supports one of the largest groups of environmental researchers in Europe and has been ranked in the top ten for interactions with small and medium enterprises.

A community of world class environmental researchers, high achieving students, government scientists and commercial enterprises work together to address today's biggest environmental challenges across areas including: Atmosphere, Climate and Pollution; Soil, Plant and Land Systems; Water Science; Environmental and Biogeo Chemistry; Plant and Crop Science; Ecology and Conservation; Earth Science; Culture, Politics and Nature; Geospatial Data Science; and eco-innovation through the award winning Centre for Global Eco-Innovation.

Exemplar Facilities

In the past decade over £35m has been invested in buildings, including office space and hot desk facilities. The centre hosts the Environment Agency, over 20 businesses, and one of the Natural Environment Research Council's research laboratories, the Centre for Ecology and Hydrology (CEH) and was cited in the 2013 *Witty Review of Universities and Growth*. The launch of a new Graduate School for the Environment, in partnership with CEH and Rothamsted Research, in October 2016 brings together a cohort of over 200 PhD students and builds on existing professional training courses run with industry partners.

Douglas Booker, managing director of National Air Quality Testing Services Limited (NAQTS) commented "The core principles of NAQTS require a firm foundation in academia. Lancaster University is an ideal choice for leveraging academic excellence... we have found the staff to be enthusiastic, professional, with leaders that are helping NAQTS to shape and develop its portfolio."

Contact Us

Contact business partnerships managers Dr Paul McKenna on 01524 510301 or by email at p.mckenna@lancaster.ac.uk or Dr Chris Holroyd on 01524 510228 or email: c.p.holroyd@lancaster.ac.uk or register your research need on our portal at www.lancaster.ac.uk/engage



EIC Annual Conference 2016

Going for Green Growth Post-Brexit: Innovation, Exports and Financing in the Environmental Sector

Wednesday 30 November 2016, London
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The Lancaster Environment Centre at Lancaster University supports one of the largest groups of environmental researchers in Europe and has been ranked in the top 10 for interactions with small and medium enterprises. We are seeking new businesses to collaborate with us on short term projects and large multi-partner collaborations.

Why Collaborate With Lancaster Environment Centre?

- Access R&D funding, facilities and office space
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www.lancaster.ac.uk/lec/business

Collaborate with our new Graduate School for the Environment

The Graduate School for the Environment is a pioneering new collaboration led by three world leaders in environmental research and practice, combining the world-class expertise, resources and connections of Lancaster Environment Centre, Rothamsted Research and the Centre for Ecology & Hydrology to train the next generation of environmental researchers, scientists, consultants, innovators, project managers, business leaders and decision makers.

All three organisations share a philosophy. They believe that environmental issues and challenges do not confine

themselves to one country, that they cannot simply be addressed by one scientific discipline, and that solutions cannot be found by researchers, governments and businesses working in isolation. Instead they advocate an international, interdisciplinary, inter-agency approach. Working together they have built on the established success of the postgraduate programme at Lancaster Environment Centre to form a new and immediately world-leading academic centre – with a truly global outlook and a similarly global network of real-world contacts.

The team at the Graduate School are dedicated to designing, delivering and expanding a portfolio of professional training programmes, so that professionals can study for a postgraduate qualification alongside their jobs. The School currently offers programmes in Food Challenges for the 21st Century and Flood and Coastal Risk Management and welcomes enquiries from businesses who would like to sponsor students to take any of the modules on offer. The School are also happy to devise new professional training programmes specifically for particular organisations.

www.lancaster.ac.uk/lec/graduate-school



A new record-breaking bridge made out of Lego is helping to showcase the amazing and inspiring feats of engineers to the wider public, says *Dr Robin Sham*.

Designing the world's longest suspension bridge made entirely out of LEGO may not be on as grand a scale as the bridges I usually create, but the structure, which is currently on display at the Institution of Civil Engineers in London, still provides a fantastic opportunity to showcase the extraordinary feats of engineers to the public.

The bridge, which spans more than 30m and is made up of over 200,000 individual plastic bricks, is at the centre of a new exhibition that celebrates the civil engineers who have created some of the world's greatest bridges. From Thomas Telford's classic Menai Strait suspension bridge to modern masterpieces including the first Severn crossing, bridges are examples of some of the most demanding engineering challenges. More recent and current endeavours, such as the Second Penang Bridge and the Padma Bridge, are vivid examples of how civil engineering can overcome the merciless forces of nature and direct its resources for sustainable use.

I always knew I wanted to be a bridge engineer. The grandeur of landmark bridges fascinates me and I enjoy the sense of achievement that comes from creating such massive structures. Every bridge brings unique challenges, so each project I work on is different. Truly iconic bridges will have an imaginative design, but the structure must also seamlessly integrate with the surrounding landscape.

Of course bridge engineering has evolved significantly since I started my career. Technology advancements allow the sector to build structures in topographies and environments once deemed impossible. The Sutong Bridge in China, for example, fulfilled a century-old dream when it opened in 2008 by connecting the cities of Suzhou and Nantong, previously separated by the vast six-mile-wide Yangtze River.

Four years later a new crossing over the Yangtze opened more than 100km inland from the Sutong Bridge. As the world's first long-span, three-pylon suspension bridge, the Taizhou Bridge achieved five new world records. At a height of 200m, the structure includes the tallest ever central pylon, as well as the deepest underwater bridge caisson foundation to support it. The bridge also has the longest suspension cable and was the first concurrent erection of two long suspended deck girders in an integral suspension bridge system.

As design consultant for the project, AECOM's team applied their expertise gained from the record-breaking Sutong

Pushing the boundaries of bridge design



Bridge project to the Taizhou Bridge scheme, helping to steer more future trends. Building on past experience is key to pushing boundaries in bridge design and ensuring the sector remains innovative. As the world's first attempt to design and construct such an ambitious bridge, substantial research and development efforts were required to aid the design of the Taizhou Bridge.

Developments in engineering science techniques over the past few decades mean

engineers can anticipate and manage changing environmental risk factors. Technology that facilitates wind tunnel testing, earthquake simulation and seismic hazard assessments, for example, enables investigations that were not previously possible even a quarter of a century earlier.

Importantly, bridges improve people's lives in a very tangible way. They connect people and places, both physically and emotionally. The 6.15km-long Padma Bridge, which is currently under construction, is an excellent example of poverty relief and disaster prevention. While knowledge of the engineering sciences is vital, bridge engineers must also have an understanding of humanities subjects and the important role they play in changing people's lives for the better.

Informing the wider public about the extraordinary work of bridge engineers will help inspire the next generation to consider a career in engineering. That is why initiatives like the ICE's new exhibition are so important. Using familiar LEGO bricks to create an impressive suspension bridge helps demystify engineering and the work that we do. The opportunities in bridge engineering are boundless and as a profession, we must do more to highlight this to those outside our industry.

Dr Robin Sham is global long span and specialty bridges director at AECOM.





Knowledge is power but culture helps you

Elevating knowledge management so that it becomes part of the DNA of a company's culture was the key take-away at a recent forum event organised by Infrastructure Intelligence and supported by BST Global. *Andy Walker reports.*

In an increasingly competitive construction marketplace, professional services firms are looking at how to better use their talent and intellectual capital to spread knowledge and make it more accessible across their organisations. Those present at a recent breakfast forum on knowledge management at London's Claridge's heard from leading experts in the field about how to create and foster learning organisations that better share information and work more efficiently as a result.

"The ability to learn and innovate faster than your competitors may be your only sustainable competitive advantage," said Darryl Williamson, director of knowledge management and information delivery at BST Global. "Leveraging knowledge assets in a firm is achieved by fostering a culture that meaningfully connects people," he said.

Culture was a recurring theme at the event. "It's not just about doing something different it's about becoming something different," said Williamson. "We really want to zero in on the cultural dynamics – it's about who we are," he said.

According to Williamson, knowledge management was "an ability to capture, recall and use my experiences". To do this well, it was important to resource knowledge management properly within an

organisation in order to foster the right culture, he said. "You have people looking after the money side of what you do, marketing and also HR, but it's the same thing for knowledge. You need to elevate it as a professional focus. Knowledge management has to be somebody's job," he said.

The financial imperative for this was clear, with recent surveys showing that 39% of employee time is lost by duplicating work and 58% of people wasting an hour a day looking for information. "Unbillable time," Williamson called it. "Organisations that do knowledge management will see a double return on assets and sales and as they learn on project work they are able to leverage this learning on future projects, increasing efficiency and reducing the risk of defects too," he said.

Williamson also talked about the need to grow the awareness of knowledge management in a firm and the "lightbulb moment" where "you see the world

differently". "You need to back that up by developing practices within local offices and sharing knowledge between departments," he said. "Then analyse and look for improvements and start to measure.

Knowledge management is a process and you have to nurture it. It's like a science," he said.

Williamson said that the values of an organisation were also important. "Ask yourself, do we value people's contributions?" he said. "Transparency, openness and accessibility need to be in the company DNA. Discuss ideas vigorously and openly. Don't discourage people. Create an atmosphere where people are encouraged to ask for help, value it and build that into your culture," Williamson said.

Williamson highlighted the four stages of creating good knowledge management – assessing leading, organising and gathering. Assessing whether an organisation has open and honest communication and engages openly and honestly with staff was crucial. As was recognising and incentivising collaboration.

Having leaders inside a firm that 'get it' and who can champion knowledge management and link up business and tech was a must, said Williamson and gathering information was also vital so that firms have skilled communities of practice where staff know they can find people who can give answers.

"We really want to zero in on the cultural dynamics – it's about who we are."

Darryl Williamson, BST Global





Organisation of information and particularly answers was vital. "Don't be intimidated by content," said Williamson. "Make sure that information is appropriately tagged and categorised so you can find it effectively, but locate answers not content. You don't want practitioners looking for answers you want them finding answers," he said.



"For us, knowledge is what we sell so it is absolutely integral to what we do."
- Dominique Poole-Avery

Dominique Poole-Avery, associate and knowledge manager at Arup, shared her many years of looking at lessons learned on projects and how better to share information across firms. "We look at knowledge management internally but we also work externally with behavioural change consultants. The Arup culture of employee ownership has been important in sharing information in an organisation where last year we worked on 17,000 projects with 8,000 clients in 138 countries – that's a lot of learning," she said.

"Finally, people are now realising that IT is two words and the first word is more important than the second word," said leading management and IT consultant Iain Godwin, who specialises in working with architect-led design consultancies and construction industry businesses. People and organisations get themselves into silos but how do we use the business itself to break those silos down and get value out of the knowledge that is in the business?" he asked.

Poole-Avery said that Arup had a network of 80 communities of practice, with two thirds of these regarded as key skills networks within the organisation, the leaders of which are highly regarded within Arup globally. "They are global and regional leaders who have the mandate to make sure that they share skills and knowledge and expertise and also to promote this externally as a leading presence in the industry," she said.

However, with the construction industry increasingly more commoditised with lower margins, some attendees highlighted that it was difficult to defend spending on what people may think is a 'highfalutin' area of knowledge management when margins are tight.

Dominique Poole-Avery said it was a vital expenditure. "For us, knowledge is what we sell so it is absolutely integral to what we do. Our skills leaders are all directors or principals and globally we spend the equivalent of one day a month on knowledge management. It's a fairly significant amount and absolutely fundamental to what we do."

"Everyone is being asked to do more for less money and that means working smarter," said Iain Godwin. "Working smarter means using the knowledge that you have more effectively," he said.

For firms at the early stages of their



"Knowledge management is part of doing things better and more efficiently."
- Iain Godwin

knowledge management journey, it was crucial to get buy-in from leaders and convincing people at an early stage that this is good for business. So, how do firms demonstrate that knowledge management has helped maintain margins or reduce costs and does it pay for itself?

"You need to look at your processes," said Iain Godwin. "When you look at how businesses work you start to discover enormous inefficiencies and silos. You want to connect these silos together because you are only as good as the weakest data you have. Knowledge management is part of doing things better and more efficiently," he said.

Darryl Williamson said it was important to have stories to support investment. "You want anecdotes to support what you want to do so use project post-mortems to provide you with those stories. It's very important that you don't just start with a vision for investment," he said.

Iain Godwin was clear that from day one "you need to establish the principle of sharing". Firms needed to embed this culture from the very beginning he said. "It's about connecting people as much as finding knowledge. The concept of 'marginal gains' that we see so often in sport is also crucial in business. Build that positive culture and nurture it. It has to go all the way up the organisation and all the way out for a business to truly take advantage of knowledge sharing," he said.

Darryl Williamson agreed. "It is about bringing people together. Even an initial low-tech route of creating forums to discuss projects is helpful. Creating that forum will create that momentum for sharing. Even a simple lunch conversation, then asking what people want to talk about next can let things grow into something much bigger," he said.

Attendees at the breakfast forum had much food for thought on an issue that is growing in importance for professional services businesses and they left with many ideas about how to embed knowledge management in the culture of their organisations in the future.



About the sponsor

BST Global provides integrated business management software solutions for the world's leading architects, engineers, and environmental consultants. More than 100,000 professionals across six continents and 65 countries rely on BST solutions each day to manage their projects, resources, finances, and client relationships. For more information, visit bstglobal.com.

Five key challenges for 2017



The year 2016 will be seen as a turning point for the industry, but there are plenty of key drivers that will impact on the construction and infrastructure sector in 2017 too, says *Nelson Ogunshakin*.

With continued market shifts in 2016 and a vast array of political changes, it is undeniable that 2016 is a potential turning point for our industry. While the direction in which our industry will go past this point is difficult to ascertain – particularly given the volatility of various market drivers – we as leaders must stand ready, prepared both for those challenges that we know, as well as those unpredictable hurdles that will undoubtedly arise.

While they currently beg more questions than answers, I see five key market drivers with impacts that will evolve throughout 2017 – the Chinese economy, oil and energy prices, big data and digital economy, market consolidations and Brexit and the US elections.

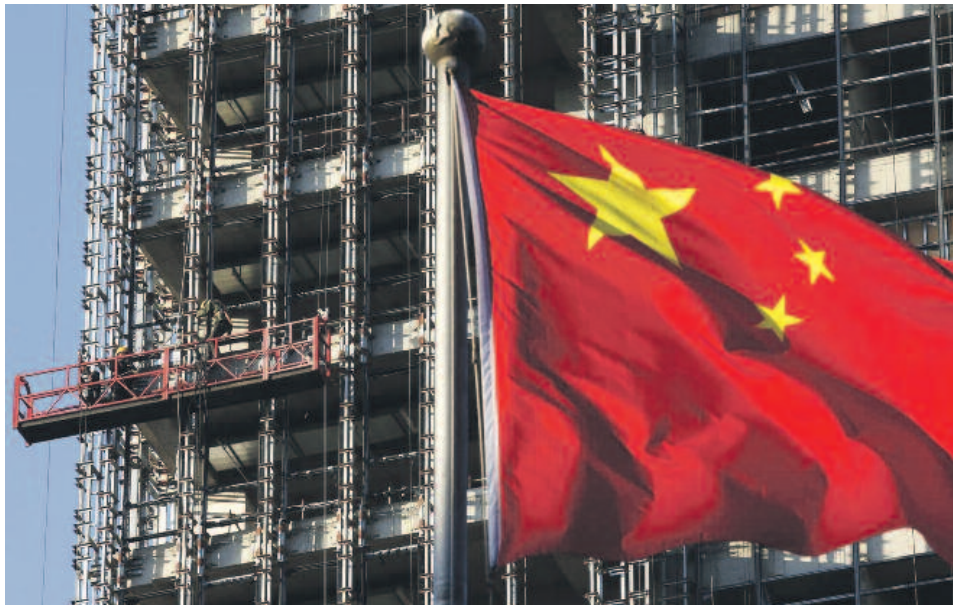
The Chinese economy

After years of supercharged growth, China is in an unpredictable economic state as industrial profits slow, debt rises, demand slackens, and overcapacity continues in many sectors. Though the Bank for International Settlements warned in September about a Chinese banking crisis in the next three years, this fragility may only be temporary, and may be settled through inward or outward investments.

With around 30% of development coming from China and China wishing to take on risks associated with global infrastructure, industry leaders are faced a thought provoking question. Is the collective Asian market a potential alternative for both investment and project ideas and can we as an industry enable this to work for us?

Oil and energy prices

In China and around the world, oil and associated energy prices are flattening. This slowed revenue is having a knock-on effect on liquidity and investment in infrastructure projects, particularly in the Middle East and areas of Africa, where countries like Qatar have large sums of money locked into existing assets or those under development. For development and infrastructure to continue, where will the money come from, and at what point must we look to renewables to fill the gap?



After years of massive growth, an unpredictable Chinese economy is set to have a significant effect on business in 2017.

Big data and digital

When looking at innovation approaches to infrastructure challenges, big data and digital economy will be a key driver for the future. This will, and must, change the way our industry operates, as client demands about the state and lifespan of their assets evolves. While BIM was yesterday's catalyst for our industry to adapt, going forward we must choose whether we will lead in changing work practices, business models and outputs to account for big data, or whether we will follow other industries as they adapt to the technological environment.

Market consolidations

As we evolve, the new market conditions may lead to the need for further consolidation or potentially deconsolidation of businesses. After years of mergers and acquisitions it is still unclear if there is an ideal level of consolidation in our market. Going forward this will depend on how the political and economic environment changes client needs. Will clients continue to gravitate towards all-in-one service providers resulting from vertical consolidations? Will we see more horizontal collaborations? Or will we see companies looking to deconsolidate? Or

will new business models come about? Only time will tell.

Brexit and the US elections

One of the few things we know for certain is that the UK has voted to leave the European Union and that article 50 will likely be invoked in the spring of 2017. This will continue to present our industry with both challenges and opportunities. Similarly, the US elections outcome could impact on trans-Atlantic opportunities. Within all this, only one thing is certain. We must now lay the groundwork for proper engagement to ensure our continued competitiveness in an ever-changing global marketplace.

Laying the groundwork for engagement, continued global competitiveness and success, despite the challenges ahead, will continue to be ACE's purpose in serving our members.

As *Infrastructure Intelligence* celebrates its third anniversary on 14 December, I want to thank you for your continued support. Together we can continue to ensure our industry's success, into 2017 and beyond.

Dr Nelson Ogunshakin OBE is the chief executive of the Association for Consultancy and Engineering.

Encouraging signs in 2016

ACE Benchmarking Report

This year's ACE Benchmarking Report of industry performance and trends was launched this month and reveals some interesting findings, writes *Brian Nolk*.

With the main benchmarking project for larger UK and European companies now in its 11th year and the report on industry SMEs is in its sixth year, the data compiled by ACE's data partner the Centre for Interfirm Comparison can confidently show us an overview of the industry.

Seen in the main benchmarking report, in 2016 the weighted growth rate for larger UK firms with over 250 employees, was 12% excluding the impact of acquisitions. For European firms the weighted average growth was 4.5%, with 90% of all larger firms across Europe and the UK reporting higher revenues.

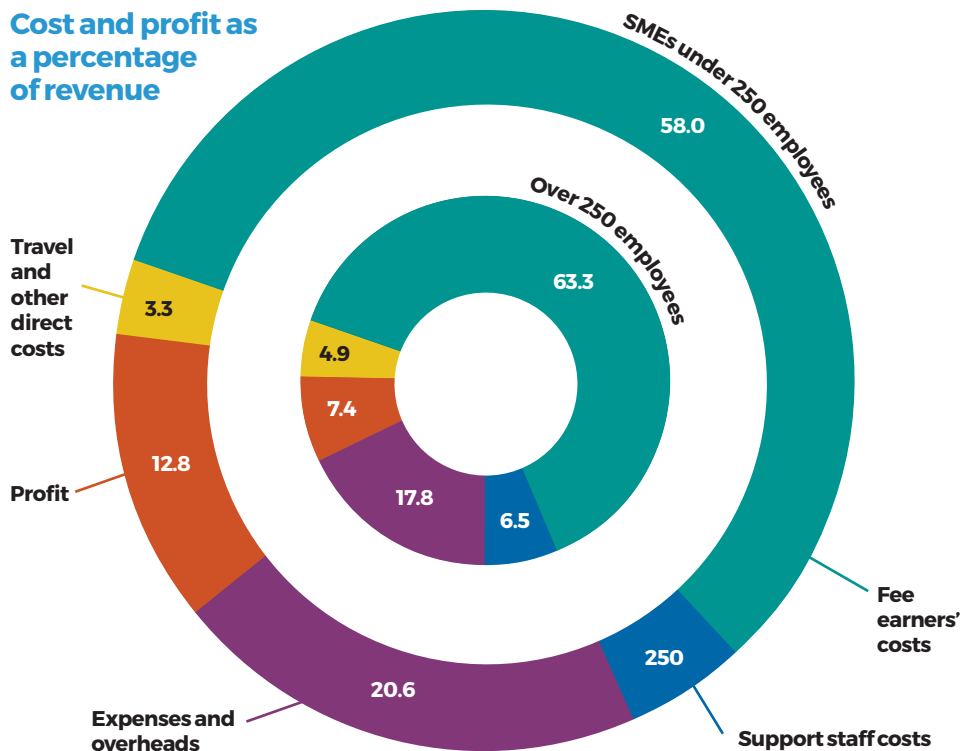
The average debt collection period for UK companies was equivalent to 75.5 days' sales in 2015/16, which was an increase of almost one day from the previous year's average of 74.7 days. The European firms' 2014 average was much higher than the UK average at 98.5 days' sales, but there was a useful improvement to 92.1 days in 2015.

Looking at the numbers of employed for all firms (i.e. a weighted average), there was an increase in permanent staff numbers of 6.4% for all UK firms. Total contract staff numbers were 3.7% higher, giving a total increase in headcount of 6.1%. Just over 80% of UK firms increased their total headcount during the year. For the European firms, total headcount increased by 7.4% between the beginning and end of the year. Excluding staff joining through acquisition, headcount increased by 4.9%. Almost 85% of European firms increased their headcount during the year.

Firms were asked to provide forecasts of revenue and profit for the current year. Of the firms which completed that section, 61% forecasted a rise in profit margin. The median forecast was for an increase in profit margin of 0.3% points, which would indicate an average margin in 2016/17 of 8.2% for this year's group of participants. Of those that provided a forecast, revenue is expected to grow by over 12%.

UK companies were, on average, forecasting revenue to grow by 13% and a 1%-point improvement in profit margin. The European companies that provided

Cost and profit as a percentage of revenue



forecasts were predicting 12% growth in income but only a 0.1%-point increase in margin.

SME Benchmarking

In the 2016 SME Benchmarking project 90% of firms reported increased revenue. The median increase in revenue net of subcontract costs was +11.5%.

Late payment remained a problem for some SME firms with 27% of respondents experiencing "problems getting payment within the contract terms" which was an increase from 24% in the previous year (although not as bad as the 29% reported two years ago).

The chart above shows the average breakdown of revenue into the principal cost headings and profit for SME Benchmarking firms, and the corresponding figures for the larger UK firms that took part in this year's main ACE Benchmarking project.

Comparison of the results suggests that the typical SME firm had lower staff cost ratios than larger UK firms for both fee earners and support staff. Average

overheads for the SMEs were 2.8% points higher than the larger UK firms but most of the lower staff costs fed straight through into higher profit margins than their larger counterparts.

Staffing up, order books improving

Each SME firm was asked to provide their headcount at the beginning and end of each financial year. Of the firms who reported data 63% took on extra staff in 2015/16, 21% were unchanged and none of the companies reduced their headcount. The simple average increase was 11.9%, the weighted average rise was 15.8%.

The average order book improved nicely for most of the industry with the median for SMEs increasing to the equivalent of 6.8 months' work compared to 5.7 months last year, for the same group of firms. The average order book for larger UK firms also reported an increase from 11.9 to 14.1 months' work.

Brian Nolk is the economist at the Association for Consultancy and Engineering.

Apprenticeship Levy – what it means for UK firms

As employers attempt to understand and implement the government's Apprenticeship Levy, *Chris Syder* looks at what exactly this means across the UK.

On 6 April 2017, the government's compulsory levy to fund apprenticeships across the UK will take effect. The levy is to build a central 'pot' of money to help fund both existing apprenticeship schemes and the government's pledge of three million new apprenticeships by 2020.

The levy applies to all employers, in all industries, in the UK. All employers will owe a mandatory sum equivalent to 0.5% of their total wage bill. The levy will be reported to HMRC, and paid, through PAYE, along with income tax and National Insurance. All employers will, however, receive an offset allowance of £15,000, meaning that only employers with an annual wage bill in excess of £3m will have to pay the levy. Smaller businesses will still be affected as the way they claim funding for their own apprentices will change.

The amount of an employer's wage bill will be based on total employee earnings subject to Class 1 secondary NICs. This will mean that variable payments such as commission, bonuses and overtime, sick pay, maternity, paternity and adoption pay, as well as pension contributions, will be included in the calculation, but benefits in kind are excluded.

Also from April 2017, for training to qualify as an apprenticeship, plans must be submitted to and approved by the new Institute for Apprenticeships ("IfA") which will make sure they meet the standards.

As apprenticeships are a devolved matter, how the levy will be used to fund



apprenticeship training in each of England, Scotland, Wales and Northern Ireland will vary. To date, the Scottish Government and Welsh and Northern Irish Assemblies are yet to decide how the levy will be used in their part of the UK. In England, a Digital

Apprenticeship Service (DAS) account will be set up. Those who are liable to pay the levy for apprenticeships in England will be able to access funding through their own personal account. This funding will not fund an apprentice's wages, which would have to be met by the contractor separately from the levy.

Contractors below the £3m threshold who do not pay the levy will not have access to levy funds, but will have access to the DAS, through which they will make a contribution to the cost of apprenticeships and access government funding. The government will apply a 10% top up on all funds through the English system, meaning that for every £1 an employer pays into the scheme, they will receive £1.10 back to fund English apprenticeships. Funds will however expire 18 months after they have been paid into a contractor's digital account, if they have not been spent, which means apprenticeships need to be carefully planned if funding is not to be lost.

Chris Syder is a partner at the law firm Pennington Manches and a member of the ACE HR taskforce.

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Beware of zombie legislation post-Brexit



The UK's decision to leave the EU has opened up a complex picture for future environmental regulation with big challenges ahead for companies working in the sector, says *Matthew Farrow*.

In the immediate aftermath of the EU referendum result, the debate over the impact on environmental legislation tended towards the black or white view – would a post-Brexit red tape bonfire make Britain the dirty man of Europe all over again, or would we be able to retain the full complement of EU standards and laws? But, as the months have edged past, a more complex picture has started to emerge.

We recently held a seminar for EIC members with academic experts on EU law to discuss how the Brexit process might unfold and how in detail the environmental business sector might be affected. In the discussion, one of the academics used the phrase “zombie legislation” to discuss the possible fate of some EU environmental regulation post-Brexit. The phrase is a vivid one; the point was that the effectiveness of environmental regulation does not just depend on its existence on the statute book, but on a number of other factors.

First, monitoring and enforcement. Air quality is a good example – without the threat of EU infraction proceedings and the Supreme Court judgment it is unlikely that the government would be making meaningful efforts to comply. Equally there is already insufficient monitoring of sewer overflows to be sure of their impact on Water Framework Directive standards.

Second, some legislation requires the UK (along with other member states) to submit plans and report progress to the Commission. The revised Waste Framework Directive, for example, has various clauses requiring the preparation and submission of national waste management plans. Such plans help ensure there is a reasonable joined up



Will the effects of climate change get worse in a post-Brexit UK?

sense of policy structure and direction that all stakeholders can work with. While the transposed law that gives effect to the Directive will remain in place after we leave the EU, clearly future ministers will not be submitting their homework to the EU, which raises the risk that the homework is not done at all, and plans such as these are never completed.

Third, EU environmental law is not static, and its ongoing effectiveness depends in part on drawing on Europe-wide scientific and environmental expertise to periodically revise standards and targets. The Industrial Emissions

Directive for example relies on documents which define best available technology in many different pollution control activities (the BREF documents) and the UK would no longer be involved in updating these. Even where there was the political will to undertake such revisions, it is questionable whether the UK still has the institutional capacity to do the work. The Royal Commission on Environmental Pollution was axed in 2011, along with the Sustainable Development Commission. Defra has also been heavily cut back.

So, there is a real risk that even if a combination of the ‘Great Repeal Bill’ and ministerial recognition that the public do not want environmental standards scrapped means that EU environmental law stays in place, we will find that its effectiveness in protecting the environment around us is limited. And that’s not good news for anyone.

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

“One of the academics used the phrase ‘zombie legislation’ to discuss the possible fate of some EU environmental regulation post-Brexit. The point was that the effectiveness of environmental regulation does not just depend on its existence on the statute book, but on a number of other factors.”



Smart alliances make for smarter infrastructure



Major infrastructure projects, including Crossrail and HS2, are adopting innovation as a driving force, but wider industry take-up is required for change to be truly transformative, says *Liam Butler*.

It is vital for industry to invest in new technology. The economy of this country depends on having modern, fit-for-purpose infrastructure and collaboration between academia and industry is key to this investment. Such collaboration brings benefits to all stakeholders, including researchers, asset owners and managers and the end users.

The Staffordshire Alliance, which comprises Atkins, Laing O'Rourke, Network Rail and VolkerRail, provides an award-winning example of the positive effects of collaboration. By working together, this multidisciplinary team successfully delivered the Stafford Area Improvements Programme, a £250m rail upgrade and development project on the West Coast Main Line, under budget and more than one year ahead of schedule.

Collaboration with academia secured innovation as an integral part of this project. Jointly funded by the Engineering and Physical Sciences Research Council and Innovate UK, the Centre for Smart Infrastructure and Construction (CSIC) at the University of Cambridge is a hub for the infrastructure and construction industry. It brings together leading academics and industrialists, developing a faster route for innovation adoption, providing an ecosystem for building confidence in new innovations and enabling their timely implementation and exploitation. CSIC collaborates with more than 40 industry partners across a wide range of projects.

Working with partners Network Rail, Laing O'Rourke and Atkins, CSIC engaged with the Staffordshire Alliance at the early stages of this project to deploy novel fibre optic sensor networks for use in short- and long-term performance monitoring, delivering the most comprehensively instrumented new rail bridges in the UK. More than 500 discrete sensors and in excess of 600 metres of distributed sensing cable were installed on two of the eleven new bridges being constructed as part of the scheme. The pervasive network of fibre optic strain cables, akin to a nervous system in a living organism, can sense strain changes in a structure caused by external forces. The bridges, completed in April 2016, are more than just passive



New rail bridges in the UK can be more than just passive masses of concrete and steel, but can be 'self-sensing', informing managers and engineers of their changing condition.

masses of concrete and steel, they act as 'self-sensing' structures capable of informing asset managers and engineers of their changing condition.

The benefits of this productive alliance between academia and industry are numerous. The project has led to the development of procedures to integrate sensing technologies during on-site and off-site construction in concrete bridge beams, on steel beams, and within concrete bridge decks. This achievement was largely possible due to Laing O'Rourke's drive to include innovation as an integral part of the project from the beginning. This forward thinking has reaped rewards; integrating the 'self-sensing' innovation enables Laing O'Rourke to access information on the performance of their assets throughout the construction process, providing the quantifiable means on which to confirm the quality of workmanship.

Data generated by sensor technologies enables the continued monitoring of an asset throughout its productive lifecycle. For designers Atkins, the 'self-sensing' bridges can provide critical information about the actual stresses and strains that the bridges experience under real loading conditions – information that most engineering designers simply do not have access to. Understanding of the performance of infrastructure through

structural health monitoring, both during its construction and throughout its design life, enables fresh thinking in future railway bridge design to minimise use of materials, energy and labour while still ensuring resilience.

The monitoring system has the potential to be controlled remotely, allowing data to be collected, analysed and assessed in real time from an asset manager's office. Based on the analysed data, the system can provide the quantitative evidence for removing the uncertainties when determining additional structural capacity in the future. Using real performance data gathered over time to inform maintenance schemes will represent a step-change in how these types of assets will be managed in future.

The installed fibre optic sensor networks will continue to provide researchers with a real-world laboratory for studying the behaviour of railway bridges for many years to come. So, instead of operating as separate entities, industry and academia can become strong allies in driving innovation and reaping the benefits, while at the same time changing the way we currently design, build and manage our infrastructure.

Dr Liam Butler is a research associate at the Centre for Smart Infrastructure and Construction at the University of Cambridge.

Career path: Suzie Heap



What is your job?

As US territory manager since 2014, I've been responsible for developing Amey's asset management consultancy business in target states. Amey gained a place on the New York Metropolitan Transport Authority (MTA) framework for asset management consultancy in early 2016 and has now been awarded a project management role with Long Island Rail Road through that framework. As we grow the team, focusing on highway, rail and aviation sectors predominantly, I'll be focusing on the New York region, working alongside MTA and agency colleagues to support all aspects of the asset management programme. We have a proven track record of delivering this type of project support to our international clients and I'm looking forward to be able to bring our experience and skills to this customer.

Why did you decide to go into engineering?

Engineering and infrastructure services are highly tangible, focused on meeting real-world needs that we can all relate to. I applied to Amey because of its blend of public and private sector values, which combine social and economic drivers with business process and efficiency.

What did you study? How did that lead to your career at Amey?

It's a slightly unorthodox career path. I graduated from the University of York with

a degree in English Literature in 2008. Immediately after, I decided to satisfy a long-held ambition of learning French by moving to Geneva and working as an au pair for twelve months. During this time, I began researching graduate job opportunities and through a process of elimination applied to Amey's management programme. I thought that it would be a great place to build and grow a meaningful career.

Who was your first employer?

I have worked for Amey since the start of my professional career, in a variety of roles. My first project focused on assessing the impact of new surface water management policy on our highways client, Bedfordshire County Council. I went on to work in business improvement, business development and strategy roles, before joining the integration management office to reorganise Amey following the acquisition of Enterprise in 2012.

What is special about where you work?

Having worked for Amey since 2009, I am constantly impressed by the dedication and outcome-focused attitude of the people I work with, as well as the diversity of my colleagues' skills and expertise. We help each other solve complex problems and to exceed customer expectations, which is highly motivating.

What is exciting?

It is exciting to see that US public sector agencies have a high level of interest in

Amey's services, based on our strong track record of adding value to customers in other parts of the world – as well as our growing US portfolio. We are building a business from scratch in the US, but with the support of Amey in the UK as well as the wider Ferrovial group. We are continuously learning about the needs of our customers as well as the day-to-day realities – and opportunities – of operating here.

What about the work that keeps you interested?

Knowing that we can develop solutions that will exceed our customers' expectations and bring a real benefit to the end user keeps me interested, as does being part of a growing, dynamic, forward-thinking organisation. The external environment that Amey operates in is constantly changing, so we always have to think about how we respond and stay ahead of the competition.

What is the best thing so far in your career?

It's hard to choose the best thing. Since joining Amey, I've had the fortune to be involved in a really diverse range of projects, from process improvement studies and contract mobilisations to the integration of a newly acquired company. I've worked all across the UK, and now internationally, interfacing with different functions and learning about the company from a number of different perspectives. The best is yet to come!

2017 Dates for your Diary

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London, 7 June 2017

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