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INFRASTRUCTURE Intelligence

Produced for the industry by the Association for Consultancy and Engineering

Improving transport to transform lives

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INFRASTRUCTURE
Intelligence

Produced for the industry by the Association for Consultancy and Engineering
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MESSAGE FROM THE EDITOR

The collapse of Carillion has dominated much of *Infrastructure Intelligence*'s online coverage over the past couple of months and it is inevitable therefore that our latest print edition and my editor's comment also follow suit by looking at the fall out from the demise of what was a construction household name.

As Nelson Ogunshakin correctly highlights in his excellent article on page 28, Carillion's fall should be seen as an opportunity for wholesale reform of business practices in the construction industry.

We have been here before of course and to address some of the pressing structural problems facing the industry and to avoid repeating the mistakes of the past, we will need to have honest, open and difficult conversations on issues such as procurement, supply chains, profit margins and value for money. Clients and government will need to be more enlightened and informed. Above all, they will need to look beyond the short-termism of the immediate balance sheet and take the longer view.

Politicians, some of whom have taken the opportunity to bash the industry in the wake of Carillion's collapse, will also need to think carefully about how public sector projects are planned, procured and delivered. They need to engage with the industry at all levels, listen to what people tell them and act on it as a matter of urgency.

There must be no more Carillions. We cannot be here again.

Andy Walker,
editor, Infrastructure Intelligence

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Northern Powerhouse Rail and HS2 must start together, say campaigners

A collection of northern mayors, MPs, and business leaders have come together calling for a major overhaul of the northern rail network.

A campaign launched by the Northern Powerhouse Partnership (NPP) is calling on the government to deliver Northern Powerhouse Rail at the same time as HS2 Phase 2B, which is expected to open in 2032/33.

Campaigners argue that improving transport links between big cities such as Manchester, Liverpool and Bradford would mean the north-south divide does not widen in the coming years.

NPP vice-chair Lord Jim O'Neill said: "Getting Northern Powerhouse Rail delivered to the recommendations of Transport for the North is crucial for the success of the Northern Powerhouse. Without connecting as quickly and efficiently as possible the many closely-located towns and cities of the Northern Powerhouse, it will not be able to create the agglomeration benefits that would

transform the economy of the UK, never mind just the north."

"Indeed, by doing it, the financial investment justification for central government would vastly exceed the usual cautious value for money criteria, and be one of the most exciting things for post Brexit Britain, notably for an area that has many disillusioned voters."

Decision-makers in the north claim that thousands of new jobs and increased overseas investment could be just two of the benefits created by cutting journey times to cities and towns. To make this happen, the NPP is requesting a redesign for Manchester Piccadilly (pictured above) to create an underground station and a further NPR station in Liverpool, alongside HS2, which would help create 20,000 new jobs and generate £703m for the economy.

Mayor reveals 25-year London transport plans

The mayor of London has revealed his revised transport strategy which commits to ploughing ahead with Crossrail 2 and tube line extensions while reaffirming his commitment for 80% of journeys to be made by walking, cycling and public transport by 2041.

Included in the plans for the next 25 years is a West London Orbital rail line that would connect Hounslow with Cricklewood and Hendon, with Sadiq Khan claiming it could potentially support the delivery of another 20,000 homes. He has also pledged "record-breaking investment" across the entire tube network which would finance the extension of both the Northern and Bakerloo lines.

The mayor published a draft of his strategy for consultation last June and the revised document has now been presented to the London Assembly for consideration before final publication in the coming weeks.

A total of 6,600 responses were received on last year's consultation and there has been a number of amendments following the feedback received. These include a commitment to work with the London

boroughs of Merton and Sutton to develop the proposed Sutton Tram extension and an increased focus on the opportunities from new technology.

Chief executive of the Association for Consultancy and Engineering, Nelson Ogunshakin, commented: "Successful infrastructure demands careful long-term planning, so Sadiq Khan should be commended for London's responsible transport strategy which, for possibly the first time, looks beyond near-term mayoral politics to offer a bold vision for the future of transport in the capital. We would urge the new metro mayors, and groups like Transport for the North and Transport for Wales, to mirror the London mayor's long-term approach to infrastructure planning."

Croydon to get upgrade after funding pledge

Croydon is set to benefit from an expanded train station, extra tracks and flyover junctions after the government committed funding to the Brighton main line upgrade project.

The funding boost for the Brighton main line upgrade programme should mean major improvements in punctuality between London, Gatwick Airport and the Sussex coast with the potential for more frequent services in the longer term.

Known as the Croydon Area Remodelling Scheme, it would see construction of a series of new grade-separated junctions north of East Croydon station to remove the 'Croydon bottleneck' where several routes to and from central London converge.

As part of the plans, East Croydon station would also be expanded and revamped with the number of platforms increasing from six to eight. Travellers would also benefit from new concourse areas with better access to the platforms and surrounding areas.

January 2018 saw the end of one of the top three construction companies in the UK, but how did Carillion end up going bust? *Ryan Tute* looks back at how the construction giant reached the point of no return and what the future may hold.

Industry leaders call for major change after Carillion's demise

Two months on from the collapse of one of the UK's construction giants, more than half of Carillion's workforce remain in limbo as they await to hear what their futures hold. The implications are still being felt and are likely to be for months as the firm's supply chain attempts to mitigate the impact. But what lessons have been learnt and how does the industry safeguard itself from a repeat episode?

The date of 15 January 2018 will always be remembered as a sorry day for the industry as Carillion liquidated with multimillion pound contracts unfinished, £800m of liabilities and a pension deficit estimated to be just short of £1bn. It's estimated the firm was the main contractor on 57 construction projects worth a total of £5.7bn on the day it fell.

Announcing the collapse, Philip Green, chairman of Carillion, described it as "a very sad day" and a decision that came "with the deepest regret". The trade union representing many Carillion workers reacted angrily with GMB's national secretary Rehana Azam saying the fact such a massive government contractor like Carillion had been allowed to go into administration showed a "complete failure of a system that has put our public services in the grip of shady profit-making contractors".

The construction company's liquidation has impacted the lives of the 19,500-strong workforce in the UK. The official receiver, an office of the government's Insolvency Service, continues to try to find new employers for the thousands who are unsure on where their futures lie. Their efforts have seen approximately 8,000 jobs saved but sadly more than 1,000 have lost their jobs.

Even though the firm was struggling to cope with a gigantic debt deficit, bosses held onto the slight hope of staying afloat right up until the day before Carillion folded. In a last-ditch attempt to salvage the company, Green approached the government on 13 January for £160m of funding over four months, but this was rejected.

Philip Green, chairman of Carillion, described the collapse as "a very sad day", a decision that came "with the deepest regret".

What led to the collapse?

The inquest into Carillion and the state of the construction sector is firmly underway and continues to accelerate as more revelations come out of the woodwork. Questions are now being asked about how long the collapse was in the making and whether those at the top concealed the extent of the problems Carillion was facing.

In the aftermath, it has become clear that last July's shock profit warning was not the same surprise to those within the company. An inquiry launched by two government select committees brought about a humbling day for former directors and chairmen as MPs scrutinised their individual roles in the company's demise.

One of those called before the committees was former Carillion chief executive Richard Howson who provided a bleak picture of non-payments well before July 2017. He revealed how the construction company had signed up to a £200m World Cup construction deal with Qatar that meant the company couldn't walk away even if money did not exchange hands. Speaking to MPs, Howson said: "The amount of energy and effort to make sure there was enough cashflow each month was extraordinary," he added. "I felt like a bailiff just to try and collect cash."

MPs also heard from former chairman Green, who reiterated how he believed the company could have been saved and held out hope right until 14 January - the day before bosses announced liquidation. He outlined three reasons for collapse: high level of debt from 2013-16, a small number of contracts that went wrong and the inability to secure short-term funding last month.

Suspicions that directors knew it was in difficulty earlier than they admitted in public have now meant former shareholders like Kiltearn Partners have considered civil legal action with a view to recovering a proportion of its clients' "crystallised losses" following its profits warning last summer. In evidence released, two investment institutions said they believed managers had been underplaying the deterioration in Carillion's finances before it announced an £845m write down of key contracts and issued a profit warning in July last year.

A few of the major projects Carillion were responsible for have been consistently highlighted as a big contributing factor in the eventual downfall. One of those being the construction of the £450m Royal Liverpool Hospital. Problems encountered again are thought to have been known long before bosses made it public. Cracked hospital beams at the hospital have plagued the completion of the project and estimated to have set the company back to the tune of £20m.

But what does the future hold for the industry and those connected to Carillion?

The latest rival to reveal it has suffered in the hands of the Carillion is Galliford Try. Recently it openly called on shareholders for a cash injection of £150m after taking a £25m hit on the cost of picking up Carillion's share of their Aberdeen bypass joint venture.

It's estimated that about 30,000 SMEs have been and continue to be affected by the collapse. From cleaning, consulting, building to landscaping, thousands were subcontracted to carry out much of the firm's work.

It's become apparent the former giant was a notorious late payer, meaning many companies operating on tiny margins have lost out on even more money owed with the loss of contracts that could have been pivotal in their long-term financial planning. Court documents revealed last month that those companies are unlikely to get anything back. This could force bosses around the country to take the regrettable measures of firing people, or even folding their business entirely.

"A new business model, coupled with client leadership, is urgently required to make our industry fit-for-the-future."

As for major projects where Carillion was the main contractor, the work continues to find a solution. So far, the Insolvency Service has found some new contractors, or is paying for work to continue as normal in vital public services such as school catering. But the future remains unclear on at least big hospital projects, the Royal Liverpool University Hospital, and the Midland Metropolitan Hospital in Birmingham. While work continues to be at a standstill, projections on costs and time spiral leading many to wonder how much damage the delays will mean.

How do we avoid a repeat of Carillion?

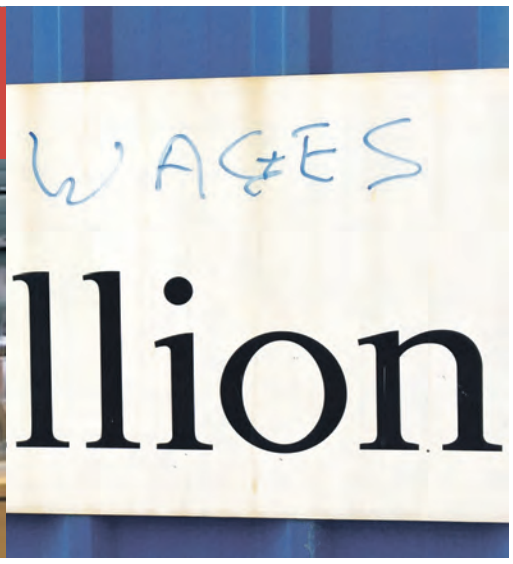
Despite the unfortunate consequences that comes with any firm liquidating, Carillion's demise has been described by many as the wake-up call the industry and the government needed. The Association for Consultancy and Engineering chief executive, Nelson Ogunshakin, believes the collapse would have a number of "major ramifications" for the industry and that a complete rethink of how it operates was needed.

"In the long term, this is an awakening for major structural change in the construction industry," said Ogunshakin. "The challenges of low profitability and negative cashflow experienced by the contracting sector confirm that the current procurement process is broken. A new business model, coupled with client leadership, is urgently required to make our industry fit-for-the-future and ensure we won't experience difficulties with other major players," he said.

The Federation of Master Builders has claimed that relying on a handful of larger firms is too risky in today's current climate. Its chief executive Brian Berry said: "Carillion's liquidation raises serious questions for the government, not least about its over-reliance on major contractors. The government needs to open up public sector construction contracts to small and micro firms by breaking larger contracts down into smaller lots. That way, it can spread its risk while also reaping the benefits that come from procuring a greater proportion of its work from a broad range of small companies. Construction SMEs train two-thirds of all apprentices and are a sure-fire way of spreading economic growth more evenly throughout the UK."

The crisis has also gripped the political arena with the government facing increasing pressure to address the systemic and damaging late-payment culture within the sector. The end of January saw an early day motion in parliament tabled by Bury North MP James Frith calling on the government to honour all outstanding payments on public contracts for work completed and to enforce public sector 30-day payment regulations. The motion epitomises the view that many within the industry agree with, namely that tighter controls and consequences for those who fail to abide is the way forward.

Carillion executives being questioned by MPs at parliament.



The wonders of engineering are revealed in a new book by an inspirational engineer who worked on The Shard. *Andy Walker* read the book in a day and was suitably impressed.

How engineers make dreams a reality

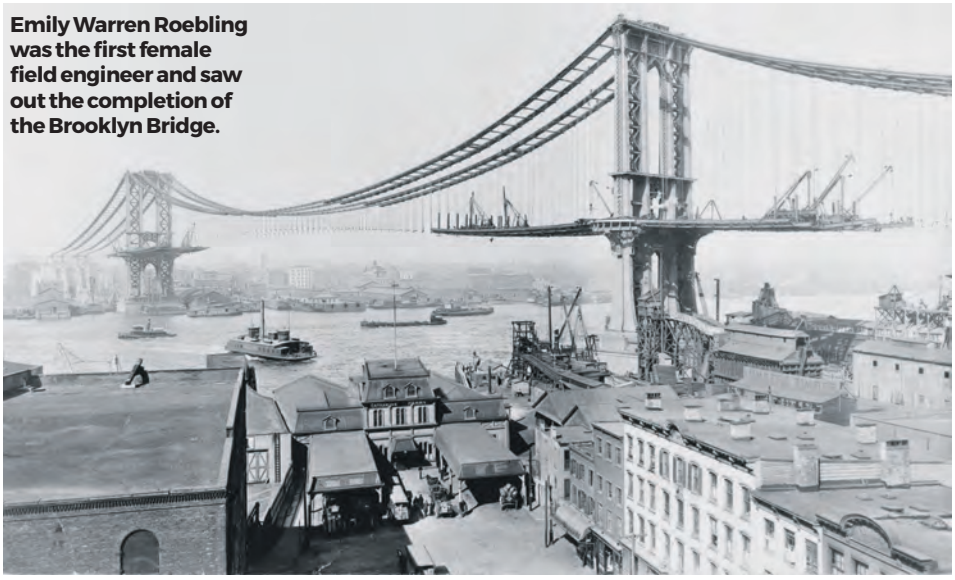
Once in a while you read a book that makes you think differently about the world around you. *BUILT: The Hidden Stories Behind Our Structures*, is quite simply a book about engineering and one woman's passion for construction that I could not put down. So much so that I read it in a single day.

Its author, structural engineer Roma Agrawal, has written a book that is as readable as it is fascinating. Even for someone who regularly writes about infrastructure, engineering and construction, this book made me look anew at the world and the built environment that underpins it.

BUILT is Agrawal's first ever book (hard to believe given its lively and accessible style) and she transports the reader on an exciting and always interesting tour of how engineering works and the forces at play that underpin – and in some cases undermine – structures and buildings. A natural communicator, Agrawal won the Consultant of the Future and Diamond Award for Engineering Excellence in ACE's Engineering Excellence Awards in 2015 and after reading this book I think the judges' decision was a prescient one.

In *BUILT*, Agrawal charts her inspirations and what drove her to pursuing a career in engineering as well as telling us the stories behind some of the world's landmark buildings. Agrawal's infectious enthusiasm for engineering shines through every page of this book, as does her respect for the natural environment and the many geniuses throughout the years that have shaped a world we now take for granted.

The book's fly sheet asks the reader to imagine a world where everything created by engineers had disappeared. What would you see? The answer of course is almost nothing – no cars, no houses, no phones, bridges or roads, no tunnels either, or skyscrapers. Agrawal looks at how construction has evolved from the days of the mud hut to mega structures made of steel that touch the sky. She also describes in some detail the way that sewerage systems have evolved and her account of the trade in human excrement in early 17th century Japan is especially fascinating!



Emily Warren Roebling was the first female field engineer and saw out the completion of the Brooklyn Bridge.

Through detailed archive images, photographs and her own hand-drawn illustrations, Agrawal brings engineering to life. She rightly highlights the role that women have played in engineering down the years and devotes a whole chapter to her engineering idol, Emily Warren Roebling, without whose skills and expertise, the Brooklyn Bridge in New York would never have been completed. Agrawal is a staunch advocate of diversity and inclusion in engineering and speaks widely on the issue with some passion.

Her accounts of how some of the world's iconic buildings and structures came into being are inspiring and her descriptions of the far-sighted visionary geniuses who down the years have made the seemingly impossible possible are equally jaw-dropping. Agrawal clearly knows her subject inside out and wants the reader to feel her enthusiasm for engineering too.

Reading the book was a real eye opener and it made me think anew about more 'technical' subjects like physics and maths that as a writer I thought I'd left at the secondary school gates. Agrawal makes engineering accessible and exciting, highlighting how the engineer makes the most extravagant of dreams a reality. This book deserves the widest possible audience, especially amongst the young.

On a practical level, Agrawal also informs us why you should never ever take on an engineer at Jenga, which is something I will also remember after reading this fantastically interesting and inspiring book. I can't recommend *BUILT* too highly.

Roma Agrawal (left). Her book *BUILT – The Hidden Stories Behind Our Structures* is published by Bloomsbury and retails at £20 but can be purchased for £12.99 from Amazon or £6.99 on Kindle.

Changing social trends means that a new approach to road funding is needed, according to a new report from ACE. *James Ketchell* reports.

Road user charges should be tailored in favour of drivers

Drivers should be charged for using the UK's road network based on their individual circumstances and when they are using the roads, according to a new report from the Association for Consultancy and Engineering (ACE).

Funding Roads for the Future calls on the government to introduce dynamic road user pricing which takes into account a driver's journey (motorways or country lanes), the time of day, congestion on the network, and even their financial situation, such as whether they're a student, pensioner, or unemployed.

Currently, motorists pay fuel and vehicle taxes and the funds raised are invested in roads but ACE says that this model is failing in the face of new technology and changing social trends, such as zero-emission vehicles, ride sharing, and increased urbanisation. ACE wants to see short-term reforms to the existing road taxation system, pushing it towards the longer-term aim of dynamic road user pricing.

Commenting on the report, ACE chief executive Nelson Ogunshakin said: "Our report argues that in the years ahead only a reformed funding regime based on dynamic road user pricing will manage traffic flows and deliver the significant investment needed to keep the country moving.

"It's vital that the government starts these conversations with the public now, as to date there have been suspicions of road user pricing and fears that people will be priced off the road. This doesn't have to be the case and there is a great opportunity to develop a fairer-for-all road funding system which delivers the first-class road network that this country needs long into the future."

Some of the report's other recommendations are to:

- Develop a new overall National Roads Strategy outlining a co-ordinated approach beyond the national network, including introducing a Local Roads Fund to amalgamate and ring-fence funding for local roads;
- Look at short-term reforms to widen the scope of Vehicle Excise Duty to include zero emission vehicles, therefore securing revenue for the National Roads Fund;
- Reform the existing HGV road user levy, using it as a pilot for the broader introduction of dynamic road user-charging across the network;
- Establish a Local Infrastructure Tariff allowing councils to develop a sustainable revenue stream for local road infrastructure investment;
- Increase private investment in England's road network.

Funding Roads for the Future was developed with detailed input from ACE's road sector interest group. Dave Beddell, managing director strategic highways (Europe) at AECOM and chair of the group said: "Such is the importance of the road network to our national economic and social wellbeing that we cannot allow the way in which we fund its future development and operation to become misaligned with emerging customer needs.

"Alongside the increased levels of spend we have seen allocated to parts of the network in recent years comes an equally exciting opportunity for industry to work alongside government in order to create an investment framework that supports a modern and sustainable road network."

The launch of the report gained extensive media coverage. Speaking on BBC Radio Four's *Today* programme, Ogunshakin said that increasing devolution across the UK provided an opportunity for a national debate on the approach ACE is advocating and that local councils would have a key role to play in new funding models.

"With devolution empowering local authorities on ways to regenerate their local economies, it seems like an ideal time to start a conversation on the future funding the road network," Ogunshakin said.

The report claims that congestion will be a major issue for England's road network in the future. Given that the government expects congestion to increase 63% by 2030, ACE is calling for new options to be considered to ensure that England's road network is fit-for-purpose for the future with budgetary constraints. Promoting private investment in the road network and giving more tools to local authorities for road funding are two options the government must explore, the report says.

James Ketchell is senior communications executive at ACE.

President Donald Trump finally unveiled his plan to reform and invest in US infrastructure in February. But will it bring the big lift in delivery needed? *Jon Masters* weighs the odds.

Trump's infrastruc

On paper Donald Trump's new infrastructure plan appears bold and based on a lot of common sense. Its central premise, for generating the big uplift in dollars needed for the United States' transportation, water and energy networks, is pump-priming federal funds to attract state and private sector investment. The amount promised is $200bn over ten years, with the aim of this garnering a total of "at least" $1.5tr for the nation's infrastructure.

The plan lacked impact, only because its central idea was much consulted and then the draft leaked in the run-up to publication in February. This came after Trump's business-friendly tax reforms and cuts elsewhere in the overall federal budget for an administration focused on reducing the nation's debt pile.

US infrastructure has been funded by a general 80/20 split of federal to state spending. Trump wants to reverse that. His plan includes $100bn of facilitating grants, which come with the caveat that they can only contribute only 20% of project funding. There were few surprises in the infrastructure plan. Now the central questions are over whether it can bring about the desired effect.

The need

Analysis by the American Society of Civil Engineers (ASCE) in 2016, put the US infrastructure spending gap for 2016-2025 at $1.4tr if funding continues at current levels across all sectors, against a total need of $3.3tr. According to ASCE's 2016 *Failure to Act* report, the costs of not reversing the deficit will be a $4tr loss in GDP and 2.5 million jobs by 2025, with every household losing $3,400 in annual disposable income.

The ASCE publishes score cards every four years on the condition of US infrastructure, gathered from scores submitted by every state across 16 different categories. This has become an often-quoted state-of-the-nation measurement, particularly for politicians as they lobby for increased spending. The 2017 *Infrastructure Score Card* gave an overall D+ 'poor and at risk' rating due to backlogs of maintenance.

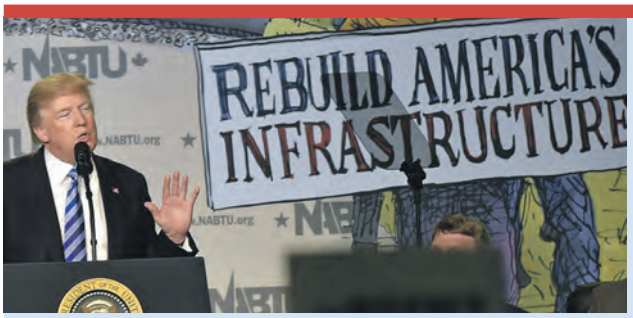
In advance of Trump's infrastructure plan, ASCE and the US Chamber of Commerce called for a strengthening of all existing federal infrastructure loan programmes, of which there are at least 13, including the Highway Trust Fund and similar for dams, waterways, harbours, rail and drinking water.

The Chamber of Commerce made four key recommendations for US infrastructure. In addition to strengthening and expanding loan programmes (to encourage public private partnership projects), it called for an increase to the federal fuel user fee – the national gas tax – plus streamlining of the permitting (planning consents) process and expansion of the workforce.

Echoing others including ASCE, the Chamber of Commerce has lobbied for an additional 25 cents on the national gas tax, which is the primary source of funding for the federal Highway Trust Fund and has stayed at 18.4 cents on petrol and 24 cents on diesel since 1993.

The Highway Trust Fund has diminished by about 40% as inflation has risen and receipts lowered due to greater fuel efficiency and the rising popularity of hybrid and electric vehicles. The non-partisan Congressional Budget Office has estimated a further $121bn is needed between 2021 and 2026 just to maintain current maintenance of the Interstate Highway System.

Speaking at its Infrastructure Summit in January, the chamber's president and CEO, Thomas Donohue, said: "By a 22-point margin – 50 to 28 – voters support implementing a federal fuel user fee, provided the money will go toward modernising our infrastructure. And I am



The plan essentials

1. Infrastructure Incentives Programme: $100bn to be administered by the US Department of Transportation, Army Corps of Engineers and Environmental Protection Agency. State applicants for funds will be scored on how much non-federal funding they can commit to construction and lifecycle costs, evidence of efficient approaches to procurement, delivery and technology, plus social and economic returns. Incentive funding cannot exceed 20% of the total to be raised.

2. Rural Infrastructure Programme: $50bn to be distributed to states for rural infrastructure projects based on a formula of rural population and lane miles of roads.

3. Transformative Projects: A $20bn

ture plan unpicked

not surprised voters are willing to contribute to this investment. Increasing the fee by a total of 25 cents, indexed for inflation and improving fuel economy, would raise $394bn over the next 10 years."

States add their own tax on top and according to the Chamber, 39 of them have increased levies on fuel since the national rate was last increased. "Not a single state lawmaker has lost their seat for supporting a gas tax increase," Donohue said. Nationally, however, the gas tax appears too hot an issue for Congress. Trump has reportedly indicated he would support such a rise, but it wasn't included in his December tax reforms.

The reaction

Responses were predictably mixed in the aftermath of publication, for an infrastructure plan that New York Democrat congressman Jerrold Nadler described as a "scam that would put most of the burden for funding our infrastructure on commuters and cash-strapped states". The Senate minority leader Charles Schumer said the plan would place "unsustainable burdens on local government and lead to Trump tolls all over the country".

Republicans were understandably more supportive. A White House spokesman had described the plan as "the start of a negotiation – a bicameral, bipartisan negotiation – to find the best solution for infrastructure in the US"; pointing to the substantial barriers the plan has to hurdle before a bill is passed. Reports in the days after the plan was unveiled painted a picture of Democrats opposing on principle and some Republicans being wary of the fact that it still needs funding by pinching from other pots.

Nonetheless, among those speaking in favour was Indiana Republican senator Todd Young: "By streamlining onerous permitting regulations, empowering states to invest in their own infrastructure priorities and significantly investing in rural America, this proposal is welcome news for Indiana as we work to ensure our state is equipped for the jobs of today and tomorrow."

Others urged the US lawmakers on Capitol Hill to just get on with it. Over the past decade US infrastructure has been characterised by spending plans stymied and stalled and existing bills extended rather than new ones enacted. "The plan released is an important first step, but Congress must also find a solution to shore up federal transportation trust funds," said AECOM's chairman and CEO, Mike Burke. "Inaction is not an option. Congress should proceed with a sense of urgency to advance our national economy and improve the standard of living for all Americans through modern infrastructure," said Burke.

The ASCE's managing director of government relations and infrastructure initiatives, Brian Pallasch, was remarkably sanguine, given that hopes for a significant federal spending commitment have been dashed. "The $200bn over ten years is not enough and the big funding gap in the report card won't all come from the private sector, but existing programmes that work well stand to be strengthened and the legislative process has started," Pallasch said.

"Trump has even stated that he'll support a gas tax rise, which no other US president has been willing to do in 20 years, so he's showing a moderation of courage at least and there are other positives, such as plenty of big equity investors waiting in the wings. Meanwhile a lot of states are working on stuff and finding their own way of raising funds and there's no shortage of projects that can use the money," he said.

programme for supporting 'bold, innovative and transformative infrastructure projects'. Applicants will compete for funds for schemes that are commercially viable, but too technical or risky for attracting private investment.

4. **Infrastructure Financing:** $20bn to bolster existing federal funding programmes; including expanding TIFIA for transportation and broadening its application to ports, waterways and airports; strengthening the RRIF fund for mainline rail and subsidising credit risk insurance premiums to encourage local rail applications; expanding WIFIA for water and brownfield clean-up; extending tax exemption regime of Private Activity Bonds for public-private finance projects.

5. **Additional provisions:** relaxing rules preventing tolling on interstate highways; demanding value capture financing as a condition of transit (public transport) funding; eliminating constraints on PPP transit schemes; greater allowance of airport privatisation; allowing federal funding for privately owned water projects.

6. **Permitting reform:** proposing a new and faster regime with a deadline of 21 months for lead agencies' environmental review decisions; with greater delegation of decisions to states and judicial reform of permitting.

With Birmingham set to host the Commonwealth Games in 2022, *Ryan Tute* looks at what the event could mean for the region and looks back at Glasgow 2014 to see what legacy has been left.

Birmingham bids for Games legacy

With promises of multi-million pound investments, housing developments, new transport links and a boost to the economy, the West Midlands could be set to reap the benefits of a successful Commonwealth Games bid but can it generate more than just 11 days of sporting success?

The decision to hand the prestigious sporting event to the city of Birmingham in December was described by West Midlands mayor Andy Street as a "fantastic Christmas present" but it certainly isn't one that comes free of charge. Questions over affordability continue to plague the city with estimates for the overall cost amounting to £750m.

The concerns surrounding a cash-strapped city council being able to fund the games are being offset by the benefits it could entail. Financial experts claim that holding an event of this magnitude will see an estimated £750m pumped into the regional economy, while improving vital infrastructure in not just Birmingham but the wider region.

Hundreds of new homes in Perry Barr, increased transport investment for new metro tram lines and rapid bus systems were all part of the case to promote the bid. The construction of an athletes' village will provide a much-needed 1,000 new homes for the region, while the creation of thousands of jobs and training opportunities, and improved facilities for communities should leave a much-needed legacy, according to those instrumental in the bidding process.

But in order for the games to be considered a complete success then the West Midlands as a whole needs to be left in a better position, according to Kathryn Ventham, who is part of the Birmingham team at the planning and design consultancy Barton Willmore.

"If they get it right then we will be talking about the benefits to a joined-up region and not just Birmingham," Ventham said. "Tackling areas like Perry Barr is much-needed and attracting the games here means kickstarting a longstanding aspiration to regenerate that part of Birmingham. The date of 2022 provides an unmissable deadline that can help bypass planning processes which are notoriously difficult to navigate and usually overrun. Without the prospect of the Commonwealth Games then we would have not got the same parties around the table and the co-operation needed to deliver a project of this size," she said.

"The Games really opened up people's eyes and changed possible misconceptions towards Glasgow."

Stephen Tucker, Glasgow (with the athletes' village in Dalmarnock pictured above)

"Without the prospect of the Games we would have not got the same parties around the table."

Kathryn Ventham, Birmingham (with an artist's impression of the proposed athletes' village in Perry Barr pictured above)

Birmingham will become the first English city since Manchester in 2002 to host the Commonwealth Games. But we only have to look back to 2014 to learn whether a fellow UK city has prospered from a successful games bid.

Back in July 2014 as a fresh-faced student, I was bringing the curtain down on my university experience in Glasgow. I remember walking down Byres Road in the west end of the city on one of the few sunny days to grace Scotland's biggest city. The streets were buzzing with excitement as the first Commonwealth Games in the UK for over a decade takes place.

The transformation of Glasgow's east end is however where anyone can see the physical impact of the event. Central to this was the Clyde Gateway, Scotland's biggest and most ambitious regeneration programme, estimated to have attracted £1.5bn of investment, bringing in more than 4,500 jobs, with 80% of its 60,000sq m completed business occupied.

Stephen Tucker, was part of the City Legacy team that was involved in securing the planning consent for the Glasgow athletes' village and delivered the regeneration of Dalmarnock. The Barton Willmore planning expert compliments those behind the bid for aligning projects already underway at the time with the sporting event.

"Without the successful bidding process then we would never have got the public and private sectors working together for the good of the city to deliver a project to a timescale that was prior agreed," said Tucker. "The athletes' village has probably had the most significant impact on the east end with the construction of 300 new housing units every year which is a number you would struggle to find in any other housing development in Glasgow. I believe the games really opened up people's eyes and changed possible misconceptions some had towards Glasgow and the east end from what they saw on their television screens," he said.

the think tank

Giving a voice to **big** ideas

The Think Tank is a new *Infrastructure Intelligence* initiative where we give a voice to big ideas affecting the industry. To kick things off, Ramboll UK managing director *Mathew Riley* calls for a digital revolution.

Innovation and disruption will save construction millions

There's been a flurry of activity in recent months from a number of major contractors and specialist traders reporting losses and lower margins – the UK construction market is contracting.

If this is to be a period of prolonged downturn in construction activity while we await the outcome of Brexit, will we see a return of the 'race to the bottom' bidding mentality in construction that normally accompanies an economic downturn?

The answer is "No".

Those hoping to take advantage of adverse market conditions may at first glance be disappointed. The reason for this is quite simple. In periods of high demand, organisations can be more selective and accept lower risk projects thus improving margins, and in periods of lower demand the reverse is true. However, as the industry enters potential stagnation, there haven't been the traditional periods of sustained growth to bolster company balance sheets. Recent publicity around trading difficulties illustrates this.

UK construction has a habit of playing the victim in times of hardship, and looking to central government to bail the industry out with sharp increases in public spending. But this is unlikely to happen this time, if one takes a look at the size of our national debt.

So what next? Fortune will favour the brave.

In today's modern world there is no excuse for poor productivity in UK construction. However, if we hope to fulfil its potential then we first of all need to tackle an industry image of technophobes with low productivity, limited innovation, and a high dependency on low cost semi-skilled labour.

Digital design techniques are becoming more widely available, and it is vital that such innovation is both encouraged and invested in. Rapid advances in computational design, and the ability to fully utilise data, create opportunities to revolutionise how the industry is run.

Shake off the industry's negative image – encourage and invest in digital design techniques.

Engineers are developing suites of advanced digital design tools to revolutionise the way we design, plan and build. Created to solve real life engineering and construction challenges, they allow us to model and analyse multiple design options faster and earlier, shortening the planning process, and allowing for easier assessment of changes and options.

There has already been much discussion about the benefits of offsite construction and a real driver will now be the acute shortage of affordable housing right across the country. An increasing number of organisations are developing their own offsite supply chain, to help tackle this crisis when called upon. This is encouraging, but only part of the story. By combining digital design with offsite construction, the industry can feasibly deliver design, engineering and construction the way it should be. I believe that embracing such techniques could boost overall productivity in the sector by up to 40%.

However technological advancement without practical experience can create solutions that don't deliver or integrate. We need both the government and industry leaders to wake up to the potential transformative benefits of innovation and help deliver a standardisation of digital tools and methods.

However, realising the benefits of these developments will become easier the more they are adopted. Massive time compression will result (and time is money), along with safer design and delivery, productivity and improved sustainability. The construction industry will reap rewards, such as a new set of skills to offset the perceived skills shortage, dramatically reduced onsite labour costs, and most of all a sustainable business model that competes alongside other industries for the best talent. Complex problems can be solved with dynamism and innovation, to deliver iconic projects and contribute to the wider built environment.

So, in light of the recent economic contraction, this is good news for the industry and economy. If embraced, such an approach will transform productivity across our industry, saving potentially hundreds of millions of pounds.

This is design, engineering and construction the way it should be – and the revolution could be about to begin.

Jason Millett, chief operating officer for consultancy at Mace

Getting match-fit for Brexit opportunities

"With the demise of Carillion, questions are being raised about the construction sector's ability to deliver this enormous pipeline of work and the business models in our sector."

The government has placed improving the UK's lagging productivity levels at the heart of its industrial strategy and budgets. The rationale for this is simple – if we are to improve living standards, grow our economy and compete on the global stage we need to be more productive.

Many of the problems are well known. It takes a German worker just four days to complete what a British worker does in five, while UK R&D spending and the number of those with professional or technical skills lags behind most other western countries.

With our exit from the EU now only 12 months away, we need to do all we can to get match-fit for the opportunities and challenges Brexit presents. One of the best ways to do this is investment in our infrastructure.

Infrastructure can make it easier to conduct global trade, allows businesses to access more skilled people and allows towns and cities to work more closely together to output greater than the sum of their parts. Plus, it allows British firms to develop the major programme expertise to then export those services overseas.

To the government's credit, they too have recognised this. Investment in infrastructure and house building are central planks in the productivity plan which is backed up by the £31bn National Investment Productivity Fund and a growing £600bn national infrastructure pipeline.

With the demise of Carillion, questions are being raised about the construction sector's ability to deliver this enormous pipeline of work and the business models in our sector.

Over the last two decades productivity in construction has been pretty much flat, while other sectors such as manufacturing and services have seen improvement of over 40%. With a quarter of the construction workforce due to retire in the next decade we need to see a 33% increase in construction productivity just to stand still.

With incredibly tight margins and challenging projects to deliver, it's no wonder that some in our sector are struggling to invest in the technology, skills and R&D required to see the change required. The £170m Construction Sector Deal is welcome, and will help, but to see a real transformation we need to change the relationship between asset owners and those who have to deliver those projects.

More often than not in recent years procurement on major schemes seems to have been heavily driven by cost. While we all want to deliver the best value for money for taxpayers and investors, this can often be a false economy – as we have seen with Carillion. If margins are unsustainable and companies go under, the risk is passed back onto the client's shoulders. We need to move to a truly collaborative relationship where outcomes are shared and so are the risks and rewards. It's only by changing the relationship will we be able to deliver the productivity improvements our sector and our country needs.

Because of infrastructure's critical role in the economy, moderate improvements to our sector's productivity would have significant positive benefits for the UK. If the construction sector could catch up to the productivity levels of manufacturing we would see an extra £100bn added to the economy resulting in £40bn of extra tax revenues. That's enough to build 60 new hospitals or completely wipe out the UK's budget deficit.

Rosie Hughes, innovation and continuous improvement lead for strategic highways Europe at AECOM

Getting community impact right

Working on iconic infrastructure carries with it a heavy responsibility, for the impact of that work today and for future generations. And, getting community impact right is crucial for those working on sensitive projects.

Expectation. That's the medium to manage for any infrastructure project – how we conceive the audience to a project is fundamental. And none more so than for Highways England's A303 Stonehenge scheme.

Dubbed 'the tunnel', proposals to bore beneath the ancient landscape to bury the dual carriageway, to unlock the south west's economy and reduce congestion, have ignited diverse communities whose opinions range from opposition to advocacy. Their expectations are around change to the landscape status quo. For some its welcome progression, for others its problematic intervention.

Given its already iconic symbolism, the Stonehenge landscape has cemented its place in national and international popular cultures. Imagery that silhouettes the stones in winter mist, or atop rolling green quintessential landscape, along with angled photographs of the summer solstice, all shape the cultural context to this infrastructure project.

The proposed tunnel's potential for becoming an iconic scheme owes much to well-established cultural notions of the British countryside. Romanticism of rural idylls permeate popular consciousness of such sites as Stonehenge and as an infrastructure industry, we must work hard to accommodate them to achieve success in both the physical and the

Tom Carpen, planning associate at planning and design consultancy, Barton Willmore

The NIC must continue to challenge government

Infrastructure is political. We know that, we respect that and dare I say enjoy that? Yet there is no doubt in my mind that the impacts of the National Infrastructure Commission (NIC) and the Nationally Significant Infrastructure Project (NSIP) regime have been profound in re-shaping how we approach infrastructure in the UK in the face of short-term political cycles.

Between them, they have taken some of the political heat out of complex and contentious decisions without harming democratic principles, tackling how we do long term integrated strategy, how we set policy to address national need, and how we make our decisions in a transparent and considered manner.

They have not been without growing pains, flaws and critics and both the NIC and the NSIP regime continue to evolve as a result. The complexity of infrastructure strategy requires independence, a multiplicity of voices and ultimately clear direction that leads to action. In a short space of time, the NIC has created an authoritative organisation with a growing constituency of people committed to engaging with the challenges.

Not only that, they have been able to drive the direction of infrastructure thinking beyond traditional sectors of transport and energy, tackling digital connectivity, housing delivery and more and seeking to build broad engagement extending to a young professionals' panel 'beyond the usual suspects'.

This type of open-minded drive is infectious, and we were delighted to be one of four finalists in its design competition for the Cambridge-Milton Keynes-Oxford corridor. It enabled our design, planning and infrastructure teams to draw on our collective experience, think critically about delivering significant new development at scale and contribute that expertise directly to the national debate. This type of visionary problem solving can often get caught up in short term political challenges and the NIC is demonstrating an appetite and ability to cut through it without losing the buy-in required to deliver complex projects.

> "The NIC and NSIP have taken some of the political heat out of complex and contentious decisions without harming democratic principles."

At the front, Lord Adonis was exactly the kind of outspoken and influential voice that was needed to hold the UK government to account on infrastructure delivery and the future needs of the UK. I don't think that the NIC would have been as successful as it has been if a less vocal, party-loyal peer had been in the hot seat.

I hope that new NIC chair, Sir John Armitt, will be willing (and able) to challenge government as the infrastructure needs of the UK will only be addressed if we can think beyond the four to five-year political cycle and party interests.

cultural landscape that could ultimately define the scheme as iconic.

In recent years, particularly since the London 2012 Olympics, managing end-user expectation has been packaged up under 'legacy'. The concept reminds infrastructure developers that the outputs of their design, construction, operation or maintenance must be outcome focused.

It's a powerful notion because it is incredibly simple. For a project to be conceived as historically iconic, then they must get their community impact right. They meet expectation, or may even exceed expectation. Recognising that people define histories, through their social, cultural and economic behaviours, means that to be an iconic success, the audience for the project is key.

So why might the A303 Stonehenge scheme have the potential to be iconic?

> "For a project to be conceived as historically iconic, then they must get their community impact right."

Quite simply its visibility on a global platform through the UNESCO World Heritage Site status means people are watching and they're engaged in how the project may shape the landscape. It will be one of, if not the, country's most important infrastructure projects as it has the cultural presence to demonstrate to the world how our industry makes interventions for improved operations that don't re-write past histories, but can shape future stories to come.

Every infrastructure project is part of a lifecycle story that means they should be conceived as integral to the wider cultural fabric of society. Our responsibility is to the legacy of infrastructure interventions. It's to the expectations for linear improvements, multi-use developments, cable-less network connectivity and beyond – of those infrastructure projects we cannot yet even conceive.

They're projects that enable not enforce change, that can incite, encourage, nudge or transform the way people engage with the landscapes around them in way that is expected. Get that balance right and our future generations will have many iconic projects to reflect upon.

As Transport for the North (TfN) prepares to become the UK's first sub-national transport body, *Andy Walker* spoke to the organisation's new chief executive Barry White about TfN's future plans.

A passion for using transport to transform lives

Barry White has taken over at the helm of Transport for the North at an exciting time. On his first day in his new role in January, the House of Commons voted overwhelmingly in favour of TfN becoming the UK's first sub-national transport body. Just six days later, the organisation launched its new *Strategic Transport Plan* with a series of events across the north and a large-scale consultation process. White is clearly in for a busy time.

"Our strategy is as much an economic plan as it is a transport plan and we're very interested to hear what people think of that linkage and what people think about having a long-term plan," says White. Having a long-term strategy over 30 years is a different way of looking at things and we will distil it down into a series of five-year interventions working with Network Rail and Highways England," he says.

The 30-year plan will cost £70bn and TfN says it will generate a £100bn boost to the economy and create around 850,000 jobs. The scale of the ambition is clear and will be crucial in winning public and political support. White says that infrastructure spend has been cyclical in the past and it is important to move beyond this.

"We wanted to take a longer view," he says. "But there also short-term things happening now, such as over £100bn investment in the Transpennine and Northern rail franchises with more than 500 new carriages and new trains coming this year. Smart ticketing is also on the way too. "People need to see progress and quick wins," says White.

The TfN strategy is based on solid independent economic research and White says that by having a long-term plan they can make a big difference to the economy and local people. "I'm a big believer that infrastructure and economic linkages are really important. It's also about quality of life," says White.

> "Currently 10,000 people can access four of the major cities in the north within an hour. When Northern Powerhouse Rail is up and running that figure will be 1.3 million."

White sees improving transport linkages across the north as crucial to opening up opportunities for local people. "If you change jobs in London there's a very liquid employment market because, as a result of good transport links, you can stay living in the same place and change your job; you can move around.

"Currently 10,000 people can access four of the major cities in the north within an hour. When Northern Powerhouse Rail is up and running that figure will be 1.3 million. For individuals that is important because you can access a bigger jobs market and you can stay living where you live now and still change jobs. It makes changing jobs less risky and staying in your local community is good for quality of life," White says.

White sees transport as an economic and social enabler and clearly has a vision of the role that infrastructure can play in making people's lives better in the north. White has a wealth of experience in

delivering major investment programmes. Previously chief executive at Scottish Futures Trust where he led the organisation in improving the planning and delivery of infrastructure investment and asset management in Scotland, he has also held high profile private sector roles including as managing director of BAM's UK infrastructure investment company and also as a director of Skanska Infrastructure Development.

Given his experience in both public and private sectors, I asked White about his views on procurement, especially relevant in the wake of the Carillion crash. "Procurement is a subject that's very close to my heart," he says. "I would love to see more people from the private sector coming on secondment to the public sector and more people from the public sector working with the private sector so both sides could understand each other a bit better," White says.

White thinks that there is still a big gap in the understanding of each sector's position and he says that cross-fertilisation of ideas and experiences from different sectors and cultures is essential. "There definitely needs to be a better understanding of each other's drivers and what different parties can bring to the table. The key question for TfN and for our delivery partners, Network Rail and Highways England, is how can we get private sector delivery partners who are going to build things for us to put really high-quality people on those jobs because those high-quality people leading the construction will add significant value," says White.

Post-Carillion there are many lessons to be learned and White's thoughts are worth listening to. "If the public sector just clamps down on margin then your ability to get the best people onto those jobs to add the value that can save you money overall is limited. So, the big question is what procurement approach do you use that says we will reward you for giving us a better product rather than a mechanism that says we will try and put you in a box to take lots of risk and that protects us but doesn't necessarily help you," says White.

"A lot of the work has been done already and there's a lot of good practice out there but we need to think really carefully about getting all the incentives right. We should be very worried in the public sector whenever private sector contractors are losing money on our jobs because that isn't success for us at all. We need a healthy contracting industry to deliver projects for us. It's about how you engage with an industry where margins are tight in a way that is fair and incentivises rather than penalises," White says.

TfN is increasingly been seen as an authoritative voice on transport and economic issues across the north and has excellent links with political and business stakeholders. "We have 19 constituent local authorities – the members of TfN – and sitting alongside that will be a partnership board that has the business leadership plus our delivery partners, the Department for Transport, Network Rail, HS2, Highways England, so we have the business leadership, elected leadership and the delivery partners sitting on that partnership board and they will feed into the *Strategic Transport Plan*," says White.

"Success will also be getting the development funding in place for the next road investment strategy."

TfN is engaging with businesses and the public on the plan and White himself is speaking at ten consultation events across the region. "We've already had thousands of downloads of the *Strategic Transport Plan* from our website and the level of interest is fantastic. This is not just about transport this is about the north and our vision of a thriving north of England, where modern transport connections drive economic growth and support an excellent quality of life," says White.

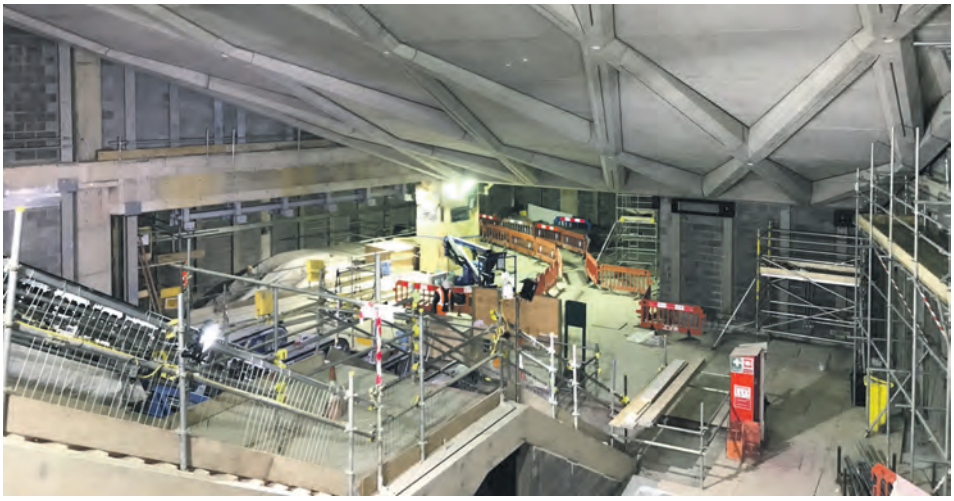
White says he is looking forward to getting the plan finalised and published and then identifying the clear interventions needed to make a difference. In five years' time he wants to see Northern Powerhouse Rail funding secured, get the rail franchises deploying that strategic investment and delivering and also looking at the next franchises. "Success will also be getting the development funding in place for the next road investment strategy and a rolling programme of work and future planning underway," says White.

That planning will also need to be flexible enough to take account of technological advances in the transport sector. "Transport planning is changing more now than it has ever done for 70 years. With the advent of autonomous vehicles and the pace of change, we will have to be quite nimble as we develop our strategies and plans."

What struck me most from talking to White is his passion for seeing transport improvements as a key driver for improving the lives of local citizens in the north. "This is not just a transport strategy, it's about transforming the economy and improving people's lives," says White.

Going und

An inside look at Crossrail



As workers begin to add the finishing touches to numerous Crossrail stations, *Ryan Tute* was given the opportunity to take an exclusive look at how the final preparations are coming

As Europe's largest infrastructure project speeds closer to its scheduled finish date of later this year, the pressure is building to make sure everything is on time and on budget. Just above the hundreds of workers underground at each station are thousands of potential future rail users who are growing increasingly curious about what December 2018 holds.

To answer some of the questions the general public may have about the ten-year project, *Infrastructure Intelligence* was taken underground at Farringdon and given a glimpse into the future. It is one of the ten stations that has been built from scratch and is a central component of the line.

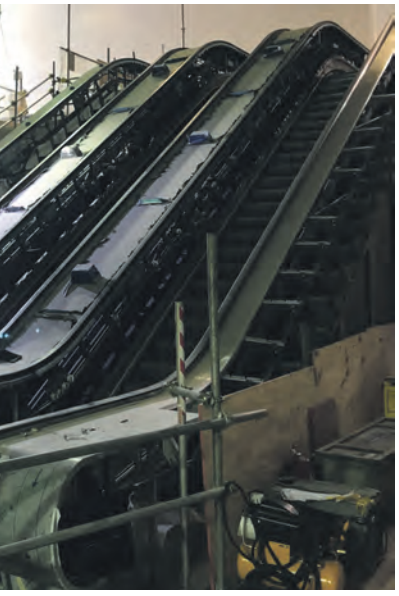
Now in its final stages, the central reason for the major project is an urgent need to help a capital city which is desperate for an increase in capacity. Once completed, Crossrail is set to boost central London's rail capacity by 10%. Transport for London (TfL) says the line will also help it keep pace with London's growing population set to rise from 8.6 million today to around 10 million by 2030.

Farringdon as a central point of the network will have 140 trains passing through every hour as it expects to welcome as many as 155,000 passengers through its doors every day. Each train passing into the station will measure in it at over 200m in length, will equate to the size of two football pitches and will have space for 1,500 passengers in nine carriages. At over 200m in length, they are over one and a half times longer than the longest tube train.

From one end to the other, the station is 350m in length. The Crossrail network itself is more than 100km long, running from Reading and Heathrow Airport in the west to Shenfield and Abbey Wood in the east. It will run underneath central London

> "We have hit so many milestones now that there is no reason why this station cannot be complete in time."
>
> **Andy Scholes, Farringdon site manager**

lerground



Clockwise, from far left: The 360-tonne reinforced concrete structure which will form a diamond ceiling at one of Farringdon's ticket halls; Underground at Farringdon as contractors continue to work on the line; One of the tunnel-boring machines that excavated through miles of concrete; Escalators at the station have now been fitted as work approaches the finish line.

through new tunnels and using existing lines on the Great Eastern and Great Western Main Lines.

The station's site manager Andy Scholes started the tour of Farringdon and one of the first impressive sights the public will encounter is a 360-tonne reinforced concrete structure which will form a diamond ceiling at one of the ticket halls. The construction represents the diamond quarter of London that is unique to London and the station. The new ticket hall currently being constructed at Cowcross Street will connect with the Thameslink ticket hall and has been designed to be able to accommodate and manage the increased capacity caused by Crossrail services.

Stepping onto the platforms below is where you really start to see the majority of contractors working away down the 250m long stretches -which are around twice the length of your average London Underground tube station platform. Stations are due to handed over to TfL in July but Scholes believes there isn't any standout reason why that won't happen.

"The pressures of the completion date is what it is, we just have to grind it out," he added. "That's something I say often with many aspects of the project as essentially that's what the majority of us have to do at this late stage. We have hit so many milestones now that there is no reason why this station cannot be complete in time. Everything is in place, it's just a case of making sure it all comes together and is handed over to TfL to play around with. Effectively it's a new toy for them and they need to come in make sure they know how everything operates and where to go if anything should go wrong."

Moving down to track level is when someone can really appreciate the scale of the project and how much work has gone into creating the central network of Crossrail, essentially from scratch. In order to build the Elizabeth Line, eight tunnel-boring machines have excavated around 26 miles of concrete under the streets of central London. The west to east breakthrough which happened in 2015 is highlighted by Farringdon's site manager as one of the major milestones since first coming on site in 2010.

continued on page 18 >>>

Left: How one of the platforms currently looks. Below: An artist's impression of Farringdon station, once completed.

>>> continued from page 17

Carving out tunnels under central London's complex underground can be pin-pointed as the crucial element of ensuring the network came to fruition. The TBMs, named Ada and Phyllis, first embarked in November 2012 with the latter tunnelling four miles from Royal Oak Portal to Farringdon. A TBM was then moved 30m east of the west branch and buried underground. The process was 24 hours a day, seven days a week, with a rolling crew of 15 swapping shifts every 12 hours and ultimately finished in 2015 when the breakthrough was made.

The tunnelling now seems a long time ago and all efforts are currently focused on not going over time or budget. Contractors continue to press ahead with work around 40m below ground as the completion date of December approaches and the final elements are now concerned with ensuring the escalators are fitted and platforms are tiled. The project itself is now said to be 90% complete and despite reported delays at Whitechapel and Woolwich, Scholes says Farringdon is on target for late 2018.

He added: "Here at Farringdon, we are okay in where we would want to be. Could we be a bit further ahead? Yes, but at the same time it could certainly be a lot worse. It's an extremely complicated project and we have just 'tickled' a railway running through the heart of central London and created brand new stations. It was never going to run smoothly from start to finish. If you look at the problems that have been caused then there hasn't been too much disruption. There might have been a little congestion but if you're going to be building something of this size from scratch then of course there will be one or two issues."

The Farringdon manager insists when complete that Crossrail is going to be "absolutely fantastic" for the city. It is estimated to bring an extra 1.5m people within 45 minutes of central London, thereby providing the public with another vital link to London's key employment, leisure and business districts, including Heathrow, the West End, the City and Docklands. It's this reason why Scholes believes the project is so important to the capital.

He said: "When you add 10% capacity in one fell swoop then you really help relieve congestion on the Central line which we know can be horrendous at the worst of times. The line will open up the city to people who would not have access before or wouldn't have come in. It's a high-frequency service and from Farringdon you can basically get to three airports which essentially opens up the planet."

The next big challenge at the central station is turning the power on with teams continuing to work with a limited amount of temporary power. But first project leaders have to ensure all the cladding is installed, temporary ventilation is removed and all systems are functioning.

> "The line will open up the city to people who would not have access before or wouldn't have come in."
>
> **Andy Scholes, Farringdon site manager**

As we head towards the bright light of outside following the 90-minute tour, Scholes provides one final reflection of where the station's current progression lies. While conceding that construction could be further ahead, the boss insists that things could be a lot worse and further behind. Scholes remains confident of remaining on time.

"We are doing okay," Scholes said. "Would we like to be further ahead? Yes. Are we still good to handover to TfL in July? Yes. Are there challenges? Yes. It's just little things that have come out of the woodwork that have been hard to plan for that have delayed us sometimes.

"It's only very recently that we have got to the point where we know for definite that we have a path in place to open in time. Before we have always just assumed it, but now is the time to be delivering it and making sure we are talking to the London Underground, TfL and Rail for London to make sure we're all on the same page and we know how stuff is going to be delivered."

In another article on building successful joint venture teams, *Tony Llewellyn* looks at how best to improve the chances of building a collaborative project team.

Establishing an effective joint venture workstream

Most joint ventures begin in a spirit of hope. The reality however is that all teams engaged in large projects are inherently dysfunctional. Whilst humans are hard wired to work in groups, the dark side of human nature is continually working to erode trust and impede effective teamwork.

As I explained in my article in the last issue, joint ventures have an even more difficult challenge to build and maintain team cohesion. So, what might be done to improve the chances of building a collaborative team? Part of the answer is to establish a project workstream specifically focused on establishing and then reinforcing strong behavioural norms. The following points provide an initial check list of the steps that need to be put in place.

1. Eyes wide open

Before the team start to plan the collaboration workstream, they should first review the environment they find themselves in. What are the constraints posed by the project governance, budget, programme and stakeholder expectations? Too many projects start with a strategy based on hope, only to find that the reality of the environment makes the project impossible to deliver within the initial parameters. If the constraints are too tight, discussions with the relevant sponsors and stakeholders should take place before the project starts.

2. Set up

Building an effective team starts as soon as your core team has come together. The greatest impact is usually achieved in a two-day workshop, where you have the time to think through the challenges ahead, and the type of behaviours you are going to need to be successful. Many team leaders are resistant to spending two days away from the project, but having this time will allow the team to start to get to know each other and to learn to understand their differences and recognise the potential strength in the team.

3. Compulsive vision

Spend some time talking through why the team exists and its ultimate purpose. The goals and objectives of each of the JV partners will often be different. Do not underestimate the importance of this exercise. It provides you with the 'Big Why' that will help the team work through the difficult times.

4. Roles not jobs

We frequently talk about roles and responsibilities without a clear idea of what this means in practice. Each role description has three elements:

a) Action – what activities the role involves.
b) Output – what happens when the roles is performed.
c) Accountability – what the person undertaking the role is prepared to be accountable for.

Setting this information down in writing is a simple and uncomplicated exercise that should take no more than 20 minutes to complete. The payoff is much greater clarity of who is expected to do what.

5. Agree acceptable behaviours

All groups create a set of rules which they apply when working together which govern how they behave. They are usually unwritten but evolve very quickly. Unless you take the active step of setting out these rules in some form of team charter, the team will follow the lowest acceptable level of behaviour. To ensure that you raise the bar on team interaction it is necessary to co-create the rules that will govern what happens in meetings and how the team communicates outside of them.

6. Agree the mechanisms for managing conflict

It would be highly unusual for a joint venture team to not to come into conflict at some time during the project cycle. It is therefore important to work out a mechanism for dealing with disagreements before they become disputes. The collaborative workstream group should be authorised and trained to manage disputes quickly and fairly.

Whilst there are many other aspects of team development that can help, establishing a workstream around these key elements will significantly improve the chances that the joint venture team will settle into a productive unit. Having a senior group who can focus on softer aspects of people performance not only gives the joint venture a much better chance of avoiding the problems that occur when a team splits into its tribal components, it also increases the chances that the project will be delivered on time and with a profitable margin.

Tony Llewellyn is collaboration director for ResoLex, a consultancy specialising in the optimisation of project team performance.

Opportunities for construction to influence Labour's plans

Given a hung parliament and the increasingly uncertain political situation, construction businesses would be well advised to familiarise themselves with Labour's plans for infrastructure, says *Andy Walker.*

Foresight over astonishment is one of my favourite phrases. It can be applied to many situations and I think it is particularly apt when considering the Labour Party's plans for the construction and infrastructure sector.

Following the general election result, I attended an industry dinner and asked those at my table whether they were aware of what a Jeremy Corbyn premiership would mean for the sector they all work in. Cue blank faces all around. Such a reaction may have been understandable in the aftermath of an election result that few predicted, but eight months on and with the government creaking and preoccupied over Brexit, the industry needs to get a handle on what might happen if Labour were running the country.

With Labour coming out in favour of a customs union and May's local council elections set to be a disaster for the government, Theresa May's grip on power looks ever more vulnerable. Increasingly, business leaders are beginning to realise that they need to take the prospect of a Labour government seriously. If the PM's minority administration implodes because of Brexit, then we could end up with a snap election that hands Jeremy Corbyn the keys to Downing Street and puts John McDonnell into the Treasury.

So, should the industry be fearful of a Corbyn-led administration? Despite continuous scare stories in the press and media about the perils of a 'hard left' Labour government, I believe that our sector shouldn't be overly concerned and indeed there are opportunities from engaging with the opposition at the present time.

Over recent months, senior Labour officials have been engaged in a charm offensive with the business community, holding a series of roundtable events across the country. The relationship between the party and the UK business community has improved of late and the recent reaction to the customs union announcement, where several business organisations including the CBI welcomed the party's stance, is an indication of that.

Historically, Labour governments have been good for the infrastructure sector, with billions spent on road and rail and on social infrastructure. Labour's pledge to build one million new homes over five years could also be very good news for construction and the party's commitment to major schemes like HS2 and Heathrow are also welcome.

The shadow cabinet understands the role that infrastructure plays in driving economic prosperity and we might see more social infrastructure projects as part of an enhanced strategy to rebalance the economy. Of course, despite a shared interest in a softer Brexit deal and higher infrastructure spending, businesses remain wary of Labour, especially on taxation and the party's policies on greater state intervention in areas like the rail sector and utilities.

"Labour's manifesto for the 2017 general election promised a £250bn spend on infrastructure over ten years. Its pledge to build one million new homes over five years could also be very good news for construction."

However, I believe that the industry could benefit from greater organisational clarity and financial investment in these areas, as irrespective of Labour's plans for the ownership of these sectors, they will still need privately owned consultancy and contracting firms to do the work. My sources tell me that there is an open door for the industry to influence Labour's thinking, so businesses need to engage with shadow ministers and their business advisors now to get the sector's message across.

I've spoken to Labour's senior economic advisors and they tell me that infrastructure is critical to the party's economic regeneration plans. Their manifesto for the 2017 general election promised a £250bn spend on infrastructure over ten years. "We are actively engaging with businesses and we want to hear their views on how best we can deliver on our plans," one advisor told me. It's clear that Labour is genuine in its desire to hear from businesses in the construction sector and that dialogue will produce business opportunities for the industry.

Infrastructure firms should take advantage of these opportunities - and fast. They should also take heed of the words of Iain Anderson, executive chairman of public affairs company Cicero. Anderson, whose clients include big banks, says that when he gives boardroom presentations he now uses a slide which features Jeremy Corbyn in Downing Street. "The first time I did it was August, and back then you'd have a few smiles, you'd see people laugh," he says. "They aren't laughing now."

Foresight over astonishment indeed.

Andy Walker is the editor of Infrastructure Intelligence.

Monitoring technology is helping industry professionals to work and build in a smarter way when maintaining future infrastructure assets, says *Chris Emery.*

Making future infrastructure more robust

With an ongoing demand for infrastructure, there is more focus than ever on creating new assets, but also extending the life of existing infrastructure. In fact, a report shared in 2017 shows how investment in global infrastructure assets hit a record $413bn in 2016, a rise of 14% per cent on the previous year.

Currently, monitoring systems are used to assess how assets are behaving, especially as they get to the end of their design life. In Europe, for example, many post World War II assets are coming to the end of their design life, so monitoring systems are proving valuable. Despite their age, these assets are still fundamental to the current infrastructure networks so there's an urgent need to determine their health. Data is key to helping us understand what to repair and what to replace.

In the cases where new infrastructure assets are needed, there's an opportunity to include the lifetime of assets in the very early stages of projects – even as early as the pitch process. There will also be the ability to monitor and collect data from the offset, which can then be used as a comparative through the asset's lifetime.

Working smart

The movement to include asset life management in the pitch stages of projects could really help to revolutionise our approach to new infrastructure projects.

Currently, construction companies install monitoring systems to cover the period of their work, but there is little incentive for them to consider a longer-term embedded monitoring system. Typically, asset managers will generally install the long-term monitoring systems in addition to those already installed, to cover the initial construction period.

With new infrastructure projects, clients have the opportunity to extend the bid for work and include asset life management as a requirement. Contracts can be awarded and maintained throughout the entire lifetime of an asset, without any blurred lines around who is responsible for installing a monitoring system and who the data then belongs to.

Although the systems required for construction and long-term monitoring are different in their objectives and are created separately, it's more efficient to create a unified system that is designed specifically for the structure. During construction, any information acquisition tool can be created within the structure. The system is specifically designed for the structure, so any sensor or information asset technique can be used to create the perfect system for that structure.

Building smart

Adopting smarter technology in the early stages of infrastructure projects will also change the industry's approach to the built environment. The Internet of Things, for example, is impacting our lives in all areas from the office to our homes, and it's going to become even more common on construction sites.

Creating smart assets involves embedding monitoring sensors into infrastructure during construction to make a 'nervous system' for the asset, enabling constant, real-time monitoring throughout its lifetime. The asset can be assessed from construction to maintenance, providing data that decisions can be based on.

New technology can help futureproof systems to ensure they are robust enough to safely deal with the future quality and volume of data capture.

Topcon's Delta Solutions, for example, combine all of the hardware and software required to manage infrastructure projects to give total consistency. The system can also handle a range of inputs and outputs, making it versatile as well as scalable to any sized project.

It's essential to focus on handling the data around existing and new infrastructure assets in a smarter way. Clients placing more of an emphasis on asset life management at the pitch stage of a project will mean it is planned for from the offset, making the process much more efficient.

Correctly collecting, owning and understanding the data on a project is an essential component to creating the infrastructure we need now and in years to come.

Chris Emery is business development manager for monitoring at Topcon Europe.

"Carillion could be the wake-up call the industry needs"

Chief executive of public procurement organisation Scape, Mark Robinson, discusses all things Carillion, golden rules of procurement, housing challenges and future challenges when *Ryan Tute* caught up with him recently.

The date of 15 January 2018 will forever be remembered as a dark day in the history of UK construction when one of the country's industry giants announced it would be liquidating and potentially making 20,000 of its employees redundant. While it may have come as a shock to some, others in the industry had predicted tough times were looming as the 'race to the bottom' approach that many firms adopt continued.

With 28 years of experience in the public sector and heading up an organisation that has over 800 clients and delivers 2,000 projects a year, Mark Robinson, chief executive of the procurement group Scape, was one of those best placed to foresee a 'big player' going under.

With Carillion being one of Scape's many framework partners, Robinson identified the difficulties at the firm at a much earlier stage and he believes the way the industry operates was to blame.

"The race to the bottom approach that so many companies apply was always going to hurt the industry and a big player," he told me. "We didn't know at the time who that would be but unfortunately it's been Carillion, one of the biggest. My first thought was for the 20,000 people that are employed by Carillion and what are they going to do because they've got partners, families, mortgages and potentially they will be out of work," he said.

Robinson said he hoped that the after-effects of Carillion's fall are not too long-lasting. "I'm hoping none of the major supply chains go out of business because of this," he says. "SME's could be really hurt if they have a big contract with Carillion and it was their primary source of work. But the ripples have only just started. We still don't know the full extent of what's going to happen because projects have shut down, clients don't know when they will resume and the supply chain is wondering when they are going to get paid next so the industry will feel the effects for the next few months at least," Robinson said.

A radical change in the way the industry operates has been put forward by many to prevent a reoccurrence of the Carillion collapse. Poor procurement practices are to blame according to Robinson and he believes companies should abide by three golden rules of

procurement while being made to pay clients within 30 days.

"Any Scape project – and we have 1,400 on our books at any one time – don't have retention payments," Robinson said. "We recognise that is a cash flow for our supply chain and they all have to adhere to a 30-day payment rule and the average is about 19 days at the minute. This should be set across the board, we have been doing it for ten years, why isn't everyone else doing it? It comes down to poor procurement practices, people think procurement in the construction industry is easy and it isn't. It's hard, it's taken us a number of years to get to a position where you are procuring properly."

The golden rules of procurement that Robinson says Scape abide by to ensure developments don't overrun and become over budget are:

- **Make sure the brief is right** – Robinson says 99% of problems with the project are caused because people don't spend enough time making sure they know what they want in terms of end goals.
- **Reviewing procure options** – Procurers need to find the best solution for a particular client and provide an objective view. They should review all options.
- **Get the supply chain who are contracted to do a project in as early as possible** – People with the expertise should be round the table at the earliest possible stage, according to the Scape boss. Even before the design stage, the people who provide the best advice should be involved straight away.

> "Price and a bit of quality have always been king but we take a more balanced view and have introduced a third quality on any decision we make, which is social value."
>
> **Mark Robinson, CEO, Scape (pictured left)**

But Carillion's collapse may be the very unfortunate wake-up call needed by the industry moving forward. "I can't comment on the rest of the public sector, but we have never had a claim or a challenge against one of our frameworks," the Scape boss said. "There will be some good procurement and some bad procurement but there needs to be legislation that they must not procure in a way that could potentially put money and especially tax-payers' money at risk. It should not happen. If it's a wake-up call then fair enough, but the warning signs have been there for a while – people have just chosen to ignore them."

During his 28 years in the sector, Robinson has seen many different changes with how companies procure. He believes private and public procurement have learnt lessons from one another in terms of being more successful. On selecting their own partners within frameworks, Robinson says Scape has adopted a third principle to the traditional most important components when delivering a project.

"Price and a bit of quality have always been king but we take a more balanced view and have introduced a third quality on any decision we make, which is social value. I believe that it's the differentiator between a really good project and a fantastic one. We are always looking at what will it bring to the community, what legacy does it leave and have SMEs or local people benefitted from the project," he said.

Main picture: Working with Balfour Beatty on the M62 at junction 8. Below: On the Gobbins Coastal Walk in Northern Ireland.

Housing developments play a huge part in the company's frameworks and the issue of housebuilding has arguably never been more at the forefront of government discussions, with the prime minister Theresa May last year pledging to build 300,000 new homes every year by the mid-2020s. For May to reach these lofty ambitions, Robinson believes that the government must take the lead and provide more funding.

"Housebuilding is no longer a short-term problem, nor is it a political problem, it's now a national problem we need to address," he added. "It will take ten years minimum to solve the housing crisis. Figures the government have banded about for 300,000 new houses to be built every year are unrealistic unless there is funding there. You can't build houses without funding as the private sector will only fund so much, so whatever the market is they will build to that market. There's no easy answer and the government can lead the way – one way being by simply allowing local councils to borrow more to build more. Without the funding or the mechanisms to access more then we will continue to only build 100,000 houses a year," said Robinson.

Despite all the challenges facing the industry, Robinson is optimistic about the outlook for 2018. The start of the year saw the procurement group announce its regional construction framework which will see 11 partners deliver projects with a combined value of £1.1bn over four years. The framework partners will include a number of SMEs operating within the Midlands and the east of England.

"We are really pleased about the regional construction framework," said Robinson. "We have got 11 fantastic partners on board and 2018 will see us establishing and embedding that new framework and I'm sure it's going to be a success," he says.

"The second aspect of 2018 will be around education and helping to provide more classrooms for pupils. The year will see a focus on helping our clients and possibly the Department for Education in making sure schools are built and there are enough classrooms. The final thing for this year is the new civils and infrastructure framework which is currently out for tender. The first round was won by Balfour Beatty and it's been a fantastic success with around 100 projects benefitting. We are out for tender again and we hope to have a new partner, or partners, on board by the end of the year," said Robinson.

As leading global infrastructure company Stantec announced the integration of MWH in the UK into its business, *Andy Walker* spoke to Stantec UK's managing director, Cath Schefer, about the company's plans.

Putting people first and doing what is right

Above: Client: Essex and Suffolk Water. Location: Essex, UK. Project: Raising Abberton Reservoir – the largest reservoir improvement scheme in the UK.

Right: Client: Southern Water. Location: Sussex, UK. Project: Brighton & Hove WwTW – a £300m environmental improvement scheme bringing cleaner seas to Sussex.

Following its full integration with MWH at the turn of the year, Stantec became an established key player in the UK infrastructure market. The two organisations originally merged in March 2016, ushering in the creation of a combined business with 22,000 employees globally, across 400 locations, spanning six continents.

The union of the two companies presents the UK business with an opportunity to build on its reputation as a leader in the water sector and expand its expertise further into other sectors such as infrastructure, energy and resources, environmental services and buildings. Managing director of Stantec UK, Europe and India, Cath Schefer, says that the coming together has been well thought out and that MWH wanted to work with and be part of an organisation that would enable it to reach beyond its existing water sector focus.

"We felt that being water only was no longer an advantage. Being niche in water had been brilliant for us in the past but now we wanted more out-of-sector thinking," she said. "When we were initially thinking about how to solve our ownership issues we were looking at strategic partnerships, acquisitions and mergers with companies that had multi-sector experience. That was a key thought process for us and we also wanted to look for companies that had the same values as MWH and we went through a process of interviewing a lot of companies," said Schefer.

Canada-headquartered Stantec first approached MWH around eight or nine years ago to talk about acquisition. "We weren't interested at that time but we knew there was real synergies between the two companies," said Schefer. Rather than go for an immediate merger, the two firms worked together as one for more than a year before the final integration.

"We decided to work alongside each other and rebranded as 'MWH now part of Stantec' and we left it open ended in terms of when we would change to be formally Stantec," said Schefer. "It was always going to happen but Stantec were very open in letting us dictate the timescales. Now, as we approach the change from AMP6 to AMP7 in the water industry it seemed like the right time to rebrand and reposition ourselves in the market as something different," she said.

So, how has the 18-month transition period worked and what benefits has it brought to the company and its staff? "Waiting a while enabled us to understand what Stantec brings and enabled us to communicate that to our employees so they can promote it to clients as a very positive thing," said Schefer. "We were able to get to know Stantec, understand the key people and what they had to offer and bring them into the UK. Also, working together meant that our leadership could communicate the new approach to our employees and we could make sure that our clients knew that there wasn't going to be a sudden change," she said.

Schefer says that not changing the name of the company straight away was important as this enabled a dialogue with staff about the values and culture of the new owners. "We brought Stantec over very early on to assure our employees that things weren't going to change drastically," said Schefer. "Over time we also introduced a number of key Stantec employees onto projects and this helped with the integration too," she said.

Schefer says that Stantec's values were important in bringing the two organisations together and believes that they will help position the new company well, especially in a growing UK market for infrastructure. "We have four key values – we put people first, we do what is right, we're driven to achieve and we are better together," said Schefer. "These are very complimentary to MWH's values and the strapline 'we design with community in mind' really puts community and

Above: Client: Northumbrian Water. Location: South Tyneside, UK. Project: Fellgate Flood Alleviation Scheme – a sustainable solution that provides a greater level of flood protection to properties.

customer at the heart of everything that Stantec does. We are very keen to apply that," she said.

This focus on community is clearly an attractive one to Schefer and her team and she sees it as a real plus in winning work in an expanding UK infrastructure market. "Stantec is very involved in the built environment sector – town centres, urban regeneration – that's probably half their business and that's where the focus on community has come from as they need to take people with them to get things done," she said. Shefer is keen to push this multi-stakeholder approach. "How you engage various stakeholders in solving a problem is key and this experience of working with communities will be increasingly important for us in the future," she said.

Schefer says that the main thing people will notice with the new name is that the firm will have a much greater breadth of expertise, outside of the UK experience and also multi-sector experience. "The name is one thing and that is important, but relationships and people are key," said Schefer. "The move to Stantec is an important and exciting step forward for our business that has a 150-year history and a rich heritage. Throughout the integration process, it has been clear to all of us that Stantec and MWH values are very well aligned. Staff are comfortable with what we have done and we haven't lost anyone during this process," she said.

"My experience so far has been really positive. I sit on the executive team of Stantec and that team is committed to the UK part of the business," she said. "Buildings and social infrastructure important in the future – and a very good place to be for Stantec with infrastructure high on the political agenda," said Schefer.

Bringing together the company's existing expertise in water and applying this to other areas of work will be important in building the business in the future says Schefer. "Stantec are very strong in multiple sectors and have a very strong architecture presence in the UK. We would like to take our water infrastructure presence and combine that with what Stantec has to offer in environmental services and we will really move into buildings, urban infrastructure and solving flooding problems in a community focussed way. That's what we are going to be doing going forward – applying that urban design experience," she said.

> "Throughout the integration process, it has been clear that Stantec and MWH values are very well aligned."
>
> **Cath Schefer, Stantek UK Managing Director**

Finally, I asked Schefer, as an industry leader, what she thought were the three key challenges currently facing the industry. "A complete focus on customer. If you think about all the utilities and the fact that social media is completely changing the way that customers interact with utilities – customer expectations and interaction is massive and that's a key challenege," she said.

"Resilience and the need to ensure that assets are future proofed is also vital as is technology and the rate of change. No one can keep up with the pace of change and with that technology comes vast amounts of data. The need to be able to take that data and put it into something that is meaningful, interpret it and use it widely, will be key going forward," she said.

Schefer strongly believes that the industry's use of tech will start to change the profile of people who work in the industry. "We are already thinking differently about the type of people we recruit. We are looking at graduates with data analytics and data backgrounds to work with our engineers, who we still need let's not forget. I think you will also see a lot more partnering arrangements in the future too," she said.

Schefer is very optimistic about the future and the prospects of the newly integrated company. "Stantec now has a construction capability that it didn't have before and that in itself in the UK and also in the US will change the dynamic of the company. It will open up new opportunities, especially in the US because we can provide a complete end to end service across the piece for the first time," she said.

Schefer says that bringing the two companies' diverse technical excellence to bear will help Stantec tackle the biggest challenges facing the utilities, infrastructure and built environment sectors. Stantec's progress will be interesting to watch over the years ahead.

It's crunch-time for the Brexit negotiations

The noise around Brexit will reach a crescendo this year, writes *Julian Francis*.

As we look ahead to what 2018 has in store, it is fair to say that anyone who can tell you what will happen this year is probably not someone to trust with investment decisions.

Rumours of leadership challenges, general elections and another European referendum are all swirling around, but so far there is a lot of noise and very little substance emerging from Westminster. All we know for certain (ish) is that the UK is set to leave the EU on 29 March 2019.

So where does the UK go from here?

First of all, the joint EU-UK report on "sufficient progress" needs to be turned into a legal text that will form the basis of a formal withdrawal agreement. That may sound easy but there are a lot of tricky issues still to be resolved that were papered over last year in the rush to reach agreement. The Irish border being the biggest and potentially most difficult one.

At the end of January, formal negotiations also began on a transition period after Brexit.

The EU's position is that the transition has to take place under all existing rules and regulations (including budget payments, the jurisdiction of the European Court of Justice and the free movement of people) and that it should come to an end on 31 December 2020.

No one in the UK seems entirely happy about these transition proposals and this has led to another round of speculation about replacing the prime minister that has become Westminster's favourite pastime. Many businesses say it won't be long enough for them to be ready for a new world after the UK leaves. On the other hand, many supporters of Brexit say the transition will leave us as a "vassal state" – following rules without any say in how they are made.

Either way, the idea of a transition suggests that you know where you are heading. But the debate on the "end state" of Brexit has barely begun.

By the time this piece is published, prime minister Theresa May will probably have also given another big speech on Brexit which could give us further clues about what the UK actually wants.

However, formal negotiations on the outline of a future relationship are not expected to start until April.

Time then starts to become a precious commodity as the EU wants to have the withdrawal agreement, including transition arrangements, and a broad political declaration about the future relationship, finalised by October. By "future relationship", the EU means a general outline of a desired destination, compared to the fully ratified trade deal, that the UK government has in mind.

We will then move onto the ratification process in the run up to March 2019 that will place the UK's future in the hands of 14 member states who will each have to approve the agreement. Until those votes are cast, no one can say for sure that any withdrawal agreement will have successfully concluded.

Julian Francis is ACE's Director of Policy and External Affairs.

Industry leaders welcomed to ACE's advisory board

ACE bolsters its connections across the worlds of politics and business with four new appointments.

Meeting twice a year, the ACE advisory board is made up of highly connected individuals and chaired by Institute of Directors chair, Lady Barbara Judge. ACE has appointed four industry leaders to strengthen the board as follows.

Katrina Haley, managing director, head of structured bonds, infrastructure and real estate at HSBC. Haley is responsible for capital markets funding for transport infrastructure, energy, leveraged finance, oil and gas and physical assets such as aircraft and real estate.

John Holland-Kaye, chief executive of Heathrow. Holland-Kaye joined the airport

in 2009 as commercial director, before being promoted to development director and most recently chief executive officer. He was responsible for the £1bn investment which delivered Terminal 2 in 2014.

Liz Peace, chairman of the Old Oak and Park Royal Development Corporation. Peace has more than 35 years' experience in government and the property sector. She was chief executive of the British Property Federation and now holds a number of non-executive positions in the property industry as well as being honorary president of the Property Litigation

Engaging government on behalf of the industry

ACE has responded to a flurry of recent government consultations, writes *Julian Francis.*

One of the things that tends to get missed by commentators and the general public about surprise political announcements – like prime ministerial resignations or snap general elections – is that the machinery of government grinds to a slow crawl until the political crisis has passed.

With all the surprises that the UK has faced in the last year and half, I have never been more aware of this phenomenon than I am now. The reason for this is that Whitehall has been taking advantage of the lull in political turmoil to rush out a blizzard of consultations that have been backing up for months now. The result of all this activity is that hardly a week has gone by since October where there has not been a deadline for a consultation that affects our industry.

As I look forward into 2018 this process does not seem to be easing-up, as the calendar is already bursting until April.

To give you some idea of the scale of what has been coming our way, we have seen the National Infrastructure Commission consulting on its interim assessment and Network Rail looking at increasing efficiency and rail infrastructure investment. There have been consultations on improved building safety standards, reform of the HGV Road User Levy, RIS2 and the Major Roads Network. Alongside this, the Mayor of London has also released his proposed transport and housing plans, and the overall London Plan.

From all this activity, it is fair to say that government, at every level, is taking infrastructure investment seriously. This should provide our industry with significant levels of comfort.

The publication of the National Infrastructure and Construction Pipeline, which confirms over £600bn of private and public investment in infrastructure, demonstrates that the future of our industry in the UK has, on paper at least, never seemed brighter.

Julian Francis is ACE's Director of Policy and External Affairs.

Association, chair of the Centre for London think-tank and chair of the Shadow Government Property Agency.

Geoffrey Spence, global head of infrastructure, resources and energy at Lloyds Bank. The former CEO of Infrastructure UK at HM Treasury, Spence oversaw the creation of the National Infrastructure Plan and the launch of UK Guarantee and PF2 schemes. He previously was a special adviser to the chancellor on financial stability and business policy between 2008 and 2010. He is also a commissioner on the government's Thames Estuary commission and a member of mayor of London's Brexit advisory panel.

Lady Judge said: "I'm delighted to welcome four additional industry leaders to ACE's advisory board. As well as their obvious skills and experience, they bring unique perspectives from the worlds of finance, major projects, urbanisation and infrastructure investment – all of which will be crucial in guiding the association through some very exciting years ahead."

Dates for your diary

Details of upcoming ACE events in 2018

Consultancy & Engineering AWARDS 2018

The **Consultancy and Engineering Awards** are a unique celebration of success and best-practice from across the industry. This year's gala event takes place on the evening of 6 June 2018 at the Marriott Hotel in Grosvenor Square, London.

Earlier that day, a new one-day event, **ACE Skills' Summit** will take place. Aimed at CEOs, HR professionals and emerging engineers and consultants, the summit will explore the major issues facing the infrastructure industry today in this area, including how do we replace the expertise of those retiring and how can we attract, and make best use of, the skills and talents of millennials?

ACE's **CIO Conference** changes month this year and takes place on 20/21 June 2018 at Prince Philip House, London. As with 2017's inaugural conference, it explores the financial and business implications of the technological challenges facing the industry's IT leaders.

The sector's flagship event, the **European CEO Conference**, takes place on 5/6/7 November 2018 in London. This unique C-level conference is attended by CEOs and senior business executives from across Europe. As well as a hard-hitting business programme, there are exclusive networking opportunities, including the **ACE Parliamentary Reception** in Westminster and the **European CEO Awards** gala dinner which recognises outstanding leaders in the industry.

We need to engineer a new business model

Out of Carillion's crisis comes a real opportunity to reform construction business practices, writes *Nelson Ogunshakin.*

Part of the reason Carillion's collapse continues to be of interest to the public is that, unlike most other companies, it touched the lives of millions. Its fall raises questions on key areas of public life – from the trains we commute on, to the hospitals we get better in, via the schools our children are taught in.

Its liquidation also reveals several vital issues for our industry. Carillion is the latest, and to date largest, consequence of a failing model that is unquestionably in need of reform. In order to avoid repeating the mistakes of the past, we will need to have honest, open and sometimes difficult conversations on issues such as procurement, supply chains, profit margins and value for money. We will need to see the emergence of enlightened and informed clients, looking beyond the short-termism of the immediate balance sheet.

As an industry we will need to be candid about what we need to not just survive the next six months, but to compete in the longer term in a global marketplace. To quote current ACE chair, Mathew Riley in the last issue of *Infrastructure Intelligence*: "It's time to be bold and challenge conventional thinking."

Procurement practices have been pushed into the spotlight. Carillion was, on paper at least, the perfect partner. Their allegedly large balance sheets, strong management and lengthy experience meant they were ideal to shoulder the burden of risk. What clients didn't necessarily understand or explore was the fact that they had squeezed their already tight figures to gain new contracts.

Some suggest Carillion worked with margins as low as 2% on some projects – leaving them at huge risk of project and payment delays or penalties on one of their numerous public sector contracts. Neither did clients understand that many of Carillion's investments over the years had failed to deliver any synergies.

> "We need to have honest and open conversations on issues such as procurement, supply chains, profit margins and value for money."

The next stage in this conversation must be around profit. We need to create an understanding that profit isn't a dirty word, nor should it be haggled down to unrealistic levels. It's there to enable investment in people and skills and to realise the huge potential for technology, such as BIM, in reducing construction costs over the longer term. And, yes, it also creates a cushion for when things go wrong and helps build a sustainable business. A healthy partner is ultimately of benefit for clients too.

Carillion's collapse also highlighted the need for reform of payment practices and a fair deal for the whole supply chain. While the government champions a 30-day payment model across the supply chain, the reality is somewhat different. Figures from ACE's *2017 Benchmarking Report* reveal that the industry average is in fact 83 days. While these delays create issues for all in the supply chain, this disproportionately affects smaller sub-contractors and suppliers who have to perform financial wizardry and juggle credit lines on an almost monthly basis.

Taken collectively these changes in approach would allow for the emergence of a more informed client. Whether public or private sector they need more knowledge and understanding of the workings of our industry. The cost of Carillion's collapse in terms of time and money for existing projects is huge. No client worth their salt would be risking project delivery in this way if they could avoid it. We know that when the client speaks the industry will respond, but we must help them get to a place of knowledge, understanding and confidence. ACE members have a key role to play in helping to make this happen.

Those with long memories will remember that we've been here before. Sir Michael Latham's *No Money and No Love in Construction* from 1992, *Constructing the Team* in 1993, Sir John Eghan's *Rethinking Construction* in 1998 and Andrew Wolstenhome's 2008 follow-up review all highlighted the need for reform and demonstrates a lack of progress.

We had a near-miss with Balfour Beatty in 2014, which is still in intensive care, and we are now facing the fall out of Carillion while others teeter on the brink. Now is the right time to finally face the problem and address the issues square on. Otherwise we run the risk of seeing history repeat itself all over again.

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

Working together is key to greener living

Persuading consumers to help push the economy in a more sustainable direction is difficult, so government and business need to work together to make change happen, says *Matthew Farrow*

Growing up in the 1970s and 80s, I remember Jonathon Porritt as one of the first people I ever saw on TV talking about the environment. He was involved in the founding of the Green Party and making Friends of the Earth a major force and though he is less influential these days, his long experience in the environmental movement means he is always worth listening to.

I recently heard him at a conference talking about the lessons he had learnt in his 40 years in the environmental movement. I was struck by what he listed as one of the biggest things he felt the green movement had misunderstood, which was the willingness (or lack of it) of consumers to act in a collective manner to push the economy in a more sustainable direction. He explained the he and his fellow pioneers were convinced that companies and politicians would over time be forced to make huge changes to business models and resource use in response to sustained consumer pressure.

He argued though that in reality, while NGOs had been able to deploy consumer pressure in specific cases to stop individual companies doing flagrantly anti-environmental things through boycotts and direct campaigns, there has been no wider awakening of environmental activism among the public. Instead, he argued environmental progress that had occurred had been driven either by proactive work by business or by direct government regulation.

This very much rings true of my own experience over nearly 15 years working in the environmental world. I was part of the CBI environment policy team that switched the CBI position in favour of legally-binding long-term carbon targets, which in turn helped cement cross-part support for the Climate Change Act. We were able to do this because most of the chief executives of CBI member companies I spoke to genuinely wanted their companies to be on the right side of the debate (and only partly for reputational reasons).

Jonathon Porritt

"Porritt argued progress that had occurred had been driven either by proactive work by business or by direct government regulation."

Is there any sense that the consumer green voice is ever going to find its strength? No current TV feature about the current plastics agenda is complete without interviewing someone who is managing to live a plastic-free lifestyle, but I doubt that many will follow their example. Surveys consistently show that only about 5-10% of consumers at most will prioritise green factors when shopping.

For most consumers, if you provide an environmentally-friendly option that is more expensive than the alterative they won't buy it (only around 8% of airline passengers voluntarily pay carbon offset surcharges on their flights) or will buy less of it. Conversely if something becomes cheaper because it is more environmentally efficient people often just buy more adding up to the same environmental impact.

One of the most sobering statistics I've ever read is that while the average amount of energy used by a standard domestic fridge has fallen by 80% in recent years, the total amount of energy used in the UK for domestic refrigeration has only fallen by 3% – as people get wealthier and fridges cost less to run they buy bigger fridges, or a second fridge.

More recently there has been a lot of interest in whether the propensity of millennials to spend money on experiences rather than physical possessions might presage a more sustainable approach to resource use. But if those experiences involve cheap flights to exotic locations, or cups of coffee served in non-recyclable cups, then I'm not sure. Having said that, there is some evidence that young people do see cars differently from previous generation – i.e. less as desirable fossil-fuel guzzling status symbols and more as tools to be used as necessary (e.g. through services like Uber).

Overall, though, I suspect Tony Blair was right when as prime minister he argued that the only way to tackle issues like climate change was for business and governments to innovate together to ensure that people could live the same lifestyles but with a low carbon impact. Many businesses can be rightly proud of the effort and imagination they have shown in designing more sustainable technologies, products, systems and buildings, but there is much more for them to do.

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

Setting information free can transform transport

If technology and smart data is used to its full potential, the transport sector can be transformed and users' expectations met, says *Giles Henday.*

Transport is a technical and highly specialised sector. It is largely run by men and women who are expert in their fields, task oriented and dedicated to delivering the best in their chosen area. But digital technologies are transforming what can be achieved in transport planning and raising expectations among users in the process.

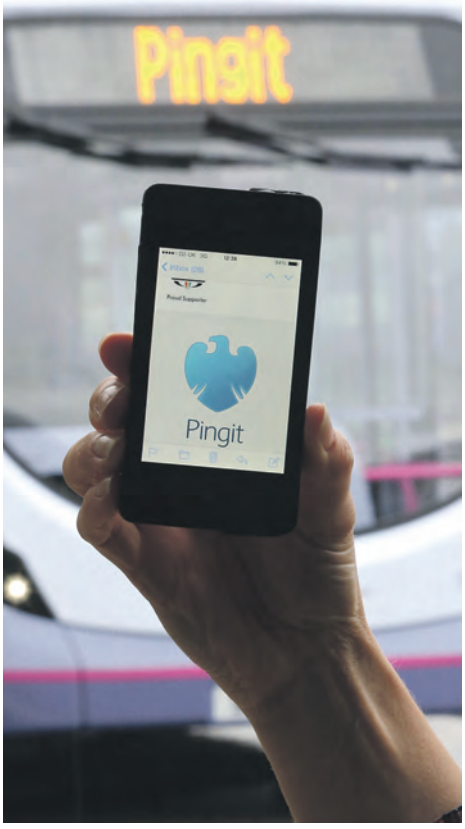
The disjointed, uncoordinated nature of inter-modal travel is becoming ever more conspicuous to travellers who are becoming increasingly used to the highly integrated world made possible by new tech through mobile devices. The demand for seamless journeys across road, rail, air, or any other mode you care to mention is only going to become ever greater. The transport sector is going to need a convincing reply.

For decades the rallying cry of the internet revolution has been 'information wants to be free!' And yet everywhere around us we find data in chains. Every customer that passes through a ticket barrier adds to a data mountain that would make app developers go weak at the knees. But it is a resource that remains underutilised, because it is kept locked up. What if it was let loose to be mined by the army of small start-ups and digital entrepreneurs that are busy transforming just about every other aspect of modern life?

The sorts of technologies that would emerge from this sort of free access cannot be predicted in detail. That is the point. But it is easy to imagine an app that could plan and re-plan a journey from bus, to bike, tube and train, car (driverless or otherwise) and even air that responds to real-time, near instant updates on personal travel plans, GPS location, live passenger flows, congestion and other disruptions and redirects the user to the transport that gets them to their destination in the most convenient and time-efficient way possible.

That would mean significant efficiency gains from existing infrastructure with minimal investment or disruption. If we want to maximise the potential of such an approach for the future, we need to be integrating it from the beginning, at the planning stage. New transport infrastructure projects should be developed with an eye not just on the use of technology to improve efficiencies and customer experience for any particular mode, but on how the technology can contribute to seamlessly integrating multiple modes into the broader transport ecosystem.

"It is easy to imagine an app that could plan and re-plan a journey... that responds to real-time updates on personal travel plans."



It will mean working in a new way, breaking down silos and breaking the mental habits that treat each project as a self-contained task to be judged a success or failure only on its own terms. We have heard that before, of course. Silos seem to have been under fire for years without changing much, but with the advances in technology it is no longer possible to ignore that something has decisively changed. The emergence of app-driven business models such as Uber and innovations such as city bike schemes, smart motorways and driverless cars are profoundly changing the mental and physical landscape we take for granted. These now need an emphatic response.

It will require a culture shift at the Department for Transport and across industry to break down these silos but it can happen. At CPC our people are adept and have extensive experience of helping TfL and Highways England (and many others) innovate in bringing public agencies and private contractors together to solve challenges with dramatic results. We know that transport can be transformed if the will is there, but we also know that we have barely scratched the surface of what is possible.

Of course, infrastructure development of our existing assets will still be needed. Rail will always need to be maintained and replaced, stations built and refurbished, motorways upgraded and renewed. But if we don't place those projects into the context of smart integrated inter-modal transport models we will be missing the opportunity to improve and adversely misdirecting huge amounts of resources as well as failing to provide optimum benefits for the travelling public.

Giles Henday is a partner at CPC project management consultancy.

There needs to be much more consideration of infrastructure recycling as a means of attracting private investment, while recognising public fears over public-private partnerships, argues *Simon Rubinsohn.*

Asset recycling can help fund infrastructure more transparently

The huge need for infrastructure spend around the world over the next couple of decades has been well documented in a number of recent reports. These include the McKinsey Global Institute's *Bridging Global Infrastructure Gaps* (2016) and Oxford Economics' *Global Infrastructure Outlook* (2017) which was produced as part of an initiative led by the G20 (the world's 20 leading industrialised and emerging economies).

Although there is inevitably some justification for caution about any estimates over such a lengthy period, the suggestion in these studies that the likely infrastructure requirement could exceed a mind-boggling $90 trillion is certainly helpful in providing some ballpark parameters to frame the discussion.

More significant than the actual number itself is the recognition of the importance of future infrastructure spend as a means of addressing a key challenge facing policymakers today; the delivery of strong, sustainable and more inclusive growth.

This is a theme that has been repeatedly highlighted by Christine Lagarde in her work at the IMF but also runs through the thinking of the OECD and it's *How's Life* report published last Autumn as well as the WEFs just updated *Inclusive Development Index*. As these publications reflect, well-functioning infrastructure is not only central to both economic development and quality of life but is also critical in addressing the very basic needs of power, sanitation and clean water.

The huge estimates as to the potential global infrastructure spend over the coming decades continues to fuel a debate as to how best to meet requirement for funding the projects. Private finance has been playing a role in providing the cash to support these programmes in many parts of the world for the last 20 or so years but its record is not without blemish with concerns raised, amongst other things, about pricing, risk transfer and communication. At the same time, it is unrealistic to assume that heavily overburdened governments have either the borrowing capacity or the desire to take a primary role in delivering infrastructure on the scale required although some are clearly better placed than others to do so.

It is against this backdrop that the report *Recycling our Infrastructure for Future Generations*, launched in Davos in January, makes for such interesting reading. Let me be clear, I don't believe there is a single approach that will provide all the answers to this big issue but in the current environment, working alongside existing mechanisms including government funding, the ideas highlighted in this study are certainly worthy of attention.

Critically, the report starts by acknowledging the challenge resulting from a mismatch in expectations between government and the private sector and arguably, just as importantly, the growing level of distrust from populations surrounding these 'partnerships'.

However, where the asset recycling approach has the scope to differentiate itself from other vehicles that secure private sector funding for infrastructure programmes is the very clear linkage between the divestment of existing assets and the reinvestment of the proceeds into other critical projects.

Underpinning this mechanism, the report set out nine key principles which help to establish a mechanism that focuses not just on delivery but also on the protection of the public interest with the establishment of a trust fund and better communication with all stakeholders.

There is, I stress, no single approach that will alone provide the capacity to deliver the infrastructure spend that is going to be required across the globe over the coming years. Governments have a role to play but it is implausible, amongst all the other demands being placed on them, that they can take this on alone.

Against such a backdrop, the asset recycling approach to delivery provides the opportunity to build on existing strategies that encourage private funding into the infrastructure space but do so in a more transparent way to create the conditions that genuinely help facilitate more inclusive growth over the medium term.

Simon Rubinsohn is chief economist at the Royal Institution of Chartered Surveyors.

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