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ROUNDTABLE

How can our industry collaborate effectively?
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I INFRASTRUCTURE Intelligence

Produced for the industry by the Association for Consultancy and Engineering

A TAYLOR-MADE PLAN FOR ROADS

This man has some important messages for Highways England's suppliers *page 8*





INFRASTRUCTURE Intelligence

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MESSAGE FROM THE EDITOR

It's certainly not been a normal summer, with the aftermath of June's Brexit vote continuing to impact on politics and also the infrastructure sector over the past couple of months.

There are undoubtedly concerns about the future health of the economy and a number of key decisions urgently need to be taken by the government, especially in the area of infrastructure, so the coming months look set to be extremely important and eventful for our sector.

As befits the name of our magazine, this issue we have some interesting intelligence on infrastructure investment (p3) and the low-down on infrastructure in Turkey after the coup attempt over the summer (p4). We also speak to the man in charge of West Yorkshire's £1bn transport spend (p6) and have a revealing interview with Highways England's director of complex infrastructure.

Speaking of complex infrastructure, we examine the implications of the latest delay to the Hinkley nuclear project (p10) and delve deeper into the key decisions that MPs and the government will need to make over the next couple of months (p14).

Our centre-page story focuses on Innovative Contractor Engagement and interviews those involved in using it on the Bank Station project (p16). Collaboration is a key part of this new procurement method so it's fitting that the subject of our roundtable report is architects and engineers working better together and collaborating effectively (p23).

We've also got a revealing update on how the UK's Brexit negotiations might be affected by EU countries that are not leaving the union and much more, including an interesting interview with a best-selling Icelandic crime novelist, who is also a civil engineer.

Enjoy the read, and as always, keep sending us your feedback.



Andy Walker,
editor, Infrastructure Intelligence

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Investment prospects boost UK infrastructure funds



Following the recent lowering of interest rates, UK infrastructure funds and building stocks are now a key focus of investors and fund managers, says *Natasha Levanti*.

While UK construction businesses saw an initial downturn after the Brexit vote, the recent lowering of interest rates has seen UK infrastructure funds and building stocks becoming a key focus for investors and fund managers.

This attention is, at least for now, creating a boost for UK infrastructure funds and stocks within the building sector.

Around the world and in the UK, monetary policy (regulatory actions to determine the size and growth rate of the money supply) is the main method used to stabilise the marketplace, as seen through the lowering of the interest rate.

Investors' interest in infrastructure and industry funds were very likely spurred by Theresa May's speech shortly after becoming prime minister in which she promised Treasury-backed bonds for new infrastructure projects as part of her government's new industrial strategy. As an apparent change from six years of cuts in spending, this was a strong signal to investors that May could be open to infrastructure as a bankable option for breathing life back into a faltering economy.

As the economy fluctuated after the referendum, UK chancellor of the exchequer Philip Hammond said that he will pursue any needed steps to support the UK economy, another signal to investors that with current economic uncertainty, the government may be willing to borrow

in order to stimulate the economy.

If that wasn't enough to change the priorities of investment managers, to counteract the economic downturn Bank of England governor Mark Carney lowered the interest rate while at the same time ruling out negative rates being enacted in the future, signifying a limitation to the monetary policy alterations the UK is willing to undertake.

All these indicators have spurred investment managers to actions which are, for the time being, boosting the value of UK infrastructure funds as well as stock within the building and construction sector.

If one follows the investment trail, this investor preference shift can be seen in two key moves. Increased investments in infrastructure funds focused on community essentials like roads, bridges, hospitals or schools, and through the investor purchasing of companies that would be on the receiving end of a government investment in building.

To see this more clearly from an investor's perspective, just compare

“It is clear that investment managers are shifting investments from property, for which a continued decline is anticipated, to infrastructure trusts...”

infrastructure trusts with property investment trusts. After the Bank of England cut interest rates in early August, infrastructure trusts rose in value, while property investment trusts have continued to decline. It's also worth noting that those infrastructure trusts directly dealing in government-backed assets are trading at a record post-referendum 'premium to net asset' ratio, an indicator of its current value to investors.

It is clear that investment managers weighing up the potential moves by the UK government to further stabilise the economy, are shifting investments from property for which a continued decline is anticipated, to infrastructure trusts, which presents itself as a viable option as the Bank of England reaches the end of monetary policy and the government looks to implement the new prime minister's industrial plans.

This shift in investor preferences can also be seen in the recent positive investment movement to the stock of those companies that are seen to be directly involved in construction and would consequently benefit from any increased activities in the sector.

While the industry is keen to see tangible government commitment to infrastructure projects, investment indicators continue to reveal that infrastructure is increasingly being seen as the way forward as the government looks to stabilise and indeed grow the economy.

Infrastructure in Turkey after the coup attempt – down but not out



A month on from the attempted coup of 15 July, Turkey's political and business environment is still reeling. *Cagdas Cataltas*, who was in Istanbul whilst the coup attempt unfolded, reports.

Many questions remain unanswered following the coup attempt in Turkey, particularly how involved the sympathisers of the self-exiled Turkish imam Fethullah Gulen were in the coup, as alleged by the ruling Justice and Development Party (AKP). What is clear is that investor confidence in Turkey's infrastructure sector has suffered.

Business as usual?

Standard & Poor's downgraded Turkey's sovereign debt rating level on 20 July, citing rising political uncertainty that could scare away investment and undermine fiscal management. The Turkish lira also saw its steepest decline since 2008, along with a 7% fall in the BIST stock exchange. However, deputy

prime minister Mehmet Simsek remarked in his first full interview after the coup attempt that the "coup's economic wounds are easy to manage".

This stems from the government's belief that the economic fundamentals are still intact. Turkey has experienced strong growth in the last decade, peaking at times around 8-9% of GDP, which still hovers at around 4%. This is due to a combination of a relatively well-educated young population and a single-party government dedicated to improving an economy located between Europe and Asia, which is still in negotiations concerning EU accession.

Now that the situation has started to stabilise, Turkey is working to return a real sense of 'business as usual'. In order to maintain the influx of foreign capital



and companies, Turkey needs to convince the West that after all, nothing much has changed. Since the state of emergency was declared on 21 July, however, the government has confiscated hundreds of educational facilities, dozens of media outlets and other companies linked to the Gulen movement – referred to by the government as the Fethullahist Terrorist Organisation / Parallel State Structure (FETO/PDY).

Private businesses and personal assets of individuals have been seized on the grounds of being associated with the movement, and an incredible purge in the bureaucracy has taken place including 529 Ministry of Transportation officials, 500 officials at the Ministry of Finance and 300 at the Ministry of Energy and Natural Resources, to name but a few.

What exactly constitutes an illegal link to the Gulen movement, and in what timeframe, is still unclear. Foreign investors will either shelve new investment decisions until this clarity comes, or will need to do more thorough due diligence into their potential and existing partners. As infrastructure investments require foreign companies and their partners to hold relationships with key decision-makers in the bureaucracy, the significant reshuffle that has taken place only prolongs the uncertainty. In addition, arbitrary arrests, the assignment of guilt by association and the detention of journalists are neither good for democracy, nor for investment.

Opportunities remain

Although much of the AKP's efforts have been spent fighting the so-called FETO/PDY, the government remains dedicated to their foreign investment-friendly economic model. Turkish prime minister Binali Yildirim recently proposed the establishment of a sovereign wealth fund of Turkey, with a capital injection of TRY 50m (£12.94m). This would stabilise markets by buying Turkish assets, if needed.

The Turkish government's ambitious (over £10bn) plan to reinvent the



country's hospitals through public private partnerships (PPPs) is finally bearing fruit, with the first hospital projects being completed and almost half of the tenders being concluded. Similar PPP tenders for schools are expected to follow this year. The opening of the Euroasia Tunnel, an underwater passage for cars linking Asia to Europe, is due to be inaugurated in December and the government is likely to use the ceremony to show their dedication to infrastructure projects and Turkey's potential return to the days of its economic success.

Furthermore, privatisations have been key to the M&A efforts in Turkey ever since the AKP came to power in 2002, amounting to well over \$70bn (£53bn) since 2002. An omnibus bill proposal was



accepted on 13 August to maintain this effort and privatise the assets of prominent Turkish state-owned companies and further assets such as theatres, the Turkish history society and the Turkish language society. Turkey's military schools, closed down after the failed coup attempt, also make a portfolio of prime real estate.

Therefore, it is not the end of the road for the Turkish economy as we know it, but rather a fork in the road. The Turkish nation showed the investment community that they have passed the first test. To keep infrastructure investment flowing, the government needs to show that it will adhere to the rule of law and due process, respect private individuals' rights and inject fresh blood into the bureaucratic apparatus, with selection criteria based on merit.

Cagdas Cataltas is associate director Western Europe at Control Risks.

LONDONERS CALL FOR SKYSCRAPER LIMIT

A new survey has revealed that Londoners want curbs placed on the number of new high-rise buildings in the capital. The major survey of London residents, undertaken by Ipsos Mori, shows that 60% of Londoners support a limit on the height of new skyscrapers, with the same proportion backing restrictions on the number of buildings with more than 50 floors.

MAY TAKES CHARGE OF HEATHROW DECISION

The prime minister Theresa May is to take personal charge of the cabinet group overseeing the Heathrow third runway and is expected to push for a quick decision on the airport plan. The much-delayed and potentially controversial decision will be made by the economic affairs (airports) sub-committee by October.

CONSTRUCTING EXCELLENCE TO MERGE WITH BRE

Following extensive discussions with its members and stakeholders, the board of Constructing Excellence (CE) has merged with the BRE. The move is designed to strengthen and grow the CE membership and influence in the industry at a time of significant global challenge.

NORTH WEST POWERHOUSE

The red hot favourites to become Greater Manchester and Liverpool city region mayors have both called on the government to follow through on its promise of a Northern Powerhouse. Labour members chose Andy Burnham and Steve Rotherham to fight mayoral elections in Greater Manchester and Liverpool respectively.

FRACKING HANDOUTS

Local residents are set to receive cash handouts from fracking after Theresa May unveiled plans to distribute the Shale Wealth Fund directly to those residents affected by the extraction of shale gas. A public consultation is now underway on the proposals, which closes on 26 October.

SCAPE CONSULTANCY WINNERS

Procurement specialists Scape Group has appointed Perfect Circle, a consortium comprising Pick Everard, Gleeds and AECOM, to lead its new National Built

Environment Consultancy Services framework, which will deliver up to £350m of professional services over four years to a range of public sector clients.

GOVERNMENT ISSUES FUNDING GUARANTEE

Chancellor Philip Hammond has pledged that funding for businesses and public projects remain certain while the UK remains a member of the EU, despite Brexit. All key projects signed off before this year's Autumn Statement will be guaranteed funding even if their timescales extend beyond when the UK formally leaves the EU.

WORLD'S LARGEST WIND FARM

Development consent has been given to the largest offshore wind farm in the world. Located around 89km from the Yorkshire coast, the Hornsea Project Two will revolutionise the status of and potential for UK wind energy to address future needs and is projected to deliver up to 1,800 megawatts of low carbon electricity.



TRANS-PENNINE TUNNEL ROUTES

The government has announced five shortlisted routes for the proposed £6bn Trans-Pennine tunnel between Manchester and Sheffield. If the ambitious project gets the green light, it will be the most significant road scheme since the construction of the first motorways 50 years ago and will half journey times between the two cities.

TOP AWARD HAS NO ENTRIES FROM WOMEN

The Chartered Institute of Building finalists list for the 2016 Construction Manager of the Year Awards are all men, with not one woman applicant. Released in August prior to the Institute for Fiscal Studies announcing new gender wage gap data, the list of finalists draws even more attention to the problem of a lack of diversity in the workplace.



Transforming transport and improving lives

West Yorkshire has more than £1bn to spend on much needed transport projects. Keith Wakefield is chair of the transport committee for the West Yorkshire combined authority and a board member of Transport for the North. He spoke recently to *Andy Walker*.

The £1bn West Yorkshire plus Transport Fund is targeted at reducing congestion, improving the flow of freight and making it easier for people to commute to and from expected major growth areas in the city region. “£1bn is a significant amount of money and transformational if we get it right,” says an excited Keith Wakefield (pictured above) when we met over the summer. “This is devolution for real and it will make a real difference not just in road schemes but also economically,” he said.

With over 30 projects planned, the aim is to reduce journey times, improve air quality and provide people living in more deprived areas with better access to jobs by car and by public transport. Wakefield is keen to stress the benefits such projects will bring to the wider community in West Yorkshire. “We’ve had vast amounts

of land stuck that hasn’t been developed because of infrastructure links and now we have a chance to unlock that and change things from what they have been for decades,” he says.

“When we spoke to the people who wanted to work with us it wasn’t just about new roads or transport systems it was also about employment. We shouldn’t underestimate that we can encourage contractors to take on apprenticeships and be good employers. We can create good employment because people will get the training and support. For me as a politician that’s really, really important,” he said.

More park and ride schemes will be a crucial benefit from the work planned and already underway. Wakefield says that Leeds in particular is blazing a trail amongst major cities in this area. “I think

we have finally cracked this now and are changing people’s behaviour,” he said, citing the city’s successful scheme at Elland Road, which started with 400 spaces and now has had to double its capacity.

“People believe in park and ride now. They know they can go to Elland Road, park up, get on a bus and be in the city centre in five minutes. No big city has done park and ride on the scale that we have done. Single ticketing is crucial to making it easy. The Aire Valley scheme will be yet another opportunity to get people out of cars and onto buses. It’s all part of tackling the bigger issues of air pollution, but also changing people’s behaviour to use public transport. It’s one hell of a challenge,” Wakefield admitted.

I asked Wakefield about devolution in an area that has yet to agree a city region mayor. “Everyone agrees with devolution, but the government’s addition of an elected mayor has muddied the waters towards the aim of a more locally-based federal arrangement that doesn’t rely on Whitehall,” says Wakefield. “In Yorkshire we have a tradition of being more autonomous and federal. We don’t merge our identity so places like Castleford would fight to the death to make sure that they weren’t subsumed in some greater Leeds thing. The government have also not put enough on the table in the devolution deal – £30 million a year is not a lot,” Wakefield claimed.

Wakefield said that devolution had to deliver for the north. “All the big cities of the north combined are as big as Shanghai,” he said. “It is a powerhouse yet we are still the poor relation of the south. Our rail services are painfully slow, especially from the local areas into cities, and it is simply not good enough,” said Wakefield.

Wakefield wanted to see a long-term view to reverse decades of neglect. “There has to be consensus between parties because the issues are too important,” he said. “Air quality in Leeds is killing 700 people a year. Our economy is not functioning properly because people are waiting hours to get into work. Surely common sense would say let’s put all that aside and let’s have a long-term strategy to solve it,” Wakefield said.

“People need to travel around more effectively. We need a decent bus service and for people not to need a car to get into employment or to visit friends and family. I know people who have lost jobs because they couldn’t get to work on time by bus,” said Wakefield.

“The dependence and reliance on cars has to be reduced. It’s obsessive and it’s bad for the environment and bad for our health,” he said.

Turning Chile's infrastructure challenges into opportunities

As one of Latin America's most developed economies, Chile continues to record steady economic growth despite the decline in commodity prices, especially with respect to copper, the country's key export. Certainly, with low levels of corruption, a high degree of legal transparency and strong institutional frameworks – providing strong financial and legal safeguards for private sector capital – Chile is one of Latin America's most promising investment destinations.

In terms of investment, infrastructure stands out as particularly attractive. The Chilean government has a significant focus on large-scale investment in infrastructure in order to advance the country's economic development and prosperity. More specifically, the government hopes to reach its goal of a per capita income of over US\$30,000 with development levels similar to that of Italy and Spain.

Such is Chile's appetite for growth that President Michelle Bachelet recently signed legislation for an infrastructure fund. With assets of around US\$9 billion, the fund will be 99% controlled by the Treasury with 1% under the control of Corfo, the state development agency.

Three key areas of opportunity

Chile's infrastructure plans can be divided into three categories: government projects, public-private partnerships (PPP) and concession projects.

Having announced a US\$3 billion programme, Chile's public infrastructure plan includes several government projects aimed at developing the extreme northern and southern regions. This includes plans to connect the remote Southern provinces of Aysén and Magallanes with a submarine fibre optic network for greater and more reliable connectivity. Elsewhere, in the north, the government aims to ease the housing shortage by 60% as well as launch 20 water projects – including desalination and wastewater treatment plants.

Another area of focus for Chile is PPP, a funding model involving the use of private finance to facilitate the provision and delivery of public services or infrastructure assets. One such PPP project is the Costanera Norte comprised of a dual three-lane highway, two tunnels, six new bridges and 30.4km of urban highway. With a partially secured investment of US\$1.98 billion, the initiative is aimed at increasing



With US\$28 billion earmarked for investment in new infrastructure projects by 2021, Chile offers numerous opportunities for investors and companies across the world, says *Mauricio Munguia*.



One of Chile's public-private partnerships – the Costanera Norte which includes this dual three-lane highway as well as two tunnels, six new bridges and 30.4km of urban highway.

mobility and addressing congestion. Furthermore, as PPP projects were initially developed in the UK, this provides the perfect opportunity for companies such as those with expertise in construction, design, procurement, operations and maintenance.

Finally, while concession projects are a type of PPP they tend to be more output focused. Typically lasting for 25 to 30 years, they entail giving full responsibility for the operation, maintenance and financing of an infrastructure asset to a private concessionaire. The Punilla Reservoir, for instance, is a concession project on the Ñuble river basin requiring an investment of US\$387 million. Aimed at addressing the irrigation needs of around 5,000 farmers, the concessionaire will be tasked with the design, construction and operation of both the reservoir and hydroelectric plant.

New markets, new risks

While the opportunities are clear, it is essential that investors and businesses know how best to take advantage of them, and how to navigate business in an unfamiliar market.

For instance, one of the more important developments for foreign investors and firms in Chile this year was the new Foreign Investment Act. In order to be granted

access to the rights and guarantees detailed in the act, foreign investors are required to obtain a foreign investment certificate from the Foreign Investment Promotion Agency. More specifically, the certificate must prove the execution of the foreign investment and must contain a detailed description of the said investment, including its amount, destination and nature.

Although such requirements are to be expected when expanding to a new country, it is important that investors and businesses are aware and undertake the necessary research beforehand. Fortunately, banks such as Santander, as well as organisations and governmental departments such as Department for International Trade (DIT) in the UK, are able to assist in the process, identifying new business opportunities, strengthening partnerships and disseminating knowledge.

With a stable economy and an established PPP system, Chile has positioned itself as an attractive and reliable destination for foreign investment. UK businesses should take advantage of the opportunities available so it can both help Chile develop its infrastructure, and reap the rewards.

Mauricio Munguia is head of Latin America desk at Santander.

Managing a shift in expectations



Three major roads projects in England are being overseen by a single director, Chris Taylor, whose remit points to some important messages for the sector's suppliers. *Jon Masters reports.*

A notable change brought in at the birth of Highways England last year, was the introduction of a new senior position – the HE's director of complex infrastructure. Creation of the role deserves some explanation. It goes to the heart of what the new organisation is now grappling with, while also revealing some important messages for the HE's suppliers.

The man in the job is Chris Taylor. As problems with award of contracts for the A14 upgrade project in Cambridgeshire entered the media spotlight last year, it was Taylor answering the questions.

So far he has oversight of a programme of three projects: the A14 upgrade, plus the proposed Lower Thames Crossing (LTC) and the A303 Stonehenge Bypass. Each will be an undertaking of civil engineering on a grand scale. The A14 total delivery cost is set at £1.5bn, the LTC tunnels and new connecting roads are estimated at £4.6bn

and the A303 budget is likely to be around £1bn to £1.5bn.

"There were two fundamental reasons why my role was created. Firstly, Highways England is aiming at a wider set of outcomes than its predecessor, focused on safety, customer and delivery. There were questions over how we put project teams together to deliver that," Taylor says.

"Secondly, these schemes are significantly bigger than anything else in the current investment strategy. We had a choice: either build such projects individually and let them go off and do things their own way; or put them under a complex infrastructure programme and seek to drive knowledge and expertise on a more consistent basis."

While the three projects are relatively large and will demand some heavy engineering, they don't appear to present anything that has not been done before. The



'complexity' involved, Taylor says, is multi-layered.

"Scale is certainly part of it, as are questions of funding and stakeholder interest. Some far smaller projects can be difficult or controversial, but the importance of stakeholder relationships is huge with all three of these schemes," he says.

"There is also the scale of supply needed. We need to consider carefully how we put the delivery teams together, plus there is the pace at which we're being asked to deliver. The A14 programme has been brought forward two years and we've been set a target of starting work on the A303 by 2020, which is hugely challenging. Once the required pace of delivery is layered on top of all the other demands, it can be seen what we mean by complex."

Problems with procurement of one of the main contracts for the A14 project has highlighted the change of approach that the HE wants to see from its suppliers.

A contract for detailed design of the whole project was awarded to an Atkins CH2M joint venture in June 2015. For construction, the scheme was split into four sections. Contractors would be appointed for supporting design development on the agreement that they would subsequently build those sections if government gave the project the green light – which it did in May this year.



Planning of the A14 project is being done with the help of a Mission Room.



Artistic impression of the tunnels of the £4-6bn Lower Thames Crossing: "The importance of stakeholder relationships is huge," says Chris Taylor.

One main contract, principally involving demolition of the existing A14 viaduct and remodelling of local roads in Huntingdon, will not be tendered until 2019. A second was awarded in June last year to a Costain/Skanska joint venture, for two of the works packages: widening three miles of the A1; and building a new 12 miles long, dual-three-lane bypass south of Huntingdon.

The fourth package of work, for reconstructing about 10 miles of the A14 between Swavesey and Milton, was not awarded initially as none of the bidders met the HE's prequalification criteria. They were effectively told to rethink their approach.

Taylor explains: "Whole life safety has become an acutely important aspect for major projects. Our commitment to government is to reduce numbers tragically killed on our roads by 40% by 2020. This was partly key to it – the bidders' approach to safety for the customer and for maintainers during and after the works."

What was missing from the tenders for the Swavesey to Milton contract was effectively a change in the language of their intent, Taylor says. The HE now wants its contractors to be stating what they will do to design and build safer roads and to take aim at its other targets.

"We want to know what they're bringing to drive the whole agenda," Taylor says. "We want suppliers to step outside their traditional roles and take responsibility for

long term safety and other desired outcomes around stakeholder relationships and customer service."

The Swavesey to Milton contract was retendered and awarded to a Balfour Beatty and Carillion joint venture in September last year. An integrated delivery team was then formed between the HE and its A14 designers and contractors. Work has turned to how best to build a major upgrade of a road carrying 80,000 vehicles per day and twice the national average of HGVs.

Planning of the project is being done with the help of a Mission Room, a 360 degree interactive video system. This is an example of some of the good work being done by the industry, says Taylor. Millions of man hours are going into developing the A14 design to the Expressway concept, supported with similar levels of technology used on Smart Motorways.

"I'm confident the A14 is going to be the safest A-road we have. As an Expressway-type road, it's going to be a top-end A-road. We've got opportunity here to build something of very high quality for safety and customer experience," he says.

"Regarding the LTC and A303, absolutely the idea is for these to follow the same principles," Taylor says. "As much as possible, we want it all to reach other projects as well. The amounts of money may be different, but the principles absolutely still apply."

Chris Taylor on...

...safety

"What our safety aim looks like is safe construction and making sure that when the rebuilt A14 opens, it is significantly safer than what it replaces, for those that use it and maintain it. We've got the space to start again. How can we make it the best? "It has to come from design. To reduce risk to maintainers and operatives, we're clustering M&E equipment together and creating alternative, safe access to our network from off-network points. These are the kind of things we're looking for from bidders.

"During construction, if we're going to do four times the work, we cannot have four times the tragedies. It's about setting higher expectations as a client."

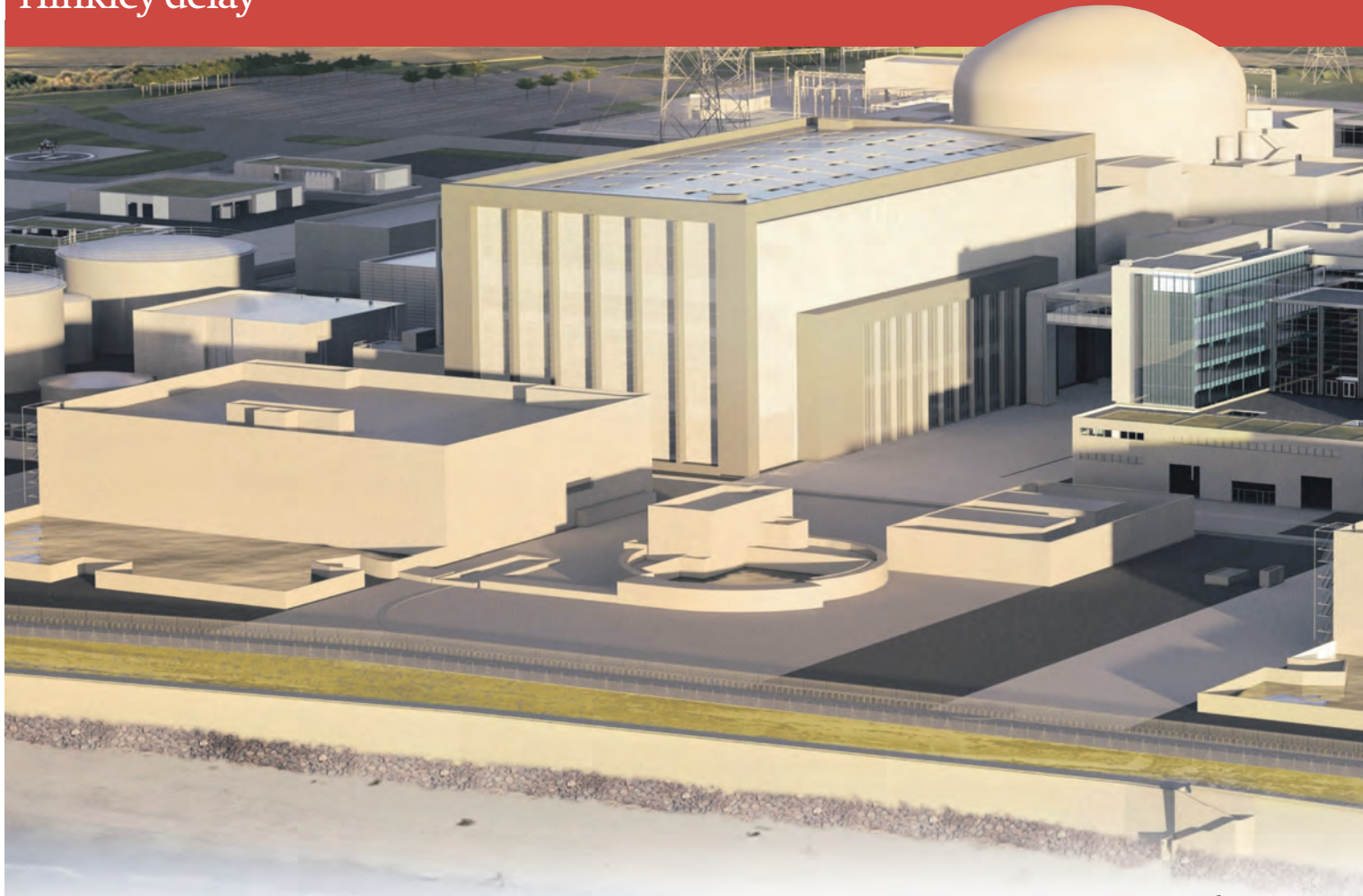
....stakeholder relationships

"While these schemes will produce regional and national benefits for the country, their impacts will be felt locally. "There is a lot of value to be gained from working closely with local stakeholders, learning where areas are sensitive, or how we can protect or enhance the things that people value.

"We're now doing more to give value back, through investment in jobs and skills in local communities. In Cambridgeshire we are working to support the setting up of an engineering training academy with a local college. Some of the trainees may work on our projects or those of Network Rail or others, but the skills base is the important thing for the local area. The local enterprise partnership is helping with this."

...customer service

"The importance of our relationship with customers is a big message for us. It's partly about giving them better, more reliable information, bringing technology from Smart Motorways. "But it's also about improving motorists' experience when driving through our roadworks. How can we make it better? We've got a full 3D interactive model. We can mock up roadworks and test how the signing works to reduce uncertainty and therefore incidents. "A really big message for the supply chain is that, yes, they are there to construct a road, but when they take possession they become part of our operational organisation. They must be prepared. It's a much more integrated role we want from our suppliers and they have to set an expectation from their suppliers too."



Government needs

Former UK environment minister and chair of the energy and climate change select committee, *Tim Yeo*, reflects on the political implications of the Hinkley commissioning delay for the future of UK energy.

Downing Street's last minute intervention just when the EDF board took a positive final investment decision on Hinkley Point C has added a new element of uncertainty to this already complex process.

Ministers, and notably the very capable new top team at the Department for Business, Energy & Industrial Strategy, urgently need to clarify UK energy policy.

First and foremost, there needs to be unequivocal confirmation that Britain remains committed to achieving its legally binding carbon emission reduction targets. Such confirmation is much needed to reassure all investors and in particular the wider nuclear industry. Without it, fears that Britain no longer offers a sympathetic home for new nuclear plant will grow.

Complete decarbonisation of electricity generation, which is needed by mid-century, requires investment to switch

increasingly to the low carbon technologies as well as to greater energy efficiency and better demand side management. The essential role that nuclear has to play in a future low carbon energy mix, in Britain and many other countries, is undeniable.

The outcome of the government's review of Hinkley will be closely watched by Hitachi and Toshiba, the backers of the next two nuclear developments in the pipeline. Both are spending time and money, in good faith, bringing forward their projects in the expectation that investment in the nuclear industry will continue to be supported.

Turning to Hinkley itself there are legitimate concerns about the £92.50 strike price. The value to Britain of baseload electricity from Hinkley, and therefore the justification for the high strike price, will decline if commissioning of the plant is further delayed by technical problems during construction. A progressive cut in the strike price could logically be applied for late delivery of the project. Ministers should now demand a guaranteed completion date of not later than 2025.

There must be a Plan B for nuclear. If an alternative nuclear vendor, with a



Tim Yeo chairs New Nuclear Watch Europe and the University of Sheffield Industrial Advisory Board for the Energy 2050 initiative. He is also chair of AFC Energy and is a board member of Eurotunnel. He was previously the MP for South Suffolk, minister for the environment and countryside and a former chair of the energy and climate change select committee.



to end uncertainty

technology that is already in commercial operation elsewhere, is capable of generating electricity for British consumers at a lower price the government should be willing to explore how soon this can be done and how the largest number of supply chain jobs can be secured.

Much of the current debate about Hinkley's future is focusing on the acceptability of Chinese investment in Britain. A minority Chinese stake in a plant controlled by a French (government controlled) company using European technology ought to be relatively uncontroversial. The real issue is the prospect of Chinese control and operation of Bradwell in Essex.

Opponents of this idea must believe that, having invested billions of pounds constructing Bradwell, China would be ready to jeopardise its success and thus wave goodbye to any prospect of earning a return on their investment. Doing so would also destroy any prospect of further Chinese investment in foreign infrastructure projects.

It's hard to see in what circumstances such an action could benefit China. A malign owner of Britain's main airport,

London's water supply or one of our largest mobile phone networks, all of which are already in foreign hands, could do more harm more quickly to Britain's economy than closing down a single power station, however inconvenient the sudden loss of up to seven per cent of our electricity supply might be.

Hopefully the review of the Hinkley decision will swiftly conclude that no vital national interest is threatened by Chinese control at Bradwell. This conclusion can reasonably be made conditional on substantive progress being made on the cyber espionage concerns which rightly worry Britain and other western countries.

This outcome should also reassure Horizon and NuGen that if they progress to the point at which they have a credible

value for money proposal no new obstacles will be put in their way.

It is not unheard of for national governments to introduce national security tests with clear conditions and criteria to address such concerns. In Europe, such requirements include avoiding majority foreign control of large infrastructure projects, or even specifying vendors for certain aspects of the development to minimise the risk of cyber security surprises.

Such conditions can help to remove the politics that increasingly surround large infrastructure projects, such as new nuclear build, and deliver the much needed investor certainty critical to getting capital intensive projects with long payback periods off the ground.

Urgent resolution of the current uncertainty is clearly desirable. Without it there's a danger that the cost of future investment in essential infrastructure of all kinds will rise as investors demand a political risk premium for British projects. This would have an impact way beyond the energy industry and its burden would be borne by consumers in the form of higher prices.

“The essential role that nuclear has to play in a future low carbon energy mix, in Britain and many other countries, is undeniable.”



Chris Cheetham, director of recruitment consultancy Cheetham Hall Limited

Time for a radical 'division of labour' to tackle skills shortage

Increasing concerns around skills and shortages of qualified engineers led me to think about a similar challenge one of our customers experienced.

Some years ago, I worked closely with a rapidly growing business, experiencing severe pressure on some of the key employees during a boom period, when skills were in very short supply. In particular, the finance director was continually having to work six days a week to cope with his workload.

Led by the CEO, we set up an exercise to find a solution. We sat together and dissected his diary – all the key elements of his time. Whilst not easy, we found five days a month of work which could be delegated to others. Following the success of this exercise we repeated it with the commercial director and then cascaded it throughout the business. The result was that the business continued to grow, profitably, plus many people felt invigorated by being able to focus on work which really needed their skills and knowledge.

I suspect if all organisations dissected people's diaries it would be possible to find high cost, hard-to-find people

carrying out work which could be handled by lower cost, easier-to-find people. Realistically, what percentage of most fully qualified engineers' time is being spent on work which no-one else could deliver? The rise of apprenticeships provides an excellent opportunity for organisations to consider 'who does what?' and question the current division of tasks and projects.

It may not only help to solve a skill shortage, it may have knock-on benefits of improving employee satisfaction (and therefore retention) and even, dare I say it, profitability!

"I suspect if all organisations dissected people's diaries it would be possible to find high cost, hard-to-find people carrying out work which could be handled by lower cost, easier-to-find people."



David Spencer, consulting managing director at Amey

Are we keeping the ingenuity in our engineering?

Clients often hear suppliers talk a 'good game' around innovation but are we really experiencing results on the scale of our collective 'spin'? There are surely significant opportunities for genuinely innovative suppliers to capitalise on this.

Innovation is one of those buzz words we hear a lot in business. It seems to be used to describe anything from *ad-hoc* improvements to radical change – and almost everything in between – but what does it really mean when we claim to be innovative, are we paying lip service to the concept or really making a valuable contribution to moving our industry forward? Let us also remember that our industry, being *engineering* orientated, has innovation in its very origin, '*ingenuity*'.

Semantics aside, there seems to be number of misconceptions about innovation that make fundamental differences in performance for support and construction service businesses.

There is sometimes a perception that innovation happens in a 'Eureka!' moment that hits you when you're least expecting it or, alternatively, that a particular person or team have the sole responsibility for innovation. Worse again perhaps is the association of innovation with undue risk and the fear of failure that engenders. But perhaps one of the most concerning misconceptions about innovation is when it is overly focussed on finding cheaper ways of working.

The truth of course, is that innovation must be about finding better, ingenious ways of doing things and in our predominantly service orientated industry, has to be something that is continually worked at, nurtured and cultivated, throughout our organisations. Some of the UK's most forward-thinking businesses give all their employees time for ingenuity, and why we, at Amey, have events like 'The Den', to empower all our people to develop better solutions to everyday challenges, without any fear of 'failure'.

There are some good examples out there of businesses that have been on the brink of failure and have achieved great things by taking a fresh and sustained approach to innovation. Lego is perhaps one I could mention from outside our sector, but in our own, Amey's entire business has been transformed as a result of years of continual innovation and ingenuity; starting out as a local quarrying business nearly 100 years ago. But our success wouldn't have been possible without building a culture of innovation – or without experiencing some of the 'failures' that go hand-in-hand with trying something new.

Whatever innovation means to your business, it should be focused on improving what you do, delivering tangible benefits to your customers and viewed as a truly sustainable path to growth and progress.

Let's make sure we keep the *ingenuity* in our *engineering*.



Richard Robinson, AECOM
chief executive for Civil
Infrastructure, Europe,

UK needs an Olympian approach to STEM education

The recent GCSE results show a slight increase in participation in Science, Technology, Engineering and Mathematics (STEM) subjects, but the 1.5% rise falls far short of what the UK needs to remain globally competitive. There is huge demand for STEM skills in industry and a big shortfall in qualified candidates. Insufficient numbers of STEM students at GCSE level will perpetuate today's shortfall in apprentices and graduates in technical subjects, such as engineering.

The problem is further exacerbated at A-Level, with this year's results showing a decline in student numbers across most STEM subjects since 2015. Certainly the marginal average increase in STEM subjects since 2012 is insufficient to make a meaningful difference to the UK's engineering shortfall.

The challenge is not insurmountable. Look at where Team GB stood at the 1996 Olympics in Atlanta – in 36th place with just one gold medal. The UK needs to do for STEM education what it did for sport, and accelerate to Rio 2016 levels of achievement.

STEM careers are vital to the UK economy, so it is important to create a healthy pipeline of skills and talent through today's education system. Part of the problem is stubborn stereotypes about engineering. Technical industries need to capture young people's imagination to encourage them into STEM-related professions. It is important they hear about the exciting work engineers do to build a better world.

Post-GCSE, female students turn away from STEM subjects at a much higher rate than their male counterparts, so this gender imbalance also needs to be addressed. The engineering industry is making great strides in diversity but the problem must be tackled at the source.

Team GB's recent Olympic success did not come about overnight or by accident, it is the result of a consistent vision backed up by a long-term strategy of investment. If the UK is to be an engineering world-beater in 10 or 20 years' time, it must adopt a comparable approach. This will require a coordinated, well-funded, long-term plan with collaboration between industry, government and educators.



Naomi Climer, president,
Institute for Engineering
Technologies

Experience has changed my views on diversity

My main priority as president of the IET has been to promote the important role that engineering and technology plays in our everyday lives – and to try and share some of my own passion for engineering with others.

I've found that becoming the first female president in 145 years of the IET has acted as a great step forward in terms of inspiring diversity. However, just 9% of engineers in the UK are women. This has largely remained static since I became an engineer 30 years ago which is disappointing.

My views on potential methods for increasing diversity have changed over the last few years as I've become frustrated at our slow progress. I know it is not always a popular view, but if companies published their recruitment statistics, this could act as a catalyst for action, as we have seen with increasing women in FTSE 100 boardrooms, where the target of 25% has been met. I was absolutely against such measures in the past but, I now believe that they could help take us take a step forward in our efforts to recruit more female engineers.

Research we conducted as part of the IET's Engineer a Better World campaign showed that only seven per cent of parents felt that engineering would appeal to their daughters as a career. However, after seeing a little

information on some of the careers available, both parents and children were much more interested in what the sector had to offer. In fact, 72% of parents agreed that they would encourage their child to pursue engineering as a career.

The stereotypical visual image of men in hard hats and overalls is certainly something we are challenging in the midst of this new and exciting engineering and technology landscape. The IET recently launched a new photo library of engineering images for journalists. It includes a wide range of images highlighting the exciting and creative side of engineering, which we hope journalists will use instead of the more traditional images. This will go some way to highlighting the modern, creative and exciting world of engineering.

The industry is still painted as a male dominant arena in lots of different ways. We need to change this perception to stop women from being put off by this, because they shouldn't be. We need to encourage this perception to help young women see that organisations with a diverse workforce in the form of different backgrounds, upbringing and sexes are more likely to come up with ideas and innovation that will be relevant to a broader range of society.



As Westminster reconvenes after the summer break, *Julian Francis* takes a look at some of the key priorities and decisions MPs will face.

As the summer grinds to a close, MPs' thoughts turn back to Westminster as they return to the House of Commons. Following all of the political turmoil after the Brexit referendum, the resignation of David Cameron and the rise of Theresa May, the autumn session is shaping up to be a return to politics as usual with a number of decisions that have been delayed coming back to haunt the political class.

With the glow from her triumph of seizing the keys to Downing Street beginning to dim and the holiday to Switzerland behind her, Mrs May must now begin to govern the country and put some real flesh on the bones of her rhetoric. Given this, it is worth looking forward to see what issues will be coming up in the

next few months. The problems the government faces are of such importance that they will no doubt be very grateful when the Christmas recess comes round.

First and foremost, the PM will have to decide what to do about Hinkley Point C, as a decision will have to be made in the next few weeks about whether to proceed with the project or shelve it. The problem with Hinkley is not so much one about a large scale energy project so much as it is now a test for the new government. The international dimensions to the project which touch on our relations with France and China will overshadow whatever decision is made and will be taken by pundits as a sign of what is to come. All of this diplomatic chatter will undoubtedly obscure the vital debate about the future of

UK energy supply in the coming decades but that should not prevent the industry making its case.

We are already seeing the government making some interesting decisions on energy policy from the attempts to prolong the life of coal burning stations through the coming winter with government subsidisation, the announcement of more "capacity market" contracts to keep plants open after 2021 to the attempts to increase gas and renewable energy supplies.

We are told that none of this should be seen as the government moving away from nuclear as they firmly state that nuclear will remain a vital part of the mix but it does show a government preparing the ground to defend a decision not to proceed with the current Hinkley deal. Meanwhile,



Reality bites for May government

it must not be forgotten that Hitachi continue to move ahead with the Horizon project in Wylfa and their representatives could be seen having key meetings in Whitehall while most people were away.

Further to this, the government will have to decide whether it will go ahead and subsidise the Swansea Tidal Lagoon as another source of supply for the UK grid that can help ensure the UK remains energy self-sufficient. As with Hinkley, international considerations will have an impact on the decision. As part of a potential Brexit deal, the concept of a North Sea Union comprising Denmark, Germany, the Netherlands, France, Belgium, Sweden, and Norway has once again been raised. At the heart of such a grouping would be the promotion of an integrated sphere for offshore energy and marine research, and as well as a better grid network with interconnectors to drive down costs and boost back-up power. Tidal will be a key part of such a strategy for the region and could see the UK as a market leader for the technology.

Transport will also figure heavily in the coming months with a number of key projects needing to be signed off.

First and foremost will be expansion of airport capacity in the South East with the government being asked to make a deceptively easy decision of either expanding Heathrow or Gatwick. You could be forgiven for being a little sceptical about a decision finally being made on a project that has been dominating political debate for more than a decade and arguably has been around since the 1970s, but Brexit has concentrated minds.

The prime minister herself is to chair a cabinet sub-committee that will look at this issue and has stated that a decision will be made in October. That said, the political issues around Heathrow expansion have not gone away with a significant number of MPs adverse to expansion that will be opposed by their constituents. Something that Mrs May will be only too aware of as her constituency is one of the ones affected. Given the small size of her majority, party management will be key to getting any decision through a fractious parliament.

HS2 will also be in the agenda as the hybrid bill makes its way through the Lords in the coming weeks. The Lords will be focusing on the technical details of the bill so the industry must be prepared for very specific issues to be highlighted in this process. With no overall majority in the Lords, the government will have to pick its battles carefully with one eye on



Airport expansion



Housing supply



Tidal subsidy



Hinkley reaction



Railway investment

the appetite of the Commons to accept any amendments with the other on the actual delivery of the project. Concerted political campaigns can still generate results for determined opponents, so this is all far from over.

With Crossrail beginning the process of transforming from project delivery to operation under TfL as the Elizabeth Line, the debate will now start in earnest for Crossrail 2. The chancellor will have to make clear in the Autumn Statement if he will continue with his predecessor's policy or will he loosen the government purse strings and agree to some element of public finance for the project. Balloons have been raised stating the government sees a case for public investment in infrastructure projects but the industry awaits any concrete demonstrations that this will now be actual policy. Crossrail 2 would be an ideal project to demonstrate this new approach.

Alongside all of this there will also be the issue of housing and housing supply that is fast becoming one of the biggest political issues in the country. How the government proposes to deal with the issue could well be the difference between electoral success and failure in 2020. Similarly, devolution and investment in the Northern Powerhouse will continue to make weather but there are signs of winter coming for both of these projects with the PM concerned about the political fallout from both projects. The development of the new industrial strategy will no doubt allow us to more fully understand government thinking going forward on these issues but for now we must just wait and see.

As if all of this is not enough, we will still have to deal with the reality of Brexit. The government will have to start making decisions on how it will proceed and implement Brexit and what the future direction of the country will be.

Everything between now and our eventual exit from the EU will be dominated by the Brexit question and this more than anything else will be the lodestar of this administration. A slim majority combined with simmering resentment and mistrust in Westminster will not make Mrs May's life easy but we as an industry must be aware of these pressures if we are to be able to influence the government and achieve our objectives.

Politically and for our industry, this coming autumn is set to be a very busy time indeed – and on a number of fronts.

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

Supplying intelligence

Transport for London has been evolving its contract procurement, aiming to get greater value from its major projects. *Jon Masters* caught up with TfL and team members involved in the Bank Station project to discuss Innovative Contractor Engagement.

Bank Station is the next to undergo major improvement works through London Underground's programme of capital investment. Government gave the £563m project the go-ahead in December 2015, subsequent to approval of the associated Transport and Works Act Order. This was two years after a design and build contract was awarded to Dragados, with AECOM as design partner, using a method of procurement known as Innovative Contractor Engagement (ICE).

Development of the ICE process was driven by Transport for London's (TfL) programme manager for construction for London Underground, Miles Ashley, a member of the Infrastructure & Projects Authority's Client Working Group. Like other major clients, TfL has signed up to commitments of the Construction 2025 Strategy, including aims of a 33% reduction in whole life costs and a 50% cut in delivery time. With construction at Bank now underway, TfL and its supply chain have had time to take stock and consider the pros and cons of the ICE process.

Why was ICE introduced?

Miles Ashley: "Bank Station is the latest project in a programme of capacity improvements, which traditionally have been procured in a very orthodox manner,



Miles Ashley, Mark Raiss and Danny Duggan.

with designs fixed before they are released to tender. As a result we have tended to learn too late about suppliers' ideas for how schemes could be done differently to bring greater value. Previously we have defined the scope of projects too tightly. It's hard to get alternative and innovative ideas if you're already fixed on a given solution."

How does ICE work?

Miles Ashley: "We wanted to market test the product as well as the price, to see if we could get the best overall operational outcome, because we were making an investment against a business case based on journey times.

"We engaged with the market, through a process of protected dialogue, on how to best achieve the scheme benefits and outcomes we were seeking. We still started out with an outline design for the basis of evaluation, but produced tender documents that invited alternative designs, with an open book for analysis, so that all of the different ideas from bidders could be taken forward to form the final design; and we stated that any innovations used from losing bids would be paid for."

AECOM engineering director for civil infrastructure, **Mark Raiss:** "London Underground was trying to get creative solutions to solve a problem, to get a better answer to the one it already had.

"Submissions were assessed against detailed criteria including usual parameters of price and quality. We were given the design price; affordability was still important. But more importantly, we had to consider other outcomes, of capacity improvement per pound spent and the cost of disruption to travel time for the public."

Dragados project director **Danny Duggan:** "The client had a scheme design ready for the market to price against, but that proposed solution didn't quite meet the desired business case. By introducing ICE, instead of releasing that design fixed in a tender for contractors to price against, LU drew breath and said it would go out to the market through a design competition.

"At Dragados we then set up collaborative partnerships with seven different Tier 2 delivery partners on the understanding that they would also give up their intellectual property in return for the guarantee that if we win, they win. From then on, each bidding supply chain effectively entered eight to nine months of design and secure dialogue with the client."

What were the advantages?

Mark Raiss: "The process evaluated on things that really matter to TfL, on value in terms of continuity of customer service within a given budget; actively seeking better ways of doing things. The winning design introduced a lot of different variations on the original scheme, but one notable innovation was the change of tunnel configuration to maintain Northern Line services at Bank Station, with a travelator installed to speed up journey times. This added more construction cost, but within what was affordable given the reduction in disruption."

Danny Duggan: "The client created an innovative procurement model that brought input from lower down the supply chain up to the front, before the design was locked down. TfL asked the intelligent question of 'can you produce a better whole life solution for the money available, to move people through the station without disruption for the next 60 years?'

"For the first time, we had access to the client's business case and all of the detail of the original scheme, including the price risk register, which was crucial. It showed us what LU did not want and how much cost had been built into mitigating against the risks of that happening. We were able to work at coming up with a scheme design that reduced the likelihood of these risks and cut the associated costs.

"Consequently we've been able to continue improving the project's business case, which is now at a benefit to cost ratio of 4:1, and we've cut waste out of the project by avoiding the

London Underground's upgrade at Bank has been designed to increase the station's capacity by 40%, improving accessibility and shortening interchange times when it is completed in 2021. Bank is the third busiest station on the Tube network, used by over 52 million passengers per year. The £563m Bank project – a key part of TfL's long term plans for increasing train frequency and capacity on the Northern Line – will add a new railway tunnel and platform for the Northern Line at Bank, step-free access to the Northern Line and DLR platforms, three new lifts and 12 new escalators, plus a new station entrance in Cannon Street.

ent chains

common scenario of time and cost being wasted while fighting over design changes after contract award. Overall, ICE has produced a better outcome for all. Procurement done this way, or similar variations, has the potential to fundamentally change delivery of infrastructure schemes for the better.”

Miles Ashley: “We got four completely different solutions. All bidders had to engage early with their supply chains, which was very beneficial. We got a measure of the value outcome from the start, so a definition of how to optimise the desired solution and we’ve had further value improvement since the contract was awarded.

“Dragados, with ICE stage input from AECOM, brought substantial improvements. The ICE process changed the focus towards outcomes, from transactional relationships to enterprise. This is what drives greater value from infrastructure. We’re now getting more additional capacity at Bank and a better service for customers for every pound spent.”

And the disadvantages?

Mark Raiss: “ICE was a very good process in principle, but in taking over a year instead of four to five months, it was too long and too expensive for the bidders. The compensation element was good in principle. But practically it didn’t

work because the Dragados bid was so different, which meant none of the innovations from other bids could be used. I’m sure ICE could be done again and done better, however.”

Danny Duggan: “To be sustainable ICE has to be more equitable. The costs of bidding were about twice as much as conventional for a job of a similar size. TfL did agree some funding to support bidders’ costs, but clients have got to do more to part fund industry bid costs, if they want to get better value solutions.”

Miles Ashley: “The ICE process was a more expensive procurement exercise for bidders and for us, but there are several counter points to this. We gained a significant increase in overall value; contractors had the opportunity to be paid for their design innovations;

“By introducing ICE, instead of releasing design fixed in a tender for contractors to price against, LU drew breath and said it would go out to the market through a design competition.”

and over the long term, the bid costs will reduce dramatically if the process leads to supply chain relationships that are more strategic and less transactional.”

Where are you going next with ICE procurement?

Miles Ashley: “Now we’re pushing on further with advancing our procurement of capital works contracts.

“We’re seeking long term relationships with specialist contractors and two integrators, through eight-year framework agreements, to help us forge close links with different levels of the supply chain. The focus will be on value, because as a client we’re now mature enough with our cost data to know good value when we see it.

“The Client Working Group, established alongside the Infrastructure and Projects Authority (IPA), is working on the development of new, more efficient, delivery models. On the whole these now rely on a move from transactional to strategic relationships, driven by owners’ or operators’ desired outcomes. The IPA Client Working Group’s Project 13 report due later this year will conclude that infrastructure clients can get more value and efficiency if they engage earlier with the supply chain on the ultimate outcomes they want, to establish not a contract but an enterprise.”

The Bank Station upgrade will add 40% more capacity when opened in 2021.

Kier is working on the Mersey Gateway, a six-lane stretch of road with a large bridge in the middle of it.



Proceeding with caution

A concerted move back into the roads market has propelled Kier to a prominent position in infrastructure. *Jon Masters* met with Kier's Sean Jeffery to gauge the mood as the industry eyes up the potential in a mouthwatering £41.1bn of projects.

Just under one half of Kier's annual turnover now comes from infrastructure – about £1.5bn from roads, railways, water and energy markets, out of a total of £3.2bn from all construction, property and support services sectors.

The company's pursuit of a greater share of civils work, particularly in the roads market, has put it at the top table as one of the UK's largest contractors in the infrastructure sector. Kier is working as a Tier 1 supplier on Crossrail and other major project programmes and it's in the bidding for Phase One of HS2 and more.

So it might be expected that Kier executive director for infrastructure Sean Jeffery would have just positive things to say about the current outlook. But if Jeffery's view is a test of the temperature in the market, it's his cautious tone that stands out.

As an experienced civil engineer he's been here before of course; seen substantial programmes of government funded work

temporarily or permanently shelved due to the vagaries of economic conditions. It might all be different this time around. Government has highlighted a pipeline of £41.1bn of infrastructure projects, but 64% of that figure, £26.4bn, has to come from the private sector.

"We're aware there's a lot of positive things happening to give more surety of sustainable growth in the industry. But we'll have to see how that develops over the next couple of years because it's easier to talk about than fund. The money has to follow the message," Jeffery says.

The Brexit result of the EU referendum has added some more market uncertainty, but Kier's breadth of activity and strong order book give an appearance of resilience, for now at least. "Our construction division is performing well with 85% of our targeted revenue for the full year to 2017 covered by the current order book," he says.

Analysis this year by the Construction

Products Association has forecast a slow down in UK construction activity during 2016, while predicting that 102% growth in the infrastructure sector will underpin a 21% increase in overall construction activity between 2015 and 2019.

The analysis came attached with caveats: that infrastructure funding is at risk from the effects of the global economy and the industry's capacity to deliver – to up-skill quickly enough for such a rapid build up in activity.

"These are two important risks, but whether it's a symptom of economic factors or not, surety of workload has to be in there as a major risk as well," Jeffery says. "Skills shortage is self-generating in some ways and will always appear to exist when looking at work ahead, because if you don't know exactly how much work is coming, it can't be known how many people are needed. No-one wants to recruit and train people for work that ultimately doesn't come about.

"I'm not an economist, but the current market feel is that we're still in quite tough times, but there's enough in the pipeline to suggest we're going into a better more productive period."

A large chunk of Kier's turnover from infrastructure, some £600m, now comes from the roads market since the acquisitions of local authority highway

maintenance contractor May Gurney and consultant Mouchel. The latter came with the EM (Enterprise Mouchel) Highways business, which has been combined with the former to set up the circa £600m turnover Kier Highways.

"The acquisition of Mouchel gave us the opportunity we were looking for, to move more into the Highways England market. Acquiring the EM Highways area-wide contracts has helped us along a journey that started with May Gurney, moving back into the roads market in general," Jeffery says.

Kier Highways is led by Dave Wright, who came across with EM Highways. With the contracting arm removed, Mouchel Consulting has remained relatively autonomous as a stand alone business, under managing director Miles Barnard, and is now being sized up for a possible sale.

Jeffery's responsibility covers major projects, "generally anything over about £30m in value", he says, in roads, energy, water and rail – a business now worth about £700m annually. Kier has completed four of the main civils contracts of Crossrail in joint venture with BAM and Ferrovial. It has also built a dozen gas fired power stations. In the major roads market, Kier is dualling the A30 in Cornwall between Temple and Higher Carblake, while also working on a Smart Motorway scheme on the M6 in joint venture with Carillion.

"We're also building the Mersey Gateway, which is a six lane stretch of road with a big bridge in the middle of it. So as a business we've journeyed strongly into the highways market; a deliberate plan that we had," Jeffery says.



The Carillion-Kier JV working on the M6 has secured a total of £475m of Smart Motorway work through the Highways England Collaborative Delivery Framework, but the majority of that is due to start from 2017.

These are still not quite yet the boom times for infrastructure contracting. The energy market has failed to live up to promise so far, due partly to government's capacity auctions not bringing new power generation schemes forward as hoped. Kier also has construction equipment standing by on site in Somerset, waiting for the nod to start the next phase of enabling works for the delayed Hinkley Point C nuclear project.

Next year looks like being the start point for the real ramp up in work for contractors. Besides the HE's investment programme, the first major contracts of Phase 1 of HS2 should be on site by summer 2017. Kier is in the running for a share of £7bn of HS2 work as a part of the CEK (Carillion Eiffage Kier) consortium.

So will there be enough skilled people available to recruit as the workload ramps

up? "Yes, I think there will," Jeffery says.

On the brink of such a big uplift in infrastructure in the UK, there have also been questions asked over whether industry can deliver it all.

"For me, deliverability is about surety of the product, what we produce. We pride ourselves on winning projects by coming up with clever engineering solutions, so deliverability is always about making that happen. It might not be going for lowest cost, or could be tunneling in a way that takes lorries off the road, or using materials imported by river, or whatever makes the project work," Jeffery says.

"The key to it once arrived on a project is then being sure you can deliver that on site. It will affect productivity and commercial performance if encountering a lot of change. One of the things that makes us strong as an infrastructure business is our engineers and engineering and approach to solving problems."

Being "enthusiastic on collaboration" is the other key factor that makes Jeffery confident that the big programmes of work will be delivered on time and within budget. The majority of the work Kier does in the infrastructure sector will be in joint ventures with other contractors and consultants.

For the planned £2bn Silvertown Tunnel in London, for instance, Kier is entering the bidding for the design, build, finance and operate project in partnership with Ferrovial. "It's in collaboration where you see the most success in projects," he says.

An example he gives is the Devonport Dockyard, where Kier built one nuclear submarine dock for £29m, then, with less money available, worked with the client Devonport Management and its designer to work out how a second dock could be built for less.

"We took the project duration from two and a half years down to one and built it for £22m, so achieved a saving on the pain-gain share and we returned a cheque to the client. Everything you do is about the good ideas brought to a project, it can't be about a race to the lowest cost, but finding better ways of doing things."

Sean Jeffery – career path

Sean Jeffery is a Bristol-born civil engineer, brought up used to travelling the country following his civil engineer father as he worked on different road build projects. Sean's career started in 1990 in the roads unit of Balfour Beatty, as an engineer and ultimately project manager on schemes such as the Second Severn Crossing approach roads.

He joined Kier, partly to diversify and because opportunities to progress were looking less promising in the diminishing roads market of the late 1990s, he says.



His role for Kier initially became one of area manager responsible for delivery of a long list of contracts at the Devonport Dockyard, including major submarine dock refits, before a secondment to

Kier Build and subsequent promotion to look after all of Kier's infrastructure work in the south west.

As sector manager for the south west, Jeffery was responsible for projects such as the Langage combined coal and gas power station, plus more work at Devonport and projects for Babcock Marine and Centrica in industrial and energy markets.

He was Kier's MD for the south for a year until June 2013 and has been Kier's executive director for UK infrastructure and utilities since then, also responsible for the Kier Mining and Engineering Consulting businesses.

Closer collaboration needed for better public spaces



Public realm projects are becoming ever more complex so local authorities, developers and all parts of the supply chain need to work together to create engaging, effective public spaces, says *Stephen Wojcik*.

The design and construction of successful public spaces has never been a more challenging task; with shorter timescales and minimal disruption to the customer and public being key delivery drivers.

Population levels are rising at an astonishing rate, especially in London, meaning our public realm has to cope with ever-higher levels of footfall and traffic. There are more stakeholders to consider than ever before, each with their own disparate demands and expectations. The transport mix is becoming increasingly diverse, with the proliferation of cycling and pedestrian travel adding further layers of complexity to the challenge of designing and engineering spaces to serve multiple users.

Our industry's approach to collaboration has moved on dramatically over the past decade. This progression needs to continue if the public spaces we build now are to serve us well in the future and deliver best value. In the past there has often been a fundamental disconnect between different parts of the supply chain, despite best efforts to encourage early contractor involvement.

Often engineers, contractors, architects and planning teams operate in silos; only linking up when one needs the other, rather than when there is a real opportunity to share best practice. With London and the nation's roads and public spaces undergoing a widespread process of renewal and projects becoming more challenging, we need to continue to value engineer from the very start.

Project leading agencies need to pave the way by facilitating a more holistic and collaborative approach to project design and delivery. Projects now include representatives from many different focus groups in the consultation process to try and understand differing user needs and how a design might impact upon them, but procurement and material performance are often the last things to be considered. Holistic engagement is vital to ensuring that all voices are heard from the very start of a project, when design, cost, materials and programme can still be influenced.



Engineers and contractors involved early on can really bridge the gap between the vision and the reality; advising, for example, on how different materials will perform in real life. Some products may be aesthetically beautiful and perfect for foot and cycle traffic, but will deform and fail under the load of heavy buses and HGVs. These are the sort of considerations that need to be addressed during initial design and specification stages to avoid significant cost and safety issues later on.

At FM Conway we are trying to do our part to help customers tackle these

challenges by investing heavily in our combined design and build offering. This enables us to provide an integrated solution that considers all aspects of a project from conception through to construction - but it doesn't make us the sole solution. We need sponsors, local authorities and developers to engage with all parts of the supply chain if practical, workable solutions are to be found for the challenging public realm projects that are on the horizon.

Stephen Wojcik is head of consultancy services for FM Conway.

'Stayers' will affect Brexit deal



The attitude of those EU members who want to stay within the union will have a major impact on how the UK negotiates Brexit, writes *Natasha Levanti*.

Though 'Brexit' looming on the horizon has done little to reassure domestic or regional markets, it is not the only factor at play in the European landscape that will impact business growth. When contemplating the optimal alternative for the UK post-EU membership withdrawal, consideration of European factors is fundamental to success, for the union will advocate for the interests of those who wish to remain within it.

With global economic shifts having kicked off in 2008, economic turmoil continues to be perpetuated by regulatory failings, with the parallel rise of nationalistic parties changing geopolitical debates, making Europe today a hotbed for economic and political uncertainty.

As one of the Eurozone's three largest economies, Italy is the current European lynchpin. In Italy there are three challenges - banking regulations and mounting bad debt, Matteo Renzi's declining popularity and rising nationalism, as well as geopolitical risks including Brexit and refugees.

Ahead of a crucial constitutional referendum set to take place this November, Italian economic growth ground to a halt in Q2 at 0%. If in November the Italian referendum sees a turnover in government, or a failure to impose banking regulations, the Eurozone risks collapse.

With over 360bn euros of bad debt and not meeting growth expectations, Italian difficulties are already impacting markets across the Eurozone, in particular the two largest economies in the Eurozone - Germany and France.

Germany, as the largest national economy in Europe, continued to have moderate growth, above expectations, though the rate of economic growth has declined in Q2 compared to Q1. With slowdowns in retail sales, industrial production and exports, Germany's heavy reliance on trade means that the longer uncertainty exists within emerging economies, around the Eurozone and the single market, the economy will continue to slow.

Many slate this downturn as due to geopolitical positions of current politicians, giving more momentum to rising political unrest. Chancellor Angela Merkel's party has fallen from favour in



her home state of Mecklenburg-Vorpommern, coming after the Social Democrats and Alternative for Deutschland (AfD), the far right nationalist party. This exemplifies the rising populism throughout Germany, with the nationalism party AfD going from zero political hold in 2011 to being politically present in more than half of Germany's state parliaments.

In France, the economic and political spheres are both experiencing turmoil.



"We need to protect the interests of the members of the EU that want to stay together, not the one which wants to leave."

European Council president Donald Tusk

The French economy declined in Q2 in connection to not only bad debts in Italy but also the continual building of French debt. With a national election coming in 2017, and with Brexit estimated to significantly damage the French economy, public support has declined for mainstream politicians, with National Front politicians led by Marine Le Pen mounting support. With 38 polls having been conducted since April 2013, all identify Le Pen as a front runner for 2017.

While other member states are also facing challenges spurred by Eurozone troubles, geopolitics and rising nationalism, what is certain is that the impacts stemming from UK post-referendum uncertainty are mixed amongst other long-term challenges, domestic agendas, as well as an assortment of strong political figures and ideas around Europe.

As European Council president Donald Tusk said recently: "We need to protect the interests of the members of the EU that want to stay together, not the one which wants to leave."

Tusk's words should not be forgotten going forward, as the success of the UK's political and economic relations post-EU membership withdrawal are heavily dependent upon navigating the uncertainties at hand.

These issues and other concerns for businesses operating in Europe will be discussed by business leaders at ACE's European CEO Conference this November in London. For more information go to: www.acenet.co.uk/EuropeanCEOConference

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Working together for better results

Architecture practices and engineering firms working together and collaborating effectively was the topic at a recent roundtable organised by *Infrastructure Intelligence* and supported by Deltek. *Andy Walker* reports.



More and more in the industry, the issue of working together and collaboration is being discussed and those present at this roundtable at the Gherkin in the City of London were keen to stress the benefits of joint working and explore ways of doing so more efficiently and effectively.

Skills shortages

A crucial part of collaboration was having the skills within a team to work effectively together and on this issue, like so many others in the industry currently, the skills shortage was seen as a particular challenge.

In the aftermath of Brexit, Michele Pasca di Magliano from Zaha Hadid Architects was concerned about the access to skilled professionals. "We don't want to lose the talent pool," he said. "Working together in Europe is important for collaboration and we need access to that talent," he said.

Pell Frischmann's Ashu Prabhu thought the skills shortage was overplayed. "I'm

Who was present

- Mark Bagley – director, EPR Architects
- Roger Hawkins – partner, Hawkins|Brown
- Tomas Neeson – managing partner, Cundall
- Ashu Prabhu – partner, Pell Frischmann
- Rahul Patalia – partner, Peter Brett Associates
- Michele Pasca di Magliano – associate director, Zaha Hadid Architects
- Blair Pringle – new business director, Deltek
- Chris Duddridge – business director, Deltek
- Andy Walker – editor, *Infrastructure Intelligence*
- Diane Williams – business development manager, ACE
- Natasha Levanti – contributing editor, *Infrastructure Intelligence*
- Nelson Ogunshakin – chief executive, ACE, chairing the meeting

not sure that there still is a skills shortage in the industry," he said. "The question is whether we are generating a skills shortage from the universities because graduates aren't going into engineering. The task is to make infrastructure a more palatable industry to go into. A lot of people that I trained with went into banking and management consultancy because the training that they got was equally applicable there and the financial rewards are greater. There's a bit of a problem in that the industry needs to attract the best talent," Prabhu said.

Roger Hawkins of Hawkins|Brown agreed that the issue of skills was a crucial one for collaboration. "The skills shortage is not a tap that you can turn on and off when you need more people," he said. "The benefit of bringing people in from around the world is the positive input that they bring to teams and projects and the quality and diversity of their thinking. Collaboration works better and we do better projects when we've got people

“We do better projects when we’ve got people from a diverse background all working together and sharing experiences.”

Roger Hawkins, Hawkins\Brown

from a diverse background all working together and sharing experiences. It’s a melting pot. Opening the doors allows much better things to happen and surely that international collaboration and sharing experiences is the goal we are aiming for,” Hawkins said.

Winning new work is often the starting point for collaboration and there was some discussion at the roundtable about the effect of skills shortages on winning new business. “With large scale infrastructure projects, by definition, there are not that many of them and therefore you don’t have large numbers of people experienced in working on them,” said Michele Pasca di Magliano. That narrowed the pool of talented professionals to pick from and could make it harder to collaborate but “Collaboration was part and parcel of working in construction and it is a given,” di Magliano said. “The world is more complicated than in the past. It’s no longer just one firm doing one thing so collaboration is essential,” he said.

Working together

EPR Architects’ Mark Bagley agreed, though he said that his own profession was easier to work with than engineers. “We work on projects with other architects and it’s a much more collaborative process. We do collaborate with architects and engineers and it’s good to get teams working together but we also need to be aware that firms also have their own agendas and interests. It’s about personalities and individuals at the end of the day and as long as you can get like-minded people together who can work together then you’ve got a success. It’s all about relationships,” said Bagley.



Natasha Levanti.



Roger Hawkins.



Blair Pringle and Mark Bagley.

Chris Duddridge from roundtable hosts Deltek said he was always impressed by the way that professionals in the sector worked together. “Within the consultancy, engineering and architecture sector you get a level of informality about the way that people work together,” he said. “You see firms assigning the right people to the right projects and with that there’s a feeling that you might not need formal structures,” Duddridge said.

Mark Bagley said that money and risk was often the driver as to whether and how collaboration takes place. “On big projects it’s financially driven. Not taking on risk is an issue and to move an infrastructure project forward you need someone to take on risk who is able to do so,” he said.

Nelson Ogunshakin from ACE agreed. “It’s all about risk management. Firms need to ask themselves ‘what am I big enough to take on board?’ and this will not suit every partner on a project,” he said.

Roger Hawkins said that in the end that risk fell back onto the engineer. “Architects take the lead in the early stages of designs but then the balance tips, through novation or whatever and then the engineers take over later.”

Tomas Neeson of Cundall said that he thought that working in the UK was a different experience than working overseas as far as partnering and collaboration were concerned. “I find that there is a completely different approach in the UK than in other countries,” he said.

“It’s about personalities and individuals. As long as you can get like-minded people who can work together then you’ve got a success.”

Mark Bagley, EPR Architects

“Overseas we work with our direct competitors but not in the UK. I don’t know of any scheme here where we are working in the way we do overseas,” Neeson said.

Rahul Patalia from Peter Brett Associates said he thought that architects worked better together: “Collaboration between architects is quite common and often a winning formula,” he said. “The client is looking for that diversity, creativity and complimentary thought process you tend to get with architects. Engineers are probably a bit more nervous about collaboration.”

What is true collaboration?

But what is true collaboration? Roger Hawkins said that it was more than just working alongside each other. “People work together all the time but collaboration goes one step beyond that. It’s actually a mutual respect and understanding of each other’s interests. The whole being is then greater than the sum of the parts. We see it in other sectors, housing for example where there may be three or four architects working with



Rahul Patalia,
Blair Pringle
and Ashu
Prabhu.

engineers, but what I see in infrastructure is rarely collaboration it's more about team definition than working together," said Hawkins.

Hawkins said that he thought that the way the industry works corporately was part of the reason for that. "The forms of procurement and contracts we use don't really allow for collaboration. We need to discuss more how we can improve collaboration and make it better," he said. "We have to look at the contractual side," he said.

Ashu Prabhu agreed. "In terms of the barriers to collaboration, in order to get over contractual arrangements and professional indemnity issues there does need to be more coming together," he said. "True collaboration is where different disciplines are able to bring their experience in difference areas to bear to improve the final product and we do need to look at contractual arrangements and also potentially project insurance," said Prabhu.

"If we are able to break down those barriers and actually make sure that the

contract itself rewards the correct behaviours to encourage a better project, that would make a huge difference and remove some of the fear. If we can address at the very outset what will happen if things go wrong on a project then people will work a bit more freely. This in turn enables you to work more collaboratively," he said.

Incentivising the team

So what about incentivisation? How can projects be set up so that those who work on them are encouraged to work more collaboratively? The role of the client was key.

"It's down to the client, what they want and how they procure it," said Mark Bagley. "By collaborating to achieve a cohesive project outcome you are incentivised to work together because then everyone benefits from success," Bagley said. Ashu

"True collaboration is where different disciplines are able to bring their experience in difference areas to bear to improve the final product."

Ashu Prabhu, Pell Frischmann

Prabhu agreed, saying: "The client is a kingpin in all this and sets the tone. Rewarding behaviours that don't promote 'gaming' is also important."

Roger Hawkins also agreed about the key role of the client. "The client is absolutely fundamental," he said. It was also important for clients to take a long-term view, Hawkins said. "My favourite sector of work is the universities. They take a long-term view. They have politically sensitive stakeholders – governors, trustees, students, politicians – but by being a 'multi-headed' client they are really engaged as a result. They are embedded in their communities and are often the biggest developer in town so they have a real stake in getting it right," said Hawkins.

"If we can get that long-term thinking into clients' minds then we will get better projects," he said.

But how can clients be educated to adopt a more enlightened approach that can then lead to better collaboration?

Michele Pasca di Magliano said clients needed to be more part of the project team, working alongside other professionals.

"It's easy for Europeans to come here and live here and speak the language but on the whole the Brits don't want to do that."

Tomas Neeson, Cundall



Tomas
Neeson.

Roundtable discussion

Mark Bagley, Chris Duddridge and Tomas Neeson.



Michele Pasca di Magliano.

“We need to have a project officer for the project team and they should sit in the office with the members of the project team. We should join forces and work together. The client should sit in the office with the team and that way they see what is going on and how everyone works together,” he said.

Nelson Ogunshakin said that architects and engineers had it within their power to bring about the changes they wanted to see with regard to clients. “Shouldn’t we be initiating this change in client culture and make it happen? We should not have to wait for the client,” he said.

Working in Europe

Concluding the roundtable, those present looked at the issue of Europe and discussed winning work there, the barriers to the market and also the effect of current market volatility.

Roger Hawkins highlighted some issues in the way that different nationalities approach regulations and legislation. “It’s a well-known statement that European legislation for Germans is to comply with, for French and Italians to ignore and for Brits to argue about! Notwithstanding that, I don’t see Europe as being particularly difficult to win work in Europe,” he said.

The advantages of having a diverse workforce were important in breaking down barriers in Europe. Chris Duddridge said: “Germans tend to buy from Germans so on a basic level the advantages of having a diverse workforce are there for all to see. This is the case for many professional firms,” he said.

The willingness or not of professionals to be mobile and work in Europe was also important according to Tomas Neeson. “It’s easy for Europeans to come here and live here and speak the language but on the whole the Brits don’t want to do that.

“The client should sit in the office with the team and that way they see what is going on and how everyone works together.”

**Michele Pasca di Magliano,
Zaha Hadid Architects**

Big US companies are more culturally set up to work overseas and send their staff and resources there. They commit more to the process,” he said.

“To collaborate effectively you have to have respect of each other’s culture and experience,” Roger Hawkins said. “You need dialogue and that is true collaboration. If you can work with local people and exchange and share experiences then everyone benefits.”

Mark Bagley said: “Having an office abroad is about having people who are from that country as they understand the

local community and they understand the ground rules, the regulations the culture.”

Tomas Neeson said that his company approached working in Europe as a way to increase the talent they have available:

“We have only opened offices based on people rather than location. In European cities we are accessing talent to bring into our business by being linked with graduate programmes. We are working there to access and broaden the talent pool. There are some fantastic engineers out there,” he said.

Most of those present were concerned about future market volatility, especially in the wake of Brexit. Ashu Prabhu said: “Investment coming in and being able to fund projects and the lack of certainty that investors will get a return on investment is a concern,” he said. Volatility in politics also mattered said Michele Pasca di Magliano. “Politics affects our work. The world has become an unstable place. We work globally and you cannot escape global crisis,” he said.

Notwithstanding concerns about uncertainty and volatility, Tomas Neeson struck an optimistic note. “London will always be an investment magnet, it will always attract money, so I wouldn’t be too worried. Political uncertainty will delay the ability to make decisions but only delay them,” he said.

As always, the latest *Infrastructure Intelligence* roundtable saw a wide-ranging and thoughtful discussion. Summing up, Deltek’s Chris Duddridge said: “We always gain a real insight from these gatherings and from the breadth and depth of the conversation around the table. Listening to the experiences of people within the industry is crucial and sharing knowledge and experiences is the hallmark of collaboration and a healthy industry,” he said.

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Deltek is a leading global provider of enterprise software and information solutions for professional services firms and other project- and people-based businesses. For decades, they have delivered solutions and insights that empower their customers to unlock their business potential. 20,000 organisations and millions of users in over 80 countries around the world rely on Deltek to research and identify opportunities, win new business, recruit and develop talent, optimise resources, streamline operations and deliver more profitable projects.

Speaking out with one voice for the industry

More than ever, following the UK's decision to leave the EU, the industry needs to speak with one voice to government on the issues that matter, says *Nelson Ogunshakin*.

While today's uncertainties vary, chief among business concerns remains the United Kingdom's decision to relinquish its membership of the European Union. Its potential ramifications, both challenges and opportunities, will be far-reaching.

After the EU referendum results, countless businesses are scrambling to gain the attention of decision makers. However, those decision makers are currently inundated, with the sheer number of representations making it more difficult to consolidate, understand and address concerns.

Facing UK withdrawal from the EU, firms working in the natural and built environments have been largely frustrated in their attempts to raise concerns, as they function in silos. By forgetting that these concerns are shared industry-wide, businesses are missing a key strength – the ability of the industry as a whole to speak with one voice.

To drive decision-makers to action, businesses must galvanise, as an industry, and face the challenges as a group, with one strong, shared voice. For over 100 years, Association for Consultancy and Engineering (ACE) has been that voice, proudly ensuring that industry concerns are heard and addressed.

Today these concerns centre around uncertainty and confidence in the market, stability of sterling, indecision on major infrastructure project investment and a significant reduction in investment in property sector. However, the biggest concerns remain on recruitment and skills development; key industry challenges that will be intensified by the UK leaving the EU.

Prior to the referendum our industry faced a rising skills gap, with 2.74m job openings estimated within the next decade alone. As highly skilled individuals are leaving the industry, through retirement or otherwise, we have already been struggling to find the quantity of skilled workers needed for project and business growth.

This may be exacerbated depending on the deal that the UK reaches for EU citizens currently working in the industry, and potential new hires from EU member states, as well as the latent impacts any deals will have on non-EU visa and work permissions.

While it is still possible for the government to ensure continued access to skilled workers, it is equally possible that this will not be guaranteed.

With potentially a greater shortage in the skilled workforce available, skills development and retention of a quality skilled workforce becomes fundamental to the continued success of our industry in the UK, as well as beyond.

Going forward amidst the political uncertainty, if access to skills labour is reduced without plans in place to recruit from a wider diverse talent pool and develop skills, this could leave our industry without the workforce needed to take on future infrastructure projects vital to the UK.

No matter what the various deals to be made by the government, we

must as an industry do what we can to mitigate this potential impact on recruitment and skills.

While for years ACE has encouraged businesses to foster a workforce pipeline, now more than ever, businesses must actively engage in plans to encourage individuals to join the industry, continually develop workers' skills, and retain talent in the industry.

As an industry we must find ways to appeal as a career to the next generation, whether through apprenticeship programmes such as Technician Apprenticeship Consortium, skills development programmes for current staff, reaching out to local schools to expose students to engineering possibilities, or strategies to cultivate diversity. The new government apprentice levy programme, if embraced in a structured and integrated approach, could help to develop future talents for the industry, and ACE will be playing its part in galvanising and industry response to the initiative.

There are countless ways that businesses can foster a workforce pipeline and for those not already doing so, now is the time to act on improving recruitment and skills development.

Prior to the referendum, ACE activated a plan to provide key industry insights, engage in discussions to isolate vital issues, as well as develop a network to ensure solutions are found and considered by government. This work will continue, providing the industry with a go-to resource and strategic advocacy, so that our businesses will continue to thrive despite the uncertainty ahead.

We invite you to read the latest briefings at acenet.co.uk/Brexit and to reach out with any questions or concerns you may have. ACE is here to help and it is by working together that we will truly rise to meet the forthcoming challenges.



Enhanced services for better business management

This autumn, ACE is providing its members with a new set of strategic insights to assist with the technical and legal aspects of business management.

Success in running a business in the natural and built environment is about more than just raw talent to complete technical project tasks, it is also about providing the framework necessary to provide high quality customer service and make business services accessible while abiding by legal standards at all points in time.

This is a significant hurdle that many businesses struggle to overcome, particularly those with limited resources or in house legal skills.

Legal standard issues faced daily by business leaders range from modern slavery,

health and safety, cyber security, supply chain transparency, to business policies for internal and external use. All of these can change rapidly, with many having been the subject of new UK legal standards issued in the last year.

This autumn ACE will be hosting a number of events across the UK wide to assist firms with the wide range of legal issues they need to consider.

● 7 September – London – **Minimising Daily Health and Safety Risks**

● 6 October – Manchester – **Minimising Daily Health and Safety Risks**

● 11 October – London – **Running a Modern Day Business – Practical and Legal Requirements Seminar**

● 26 October – Glasgow – **Minimising Daily Health and Safety Risks**

If you're not able to attend the events above, event discussions will run in parallel to resources available on www.acenet.co.uk with additional resources designed to allow business leaders to effectively manage. For any other related queries, members have access to ACE's business helpline. Just call 0845 450 1980 and speak to ACE's legal and compliance team.

New ACE Agreements coming soon

New ACE Agreements are set to be published around the turn of the year, following the conclusion of a thorough review of the current suite of agreements to produce more 'user friendly' documents which will be acceptable to consultants, public and private sector clients and contractors.

The revised agreements have been updated to take into account new developments in the industry and changes in the way that clients, consultants and contractors do business.

Irrespective of the value or complexity of services being commissioned and delivered, the business case for clarity of what these are and a framework for the proper allocation of risk and responsibility between the parties to any agreement are crucial.

ACE has consistently promoted the use of standard terms of engagement to address these issues. It has also highlighted the dangers inherent in contractual terms being incorporated by reference. However well the parties think they understand what their agreement means it may well, if tested, be found to differ significantly from what they thought. This outcome can prove costly both financially and in terms of the

ongoing relationship between the consultant and client.

With this in mind, new ACE Agreement for both "design" and "design and construct" services is now being finalised. Written in clear language, it "collects" all the rights and obligations of the parties together to ensure greater clarity of responsibilities and fairly balancing and allocating those to the party best able to deal with them. Collaboration and the early warning of events which may impact on services are included, as is BIM. Guidance notes will be incorporated within the agreement as will a standard form of collateral warranty, should this be required. A new Sub-Consultancy Agreement will cascade down the key provisions of the Agreement to ensure that all rights and responsibilities are 'back to back', whilst able to be used for projects based in Scotland as well.

Together with the publication of the new agreements, updated Schedules of Services are being developed to complement them.

Following publication, ACE will host a number of regional events in 2017 to familiarise the industry with the new agreements and schedules of services.

For more on ACE's agreements, please visit www.acenet.co.uk/publications.



Business policy templates available now

To help businesses establish policies that not only protect business interests but also allow all stakeholders to benefit from services, ACE has produced eight business policy templates, all available within the Resource Hub on www.acenet.co.uk

A modern business needs policies and statements on a range of issues such as health and safety, equality, anti-bribery and whistleblowing in order to help guide managers, staff and other stakeholders on the business's values and procedures and to keep the business compliant.

Increasingly, clients, funders and other third parties want to see that your business has such a framework in relation to the normal range of risks that arise in running a business. So, don't be caught out – download those business policy templates today!

Strange times, but we're keeping up the pressure on the politicians



Recent changes to government departments and the arrival of new ministers are making it more difficult to discuss key issues with officials, but the environmental sector has much to offer, says *Matthew Farrow*.

Early September always sees politics starting up again after the summer break. But though the timing may be familiar, the atmosphere is anything but.

Here at the Environmental Industries Commission we tend to be in regular contact with officials across government to develop policy and regulations, but day-to-day policy making remains in limbo, with some important consultations which we have been expecting for months, for example on the much-needed Clean Air Zones or the future of energy efficiency policy delayed.

At the same time the implementation of the structural changes across government is slowing things down with the Energy and Climate Change department gone, BIS refashioned into BEIS (pronounced 'baize' apparently!), and new departments for Brexit and for international trade created.

So while EIC (and ACE), is an accredited trade partner for the government export agency UKTI it is virtually impossible right now to get anything discussed with the staff there as UKTI has technically been abolished, its functions absorbed in the new trade department and people there are currently focused on moving buildings and changing email addresses rather than working with business.

Against this stasis, the big questions of exactly how Brexit will be delivered dominates discussion in the green business sector but with few answers.

So what is EIC's role in these strange times? First, we need to keep the pressure on politicians to ensure that important policy issues are not put on the backburner by Brexit. So when I spoke for the first time with new environment minister Therese Coffey, I urged her to reaffirm the government's commitment to hitting air quality targets. And if ministers don't step up to the plate, our new all-party parliamentary group on air pollution will ensure back bench MPs are well-briefed and can apply pressure to them.

Second, we must help our members separate fact from speculation as they seek to understand how Brexit might impact environmental policy and hence their markets. So I have agreed with the deputy



The government needs to get moving quickly to say how Brexit will be delivered.

head of the Norwegian Environment Agency that she will come over to the UK in November for an EIC seminar so that we can gain insights into Norway's experience of working with EU environmental law as a non-EU member (the so called 'Norway option' – being part of the EEA but not the EU). This is one of a series of Brexit seminars we will run this autumn.

Third, we are working with our members to clarify which are the core elements of EU environmental law which are fundamental to UK environmental standards and markets so that we are well-positioned to influence government when the hard graft of detailed Brexit

activity gets underway.

And lastly we need to be upbeat and offer solutions to our new government. Despite the deep concern many in the environmental world inevitably have about the impact Brexit could have on environmental progress the UK's green economy remains a hotbed of innovation and export potential. As ministers search for ways to put flesh on the bones of soundbites such as 'rebalancing the economy' and 'becoming an open, trading nation', we have a lot to offer.

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



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Iceland's best-selling engineer

There can't be many, if any, civil engineers who are also best-selling authors. Yrsa Sigurðardóttir from Iceland is both and *Andy Walker* caught up with her at the Theakston's Crime Writing Festival in Harrogate this summer.

You're a civil engineer and a successful novelist; that's quite unique isn't it?

It is. I don't know why because you have all kinds of other professions that do a lot of writing. You have doctors who have been successful like Robin Cook and Michael Crichton. So I don't really understand why more people in the professions aren't writers, but maybe I'm breaking the ice and we'll now have a flood.

You still practice as a civil engineer. Who do you work for?

I work for Verkis, one of the biggest consulting engineering firms in Iceland, in the power industry doing project management for geothermal and hydro. I'm currently on the project management team for a geothermal plant being built in the north east of Iceland and we did the design and the tendering and now it's in construction and we are doing the design reviews, so we are involved from the beginning to the end of the project.

When did you first realise that you had this talent to write?

Rather late. I was over 30 when I started writing. I'd always been a very avid reader since I was a kid and that was fine for me, but then my son wasn't reading very much, he was eight at the time. I was worried that he would never learn to love reading and I started trying to read to him but the books that were available at the time were kind of depressive, written in the style of the time, where books needed to teach kids a lesson. I thought he needed something more fun so I decided to have a go at writing a book for kids that was more humour based. I wrote five books for kids and then I stopped and thought I wouldn't write again but two years later I started writing crime fiction and I have been doing that since.

Do you think that there are any synergies between being an engineer and the whole crime fiction genre?

There's a synergy in knowing and understanding how a project works. A project has a beginning, it reaches a crescendo, then it has an ending and it is different every time. It is the same with a novel. You need to have a beginning and get to the end in some manner that's pleasing to the reader. I think there is synergy in



Last Rituals, the first crime novel by Yrsa Sigurðardóttir (above).

understanding what is important and what is fluff. The reason I continue to work is that working on projects with groups of people you get more interaction with people and when you're writing it's very lonely. The interaction with people is a stimulant for ideas – not that I am writing about the people I work with! – but you need to have conversations to get inspired.

How do you manage to fit it all in? When do you get time to write?

I write usually after work, in the evenings, at weekends and on my summer vacations. Now I only work half time because I publish in 30-something languages and I have to do a lot of travelling and I find that the travelling has made it impossible for me to work full time. It's not the writing it is the travelling and I have to be away promoting books and I can't be working.

Being an engineer, the skill set comes from one side of the brain whereas being a novelist it tends to be the other side of the brain. Have you ever pondered on that?

I have and I'm not sure that this has really been proven. I think that somehow the brain all works in unison. If that's the case then we all have these two sides to us at least so it's just a matter of unleashing your creativity.

What do your colleagues think about what you do?

In Iceland hard cover novels by local authors only come out in November for the

Christmas market so there is this big period where it's discussed in the papers and you are very prominent as a public figure but outside of that period it is just a non-issue. People are more relaxed about these things in Iceland. People who know me don't think any differently about me because I write, I'm just me.

Have you ever been tempted to write using infrastructure as subject matter?

I wrote one book that took place in Greenland on a mining project and the reason I moved it there was that at the time I was working on a hydro project in the highlands of Iceland that was controversial in some circles and I didn't want to give any fodder to its opponents. The book, *The Day is Dark*, was about the murders that took place in an isolated construction site so I didn't want people associating it with the project I was working on! I have thought a lot about the geothermal side of things and I probably will write something about infrastructure at some point.

What is your favourite engineering project?

It would be the district heating system in Reykjavik. It uses geothermal water to heat all homes and it makes heating so cheap and has made a huge difference for Iceland pollution-wise which is a big thing in a country that is as cold as ours. We have many other geothermal projects, such as a heated beach where they heat up the ocean in a small alcove so people can go to a beach. Most of the stuff that I admire would be geothermal projects where we make use of what we have. It's made our country more habitable and just a great place to live.

What would you like to write about that you haven't written about so far?

I would love to write an apocalyptic book, in the aftermath of an apocalypse, where you have nothing that you count on. You can't Google stuff. Either you know it or you have no way of acquiring information and all of the safety things that we take for granted have gone. You'd certainly need engineers in such a time. I would love that. But maybe later, not this year!

The latest book by Yrsa Sigurðardóttir, The Undesired, is out now.

Career path: Steven Yule

What is your job?

I'm Amey's international business development manager for the Middle East; based in Doha, Qatar, with responsibility for managing the delivery of regional business plans across a range of sectors, including highways, rail, utilities, aviation and asset management.

Why did you decide to go into engineering?

I always wanted to pursue a career that would enable me to make a lasting beneficial impact on society and it was clear that civil engineering would give me the skills to make this a reality.

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

MEng Civil and Structural Engineering at the University of Liverpool. Amey was a clear favourite choice for me during my final year of study, partly due to the enthusiasm they put into the graduate programme and the vast range of work opportunities.

Who was your first employer?

I completed summer placements with Arup during my university studies. Amey was my first full time employer after I graduated and I joined the structures team in



Birmingham, where I helped design and project manage bridge rehabilitation schemes across a variety of projects including the Midland Links, for Highways England. I moved to Amey's graduate management development programme before moving to the Middle East.

What is exciting about your work?

No day is ever the same in Qatar and there is never a dull day, frustrating at times maybe, but certainly not dull! The country has been experiencing a massive construction boom in the lead up to the FIFA World Cup 2022 and Qatar National Vision 2030. Quite simply it is an engineer's dream, both in terms of the scale of projects and the challenges involved.

What is it about the work that keeps you interested?

The variety of challenges our industry faces and the opportunities Amey gives me to tackle them. I feel privileged to have the chance to make a lasting impact in developing solutions to support the long term sustainability of places where I work.

What is the best thing so far in your career?

Before moving into my current role, I was the project manager for our client in Qatar, developing and implementing their highway handover procedure for several billions of pounds worth of infrastructure from scratch has to be a highlight. This project allowed me to complete my professional training to sit my charter professional review for CEng MICE, which I will be taking this autumn in Dubai.

How are you able to engage with the wider industry through your role?

I work very closely with the Amey business in the UK, to share best practice and draw on our global expertise. I also work with Ferrovial, our parent company as well as a variety of other organisations in Qatar. I'm also a committee member of the ACE Middle East Group (ACE MEG), which forms part of ACE's International Business Group, which meets twice yearly in the UAE to discuss regional opportunities and issues facing ACE member companies.



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