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INFRASTRUCTURE Intelligence

Produced for the industry by the Association for Consultancy and Engineering

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MESSAGE FROM THE EDITOR

Can it really be that another year is drawing to a close? A year in which infrastructure has once again been high on our politicians' agenda, along with the ever-present concern of Brexit and the effects that might have on the economy and our sector.

While the ramifications of the Brexit negotiations are still (still!) uncertain, what we do know is that infrastructure expenditure is one of the best and most cost-effective ways of boosting the UK economy and improving the lives of millions of citizens. In 2019 I hope that our politicians finally grasp this truth and start to really invest in infrastructure and the industry that supports its delivery.

Good quality infrastructure, as Keith Howells writes on page 22 and 23, can connect and unite communities and help resolve many of the challenges we face as a society. That's a big message and we as an industry need to ensure that it is one that is heard loud and clear by those in government and, given the uncertain political climate, by those in opposition too.

As Sir John Armitt correctly points out in this issue, winning over the public is a prerequisite to winning political support for projects and in 2019 I hope to see the industry redouble its resolve to engage people and get its positive message across on all fronts.

Finally, as this is our final issue of 2018, I'd like to be the first to wish all our readers a happy and relaxing festive season and a prosperous and peaceful 2019.

Andy Walker,
editor, Infrastructure Intelligence

Contents

Is the "end of PFI" little more than party politics?

After Philip Hammond pledged to not sign any new PFI contracts in his budget, *Ryan Tute* looks at what this means for financing future UK infrastructure projects.

It may not come as a surprise for many in the industry, but for any potential PFI investors still in doubt then the chancellor used his autumn budget to deliver the fatal blow to any new Private Finance Initiative contracts.

Philip Hammond was hoping to send a clear message out to the construction sector and investors that this government meant business, saying the "days of the public sector being a pushover" were over.

MPs in the Commons were told that PFI deals no longer represented value for money and while he had never signed off the use of a PFI contract, or its successor PF2, the announcement would now end the future use of the financing method.

But with no deals of note signed since 2016 and just four transactions posted with a value of around £500m in 2015 - way down on the £7bn plus value of 55 transactions of 2009 - then does the statement of intent hold much value?

The idea of putting to bed PFI contracts is also nothing new. In 2017, shadow chancellor John McDonnell promised a radical review of all PFI contracts if Labour was to win the next general election, saying "we'll bring these contracts and staff back in-house".

At the time McDonnell said PFI has cost taxpayers over £28bn paid to private sector investors and shareholders. While a freedom of information request conducted by the law firm Collyer Bristow recently showed that just £32m was withheld from PFI providers, confirming government fears that tax payers are over-paying for poor service.

Alexander Jan, chief economist at Arup, believes party politics is definitely a factor behind Hammond's statement. He says a programme of fiscal devolution which allows local authorities to retain the growth in their tax bases and leverage finance is now required.

The economist said: "This is arguably more an announcement to neutralise Labour's position on private finance than a material change in government policy. In overall terms, the government appears to be tilting towards a policy position in which drawing from public sector sources is once again seen as the norm. Examples of this include the removal of the cap on local authorities' use of housing revenue accounts to leverage borrowing, the expansion of the Housing Infrastructure Finance programme and an expansion of the government's 'Help to Buy' scheme."

Colin Wilson, partner at international law firm DLA Piper, believes the lack of confidence expressed by the chancellor and Labour's previous threats of nationalisation, are clear signs of a "lack of trust between the public and private sector".

"The need for infrastructure investment in the UK has never been higher, especially in the transport and energy sectors, yet our need continues to exceed the capital budgets that are available," he added. "There are many partnering alternative models available for government to adopt to facilitate this investment as opposed to the PFI model. It is important, however, that the public and private sector finds a way of forging effective partnerships, working together to structure these projects so as to ensure their successful delivery when they are brought to market."

From the outside it appears that only Highways England Stonehenge and Lower Thames Crossing projects will be impacted moving forward, with both using PFI deals. Arup economist Jan believes a switch to more traditional contracting will be implemented through conventional government expenditure as part of the agency's £30bn Vehicle Excise Duty budget announced by Hammond. All the money for these schemes is now set to come from public finance and Highways England's own budget.

Simon Rawlinson, head of strategic research and insight at Arcadis, added: "The end to the use of the PFI for social and economic infrastructure is good politics as no deal has been signed since 2016. However, finding the finance to plug the gaps left by the European Investment Bank, which the budget does not address, along with public sector expertise to deliver publicly-funded programmes, may prove to be longer-term liabilities."

Momentum vital for Construction Sector Deal, ACE CEO tells MPs

ACE's chief executive has given evidence on the Construction Sector Deal to the Department for Business, Energy and Industrial Strategy select committee.

Speaking to MPs, ACE's chief executive Hannah Vickers has spelt out what she believed was important in ensuring that the £420m Construction Sector Deal is a success story.

In the latest evidence gathering mission by MPs, Association for Consultancy and Engineering (ACE) chief executive Hannah Vickers has warned about losing the "goodwill" and "momentum" surrounding the government's Construction Sector Deal as questions on progress were brought to the table.

Vickers was part of a panel of industry leaders invited to provide oral evidence to the Department for Business, Energy and Industrial Strategy select committee on the industrial strategy, sector deals and issues surrounding productivity.

The session also specifically focused on the £420m Construction Sector Deal which was announced in July and is an integral part of the Industrial Strategy. It sets out what it believes to be the foundations for an ambitious partnership between the government and industry to transform the sector.

The ACE chief executive has previously highlighted the need for representative bodies to unite behind the Construction Leadership Council and has backed its incoming co-chair Andy Mitchell, on his plea for the industry to overcome its fragmented structure to deliver the Construction Sector Deal successfully.

In the hour-long session, Vickers started by stressing how increased investment in digital design and offsite manufacturing, together with the sector deal's supporting role would help improve the UK's export potential and thus turn the industry into a "product-based" one, rather than a "man-hours" offering.

ACE chief executive Hannah Vickers giving evidence in parliament at the Department for Business, Energy and Industrial Strategy select committee.

While reaffirming the fact it was still "early days" for the government and the acceleration of the Construction Sector Deal, Vickers told the committee that early indications showed there were some promising signs from government.

"I think from what we have seen so far, given that the deal was only announced in July, the deal is giving industry confidence to invest," she said. "I've got SME members now setting up separate businesses because they have got a clearer understanding of how government will create a stable policy environment."

However, Vickers did issue a word of warning to MPs on the real possibility of losing momentum. "I think we are at risk of that goodwill and momentum which has been built up around the sector deal stalling because there are dribs and drabs of announcements coming out," she said.

"For example, there are commitments in the transforming infrastructure programme and the publication government construction strategy that haven't been met. I think consistency is really important and if we can get it to hit the market so to speak when they come out and procure then that's when you will really have the fundamental change in industry.

The ACE chief also told the committee how trade and business associations were needed to "bridge the gap" between government and SMEs and changes in the governance of the Construction Leadership Council were necessary to utilise organisations like ACE more.

"It's good to have headline targets and working with the new chair what we need to focus on is getting that plan around it," Vickers added. "We have the high-level frame, the targets, but we are missing the plan. We need to focus very much now on delivery and I do think there is a need to reformat the governance around the Construction Leadership Council which has historically been represented by individual firms."

Finally, in response to a question on what the government has done to help, Vickers identified incentives like R&D tax credits and the apprenticeship levy.

She said: "We have been working with the Construction Leadership Council to shape the strategy around the deal. I think the tangible things we have noticed to date are more specific policy announcements like the R&D tax credits which have had a big impact, we know now we are spending 3-4% of the consultancy firms revenue on it which we didn't have before as an incentive."

"It's good to have headline targets and working with the new chair what we need to focus on is getting that plan around it."

Hannah Vickers, ACE chief executive

Transport key to putting towns back on the map

The multi-modal transport interchange in Altrincham, Greater Manchester, which helped to transform the town centre's fortunes.

A new report examines the key role that transport interventions can play in supporting post-industrial towns and argues that a coordinated approach is needed to achieve success.

Transport has a key role to play in helping the UK's post-industrial towns to thrive, putting them firmly back on the map, a report by the Urban Transport Group has found.

The report, About towns: *How transport can help towns thrive,* reveals how transport can address many of the challenges that such towns can face, such as unemployment, underinvestment and a lack of housing, by creating jobs, attracting investment and opening up sites for homes.

Transport can also shape the way towns look and how their residents feel about them, renewing a sense of civic pride through better and healthier streets, and high-quality transport infrastructure such as stations and interchanges. Tobyn Hughes, chair of the Urban Transport Group, said: "As major drivers of the economy, cities have been the focus of much of the debate about urban transport policy. But the future of the UK's post-industrial towns, and how they succeed and support their residents and wider economies, is increasingly under the spotlight.

"This report shines a light on just how key transport is if our towns are to thrive. Whether it is providing greater access to jobs, opening up investment opportunities, meeting housing demand or creating go-to destinations, transport is a true enabler of prosperous and proud towns."

A key finding of the report is that isolated capital interventions in transport infrastructure are insufficient in themselves. One-off investments in flagship, capital transport projects, are not enough alone for towns to truly succeed. Instead, investment must be integrated with other initiatives in areas such as education, housing and economic development, for example, locating new colleges alongside public transport hubs and ensuring public transport is affordable for young people.

Jonathan Bray, director of the Urban Transport Group, added: "We need to move away from a 'silver bullet' approach based on a single transport solution and instead towards packages of transport measures combined with wider cross-sector initiatives on housing, employment and education. Only then can transport make its mark in reversing the fortunes of our post-industrial towns."

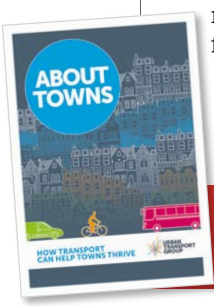
Key findings from the report include:

- Long-term leadership and planning is needed to transform towns but with space for bottom-up community initiatives.
- Restoring historic transport infrastructure and building new high-quality interchanges in towns can provide destinations in their own right, becoming a welcoming gateway for visitors and investors and a celebration of history and heritage.
- The transport sector is a major employer in towns and can be both an anchor institution (reinvesting in local businesses) and an exemplary employer (by investing in skills and people, and by paying decent wages).
- Hard and soft (capital and revenue) transport measures can play a vital role in widening access to employment, education and skills, enhancing quality of life, and enabling access to leisure, recreation and physical activity for the residents of towns.
- Transport is key to opening up new sites for housing and commercial development in and around towns

The report also includes a number of examples of where transport has helped or is helping towns to succeed, including:

- Transformation of Kilmarnock Station, in Scotland, into a vibrant hub for the community;
- The new National College for High Speed Rail's £25m campus in Doncaster, which builds on Doncaster's railway heritage and acts as a potential anchor institution, reinvesting in the town's rail businesses; and
- The creation of a new multi-modal transport interchange in Altrincham, Greater Manchester, which (alongside other investment) has led to a 19% increase in town centre footfall and a 20% reduction in vacancy rates.

The report features case studies from the UK and the wider world of how different types of interventions - from transport's role as an 'anchor institution' for local economies and as an employer, through to how transport interchanges can act as 'gateways' and sources of civic pride and renewal - can achieve results.



You can download the *About Towns* report at https://bit.ly/2STzMQp

Better planning and design can boost city productivity

A new report sheds light on the potential contribution of the way that cities are planned and designed makes to boosting local productivity.

Ian Liddell of WSP.

With a 44% difference between the most and least productive UK cities, experts at engineering and professional services consultancy WSP say that the lack of focus on how the built environment contributes to local productivity is a missed opportunity.

WSP asserts that applying a 'productivity lens' to all development at a more local level will deliver productivity gains to local economies. A new WSP report sheds light on the potential contribution of the way that cities are planned and designed to boost local productivity and recommends a new approach for city leaders to make their cities more productive. The report outlines how places which are designed and delivered with space, health, accessibility, resilience and engagement (SHARE) in mind can be more productive.

"Local authorities up and down the country are currently responding to the government's call for action to deliver productivity through local industrial strategies," explains Ian Liddell, managing director, planning and advisory at WSP. "By introducing the SHARE approach, the potential productivity gains that can be unlocked by how the built environment is designed and delivered are considerable," says Liddell.

The report emerges after recent research by Transport for New Homes and RAC warning that some unconnected developments with a lack of public transport access, walking and cycling routes are trapping new occupiers into an over-reliance on the car, contributing to congestion, gridlock and poorer health, all of which negatively impact productivity.

Spaces

The report explains that when places are more attractive, more flexible and are more efficient in their use of space, they will drive productivity. This includes spaces that are aesthetically pleasing, have good connectivity and can easily be adapted to future technologies such as electric vehicles.

"An effective approach to spatial planning can help to avoid isolated communities and ensure we are addressing the challenges of tomorrow", says Liddell. "We think that local industrial strategies should consider how the public realm can be used to increase productivity," he said.

Health

It is well known that healthier employees are more productive at work and physical inactivity costs businesses around £126,000 every year per 1,000 employees. The living and working environments affect the individuals' experience and poor health creates an unproductive cohort of people who cannot contribute.

"Poor health is a cost to the system and public realm designs can play a preventative role through high- quality outdoor spaces and healthier homes and workplaces", says Liddell. "Placemaking strategies should consider monitoring outcomes such as physical activity, air quality, and noise to maximise health and productivity."

Accessibility

More accessible cities save time and reduce traffic costs. Recent research shows that motorists in London currently spend on average 74 hours in traffic each year, costing the city £9.5bn. Within an accessible city, there is also a need for inclusive developments so more people can work and remain independent for longer.

"Urban designs that offer step-free access, tactile paving and convenient public transport services to amenities and workplaces can help disabled people travel to and therefore stay in work", said Liddell. "Good practice should ensure where feasible, that all common, daily activities can be achieved within walking distance," he says.

Resilience

Areas which are more resilient can maintain higher levels of productivity during disruption, protect local businesses and supply chains from rapid change and accommodate future trends in society, mobility and climate change. "Planning best practice should consider specific analysis of how areas can remain productive in climate change scenarios, with specific focus given to energy systems, water supplies and transport systems", explains Liddell.

Engagement

With developments affecting local communities, city leaders need to put communities at the heart of regeneration and encourage meaningful input which will help communities shape the productive future of places where they live and work.

"Creating truly productive and future ready places up and down the country will require engagement and collaboration", continues Liddell. "We aim to open this discussion about productivity to all, and I am keen that WSP continues to play its part in collaboration with public and private sector delivery partners, academia and think-tanks to promote the value of a productivity-focused approach to design".

One year on, is strategy still a

Experts in the infrastructure sector talk to *Ryan Tute* about how they view progress a year since business secretary Greg Clark launched the industrial strategy.

Almost a year to the day after the government unveiled an ambitious industrial strategy which pledged to support firms in seizing the "big opportunities of our time" and put the UK at the forefront of a data revolution, has its preoccupation with Brexit and other affairs put the long-term vision on the backburner?

To answer this, *Infrastructure Intelligence* gauged the opinions of several industry leaders who have cast a close eye on the process since the launch of the industrial strategy on 27 November 2017, which marked the culmination of an 18-month process starting when Theresa May first got the keys to number 10 and declared it a priority as PM.

Central to the white paper were the five foundations of productivity – ideas, people, infrastructure, business environment and places. Each foundation is underpinned with measures like raising total R&D investment to 2.4% of GDP by 2027 and the rate of R&D tax credit to 12%.

Four grand challenges were published in the white paper which identified global trends that were predicted to shape a rapidly changing future and areas that the UK must embrace to harness opportunities.

The four grand challenges pinpointed artificial intelligence, clean growth, an ageing society and the future of mobility. The white paper launch followed extensive engagement by government with industry, academia and business bodies who submitted almost 2,000 responses to the green paper consultation earlier in 2017.

But in the 365 days since plans were revealed, what changes have we really seen? Has there been real progress and are we on the road to improving productivity performance, embracing technological change and boosting economic output?

Concerns are centred around the strategy losing traction as Brexit negotiations continue to be drawn out and dominate the political arena.

Leading infrastructure firms like AECOM are just one example of a company who are keen to see greater clarity and focus on the pace of delivery for transformational programmes.

Colin Wood, chief executive of civil infrastructure, EMEA, at AECOM, says: "Since its launch, the industrial strategy has initiated the right conversations about the vital role of infrastructure investment in boosting the UK's productivity. One year on, the rhetoric must turn into action. With government increasingly engaged with the ongoing Brexit negotiations, there is a danger the strategy will lose traction.

"Attracting investment requires increased certainty around the UK's project pipeline and greater engagement between government and industry will be an important step to drive forward the industrial strategy's infrastructure agenda."

> "But the most single important thing ministers could achieve by this point next year with problems around productivity would be to get the best possible soft Brexit deal."
>
> **Alex Jan, Arup chief economist**

The inaugural Industrial Strategy Council meeting.

Engineering consultants WSP believe progress has been made on the Grand Challenge funds, especially in terms of clean growth and new mobility, and the leadership shown by ministers on these two fronts should be welcomed they say.

Charles Malissard, head of government relations at WSP, said: "WSP welcomed the industrial strategy when it was published and fed in to a number of key consultations. Its focus on people, place, infrastructure, ideas and business environment, galvanised us to think about how we might help to articulate better the major contribution of the built and natural environment to the main challenge the strategy was

s the industrial priority?

Theresa May on a visit to a tech company.

designed to address productivity. Now, we must ensure that all local authorities - and not simply combined authorities with developed budgets and mayors - are given the means to develop their local strategies, to ensure no one is left behind."

However, the year-long process has not been without bumps in the road. When first announced it was hoped an independent council would be up and running by spring to keep tabs on government progress. But it was only in October, that the body was setup with a chair to oversee it in the form of Bank of England chief economist Andy Haldane.

The council comprising of 20 leaders from business, academia and civil society met for the first time earlier this month and the chair vowed to develop a workplan that would deliver "strong evaluation metrics" and a programme of activity challenging critical policy.

Arup's chief economist Alex Jan believes that while the objectives of the strategy are difficult to disagree with, the delay in establishing the strategy council is "reflective of governmental machinery that has been overly preoccupied with Brexit".

"It's still quite early to tell if the industrial strategy is a priority," Jan said. "The signals coming out of government say it is important and the fact they have got some heavyweight people involved including the chair being the chief economist of the Bank England suggest they are serious about it. But the most single important thing ministers could achieve by this point next year with problems around productivity would be to get the best possible soft Brexit deal and provide as much certainty for businesses across the UK. But if that is impossible to achieve then I think the industrial strategy will be viewed as sticking a plaster over a gaping wound," said Jan.

In the wake of Brexit, Jan says there is a need for the government to show that it is being proactive about many of the themes within the strategy, while it's crucial ministers strive to achieve the

> "Attracting investment requires increased certainty around the UK's project pipeline and greater engagement between government and industry will be an important step to drive forward the industrial strategy's infrastructure agenda."
>
> **Colin Wood, chief executive of civil infrastructure, EMEA, at AECOM**

Andy Haldane.

softest possible Brexit deal for the UK to see a resurgence in the economy.

Simon Rawlinson, head of strategic research and Insight at Arcadis, reiterates that there is "no doubt that Brexit is placing a big demand on government and the civil service" but has applauded the decision to appoint Haldane as chair of the council.

He added: "There are any number of suitable candidates but two aspects of the role which single out Andy Haldane are the fact that the priority is to increase national productivity and this is something which has been at the heart of the Bank of England's work since the crash, as it is vital to increase productivity so that the growth rate can increase without inflation. His understanding of underlying issues is critical. Also, the remit of the industrial strategy council is to develop success measures and KPIs and Andy's background is vital for this."

Moving forward over the next year, Rawlinson would like to see more deals demonstrating that a wider range of sector councils are engaged in the sector deal process and demonstrable outcomes from the forthcoming Construction Innovation Hub.

Early public eng vital to infrastr

In conversation with *Andy Walker,* National Infrastructure Commission chair Sir John Armitt says that the infrastructure sector needs to engage more effectively with the public to get its message across.

National Infrastructure Commission (NIC) chair Sir John Armitt is on record as saying that public engagement on infrastructure will be essential to the delivery of future projects. He has described this as one of the biggest challenges for the sector, but one that must be addressed. Given that the public is ultimately one of the country's biggest investors in infrastructure - whether through taxation, pension fund investment or directly through paying to use the final product - Armitt says that the industry needs to do more to make the public aware of the challenges it faces and the potential options available for development.

"The issue is how do you increase the acceptability of projects in a country where there is a guaranteed resistance to almost any project," said Armitt. "There will always be a group of people who will say "not in my back yard", but my argument that I have been making for several years to the profession is that if you don't get out there and talk about it, explain it, be honest with people and show them what choices and options you are having to deal with, ask for their input about what they would be happy with or not and explain to them what the impact of doing nothing is, it's not surprising that you get this resistance. As long as you have got resistance from the public, you are going to get resistance from the politicians," he said.

Armitt said that it was important to be clear about why infrastructure development is taking place and who was going to benefit from it. "Who are we doing this for at the end of the day? We are not doing this for ourselves we are doing it for the public. The public are the consumers, the users, they

Sir John Armitt

are also the payers, so how come they get left out of the loop of debate and consideration?" said Armitt.

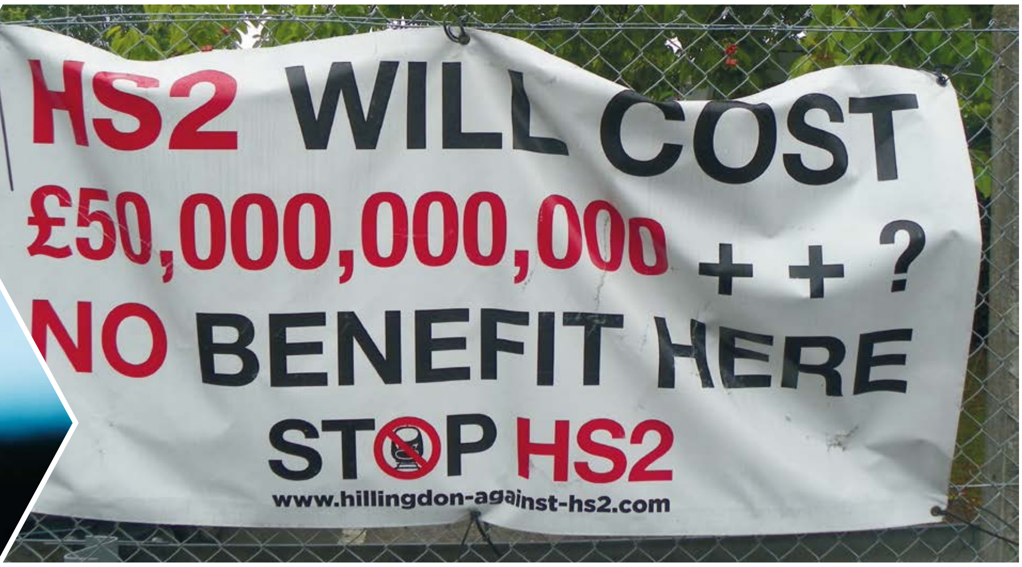
"So, you need to involve the public and be much more upfront and get them engaged from the beginning. Once you do that then you stand more chance of having a better solution and one that is going to be satisfactory and meet people's objectives, as well as one that is likely to garner political support because the politicians see that the public are buying into this idea," he says.

Armitt stressed the importance of active and early engagement with local people, often before a route of scheme had even been agreed. "One of the difficult things is when do you start that process?" he said. "High Speed 1 looked at 100 different options, but it looked at them prior and then announced that this is going to be the route. People criticised British Rail at the time for announcing several different route options through Kent, so we had the whole of Kent in uproar, but at the end of a couple of years of going round the villages talking to everyone about the impacts of the different choices, people were keen to see a decision made and that made it easier for government to choose the route," said Armitt.

As well as early engagement, openness was crucial when talking to local people affected by development, Armitt said. "Project sponsors need to take a lead. They are the people who need to get out there first and start talking and accept that they may be talking not actually with a line on the map even but actually say 'this is our challenge, we've got to get from there to to there but tell us what do you see as being the pros and cons of the different choices,'" he said. "If you are prepared to take people into your confidence at an early stage, not treat them as idiots and ask them to get engaged, that seems to me to be a much more sensible way of going about it," he said.

I asked Armitt if he thought that

gagement is ucture delivery



there was a connection between that type of early involvement (or the lack of it) and taking people into the loop and the reputation that the industry has - some of it deserved, some of it undeserved - amongst the general public as an uncaring sector interested only in itself?

"If you are prepared to take people into your confidence at an early stage, not treat them as idiots and ask them to get engaged, that seems to me to be a much more sensible way of going about it."

Sir John Armitt, National Infrastructure Commission chair

"Absolutely. When I was at Costain and we did the Newbury bypass, when we finally got on site the site manager went out knocking on the doors of all the nearest houses and said 'can we help you in any way', would it be useful if we came round and washed the windows on a regular basis to offset the impact the project was going to have'". These things made a big difference.

"I was also out at a project a couple of weeks ago where that had been enormous resistance to the development of the old Upper Hayford airfield site. One developer had to sell off that opportunity in 2008 and they had total resistance to everything they were trying to do. The guys who came in immediately went out and started talking to the people about what they are trying to do, why they'd bought the site and listened to what people's concerns were and so the first thing that they built was a school.

"The next thing they did was to take the old warehouses and the buildings there and spruced them up and made them available for small business to start to go into. So, all of a sudden, this horrible housing scheme that was going to be dumped on their doorstep became a place where jobs were being made available and there was a brand-new school and so the reaction of people to that development is now a much more positive one," Armitt explained.

That public desire for consultation is only going to intensify in the age of social media and the internet and this could create a very interesting dynamic in terms of what people want to see for the future and in exercising their right to a say. I asked Armitt how he sees the growing importance of people power in the future in respect of infrastructure development.

"There's a lot more knowledge out there these days and also let's not forget that much of the funding for infrastructure is the public's money and it makes them the ultimate stakeholder," he said. "Government and opinion formers are increasingly recognising this too. The infrastructure we need to give people a better quality of life is one that needs to be paid for and people think that government has the money because it has the ability to borrow, but even when it borrows who's paying the interest? Who is paying for that borrowing? We are.

"We all pay at the end of the day, so all this infrastructure belongs one way or another to the general public and therefore the engagement of them as the ultimate stakeholder in what we are planning to do, why we are intending to do it, what happens if we don't do it - which I think is a question that very often doesn't get asked - is vitally important and a lot of politicians are starting to get that," said Armitt.

Urgent government action is needed to tackle UK's air quality crisis

Strong leadership with clear thinking and collaboration is the only way the UK is going to find a solution to its air quality epidemic and policymakers need to ensure a planning system is implemented to deliver ambitious targets set out earlier this year, says *Lucy Wood.*

We already know that poor air quality contributes to respiratory problems, cancers and other very serious illnesses. Recent studies have shown that it can contribute to type 2 diabetes and perhaps even contribute to the onset of dementia, with further health implications likely.

Currently, air quality effects from new development are assessed through air quality assessments, which, when appropriate, form part of the Environmental Impact Assessments (EIA) process for developments coming through the local planning system.

However, the most significant contributor to poor air quality is road traffic and this issue rarely derives from the local level, individual buildings or schemes, but rather from a macro-scale, so cannot be easily tackled at the project level. By 'macro' we're talking about design of infrastructure, its function and connectivity, and the policies that govern them.

For example, we can assess how many motor vehicles would be generated by a development and what this would mean in terms of air quality through project-level assessment. But it can't tell us so easily how mitigation might affect levels of pollution and give the confidence that the air we breathe would not be damaging even with the mitigation in place.

To effectively address air quality issues head on and achieve the NIA's target, we need strong leadership with clear direction and an energetic plan that is capable of delivering truly sustainable and healthy infrastructure. This can only be achieved by looking at the macro-scale – the national picture – and join up current initiatives. Central government must take a step forward and lead efforts from the front.

But, there appears to be a lack urgency on the subject, setting targets for well into the future rather than ones achievable now. The ban on the sale of all diesel and petrol cars announced in the Clean Air Plan back in July, for example, will not come into force for another 22 years. This is despite an understanding of the detrimental impact particulate pollution is having on the health of the population.

The government has tackled other health issues proactively, such as the obesity crisis. Arguably, its reactive stance to air quality will begin to undermine the proactive approaches to health. Initiatives such as 'trim trails', cycle routes and public realm proactively tackle obesity and mental health, but those benefits will be undermined if air quality is poor. The issues must be tackled simultaneously to be effective.

A national problem needs a national solution. And, the solution towards lower polluting infrastructure relies on a joined-up approach led by government.

Lucy Wood is environmental planning director at Barton Willmore.

> To effectively address air quality issues head on and achieve the NIA's target, we need strong leadership with clear direction and an energetic plan that is capable of delivering truly sustainable and healthy infrastructure.

Six key enablers to help deliver the UK's industrial strategy

One of the five key foundations of the government's industrial strategy is a major upgrade to UK infrastructure, including an increase in the National Productivity Investment Fund (public spending earmarked for raising economic growth) to £31bn to support investments in transport, housing and digital infrastructure up to 2023, says *Barry Rust.*

From Tata Steel's experience of working on major projects we have identified six key enablers that will be critical to the success of the government's industrial strategy's infrastructure proposals.

1. Early vendor engagement and communication

A critical element in the successful delivery of any infrastructure project is effective communication, specifically early vendor involvement. Aligning the objectives of the project, especially in the design brief, with the practical experience of the supplier at the earliest opportunity can create significant benefits both in identifying cost reductions and the agreement of mutual outcomes.

2. Capacity planning

Part of the communication process will be an understanding of the vendor's capacity to deliver in the contractor's required timeframe, especially where the vendor is managing several large projects concurrently. This can be a particular issue for smaller suppliers and reinforces the message that early vendor involvement allows for effective planning and delivery as part of the project's overall success.

3. Stick to the brief

Another critical element in ensuring the end results meet the original brief will be to ensure the specifications set by the project owner at the start are adhered to throughout the supply chain. If carried out as stated by the government, the industrial strategy has the potential to spearhead the UK's economic growth

well into the mid-21st century. This is too big an opportunity to 'fudge'. Cost engineering to deliver a project that approximately fits the original plan cannot therefore be accepted.

4. Innovation

The industrial strategy will demand innovation from suppliers in the delivery of products and services. For example, to avoid congestion issues and on-site waste, some of the country's largest infrastructure projects, such as Heathrow, are planning the creation of supply chain logistics hubs with products assembled into component parts, at a distance from their final destination, so they can be installed more efficiently on site. Suppliers may have to abandon traditional business models in favour of more collaboration and adaptability for the greater good of the overall project.

5. Sustainable solutions

Innovation will also be required in the sustainability of materials to be used with the intention of further reducing lifecycle costs and delivering more circular economic solutions. Tata Steel has developed a number of product solutions from energy-generating steel facades in construction to weathering, maintenance-free steel that significantly reduces corrosion potential and will generate clear benefits in terms of reducing maintenance during the project lifetime and therefore enhance cost optimisation.

6. Enhanced and improved digitalisation

Innovation through the improved and increased use of digitalisation across the board to collate and deliver data at speed can improve processes and enhance communication. The drive towards greater digitalisation will effectively underpin the above enablers and the delivery of the strategy.

Barry Rust is marketing manager energy and sustainability at Tata Steel.

Post-Brexit immigration system must allow industry to thrive

The latest Migration Advisory Committee (MAC) report on the economic and social impacts of the UK's exit from the EU envisages that from the end of 2020, European Economic Area (EEA) and non-EEA immigration would be managed under the same set of immigration rules, although of course such a transition period is dependent on a no hard Brexit in March 2019, says *Edward Goodwyn.*

It recommends that the Tier 2 cap on current skilled migrants should be abolished and that the Resident Labour Market Test should either be removed or reduced in scope, which would have pleased many employers.

However, the MAC does not recommend the introduction of any sector-specific work-related schemes for lower-skilled workers, with the possible exception of a seasonal agricultural workers scheme. It also suggests that those in low-skilled roles will need to be paid £30,000 a year as well as their employer having to pay full immigration fees, including the immigration skills charge. Should the government choose to introduce a low-skilled immigration route, the report advises that this should instead be based on an extended youth mobility scheme.

The MAC report was not well received by the construction industry, with the Federation of Master Builders saying that its recommendations "would cripple the construction industry" and that MAC has ignored the pleas of construction employers who have called on the government to introduce a visa system based on key occupations rather than arbitrary skill levels.

MAC also announced that immigration for higher-skilled workers should be less restrictive than for lower-skilled workers and that this "aligns with the government's industrial strategy". Yet, this is in contrast to the government's long-stated commitment to invest in construction and infrastructure. It's also important to note that there doesn't seem to be anything in terms of evidence in the MAC report to support such a change in immigration policy from an economic perspective. There is nothing to suggest that low-skilled migration is detrimental to the UK's economy.

With 14% of construction workers in the UK from the EU and in London this increasing to one third, these workers have played a very significant role in mitigating the severe skills shortages the industry has experienced in recent years.

The construction industry is aware that it needs to do more to recruit and train domestic workers. Until a time where apprenticeship schemes are able to provide local available skills, many in the sector are calling on the immigration route to supply the shortfall in the immediate term. However, this will take time and in the interim, migrant workers have, and will continue to play, an important part and so it is essential that the post-Brexit immigration system allows the industry to thrive.

What is important for employers to be aware of is that under the current proposals, any EU nationals who arrive up until the end of December 2020 will be able to register for "settled status", which means they can stay living and working in the UK regardless of Brexit. As a result of this, we may start seeing some firms increasing their recruitment drives before this period.

Edward Goodwyn is employment partner at the international law firm Pinsent Masons.

> The MAC report was not well received by the construction industry, with the Federation of Master Builders saying that its recommendations "would cripple the construction industry".

Transforming Rus rail leader

On one of their rare visits to the UK, *Ryan Tute* met with a member of Russian Railway's board to discuss expansion plans, productivity and why nationalisation of the network is beneficial.

As UK rail firms continue to try repair the damage from a summer of misery that saw widespread delays and cancellations, the picture in Russia is somewhat different with the firm responsible for maintaining and running trains along 85,500km of railway able to boast transporting more than one million passengers in just one month.

Russian Railways (RZD) is one of the country's largest companies and is a fully state-owned organisation which manages both infrastructure and operating freight and passenger train services. Despite the huge operation undertaken within Russia, the firm has big plans for expansion across several European countries.

While visiting the UK, *Infrastructure Intelligence* spoke to Vadim Mikhaylov, a leading figure within Russian Railways. He is the first deputy chief executive of an organisation which not only aspires to control the country's rail network but to expand east-west, north-south transport corridors which could unlock opportunities for Russia to become more of a global economic player.

"It's a very simple message for people that work for Russian Railways, if you increase productivity then we will pay you more."

Vadim Mikhaylov, deputy chief executive, Russian Railways

Domestically RZD is seeing a spike in passengers with services proving to be as popular as ever. The latest figures published show the company transported 101.5 million passengers during October - an increase of 3.2% over the same month last year. Meanwhile, passenger turnover in October 2018 increased by 3.6% compared to the October 2017.

A total of 961.9 million passengers travelled on the network during January to October 2018, which was up by 3.1% compared to the same ten-month period in 2017. Long-distance passengers were up by 8.3% to 94 million, while suburban passenger numbers rose to 867.9 million, an increase of 2.5%.

The transformational changes being seen in eastern Europe are helped by what is in no doubt a long-term plan. It was back in June 2008, when the government provided a much-needed injection into rail reform with the ratification of the Strategy for Developing Rail Transport in the Russian Federation up to 2030.

A hugely ambitious modernisation plan was mapped out for the coming decades with a "maximum" vision of constructing up to 20,000km of new routes, the upgrade of 13,800km of freight lines and the purchase of 23,300 modern locomotives.

Central to the fast track development

of Russia's railways is the growth in productivity levels which the organisation can boast. As the UK strives to solve the puzzle and boost levels across the country, the RZD boss paints a simple picture behind the 6.5% increase in productivity growth for the first half of 2018, compared to the first of last year.

"Keeping happy 900,000 workers is not easy but we have a very strong trade union that we liaise with," Mikhaylov said. "It's a very simple message for people that work for Russian Railways, if you increase productivity then we will pay you more. It's very clear to staff, they understand that they will go home with extra cash in hand. The development of Russia's high-speed rail services is central to its modernisation of passenger lines, so we have to make sure staff feel valued," he said.

On the debate of nationalisation, Mikhaylov believes competition and free market of the railways "simply would not work" in a country the size of Russia and believes it can only work in the UK when geographical boundaries don't overlap as this can lead to disruptions in the service which UK passengers have seen for themselves all too often in 2018.

Following the end of the Soviet Union in 1991, Russia was faced with the prospect of overhauling its infrastructure and needed a plan

ssia into a global

of action within the new political landscape. The Structural Railway Reform Programme, approved by the Russian Federation in 2001, led to 100% of railway assets becoming state-owned.

On the objectives of reform, the RZD executive said: "It was important we built up a well-balanced transport system in the country, met the growing demand for rail transport services and ensured the reliability, accessibility and safety of rail transport. Structural transformations in the passenger railway sector have meant we have setup 25 suburban passenger companies (SPCs) that provide passenger transport services linking city centres with outer suburbs, commuter towns and other suburban residential areas."

But as the Russian Railway boss made reference to yet another negative rail story on the front page of a UK national newspaper, Mikhaylov identified more reasons why under state ownership, the sector is able to flourish in Russia.

"We are able to further increase the efficiency of transit transport by eliminating bureaucratic barriers and introducing electronic technologies," he added. "Today RZD can deliver goods from the Russian eastern border to its western border in seven days and plan to shorten the delivery time. In 2015, JSC Russian Railways updated its program for high-speed and higher-speed rail services in Russia. Twenty projects are planned, each of which is operationally profitable."

One such example which identifies how the organisation is enjoying profitable times is the World Cup in the summer which on paper presented massive challenges for the country's infrastructure network.

Finances boasted by the firm allowed the organisation to take the unprecedented move whereby visiting football fans were offered free rail travel. This meant 319,000 fans from across the world benefitted from free tickets on the 75 additional trains laid on for them.

RZD said the trains provided facilities for passengers with reduced mobility, air-conditioning and power sockets. More than 2,300 onboard crew members and 4,000 station staff received special training ahead of the tournament. The busiest day was 24 June when 45 special trains were operated used by 26,000 fans.

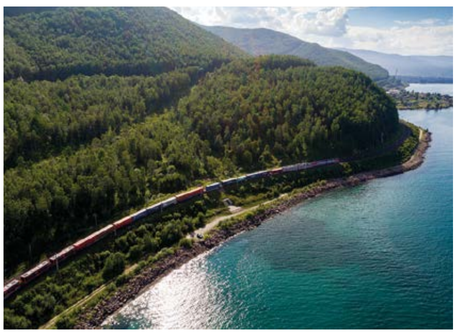
But despite the vast network that needs constant monitoring and maintenance, bosses are plotting and pushing ahead with big plans to extend into more regions. A large-scale Eurasia project is one example which would see the construction of a cargo–passenger high-speed railway transport corridor to take goods and passengers through six countries including China, Kazakhstan, Russia, Belarus, Poland and Germany.

Commenting on the project, Mikhaylov said: "Once implemented it is expected to be the largest network of high-speed and higher-speed rail, with the length of more than 50 000 km, as it unifies the transport systems Asia, Russia and the European Union. In 2017, a preliminary feasibility study of the project was prepared, confirming its great significance for all potential participants, first and foremost, for Russia.

"One of Russia's highest transport priorities is the creation of effective, safe and reliable overland international corridors to increase the competitiveness of the country's transport network. We plan to create a logistical network that will allow 'through' freight services between Europe and Asia."

There is little doubt that rail remains Russia's most important piece of the country's jigsaw puzzle with over 45% of freight and more than 25% of passenger traffic shifted by trains. So, moving forward, Mikhaylov is under no illusion how big a role digitalisation plays in development.

"Collecting big data is vital," he said. "We want to understand passenger movements better, so we are using data from when people buy tickets to see what journeys they make and when they make them to inform decisions. Digitalisation also means convenience for our customers, so a large number of digital services have been introduced lately. We have plans over the next four years for our whole railway system to be converted to digital technology," said Mikhaylov.



The Crossrail 2 conundrum: How will the £30bn scheme be paid for?

Crossrail 2's managing director Michèle Dix sits down with *Ryan Tute* to provide an update on progress, how it can be more affordable and lessons to learn from the Elizabeth line.

While the managing director of Crossrail 2 could not be more confident of the business case for the major rail project and the benefits it will provide for the UK, Michèle Dix admits it "still needs to be more affordable".

The scheme is still in its very early stages with nothing finalised or granted permission but initial indications suggest a hybrid bill could be submitted to parliament by 2021 and all being well construction could finish in the early 2030s but the latter is a very loose date.

As proposals for funding and even a final route continue to be deliberated, the preceding Crossrail 1 is in the final stages. However, it's inevitable that those behind Crossrail 2 will be under much more scrutiny this time around due to problems that have been reported elsewhere this year.

Not only has Crossrail seen costs skyrocket £600m over budget but its former boss Simon Wright was forced to delay its opening by at least an extra nine months until autumn 2019.

But despite issues with Crossrail, Dix is adamant that Crossrail 2 is in "a good place". The managing director reiterated why the scheme has a very good business case, by the fact it will generate 200,000 new jobs, add £150bn to the UK economy and most importantly support the development of 200,000 new homes.

Furthermore, the line could bring about 60,000 new jobs across the UK supply chain while under construction

> "The question is can we make further savings and deliver it cheaper than we costed for."


Michèle Dix

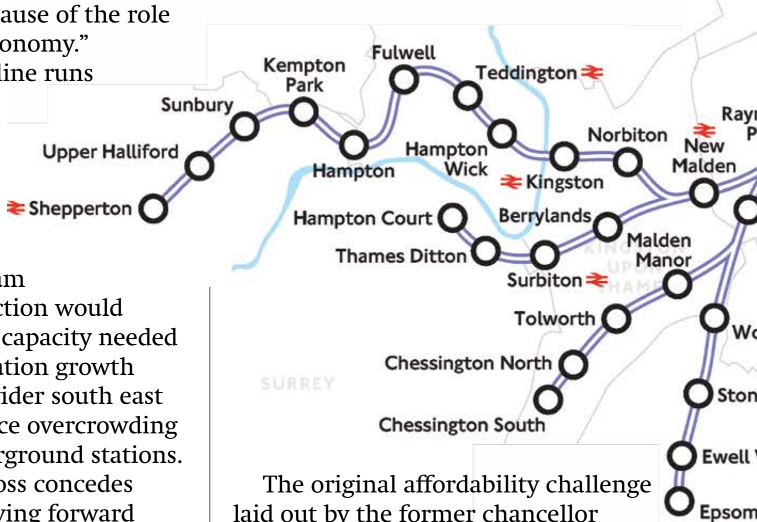
and 200,000 jobs across London and the south east once operational.

"It's a scheme of regional significance and also national importance, particularly from a productivity angle," she said. "It's not just a London scheme, it's got a lot of cross-party support in London and beyond because of the role it plays for the wider economy."

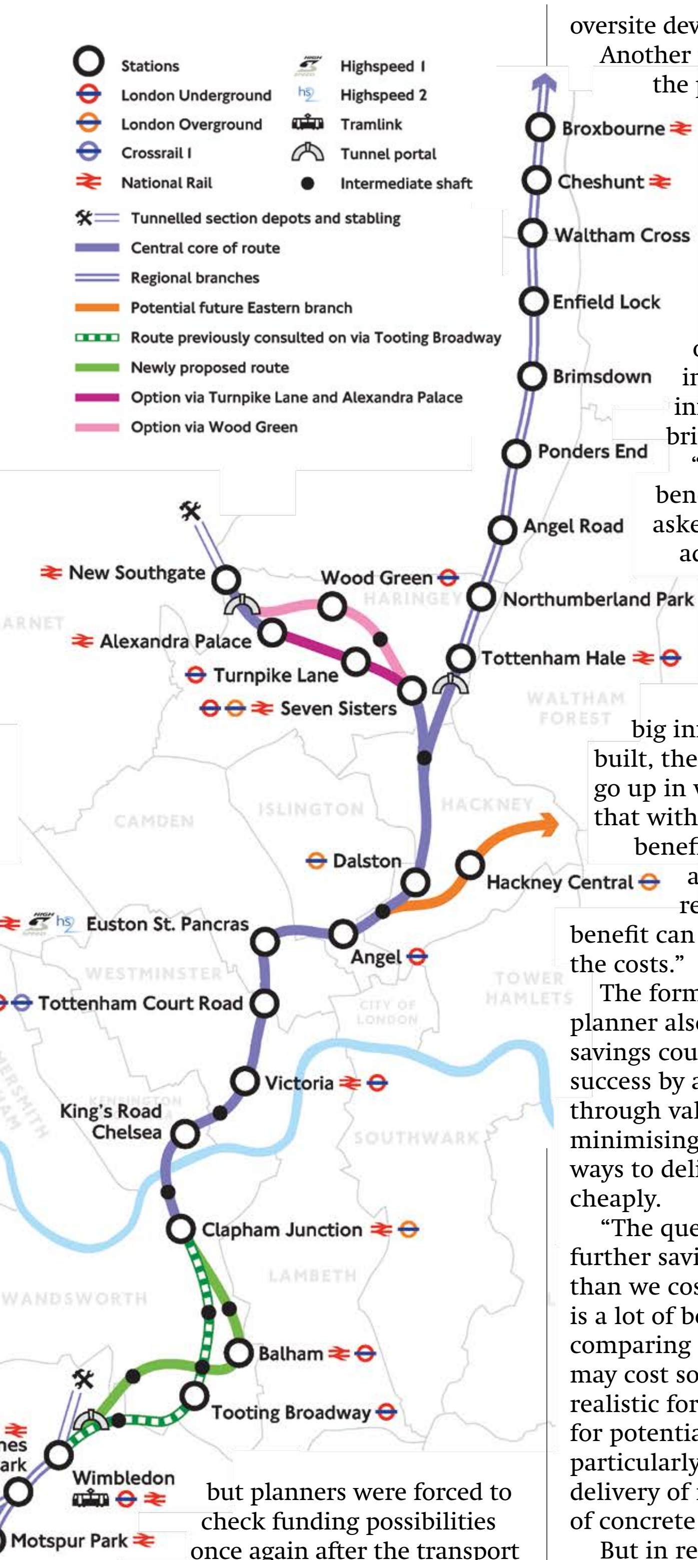
While the Elizabeth line runs east to west, Crossrail 2 will predominantly run north to south, connecting London to its outer surroundings with the two lines intersecting at Tottenham Court Road. Its construction would provide extra transport capacity needed to accommodate population growth in the capital and the wider south east while projected to reduce overcrowding at no less than 17 underground stations.

But the Crossrail 2 boss concedes the main challenge moving forward is ensuring it is affordable and acknowledges "£30bn is a big number".

Having submitted a revised business case in 2017 to the government, Dix says they were told while the project provided a compelling strategic case, ministers wanted those behind the rail network to once again explore how it can be more affordable.



The original affordability challenge laid out by the former chancellor George Osborne supported the £30bn project as long as London paid half



but planners were forced to check funding possibilities once again after the transport secretary Chris Grayling asked to see whether they could pay half up front meaning some revenue streams would not be utilised.

"There are a number of things we have looked at in terms of making it more affordable," Dix said. "One is whether you can deliver it in phases so we could reduce pressure on us in terms of paying half up front. If you phased construction then you could at least collect fares and take advantage of oversite development opportunities."

Another method mentioned to fund the project which has attracted attention is exploring whether all people who directly benefit from Crossrail 2 should contribute. The idea relates to a report published by TfL in February 2017 on land value capture - a way of monetising the increase in land values that large infrastructure projects can bring.

"There are other beneficiaries who aren't being asked for contributions, Dix added. "So, TfL has asked whether we could seek ways for people to make a contribution and that is largely in the form of property owners. When big infrastructure projects are built, the properties in the vicinity go up in value and you have seen that with Crossrail 1. While owners benefit, the railway doesn't so it's a question of exploring that relationship and seeing if any benefit can be captured to help pay for the costs."

The former Transport for London planner also revealed how achieving savings could play a pivotal role in its success by attempting to reduce costs through value engineering – not by minimising its scope but identifying ways to deliver the infrastructure more cheaply.

"The question is can we make further savings and deliver it cheaper than we costed for?" she added. "There is a lot of benchmarking work ongoing comparing to what other schemes may cost so we can understand what is realistic for us to assume at this stage for potential savings going forward, particularly when it comes to the delivery of it as opposed to the amount of concrete required."

But in relation to highlighting the need for it, Dix points to the National Infrastructure Commission's National Infrastructure Assessment which was published in July that reaffirmed Crossrail 2 is one of the top schemes for investment in infrastructure.

Dix said: "Based on the remit given by the Treasury that 1.2% of GDP could be spent on infrastructure then the NIC concluded that not only Crossrail 2 could be afforded but crucially HS2 and Northern Powerhouse rail networks could be built to meet demands of the future. The document in the summer reconfirmed its importance after previously listing Crossrail 2 in its top 12 infrastructure projects for the UK. Getting that endorsement is very important."

The project boss is also satisfied that lessons can be learnt from Crossrail 1 and the transfer of knowledge from one scheme to another will be invaluable in ensuring targets are met and obstacles are overcome.

"We have been talking to Crossrail since day one," the managing director said. "Many of the people who have come on board here have been on Crossrail as we believe it's the best way to capture experience and expertise. We have regular discussions with colleagues about lessons that can be learnt. Crossrail 1 have been really good with sharing knowledge and the day-to-day liaison has been great for asking what can we do on Crossrail 2 that you in hindsight would have done if you had the chance to do this again."

The British civil engineer has had an extensive career in transport planning and engineering within the capital. After spending 15 years at the engineering consultancy Halcrow (now Jacobs), she joined TfL as co-director for congestion planning and later became managing director for planning London's future transport needs. She was also named as one of the Top 50 Influential Women in Engineering two years ago.

Commenting on the state of London's transport network today and how it's changed, Dix said: "It's certainly evolved. I think it's been a slow evolution, rather than a revolution. I think one of the things that has been critical in the evolution has been transport playing a role in enabling development. The fact that the London Plan and the mayor's transport strategy are developed together means there is a far greater synergy between land use and transport development."

> "It's not just a London scheme, it's got a lot of cross-party support in London and beyond because of the role it plays for the wider economy."

Councils sitting on £443m as local infrastructure suffers

Millions of pounds earmarked for local infrastructure improvements remains unspent by local authorities, writes *James Ketchell.*

Cities	Total collected: 2014 – July 2018	Total unspent: 2014 – July 2018	As a percentage of total collected:
Birmingham	£1,630,600.74	**£1,630,600.74**	100%
Bristol	£10,991,087.45	**£5,229,212.01**	48%
Newcastle	£309,845.00	**£309,845.00**	100%
Oxford	£5,721,119.00	**£3,161,795.00**	55%
Plymouth	£9,104,045.43	**£10,443,827.14**	114%
Southampton	£11,312,621.09	**£3,502,669.00**	31%

New analysis by the Association for Consultancy and Engineering (ACE) reveals that two fifths (40%) of the receipts from a levy on property developers meant for local infrastructure improvements remains unspent by councils in England and Wales.

The Community Infrastructure Levy (CIL) was introduced in 2010 to help local councils secure the revenue needed to meet the impact of new property developments, for example improving local transport links or helping to build new schools or GP surgeries.

Freedom of information requests undertaken by ACE show that despite raising more than £1.1bn for councils across England and Wales between 2014 and July 2018, £443m remains unspent and is currently sitting in council bank accounts. ACE's research also shows that across the board, take-up of the levy remains poor, with only 43% of councils in England and Wales (148 out of 348) choosing to implement it.

A new ACE report, *Scrapping the Levy,* also highlights a number of regional disparities. More than half (56%) of unspent CIL is with councils in Greater London, while Birmingham and Newcastle have, to date, not spent any of the collected levy.

Commenting on the findings, ACE chief executive, Hannah Vickers, said: "While councils are deciding not to implement the levy, or sitting on the funds raised, local infrastructure is bearing the brunt of increased strain whenever new homes or retail developments are green-lit. This means more cars on our local roads, more pupils in our crowded schools and longer waiting lists at the GP. Given the current financial demands on councils this is surprising state of affairs.

"It's clear that the original intention of the levy as a means of fairly raising money for supporting infrastructure is failing. The government needs to address this imbalance and put in place a system which is simple and transparent. At the moment the system is failing old and new residents alike."

ACE's investigations revealed that local authorities across England and Wales fail to collect the levels of CIL that was anticipated when the levy was first introduced and that councils were also holding back a significant portion of the overall levy that was collected. The reasons for this may vary but the impact and potential dangers of this are easy to see, say ACE. Failing to spend sufficiently on infrastructure in a smooth and consistent way can have costly and potentially dangerous consequences claims the report.

The report makes it clear that issues with the implementation and collection of the CIL have prevented local infrastructure needs being met and without intervention, local infrastructure spending will continue to fall below the level required to deliver positive outcomes for local residents. To counter this, ACE recommends that the UK government:

- Retains Section 106 as a means of mitigating specific development issues;
- Reassesses how the CIL is implemented and charged at an authority and local level;
- Issues guidance over best practice for CIL spending including developing a transparent pipeline of work; and
- Starts charging a new property sales levy to replace the CIL over the medium to long term.

"The effective delivery of infrastructure is dependent on close collaboration with local authorities, in conjunction with the appropriate financial backing to provide what is best for them and for the broader society," said Vickers. "The success of infrastructure delivery on a local level is, in part, dependent on the effectiveness of the Community Infrastructure Levy; ensuring it is working to its maximum potential is in the interests of all," Vickers said.

You can download the *Scrapping the Levy* report at http://tiny.cc/epbm0y

Tackling the late payment problem

Suspension notices and automatic interest charges need to become the norm for those who consistently refuse to pay on time, a recent roundtable discussion found. *Ryan Tute* reports.

With nearly a quarter of UK businesses reporting that late payments are a threat to their survival, the industry's worst kept secret of a problem which has stifled firms across the UK has become mainstream knowledge in 2018.

But what measures can be implemented to stem the decline - and the demise of those particularly affected? What are reasonable payment terms? And what can be done to improve payment periods?

These are all questions that the latest Association of Consultancy and Engineering (ACE) liability and payment issues group attempted to answer during a recent roundtable event, hosted by law firm Beale & Co in their London offices.

Chatham House rules were in place, so this report can only give a flavour of the topics put under the spotlight during the main debate but a full list of the participants who took part is posted at the bottom of the article.

Potential solutions to the late payment issue were presented and discussed as was what action was needed immediately. The roundtable was opened by a real-life client situation that emphasised the vital importance of having agreed upon limits that were adhered to.

Speaking to the room, a participant said: "We have a client that pays on 90 days, now this client gives us a programme of work and at day 90 rest assured it's there so once you've going through the initial pain, you know it's there. So, the commercial aspect is that it's a good client and it's an agreed time so you just have to get over the initial hump."

But it was agreed by the room that the two issues at the crux of the issue were setting payment terms and then having the terms stuck to. It was noted within the discussion by one director that three or four contractors employed by his firm had been threatened with legal action due to repeated refusal to pay on time.

However, the threat of legal action or a suspension notice was highlighted as being potentially detrimental to companies, particularly smaller firms who know they can't threaten the loss of work from a client moving forward or cannot afford the time/expenses associated with taking such action.

"Although there is a lot of us about, it's a very small industry, extremely small, so it's very rare we will go down that road," one company's boss told the roundtable.

The use of electronic payments as a mandatory requirement was also mentioned. Major UK clients were highlighted that still refuse to pay electronically and insist on paying by cheque. "There's no reason why everything shouldn't be electronic," one director told the room. "Not only is it more traceable but it adds to delays. I had a letter from a major UK housebuilder last summer that said they are going fully electronic, but it is still yet to happen," he said.

As the room continued to deliberate over solutions, one of the biggest differences discussed that could be implemented to curb late payments was the idea of automatic interest being charged, regardless of if it was the mistake of one person in the chain. One participant said: "For me, it comes down to how can we incentivise firms to pay on time? Whether it's payment in five, 30, or 45 days, it doesn't matter; it's about sticking to the agreed upon contract."

It was argued that real action was needed but despite the industry acknowledging the need for change, since the start of the year that saw the fall of the former construction giant Carillion, "Fundamentally things haven't changed much," said one consultant.

"You are not going to change anything until you change the house contract," another participant claimed. "Until collectively it becomes normal to charge interest and issue suspension notices and you are not the exception, you are the rule so the paymasters out there can't discriminate against you."

Roundtable participants:

- **Andrew Croft,** senior associate, Beale & Co
- **Kevin Crawford,** vice president technical, Chartered Institute of Architectural Technologists
- **Diane Dale,** practice and technical director, Chartered Institute of Architectural Technologists
- **Indu Ramaswamy,** director at Allies and Morrison and member of RIBA Insurance Agency Board
- **Nick Hopcraft,** chair, procurement and delivery panel, Chartered Institution of Highways and Transportation
- **Ian Wright,** Network Rail
- **Rowan Crowley,** managing director, CIBSE Services
- **Mark Hurst,** GHD
- **Tim Findlay,** Hoare Lea
- **Philip Glowinski,** TGZ Partnership
- **Neil Sandberg,** Sandberg

Race to revoluti accelerates as te

As a three-year project comes to a close, *Ryan Tute* went for a spin in an autonomous vehicle through the streets of Milton Keynes to see how far testing has come.




As the global race to get the first driverless car on the road continues and despite huge strides being made, the director of the 'world's first' tests involving more than one connected and autonomous vehicle still believes the country is a "long, long way away" from seeing fully autonomous vehicles having the freedom of UK roads.

This won't be welcome news for the government after the chancellor Philip Hammond in 2017 vowed to ensure "genuine driverless vehicles" on Britain's roads by 2021. What Hammond specifically meant by this is up for discussion but questions about the possibilities continue.

In a bid to find answers and explore the technology, an Arup-led consortium has just brought the curtain down on three years of testing. The consortium included local authorities, technology and automotive businesses and academic institutions. Each party has not only developed new technologies, but also explored the wider legal, insurance, data protection and public acceptance implications that impact on the adoption of connected and autonomous vehicles.

Research and Development

Tim Armitage, Arup's UK Autodrive project director, has been at the centre of the engineering and consultancy firm's testing from day one. He has seen the progress accelerate over the three years and believes the consortium has made sufficient progress.

"We have done exactly what we said we would deliver when we started out on this journey," Armitage said. "Considering it's absolutely a research and development project, I think we and the stakeholders have done really well to achieve the things we have. A lot of effort has gone into where we are today. What we have done technically so far is show that connected and autonomous vehicles will work," he said.

Public perception

The man leading the trials for Arup says the next challenge for the industry is switching its focus on "socialising the technologies" and addressing public perception after having done a lot of public attitude work asking questions about autonomy with not many people having any experience.

"Trust is a big thing, it goes hand in hand with safety," Armitage explains. "The results from our public attitude surveys show that people are very open-minded to the technology certainly both here in the UK and in USA which is great news. Of course there are always those that are a bit technophobic and don't like the idea of not being in control, which is understandable with where we are with technology development, but there's also large sections that would get in an autonomous car tomorrow and drive away because it's a cool new gadget in their eyes," said Armitage.

However, in respect to how close the UK is to seeing fully autonomous cars driving anywhere in the UK without restriction, then the Arup boss thinks government and enthusiasts need to rethink expectations.

Armitage said: "I think we will see driverless pod-type systems in relatively controlled environments along with level four autonomous vehicles within cities but geographically limited and possibly on motorways. But what I don't see is us being close to is level five vehicles which can go anywhere as what the project has reinforced to us is how different and complex they are.

"We have vehicles that quite comfortably drive round Milton Keynes and Coventry but take them to Sheffield and a tram comes down the middle of the road then they wouldn't know what to do. There is such a variety of places that level five is a long, long way away," he said.

Journey of the future

The final day of testing also allowed people to see how the first and last mile of the journey of the future could be done via driverless pods that could eventually do up to 120km of journeys

onise roads
esting concludes

every day. Manufacturing specialist Aurrigo, which has invested in the technology, has developed the pods to allow up to four people, travel at 15mph and cover up to 60 miles on one charge to their final destination.

Miles Garner, sales and marketing director at Aurrigo, believes the potential is huge and the firm is targeting a "£900m opportunity" after projecting a substantial increase in turnover that could run to tens of millions over the next three years.

Garner said: "The trials in Milton Keynes have proved we have advanced autonomous technology that works in a live public environment and pods that can provide that crucial first and last mile transport solution for towns and cities throughout the world. We need to take advantage of being first to market and we are already in discussions with a number of potential customers to take our pods for use on university campuses, theme parks, shopping malls and retirement villages."

Reputational damage

Testing outside of UK Autodrive has not been without its problems though. Earlier in the year, the industry was shook after the death of a 49-year-old woman in Arizona who was hit by an autonomous Uber while wheeling her bike across the road. Armitage obviously describes the event as "dreadful" for the person and everyone involved and concedes it can be damaging for the brand and Uber especially who have now all but exited from the technology.

He said: "We need to be very careful and you cannot afford to take risks on the road, which is why for our trials all of the systems have been tested before we get on roads and super vigilant with highly-qualified drivers. Any accident will set back a programme and I think we have worked very hard to ensure we won't have any accidents."

In addition to this he believes any companies entering the automation market will have to be fully aware that the standards required by them will be far higher than those in the manual car market.

Armitage said: "As a society we are tolerant of killing five people every day on the roads of the UK and seem to find that an acceptable level, but it wouldn't be for an autonomous vehicle and the standards will be much higher on this side. However, the overall advantage of the technology will save lives and it is already. Insurers can see that highly-autonomous systems like autonomous emergency braking, which stop vehicles driving into back of others, are reducing accident and whiplash claims, so the benefits are there to see."

My driverless journey

Clambering into the back of the Jaguar Land Rover, I wasn't sure what to expect for my first time in a driverless vehicle.

The drive started quite smoothly as the car steadily made its way down a busy dual carriageway but the novelty of seeing the wheel turn itself and kick itself into gear does not wear off throughout the journey.

The drive itself is still rather clunky as the braking still needs work and the technology remains over-cautious at roundabouts and junctions, which given the risks is completely understandable.

But overall, I never felt in danger even in rush-hour traffic when the risks escalate. The ride isn't the smoothest yet, but the basics have been put in place. If and when they become the norm on UK roads however is another question.

Infrastructure can and must deliver inclusive growth

Engineers must ensure that social inclusion is at the front of their minds when planning projects to ensure that those projects make a real difference, writes *Keith Howells.*

With increasing importance attached to the social outcomes of infrastructure projects, it's an exciting time to be an engineer committed to making a difference to people's lives. When planning infrastructure projects, we talk about the three pillars of sustainability - economic, environmental and social - yet the social element has perhaps been the poor relation. I believe that's now changing.

The links between economic growth and social development are well known, albeit there are many issues to resolve, not least inequality. We know that inequality breeds insecurity and that poses a fundamental risk to society. At the extremes, it provokes conflict between the 'haves' and the 'have nots' which can manifest itself in many ways, from crime to civil disobedience, and even war. And it's clear that the world is a more insecure place when large segments of society are left behind in the absolute pursuit of economic growth.

The link between environmental sustainability and social outcomes is also becoming more critical when you think about the importance of maintaining an environment in which we can enjoy healthy and prosperous lives. Climate change, air pollution, water quality, marine pollution, ecosystem fragility and species loss, all impact on our health and wellbeing and therefore on society at large.

The mass migrations we're seeing across the world are not just the result of conflict or economic mismanagement, but also of environmental degradation, making the struggle to survive harder, and fuelling the desire of people living at the margins to seek a better life.

We as infrastructure engineers need to remember that most, if not all, of what we do is about improving people's lives, whether that's providing safer water, reliable electricity, a better living environment, education opportunities, healthcare facilities, or even a faster and safer commute to work. But most of what we do also has the potential to affect people's lives in adverse ways, unless we offer solutions that eliminate or mitigate those risks.

Social inclusion

There's no doubt that social inclusion is firmly on many of our clients' agendas. I think I've heard more clients talk about outcomes in the last 18 months than I've heard in my entire lifetime. Crossrail, for example, will tell you that the Elizabeth Line is not about building 100km of railway; it's about moving more people through London faster. That's an outcome.

Social inclusion has been an aim of the international funding institutions for many years, with a clear focus on poverty reduction through education, health care, economic development and gender equality. In 2015, the United Nations passed legislation on the 17 Sustainable Development Goals (SDGs) to provide a framework for global development applicable to both developing and developed nations.

They're aimed at forging a path towards a fairer and more just society and seven of the 17 goals reference equality and inclusion. Goal 10 specifically addresses reducing inequality, both within and among countries. Goals 6, 7, 9 and 12 address water, energy, infrastructure and cities.

So, it's clear that what we do has the potential to directly support many of the goals and indirectly, most of them. In the UK, the government has committed to meeting the SDGs, and has specifically called on infrastructure developers to keep inclusion and equality in clear focus.

There's thus a growing requirement for the development of new infrastructure to consider local impact and engagement with communities, so that the long-term benefits of the investment can be fully realised.

Better outcomes

We know that infrastructure is a strong underpinning driver for economic growth and development. We know it helps to stimulate employment. We know it has the power to connect and unite communities. It can help resolve many of the challenges we face as a society.

Planned and delivered with thought, it can provide better outcomes that are environmentally sensitive and socially inclusive. If we look at infrastructure as a platform for economic growth and social

development - building the communities of tomorrow - what's becoming clear is that both developers and engineers have an obligation to provide solutions that are more inclusive, address inequalities and do not impact negatively on communities.

Putting social inclusion, alongside environmental impact, at the heart of project planning will deliver better outcomes for clients and end users.

Unforeseen consequences

If we don't think these issues through, I know from my own experience what can happen. Around 35 years ago, at the start of my engineering career, I worked on a project in Africa which had the aim of providing irrigated agricultural land to poor, landless people from another part of the country. The resettled people would also be provided with housing, clean water, schools, clinics and other amenities.

The aim was noble but the land being offered was in lowland areas, while the people being resettled were mostly from highland areas. There were two negative social consequences that were not foreseen. The first was conflict: with indigenous people in the lowland areas resenting what was being provided for the incomers.

The second was health: with the incomers from the highlands having almost no natural resistance to malaria, which was endemic in the lowlands, resulting in much illness and many fatalities. A salutary lesson which, to this day, sits on my conscience, even though I had nothing to do with the concept or the project planning.

Inclusive growth

For a long time, the global focus has been on economic growth as the measure of success, sometimes at all costs. We're now entering a phase of development thinking, as captured by the SDGs, where the focus is shifting to inclusive growth. Engineers will need to examine who will benefit from a project, how communities engage with the project from conception, and how marginalised groups can be supported.

By ensuring social inclusion is at the front of our minds when we develop our thinking and plan projects, we can make a real difference to project outcomes.

Keith Howells is group chairman of Mott MacDonald.

New partnership to drive clean economic growth

The Centre for Global Eco Innovation and the Environmental Industries Commission have teamed up to support green businesses, writes *Andy Walker.*

Lancaster University has teamed up with the Environmental Industries Commission (EIC) to support innovation and grow business which reduces carbon emissions and delivers clean growth.

The partnership between the two organisations will support businesses which are working on ideas, developments and innovations which could cut energy use and waste.

The recent Intergovernmental Panel on Climate Change (IPCC) special report on global warming highlights the urgent need to develop new technologies and approaches that will help limit temperature rises to 1.5 degrees. According to EIC, "the global move to cleaner economic growth, through low carbon technologies and the more efficient use of resources, is also one of the greatest industrial opportunities of our time". As well as being central to the IPCC report, clean growth is also at the heart of both the UK Clean Growth Strategy, and the industrial strategy.

The Lancaster University-based Centre for Global Eco innovation and the Environmental Industries Commission hope that their partnership will maximise these opportunities for business. Dr Andy Pickard said Lancaster University had been working for many years to enable innovation which is better for both the environment and for the economy.

"We have a strong track record of working with businesses on innovations from new energy technologies to improving food security," said Pickard. "This could mean finding new ways of using existing resources more efficiently or reducing waste and carbon emissions. This partnership also enables us to work closely with business to inform government policy. It will help develop new relationships with industry and commerce to address global challenges, ultimately benefiting the environment and the economy. The two will have to go hand-in-hand if we are find ways to keep temperature increases below 1.5 degrees," Pickard said.

The UK has some world-class strengths in environmental technology and services and we need to build on these to deliver the clean growth and exports we all want to see post-Brexit.

EIC director, Matthew Farrow

EIC director Matthew Farrow said: "The UK has some world-class strengths in environmental technology and services and we need to build on these to deliver the clean growth and exports we all want to see post-Brexit. Innovation is central to doing this. How can we solve environmental challenges such as air pollution or plastic waste faster and more efficiently? To succeed we need business, policymakers and universities working together and by partnering with Lancaster University with its eco-innovation strengths we believe we can help make this happen."

Claire Perry, minister for energy and clean growth, said: "The UK has led the world in cutting emissions whilst growing our economy, with clean growth driving incredible innovation and creating hundreds of thousands of high-quality jobs. Ten years on from the Climate Change Act, is a time to build on our successes and explain the huge opportunities for business and young people of a cleaner economy. I'm delighted to see how many more businesses and organisations such as Lancaster University are seizing this multi-billion-pound opportunity to energize their communities to tackle the very serious threat of climate change."

The Lancaster Environment Centre (LEC) represents one of the world's largest centres for environmental research offering balanced perspectives on complex societal challenges. LEC hosts the Centre for Global Eco-Innovation, an award-winning centre which delivers high quality business-led research, through enabling enterprises to access the expertise, resources and global contacts of Lancaster University and its national and international partners.

The Centre is "solution focused" rather than "technology driven" enabling it to offer a range of multidisciplinary solutions, each based upon collaboration between the universities, their researchers, and the business community.

The university and EIC are committed to working together to maximise low carbon innovation opportunities for business. Opportunities over the next 24 months include joint workshops, case studies and position papers.

the think tank

II

Giving a voice to **big** ideas

In the latest *Infrastructure Intelligence* Think Tank article, David Barwell, chief executive, UK & Ireland for AECOM, says that the industry has a key role to play in making UK infrastructure an attractive investment opportunity.

Industry has key role in promoting infrastructure investment

When I was a young boy, I remember the excitement surrounding new infrastructure, with regular news coverage of the Queen, dignitaries or famous actresses and actors cutting ribbons at new airports, bridges, motorways and ports. With a construction boom for new infrastructure, projects were bold, even a bit glamorous, and they were certainly about improving quality of life.

In the intervening decades, society has become accustomed to the networks and services that fuel modern life. We've taken infrastructure for granted. Yet we still need improved airports, more and faster trains, better water systems, clean energy and all-round improved resilience to meet today's demands and to help stimulate economic growth.

It is widely acknowledged that the UK will face mounting economic, environmental and social problems if the nation's infrastructure fails to meet present and future demands. Government estimates propose that almost £500bn is required to bridge the infrastructure funding gap.

The National Infrastructure Commission's first National Infrastructure Assessment (NIA) published in July set out a long-term plan for meeting the country's identified infrastructure needs and priorities. While the government has committed to responding to the NIA within six months, one thing is clear - the state simply cannot finance all these changes and advancements alone.

There are trillions of pounds of private capital, both foreign and domestic, searching for a home. Yet despite infrastructure being critical to the growth and economic health of any country, the Organisation for Economic Co-operation and Development estimates that only a tiny percentage of this cash, just 1.6%, is invested in global infrastructure.

If government is to attract private investment, it needs to turn visions for new infrastructure into action. Indeed, there are a number of things that can be done to bridge the UK's infrastructure investment gap and help secure finance for new projects.

Firstly, the UK must vigorously promote its infrastructure as a great investment opportunity to private financiers. Private investors are not necessarily infrastructure experts, so vocal government endorsement of infrastructure as a sector full of investment opportunities is vital. Matching potential investors with the most suitable infrastructure project, and crucially the right stage of a potential programme, will be key.

A common criticism of infrastructure investment is that it is risky and unpredictable. Collecting and making readily available accurate, up-to-date data on the financial performance and costs of UK infrastructure assets gives private investors the ability to predict and project long-term revenue streams. Taking a pragmatic, data-and-results-led approach to offering investment opportunities to the private sector enables engagement at the design stage, giving investors early input into a project and allows both parties to share data.

Equally important is the need to create innovative financing structures and institutions. The need for new ways to mobilise private capital is even more pressing as Britain prepares to leave the European Union. The EU's European Investment Bank has worked for decades to bring private capital into infrastructure projects, but the UK's membership of the bank could end post-Brexit. Despite the complications of doing so, a dedicated UK infrastructure finance institution needs to be created if this happens.

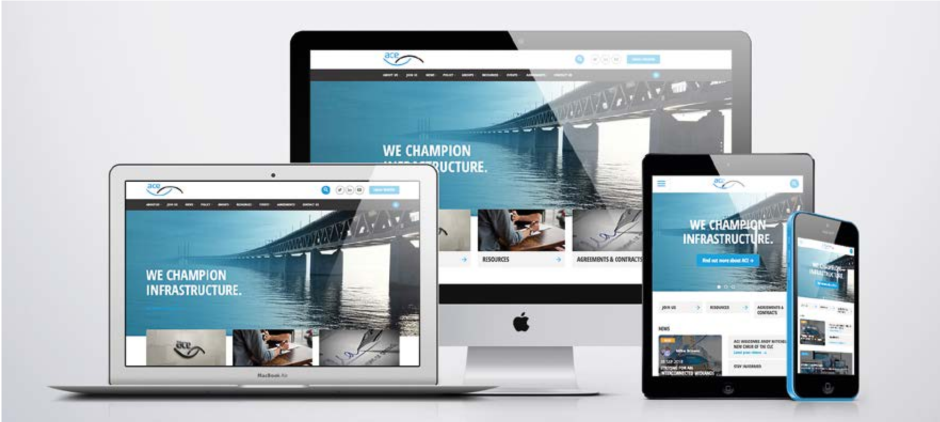
Political bias is an issue that has stunted the growth of the sector for decades. Moving big projects outside the political cycle is essential for attracting private investment. If the private investment community is being asked to make long-term, multi-billion-pound investments, the government needs to offer long-term guarantees and protection to these investors in return.

But industry also has a key role to play in making UK infrastructure an attractive investment opportunity. All of us involved in infrastructure delivery can do more to promote the positives of new and improved infrastructure as a path to economic growth and a better standard of living for large numbers of people. Gaining public support for infrastructure investment is essential to getting projects off the ground, particularly in the UK, where schemes are frequently blocked by local opposition.

The infrastructure sector needs to step up to make projects more attractive, help build project certainty and promote the benefits of new networks and services to the public.

New website for ACE

The redesign of acenet.co.uk provides a new platform for engagement.



Developed with the end-user in mind, a new ACE website has been designed to better reflect ACE's work, allowing users to easily browse industry events, purchase agreements and explore member services. Stakeholders can engage with the breadth of ACE's policy work, while journalists will be able to easily find ACE's latest comments and media releases.

Thanks to the intuitive and responsive design, the website works equally as well on mobiles and tablets, as it does on desktops. In addition to news from ACE and the industry, it also hosts blogs from thought leaders from across the industry.

Commenting on the launch, Tam Simmons, head of marketing and communications at ACE, said: "This is the product of months of work and I'm delighted to be able to share our new website with ACE members and the wider world. We've tried to make it as easy as possible for users to access the information they need and we hope that we've achieved that."

Those working for an ACE member company are encouraged to visit www.acenet.co.uk and register to access exclusive member-only content (policy, HR and legal briefings, as well as business templates) or to sign-up to regular email communications.

Visit the new website at www.acenet.co.uk

Representing members across the UK

Regions and nations meeting highlights initiatives with huge potential to shape local infrastructure.

ACE's regional and Progress Network conference took place in Birmingham on 2 November 2018. The meeting, which brought together the chairs of ACE's regional groups and the Progress Network, with the chairs and managers of the devolved nations, as well as representatives from ACE's staff and the chair, aimed to share best practice and plot future activity over the coming year.

Kicking things off, ACE Chair Mathew Riley shared his views that ACE needed to do more to counter the negative perceptions that can surround the industry, from Carillion to Grenfell to delays on high-profile projects like Crossrail. He stressed the importance of increased local engagement activity for this.

ACE Cymru | Wales shared the news that they are heading a new alliance to interact with the National Infrastructure Commission for Wales. Working alongside the Welsh branches of ICE and CECA, ACE Wales manager Simon Shouler shared the vision of the alliance to increase dialogue and join-up thinking between the industry and the commission.

This will have provided ACE Scotland manager, Sam Ibbott with plenty of food for thought and a perhaps a workable vision for engaging with the future Scotland Infrastructure Commission, which was recently announced by the first minister at the SNP autumn conference. ACE will be working hard to shape this future relationship over the coming months and with this in mind, an upcoming reception at Holyrood in Spring 2019 will be hugely important.

Procurement was a theme common to all of the groups. ACE Northern Ireland manager, Bill Taylor, shared his work over the last 18 months with the Central Procurement Directorate (CPD) to agree a new methodology where the lowest price is no longer the determining factor in the award of a contract.

Working alongside other professional bodies in the Construction Professionals' Council NI, ACE Northern Ireland has effectively made the case that a new approach to public procurement is required. This is vital to the local economy – in Northern Ireland some 40% of construction output is publicly funded – and the discussions have now led to CPD beginning this pilot scheme, which forms the first stage of a wider piece of work on reform of procurement in Northern Ireland.

ACE chief executive Hannah Vickers pulled together the strands of the day's discussions, highlighting the need for ACE to work holistically on campaigns of interest to all members and help the regions and nations achieve more while supporting the build-up of local networks – whether at it be for emerging engineers and consultants, or member companies.

Find out more about the work of ACE's regional/national groups, and how you can get involved, at www.acenet.co.uk/groups

Celebrating exceptional achievements

European CEO Awards shine spotlight on innovative and creative leaders.

Karin Sluis (centre) recieving her award from ACE chair Mathew Riley and chief executive Hannah Vickers.

Grace Hall in the City of London was the venue for this year's European CEO Awards. Kicking off a packed European CEO Conference week, the awards on Monday 5 November 2018 recognised exceptional, innovative and creative leaders in the consulting engineering sector.

Chair of the judging panel, Roger Flanagan (Construction Management, University of Reading) praised all nominees for demonstrating strong integrity and for demonstrating their contribution to their companies, the industry and wider society.

This year three CEO of the Year awards were bestowed on worthy leaders from across Europe - Gerry Carty of RPS, Ciarán Kennedy of Barrett Mahony Consulting Engineers and Karin Sluis of Witteveen+BOS.

In addition to the three CEO of the Year awards, John Turzynski of Arup was presented with an Ambassador Award, Graham Nicholson formerly of Tony Gee and Partners was presented with a Lifetime Achievement Award and a special one-off award was bestowed to Nelson Ogunshakin, former chief executive of ACE and currently chief executive of FIDIC. He received the ACE Lifetime Achievement Award which was presented to him by former ACE chair Rod MacDonald.

View the photos from the awards at www.acenet.co.uk/news/gallery

Future of the industry firmly on the agenda

The annual European CEO Conference stressed importance of future-proofing the industry and meeting the challenge of disruptive change, writes *James Ketchell.*

Taking place at the European Bank for Reconstruction and Development (EBRD), this year's European CEO Conference certainly delivered on its key theme, 'Visions for our Shared Future'.

ACE chief executive Hannah Vickers made the opening address announcing a new campaign, *Future of Consultancy*. This will bring members and stakeholders together to seize the opportunities offered by the huge technological changes the industry is collectively facing and help to create a vibrant, profitable and sustainable industry.

Keynotes from Amanda Clack (CBRE), Rupert Whitehead (Google) and Paul J. Harris (Rolls Royce) returned to the theme of the disruptive digital forces challenging traditional industries, while discussions with panellists from across the industry, KPMG, Heathrow Airport, Bentley Systems, BST Global and EBRD echoed these ideas too. Sessions on mergers and acquisitions, macro-economics and infrastructure finance gave delegates a fully-rounded picture of the major issues facing their businesses today, as well as in the future.

In addition to the results from ACE's annual benchmarking survey, day two of the conference focused on developing solutions within this new business prism. Sessions on developing new commercial models, accessing funding or support for R&D and creating new and different partnerships, rounded off an informative and engaging conference and set the scene for future activity around ACE's Future of Consultancy campaign.

Complementing a hard-hitting business agenda, there were plenty of opportunities for informal networking. The European CEO Awards celebrated the best of the industry, while the ACE annual parliamentary reception offered delegates the chance to mingle with representatives from the world of politics, industry and academia at the House of Commons. It also saw ACE launch a new discussion paper on sustainability.

In its ninth year, and now firmly established as the highlight of the sector's autumn business event calendar, the two-day conference gave attendees a unique insight into the issues facing the sector. Somewhat uniquely, it also offered an opportunity for delegates to proactively address the issues they are facing too.

View the photos from the conference at www.acenet.co.uk/news/gallery

Shaping the future of consultancy

The consultancy and engineering sector needs to come together to seize the opportunities that the technological revolution offers, argues *Hannah Vickers.*

The world is changing. Technological, environmental and human advances have disrupted many industries. The internet revolution has changed the way we shop, listen to music, watch TV, and even engage with politics. Further advances in big data, AI and virtual reality are promising to do the same for many others, including consultancy and engineering.

Our industry now stands on the brink of the fourth industrial revolution. Led by data and technology, new tools are emerging, including self-monitoring infrastructure, offsite and modular construction, drones and virtual reality which enables engineers to monitor projects from their desks, digital design which takes minutes, rather than weeks. All of this to help build the 'smart' infrastructure society is demanding such as more efficient turn-up-and-go transport networks and sustainable, yet affordable housing.

Engineering and technical consultancy in the UK remains the backbone of the economy as infrastructure investment is the only way to ensure post-austerity and post-Brexit growth across the whole of the country. In this economic and political environment, our industry is more important than ever before.

However, with the demands we are now facing, is our sector, collectively, ready to meet this challenge? It is clear that in order to do so a change is required – not just on a technical or project level, but on strategic, market and industrial levels too.

The government has shown leadership with its commitment to the industrial strategy and Construction Sector Deal and our industry is exploring future opportunities through our own R&D programmes and campaigns like Project 13. We're all aiming to build an industry that is future-proofed and sustainable while remaining prosperous in the UK and increasing its impact internationally.

It's clear that within this new prism, there are significant opportunities for consultancy and engineering firms to improve outcomes and deliver better quality services for the end users of infrastructure, but this must be enabled by the actions of the government and private sector clients. They are ultimately responsible for creating the environment which will allow us to bring forward the best the industry has to offer. Exploiting these new technological opportunities will improve the productivity of our sector and its export potential.

On a delivery level, there is an opportunity for our sector to help deliver transformational buildings and infrastructure that is sustainable, affordable and - most importantly - wanted by society. This will enable us to bridge the north/south divide, better connect regions to the economic centre whilst fuelling London's continued growth, build the 300,000 homes a year the country needs and ensure the UK is better connected to the world and post-Brexit markets.

But realising these opportunities, and our industry's transformation, requires deeper collaboration, not just within our industry, but with government, clients and users of the built environment we create. This will ensure our consultancy business can build the skills, tools and capabilities needed to meet the ambitions of the Construction Sector Deal, the modern industrial strategy and beyond.

This is why I was delighted to announce ACE's new *Future of Consultancy* campaign at the European CEO Conference in London in November. A multi-year, two-phased campaign which will firstly scope new areas of opportunity, identify and explore new business models for consultancy and analyse the sector's changing needs in terms of skills. Secondly, the campaign will pull together findings from phase one and focus on enhancing existing revenue streams and the development of new ones, piloting tomorrow's training, apprenticeship schemes and contracts and creating effective and fit-for-future-purpose industry forums and partnerships to support a vibrant, profitable and sustainable sector.

All of this will help all our members, no matter what their size, seize the opportunities that lie ahead of us. However, for this to happen, we will need to build a consensus for change, not just among ACE members, but with wider stakeholder and government bodies too. I look forward to working with you all over the coming months to help turn this into a reality.

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

Hammond's hesitation on the green economy

In his recent budget, the chancellor seemed somewhat reticent on highlighting the value of saving the planet. *Matthew Farrow* looks at the factors behind Philip Hammond's reluctance to play the green card.

Philip Hammond's budget speech was one of the longer ones in recent years, which only increased the fury of the environmental Twitter fraternity that it did not contain a single mention of climate change.

As the green lobby pointed out, the IPCC report stressing the very significant dangers of warming above 1.5C was only a few days old and had made headlines across the world. The fact that the UK actually has a reasonable story to tell on climate policy (the Climate Change Act, record levels of renewables, big push on electric vehicles etc) made environmental commentators even more perplexed. Green policies are the ones that dare not speak their name, they wailed.

So why was the chancellor so reticent on the value of saving the planet? I think there are two main factors behind this.

The first is the nature of the budget. Budget speeches are primarily about change; about what great reform the chancellor is going to bring in to tackle a problem holding the economy or the country back. They are also highly politicised, inevitably so given the amount of media attention they automatically command. So, the focus was very much on various tax and spending changes that may or may not (depending on your point of view) back up the claim by the prime minister and chancellor that 'austerity is over'.

On climate policy, the government's macro-policy is fairly stable (and it deserves credit to it for that). A set of carbon budgets and targets through the Climate Change Act, carbon pricing, diminishing subsidies for renewables as costs fall, some modest efforts to improve energy efficiency and a push to make UK a centre of low carbon technology such as electric vehicles. With no big development in climate policy to announce, the Treasury saw no reason to include it in the speech.

But what about broader environmental policy, where things are definitely a-changing? Here I think the reason is more a difference of temperament and view between the cautious 'Spreadsheet Phil' at No 11 and Michael Gove at Defra – a minister in a hurry if there ever was one.

Given Blue Planet, The Daily Mail, and Gove's skilful positioning as the scourge of plastic waste, Hammond had to be seen to be doing something on plastics at least. He (wisely) rejected the blunt instrument of an incineration tax (while seeking to keep its supporters on board by naming it as a theoretical future option). Instead he opted for a welcome commitment to a tax on plastic packaging but kept the excitement levels down by making it clear it would not come into effect for four years and that the details would to be determined by future consultation.

Caution was also the watchword on carbon taxes as, despite the IPCC report noting a need for steadily rising carbon taxes, the budget view was that UK carbon taxes might be reduced in the early 2020s. And the plans to reshape UK environmental policy post-Brexit through a new Environment Act was not touched on. This caution was partly due to the Treasury's desire to give weight to the concerns of business, who argue that it takes time to redesign packaging and that high energy costs damage competitiveness.

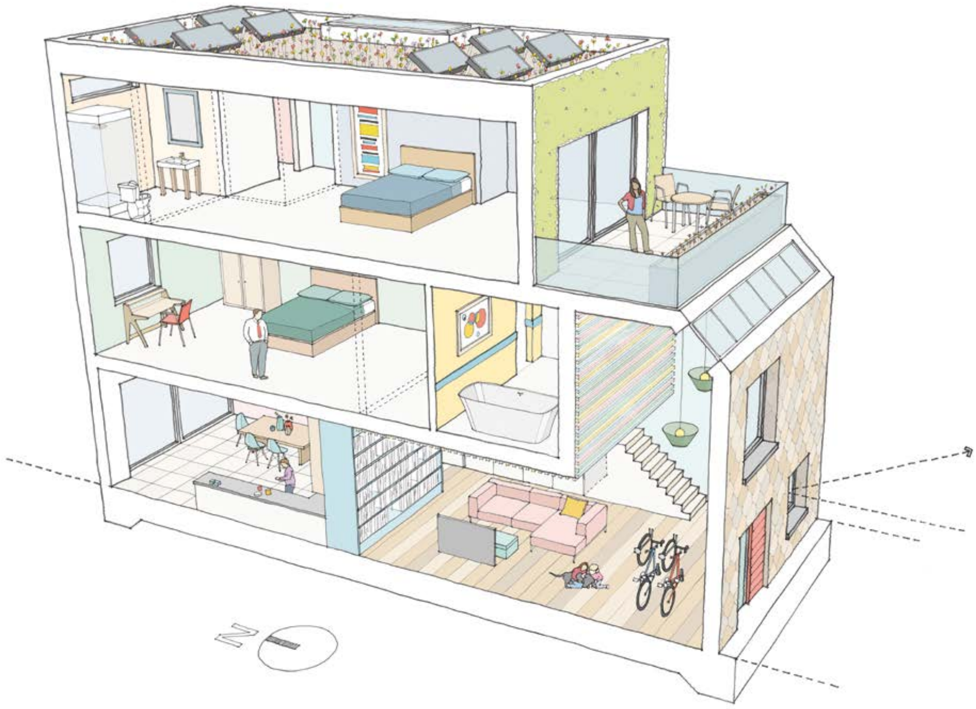
Partly though, I think the chancellor and his closest advisers are unpersuaded that greening the economy is the key to tackling the UK's growth and productivity challenges. That does not mean they are set against environmental initiatives, but they are wary of anything that might hold back housing development for example in the future.

Expect to see some Treasury-Defra tension next year over what the prime minister's commitment to 'net environmental gain in all new infrastructure' actually means.

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

Designing for a happier life

A new book by architect Ben Channon, *Happy By Design,* explores the ways in which buildings, spaces and cities affect our moods and reveals how design can make us happy and support mental health. *Andy Walker* reviews the book here.



Happy By Design: A Guide to Architecture and Mental Wellbeing, published by RIBA Publishing, is a brilliant little book which looks at the ways that buildings, spaces and cities affect our wellbeing and mental health. Presented through a series of easy-to-understand design advice and information and illustrated by handy illustrations, *Happy By Design* is a great resource for architects, engineers, builders and indeed anybody who wants to understand the relationship between buildings and happiness.

In short, according to *Happy By Design,* good design really matters and there are lots and lots of things that architects, builders, home owners and tenants can do to make the places they live in happier places in which to dwell. Many of them need not cost the earth either and in many cases the measures outlined in the book are more cost effective in the long run.

The book's author, architect Ben Channon of Assael Architecture, certainly knows his stuff. He's the mental wellbeing ambassador for his company and he's also an accredited mindfulness practitioner. In his very well-illustrated book, which is broken down into seven features of design that affect wellbeing, Channon highlights the things to consider in every building if you want to optimise good wellbeing.

His seven fundamental design elements include light, comfort, control, nature, aesthetics, activity and psychology. Channon describes how these broad areas are interlinked and helpfully colour codes the different sections of the book and uses symbols for the seven categories alongside design tips. Including just one of the seven features will make a real difference to the people that use your space or home and you don't need to

Ben Channon of Assael Architecture and the author of *Happy By Design*.

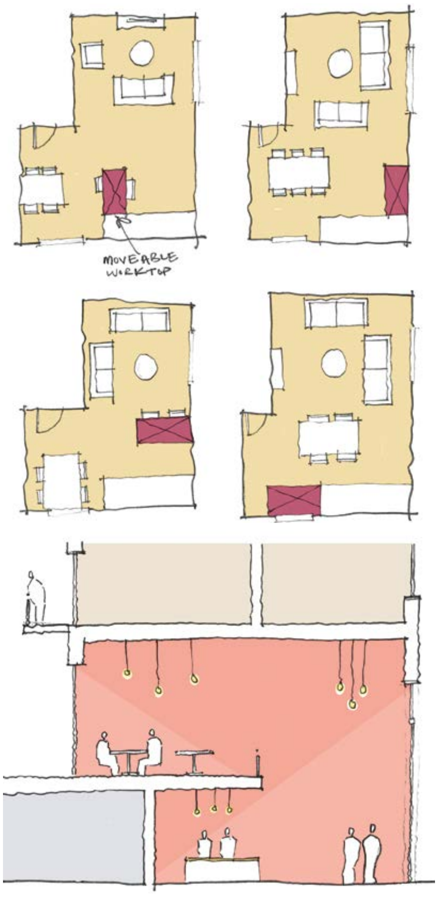
be a building industry professional to follow Channon's advice.

Happy By Design provides a toolkit of ways in which designers can support people's wellbeing through the buildings they create. Channon's key concepts to consider include creating good lighting, considering the importance of touch, making spaces comfortable, giving people control over their buildings, involving plants and wildlife in design, creating visible interest and joy, encouraging physical activity, having calm spaces for escape and relaxation, providing good storage and creating a sense of home.

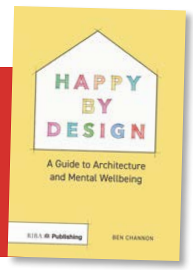
His tips and handy advice are all easy to follow and reading the book I couldn't help thinking that if only all buildings were designed this way we would go a long way towards improving people's mental wellbeing and creating a better world. Maybe that's a grand statement but it's clear from reading Channon's book that such lofty aims are entirely possible using good design and the will to carry it through to a conclusion.

One of the best bits of the book for me was the comprehensive notes and references section at the end which lists numerous books, guides and online papers that have helped to inform Channon's work or inspire him. Fellow architects and engineers have produced some excellent advice and information on how to make buildings happier and Channon generously lists website links and references useful books to add to the reader's experience and knowledge.

I've already ordered two of his recommended books - on getting rid of clutter and how to think about exercise - and I can't wait to read them. So, both for the book itself and also for Channon's very useful tips for further reading and research, I can heartily recommend *Happy By Design.* It really is a brilliant little book that will help people to live better and feel better. Anyone with an interest in the built environment must read it.



***Happy By Design* is available from the RIBA Bookshop, price £20. Order online at www.ribabookshops.com**



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