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INFRASTRUCTURE Intelligence

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Infrastructure Intelligence
12 Caxton St, London SW1H 0QL
T: 020 7222 6557
www.infrastructure-intelligence.com

Editor: Antony Oliver,
07710 341082,
antony.oliver@infrastructure-intelligence.com

Associate editor: Jackie Whitelaw,
07740 740202,
jackie.whitelaw@infrastructure-intelligence.com

Designer: Kieran McCann,
0779 000 3972,
kieran@kieranmccann.co.uk

Commercial director: Sally Devine,
07963 934892,
sally.devine@infrastructure-intelligence.com

Other material contributed by:
Bernadette Ballantyne
David Fowler

Produced by Victoria Street Capital on behalf of the Association for Consultancy & Engineering, 12 Caxton St, London SW1H 0QL.

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T 01732 366666, enquiries@cpg-net.co.uk

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MESSAGE FROM THE EDITOR

The potential for major infrastructure projects to create enormous national economic benefit is clear from the articles in this, the launch issue of Infrastructure Intelligence. But so is the challenge of delivery.

Steely determination, persuasive powers and ability by promoters and politicians to weather setbacks and react to the needs of local communities are all vital ingredients in turning ideas into reality.

Twenty years ago the UK and France opened the long awaited Channel Tunnel, a project first mooted in 1805 and which took considerable effort to deliver the vital infrastructure we now know. Today we are pressing forward with a similarly grand project in High Speed 2 a project, itself not without controversy but of equal national importance.

HS2 chairman Sir David Higgins is very clear about his ambitions for the project as "a catalyst for fundamental change". And without question he has to be.

The resounding 452 votes to 41 support signalled by politicians in last month's second reading of the HS2 hybrid Bill was a massive boost. But as Higgins and the whole project knows, it is just a start.

As with all infrastructure projects in the UK, the democratic process means that ahead lies a huge amount of debate. Central to winning that debate will be the ability to demonstrate how that fundamental change will manifest itself in peoples' lives beyond the London focus.

By all accounts we are seeing cities across the UK start to prepare to take advantage of this major public investment and that work must continue at pace to be ready for a 2026 opening.

As a country we face a choice, says Higgins, between status quo and strategic opportunity. We must sell the benefits of infrastructure hard and early to ensure that right choices are made and that we embrace the opportunity.

Antony Oliver,
Editor, Infrastructure Intelligence

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News roundup

RAIL

Network Rail is losing another director. This time it is project development director Simon Wright who is quitting to take over as Crossrail's new programme boss. Wright will replace Andy Mitchell, the new chief executive of London's Tideway Tunnel in the summer.

WSP has been appointed by Transport for London to develop options and make recommendations for a London Overground station to link to the proposed HS2/ Crossrail interchange at Old Oak Common.

Numbers of people in Spain using high speed trains has surpassed those using domestic flights, according to reports. Passengers on long distance and high speed routes jumped from 22M in 2012 to 25M last year and numbers are up another 18% so far in 2014 according to Felix Martin who runs the national train company RENFE's passenger services in north east Spain. Overall domestic travel including trains, planes and buses was down 16% last year. Spain has the largest high speed train network in Europe.

The Rail Freight Group has welcomed a proposal from Eurotunnel to significantly reduce the level of access charges for rail freight services using the Channel Tunnel. The changes, which take effect from June, will see tolls for the 'off peak' period, when most traffic operates, reduce by 25% compared to 2013 levels, with no further increase until at least 2018. Eurotunnel's 'ETICA' incentive scheme is also to be enhanced and extended such that new rail services will see an average overall discount of around 35-40%. The commitment by Eurotunnel comes as a response to the legal investigation opened by the European Commission against France and the UK for their failure to implement European rules on access to infrastructure in the Channel Tunnel.

The 20th anniversary of the opening of the Channel Tunnel passed on 6 May. Some 325M passengers have used it in the last two decades, less than the numbers predicted. But operator Eurotunnel moved into the black with revenues of over £0.8bn in and profits of £16.5M in the last financial year and is beginning to pay down its £3bn net debt.

Network Rail has announced plans to bring Waterloo International rail terminal back into use as part of its £300M Wessex Capacity Programme. Work is expected to start next year.

Labour should renationalise the rail industry if it wins the next election, a group of 31 prospective MPs has said in a letter to the Observer. Labour leader Ed Milliband said Labour was looking at all options but would "not go back to old-style British Rail". The Conservatives said recent estimates suggested renationalising the railways would add at least £10bn to the UK's budget deficit.

HIGH SPEED 2

Parliament gave the High Speed 2 rail project a boost this month with the passing of the hybrid parliamentary bill that will grant the powers required to construct phase one of the proposed £50bn scheme. Despite a last-ditch effort by former Welsh Secretary Cheryl Gillan MP to derail the bill, MPs approved the bill at second reading by 452 to 41 votes, a majority of 411. This included the decision to omit the provision for a link between HS1 and HS2, as proposed by HS2 chairman Sir David Higgins in his recent report HS2 Plus (see interview page 10).

ENVIRONMENT

A jury in Dallas, US has awarded a Texas family $2.925M (£1.7M) in a trial based on air quality medical problems allegedly caused by fracking. They argued that they had been exposed to hazardous gases, chemicals and industrial waste – chiefly through the air – and that this resulted in significant health problems and drove them from their home.

Beijing, China is planning to build a £600M desalination plant on the Yellow Sea coast 270km from the city to supply a third of the capital's daily water needs. Construction is scheduled to start this year, state media have reported.

Households will be granted up to £7,600 each from a £120M pot of money available from June to install double glazing, new boilers and insulation. The grants are being made available as the government attempts to encourage energy efficiency after the slow take up of its Green Deal loan scheme which has been shunned by homeowners in part because interest on the loans is perceived as too high.

Michelangelo's statue of David is in danger of collapsing under its own weight due to weak ankles according to reports from Italy. The Renaissance sculpture created between 1501 and 1504 weights 5.5t and has started to display signs of micro fractures in its legs with researchers in Florence warning that it could collapse.

AIRPORTS

Heathrow and Gatwick airports have submitted plans to the Airports Commission in the battle to win permission to build the UK's next runway. A decision will be made in 2015. Heathrow upped its compensation offer to the 750 homes needed to be demolished to 25% above market value at an estimated cost of £550M. The airport also proposed a congestion charge for passengers travelling by car. Gatwick argued its expansion plans would cost £7.8bn and were cheaper and could be delivered quicker than Heathrow. Heathrow Hub which is proposing an extension of the existing runways at the airport said its plans had the potential to end night flights.

Birmingham Airport's new runway extension to became operational and able to take fully laden, long haul A380 jets. The 400m extension increases the runway length to 3,003m. China Southern will be the

first long-haul airline to take advantage of the extended runway from July 22 when it operates a charter flight to and from Beijing. Runway extension construction began in autumn 2012 and cost £33M. Contractor was a Colas VolkerFitzpatrick joint venture. Designer was Halcrow (CH2MHill), project manager Turner & Townsend and airport engineering advisor URS.

ROADS

National Assembly for Wales has confirmed a £500M investment in road improvements including a plan to relieve congestion on the M4 at Newport. Another £300M will go towards completion of the dualling of the A465 Heads of the Valleys artery by 2020. And a further £200M will help finance a new specialist cancer care centre in Cardiff.

Foreign hauliers are now paying their way on UK roads, government reports. HGV User Levy generated £7.6M in its first five weeks.

Go ahead has been given to widening to dual carriageway the A21 between Tonbridge and Pembury in Kent. Advance work could start in the Autumn, Department for Transport said. The £117M scheme (2010 prices) topped the DfT list of unfunded projects offering best value for money with a benefit cost ratio of 11. National Trust external affairs director Richard Hebbditch pointed out that the route would mean the loss of 22 acres of ancient woodland, one quarter of that lost with HS2 but in just 4km.

Department for Transport has given the green light for the Highways Agency to widen more of the A1 Western Bypass at Gateshead. This will see 6.4km of the A1 widened to three lanes in both directions – an additional 4.8km to what was previously planned. The extension has been made possible through £19M savings identified in the design of the original scheme.

Transport Secretary Patrick McLoughlin has approved reform of the Highways Agency into a business backed by stable, locked-in funding that "will eliminate the uncertain stop-start processes of the past." Legislation is expected in the Queen's Speech in June but the one year timescale might prove ambitious if the legislation is wrapped up in a wider Infrastructure Bill.

Proposals to build a road tunnel under Stonehenge could be revived as the Government looks to ease road bottlenecks. A study to be completed this summer will consider options for easing congestion on the A303. Plans for a 2km road tunnel beneath the site have been proposed before but were dropped in 2007 due to the estimated £470M cost. Final proposals are due in the Autumn Statement.

A report just released by the American Road and Transportation Builders Association shows that 1 in 10 bridges in the United States is structurally deficient and in need of repair. Total number at risk in 2013 was 63,207 bridges - a total of 2,400km in length, the report said. Pennsylvania, Iowa, Missouri and California had the most structurally deficient bridges.

WATER

Consultant MWH has won the up to £200M deal to manage Southern Water's £1.6bn investment programme over the next five years.

Around £440M of work will be brought forward into 2014-15 to help lessen the boom and bust impact of cyclical investment in the UK water industry, government has confirmed. The next AMP cycle starts in 2015.

Qatar's General Electricity and Water Corporation has announced the tender for construction of five primary reservoirs and pumping station packages as part of its Water Security Mega Reservoirs project. The reservoirs and pipeline network will provide up to 17M cubic metres of potable water storage. Bids need to be in by 5 June.

PLANNING

Plans to hang giant advertising banners from the top of the Forth Road Bridge to help fund its 50th anniversary celebrations have been abandoned. The 20m wide promotions would have remained in place for up to a year and prompted anger from heritage groups when bridge officials revealed the scheme last year.

Joined up planning for both passenger and freight traffic across the UK's road and rail infrastructure is crucial for future prosperity, the Commons Transport Select Committee has warned in a report. In a separate document the committee says effective regulation and long term funding plans are essential for investment in the strategic road network.

HOUSING

The number of large scale housing estates being given planning approval has risen over the two years since the National Planning Policy Framework came into effect. A Glenigan study – 'Residential planning and the NPPF' – found that English local authorities approved 194,700 planning applications in the year to the end of March, a 9% increase on the average number of approvals in the two years before the changes.

Nick Raynsford MP's quest to get legislation to make smoke alarms in rented property compulsory moved a step forward when his 10 Minute Rule Bill was supported by 245 MPs to 8. Next stage is a second reading, to be announced (see Opinion page 8).

The Defence Infrastructure Organisation has announce its national housing prime and Scotland and Northern Ireland prime contracts, worth in total £1.1bn have been won by a Carillion/Amey joint venture. Interserve subsidiary, Landmarc Support Services won the national training estate prime deal worth £322M.

BUSINESS

Balfour Beatty issued its third profit warning in last 18 months in May prompting an immediate 16% fall in the share price and the resignation of group chief executive Andrew McNaughton. Just a year ago the firm down-played its profit expectation by £50M. In May profit expectation was cut by another £30M with poorer than expected performance the Construction Services division largely to blame. Balfour Beatty reported a fall in its order book in the first quarter, reduced to £12.9 billion compared with £13.4 billion at the end of 2013.

A new industry-led campaign has been launched to inspire more young people to study maths and physics. Over 170 businesses are already signed up and are offering 2,000 jobs and apprenticeships as part of the Your Life campaign. See Paul Jackson, p7,

The University of Surrey is launching a new MSc in Infrastructure Engineering and Management, to provide graduates with the skills to plan, design, manage and analyse infrastructure systems. For details www.surrey.ac.uk/postgraduate.

Auditors warn that construction companies and their clients must end the vicious cycle of pricing contracts unrealistically low if the sector is to pull its weight in generating economic growth. These are among the recommendations in Audit Insights: Construction, a report published in May from accountancy organisation ICAEW.

The PIP Equity Fund, the first investment fund set up by the UK Pension Infrastructure Platform (PIP), has completed its first investment. According to Dalmore Capital which manages the fund, the PIP has purchased a stake in a holding company for private finance initiative assets from construction company Interserve's pension fund. Seven institutional investors including the Pension Protection Fund (PPF), British Airways Pensions and the Strathclyde and West Midlands Pension Funds committed £260M to the fund, which will be capped at £500M.

ENERGY

Marine energy research projects near the Orkney Islands may need public funding to get a proposed 180MW cable to Orkney. Orkney is one of three planned Scottish island transmission connections that are caught in a deadlock. The others are a 450MW cable to the Western Isles and a 600MW link to the Shetland Isles.

Shale gas could deliver a potential £33bn benefit to the UK economy and over 64,000 jobs according to the Getting Ready for UK Shale Gas report published by trade body United Kingdom Onshore Operators Group (UKOOG) and part funded by the Department for Business Innovation and Skills. Specialised equipment, waste management, steel manufacture and rig manufacture are the sectors that will benefit most.

The House of Lords Economic Affairs Committee this month said it was disappointed with progress made on exploiting the UK's shale gas reserves. It called on the government to do more to accelerate development of resources and said well regulated development was an urgent national priority. Its report The Economic Impact on UK Energy Policy of Shale Gas and Oil which followed an extensive investigation earlier this year, blamed "regulatory log jam" for the slow start.

Cuadrilla is preparing to submit planning applications by the end of this month to frack at two sites in Lancashire next year, with the test sites connected to the gas grid in 2015. The hope is that drilling will start at Roseacre and Little Plumpton at the end of this year. Government has also said that the next round of licensing will cover around two-thirds of Britain, including national parks and urban areas, from the Yorkshire Dales to London.

INTERVIEW: Andy Milner, managing director, Amey Consulting, Rail and Strategic Highways

Amey, working with Swiss rail specialist Sersa, was this month named preferred bidder for Network Rail's £400M, 10 year Northern Alliance contract to renew switch and crossings across two thirds of the UK rail network. It will be, says Amey, a step-change in efficient, sustainable and innovative track renewal methods. Andy Milner explains his views on asset management.

You have a major and growing rail maintenance portfolio. What is the biggest contribution that you can make to reducing the cost of the UK railway?
Collaboration – the need to get the whole industry working better together, sharing best practice, reducing risks and inefficiencies through innovation and technology. Collaboration is also the key to improving safety, as an industry we need to share best practice to continually improve.

Asset management requires a balance between capital and operational spend. Do clients appreciate this?
Yes, to a certain extent and we see our role as a provider to support this dynamic. There is pressure on budgets, so we try and ensure we propose solutions that support the clients within their budget constraints, as well as introducing efficiencies through the use of asset management.

What impact has the economic downturn had on public and private sector clients' approaches to asset management?
I think the economic downturn has split clients – some quickly looked to reduce budgets with very short term view points, whereas others have taken their time to consider how they can reduce costs with minimal impact. I think more and more clients are therefore now appreciating the value of an asset management approach and we are seeing whole industries starting to adopt it.

Your contracts to maintain Birmingham and Sheffield's roads have pushed asset management boundaries. What lessons do they provide?
The Birmingham and Sheffield projects really demonstrate the private sector's ability and willingness to manage asset risk. What we see is true collaboration between us and the public sector; we expect to see more contracts of this type coming to market as public sector budgets come under increasing pressure and the need to find new ways of working is increased.

We hear a lot about the economic value of infrastructure investment. Are clients are now investing properly or still living off the legacy of our forebears?
The UK has some of the oldest infrastructure in the world and is a very different dynamic to other countries who are either building or have just built brand new infrastructure. It is partly why UK engineering is considered some of the best in the world. I think public sector clients do understand the need to invest but it is our job in the private sector to help them invest their money as smartly as possible. Whole life asset management can make sure that we adapt investment to address their current restraints and that we don't create problems for future generations by just focusing on the short term.

David Waboso,
capital projects director
for London Underground

Turning the training super tanker

London Underground has a large and growing need for good engineering and project management skills. One of the legacies of decades of under-investment in infrastructure is that our most valuable resource as an industry was also neglected – our people. It's hard to comprehend, but LU, like many other large infrastructure organisations, actually stopped recruiting graduates and apprentices in what was seen as an era of out-sourcing "non-core" activities. Of course that's all changed, but like turning a super-tanker, it takes time.

We start by engaging with young people as they are making decisions about their careers. In partnership with the London Transport Museum, we run an 'Engineering Ambassador' programme, with schools to excite young people. It's fantastic to see how interested school children are in how the Tube is engineered.

We've reinstated our engineering graduate scheme. Students can join the civil, electrical, electronic or mechanical engineering streams. These are three year programmes, working on a mix of projects across TfL. Whenever I talk to our graduates I'm inspired by their enthusiasm and imagination.

We also have a number of engineering apprenticeships, from an 18-month to three and four year advanced schemes. For many youngsters, apprenticeships can be a better option than university as they offer the opportunity to learn *and* earn, without the expense of university fees. Our track renewal engineering scheme was recently awarded the Apprenticeship Development Scheme Award at the 2014 UK Rail Industry Awards (UKRIA).

We also have a well established graduate scheme in project management, and this year implemented an apprenticeship scheme in partnership with the Association of Project Management (APM). The apprentice scheme is fairly unique – in that only a handful of other employers currently offer apprenticeships in project management. We've also recently introduced a planning graduate scheme. There's an industry-wide shortage of planners though it is not a career that young people usually know about.

So we're certainly not repeating past mistakes. One of the big advantages of sustained investment in infrastructure is it allows long-term planning and investment in skills to take place and that's precisely what we and other infrastructure clients are doing, which is great news for youngsters wanting a career in engineering projects.

Alexander Jan,
director, transaction
advice at Arup

Transport's bare cupboard

"It is not unreasonable to expect at least a partial return to the use of private finance."

Barring a major coalition upset such as Scotland voting to exit the Union, Britain will shortly begin its twelve month countdown to the next general election. Perhaps now is not such a bad time to take stock on transport PPPs in the UK.

While the merger and acquisition market has been reasonably buoyant, particularly in the airport sector, the PPP market has been much more subdued.

According to Partnerships Bulletin data, there were no PFI/PPP transport projects that reached financial close in the UK in 2013, with the exception of the belated Thameslink rolling stock deal. In 2012 there were three highway local authority PFI projects that got away: Isle of Wight (£325M); Hounslow (£800M) and Sheffield (£1.2bn), plus the first tranche of the Intercity Express Programme (£4.5bn).

With the notable exception of the £500M Mersey Gateway, which has just reached financial close, and Intercity Express Programme phase two, which is slated to close later this year, the cupboard is looking rather bare. And according to the Treasury's Infrastructure UK PFI/PF2 tracker there is little on the radar.

There are perhaps a number of reasons for this. Firstly there has been little enthusiasm for the use of the PPP model by the coalition government. This is a real challenge for our industry.

At the same time and in the wake of the financial crisis, there has been a shift towards greater use of other funding models incorporating the use of government guarantees or prudential borrowing.

Finally, there has been the impact of government austerity. Despite the rhetoric, expenditure on infrastructure has declined since the last election.

Does this mean the end of the line for transport PPPs and PFI schemes? Not necessarily. With a growing population and an economy finally returning to growth, the UK will need to become more efficient and effective at delivering infrastructure – however it is paid for.

Whatever the political complexion of the next government, it is not unreasonable to expect at least a partial return to the use of private finance. The real question is perhaps whether a future regime will allow local government to take the lead in getting things done. To do that, Whitehall will need to give it greater financial freedom.

Malcolm Bairstow,
partner at EY

Clarity over HS2's business case is crucial, but beware the cost of not going ahead

"Improving connectivity between cities is not a 'nice to have' but critical."

With the bill for Phase 1 of High Speed 2 (HS2) receiving the backing of MPs at its second reading, the Government and HS2 Ltd is making progress through the parliamentary process and achieving the important cross-party political consensus called for by Sir John Armitt in his review of infrastructure planning in the UK.

The important tasks of winning public support and securing the investment needed for this long term project continues. This will require not only clarity on the costs and benefits of the project, but also the costs of not going ahead.

As a country, we are seeing momentum in the infrastructure sector with a successful 2012 Olympics and great progress on Crossrail. The future passenger experience, reduced environmental impact and increased capacity that Crossrail will provide London, HS2 can provide for the country.

Recent research by the Centre for Cities think tank suggests that the gap between London and our other cities is widening. This results in a talent drain from other cities towards London, further reducing these cities' ability to play their part in sustainable, economic growth. Improving connectivity between cities is not a 'nice to have' but a critical component of rebalancing and boosting the UK's economy.

In this sense, HS2 is not the answer but the first step towards smarter, better connected cities across the country enabled by transport innovation, technology and good design.

Politicians and the public, the industry and its customers need to all get behind this project. Nevertheless, continued scrutiny and challenge is always healthy. The expectation should be zero tolerance on failure and inefficiencies, including excessive cost and time overruns.

Significant work has been done on the business case for HS2. All large infrastructure projects face challenges of cost, time and quality; in a complex stakeholder environment HS2 needs to demonstrate the transparency expected in a democratic system. It would be too easy to suggest it is the role of HS2 Ltd to manage its stakeholders, the public and the Government. In actual fact, we will all benefit from HS2 being successful.

It is the role of our parliamentary system and the stakeholders in the sector to perform challenge and scrutinise in an efficient manner.

Paul Jackson,
chief executive of
EngineeringUK

Developing an infrastructure of engineering talent

Real acknowledgement of the importance of physics and maths skills backed by tangible joined up action, are vital to delivering a re-balanced economy.

EngineeringUK, along with others across the profession has been working with Government departments to help shape actions and real, measurable goals. I was pleased therefore to hear the Chancellor of the Exchequer launch new commitments on 7 May to increase the number of young people taking A-level maths and physics.

The campaign, "Your Life", consists of a three-pronged approach: a communications campaign, promoting physics and maths A-level with emphasis on girls aged 14-16; the establishment of post graduate maths and physics "chairs" to bring their subject expertise into schools; and a call to action to increase the number of women in engineering.

The campaign has some ambitious aspirations. The aim is to increase the number of boys and girls taking physics A-level by 50% in three years. Such positive change comes with its own challenges, of course. An increased uptake of maths and physics at A-level means we must press for further capacity in engineering education post-18.

For our part, EngineeringUK continues to develop and grow active channels of engagement. However, if we are to make a change on the national scale that's needed, we have to reach even more young people.

That's why, building on feedback from hundreds of employers, Tomorrow's Engineers plans to facilitate a national programme of engineering employer engagement in schools by joining up other networks and initiatives at a regional level; coordinating activity to improve reach and impact; and sharing best practice.

We are running a pilot programme of this approach during the summer term in two regions where a Tomorrow's Engineers Regional Partnership Manager will work with employers and schools in each of those areas.

We are also planning Tomorrow's Engineers Week 2014, working in partnership with businesses, educators and call to action signatories, from 3 – 7 November.

Government is taking seriously the role of STEM in securing the future of engineering and of our economy. We must glue STEM to the top of the agenda, and keep those goals on track.

Tony Berkeley, member of the House of Lords and chairman of the Rail Freight Group

Here's the answer to the Euston conundrum

Ministers are now focusing on the 'success' of the Kings Cross St Pancras developments and wanting to emulate and better these for the HS2 terminal at Euston. Although they have rightly cancelled the HS2-1 link, they are still supporting the continuation of the HS2 tunnels right into the approaches to Euston station, involving massive demolition and construction.

The latest idea is to lower all the tracks at Euston station by perhaps 8m so that, with a deck above, there will be a level walk through area right across the station. Of course the track lowering would have to start well to the north of the station, possible at the Regent's Canal, so the cost, disruption to passengers and to the local community would be even greater and last for longer.

I am told that a ground level deck makes the development so much more attractive to developers that they could fund the massive extra cost of these works. How real is this commitment?

But, given the large size of the footprint of the station, surely a deck over the existing station with good escalators, ramps or whatever could be an attraction in its own right, as well as providing access to all platforms along the length of each train, to the Underground, to visitor and retail opportunities and, of course, access to whatever development might be built above?

This is where the scheme developed by Lord Bradshaw and myself with the assistance of consultant Jonathan Roberts, comes in as a perfectly acceptable 'base case' against which these various developer dreams can be assessed and coasted.

We worked on the number of trains that HS2 and the WCML could deliver to Euston, and concluded that, if one diverted some of the WCML suburban services via a new link to Crossrail at Old Oak Common, the remainder of these could be accommodated in the 18 platforms of the existing station.

And if anyone really wanted even more trains to terminate at Euston, then there is space for probably four more platforms within the footprint.

Some HS2 trains are planned to be 400m long, so the platforms would need extending southwards towards Euston Road. This would involve demolishing the two towers there, but maybe that would be an advantage.

Tony Berkeley is a member of the House of Lords and chairman of the Rail Freight Group

For a more detailed explanation of the proposal visit www.infrastructure-intelligence.com

Nick Raynsford, MP

Why I want legislation on smoke alarms

Smoke alarms save lives. A person is four times more likely to die in a fire in the home if they do not have a working alarm. Building Regulations require smoke alarms in all new dwellings, and nine out of ten homes now have a working alarm.

But more needs to be done. Two and a half million homes are still unprotected, and almost one in five privately rented homes does not have a smoke alarm, double the proportion in the social housing sector.

The purpose of my Ten Minute Rule Bill is to remedy this by making the installation of a working smoke alarm mandatory in all privately rented housing.

The Energy Act 2013 already contains a clause which makes it possible for Ministers to make this measure law. All that is required is the introduction of a Statutory Instrument to bring this into force. So why has the Government allowed this issue to be kicked into the long grass?

The CLG consultation paper on smoke alarms has cited 'regulatory burden'. In contrast, however, the National Landlords Association says "we already advise that it is best practice to install smoke alarms and carbon monoxide detectors in rental properties and are comfortable with this being made a regulatory requirement". The British Property Federation says that it "supports the compulsory roll-out of smoke alarms and CO alarms across the rented sector".

The public too is overwhelmingly supportive.

I therefore find the Government's 'regulatory burden' argument wholly unconvincing.

The Government's claim that this "would impose additional costs on landlords" is equally unconvincing. In reality the cost would be tiny. A sealed smoke detector with a ten-year battery costs around £15, only £1.50 a year spread over the life of the battery against the average rental income from a private letting which is currently over £10,000 a year.

Those landlords keen to do the right thing will by now almost all have installed alarms. Those who are negligent or indifferent to tenant safety may well not have done so. Without a legal obligation it is unlikely that they will. That is why I presented my Bill as a call to action. Given the overwhelming support of the House of Commons (voting 245 to 8 in favour) I hope that the Government will now act without further delay.

Jason Millett, chief operating officer, major programmes and infrastructure, Mace

Improved transport policies can drive economic growth for our cities

We already know that good transport links can make a huge difference to the economic success of a city. But cities don't need to wait for central government to release funding or make changes to policy or regulations, to take action. Research released this month from Centre for Cities, supported by Mace, found that many cities in the UK have found ways around the often confusing array of regulations, funding pots and organisations involved, to provide improved transport provisions for the city or region (see feature page 18).

The report highlights a number of best practice examples from across the country that cities can learn from and implement now. Nottingham for example, has not only introduced a smart ticketing system along the lines of the London Oyster card, it also established a Statutory Quality Partnership Scheme (SQPS). All the city's private bus companies had to qualify for the SQPS to use the city's bus stops, and so could be regulated through this to improve the bus service for passengers. While there were undoubtedly challenges to putting these provisions in place, Nottingham should be commended for finding a solution by flexing its existing powers within the current system to improve the bus service.

Brand new transport infrastructure can take decades to deliver, and no doubt many cities feel that seeing changes from central government can sometimes take just as long. It can be all too easy to sit back and wait for Whitehall to decide transport policy for a region. But I would argue that there are already cities up and down the country that have found ways to make improvements and take action *now*, and so it's a case of sharing best practice and learning from each other to get cities moving. Otherwise as the country's economy picks up, cities that don't take action and find ways to work with partners or pool resources, risk being left behind.

Steve Bromhead, UK head of infrastructure at EC Harris

Delivering returns from the next generation of UK infrastructure investment

As the UK faces increased capacity restraints it seems evident that there is a need for investment to replace ageing infrastructure on these shores. But is this really the case?

The 2014 Global Built Asset Index published by ARCADIS this month suggests that European countries such as France, Germany and Spain all have 30% more built asset wealth than the UK but do not get a premium return on their investment. So does investment in new infrastructure lead to expensive to maintain under-utilised assets?

The UK is very good at making assets work efficiently in comparison to other European countries. Research shows that the UK gets 30% more return compared to our European peers which in turn compensates for the fact that our asset base is 30% smaller on a per capita basis.

Could we see a diminishing return on our asset base through poor planning forcing us to work even harder with the ageing infrastructure in the UK? Sweating assets can only go on for so long before the returns start to fall or disappear altogether.

The challenge for government and the industry is to accelerate the investment that is already planned, look to the future and invest more readily in the ageing assets, making quicker decisions around key investments that will benefit UK Plc.

So, how much infrastructure do we need in the UK? To put it simply, it is less than we aspire to, but more than we are prepared to pay for.

Sheena Sood, partner at Beale and Company

Many hands make light work

At construction and insurance lawyers Beale & Company we have long adopted a collaborative approach to our clients' legal needs, developing long-standing relationships to provide the best value advice.

But today we are finding that we are not the only ones to have adopted a more collaborative approach as our clients, and their clients' clients do the same.

Collaborative working is clearly becoming increasingly popular in the construction industry and is endorsed in the Government's Construction 2025 strategy paper as a key to the industry reaching its growth and sustainability targets.

The term covers a wide range of procurement methods, from simply acting in good faith, through partnering and joint venturing through to alliancing and other innovative structures. Our lawyers have advised on a number of recent projects as high profile clients lead this trend towards procuring infrastructure projects using some form of collaborative model.

These include the Highways Agency's Collaborative Delivery Framework, Network Rail's series of alliance contracts and Thames Water's AMP6 alliance.

One of the critical issues in the industry is to ensure that professionals are up to date with the latest thinking on collaboration and the advantages that it can bring to projects.

HS2: Building momentum

High Speed 2 chairman Sir David Higgins completed his initial, highly positive eight week review of the £50bn project in March and last month saw Parliament approve the second reading of the HS2 bill 452 to 41 votes, a majority of 411.

That cross party consensus was certainly a great start. But, as Higgins pointed out in his recent *HS2plus* report, completing this project to budget relies on the swift and efficient progression of HS2 legislation through Parliament continuing.

There of course remains considerable opposition to the project along the phase 1 route between London and Birmingham and along the proposed phase 2 route from Birmingham to Manchester and Leeds. As many as two thousand petitions are expected for phase 1 and likely to push any Royal Assent for the project well into 2016.

But overall the message seems to be being heard in the cities and regions across the UK that this project does represent a major economic opportunity.

Higgins discusses the project, its progress and priorities with Infrastructure Intelligence editor *Antony Oliver.*

EXPLAINING THE VALUE OF THE PROJECT TO THE NATION

You say in your HS2plus report that "as a country we face a choice"– HS2 is a difficult one. Do you think that as a country we are getting better at making those difficult choices?

I think that compared to many other countries, yes we are. Let's face it this is not an easy decision for the coalition to support but 452 votes against 41 is a pretty convincing majority to get the second reading through. It is a realisation that you need to make long term decisions outside the political cycles.

You describe HS2 as "a catalyst for fundamental change" – what do you mean?

We need to do something that shifts the concentration of activity from in and around London. London will have 10M people by 2030 but my point is where and how much will house prices be by then. You have to ask why is the UK so different from other developed countries with such a concentration of decision making based in London and huge disparity in wealth and career opportunities. I believe that that one of the reasons is that companies need to be near to Heathrow. But if you are one hour away with regular and consistent services rather than 2 hour 20 – and you have a railway that works – then I believe things will change.

THE PARLIAMENTARY PROCESS AND PROGRAMME

You say "getting clarity over the duration of the parliamentary process is key" – the reality is that it is going to take a long while to conclude.

The Secretary of State has confirmed that HS2 will not get through [to Royal Assent] before the election and that was obvious. But if we can get through the Commons committee stage before the end of the parliament that would be a big plus. There are likely to be a couple of thousand petitions compared to Crossrail which had around 300 and Crossrail took three years.

Can you help to accelerate the process?

A lot of the delay on Crossrail was with utilities and we are well down the track negotiating deals. We can't be in direct discussion with the committee but we need to respond to the petitions and advise the committee what the implications are of each petition. We need to be efficient.

The project will span four to five parliaments. What do you see as your biggest risks to maintaining the longstanding bipartisan approach?

Losing momentum is the single biggest thing. Projects like this need to keep having events and wins so that the public and politicians can see progress. If it loses and stalls then it will be hard to restart.

Could a change in government set the project back?

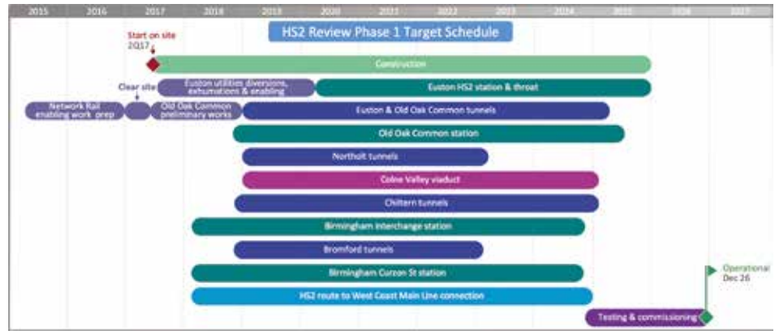
The whole point was that there was bipartisan support so I hope not. The next step is getting the capability of the organisation up and then in the autumn there will be a second report detailing what we have done since the first [progress report] and setting out plans for the second phase.

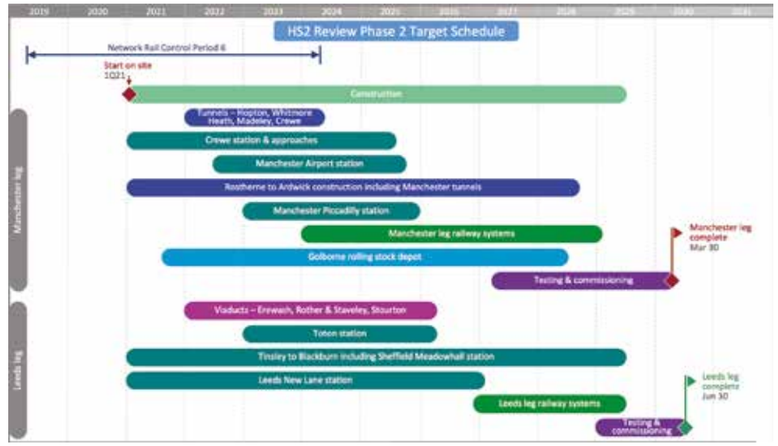
THE BUDGET

The budget you say "is enough". Do you think the move to a P95 estimate with a £5.75bn contingency in Phase 1 was helpful?

I think that in the end it was the right thing to do. If you remember on the Olympics the government fully funded the contingency and there were many who said we should only fund half of it and that if we ran out of money we would go back to get it. The problem was that you would never have got the money. Doing the P95 budget is an important discipline. You shouldn't spend a P95 budget – it would mean that 95% of things have gone wrong – but there is no point in saying we can do it for P50 or P80 because we need to see what the legislative processes are.

	HS2 funding envelope	Phase One	Phase Two
Phase 1 Infrastructure	£21.4bn	£21.4bn	
Phase 2 Infrastructure	£21.2bn		£21.2bn
Trains	£7.5bn	£3.0bn	£4.5bn
Total	**£50.1bn**	**£24.4bn**	**£25.7bn**





Getting HS2 built: How the line will develop across Phases 1 and 3 according to the latest plans and timelines published with the HS2plus report

So can you really say that the budget "is enough"?

If the legislative process takes three years then all bets are off. And if [the committee] says yes to every change then we'll say what that will cost.

THE RIGHT TEAM TO DEVELOP THE PROJECT

How many staff do you have on the project today and will this increase going forward?

We have around 600 people and a fair degree of agency staff. But we also need to employ more senior staff. We are now recruiting the next key roles and I hope in the next few weeks to secure the level to work under Simon (Kirby) to fill out the capability.

THE KEY PROJECT PRINCIPLES

The first of your five key principles for HS2 is that it stands the test of time. How do you envisage this?

I think the biggest test for the project over time is that it stimulates regeneration. The railway itself will be engineered as efficiently as possible – and remembering that the environmental constraints are considerable we are not going to dumb [the design] down. But the big opportunity will be where it lands and so we have to make the most of the opportunities where it hits the cities. That is the biggest thing to get right. What happened at Kings Cross and St Pancras is a fantastic story. Hard to envisage 20 years ago but now it is very

obvious what can happen. Will that happen in Leeds or Sheffield? I hope so.

In what ways will this project really embrace a future of lower cost asset management?
There are very interesting opportunities around what monitoring equipment can be incorporated into the infrastructure. Remote condition monitoring is an obvious one and it is about bringing existing technology into the rail industry. There are also ways to structure contracts that tie firms into the asset management and we are considering whole life-cost contracts. On HS2 there shouldn't have to be renewals – the scourge of the railways – for 20 years.

BENEFITS IN THE REGIONS

You talk about the need to maximise the value added to local and national economies. How do you ensure that development is stimulated by the project?
Firstly that [development] needs to be locally led. It needs to have a business plan around each station and you need to plan well in advance of the stations being opened. You need to have local leadership but then you also need to have a national body that coordinates input into the regions. The Local Enterprise Partnerships are an obvious way to take the plans forward. But I have met with the Secretary of State for Communities and Local Government to see how we better coordinate the obvious link between planned Local Enterprise Zones and regeneration around railway lines. The opportunity is around not only those stations that are connected to the railway lines but also the other stations that will benefit from increased capacity.

Do you think that local development authorities discussed in the recent Deighton Task Force report will be key to driving local economic boost?
The success of HS2 is really integrally linked to the ability of local authorities to get their acts together. There are many examples around the French High Speed rail lines. Cities that just sat there thinking that good things would just happen them without doing a thing missed out. UK cities need to champion and prepare for HS2 coming now.

In reality, London will always be the big winner from HS2 – does that matter?
There will be benefits to London. HS2 will make commuting easier, bring access to vital housing and international businesses do need to connect to London. But if you can say to someone that you can be in Birmingham in 45 minutes or Manchester in an hour then that is a very different story for the cities. Their cost structure is just dramatically lower – office space costs a third outside London.

Higgins HS2plus report changed the game and switched concentration to regeneration and the cost of indecision.

SPEED AND CAPACITY VERSUS REGENERATION

Do you think that the project is genuinely moving on from the focus on speed and capacity toward regeneration?
It is not obvious in people's minds yet. For example, I know that many residents are concerned about ten years of disruption through construction around Euston and I can understand that. But people forget that there were the same complaints about the Kings Cross and St Pancras development. Now it is a destination. We need to get into people's minds that Euston is now not an attractive place but will be the similar destination that Kings Cross has become.

But speed and capacity remain central?
We need to explain the advantages of linking to the classic rail. We are not building a perfectly pure high speed line in isolation. We are building a rail infrastructure that will accommodate high speed and classic compatible trains.

Are you still pressing forward with the "plug in stations" concept?
Yes. Manchester is well down the track and Birmingham has developed ideas very well. They are getting the developments ready to open when the station opens. Why shouldn't we have stations with commercial developments that open at the same time or even before so that you don't have a station sitting there for years in splendid isolation.

THE CHALLENGE OF DEVELOPING EUSTON

What options are you looking at? What is your current favoured solution?
We now have options A, B and C. A is the existing scheme in the Hybrid Bill which is a new station taking out some of the existing station, rebuilding and lowering and leaving the conventional. Option B is doing that but also demolishing all the superstructure on the existing and C is demolishing the existing and lowering everything down to the same level as the high speed service. So C is the preferred option as a better solution for the community as it gives a completely on grade access through the station and gives easier operation of the station from the customer perspective.

Lowering the tracks is an expensive, complex and disruptive job. Is it really deliverable?
Yes it requires a large hole – but that is what other countries do. There are lots of big holes in London and yes they are disruptive but when you finish you set a piece of infrastructure for 100 years. Like everything we need to do it properly. Euston has to be planned as a major gateway for the city – it is 25 acres of development land. We need a private sector partner and we will have a development competition next year. We will choose the right partner and get on with it. They are already knocking on the door.

You describe the HS1 / HS2 link as an imperfect compromise. Do you think that this sub-optimum idea will ever be realised?
We will do a study on what the options are. All I have said now is that if you do it you must do it properly and justify it – you don't do something that compromises both freight and commuter traffic and is suboptimal.

Keep up to date with the HS2 project progress at www.infrastructure-intelligence.com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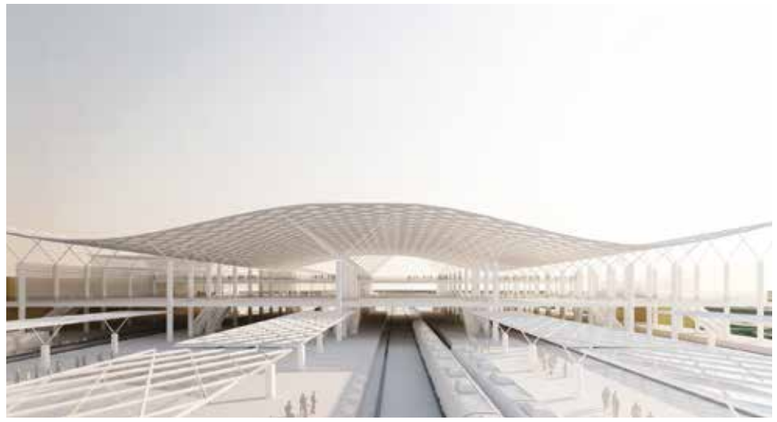

The Euston opportunity

The chance to convert Euston Station from dreary dive to a life enhancing public space will be one of the most exciting possibilities of HS2, says John McAslan director Hiro Aso, architect for the redevelopment of King's Cross. Interview by *Jackie Whitelaw*

Hiro Aso, architect who showed the way at King's Cross.

Clockwise from top left: King's Cross Station Panorama. Copyright Hufton + Crow; Plans for Kosino station in Moscow. Copyright John McAslan + Partners; Anand Vihar, Delhi. Copyright John McAslan & Partners.

Why is Euston such an exciting opportunity?
The station has had a very messy history and I believe HS2 is the once-in-a-lifetime opportunity to re-tell its own story, re-establish a new identity. The fact that the existing 1960s inspired buildings can be demolished gives architects and masterplanners a clarified canvas to work with and evidence from St Pancras and King's Cross means that public expectation will be very high. On balance something really drastic needs to be done. The irony, having worked for years on preserving the Victorian legacy at King's Cross, is that a living and breathing Victorian solution would have been to knock it down and start again! At Euston we have a chance of a properly Victorian approach.

What is the key lesson Euston can learn from King's Cross?
Establish the brand. At King's Cross we had the Victorian legacy and to an extent Harry Potter (laugh). What is it about Euston that is special and specific to the location, what is significant about the local context, how can the new station and associated development enhance that? That means engaging the local community and understanding the area.

What about customer experience?
Customers are getting ever more demanding and will and should expect better than St Pancras and King's Cross. That means re-thinking through what a railway station is and should become. The Victorians innovatively created big volumetric spaces to cope with the technology of steam from the trains so there is an argument that you can technically suppress that space. But then you would not retain the romantic volumetric nature of "the sky within a building". Is that what is wanted? Also, should associated development be dictated by the station or the other way round? What's the balance at Euston? How should passengers experience the space? Does the development become part of the sense of arrival? Whatever is done, we can't repeat what happened last time Euston was flattened. For everyone involved in transport infrastructure it is very, very exciting.

Is there other learning that needs to be incorporated?
We must get the very, very best of learning from London and around the world. In particular the issues of security and commercialisation and how the two can work together. At John McAslan + Partners we are working in a consortium on a three year project for the European Commission – Project Seven: SecureStation – which is looking at all aspects of design and the development of security in transit developments. The end result will be a handbook for clients around the world on how security can be seamlessly integrated into design. A key issue is making sure designers address the issues of congestion and disperse people as much as possible particularly at the crunch spaces like platform access points and interchange tube entrances. Alongside that is understanding the impact of commercialisation, the shops and other outlets that passengers expect as part of the service and striking the right balance with how much can safely be incorporated. I think we have demonstrated at King's Cross that that can be done.

Are London's new station designs opening opportunities for designers around the world?
Yes, definitely. For instance we are about to submit a masterplan for Delhi to the Indian ministry for railways and a key design issue is security. London and Delhi could be said to be polls apart but in fact have shared security interests. We are also working with the city of Moscow on the sixth masterplan we've done for them,which is focusing on transit oriented development. My focus there is modal shift; how do we get people out of cars when the culture is to sit out 2-hour traffic jams in the morning then again in the evening! We also find we are being asked to do a lot of work beyond London at diverse transport land sites, including for example airports on landside developments.

What is the impact likely to be on other station developments in the UK?
Let's just take HS2. The project has raised high expectations for all its stations, but at the same time has to be utterly affordable. Austerity continues. I am particularly excited about the possibilities of associated regeneration effects, for example at Old Oak Common. The original Victorian blueprint was to position stations on the outskirts of London and those termini have now been absorbed into a bigger London. With the inner city approaching capacity, could HS2 be the start of an outer ring of significant London stations?

Anything that current HS2 plans are missing?
Straight back from Easter with a young family, I feel it ought to be possible to make a seamless trip to Paris by being able to check in at Glasgow, Manchester and Liverpool and travel straight there. The travel experience would be so much better. Surely that has to be a given. In all seriousness, breaking the journey as has been suggested and having to use say travelators to get from Euston to St Pancras, that feels counter cultural?

BIM is key to water industry aim of assembly not construction

Collaboration is key to maximising the benefits of asset lifecycle information management in the water sector, writes *Bernadette Ballantyne*

The @one Alliance is producing big savings in carbon and cost on new plant.

The BIM challenge for the water industry is not so much about construction but about managing infrastructure. As a result the acronym ALIM (Asset Lifecycle Information Management) is becoming widely used to describe the digital transition. "People think of BIM being used for 3D models on vertical construction, but for us it is not about a single project," explained Andrew Cowell, engineering director, MWH Treatment Ltd. "It is about taking the concept and applying it across an entire industry."

Cowell co-chaired last month the BIM for the Water Industry conference organised by supplier body British Water and consultant MWH Global along with Richard Coackley, director of energy development at URS. The event highlighted both the challenges and the opportunities facing the sector with one of the biggest advantages being the potential to "move from a piggy bank approach to thinking more about the whole life cost," said Professor David Philps, head of BIM implementation at the Cabinet Office's UK BIM Task Group. In other words considering total expenditure (Totex) from the outset instead of separating spending into capital expenditure (Capex) and operational expenditure (Opex).

> "We develop products for solutions – we don't want to design."
>
> **Dale Evans, director, @one Alliance**

One of the organisations in the industry that has made most progress in terms of using information modelling for its programme is Anglian Water's @one Alliance. The organisation has been Anglian Water's delivery partner for the AMP 4 and AMP 5 programmes and consists of Balfour Beatty Utility Solutions, Barhale, Black & Veatch, Grontmij, Jacobs, MWH and Skanska.

Director Dale Evans told delegates that over the past five years the group has been working on using an information based approach to managing its work programme with a view to obtaining a 30% cost and 50% embodied carbon saving compared to the previous AMP. "Clearly they were very stretching targets. To meet those we needed a different approach. Traditional design and construction was not enough," he said.

This meant that the overall process had to change. "We develop products for solutions – we don't want to design," said Evans. "We want to assemble the solutions, we don't want to construct and then we operate and maintain to deliver a service. This is really product life cycle management."

Products themselves are defined as any part of a programme where there is repeatability or commonality and Evans explained that this strategy come from industries that have already moved down the digital path such as aerospace and manufacturing.

"This is quite a significant culture change for engineers. Our products are intelligent so what you are selecting is a dataset so every product comes with an installation guide, procurement guide and most importantly they come with operation and maintenance data. Our aspiration is to be able to make Totex decisions from the point at which we select a product."

So far the team, which undertakes around £200M of work per annum, have carried out several major projects that have convinced them of the value to be had from this approach. A 15,000 population wastewater treatment plant in Cambridge for example worth £11M was delivered for 20% less cost and 45% less carbon. "The particular challenge for this job was to go from construction to operation in 12 months, they actually did it in less than nine months by maximising the product selection approach."

Another scheme, a £9M treatment works in Norfolk highlighted the impact that the information based working environment has had on the overall process. By digitally mapping out the scheme using GIS and the standard products the team could see that the access ways and other safety features would be in place. "They could prove it was safe to operate before they had done the design and it becomes compellingly obvious, why would you do 'safe to operate' at the end?"

Evans says that the process has been evolving for around five years and that by the end of this AMP period the catalogue will have around 200 products but he points out that it remains a work in progress. "Opportunities open up this evolves so I am not sure what the product catalogue is going to look like in 5 years time."

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Highway to prosperity

Local government can deliver major projects – Doncaster has the evidence. *Jackie Whitelaw* reports on a new road for the town funded from the Regional Growth Fund.

In the evening, in some parts of Doncaster, you can hear lions roaring. There are three prides at the Yorkshire Wildlife Park close to the town and after only five years in operation the attraction is the second most popular in the county (after York Minster). Nearly half a million people enjoyed the experience last year.

This is relevant because the Park's success, along with that of Doncaster's relatively new Robin Hood International Airport close by, are crucial to the economic revival of the whole borough.

And underpinning that revival is a road scheme that will connect visitors, tourists and travellers through the southern part of the borough, with the UK motorway network, opening up sites for redevelopment and job creation along the way.

The Finningley and Rossington Regeneration Route Scheme (FARRRS) links Junction 3 of the M18 to the south of the town with the A638 – the old Great North Road – to the east. Drive a kilometre or so south and you are at the airport, a few more and you reach the wildlife park.

> "If you can create the demand with what you can afford, unlock the development and then move on to the next stage that is often the most practical option."

The lions, it has to be said, are late to the party in terms of the reason for this particular transport project. The £56M, 4km long scheme was conceived with idea of making the most of Doncaster's position at the heart of the country's motorway and train network and building on the creation of the airport as a catalyst to attract new employers to the area.

"All of our prosperity and vitality was based around industry, particularly coal and rail," says head of service, transport and major projects for Doncaster Council Neil Firth. "In the 1980s, 90s and the early 2000s the town suffered serious economic decline, high unemployment and deprivation. At one point 11 of our 20 wards were in the bottom 10% of the deprivation indices.

"We had to find ways to dig ourselves out of the economic spiral of decline. So we looked at what we did have going for us. We are in the centre of the country, dissected by the strategic road network in that the A1(M) runs north to south through Doncaster and the M18 east to west. The East Coast Main Line (ECML) means we're only 88 minutes from London by train. And in 2005 we opened the international airport. That gave us significant opportunities to build on. We are a good place for businesses to base themselves."

Restrictions on airport growth until access was improved focused attention on a route back to the M18 around Rossington with the added benefit that it would unlock opportunity for development and improve transport options for the village. "Rossington is cut in half by the ECML and at peak times the level crossing can be closed for longer than it is open, waiting for up to six trains to pass each time," explains Mott MacDonald project manager Nigel Morley.

The original plan for FARRRS back in 2008 was that it would be a Department for Transport (DfT) funded scheme but with the recession and the election everything changed. And that is where Doncaster got really clever.

"Everything was put on hold in 2010," says Firth. "But we didn't just stop." There are two major regeneration sites opened up by the project – one is the six million square foot, £400M, inland freight port backed by Verdion (iPort) and the Healthcare of Ontario Pension Plan; the other is the redevelopment of Rossington Colliery including 1,200 new homes. "We were negotiating with developers for funding contributions and that carried on."

The Council also determinedly acquired funding from the European Development Fund and DfT towards the £32M upgrading of White Rose Way which links central Doncaster to J3 of the M18 via a new bridge over the ECML. This was vital to allow FARRRS to go ahead. The 1.9km dualling scheme, completed in 2013, in particular stopped queues of traffic backing up at the M18 junction, a congestion and safety risk which had put all redevelopment on the south side of Doncaster at risk.

"For FARRRS though, at the end of 2010, we got sight of the Regional Growth Fund," Firth says. "It was linked to jobs and it required public/private sector joint ventures – we had that. Initially we looked at whether we could augment DfT funding with RGF money but were told we couldn't. So we took a bold decision and resubmitted the scheme as an RGF project through the Department for Business Innovation & Skills, presenting it as regeneration project with the highway as the means of unlocking development."

"And it does," Morley says. "The Council estimates that the potential job creation opportunities with White Rose Way and FARRRS is 20,000, with the inland port creating 5,000 on its own. With the associated developments the scheme unlocks investment of £1.2bn. For the RGF bid we established that in the first five years after completion of the road 1,232 jobs would be created."

A bright, positive submission, complete with a brochure packed with support from local businesses, and worked up in concert by the Council and Mott MacDonald's experts in design, engineering, masterplanning and airport development helped get the deal through.

So too did some concerted value engineering to get the original scheme cost of £100M substantially reduced.

The team had a good look at whether the road needed to be dual carriageway all the way to start with, particularly in light of the fact that requirement for and cost of fill was going to be vast as the route needed to be constructed largely on embankment – the M18 junction was elevated, the road then needed to go over the ECML and so on. The Council and Mott MacDonald created a new, very sophisticated transport model to predict future traffic loads and the results allowed them to trim down the scheme while satisfying the developers that the road would have enough capacity.

Construction of White Rose Way (in red) has been followed by the FARRRS road (in green), opening up the south side of Doncaster to new development as well as improving access to the Robin Hood Airport via existing A638 (green dotted line).

FARRS funding

Regional Growth Fund	£18M
Doncaster MBC	£4M
Developer funding	£34M

"The model showed we had to dual the route at the start from the M18 to the inland port but after that we could reduce it to single carriageway," Morley explains. "That cut the fill from 1.8 million cubic metres (more than enough to fill Wembley stadium) to 800,000 million cubic metres.

"And," says Firth "we came to an arrangement with the owners of the former colliery site to take the fill from them as part of their developer contribution, cutting purchase and transport costs by £8M."

On the original plans the FARRRS scheme would have carried on all the way to a new airport access. The decision was also taken to stop the scheme at the A638 and to use the existing highway network to make that connection.

Local support for the road has been high, with few objections to the planning application, while compulsory purchase orders were all negotiated out so no public inquiry was required. Construction of the job by Carillion is now underway with completion of access to iPort expected by October this year and the whole job finishing in January 2016.

Doncaster Council does have an aspiration to continue the FARRRS route all the way to the airport and that extension is now part of the Sheffield City Region Local Enterprise Partnership register of infrastructure projects, with an outline business case using devolved transport funding already in place.

"Sometimes trying to do it all in one go tips the balance of what is affordable," says Doncaster Council's Neil Firth.

"If you can create the demand with what you can afford, unlock the development and then move on to the next stage that is often the most practical option."

"We think we are showing here that local authorities can play a successful role in leading delivery of major projects," Firth says. "We can deliver the funding and can convince the private sector to trust and invest in us.

"But councils have to recognise that they don't have all the resources they need in house, and they can't carry them in house. They need to be cognisant of that and augment resources with external consultants to help with the specialisms.

"Delivering major projects for the benefit of local communities isn't about whether private or public sector is best. It is about the combination of the best of both."

Neil Firth and Nigel Morley - proving the benefits of public/private collaboration.

Flood alleviation: it's a long game

In just under a year Scotland's biggest investment in flood protection – the £180M Moray Flood Alleviation Scheme – will be complete after 15 years of work. Steven Trewhella, Royal HaskoningDHV business case manager from the start, shares the key lessons. Report by *Jackie Whitelaw*

In July 1997 the region of Moray in Scotland was devastated by floods. Hundreds of people were evacuated, homes and business premises ruined, the rail line from Aberdeen to Inverness was closed and the A96 was flooded.

The damage kick started a long term programme to protect the area far into the future. Projects have been undertaken in Elgin, Rothes, Forres and Llanbryde and the job is a pioneering example of how working with the community and using intelligent investment can create a sustainable legacy for generations to come.

The programme has involved designs to make room for the river, including demolition and rebuilding of bridges to open up water courses, construction of a dam for a flood water storage scheme and relocation of businesses and homes to create blue/green flood plain all with the co-operation of local people.

Royal HaskoningDHV has been working with client The Moray Council to establish the solutions to future flood risk along with principal contractor Morrison Construction and cost consultant EC Harris.

The consultant's business unit director for rivers, deltas and coasts is Steven Trewhella. As business case manager for the Moray Flood Alleviation Scheme he has been involved with the project throughout its life span. What has he learned throughout that time to share with other flood alleviation infrastructure schemes?

Steven's list

1 The single biggest revelation to me has been the importance of client continuity and leadership. The council took the decision to invest in a major capital programme over a 15 year time frame and stuck with it. Dave Gowans and Peter Haslam from Moray Council have been with the project from the start and have helped it through various legal and political changes.

2 Following on from number one is the value of community engagement. There are 90,000 people in Moray and 10,000 directly affected by flooding which means the other 80,000 are contributing to the cost of the scheme and should be involved in determining the solution. Everyone needs to be engaged with the benefits the alleviation schemes bring. And by involving local influencers you can do things that would not have been achievable without them. For instance in Rothes we wanted to knock down two properties to widen the flood channel. It would have been hard for me to bang on the doors of people's homes and say they had to move to benefit the wider community. But the local councillor could, and did. We removed the properties and built for the residents two new ones in the town and they love them. On another occasion we were struggling to find flood storage land – we had really exhausted all the possibilities – but because the local community had bought into the works, a farmer came forward and said he was retiring and we could have his land for the scheme. It has been used in anger four times since.

3 Being part of a big Anglo-Dutch group I have learned from my colleagues in the Netherlands that there is a lot more we can do in the UK in terms of spatial planning for flood alleviation, visualising the possibilities of connecting town and river with green/blue space to add to the urban environment in a good way.

4 The UK should promote its flooding expertise far more widely than it does. There is £40bn to £60bn to be spent on resilient infrastructure in the years ahead around the world and rather than cutting back on skills, government should be supporting us to sell UK expertise internationally, as the Netherlands does.

5 There is an excellent link between good health and safety practice and finding solutions to tricky construction problems. Replacing the main road bridge in Rothes was an almost insurmountable issue – the site was so constrained by buildings and traffic. But we hired an old quarry and set out the town round the bridge in cones to help our plant drivers understand the difficulties. They kept asking if we could move one cone and we

Chapelton Dam was opened in August 2009, a week later it saved hundreds of properties from flooding when 90mm of rain fell in 30 hours.

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said 'no, that's the police station'. It helped us optimise the design and we realigned the bridge slightly to make the works possible.

6 The motto for the team was 'learn from the past, design for the future'. The whole area was awash in 1829 and then 1997 was just as bad but exacerbated by all the development over the previous 160 years. Our designs had to be able to stand up to another big event assuming further development. But we wanted the flood defence to be integrated into the community – solutions shouldn't just be functional, they should be desirable and an asset for the future. Sustrans is funding a new cycle route along our flood defences for instance. A little bit of lighting in Elgin as part of that scheme sets off the cathedral and creates a stronger sense of place.

7 Engineers are not always very good at this, but we need to have a voice if we want the public to be confident in our solutions. We can't shine in silence. If we want private investors to be confident about investing in public projects we have to be big enough to stand up and say what we think.

8 I can see BIM is going to have a major impact going forward. One of the things about working on a project over 15 years with hundreds of different people is you realise the importance of establishing a single source of truth. We may not have a BIM legacy but we do have design solutions that will proved 80% of what anyone would ever want to do.

9 Managing risk doesn't mean avoiding risk. At Elgin we had a massive issue with 300,000m³ of contaminated land on route of a diversion of the Tyock Burn and we worked with the contractor to establish an earthworks strategy that avoided taking it to landfill through treating it on site and reusing it. We saved £5M that way.

10 Flood risk management is a judgment based industry; it only works because of the knowledge, judgment and passion of the people involved. We have to defend those skills for the country's future protection.

Steven Trewhella, Royal HaskoningDHV business case manager

Clockwise from top left; Green Street fishpass, Elgin; Glen Grant Distillery flood wall and footbridge, Rothes; the Rothes scheme incorporates many environmental enhancements, such as this badger bridge; Chapelton Dam features an innovative baffled crump weir control structure; Broom of Moy Footbridge during a spate, Burn of Mosset, Forres; Mansion House, Elgin.

Still underway

The largest of the Moray schemes is an £86M project to alleviate flooding in Elgin. Works are being carried out along 9km of the River Lossie, creating a conveyance corridor through the town and opening up the existing flood plain downstream. Works have involved replacing three bridges to open up the water course along with diverting the Tyock Burn. The scheme is due to complete in spring 2015. At Forres, in a £45M project, a 5km long embankment up to 3m high has been set back from the river, together with extensive works close to the river channel to create space for higher flows. Two roads are being raised to pass over the embankment and a 66 year old footbridge extended by 90m to travel over the lowered river bend. This job will finish at the end of this year.

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Power players of the West

The Severn Estuary and Bristol Channel could be a showcase for low carbon energy production. *David Fowler* finds out about tidal, marine and nuclear plans and starts his report with an update on Hinkly Point C.

Hinkley Point C would sit next to Hinkley Point B on the Somerset coast with the intention for it to be generating electricity just as the B station nears the end of its life

April's report by the UN Intergovernmental Panel on Climate Change stressed again the urgency of developing low carbon sources of energy to replace dependence on fossil fuels.

Of the four new nuclear stations proposed for the UK – Hinkley Point C, Sizewell C, Wylfa and Sellafield (Moorside) – Hinkley Point C in Somerset is the most advanced. It has design approval from the UK regulator, a nuclear site licence and planning permission for construction. Last October, after lengthy negotiations, promoter EDF Energy finalised a deal with the UK government which would guarantee a minimum price it receives for the electricity generated, as well as giving it access to Treasury-guaranteed debt. The remaining – though significant – hurdle for the project to clear is a European Commission investigation into whether the agreement amounts to illegal state aid.

Meanwhile Tidal Lagoon Power applied in February for a Development Consent Order to create an 11.5km2 lagoon in Swansea Bay, with generating capacity of 240MW. The scheme is said to have less environmental impact than the much-debated Severn barrage and could be in operation by 2018. And Kepler Energy, an Oxford University spin-off, recently won a Shell Springboard award which provided £30,000 for a detailed study of an installation of its revolutionary turbines in the Severn estuary.

The £16bn Hinkley Point C plant will use two reactors of the European Pressurised Reactor design, generating a total of 3.2MW. They will be the fifth and sixth in the world: one is under construction in Finland one in France – where in both cases there have been delays in construction – and two in China.

The aim of the government's deal with EDF was to remove the last remaining doubts of investors and kick-start construction with the intention that the plant would be commissioned and generating electricity by 2023. This is around the time the oldest advanced gas cooled reactors, Hinkley Point B and Hunterston, will be nearing the end of their lives.

Investors, subject to a final investment decision scheduled for July (though this may be at risk from the European inqury), are: EDF Group (with a 45-50% stake); Areva (10%); China General Nuclear Corporation and China National Nuclear Corporation (30-40%). Other interested parties may take a stake of up to 15%.

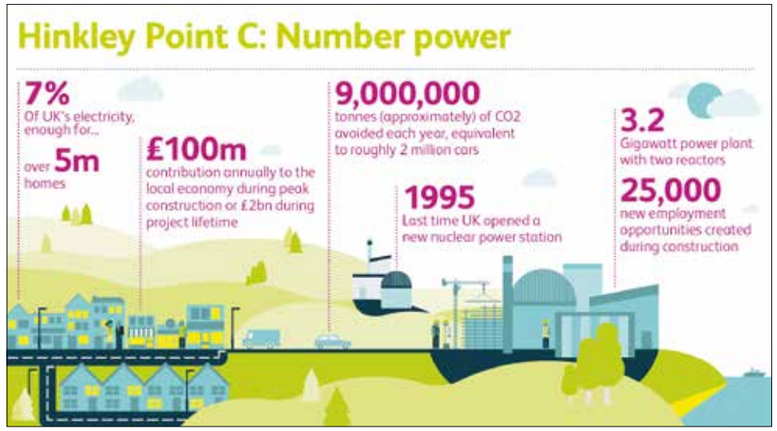
Areva has been integral in the construction of all the existing EPR projects and it was announced alongside the agreement with the Government last October that it had won one of four major contracts on the project, for nuclear steam supply equipment, instrumentation and control, and fuel. Alstom is to supply two 1,750MW steam turbines, together with other non-nuclear construction work..

A joint venture of Bouygues and Laing O'Rourke has won the main civil engineering contract, valued at over £2bn. Costain has been awarded the contract for cooling water outfalls, consisting of three marine tunnels of 7m diameter and totalling around 11km in length. Both contractors plan to begin work as soon as possible after the final investment decision. A joint venture of Kier and BAM has awarded the contract for site preparation works, worth over £100m.

Hinkley and the projects that follow could be good news for the UK contractors. EDF has said that 57% of Hinkley C's construction value could be spent in the UK and the other would-be developers of nuclear power plants have made similar commitments. Some observers have questioned whether this will be achievable, given that the UK has no recent experience of building nuclear power stations. However, Professor Stephen Thomas, professor of energy policy at the University of Greenwich Business School, said "The big items of equipment tend to make up a relatively small proportion of the overall cost. The nuclear steam supply system could be 30% of the total. So it's hard not to get to 50% of local content: there is a lot of steel and concrete, non-specialist civil engineering and electrical engineering work which is easy to source locally."

All this, however, depends on the outcome of the European Commission inquiry, which could still undermine the whole programme. The inquiry, launched in December, will decide whether the agreement between the Government and EDF constitutes illegal state aid.

Officially EDF says the project timetable remains unchanged. But with the commission's conclusion not expected until summer or autumn, there is a strong likelihood that the deadline of July this year by which EDF and its partners planned to take the final investment decision on the project will be missed.



Hinkley Point C would be the first nuclear plant built in the UK for 20 years.

"The UK and French governments have said they will work together in an effort to persuade the European Commission that the agreement is within the rules. The consequences if they fail could be considerable."

The Hinkley contract is the first example of a contract for difference, effectively a feed-in tariff, being introduced as part of the Government's energy market reforms. It sets a "strike price" for electricity generated by Hinkley Point C of £92.50/MWh (reduced by £3/MWh if Sizewell C goes ahead). If the wholesale electricity price is below this price, the generator receives a top-up payment. If wholesale prices rise above the strike price, the generator reimburses the Government.

The contract will last for 35 years from the date of commissioning of the plant, with the strike price indexed to inflation via the consumer price index. The project will also be protected from unforeseen changes in the law or government policy. EDF Group and its partners will bear the risk of constructing the power station to budget and schedule. The Government and EDF claim the agreement equates to a rate of return of around 10%.

Though the Government insists the deal is "fair and balanced", critics argue it is too generous. In a highly critical 70-page letter to the UK government in December explaining the reasoning behind its decision to launch the state aid inquiry, the European Commission said the structure of the CfD had "the potential for distorting competitive conditions". It added: "If the CfD is provided together with a credit guarantee, in addition to a compensation for political risk and the indexation of the cash flows to the consumer price index, as the UK intends to do, it can be safely concluded that the activity undertaken by the beneficiary is not far from being risk-free at the level of operations."

EDF and the Government say that the investigation was expected, and that it is progressing satisfactorily. The UK and French governments have said they will work together in an effort to persuade the commission that the agreement is within the rules. The consequences if they fail could be considerable.

The University of Greenwich's Prof Thomas says: "The commission's initial view appeared very negative. It could be hard to withdraw from that position." On past experience, he added, the commission was more likely to impose conditions rather than reject the contract outright – for example it could require a shorter contract or set conditions on the loan guarantee. "It might limit the contract to 20 years, for example," he said. "But if it did that, the project might not be financeable." That could spell the end of the entire nuclear programme: "If Hinkley doesn't get through, nothing will get through,' he said.

Swansea's tidal lagoon would be UK's first

A year from now construction of the UK's first tidal lagoon power scheme could be under way in Swansea Bay.

Three years after that the scheme could be generating 320MW – the equivalent of around 160 typical onshore wind turbines and enough to supply 9% of the electricity needs of Wales.

The scheme's promoter applied for development consent in February this year; it has gone out to tender for the main construction contracts; and a number of financial backers are closely scrutinising the project, which appears to possess many of the benefits of a Severn barrage without its environmental drawbacks.

Mark Shorrock, chief executive of the project's promoter and developer, Tidal Lagoon (Swansea Bay) plc, believes the lagoon is "an idea whose time has come".

In no previous era could such a scheme have attracted backing, he says. Even when climate change began to rise up society's priorities, the first recourse was to more established technology such as wind farms.

Now, however, it is possible to generate the risk capital to get such a scheme off the ground. "20,000MW of capacity is going off line in the coming years, most of it high carbon content. We're an island nation with the second highest tidal range in the world. It's obvious that we should be harnessing something that's low risk, but we needed capital that was prepared to take a risk, to take this first one through all the hoops we've been through over the last three years. We will have spent £20m by the time the project reaches financial close," says Shorrock.

Those three years have been spent producing "a well thought-through" civil, electrical and mechanical package that can be costed accurately by prospective contractors and built for a price that can generate the right return for investors, says Shorrock. Key partners include Atkins on front end engineering and design. Costain is engaged on early contractor involvement on civils. Van Oord undertook initial breakwater design, which was tested by HR Walllingford. ABP Marine Environmental Research (ABPmer) was responsible for coastal process modelling.

The final proposal, whose cost is estimated at £925M, is to construct a 9.5km U-shaped breakwater within Swansea Bay, enclosing an area of 11km² of water.

Power would be generated by 16 turbines linked to 20MW-rated generators – essentially the same technology as used at the 47-year old La Rance tidal power scheme in France, though one aspect of the design work undertaken for the lagoon project has been the use of computational fluid dynamics to squeeze an extra few percentage points in efficiency from the turbines.

The next year will be crucial for the project. Tendering on the two main contract packages – one civil, one electrical and mechanical – is under way, with contract award expected by the end of summer.

In parallel, since February the scheme haas been going through the planning process. The consultation period over the application is now closed and the project now enters the 4-6 month examination period. A recommendation to the secretary of state for energy and climate change will be made before Christmas with a decision in the first quarter of next year, allowing construction to start in the second quarter. The first electricity would be generated in 2018.

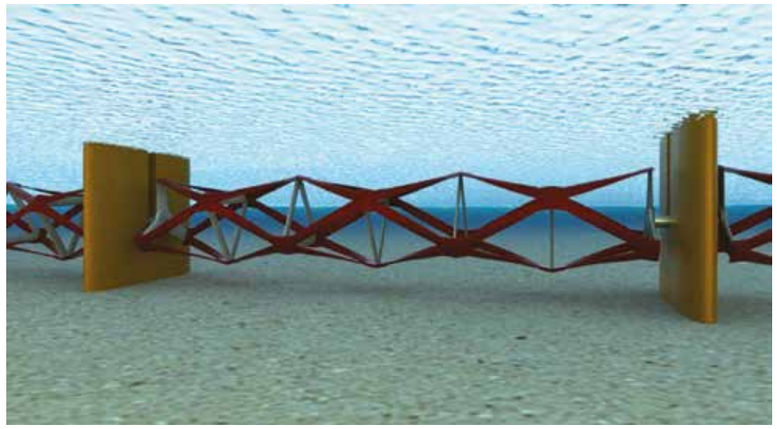
With the project having a 120-year design life, it has an ideal cash flow profile for pension funds, providers of savings such as index-linked bonds, and the like. A number of large banks, pension funds and infrastructure funds are currently carrying out due diligence with a view to investing in the project.

Construction is straightforward, involving building a large cofferdam in which the turbine house will be built in dry conditions. The breakwater will have a core formed of sand-filled Geotubes (made by composites/geotextiles firm TenCate) protected by rock armour.

The project's environmental impact statement makes up around 4,500 pages of the 5,000-page application for development consent. Shorrock says the project will have "no discernible effect" on coastal processes; mortality of fish will be less than 1%. There will be an effect on marine ecology due to the loss of sand and gravel which will be excavated from within the lagoon; however the breakwater will be a good habitat for bivalve molluscs and lobsters. There will be an improvement in water quality in Swansea Bay because the project will have to take steps to deal with the main sewer outfall from Swansea, which after heavy rainfall discharges untreated sewage into the sea.

On prices, Shorrock says the project will be viable at an electricity strike price of £155-160/MWh – about the level of offshore wind. For subsequent lagoons, economies of scale will apply: doubling the length of the breakwater wall could increase the area of impounded water by a factor of five, but a project on this scale was considered too big for the first venture. This would bring the price of electricity generated down to a level comparable with nuclear.

The Swansea tidal lagoon would create new amenity for the city, good habitat for lobsters and improve water quality in Swansea Bay, the promoters say.



Kepler Energy's tidal fence has won a £30,000 Shell Springboard award to fund research to help develop the business case.

Tidal fence will harvest energy from flow

If the ambitions of a second renewable energy developer are achieved, the proposed tidal lagoon could soon be joined by a "tidal fence".

Kepler Energy, a spinout from Oxford University, recently won a £30,000 Shell Springboard award which will allow it to take development of its new transverse horizontal axis turbine to the next stage.

The "second generation" turbine generates electricity from the flow of tidal currents and has a number of unique features which give it an advantage over a conventional axial flow turbine (that is, like a wind turbine mounted on the sea bed) for several reasons. First, it presents a rectangular shape to the flow, providing a greater effective area for generating. Second, its efficiency is improved by the blocking effect on the flow – it behaves like a weir on the sea bed, effectively producing a head of water – which extracts potential energy as well as kinetic energy. Finally, the patented turbine rotor, which in appearance slightly resembles the cutting cylinder of a giant lawn mower, is designed as a triangulated truss and so is self-supporting, spanning between bearings at each end.

"Only one other company in the world is developing a similar transverse horizontal axis turbine," says Kepler Energy commercial director Peter Dixon, "but that is limited in size due to not using a stressed truss and needs a large supporting structure, which leads to parasitic losses."

It is envisaged that in practical installations, pairs of rotors, each 60m long and 10m in diameter, would be combined with a generator in a single 130m long unit. Each unit would develop around 4.4-5.3MW at flow velocities of 2-2.5m/s. "In the same space you could put 10 axial flow turbines but there would have to be a generator and control set for each, mounted integrally with the turbine underwater. We would have a single generator with all the electrical equipment in a waterproof column, in the dry," says Dixon.

The turbines are optimised for a water velocity of 2-2.5m/s, lower than other types of turbine but more typical of flows in coastal waters worldwide. Apart from the Severn Estuary/Bristol Channel, suitable locations exist for example south of the Isle of Wight and off East Anglia, while worldwide, much of the coastlines of Korea and China have the right characteristics.

Kepler's plan is to build turbine units in long lengths – hence the description "fence". In the Bristol Channel north of Minehead a fence around 14km long, generating over 600MW, could be constructed without getting into too deep water or reaching as far as the shipping lanes.

The Shell Springboard award will fund additional research, to be led by Professor Guy Houlsby, head of Oxford University Department of Engineering Science and Kepler Energy technical director. The research programme is expected to last around six months, with results released in phases. "We expect to have something to say very rapidly on one fence in isolation," says Dixon. Overall the research should allow a robust business case to be developed. How soon could the project progress to construction?

"As with all big infrastructure projects it depends on financing," Dixon says; however, given this were available, he adds: "We would be wanting to get under way in the autumn with the first steps of gaining consents."

Dixon's ambition is for construction to get under way in 2017 or 2018. Initially a demonstrator, capable of generating up to 30MW, would be built. Under the the DECC's contracts for difference regime, tidal stream projects up to this capacity qualify for an electricity strike price of £305/MWh, after which the price drops to the level of offshore wind power (£140/MWh in 2018). Construction is relatively straightforward and the environment in the Bristol Channel is relatively benign, compared with true offshore construction.

Dixon points out that the price of electricity is currently kept artificially low by old coal generating plant, but in ten years' time when most of this is no longer generating a price of £100/MWh will be the norm for most forms of new generation. He says: "We would be confident that we can get close to the cost/MWh of nuclear and certainly be competitive with offshore wind."

Middle East: managers in demand

As projects grow in size and complexity in the Middle East the market is adapting to the new requirements, says *Bernadette Ballantyne*

There have been significant changes in the Middle East since the construction boom of 2006 to 2008 where real estate development drove the construction sector to a peak. This time the market has much more sustainable drivers – transport and infrastructure.

"These are mega projects that stand out not only in the region but stand out globally," says Steve Kay of Bechtel, currently project director for King Abdullah Project for Wa'ad Al Shamal City Development in the north of Saudi Arabia and formerly programme manager for Khalifa Port and Industrial Zone in Abu Dhabi, UAE.

Kay points to the enormous Riyadh Metro, plans for Dubai Expo 2020, and the stadiums for Qatar 2022. "They all require an expertise that is at the top end of what we deliver as an industry."

Riyadh metro for example is perhaps the most ambitious metro project ever attempted. Six lines will be constructed simultaneously over five years through contracts worth over £13bn. These were awarded to three consortia, including one led by Bechtel, in July 2013. Doha metro too is now underway with the entire network being built at once, while at the same time Abu Dhabi, Kuwait, Jeddah, Medina and other major cities plan metro schemes too.

For the project sponsors this creates a management challenge the likes of which many organisations have never really encountered. As a result clients are increasingly turning to the private sector to support the management of these programmes at a high level.

The format for this varies. Some are comfortable with undertaking the role internally, seeking consultancy support simply to increase the numbers on the management team. Conversely some developers and infrastructure delivery bodies seek to outsource all management activities.

"There is no right or wrong way-it is often a tailor made solution," says Kay who notes that there are some specific considerations that must be given to

Steve Kay, Bechtel project director

"They all require an expertise that is at the top end of what we deliver as an industry."

projects in the region. "Government structures are developing fast and the programme often has to change to meet those rapid developments. You can't stay still, at a programme level it often looks very different when you have finished to how you started."

From a client perspective realisation of the benefits of using an external programme manager is increasing thanks to the success of some pathfinder schemes. Abu Dhabi Sewerage Services Company (ADSSC), for example used the programme management approach on its 41km deep sewer tunnel bringing in CH2M Hill to manage the programme. The AED 6bn (£1bn) scheme involves three major tunnelling contracts, a pumping station contract and two major packages for the 43km of connecting pipework needed to transfer flows into the new tunnel. The first two contracts are now complete with the others ongoing.

"One of the challenges that we had was convincing people that this was not an extra cost, that what it would bring to the contract would save us money," explains Alan Thomson, managing director at ADSSC. "We brought the first two contracts in under budget which is a sign in itself that the programme management function was very successful for us."

This is welcome news for other clients looking to take the same approach. "The cost of using a programme manager is often dramatically outweighed by the savings created," says Tim Evans, Middle East development director of consultant Mott MacDonald. On the management side the firm is particularly active in the oil and gas sector and says that clients here are among the most advanced when it comes to managing their project portfolios. Evans reports that these clients tend to use cost reimbursable forms of contract based on schedules of rates and an agreed organisational structure. This was also the approach taken by ADSSC which reports that it built up a lot of trust between the parties.

Other clients prefer to engage their managers under a lump sum arrangement, which can be attractive if the scope of work is clearly defined. The challenge is that this is not always the case with some firms asking for prices to be fixed before a lot of the key decisions are made about how the project is procured and how long it might take. What is more, that tender is sent out to a large number of bidders making for a highly competitive environment based on the acceptance of risk by the management company. This is something that firms report has been on the increase in the past 12-18 months.

At the same time the field of consultants has been getting smaller with consolidation being another side effect of the credit crisis.

"You see merger and acquisition activities for firms in engineering or construction who are trying to add expertise in planning and programme management or asset operation. Ultimately that has created some larger companies that have a broader range of disciplines and that has naturally increased competition for the bigger projects or programmes," observes Kay.

"It has strengthened those companies skills sets and helped to give a stronger voice to the industry to explain what we do. Instead of a large number of small delivery companies there are more companies out there that can deliver total services and that helps the industry and increases competition."

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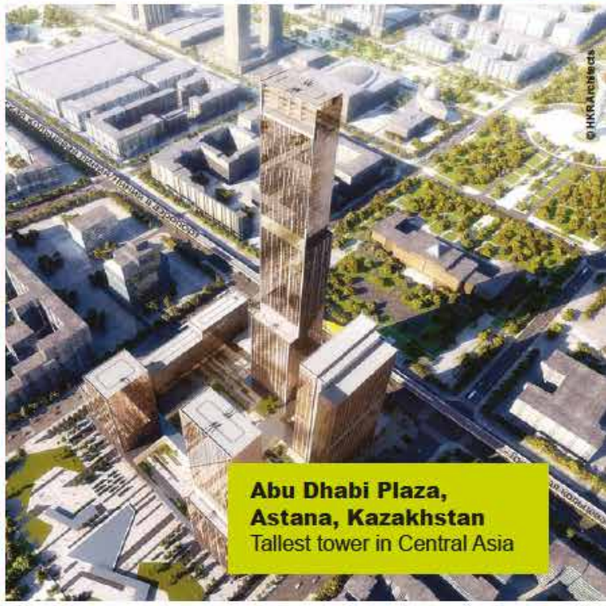

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ACE membership growth underlines new confidence in the industry

The Association for Consultancy and Engineering saw membership grow in April, underlining the current increase in confidence in the industry.

New members firms included Capita, Turner and Townsend and the Sweet Group, all major players in the UK infrastructure programme and benefitting from the most ambitious investment by the UK government in decades.

Alongside these new full member firms, ACE has also formed its first Strategic Partnership with CH2M HILL and the Thames Tideway Tunnel project to help provide greater focus on increasing quality, delivering certainty and critically, to support the wider economic, social and environmental goals of this important infrastructure project.

The increase in support for ACE is driven from a desire across the consultancy and engineering sectors to understand how infrastructure funding will be released and how it will influence the shape and growth of the future economy. ACE members know that these opportunities should not be wasted. The next few years will see decisions made that will affect all those working in the construction industry.

ACE's leading position within the construction industry, through groups like the National Infrastructure Plan Strategic Engagement Forum, enables it to engage in dialogue with the very heart of government to make the case for infrastructure and highlight challenges and suggest solutions.

It will continue to work to represent the interests of al member firms nationally, regionally and locally to ensure the UK has the infrastructure it needs to compete in the 21st century.

Opportunity for UK-China Relationship in the heart of Africa

There is a growing realisation between political and corporate leaders that a mutually beneficial strategic relationship between the UK, China and Africa could be the solution to developing much needed infrastructure investment in Africa, *writes ACE chief executive Nelson Ogunshakin*.

Not much happens these days in Africa without the involvement of China in some way. The over-arching approach adopted by Chinese companies is to finance and construct infrastructure projects in a strategic pursuit of natural resources acquisition.

However, the recent clamour by Chinese corporate leaders for better transparency, re-balancing of their investment portfolio, and the need to raise investment capital from the international market has resulted in more flow of Chinese investment into the UK, through share ownership of UK companies, and major infrastructure projects. This is evidenced by recent share ownership in UK registered Regulatory Assets owners, and investment commitment in SPVs created to deliver projects listed in the UK National Infrastructure Plans (NIP).

It is highly plausible to assume this growing Chinese interest in the UK has resulted from the renewal of cordial relationship between British and Chinese Governments, which has translated into growing Memoranda of Understanding (MoUs) signed at Government, corporate and institutional levels.

Evidence also suggests growing numbers of African leaders are becoming increasingly concerned about the long-term sustainability of their Chinese relationship. As a result, most African countries are keen to welcome the return of British companies to Africa, for the obvious reasons; shared English language, legal system, ethical practice, robust standards, etc. Similarly, the Chinese are also becoming aware that their current level of funding cannot be sustained and western finance will be needed to support their expansion in Africa.

While the flow of Chinese investment funds to the UK is good for business, the real challenge remains as to what is the best dual entry strategy to secure successful position in the UK and also maintain position in Africa?

This emerging realisation is leading to calls for strategic partnerships between Chinese contractors and British professional consultants and contractors to provide the bankable project development expertise for PFI; the feasibility studies, robust design standards, construction and contract management necessary to meet international project finance institutions' lending requirements.

To overcome the challenges associated with regulatory and compliance process in the UK, one can easily predict the next step for Chinese investors will be direct acquision of UK supply chain businesses – professional consultancy and engineering firms and major contracting organisations – in order to extract revenue across the UK value chain.

The UK infrastructure industry should be under no illusion. The story is not 'the Chinese are coming.' The reality is that they are already here. This is not the time to stand by and observe – it is time to bite the bullet and be proactive.

There is ample scope for a joint UK, Africa and Chinese relationship to release equity investment in major infrastructure projects and help address some of the World Bank Millennium Development Goals for Africa.

The ACE, Department for International Development (DIFD), Institution of Civil Engineers (ICE), UKTI, BSi and major Investment Institutions are keen to promote this burgeoning UK, African and Chinese tripartite arrangement.

As we have successfully engaged the UK Treasury and Infrastructure UK (IUK) under the umbrella of NIPSEF, ACE will be prepared to play a strategic key role in delivering this next particular objective for UK Plc.

A view from the Gulf: we'll all manage resources differently this time

Abu Dhabi by Shenli Leong, Creative Commons via Flickr

Consultants are planning resources more carefully as the Middle East market expands, says Tom Bower.

The Middle East market has matured but the huge portfolio of work underway means that challenges remain. Interview with ACE Middle East Group secretary Tom Bower.

The past 12 months in particular have seen contract awards accelerate in markets such as Saudi Arabia, Qatar and the UAE. "The world economy is also starting to look a lot better and what that will mean locally is a lot of pressure on resources," says Bower who is managing director at consultant WSP.

Despite this he is not expecting to do battle over people or pricing. "We think that this will drive more use of technology because we don't want to get into a price battle to get people here, we can actually move work to where they are."

This is one of several lessons that the industry learned from the earlier boom which ran from 2006 to 2008. Ramping up too quickly in response to soaring workloads left many firms overexposed and overstaffed when the market, particularly in the UAE, slumped in 2009 and 2010. Bower says that a legacy from this period is that consultants like WSP are now approaching things in a different way.

"You don't need to put 500 people in Qatar to be working on projects such as the local roads & drainage programme, there are more sustainable ways of doing things," says Bower explaining that having 20 people engaged on a call all viewing the same screen is now part of how business works.

This enables WSP to have a team of 70 in Qatar with supporting expertise in the UAE and India. "Clients are becoming more mature and recognising that you don't necessarily get value from lots of people being here. Engaging with quality consultants means they get value from the product not just lots of people."

Although today's market is more mature there are still challenges for firms including terms and conditions of contracts. "Some clients come up with very complex contracts that perhaps try and do a bit too much rather than working in the spirit of collaboration that we see in other markets," says Bower. He also notes that getting paid is not always easy with different markets having different challenges.

At the same time inflation is expected to begin creeping in to the industry with analysts predicting this could once again reach double figures in the not too distant future.

Despite the challenges Bower is excited about the regional potential. He points to some astonishing projects such as Qatar's iconic Sharq Crossing, set to traverse Doha Bay with a series of bridges and tunnels and Dubai's own version of the London Eye, but larger of course. "There are some high profile projects around and quite a few of the schemes that were put on hold are coming back to life," he says. The challenge for consultancy firms will be to strike a balance between making the most of the opportunities and maintaining sustainable growth.

Update imminent for Infrastructure Conditions of Contract

The ICC update will be more accessible and logical, all risks are allocated in just one clause instead of 16 separate sub-clauses and the redrafting takes into account Government strategy including early warning, *says ACE contracts adviser Rosemary Beales*.

In 2012 an interested group of users, including clients, contractors and consulting engineers met as a Development Forum with the objective of reviewing the ICC contracts to ensure not only that they reflected current industry practices and technologies but also the key components of the Government's Construction Strategy.

It was agreed that a new and updated version of the contract should be produced and a restructuring group was established. Chaired by John Uff QC the group was mandated to produce a draft that would, while retaining the "look and feel" of the current document but deliver the needs of todays industry.

The group worked to ensure clear and direct drafting in a logical format and included contract provisions that promote early warning of relevant events leading

Lucy Carraz, chair ACE Progress Network

Busy industry gives Progress Network confidence to expand

ace progress network supported by URS

I have noticed a renewed feeling of confidence in our industry. It was heartening to see the government set out its updated National Infrastructure Plan in December, with £375bn of planned private and public sector investment. And there appears to be cross-party recognition of the importance of infrastructure in spurring economic growth.

Within our Progress Network, there is a real sense of excitement about the future. Many young engineers and consultants are eager to contribute to ambitious projects that will have a lasting impact on the country. The Government's green light for infrastructure is also an opportunity for our members to gain vital, career-enhancing experience.

The Midlands branch of the Progress Network will have its launch event in September, and many of its members will no doubt contribute to HS2. A project of this magnitude will transform a great many careers, just as it will transform the North-South rail network.

The Progress Network's Scotland branch will hold its first event this summer. According to the Scottish Executive, investment in infrastructure has supported 40,000 Scottish jobs in the past year. It is indeed a time of significant infrastructure investment with the Forth Replacement Crossing, in which URS is involved as a member of the design checker joint venture, and Network Rail's recently announced five-year, £5bn investment programme for Scotland.

In the North West, the recent £270M guarantee for the Mersey Gateway Project is another example of infrastructure investment. More than 4,600 permanent new jobs will be created as a result of the operation of the Mersey Gateway, alongside regeneration activity, inward investment, and the diversion of through traffic away from the city centre.

I hope this project will encourage young engineers and consultants in the North West to get involved in their local Progress Network when it launches this year.

Lucy Carraz a technical director at URS.

to collaborative action, incorporate Building Information Modelling (BIM) and maintain, so far as possible, the balance of risk contained in the original ICE and current ICC conditions.

It also recognised the advantage of retaining the supervisory and administrative role of the professional engineer and the need to review and simplify the dispute resolution provisions given the many options that are now available.

The multi- disciplinary nature of the market is acknowledged within the contract as is the potential for its international application given the volume of international construction projects for which there are few standard forms of contract from which to choose.

The revised ICC was presented by John Uff QC as a consultative draft to a meeting of the Society for Construction Law in March and comments invited. A copy of the paper presented and a copy of the draft can be viewed on the ACE website in the membership section as a briefing note and if you have any views please email them to rbeales@acenet.co.uk

This paper has been available with the kind permission of the Society of Constrruction Law. See www.scl.org.uk.

The consultation paper is made available until 1 July 2014.

Expert Insight video series launched

ACE has launched the first episode of its new series of Expert Insight videos designed to help professionals develop their knowledge around specialist areas in the consulting and engineering sector.

The series will include thought provoking interviews with key leaders in the industry and also provide viewers with expert insight into some of the most important issues facing the industry today.

Episode One of the series features Graham Nicholson Executive Managing Director of ACE member company Tony Gee & Partners in discussion with ACE chief exceutive Nelson Ogunshakin. Topics covered include the challenges facing engineering in the UK, the role of the new Technician Apprenticeship Consortium (TAC) initiative and a dicussion around how the profession can engage with young people to promote engineering as a career.

Also discussed during the interview are wide ranging issues affecting the UK's infrastructure and the impact of recent flood events witnrssed across the UK.

www.youtube.com/user/acenet1913

Air quality: five areas to address

Environmental Industries Commission executive director *Matthew Farrow* outlines the targets for the growing battle with air pollution.

Last month, like many Londoners, I found my car covered in a thick layer of dust. The 'Sahara smog' had struck, and for several days air quality was a leading news item.

Dust from North Africa was only one element of the smog, but it provided a rare case of visible evidence of poor air quality. But in fact, even on days when the air in our urban centres seems normal – it is far from that. A WHO database published just last week showed that London, Sheffield, Leeds, Southampton, Birmingham, Chesterfield, Nottingham, Stoke-on-Trent and Thurrock are all consistently exceeding recommended levels for particulate matter (PM10s). The EU has infracted the UK for repeated failures to meet EU limits on nitrous dioxide in our cities.

At the Environmental Industries Commission we work with our member companies on many sustainability issues, but I've always believed that air quality is one of, if not the most important one. No one dies because UK recycling rates are low, or because our biodiversity is not what it should be, important though theses issues are. But air quality is a killer – in the UK it causes 29,000 early deaths a year.

So what can be done? Given that vehicle pollution, especially from diesel engines, is a major factor, I think there are five areas that need to be addressed:

1. Building on the London Low Emission Zone, we need to consider a national network of LEZs, with tough requirements for the emissions performance of vehicle engines allowed in the zones.

2. We need to look at the quality of fuel. One EIC member that works with airports to reduce on-airport vehicle emissions is developing a high quality blend of diesel that produces fewer emissions. Should refineries be required to produce such diesel as standard?

3. Emissions from off road diesel engines on generators and the like must not be forgotten. The GLA is looking at a scheme to introduce such emissions from London construction sites.

4. We need more electric vehicles. The numbers being sold in the UK are rising steadily, but not fast enough.

5. Wider infrastructure also matters – Copenhagen managed significant air quality improvements by resurfacing major roads leading to less dust from road surface and tyre wear.

There are no easy answers, but developing solutions to tackle the UK's air quality problem will be a major focus of the EIC for the rest of this year.

matthew.farrow@eic-uk.co.uk

Follow Matthew on twitter @matthewEIC

THE ENVIRONMENTAL INDUSTRIES COMMISSION

EIC's mission is to provide a strong and effective voice for the UK's environmental technologies and services sector – promoting a strong domestic market and export opportunities abroad.

It is the lead voice in the sector representing an industry worth £122bn to the domestic economy, and employing one million people.

The core of EIC's lobbying and industry networking activities take place via nine dedicated policy working groups: carbon and environmental management, sustainable buildings and energy efficiency; contaminated land, environmental laboratories, water management, transport pollution control, resource efficiency, waste management, shale gas and smart cities.

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Congratulations to all on the ACE Engineering Excellence Awards shortlist

ACE's Engineering Excellence Awards celebrate and reward the very best performances of the year from across the UK consultancy and engineering community.

Now in their seventh year, the awards continue to be a fantastic opportunity for the ACE member firms of all size and discipline to showcase their talents and see success rewarded. This year we have had a brilliant crop of entries. So congratulations to everyone on the shortlist. Well done indeed.

We will be celebrating the winners in next month's Infrastructure Intelligence magazine and on line at www.infrastructure-intelligence.com

Our people: The heart of ACE

Building Services Award (companies with up to 250 employees)
- Clancy Consulting Limited
- Crofton
- Caldwell Consulting Engineers
- Skelly & Couch

Sponsored by ACO Building Drainage

Building Services Award (companies with more than 250 employees)
- AECOM
- Hoare Lea
- URS
- Waterman Group
- WSP

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Building Structures Award (companies with up to 250 employees)
- Alan Baxter & Associates LLP
- MLM Consulting Engineers Ltd
- StructureMode Ltd

Building Structures Award (companies with more than 250 employees)
- AECOM
- WSP
- URS
- Pell Frischmann

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Utility Infrastructure Award
- GHA Livigunn
- Mott MacDonald

Transport Infrastructure
- Atkins
- Amey
- Roughton International Ltd
- URS
- Tony Gee and Partners LLP

Project Design Award (companies with up to 250 employees)
- BWB Consulting Limited
- GHA Livigunn
- Techniker
- Clancy Consulting Limited
- Skelly & Couch

Research, Studies and Consulting Advisory Award
- BWB Consulting Limited
- AECOM
- IMC Worldwide Ltd

Professional Engineer of the Year
Winner to be announced on the night

Sponsored by Mott MacDonald

Progress Network Award – Consultant of the Future
- Roma Agrawal, WSP
- Alice Berry, Arup
- Christian Christodoulou, AECOM
- Chris Mundell, Atkins
- Natasha Watson, Buro Happold Ltd
- Thomas Webster, AECOM

Sponsored by ACO Water Management

matchtech®

The Voice of Engineering...

Matchtech is well established as the UK's leading engineering recruitment organisation and is forging relationships with representatives of government, academia, industry bodies and commercial organisations, to ensure that the future of the industry is sustained and the UK retains its mantle as a world-leader of engineering.

Keith Lewis Managing Director | Matchtech

Keith Lewis, MD of Matchtech, explains, "We all have a responsibility for building the pipeline of engineering talent: a long-term strategic approach is needed. We strive to go beyond the recruitment process in the service we provide and are passionate about becoming integral members within the engineering community. A focus on encouraging the development of an engineering talent pipeline is vital and we will continue to utilise our extensive market knowledge and expertise to comment on, and become involved with, high profile issues and areas of interest within the engineering industry sectors we support."

Attract and retain...

Matchtech is a corporate member of EngineeringUK who published a recent 2020 forecast stating that engineering companies will need to recruit 1.86 million people with engineering skills. The current significant investment within infrastructure from private and public sectors is placing great demand on the need for additional talent. These large-scale infrastructure schemes in highways, rail and property should possess the desirability and longevity to keep infrastructure engineering talent in the UK, but it is vital that in this global competitive market companies not only attract new talent but also engage with and invest in their existing workforce.

Matchtech is publishing its own research initiatives; of which one is the November 2013 Confidence Index Report. The findings, from a survey of more than 1,000 participants, confirmed that UK engineers are well aware they are part of a highly desirable talent pool. As a result of this insight, organisations need to implement strategies to retain their talent.

Of the report, Keith states that, "The Confidence Index has enabled us to act as a facilitator with unique insight into how our engineers view the current state of the industry and what we need to focus on to ensure the UK remains the most attractive place for engineers to work during the economic recovery and beyond."

Aligning future needs...

Matchtech is proactive within academia, embarking on several initiatives that actively support and encourage future engineers into the industry. The company is currently sponsoring the NEF (New Engineering Foundation) with an industry research programme to be presented to government in July with recommendations for aligning further education curriculums and staff training by predicting future needs of the science, engineering and technology industries.

The diversity imbalance...

The challenge of recruiting women into engineering is well documented and a deserved current industry focus. Matchtech have researched this area well and is an active party to industry conversations such as how to get more women into senior STEM positions, how to attract more female STEM students into higher education, supporting WES (Women in Engineering Society) initiatives, such as National Women in Engineering Day on the 23rd June and celebrating women in engineering such as sponsoring the Women in Construction Awards this March.

A thriving future...

Keith concludes, "The Engineering sector is thriving, there will continue to be high demand for talent in a sector which has historically offered stability and progression; those working in the industry can look forward to being part of exciting, ground breaking projects in years to come, meaning that focus on attraction and retention remains key." **@KeithLewisMTUK**

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