

# Spotlight

## TRANSPORT: DRIVING CHANGE

Andy McDonald / Louise Ellman / Baroness Randerson



# Moving people to vote



Last month, the day before Theresa May announced the snap general election, Ipsos MORI published a report that found levels of confidence in and optimism for public services as being at their lowest for 15 years. The company's head of political research, Gideon Skinner, said (in a great example of political nominative determinism) that "the years of austerity may be reaching a tipping point". The report, he added, had found "record levels of concern about totemic public services" and "a fall in agreement that the cuts have been necessary". Just one in five people surveyed expected public transport to improve in the next few years.

Transport is not typically thought of as an issue that decides elections, but parties should not underestimate its power to sway the public. The most recent ONS Family Spending Report found that the average UK household spends more on transport than any other item in its weekly budget. Britain spends 28 per cent more on transport than it does on food.

And it is not that voters do not care about transport policy. Ask any of the 3.7 million Britons who commute for more than two hours each day, or the people waiting for the 58,983 Southern Rail trains that were cancelled last year if they care about transport policy. It is more that big transport projects are hard to pitch in an election. They almost all take longer than a single parliament, they have huge price tags and they often involve digging up someone's garden.

This will change, however. For the growing number of metro mayors, bus franchising and traffic reduction are already election-winners, but as cities and their populations grow, transport will join health and housing as an area where funding and availability become decisive political issues.

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# Passengers not profit: the case for public ownership

**A reliable and affordable rail service is essential for growth, writes Andy McDonald, Shadow Secretary of State for Transport 2016-17**



**F**or Britain's railways, June 8th's general election presents an opportunity not only to reverse seven years of decline, but to put an end to the 23-year-old privatisation experiment. When one looks at the recent performance of our railways, it isn't difficult to understand the popularity of Labour's pledge to bring the railways back into public ownership, a policy that receives support from voters of all parties across the entire political spectrum.

Fares have risen by a whopping 27 per cent over the past seven years – three times faster than wages – and the cost of some season tickets will have risen by over 40 per cent. Commuters were told that higher fares would fund investment, but vital projects such as the electrification of the Midland Mainline and Great Western railway have been delayed for years. Worse still, recently published figures demonstrate that punctuality on our railways is at the lowest point in a decade. With passengers paying ever more to travel on increasingly overcrowded and unreliable trains, it's little wonder that passenger satisfaction is in decline.

If you made one of the 1.7 billion passenger journeys on Britain's railways last year, the need for a re-think will be clear. As shadow transport secretary, I have spent this past year working with colleagues to develop an approach to rail and transport as a whole. My starting point for deciding how to arrange our nation's vital transport systems was a simple question, but one that isn't asked often enough: what are our railways for?

For Labour, the answer is simple. Rail is about the safe and efficient transport of people and goods. This question and its answer may seem so obvious that they appear trite, but it is the case that public transport has increasingly become detached from the concept of public service. Too often it is seen as a series of opportunities to profit from an essential service that no government can let fail.

If one wanted an example of the failures of rail privatisation, there could be no better case study than the ongoing debacle of Southern Rail. Southern, the country's worst rail service, is an economic artery for London and the South East, yet the disgraceful service provided by the company has left both passengers and workers suffering at the hands of a management that has veered somewhere between incompetence and callousness in its treatment of both.

Southern has exceeded any existing conception of what constitutes a poor rail service. The company's performance is rock bottom amongst train operating companies, but no league table or statistics can convey the costs to passengers and staff of how GTR, Southern's parent company, has managed the service. Delays and overcrowding are so severe that passengers faint on trains so overcrowded that they remain standing even while unconscious, parents have become accustomed to saying goodnight to their children over the phone, people have lost jobs because they cannot reliably travel to work, the rights of disabled passengers have been wound back by years through dangerous staffing cuts and, as reported this month, homeowners in areas served by the service have seen the value of their properties fall.

Yet it isn't even the poor service that makes Southern an example of why privatised rail doesn't work; it's the lack of government intervention, leaving passengers to suffer the vagaries of the market, which gets to the heart of why our railways are so dysfunctional. The success of East Coast Mainline demonstrates a clear alternative to the



↪ model of privatisation. East Coast Mainline, placed in state ownership after private operator National Express walked away from the contract, delivered over £1bn to the Treasury, kept fares down, had record passenger satisfaction and engaged the workforce with unparalleled success before the line was re-privatised in May 2015. The example of East Coast, as with the ongoing Southern Rail debacle, shows a government clinging to a failed model for purely ideological reasons – and it is commuters who are being made to pay the price.

The network of companies who operate passenger services on Britain's railways – 75 per cent of which are foreign companies or foreign-owned state companies that extract profits from British taxpayers and commuters in order to reduce fares back home – come together in a jumbled network that drives up the cost of improvement works, complicates ticketing structures,

slows ticketing reform and extracts eye-watering profits that could instead go on improvements or keeping fares down from the system. The hit to the pockets of commuters stands in stark contrast to the hundreds of millions of pounds in dividends paid to shareholders of private train companies each year.

The case for nationalisation is good economics, too. Last year, TUC research showed that the costs saved from bringing franchises which expire from 2016 to 2020 back in house could save up to £604 million a year by 2020,

**“Commuters  
are paying  
the price”**

enough to lower regulated fares by up to 10 per cent.

We know reliable, affordable transport is essential to delivering productivity growth. Trimming the fat of privatisation can unlock funds to deliver cheaper fares for passengers – and backed up with Labour's commitment to invest in transport infrastructure such as a Crossrail for the North. A coast-to-coast, east-west rail line in northern England, connecting Liverpool, Manchester, Leeds, Sheffield and Hull – and High Speed 2 – will leave us with an integrated railway network fit for the 21st century.

The Labour Party has been clear that we will put an end to Britain's rip-off railways, bringing rail back to public ownership, with routes returning to public ownership as private contracts expire, meaning profits can be re-invested to improve services and hold fares down. Ultimately, passengers, not profit, should be at the heart of Britain's railways.

# Invest in cycling now, and we'll save £248bn by 2050

Investing in active transport offers huge economic returns and improved quality of life for millions, writes Cycling UK's Sam Jones



All but unnoticed in the rush of announcements before the dissolution of parliament was the publication of the Cycling and Walking Investment Strategy (CWIS), originally proposed in the coalition government's 2015 Infrastructure Act. Just as we have for roads, England now has a legal commitment by the government to invest in the improvement of cycling and walking provision, and to report to parliament on its progress.

Among cycling campaigners, there was relief to see the CWIS finally realised. As part of David Cameron's "cycling revolution", it was one of several manifesto commitments that Theresa May's new agenda might not have accommodated. But, thanks to years of pressure from cycling and walking groups, and the efforts of the small but dedicated team of civil servants, we now have a positive vision government wants to achieve by 2040: "to make cycling and walking the natural choices for shorter journeys, or as part of a longer journey."

Crucially, we also now have long-term committed funding. This investment should put an end to the stop-start funding models that have plagued cycling planning, and allow local authorities to invest for the future.

The CWIS promises up to £1.2bn will be spent on cycling and walking by 2020/21. This figure relies largely upon local authorities and Local Enterprise Partnerships (LEPs); the central government commitment is just £316m.

That means we can expect £26 per head invested in cycling and walking over the next four years for everyone in

England outside of London – about £5.20 each per year. London's cycling funding is devolved and determined by TfL, and adds up to £17 per person. With this investment, the CWIS aims to double the number of journeys cycled.

The returns from this investment could be phenomenal. Doubling cycle use from the current level of around two per cent of all journeys would save £46bn by 2050. But the real gains are to be made at higher levels of adoption. Research at the University of Leeds predicts that if cycling grew to 10 per cent of journeys by 2025 and 25 per cent by 2050, the cumulative benefits would be worth £248bn between 2015 and 2050.

These levels, as recommended by the All Party Parliamentary Cycling Group, achieve such enormous savings through a variety of means, from decongestion to decreased casualties, but they are mostly found through increased physical fitness.

Physical inactivity causes around 37,000 premature deaths in the over-40s every year. Following current trends, 60 per cent of men, half of all women and 25 per cent of all children in the UK will be obese by 2050. This will cost the NHS at least £10bn a year.

Air quality is arguably as significant a public health crisis as obesity, and cycling is equally important in fighting it. Removing the worst-offending motor vehicles is important, but giving people a cheaper, healthier, faster option to sitting in traffic offers a long-term solution.

Building more motorways and trunk roads with a £15bn Roads Investment Strategy is not going to address the problem of an inactive nation nor our unclean air.

Doubling cycling funding to at least £10 per head – compared to the £68 per head offered by the Roads Investment Strategy – would put ambitious targets within reach. Hitting these targets would offer real and uncomplicated solutions to some of this country's most serious problems. The next government must wake up to the huge differences that could be made by investing, not in a new technology, but in one which celebrates its 200th birthday this year – the humble bike.

# “Deception on a global scale”



**Volkswagen’s false emissions readings have not been properly addressed by the government, according to Louise Ellman, chair of the House of Commons Transport Select Committee 2008–2017**

**I**n my nine years as chair of the Transport Select Committee, Volkswagen’s cheating of diesel emissions tests was perhaps the greatest scandal we encountered. Were it not for the dissolution of parliament prior to next month’s snap general election, it would remain at the top of our priority list. I recently wrote to both VW and the Department for Transport, continuing our relentless push for information and action, including seeking adequate recompense for affected UK VW owners who have so far been treated shabbily.

The emissions scandal was deception on a grand, global scale. It came to light in September 2015, discovered not by a regulator within any official system, but in a study commissioned by the NGO, International Council on Clean Transportation. VW engineers had designed a “cheat device” to recognise when a vehicle was being tested for emissions and produce falsely low readings to fraudulently meet the required standards. We now know that the deception began in 2006. The cheating software had been installed in 11 million cars worldwide, including 8.5m

in Europe and 1.2m in the UK.

We must not lose sight of why controlling diesel emissions is so important. The standards exist to protect our health. Each year in the UK alone, nitrous oxides in diesel emissions cause the deaths of around 29,000 people. Children in close proximity to the most polluted roads are at serious risk of long-term detrimental health effects, including reduced lung growth. Recent research found that 47,000 babies and children are being cared for in nurseries near roads where nitrous oxides exceed the legal limit. That is why I recently launched, jointly with the chairs of the Environment Audit, Environment, Food and Rural Affairs, and Health Select Committees, a broad inquiry into the government’s strategy to improve air quality.

The Transport Committee’s response to the emerging emissions scandal in 2015 was first to call VW’s UK managing director and the car industry body, the SMMT, to give oral evidence before us in October 2015. We called VW in again, followed by the then secretary of state, Sir Patrick McLoughlin, and officials



from the Department for Transport and the Vehicle Certification Agency, in January 2016. What emerged was not only the shocking nature and scale of VW's deceitful behaviour, but also wider concerns about the UK and EU vehicle approval and emissions-testing systems that had allowed the cheating to occur and go undetected for so long. We subsequently launched an

in-depth inquiry, holding a further five evidence sessions in the Commons and entering into detailed, and prolonged, regular correspondence with VW, the department and the European Commission.

Our conclusions in July 2016 were clear. VW had acted with a cynical disregard for emissions testing. Its evidence to us – that it was sorry, while at the same time denying corporate wrongdoing and blaming rogue engineers – lacked credibility. It seemed intent only on limiting the damage to its reputation. The UK government had been far too slow to investigate and seek to prosecute. The emissions testing and vehicle approval systems were unfit for purpose – widely acknowledged, within and outside of the industry, to allow test results to under-report “real-world” vehicle emissions. Our recommendations sought to put these deficiencies right. Steps to strengthen systems, at UK and EU level, have subsequently been taken, including the establishment of a new Market Surveillance Unit to test vehicles and components to ensure consumers enjoy a product that meets the specifications they were sold.

But what about punishment for VW's wrongdoing and compensation for affected car owners? In the United States, in June 2016, VW reached a partial civil settlement, which included an agreement to buy back affected vehicles or repair them once a fix has been found. The US settlement also includes compensation to owners, which could end up costing the company some \$15.3 billion. VW has pleaded guilty to three criminal felony counts in the US, and as a result will pay a \$2.8bn fine. Six VW executives and staff have been charged for their role in the conspiracy. Some European countries have also been comparatively swift to take action: criminal investigations have been opened in France, Norway, Spain, Sweden and Switzerland, for example.

There has been little progress in the UK, despite promises from the DfT in response to our report last year and in

correspondence since. The department agreed with us that UK consumers had been treated poorly, stating that UK owners “should be compensated for the inconvenience, uncertainty and worry caused by Volkswagen's cheating, as well as for any loss in the value of affected vehicles which may become apparent.” The reality is that to date these consumers have been offered nothing. Despite clear evidence of cheat devices in vehicles the Vehicle Certification Agency had approved in the UK, no criminal investigation has been launched and no prosecutions brought. The only legal proceeding here has been a class action seeking compensation, launched by 10,000 VW owners themselves.

This is simply not good enough, and is why the Transport Committee continued to press VW and the government, right up to Parliament's dissolution before the general election. In my letter of 24 April to Hans Dieter Pötsch, chairman of Volkswagen's Supervisory Board, I pushed for full publication of the investigation report setting out the origins of the emissions scandal, produced for VW by legal firm Jones Day. On the same day I wrote to the DfT Minister, John Hayes, seeking clarification on key issues, including the sums so far recovered from VW to cover the department's additional testing work as a result of the scandal; the steps the department was taking to secure redress for UK consumers; what attempts it had made to obtain the Jones Day report; and whether it now had the evidence required to begin any legal action in the UK.

The general election must not mean the end of this saga. I urge the next Transport Committee to secure full disclosure from VW and push the department to act swiftly to investigate and, where appropriate, prosecute. It is equally important that the proposed joint Select Committee work on air quality is quickly reconvened in the new parliament. The VW emissions scandal is not only about consumer confidence, it also has serious implications for public health. It must be prioritised.

# Supporting SMEs in the rail supply chain

**SMEs need government support and encouragement to deliver innovation and operational benefits to the rail industry, writes Roy Freeland, president of Perpetuum Ltd**

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**S**upporting SMEs and recognising their value is essential to bringing innovation to the UK's rail industry. With major new investment, the rail industry is now catching up with the pace of its aerospace and automotive counterparts when it comes to adopting new technology. For instance, the first fully automatic landing of a scheduled passenger flight occurred 52 years ago – a far more difficult challenge than stopping the Heathrow Express at the buffers at Paddington. There is now, however, a detailed roadmap for full automation of train control. SMEs are the source of many of the innovations and will thrive with support and acknowledgement of the benefits they bring.

## **Working with SMEs**

There are many benefits to working with the SME innovators whose technology can make the digital railway a reality. Perpetuum's experience is a good example; completely wireless sensors powered by energy harvesters are providing remote condition monitoring (RCM) and intelligence to rail fleets around the world. Innovative "in-flight" RCM technology is now a reality, transforming rail asset management, maintaining safety and enhancing the passenger experience, all based upon rich, secure and actionable information.

There is great value and fast payback for investment in the "in-flight" analysis of train fleets, track, bearings, wheels, gearboxes and bogies. It helps eliminate the unnecessary purchasing of replacement parts and prolong train life, not to mention the fact it monitors the condition of the

track itself. Thanks to Perpetuum's technology, train operators are now asking how they can make better decisions with the conclusive, real-time evidence.

In Perpetuum's case, it has taken many years of development and unique technical achievements to translate raw data into the rich information that identifies problems and provides solutions. The early adopters are now recognising the value of information and are achieving large cost benefits and operational improvements.

## **Sharing costs and benefits**

In the UK rail industry, there is a fragmented structure that needs to be navigated to produce the business and growth plans from which SMEs can progress. The structure includes Train Operating Companies (TOCs), Rolling Stock Companies (ROSCOs), Freight Operating Companies (FOCs) Network Rail and the Department for Transport (DfT). Government and the rail industry must work closely together to ensure that there are good policies in place to manage the gaps in this structure.

The Secretary of State for Transport Chris Grayling has long recognised the hurdles to innovation caused by the franchising system. He insists that South West Trains should work even closer with Network Rail following the recent franchise award. Policies need developing to share the costs and benefits of new technologies, where an investment transcends the boundaries between the entities above and to recognise the residual value of investments in new technologies, even when franchises come to an end.

There is a great opportunity, with the massive new investment planned for rail in the UK, for SMEs to create world-class innovative technologies. Successful installations in the home market will strongly support export growth. SMEs are enthusiastic about bringing a digital revolution to the rail industry that will benefit its passengers, reduce costs and boost safety. Government policy and the rail industry must work to recognise the ambition and value of SMEs and accelerate the uptake of new technologies.

# This government won't take us anywhere fast

Transport policy under Theresa May is stuck in the slow lane, writes **Baroness Randerson**, principal spokesperson for transport for the Liberal Democrats



**B**ritish carmaker Jaguar Land Rover has set an optimistic target of half of its cars being electric by the end of the decade. Their chief executive said, “we are shaping the future, developing our own approach to autonomy, connectivity and electrification to offer our customers more choice.”

Shaping the future is exactly what the manifesto of every party in this election should be doing when it comes to transport. Governments, even more than the private sector, need to be sowing seeds that will germinate five to ten years ahead, and preferably a lot longer. Sadly, this is precisely what this government is not doing.

UK transport policy is often glacially slow. Sometimes, delays are caused by important consultations that give local people the opportunity to express their views over projects that will significantly impact their communities. In others they are caused by technological difficulties which could not have been foreseen. But in the era we are now living in, we need a government that is on the front foot with technological innovation and prepared to respond quickly to the changing needs of our economy.

Speed of decision-making is not something at which this Conservative government has excelled. From the painfully drawn-out decision over Heathrow expansion to the crawling rollout of HS2, ministers have repeatedly put internal party politics ahead of quick decisions. The most recent case in point is the lengths they have gone to in order to delay the publication of a clean air plan.

Twice in the last 18 months, the government has been told by the High Court that its plans to address air pollution are so poor that they are illegal. Air pollution has become so bad that, according to the government's own estimates, 40,000 people are dying every year from pollution-related problems. In the light of these figures, the next government must make tackling this silent killer a priority and move us further towards the electrification of transport.

There are two major factors which underpin the government's inability to get transport and related policy moving. Firstly, although the government likes to pretend otherwise, its focus is unrelentingly inside the M25 and into the south east and fails to rebalance our economy away from the capital.

Secondly, the government's anti-environmental agenda has seen it undercut most of the environmental programmes established by the coalition government. They have clearly abandoned plans for the full electrification of some of the UK's busiest train lines – including the Great Western Line – and have cut subsidies for electric vehicles.

The country would be better served by a government that focused on the long-term interests of the country: shifting to an environmentally sustainable transport policy, ensuring our rail network is fit for the 21st century, investing in infrastructure projects outside of the south-east, avoiding a hard Brexit that wasn't on the ballot, rather than on a government trying to manage party-political issues through policy announcements.

By the end of the next parliament, transport will look different. We almost certainly will have autonomous vehicles on the roads, for example. To keep up, our transport policy will need to be modern, forward-looking, and capable of dealing with advances in technology, and so will our government.

Theresa May's steadfast belief that the country's future is to be found in a return to its past will not be sufficient.

# Bringing communities closer together

Bechtel's **Paul Gibbs** and **Steve Kay** discuss the importance of improving UK connectivity



**W**hat could happen if we improved transport connectivity in the United Kingdom? Paul Gibbs, general manager for UK infrastructure at Bechtel, turns the question on its head: “What would happen if we didn’t?” The UK’s decision to leave the European Union, Gibbs acknowledges, has thrown something of a curveball across the country’s political and economic landscape. Brexit, he says, underscores the need for the UK to become more self-sufficient, both in terms of better transport links at home and the potential to export abroad. “If we fail to invest in our infrastructure,” Gibbs explains, “we’re saying that we’re willing to stop our cities from improving. There are also benefits in terms of what we can export – the skills and technology involved in improving infrastructure; if you have that proof of concept here, then you open up the opportunity to transfer it elsewhere.”

And Bechtel can boast proof of concept. The global engineering, construction and project management company with nearly 120 years’ worth

of experience has already delivered many of the UK’s most significant infrastructure projects; including HS1 on time and on budget. It’s that reliable track record, according to Bechtel’s infrastructure operations manager Steve Kay, which has given the UK the confidence to award the firm key delivery contracts for Crossrail and high speed rail.

Crossrail is Europe’s largest infrastructure project. It will open in phases from May this year with services through central London running in December 2018. The 100km-plus railway is set to connect Heathrow and Reading in the west to Abbey Wood and Shenfield in the east, via 42km of new tunnels under the capital. Kay says: “Bechtel was selected to manage delivery of the central section of Crossrail, the most complex part which has included tunnelling under central London, and we’re also overseeing the extensive upgrades to the existing rail network outside of London for Network Rail. Our integrated teams manage the extensive engineering and construction programmes to build this new railway.”

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Beyond the obvious, that is to say quicker journey times, what are the benefits of projects such as these? “They’re far-reaching,” Kay insists. “It’s not just about passenger services, although that’s a clear advantage, but it frees up capacity for other local passenger services and freight on the existing railway. It contributes to the capability of the UK’s logistics infrastructure as a whole and makes it more resilient.”

The over-reliance on London has themed much of national economic discourse in the 20th and 21st century. The commitment to better transport connectivity, Gibbs says, “can help relieve the pressure and redistribute populations and businesses.” Bottlenecking towards the Big Smoke, he notes, has led to an oversaturated pressure on public services, including the education and health sectors. Kay draws attention to the wider employment benefits, too. “There’s a real buzz across the UK about infrastructure, I feel it at home in the north west,” he beams, “we’re excited about the economic opportunities that

faster connections can bring. Consider employment: in construction, you’ve got thousands of jobs and apprenticeships. The enthusiasm from higher education has been massive. Bechtel is working closely with the National College for High Speed Rail.” Gibbs adds: “It’s crucially important that the UK has access to the best graduates, engineers and apprentices across a range of disciplines. Big projects like these ensure that happens.”

It’s usually par for the course for an infrastructure project to encounter some environmental concerns. What, then, has Bechtel done to ensure its projects are cognisant of climate change and local geography? Kay offers: “So, for example, we’ve seen that the Crossrail project piloted the use of hybrid diesel-electric excavators, hydrogen fuel cell-powered lighting and noise monitoring stations, and used LED lighting instead of halogen or fluorescent lights to significantly reduce energy consumption. And of course you’ve got to work collaboratively with the communities affected by these projects. Respect is a core value of our

company, that means respecting our neighbours and our communities on projects.

At a basic level, Gibbs suggests, delivering better transport is about meeting needs for connectivity and convenience. He puts it succinctly: “Urbanisation demands infrastructure, that serves as a fundamental building block for growth. Crossrail, or the Elizabeth Line as it is now, will carry 200 million passengers per year, that’s a 10 per cent increase in central London’s rail capacity, better journeys and around £42 billion to the economy.”

The Elizabeth Line, the first full new line in more than 30 years, will support what Kay calls “a new fleet of state-of-the-art trains.” The new trains will be fully interconnected with walk-through carriages, air conditioning and have four dedicated wheelchair spaces. The Crossrail project will increase the number of people able to travel to central London within 45 minutes by 1.5 million and Kay welcomes “a real step-change in the way we travel”. He continues: “It’s going to be really different in terms of the design, the frequency of the service and the technology involved. People will feel much more comfortable. It’ll be like a spacious national rail train but with underground frequency.”

Ultimately, Gibbs says, the investment in infrastructure can only be as good as the industry’s ability to deliver. Bechtel, which operates uniquely as a contractor as well as a project manager, combines its extensive design-build expertise with its long history as an equity partner and developer. Gibbs elucidates: “The private sector should be the valve that government can turn on when it needs to. Government has a responsibility to create the right environment. In turn, we have a responsibility to be a private partner for public benefit—delivering the best value for our customers, and their customers on large-scale, complex projects.” The current enthusiasm for infrastructure, Kay hopes, is “a sign of great things to come.”

# Innovating the next generation of transport

The advent of new technologies opens up growth opportunities for the UK transport sector, writes **Philip Hoare**, Atkins' managing director of transportation



**T**wo months ago, the European Commission issued a final warning to the United Kingdom for this country's persistent failure to adequately reduce air pollution levels in its cities. This problem is by no means new, but it is now being exacerbated by an increasingly congested transport network. High emissions output, however, is only one of the challenges faced by the transport sector in times of large-scale demographic and economic change.

New thinking will be needed if we are to deliver more efficiency, reduce congestion, improve safety or upgrade the passenger experience, and this thinking will need to focus on what technology can do to address existing and future transport challenges. New developments in areas such as digital railways, digital asset management and intelligent mobility are set to create opportunities in support of enhanced operational

management and performance.

Achieving transformative and lasting change will require more, however, than simply the application of technology. It will need a deeper understanding of the problems we are trying to solve and the social contexts in which we operate. More often than not, we will be expecting customers to make behavioural changes or accept new concepts, such as driverless cars or electric vehicles. Importantly, innovations such as intelligent mobility will allow us to develop solutions that are more customer-centric by design but equally capable of making the best use of our existing infrastructure.

Significant changes are already occurring across the transport sector, with innovation taking centre stage as an enabler of growth and productivity. To fully realise our vision of achieving a truly efficient and effective network, though, industry and government must foster the right

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culture to support technology diffusion and create opportunities.

Fundamentally, network users are seeking a seamless end to end journey while transport providers are working to address the trends impacting mobility and the complexities of preparing our road and rail networks for decades to come. This means building smarter and making more efficient use of existing assets while bringing together several variables such as converging trends and technological innovations to create an ecosystem that facilitates intelligent connectivity.

#### **A modern industrial strategy**

Industrial strategy is firmly back on the political agenda. The renewed focus on innovation is expected to stimulate economic growth, increase productivity and create policy certainty for businesses. But this vision of a modern industrial strategy must be holistic, capable of building a resilient infrastructure, and

capable of providing much needed labour market opportunities.

Most recently, the government has shifted its focus to implementing a policy and regulatory framework better able to deliver the required transformation. The Vehicle, Technology and Aviation Bill is a key step to breaking down the barriers and pushing the modern transport agenda. The bill signifies a clear commitment by government to further stimulate innovation, generate investment and give the UK a competitive edge in the electric and automated vehicles' market. Further to this, the government has granted additional funding of £109m to 38 new cutting edge automotive research and development projects within the scope of driverless and low carbon vehicles. This is in an effort to ensure the UK is at the forefront of the transport revolution, delivering future mobility solutions that is accessible to all.

#### **Making the best use of our data**

Big data, the internet of things and blockchain technology are forming the next stage of the information revolution. These disruptive technologies are already impacting on a number of sectors and transport is no exception. Drawing on existing research, figures show that the global internet population is now 3.2bn people. Every 60 seconds, Twitter users send 347,222 tweets, Facebook users 'like' over 4m posts, Apple users download 51,000 apps and Skype users make 110,040 calls. These staggering figures depict the rapid trends in changing consumer habits and the vast volumes of data processed on a minute by minute basis.

Moving forward, what will be critical is our ability to turn data into useful information that will help us to improve transport services and better meet the needs of the travelling public. Journey management, for example, encourages the use of 'customer-centric' intelligence to build integrated mobility solutions but requires private and public

sectors to share trusted, actionable data in order to remedy costly transport challenges. The exploitation of big and open data in transport is currently being used to gain a deeper understanding of users' needs and to monitor infrastructure performance and transport services. Big data is being applied in asset maintenance, road traffic management and the planning of public transport services.

This technology added value allows us to gather and analyse data to better meet the demands of our customers. But it's not just about productivity and journey times. It is also about safety. Technology can create a safer environment through improved road design, better management of traffic and encouraging behavioural change.

#### **No magic bullet**

Infrastructure is set to receive record levels of funding as government continues to drive a pro digital, pro investment stance. Most notably, the sector is experiencing a period where industry and government are seemingly moving in the same direction to alleviate existing pressures on the UK's transport system.

However, there is no single magic bullet. Solutions need to be linear and consider infrastructural and economic interdependencies. To achieve this, a clear road map is key, as increasingly a cross-sectoral approach will become necessary to develop real progress in tackling issues that have historically plagued the sector.

Industry must be forward thinking and collaborative in order to create new possibilities for smart mobility. From establishing a cohesive real-time data infrastructure to developing a comprehensive national framework for the roll out of intelligent mobility; there is a lot that needs to be done but the first step is recognising that the solutions truly capable of meeting the needs of the future do not rest with the conservatism of previous years but with the current wave of digital innovation.

# Are we ready for HS2?

Brexit has underscored the need to modernise the UK's industrial talent pool, say Matchtech's department manager of rail **Graham Day** and director of engineering technology **Tim Carling**



**I**t is an exciting time to work in the UK rail industry. Successful delivery of the landmark Crossrail project has been followed by the promise of additional funding for transport in Philip Hammond's Autumn Statement. With HS2 now signed off, it is no wonder that 72 per cent of rail engineers surveyed in Matchtech's Voice of the Workforce research expressed confidence that the sector will grow or increase its revenues over the next 12 months.

Beyond the financial investment in rail, these projects offer engineers the opportunity to be at the forefront of a substantial shift in the technologies and skills required to deliver them. With such opportunities, however, the UK engineering industry is presented with significant challenges. The successful delivery of highly technical projects is dependent on having the right resource readily available and many times, the talent pool from

the UK has been supplemented by specialist skill sets from the European market to get projects over the line. Of course, following last year's referendum result our access to this additional talent is now cast into doubt. As the global rail sector evolves, we must ensure that the UK's engineering capabilities evolve with it.

The role of an engineer, regardless of sector, is constantly changing. The gap between traditional engineering skills and IT-led software skills has been decreasing for some time and we are increasingly managing requests from engineering companies for candidates with skill sets from the technology sector, which would not have been needed a generation ago. This trend is embodied by the increasing prevalence of BIM (Building Information Modelling) technologies across the industry. From being a "nice to have" skill BIM is now at the core of project delivery and a number one priority for

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employers. Any government-funded scheme valued at £15m or above must now be completed to BIM standards. BIM modellers, managers and coordinators (roles that did not exist 20 years ago) have therefore become increasingly key members of any project management team.

In the rail sector, we have experienced this demand for software skills in the converging engineering and IT space within rail automation and signalling systems projects. These projects require developers with a software engineering architecture understanding combined with higher level software Java and .net development skills.

HS2 represents the pinnacle of technological capabilities in rail engineering and demand for these highly specific skill sets will increase dramatically as the project rolls out. On a scale unknown to this market, HS2 will test the UK talent pool. *EngineeringUK's 2017 report forecast*

that 265,000 skilled entrants will be required annually to meet the demand for engineering enterprises through to 2024. There is a significant skills shortage in this country, particularly in electronics and software engineering roles. As a result, at Matchtech we have pulled on the European market to recruit for projects with a strong technological element. Whilst the skills shortage remains in the UK, we believe sourcing from overseas will continue to be a crucial factor in the successful delivery of projects like HS2.

With Brexit looming, this is no longer guaranteed. Beyond the man hours, knowledge share across the continent is crucial; if innovation is taking place in Europe, it must be incorporated into HS2. Amid the uncertainty and potential economic impact of Brexit, there is a risk that UK-based engineers will be tempted to relocate and our Voice of the Workforce data shows that half of all those surveyed would be willing to work overseas. Positioning HS2 as a career-defining project for engineers should be at the heart of the UK's drive to retain our own talent whilst attracting new talent from abroad.

This positioning will also be key to attracting young talent to the profession. An ageing workforce was identified by 27 per cent of rail engineers as a threat to the industry and it is an issue we know well. The same personnel have been prominent on CTRL, Crossrail, and now HS2 – projects spanning over 20 years. While harnessing this experience will continue to be a major asset, it is essential that the industry uses HS2 as an opportunity to encourage young professionals to choose a career in rail engineering. In addition, the project should present existing engineers an opportunity to apply their knowledge, upskill and develop their careers. As Hammond referenced in his Spring Budget, the changing nature of work makes retraining and re-skilling essential. He committed to spending up to £40m by 2018-19 to test different

approaches to help people retrain and upskill throughout their working lives.

It is important that these schemes span the entirety of the UK, providing engineers across the country access to the skills required to deliver HS2. Projects such as Crossrail, which have centred on high-quality design and adopted the BIM process, have developed talent in London and it would be great to see this replicated in other UK cities. We produced some data recently that showed a gap in 3D modelling expertise between the London and Birmingham markets in recent years. These specialist skills have grown at an accelerated rate in the capital and employers recruiting for major projects have become accustomed to these advanced capabilities. HS2 initiatives in Birmingham and Doncaster are already playing an important role in solving this issue but employers should be flexible in their recruitment to make the most of the UK's existing candidate pool. For example, training those 3D-capable engineers or technicians in Birmingham to deploy their skills using the Microstation platform is a simple upskilling solution for that region.

This flexibility is essential to successful resourcing for HS2. While the project will demand highly specific and advanced expertise, the value of transferable skills shouldn't be ignored.

Recruitment partners will also play a key role and, at Matchtech, we are embracing the challenges posed by employers in this sector. Our well-established rail engineering division has delivered leading talent for CTRL, Crossrail and a range of other UK projects. We understand, however, that skills needs are shifting and we have built a team dedicated to the constantly expanding engineering technology convergence space.

With HS2 spanning across the next decade at the very least, the development of new skills and technologies makes the sector one of the most dynamic to work in and recruit for.

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