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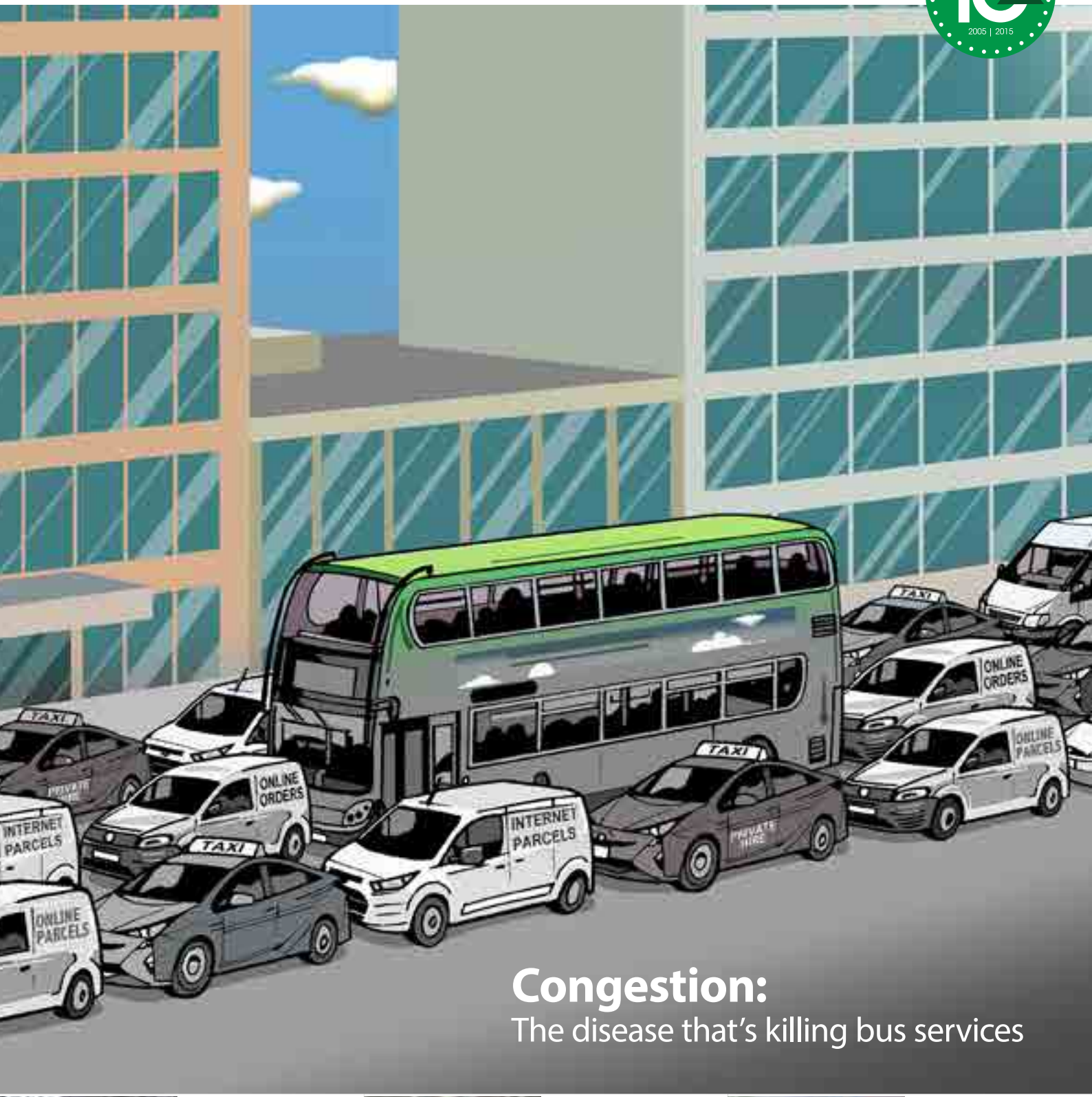

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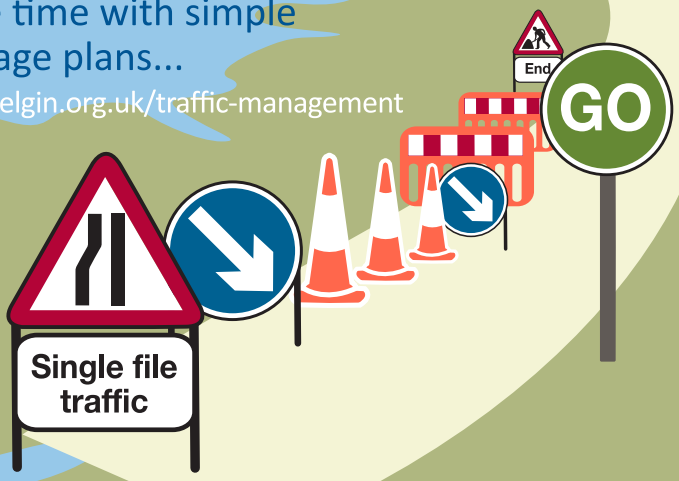

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Act now to save snarled-up buses

Congestion is the hidden threat which threatens to destroy the bus sector. It is a disease which is slowing up buses by around 10% every decade and reducing bus use by between 10% and 14%.

When it comes to the bus, London has a very impressive track record. Since the inception of TfL in 2000 the growth in patronage has been world-beating. However, in the last few years patronage has been declining faster in the capital than most other places in the UK.

There is a key lesson to be learnt from this. You can get all the other ingredients right: modern bus fleet, cashless buses with the most advanced smartcard and contactless ticketing system in the world, a level of integration which is the envy of other UK cities, state-of-the-art passenger information at the bus stop and on mobile devices. Add to this population and employment growth and you should have a recipe for the London bus success story continuing. But all these laudable ingredients cannot offset the rapid deterioration in bus journey times.

TfL is facing swingeing cuts to its revenue budget. London's public transport system is expected to operate without any revenue subsidy by 2018. Hong Kong and London will be the only cities in the world expected to meet this objective. The new mayor Sadiq Khan is committed to a fares freeze, which raises the question of who is going to pay for bus services in London if not the taxpayer, as passengers will not make up the difference in higher fares.

The solution is to operate buses more efficiently by improving their speed. If London is to eliminate the £461m annual subsidy to its bus network, bus speeds would have to improve by 24%. There is a crucial lesson here for any city contemplating franchising.

Slow buses are bad for our city economies. If the trend for

Contactless payment and smart ticketing could improve journey times by up to 10%

bus journey times increasing by almost 1% per annum continues we can expect to continue to lose access to around 5,000 jobs per year as a consequence.

Slow buses are also bad for pollution. Fuel efficiency measured in kilometres per litre has declined by 35% since 2000, and carbon dioxide emissions per bus km in urban conditions have risen by 25%. While there are factors other than congestion behind this trend, such as larger buses, stop-start conditions caused by congestion are a key factor. Under heavily congested conditions, tailpipe emissions can be increased by a factor of three or four.

If London-style cashless buses with contactless payment and smart ticketing could be extended to the rest of the UK, bus journey times could be improved by up to 10% by halving dwell time at bus stops. In urban conditions dwell time makes up between 25% and 33% of total journey time. The big five bus operators in the UK have set a target to introduce contactless bus transactions by 2022. They should do everything possible to accelerate this, and it is realistic for them to achieve this goal in the large conurbations within three years.

The Bus Services Bill should set out guidance encouraging local authorities and bus operators to set targets for average bus speeds. The minimum requirement should be for bus speeds to stop declining. Local authorities need to give priority on roads and at junctions to buses.

More bus champions are needed in the UK in local, devolved and central government. The bus is the most efficient user of road space, crucial for the health of our city economies and a vital part of an environmentally-friendly local sustainable transport system.

Intervention is needed now to halt this insidious decline.

David Begg

David Begg is publisher of *Transport Times*

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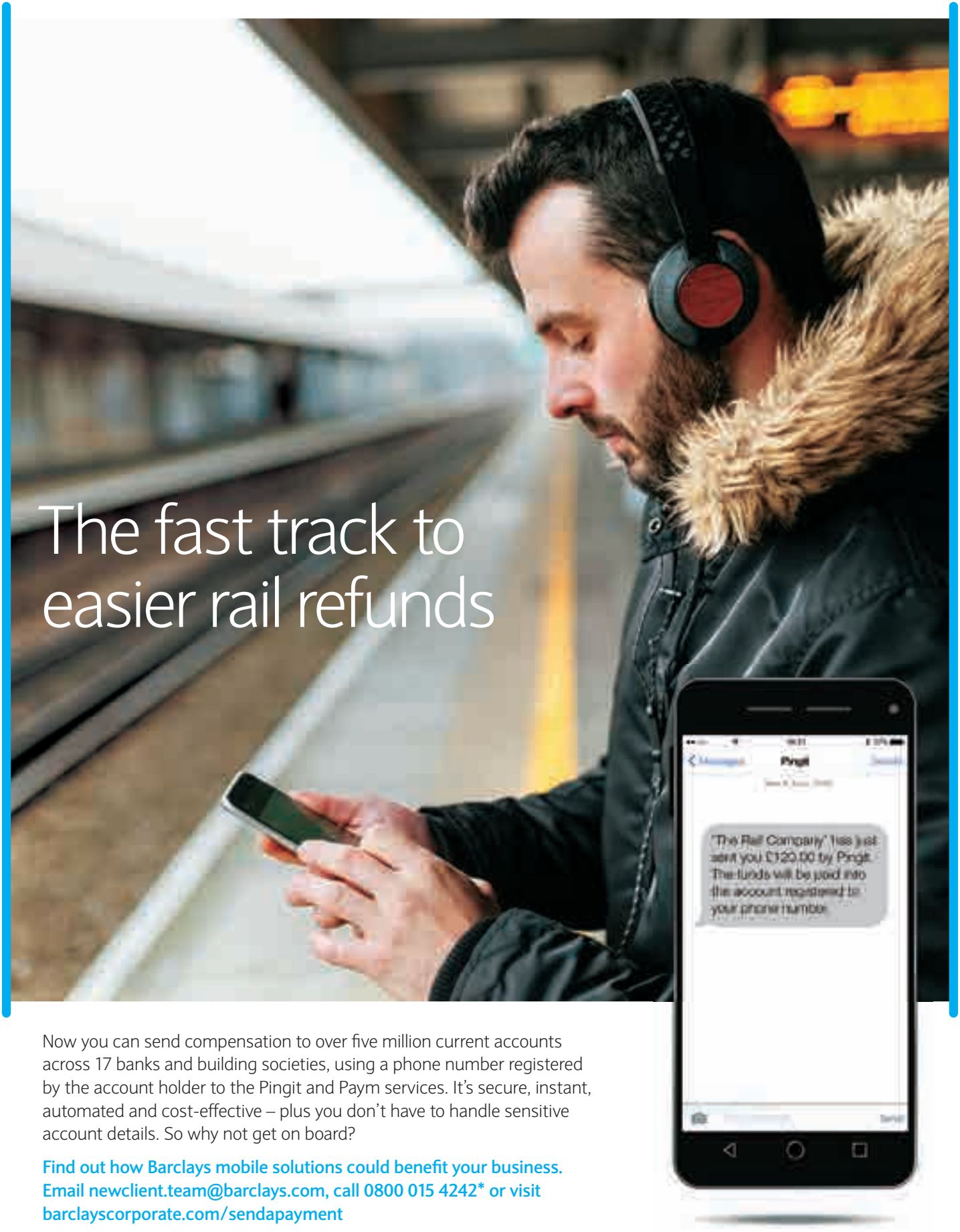

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Congestion 'potentially fatal to bus sector'

Traffic congestion is a disease which is draining the life out of the bus sector, according to a new report.

Bus journey times have increased by around 1% annually in the UK's most congested conurbations. There has been an increase of almost 50% over the last 50 years, contributing to a loss of passengers. Every year the trend continues will cost 5,000 jobs, the report says.

The report, published by Greener Journeys, was produced by Prof David Begg, visiting professor at Plymouth University, former chair of the Commission for Integrated Transport and *Transport Times* publisher. It predicts that bus passenger numbers will continue to fall by between 10% and 14% every decade, putting the future of the bus sector under threat.

The situation is set to get worse, with traffic expected to grow by up to 55% by 2040, and morning and evening rush hour periods already lengthening as traffic volumes reach saturation point in cities such as London, Manchester and Bristol.

Average traffic speeds have been reduced to below 10mph in Britain's busiest cities, with some bus services reduced to walking pace.

London, where bus passenger numbers had doubled since 2000, is experiencing one of the fastest declines in bus use anywhere in the UK.

The report cites the growth in online shopping, resulting in an upsurge in the number of delivery vans on the road, as a contributory factor to the rise in congestion. A surge in private hire vehicles, with the emergence of services such as Uber, has exacerbated the problem.

Slower speeds lock buses into a downward spiral in a number of ways, the report says.

Bus operators are forced to respond to congestion in one of two ways. If they try to maintain service frequency by using more buses on the route, every 10% decrease in operating speeds leads to an 8% increase in operating costs. If this is passed on to passengers through higher fares, the result is a fall in patronage.

Alternatively the operator can keep the same number of buses and reduce frequency. Historic studies suggest a 10% reduction in frequency leads to 5% fewer passengers.

In both cases the passenger will be spending longer on the bus. Again past research suggests that a 10% decrease in frequency leads to a 5% fall in passengers, initiating a downward spiral of falling revenue and service decline.

The net result, the report concludes, is that a 10% decrease in speed leads to a 10% reduction in patronage, even before the effect of congestion on punctuality and reliability is taken into account. "If we had protected bus passengers from the growth in congestion there would arguably be between 48% and 70% more fare-paying bus passenger journeys today, " the report concludes.

Potential solutions include demand management, bus priority and the faster introduction of contactless ticketing outside London.

"There is a need to return to the ethos of the 1998 White Paper on transport which recognised the necessity of changing travel behaviour and the importance of demand management," the report says. "More cities need to follow the lead of London, with the congestion charge, Nottingham, with its workplace parking levy, and Bristol, with essential car parking restraint measures." Public transport improvements are not a panacea for congestion and must be accompanied by traffic restraint measures.

Contactless ticketing could improve bus journey times by up to 10% by halving the time buses spend at stops while passengers board. In urban conditions, this dwell time makes up between 25% and 33% of total journey time. The big five bus operators should speed up plans to introduce contactless transactions.

"It is realistic for them to achieve this goal in the large conurbations within three years," the report says.

The Bus Services Bill should set out guidance encouraging local authorities and bus operators to set targets for average bus speeds, with a minimum requirement that they should stop declining. Local authorities should give priority on roads and at junctions to buses.

Other measures to be considered include charging van drivers making deliveries during peak hours and encouraging bus companies to provide more up-to-date travel information for passengers, says the report.

Prof Begg said: "Traffic congestion is a disease which if left unchecked will destroy the bus sector. If the trend is allowed to continue, then our urban buses will no longer represent a viable mode of transport for the majority of customers. We have to change travel behaviour. If we don't try to influence people's travel choices, it will mean that we all have no choice but to sit in ever increasing traffic jams."

Greener Journeys chief executive Claire Haigh said: "This report highlights the shocking growth in congestion blighting major cities, and particularly the heavy toll it is taking on the bus sector. Giving buses more priority on the roads and introducing contactless payments would make journeys faster and more reliable, encouraging more people to leave their cars at home."

London – a reversal of fortune

Over the past year passenger numbers on a third of London's bus routes have been declining at five times the national average – reversing a trend of increased patronage since 2000.

With planned roadworks having increased by 362% in three years, bus speeds on some routes have fallen so dramatically that it is almost quicker to walk than take the bus, the report says. London's experience demonstrates that even having all the other ingredients, such as a modern bus fleet, smartcard and contactless ticketing, a high level of transport integration, and state-of-the-art passenger information, cannot offset the rapid deterioration in bus journey times.

TfL is expected to operate without any revenue subsidy by 2018. New mayor Sadiq Khan is committed to a fares freeze. This raises the question of how bus services in London will be paid for.

"The solution is to operate buses more efficiently by improving their speed," the report concludes. The £461m annual subsidy to its bus network could be eliminated by improving bus speeds by 24%.

Queen's Speech aims to boost buses and autonomous vehicles

The long-awaited Bus Services Bill was published alongside the Queen's Speech as the Government announced its legislative programme for the next year.

Also announced was a Modern Transport Bill, designed to encourage the development of driverless vehicles and to clarify questions of how such vehicles will be insured. There were also provisions for supplementary business rates in combined authorities with elected mayors.

In addition it was announced that the National Infrastructure Commission would be put on a statutory footing.

The Bus Services Bill is designed to drive up bus use, help cut congestion and support economic growth, the Department for Transport said.

It will give councils new powers to work in partnership with bus operators. Combined authority mayors will be given powers to franchise bus services. And operators will be required to make data about fares, timetables and routes openly available.

As expected, areas with an elected mayor will gain powers to bring in bus franchising, allowing them to specify fares, routes and timetables, as in London. Other councils will also be able to franchise buses if they get permission from the Transport Secretary. The new powers will be clearer and simpler to use than the existing arrangements, which have been criticised for their complexity and under which a bid to introduce franchising by the North East Combined Authority was blocked by the Quality Contract Scheme Board set up to examine the proposals.

New "enhanced partnership" provisions will remove the need for local authorities to invest in new infrastructure – whether or not it is necessary – in order to create a partnership, said roads minister Andrew Jones.

The proposal to make data about fares, timetables and routes openly available will allow software developers to produce apps that tell passengers when the next service will arrive. The DfT estimates this alone will lead to an extra five million journeys a year.

The Venturer consortium is running trials of driverless vehicles in Bristol

Mr Jones said: "Good bus services can help cut congestion and provide better journeys for hard-working people, helping them get around and get on. We are determined to increase bus use and these measures are designed to give councils access to a range of powers to help deliver regular, reliable services for all.

"We are also looking to end the frustration of not knowing when the next service will turn up, by giving software developers the data they need to produce new apps."

The bill was welcomed by authorities in the major conurbations.

Councillor Andrew Fender, chair of the Transport for Greater Manchester Committee, said: "Under a franchised system the elected mayor for Greater Manchester will have the ability to decide the routes, frequencies, timetables, fares and quality standards for bus services in the city-region.

"This will help deliver a consistent, integrated transport network and make it possible for every passenger to use their tickets on any bus in Greater Manchester, as well as other forms of public transport."

Tobyn Hughes, managing director of Nexus, said: "Nexus welcomes the Bus Services Bill because it has the potential to place the decision over whether to introduce bus franchising firmly into the hands of elected local representatives."

The Modern Transport Bill is designed to encourage investment in autonomous vehicles, as well as setting the framework for a commercial UK spaceport. It aims to "create the conditions that drive innovation and put the UK at the forefront of modern global transport developments" and "maintain and extend the UK's role as a world-leading transport manufacturing base".

It would include measures to change how vehicles are insured, to cover collisions when a vehicle is in driverless mode so that the vehicle would be at fault.

Mr Jones said: "Compulsory motor insurance will be extended to cover product liability, so that when a motorist has handed control to their vehicle, they can be reassured that their insurance will be there if anything goes wrong. Where the vehicle is at fault then the insurer will be able to seek reimbursement from the manufacturer. The vital point is that, for affected individuals, the insurance process will feel much the same."

A Local Growth and Jobs Bill will give local authorities full control of the money they raise through business rates, so they can attract business and investment to their local areas. This will represent a transfer of up to £13bn, the Government said. In addition new measures will allow combined authority mayors to levy business rate supplements in order to fund infrastructure projects where there is the support of local business.

A Neighbourhood Planning and Infrastructure Bill would establish the independent National Infrastructure Commission, with its role of providing long-term advice on infrastructure needs to the Government, as an independent, statutory body. Commission chair Lord Adonis said: "This is a major advance for infrastructure planning in Britain and will give the commission the power it needs to do its work."

Alstom unveils HS2 design as training academy gets green light

Alstom is to build a technology centre and training academy on a 30-acre site at Widnes in north-west England.

The £19.5m centre will provide expertise in the maintenance and modernisation of trains. It is intended to support the company's growth in the UK and to make its operations more efficient.

Following the award of planning permission last month, ground-breaking is planned before summer.

The North West Transport Training academy on the site is planned to open in autumn next year. Alstom said it would act as a UK centre for research and development, providing training in engineering, manufacturing, project management and other transport sector skills, upskilling the existing workforce as well as supporting apprentices and new graduates for the rail industry across the North West.

"This centre is part of our global strategy to increase our service activities by localising our operations close to our customers. It allows us to react much more quickly to growth in local markets. It's important that we run the most efficient operation possible through modern facilities with the latest technology," said Alstom senior vice president for Europe Andreas Knitter.

Speaking at a Parliamentary reception, Alstom acting managing director for UK and Ireland and HS2 director Henrik Anderberg said: "The UK market is a critical, dynamic and booming market, and one that is very important for us to continue to grow in."

> **"The skills agenda is critical for the rail industry"**

He added: "The skills agenda is critical for the rail industry. The skills academy will be a fantastic site, training the engineers of tomorrow, and upskilling existing staff." It will be used to train Alstom's workforce, and on a commercial basis to train employees of other firms in the North West.

At the reception the company also unveiled a proposed double-deck train design for HS2. Procurement for rolling stock is due to begin later this year, with contracts expected to be awarded in 2019.

The design concept is based on Alstom's Avelia very high speed platform. With its articulated design, in which a single bogie is shared between two carriages, the train could be lighter than a single-decker, the company said. Articulation, widely used on Alstom trains, is also said to give a better ride and to make the train safer in a derailment.

The lower weight would reduce energy use and track maintenance costs.

The interior design envisaged a continuous upper deck with seating, with the lower deck used for bars, dining cars, business meeting areas, and areas for children and mothers.

Mr Anderberg said Alstom pioneered double deck trains in France 20 years ago. The new design would provide "an outstanding passenger experience at lower cost". It would add 40% more capacity, 40% more space and greater comfort. "It will be like travelling in business class but with economy ticket prices," he said.

Alstom has also been awarded a £31m contract by TransPennine Express to maintain two fleets of 25 brand new five-car trains from their entry into commercial service in 2019 to 2024 (page 10).

Alstom's proposed design for HS2 (top) and its Widnes technical centre

Peak time control points would work in a similar way to the existing core zone around Cambridge city centre, but number plate recognition will replace bollards throughout

Cambridge follows Nottingham with plans for workplace parking levy

A workplace parking levy and peak time control points or virtual road closures are part of a comprehensive new plan by the Cambridge City Deal to reduce congestion in the city.

The workplace parking levy would be only the second such scheme to go ahead, after it was pioneered by Nottingham City Council.

City Deal officers said the approach could bring about a step-change in city travel from as early as next year.

The proposals were expected to be approved at a meeting of the City Deal executive board at a meeting on Thursday this week.

The package of measures includes introducing a series of "virtual road closures" or peak-time congestion control points at key points on the city's road network, similar to an established scheme in the city centre.

This would create a low-traffic zone during rush hour through which only buses, cyclists, local taxis and emergency vehicles could travel. Drivers would have to find an alternative route to streets within the zone, or switch to bus, cycle or walking for part of their journey. The closures would be enforced through automatic number plate recognition and £60 fines.

It is proposed to introduce the system on an experimental basis as early as autumn next year.

The workplace parking levy would be similar to the successful scheme in Nottingham. Subject to consultation with business, employers with extensive parking space for employees would be charged an annual fee for each space. As in Nottingham, the funds raised would be invested in further transport improvements and to encourage people to switch to other modes.

This would be complemented by residents' parking zones in areas near large workplaces, which would further discourage commuter car journeys and make sure parking is not displaced to nearby streets.

Removal of traffic from key bus routes would immediately improve bus reliability and reduce bus journey times in the city, complementing work to improve bus journeys on other routes to and from the city. This in turn is expected to lead to investment by bus operators in new routes and services.

Cllr Lewis Herbert, Cambridge City Council leader and chair of the City Deal board said: "Congestion has to be tackled because it wastes so much travel time and threatens to choke off growth. The City Deal board is committed to taking decisive action to keep our city region moving – keeping it a place for people, not for traffic."

The strategy was welcomed by the Campaign for Better Transport, which has been promoting the wider adoption of workplace parking levies through a thought leadership programme, Tracks.

CBT called on the Government to consider broadening the way public transport is financed in the UK, learning from schemes such as Nottingham's. This was one of the schemes examined in new research commissioned by CBT from consultant Steer Davies Gleave.

Nottingham's levy was introduced in 2012 and is an annual charge paid by employers in the city with more than 10 parking spaces. It now raises £9m a year which is used to finance the city's public transport, and has contributed to new tram lines, electric buses and the regeneration of the railway station. Oxford is also understood to be considering introducing a similar scheme.

Stephen Joseph, chief executive of Campaign for Better Transport, said: "Other countries use a much wider range of means to finance their public transport, especially at local level. If barriers to new funding streams from property and local charging could be removed this could help make new public transport schemes happen. Nottingham's workplace parking levy has proved to be a very good way of raising money for public transport improvements."

The Cambridge City Deal is an agreement between the Government and a partnership of Cambridge City Council, Cambridgeshire County Council, South Cambridgeshire District Council, the University of Cambridge and Greater Cambridge Greater Peterborough Local Enterprise Partnership.

Leeds anger over trolleybus decision

Anger and disappointment has greeted the decision by Transport Secretary Patrick McLoughlin to cancel the proposed £250m trolleybus system for Leeds.

Mr McLoughlin backed the recommendation of the inspector of the public inquiry for the scheme. The New Generation Transport scheme was planned as a lower-priced alternative after Leeds Supertram was also cancelled on cost grounds a decade ago, and would have run on a 15km route north and south of the city centre.

West Yorkshire Combined Authority transport committee chair Cllr Keith Wakefield said: "Today's news is a frustrating reminder that despite the government's emphasis on devolution, we still find ourselves subject to decisions made remotely in Whitehall on local matters. Developing NGT in line with government advice and complying with the Department for Transport's lengthy approval process since 2007 has cost approaching £27m."

However, land acquired for the scheme has a value of around £10m and may be sold to generate funds for transport investment.

The DfT said its £173.5m contribution toward the project would be ringfenced for other public transport schemes in Leeds.

The inspector's report concluded that a compelling case in the public interest had not been made for granting the powers required to implement the project. The inspector accepted that there is a strong need to improve public transport in Leeds to bring about modal shift, including along the NGT scheme corridor, much of which is congested during peak times.

But he said: "The applicants have not demonstrated that the scheme would meet key objectives of supporting significant economic growth, reducing congestion and greenhouse gas emissions, or enhancing the quality of life in the area it would serve."

Leeds City Council leader Cllr Judith Blake said: "Leeds has been let down by successive governments in Whitehall on transport, first with Supertram and now with NGT. Each occasion has set public transport in the city back many years."

Combined authority chair Cllr Peter Box said: "After being supported by successive governments to pursue the country's first trolleybus-based scheme, only for that support to be withdrawn at this late hour, we now need to see the Government working with us. We need to see ministers committing further funding to develop key alternatives and help us make up for the lost time and resources, and we need devolution so these decisions can be taken locally.

"We need to be able to press ahead with the development of a metro-style system with integrated rail, tram-train and light rail, bus, cycling and walking networks designed to meet local people's needs and underpin the economic growth and job creation across the city region. Unless we get the Government's backing, today will be remembered as a bad day for Leeds, West Yorkshire and the Leeds city region, and also for the idea of a Northern Powerhouse."

More new trains for TransPennine

TransPennine Express, the intercity rail operator for the North and Scotland, has announced an order for another 126 new carriages.

It will invest more than £230m in 25 five-carriage trains, which will be in service by 2019.

This follows an earlier agreement to buy 19 new five-carriage bi-mode trains from Hitachi Rail Europe. The new train fleets will provide an extra 13 million seats a year.

The announcement covers two new fleets: 12 five-carriage Civity UK intercity electric trains financed by Eversholt Rail; and 13 sets of five-car Intercity carriages financed by Beacon Rail Leasing, which will be locomotive-hauled. Both will be built by Spanish manufacturer CAF.

It was decided to go for locomotive-hauled carriages because these can be manufactured and go into service more quickly than a complete train. TPE will sub-lease Class 68 locomotives from Direct Rail Services to haul them.

The Civity UK Intercity electric trains will operate between Manchester and Liverpool to Glasgow and Edinburgh while the Intercity carriages will operate initially between Liverpool and Newcastle.

In total, the 44 new trains will supplement TPE's current fleet and will more than double capacity on all intercity routes across the North and into Scotland by 2019. The vast majority of services will operate with at least five carriages as opposed to the current three.

The new franchise began on 1 April, with a commitment to invest more than £500m in the network.

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8. Contribution to Sustainable Transport
9. Excellence in Technology
10. Transport Team/Partnership of the Year
11. Transport Supplier of the Year
12. Excellence in Travel Information and Marketing
13. Customer Service Team of the Year
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David Brown, Chief Executive, Transport for the North

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My three tests for a sustainable railway

Good environmental credentials, strong roots in the community, and a diverse workforce are essential characteristics for the industry's long-term future, says **Claire Perry**

Britain's rail industry is complex. Its history, geographic reach and role in supporting our economy all make sure of that. But it is also a rapidly changing industry, and it is important for all sides to keep exchanging ideas and collaborating.

Last month representatives from across the railway came together for a special industry day. We discussed many of the big rail issues of our time, such as investment, capacity and connectivity. But I also wanted to focus on a topic that in recent years has not received the same level of attention – the importance of sustainability.

Our mission to revitalise and regenerate Britain's railway is not just about meeting rising demand and improving links for the short term. It is also about building a more resilient and responsible industry for the long-term future. Yet sustainability is a slippery term, too often used to mean all things to all people. So at the industry day, I set out what I believe to be the three characteristics of a sustainable railway.

First, a sustainable railway helps to solve the environmental challenges we face, rather than contributes to them. On that front, we're making good progress. Rail is already one of the greenest transport modes, and it's getting greener still. We are on target to reduce carbon emissions per passenger-kilometre by 37% between 2014 and 2019.

Our electrification of 800 miles of track will be a huge step forward, allowing carbon-emission-free trains to run on lines across the country. But we are also looking at running electric trains on sections of track that are not currently in the running for electrification – by turning to battery power.

Last year we successfully tested a battery-powered passenger train in Essex, and now we're working to improve the range so the technology can be made commercially available.

Stations, too, can make their contribution. The station spanning Blackfriars Bridge in London is a stunning symbol of a modern railway, but how many people know that its roof is covered by solar panels with the area of 23 tennis courts, providing up to 50% of the station's energy? I would like to see more stations use their roofs in this way and show green technologies to the millions of people who travel on the network.

There's also an opportunity for rail freight. One of the greatest challenges of our age is the emission of particulate matter and oxides of nitrogen from road vehicles. Air pollution is here now, on our streets, already shortening lives. One of the contributors is trucks bringing goods from out-of-town distribution centres into city centres. Yet our rail lines already reach into the heart of the city. If we could find a way to run electric freight trains into stations outside peak hours, goods could be offloaded on to electric vehicles for distribution to shops, restaurants and homes.

> **I want to see the relationship between railway and community taken seriously**

The second characteristic of a sustainable railway is that it's properly connected to the communities it serves. Railways are part of the fabric of local life. I want to see the relationship between railway and community taken seriously.

One way to do that is to make better use of under-used railway buildings standing in towns, cities and villages all over the country. In many places, it's already happening. A once-disused waiting room at Great Malvern Station is now a shop selling craft goods made by people with learning disabilities. And under the terms of the Northern franchise we have agreed that disused railway assets should become community centres. By putting railways into the service of local life we gain support for the railway even from those who don't currently use it.

The third characteristic of a sustainable railway is one that invests in the skilled, representative workforce it needs for the decades ahead. Parts of the rail industry are set to lose half their staff to retirement over the next 15 years. That's unsustainable, and so too is the idea that we can run a railway with a workforce that looks little like the public it serves.

In particular, we need more women working in rail. Women make up half the population and 47% of workers nationally, but only 16% of rail employees, and just 5% of train drivers.

There's no good reason for these discrepancies, and there are pockets of success that we should celebrate. Of the 10,000 people working on Crossrail, nearly one-third are women. The diversity of its staff has certainly contributed to the success of the project, and its workforce is a model for the whole transport industry.

So if anyone asks me what I mean by a sustainable railway, my answer is clear. It's a green railway, a community-minded railway, and a railway with a workforce that reflects the people it serves.

Modernising the railway infrastructure is crucial. But no less important is modernising the industry that designs, builds and runs the network, and making sure it's fit for the future.

Claire Perry is minister for rail and Conservative MP for Devizes

How can Leeds escape public transport limbo?

Public transport in Leeds suffered another severe setback with the rejection of its plan for a trolley-bus route by the Secretary of State. But what is one of the UK's biggest cities meant to do?

Leeds is a lost city as far as transit is concerned. Following the demise of its light rail proposals (covered in my first *Transport Times* column ten years ago), the PTE and city authorities – with the support and encouragement of DfT – pursued a modest and less costly ambition: a north-south trolley bus route. But this has now been rejected following a public inquiry.

So Leeds will continue to lay claim to being Europe's largest city reliant on buses for its public transport system.

It's not a badge of honour. And it won't help the Northern Powerhouse ambitions, in which Leeds is expected to play a key role, even though the DfT says the unspent funding allocation will remain on the table. It would be laughable if, uniquely in Europe, the fully integrated HS2 station now planned for the city centre has no proper onward transit system connections.

The failure to secure powers is itself an interesting measure of a growing – and wider – problem. Creating new alignments in established areas, even for transit systems with all kinds of green credentials, is getting harder. Proposals to extend Sheffield's Supertram network, for example, since it was opened 22 years ago seem inevitably to encounter local opposition.

It wasn't always like this. In 1992, Leeds Supertram line 1 secured its planning powers through the last parliamentary Act to be passed before that system was effectively replaced for transit schemes by the Transport and Works Act. So minimal was the degree of objection then that the PTE of the day had to offer to arrange transport for the few members of the general public who petitioned to attend the bill committee.

So for Leeds Supertram it was a case of yes to powers, but no to funding, although that sorry tale was to be drawn out over a dozen years more.

Among alternatives that will now be put to city council leader Judith Blake are likely to be much costlier underground solutions. 25 years ago, the council was rather enamoured of its twin city Lille's VAL automated metro, for example. But its costs would be likely to be an order of magnitude greater than DfT's allocation.

So here's the problem: just how does a city like Leeds find a way to fashion an affordable transit system? Note it lacks the disused rail alignments that provided cost-effective rights of way in Manchester, Birmingham, Tyne & Wear, and to a lesser extent Sheffield and Nottingham. Must it remain "car city" as it was when it embraced urban motorways long ago?

> **New housing is the clue as to how to fashion an effective public transport system**

Some will suggest a tram-train system, along the lines of the Sheffield-Rotherham trial, the completion year of which has just been deferred yet again. Proponents can still point to successes in Karlsruhe, Kassel and elsewhere. But these approaches rely on there being spare capacity on radial railways: only perhaps the Headingley/Horsforth/Harrogate corridor offers that for Leeds.

The city was right to look to Europe for ideas 25 years ago. Today, there is a helpful text to hand – Sir Peter Hall's last book, *Good Cities, Better Lives* (Routledge, 2014). Subtitled '"How Europe Discovered the Lost Art of Urbanism", it offers a contemporary tour of successful planning in Europe, with a common characteristic of planning public transit systems and housing together. The lesson is that there can be no quick fix: a transport project dropped on an unchanged city does not compute.

Leeds is a success, of course, with a diverse and well-balanced economy. It would be disastrous to leave it prey to ever-growing road congestion, a struggling bus service and minimal provision for cyclists. There will continue to be demand for new housing.

And that's the clue as to how to fashion an effective public transport system. Within the confines of the city, which is surrounded by green belt, there will be scope for greater housing density within roughly a 7km radius of the strong and compact centre. Use of road space can be reprioritised to promote liveability while accommodating increased demand, with private car use at the back of the queue.

But the economic and demographic challenge extends well beyond, into the city-region. And it is here that a new transit system needs to be forged.

West Yorkshire has had great success in opening new stations – 24 since 1982. But the rail service is outdated, lacks cross-city connections and leaves unserved key development locations such as the Aire Valley Enterprise Zone.

This will require investment – for instance by four-tracking the railway that runs eastwards from Leeds. But the economic case need not rely on requirements within the city-region alone. This is also a key intercity route, part of the Northern Powerhouse plan to better connect the major cities of the north.

So the combined benefit – within and between city-regions – makes the investment case.

Jim Steer is director and founder of Steer Davies Gleave.

Anthony Smith

Passenger satisfaction: an emotional journey

New partnership options in the Buses Bill seek to increase passenger numbers. Meanwhile a new app provides an insight into how rail travellers' emotions change as their journey unfolds

It's good to see the Bus Services Bill getting closer to reality. We welcome what the Government wants to achieve: to improve bus services and also to increase bus passenger numbers.

Two-thirds of all public transport journeys in Great Britain are already made on the bus. It is the unacknowledged workhorse, getting people to work, school or to meet friends and family. But until now it has barely featured in announcements such as the Budget or the Northern Powerhouse strategy document.

The bill includes provisions to give local authorities a range of options for agreements with bus providers. This seems sensible, but earlier versions of legislation to allow partnerships and contracts met with limited success – so Transport Focus will be watching closely to see how this has an effect.

With increasing pressure on local authority spending, it is vitally important now more than ever that passengers are at the heart of decisions. We used our recent research on trust in bus and priorities for improvement to inform the bill's development.

We spoke to regular, infrequent and non-users of buses. Getting the basics right is key to bus passengers trusting bus companies: they expect punctual, reliable, frequent services and friendly drivers.

Value for money is passengers' highest priority for improvement, followed by reliability and punctuality. And almost three in ten non-users would consider making more journeys by bus – highlighting the opportunity for further growth in the industry.

Transport Focus will continue to monitor bus passenger satisfaction through the Bus Passenger Survey. It is now in its sixth year, and last autumn we captured the views of over 40,000 passengers in 51 areas and operations.

Beyond satisfaction

Meanwhile Transport Focus continues to develop its research methods to create innovative ways to reflect how transport users communicate.

We know that overall satisfaction with rail services is quite high, despite some areas of weaker performance. But we also know that passengers often use social media to give feedback to train operators in the moment. We wanted to tap into this feedback and create a way of taking the temperature between iterations of the main National Rail Passenger Survey.

But, most importantly, we needed to be able to turn this into data that the industry can act on. There is no point in reiterating the fact that angry passengers are angry: what is helpful is to look at what

> **The research shows just how quickly passengers become annoyed by even small delays**

factors can reduce the levels of anger and start to make passengers feel happier overall. Sectors such as retail already do this to gauge emotions as a measure of how consumers feel about goods and services.

Transport Focus commissioned an app which prompted participants to log their emotions and any thoughts surrounding them as they made their daily journeys.

In summer 2015, rail minister Claire Perry invited us to join a taskforce addressing issues raised during the period of severe disruption linked to London Bridge and the Thameslink programme. The disruption was linked to major investment that will, ultimately, resolve many of the issues regarding punctuality and capacity that commuters in this area complain of. However, the works are going on for a long period, so it was worth investigating passengers' daily experiences more closely. It also gave us the perfect opportunity to test the emotion tracker in a real-life situation.

We ran it on six routes, from last December. Over the course of four months 364 passengers recorded comments on just under 13,000 journeys.

Passengers expressed a range of emotions for their journeys – it was not simply a case of always being happy or angry throughout the period. There were two key factors that contributed to passenger happiness – being on time and the ability to get a seat. This is no great surprise: such issues have always been a core concern for commuters. However, the research shows just how quickly passengers become annoyed by even small delays. Passengers moved from happy to less positive emotions within just five minutes.

The strength of those emotions increased the more the train was delayed. The two most negative emotions, frustration and anger, were felt most strongly, even if they weren't the most common emotion.

With crowding, we found that the ability to do something productive or enjoyable on the journey can help to take the edge off some of the more negative emotions. Typically this will mean provision of wi-fi and improving mobile phone signals.

The emotional tracker project has provided a benchmark of emotions. It was led by Transport Focus head of insight, Ian Wright. If you're interested in working with us or finding out more, please drop either of us a line.

Anthony Smith is chief executive of Passenger Focus.

Cutting aviation tax is not as simple as first appears

The Scottish Government's proposal to abolish air passenger duty as soon as possible has not been fully thought through. Pressures of a minority government could result in a better policy

Air passenger duty is being devolved to Scotland, and the Scottish government wants to cut the tax as soon as it can. It has proposed a reduction of 50%, starting in April 2018, with the tax to be completely abolished when resources allow.

In the May elections the SNP lost its majority in the Scottish Parliament, but it has stated that it wants to try to deliver its full manifesto with a minority government. All other parties in the Scottish Parliament have said that this particular tax cut is not one they will support. What are the prospects for the APD change?

The government points to other countries in Europe, such as Ireland, which have cut aviation taxes to attract more flights. However, the applicability to Scotland of policies applied in other countries does not appear to have been studied in any great depth. The government's recent consultation called for evidence, recognising that the current proposals rely almost entirely on aviation and tourist industry analysis, including studies by PWC and York Aviation. Many responses, such as those from the Chartered Institute of Logistics and Transport, noted that the proposed change may have huge implications for tax revenue and for transport which are not currently understood. Several airlines, including easyJet and Jet2, have announced that they will commence new flights from Scotland and bring more jobs if the tax is cut.

At the heart of the current controversy is a potential additional black hole of more than £200m annually in Scottish Government finances from the loss of tax revenue. The Scottish Tourism Alliance argues that the loss of APD from existing air passengers will be more than made up for by a combination of more tax from growth in air passengers, income tax from additional jobs created and savings in benefits paid to unemployed people now able to work. However, if these optimistic predictions are not all fulfilled, there will be a net loss of income. Even direct effects from increased air travel competition are not currently included in the analysis.

Virgin Trains wrote to its stakeholders in April encouraging them to consider the impact on rail services in their responses to the consultation. The rail operator has estimated that a third of the southbound Edinburgh-London rail market could be lost to air if APD were removed altogether. Virgin understands the central Scotland to London travel market well: it currently operates 92% of train services

> **Virgin Trains has estimated that a third of the southbound Edinburgh-London rail market could be lost to air**

connecting Scotland's central belt to London, and recently announced the withdrawal of its Little Red flights to Heathrow due to a lack of slots in London.

The Scottish Council for Development and Industry says that increased internationalisation is essential for stronger growth in the Scottish economy, and global connectivity is key to enabling Scottish businesses to enter and grow in overseas markets. What is not clear is whether a cut in APD would make any significant improvement to Scotland's international connectivity. On routes where air serves inelastic travel demands, and where large-scale competition is unlikely, the greatest impact could be increased airline profitability. Well-timed PR investment from airlines could be highly profitable.

The politics may drive the Scottish government to consider more broadly the impact of its proposal. The Conservatives are now the main opposition in the Scottish Parliament. But despite the party's tax-cutting instincts it has said that it wants a more progressive form of air traveller departure tax than a cut in APD. Labour does not think that APD is the right tax to cut, and the Liberal Democrats and Greens are also concerned about encouraging more air travel at the expense of rail. In order to win backing from other parties, more analysis will be needed about how to improve international connectivity.

A few years ago, my colleagues and I helped the Scottish Government to set up the Air Discount Scheme, reducing the costs of air travel from Scotland's remote islands to the mainland. This change also derived from a manifesto commitment, but it was only through detailed analysis of travel to and from the islands that the government could understand how to design the policy to secure the desired economic and social benefits.

The ADS scheme is far from perfect, but the analysis supporting its design showed how successful government policy needs to think carefully about how businesses and transport operators will respond to a change, rather than rely on industry views and promises driven primarily by commercial goals.

Devolution of APD to the Scottish government is an opportunity for better policy. Having lost its majority the SNP may be able to benefit from the better policy design that will come from securing consensus in a minority government. If that means that the cut in APD will be better targeted to achieve a more progressive approach to taxation, then everybody could be winners.

Derek Halden is director of transport data and technology business DHC Loop Connections and is secretary of Scotland's transport think tank STSG. www.dhc1.co.uk

Bill brings new powers, but no new funding

With the Bus Services Bill finally published, **Matthew Bentley** looks at what powers it will provide, while opposite, Greater Manchester councillor **Andrew Fender** looks at the implications for the city

Matthew Bentley: "Partnership provisions have been welcomed by operators"

Since last year's Queen's Speech, the Government has been committed to bringing forward a Buses Bill. Transport minister Andrew Jones has given a number of speeches explaining the aims of the legislation. The bill would give local authorities bus franchising powers; allow for stronger partnerships between local authorities and bus operators; and require bus operators to make data about routes, fares and times open and accessible.

With the publication of the long-awaited Bus Services Bill last month, the Government's broad policy aims are well known. Like any legislation, though, the devil is in the detail.

The bill will introduce new bus franchising powers for local authorities, though only combined authorities with elected mayors will automatically be given these powers. Other local authorities will need the Government's permission. The Labour party and the Local Government Association have called for bus franchising powers to be made available to all local authorities.

In areas with a franchising scheme, the bill would allow bus operators to run commercial services outside a franchise if they have a service permit. This is intended to allow services to run across franchise area boundaries; however, the Government has made it clear that it would also allow operators to run commercial services that are not covered by a franchise network.

While operators will apply to local authorities for service permits, they will be able to take appeals against decisions to a traffic commissioner. There may be some criticism, therefore, that these service permits could undermine local authority control of bus services in franchised areas.

As regards bus franchising, one of the most important issues is the procedure for local authorities to establish a franchising scheme. The current process for establishing a quality contract scheme has been criticised for being lengthy and complex and it has been argued this is why no local authority has implemented such a scheme.

The process set out in the bill to establish a franchising scheme is more straightforward. Nevertheless, local authorities will need to be confident that the process is a simple one, otherwise few will seek to use these powers.

The bill aims to support partnerships between local authorities and bus operators through new Advanced Quality Partnerships and new Enhanced Partnerships. These provisions have been warmly welcomed by bus operators and it is clear the Government wants local authorities and bus operators to work very closely in the creation of Enhanced Partnership plans and schemes.

> **The bill would prevent local authorities from setting up municipal bus companies**

One possible issue may be that the provisions on Enhanced Partnerships do not specifically mention the role of small and medium-sized bus operators. Though any Enhanced Partnership plan or scheme will need the support of a "sufficient number" of "qualifying local services", both these terms will be defined in secondary legislation. The Government has indicated that "sufficient number" will take account of the number of operators and share of market, but any definition will have a big impact on small and medium operators.

The bill will require bus operators and franchising authorities to make information about bus services available to bus passengers. The information that will need to be made available and how it should be provided will be set out in regulations, though the Government has said data about routes, timetables, punctually and fares will be included.

One of the less noticed parts of the bill would prevent local authorities from setting up council-owned municipal bus companies. This prohibition is likely to be opposed by Labour, which often praises such bodies. The party is expected to attempt to amend the bill so that elected mayors can establish municipal bus companies to bid for contracts in a franchise system.

Just as important as what is included in the bill is what has been left out. There will be no new funding for bus services. The LGA has already called for the devolution of bus service operators' grant to go hand in hand with new powers over bus franchising. With local bus services a popular local campaigning issue for MPs, expect the issue of funding to become more prominent once the bill reaches the House of Commons.

The Bus Services Bill was due to receive its second reading in the House of Lords this week, as this issue of *Transport Times* went to press

Matthew Bentley is a monitoring consultant at De Havilland

We'll make buses work for the whole city-region

The new legislation will allow changes to bus service provision and make possible the creation of a London-style transport network with a simple fare and ticketing system, says **Andrew Fender**

Bus services are the backbone of any effective transport network, providing essential services to the travelling public. In Greater Manchester, 79% of the 267 million public transport journeys during 2015 were made by bus in comparison to 9% by train and 12% by tram.

As well as getting people to work, bus services can connect communities across the whole city-region, providing point-to-point journeys and linking people with jobs, services and education. However, in Greater Manchester, despite a strong economy and a growing population, the number of people travelling by bus has at best flatlined.

Greater Manchester has ambitious plans for growth, with GVA forecast to rise by 2.8% annually between 2014 and 2024, and the potential for around 110,000 additional jobs, in the regional centre alone, by 2040. Bus services and public transport in general have an important role to play in supporting this economic growth.

Despite hard work from both the public and private sectors and a large level of public capital investment in infrastructure, the current bus system limits what can be achieved to integrate services, join up ticketing and meet the needs of our successful city-region.

This is why I'm so pleased to see the publication of the Bus Services Bill, which had its first reading on 19 May, following the Queen's Speech. The bill recognises the limitations of the current system and proposes a range of new measures to allow devolved regions to make changes to the way bus services work, choosing the solution which works best for their area.

For Greater Manchester, the new legislation will allow the combined authority to make vital changes to the way bus services are run in our region, helping us to ensure that bus plays its important role as part of an integrated transport network.

What the Bus Services Bill provides is the option for an elected mayor of Greater Manchester to introduce bus franchising should they choose to do to. This will allow for the creation of an integrated, London-style transport network with a simple fare and ticketing system and consistent quality standards.

Under a franchised system Greater Manchester will have the ability to decide the routes, fares, frequencies and timetables, together with quality standards for all buses in the city-region. This will provide a consistent, integrated transport network and make it easier for passengers to use their tickets on every bus, as well as other forms of public transport.

> **Increasing the role of bus is in the best interests of the taxpayer, the passenger, the operators and local authorities**

The option to implement bus franchising powers was requested by Greater Manchester Combined Authority as part of its devolution agreement, signed with the Government in November 2014. As part of the devolution of powers to the combined authority, it places local decision-making in the hands of local authorities, which are directly accountable to local people. This gives GMCA accountability for local bus services and provides increased transparency.

Another advantage of this model is that it allows GMCA to involve the public in determining the shape of the network, by consulting on plans to ensure that the bus network is working for the whole of the city-region.

At the moment, the network is, quite naturally, shaped primarily by the commercial considerations of the bus operators involved. This means that some routes have an excellent service provision, whereas quieter areas aren't served as well. Bus franchising will allow more holistic transport planning and bring about improvements to make bus a mode of choice for travellers.

Despite some concern at changes to bus service provision, we've seen this positive view expressed by a number of operators who see the opportunity for increasing the role of bus in our city-region. Taking the competition off the road and placing it at the franchise level will allow us to combine the best of the public and private sectors to deliver consistent standards.

There is already significant public investment in bus services in Greater Manchester. Around £100m of public support for bus goes to operators – equating to around 40% of bus company turnover. Under a franchised bus system, there would be clearer accountability and an opportunity to reinvest profits in the transport network to make further improvements to services.

This means that increasing the role of bus is in the best interests of the taxpayer, the passenger, the operators and local authorities, with an increase in patronage supporting the economic growth of the city-region.

Ultimately, bus franchising will place the customer at the heart of the transport network and allow Greater Manchester to realise its long-term vision of creating a world-class transport network which supports long-term sustainable economic growth and access to opportunity for all.

Cllr Andrew Fender is Chair of the Transport for Greater Manchester Committee

Andrew Fender: "The current system limits integration of services"

Diversity: the smart way to attract future leaders

A more diverse workforce would benefit the whole rail industry, says **Simon Kirby**. A concerted effort is needed to attract the new generation needed to build projects such as HS2

Simon Kirby: "Opportunity to make a step change"

Too often, it seems to me that the rail industry is stuck in the past. One stark example is that the rail sector is not hiring or promoting enough women.

As a result the industry is missing out on the skills and perspective of half the population.

A recent report published by Women in Rail spells out the problem. It found that of the 87,000 people working in rail, only 13,500 are women – just 15%.

Of those, half work in the operational, customer-facing parts of the railway, like catering, ticketing and station retail. These women are often the face of the rail industry, the people passengers come into contact with on a daily basis, but they are not representative of the industry as a whole. Back office, engineering, maintenance and senior management are still very much the preserve of men.

To an outsider, it would rightly seem shocking that only 4% of rail engineers are women, or that only 0.6% of women have progressed to director or executive level. Yet this is what we've come to accept as the norm. That has to change.

Though at HS2, 46% of the people working here are women, there remains an opportunity for us to make a step change for the whole infrastructure industry. It has to change, not just in the interests of women, but in the interests of the rail industry as a whole.

A more diverse workforce would benefit the industry. The wider the range of skills and experience brought to bear on a problem, the better the decision will be. Others are making tangible efforts, but we appeal to the construction industry to make greater efforts still.

Other sectors learnt this long ago. HS2 presents a welcome opportunity to really begin the process of change, but it's much easier said than done. Making the rail industry more diverse will be a generational challenge. The industry must work to change young people's image of rail engineering and get more young women into the profession at the start of their careers.

Far from the old stereotypes, the modern rail engineer is likely to be involved in programming, digital design, control and high-tech manufacturing. HS2 will be the first major UK transport project built entirely in the digital realm, using BIM Level 2 from day one.

At the peak of construction, in the mid-2020s, we expect more than 24,000 people to be working on the project, either on site along the route, or across the UK-wide supply chain.

> **"The wider the range of experience brought to bear on a problem, the better the decision will be"**

To meet this unprecedented demand, the rail and construction industries need to prepare for a high-tech future. They need to attract the brightest and the best engineers and project leaders, whoever they may be and whatever their background.

High profile rail projects like HS2 have the potential to transform the image of the industry. Much of that starts in schools.

Statistics show that the UK's education system currently produces only 60% of the engineering graduates we need. Encouraging more young people to study science, technology, engineering and mathematics (STEM) will benefit not only HS2 but the whole economy. That's why HS2 is engaging with schools through its educational programme.

We have trained more than 70 staff as STEMNET ambassadors to support our expanding programme of school engagement, and spent more than 20,000 hours working with organisations such as the Smallpeice Trust and the Construction Youth Trust.

The new National College for High Speed Rail will create a clear career path to rail engineering jobs. It will be a one-stop shop for the next generation skills and expertise we will need to build HS2, and a beacon of excellence for the industry as a whole.

As well as creating the opportunities, we also need to change the way we work.

There's no shortage of research to suggest that women and minority groups have a more negative impression and experiences of the engineering and construction industry than a typical white male. But the average white male in the sector isn't having it easy either. Long hours, false self-employment, zero-hours contracts and difficult working environments are all too often the norm.

It doesn't have to be that way. To attract the brightest and the best of the next generation it can't be that way. At HS2 we will put fairness, safety and respect at the heart of everything we do. We will be paying the living wage to all our people – regardless of age – and we aim to create more than 2,000 apprenticeships at a range of levels, from school leavers to graduates and beyond.

We are committed to equality, diversity and inclusion. It is the smart way to do business, as well as the right way – and it is the only way to attract and retain the talent of tomorrow.

Simon Kirby is Chief Executive of HS2 Ltd

HS2 nears the end of the beginning

The Bill for phase one of High Speed 2 has entered the Lords. Can it complete its journey through Parliament by the end of the year, as ministers hope, ask **Sarah Clark** and **David Mundy**

Continuing its passage through Parliament, the High Speed Rail (London to West Midlands) Bill is now progressing in the House of Lords. The bill, which will provide the legal authority for the new railway to be built, passed its second reading in the upper house in mid-April, and is now to be considered by the Lords select committee, which met for the first time in public on 19 May.

In March, we published an article in *Transport Times* setting out the select committee process. In short, the committee will consider petitions (read "objections") from organisations and members of the public who are "specially and directly" affected by the HS2 project (for example, because they will have their land compulsorily purchased, or will be affected by noise and vibration). The committee can request relief or mitigation be provided by the Government to protect the interests of the petitioners, but it has no power to reject or fundamentally alter the bill.

The committee's members are a highly distinguished group. It is chaired by a former Justice of the Supreme Court, Lord Walker. The committee's first major duty will be to conduct locus standi hearings, which were scheduled to begin this week. These hearings will take place in cases where the Department for Transport has challenged the rights of certain petitioners to be heard before the committee (or to be heard on certain topics), on the basis that they are not sufficiently affected by HS2. The locus standi hearings will give these petitioners the right to argue against the DfT's decision and therefore the right to be heard. It looks as if the DfT is intending to be strict on interpretation of locus. Of particular interest is the fact that it has challenged four ministers, three backbenchers and even the Speaker. Overall, the DfT has challenged 414 petitions out of 820. There are strict rules on locus, governed by precedent, and it will be very interesting to see how these challenges are pursued.

The committee will then consider the petitions on a geographical basis along the proposed new line from north to south. A number of petitioners will be contacted by HS2 Ltd (or their parliamentary agents), who may try to negotiate settlements in return for the withdrawal of petitions. Those petitioners who remain unsatisfied will then have the option to appear before the committee, or have their petition considered in their absence.

> **"The DfT has been unusually firm in challenging petitioners' right to be heard, showing a steely determination to press ahead"**

How likely is it that the bill will receive Royal Assent by the end of 2016? In April, Lord Adonis was positive. In a speech to the House of Lords, Adonis said: "HS2 is on course for enactment at the end of this year and the start of construction next year", describing progression of the project as being a "phenomenal achievement" given its size and complexity. So the Government clearly believes the project is on track for Royal Assent.

Moreover, the DfT's unusual firmness in challenging petitioners' locus standi shows a steely determination to press ahead.

There are, however, some reasons for scepticism, especially if history provides any guidance in these matters. A hybrid bill has elements of a public bill (which affects the population at large) and a private bill (which affects specific organisations or individuals) and in consequence, is subject to a longer parliamentary procedure than would apply to an ordinary public bill. Since 1990, four hybrid bills have been used for major infrastructure projects (Severn Bridges, Cardiff Bay Barrage, the Channel Tunnel Rail Link and Crossrail).

These bills took an average of 795 days to pass from first reading into law. Each took progressively longer than its predecessor, and the Crossrail Bill, the most recent, took 1,247 days. By mid-May, the High Speed 2 Bill had been in progress for 902 days. If it were to match Crossrail, it would not receive Royal Assent until April 2017.

In addition, the HS2 Bill faces some particular problems of parliamentary timetabling. A combination of holidays, recesses and a break for the European referendum means that the Lords will not be sitting for much of June, late July and August. Moreover, even after the select committee's work is done, the bill still has to pass report stage and third reading in the Lords.

Given the Government's clear determination to get the bill through this calendar year, it will be interesting to see if a 2016 Royal Assent can be achieved.

Once the bill receives Royal Assent (thereby becoming an Act), the authorisation of Phase 1 (London to West Midlands) of the project will have passed into law. It is then up to the Treasury to secure funding and get things moving. This is not the easiest of tasks, if Crossrail is taken as an example.

In summary, great progress has been made, but significant hurdles remain.

Sarah Clark and David Mundy are partners at Bircham Dyson Bell

Sarah Clark and David Mundy: "Since 1990, each hybrid bill has taken longer than its predecessor"

BIRCHAM DYSON BELL

DIGITAL TECHNOLOGY: the key to capacity?

At a recent *Transport Times* round table on rail capacity, the digital railway dominated the discussion. **David Fowler** reports, and on page 23 **Roger Ford** argues that the digital railway already exists

Participants:

- **Lord Adonis, chair, National Infrastructure Commission**
- **Steven Norris, former Minister for Transport**
- **David Begg, chief executive, Transport Times**
- **David Brown, chief executive, Transport for the North**
- **Geoff Hobbs, head of transport planning, TfL Rail & London Underground**
- **Alistair McPhee, vice-president Ground Transportation Systems, Thales**
- **Steve Montgomery, managing director, First Rail**
- **Jim Steer, director, Greengauge 21**
- **David Waboso, capital programmes director, London Underground**
- **Jonathan Roberts, managing director, Jonathan Roberts Consulting**
- **Paul Plummer, chief executive, Rail Delivery Group**
- **Elaine Stewart, head of travel & transport, Worldline**
- **Natasha Cleeve, partner, McLean Interim Management**

Top: New trains will add capacity on the TransPennine Express (pictured) and Northern franchises

Britain urgently needs new rail capacity. The rail industry must be bold in its vision for the digital railway and install it on a busy main line, where its benefits would be most visible. Because the UK has the most pressing capacity problems, it should not shrink from taking the lead.

Those were the views of a recent *Transport Times* business breakfast on the subject.

The digital railway is shorthand for the introduction of advanced signalling: European Train Control System levels two or three plus traffic management, all enabled though Network Rail's telecoms system, and linking to existing systems such as C-DAS. The digital railway can already be seen in metro form on London Underground's Jubilee, Victoria, and Northern Lines, where new CBTC signalling is permitting up to 34 trains hourly.

Head of planning for TfL Rail and London Underground Geoff Hobbs said, in his opening address, that to cope with London's increasing population new lines such as Crossrail 1 and 2 were not the complete

solution: "We have to get more out of the existing railway as well."

"A good deal of thought" was going into what the next generation of programmes should be in TfL's next business plan. The south London metro area was "one of the great areas where the digital railway can come into its own". The Centre for London report *Turning South London Orange* had suggested it should come under the auspices of TfL as part of London Overground.

Mr Hobbs added that lines into Victoria main line station have a peak capacity of 14 trains hourly which itself was "not great". Outside the station lines diverge. "At Streatham Hill you end up with four trains an hour. A mile away, Brixton on the Victoria Line has 30 trains per hour."

Improvements to infrastructure such as grade-separating junctions, and metro-style rolling stock with bigger doors were also needed. "When a train stops at Clapham Junction, a third of the passengers get off and a third get on, in single file. The train is stationary for two minutes."

Automatic train operation is to be installed on the central section of Thameslink using a form of ETCS: "That's a start. Why stop there?" he asked. The East London Line could run at 24tph rather than 16, but it lacked onward train paths through south London. "The digital railway could help with that," he said.

In Network Rail's next five-year investment plan, he said, "we would like to see the start of the next generation of really big projects, such as Crossrail 2." This would be a benefit not just to London, but by relieving pressure on Waterloo it would open up paths to destinations as far afield as Basingstoke and Southampton.

A brave decision

London Underground capital programmes director David Waboso, shortly to join Network Rail as digital railway managing director, joined TfL 11 years ago from the Strategic Rail Authority. The SRA and RSSB had been leading industry strategy on ETCS and had just decided on a trial on the Cambrian Coast line in Wales. TfL took the "brave and really tough decision" to install digital signalling, starting with the Jubilee and Victoria Lines. This introduced automatic train operation and automatic train control – in-cab signalling that dispenses with much lineside equipment, using CBTC which is the standard that applies to metros.

Subsequently the Northern Line was upgraded; soon the Victoria Line will be operating at 36 trains hourly, and the sub-surface railway is now being digitally re-signalled.

Capacity had been increased by up to 30%, largely through digital technology which included train supervision, a system that knows where every train is and where it's going. It can predict where delays will occur and allows quicker recovery. Making timetable changes, which used to be a cumbersome task taking months, could now be carried out through a new computer based timetabling tool.

The challenge

The challenge was how to repeat this on national rail. Mr Waboso said what is needed is a clear and stable plan setting out cost and benefits and describing how the risks would be managed. Although he was keen to emphasise that any remarks made now were very preliminary thoughts, automatic train operation on the central section of Thameslink "should be built on", he said. "In my experience, building on a successful first implementation greatly reduces risks. There are ways of managing risk to allow digital signalling to be installed on the big main lines without disrupting services." Test tracks and simulation could be used. There were also potentially big gains for Transport for the North by using the technology.

"Traffic management is potentially a big win," he added. This could add more capacity either on its own or when linked to CBTC, once all trains were fitted with the equipment.

People questioned whether the UK should take the risk of being the first country to go digital. But Mr Waboso said: "ETCS is being rolled out in many places in Europe and elsewhere, although only the UK has such a significant capacity challenge."

Thales vice-president of ground transportation systems Alistair McPhee said using digital technology would produce a great deal of data for the benefit of train operators, infrastructure operators and passengers. "The digital railway is a great technology," he continued. "We've got to grasp the opportunity as an industry." The Shaw report called for a clear vision for the industry: "It should be brave and bold and push forward. It's the obvious thing to do as far as I'm concerned."

Transport for the North chief executive David Brown said: "Capacity into and out of cities is a big issue. We're working on the Northern Hub – that sorts Manchester out but it still doesn't look at capacity into the other big cities."

The new Northern and TransPennine franchises would add significantly to capacity into city centres in the next seven years through new trains and improved frequencies, but at the end the lines would be full, he predicted. "I foresee the new capacity will be swallowed up fairly quickly," he said.

Electrification would get more out of the existing railway through faster trains and more capacity, but only on main lines such as Leeds to Manchester. "It's not a comprehensive solution," he said.

It was also more difficult to create capacity for freight.

"We need to consider whether technology or new infrastructure is the answer to getting more capacity between cities," he continued. TfN's core ambition was for six trains hourly between the main cities of the North, he said. "Our initial work says you can't do that by tweaking the existing infrastructure. But all our work with Network Rail has looked at infrastructure. We haven't looked at technology. There's an opportunity there."

He warned against looking at the problem from the perspective of each mode individually. "There may be an optimum solution looking at rail and the motorways together."

Taking up this point, Andrew Adonis, chairing the session, asked whether driverless vehicle technology could provide part of the solution. "Could you put freight on convoys of lorries on motorways overnight, more systematically, with marshalling yards at each end?"

Rail, he said, was not particularly successful for freight except for bulk cargos such as aggregate, for example. "If I was at the DfT now it would be something I'd be looking at. Driverless technology on motorways has none of the safety issues it has in towns. The motorway network is largely empty for seven hours of the day."

Rail Delivery Group chief executive Paul Plummer said: "From a customer perspective the flexibility you get from the digital railway is transformational, but talking about the digital railway doesn't convey that."

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"You have to concentrate on the big problem areas"

Digital signalling allows up to 34 trains per hour on the Victoria Line

From top: David Waboso, Paul Plummer, Lord Adonis and Steven Norris

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He added: "There isn't a do-nothing option. Do we do digital or not is not a yes/no question. You can ask: do we get to level two or level three, how fast, and so on."

He added that more people in the rail industry should act as advocates and the industry should be "much more engaged at bringing the supply chain in". Celebrating success was another thing. "If we can start delivering something and people can see the benefits, we could build on it."

Leading rather than waiting would create an opportunity for the railway industry to export its skills. "We need to bring Europe along with that rather than waiting."

No magic bullet

Greengauge 21 director Jim Steer cautioned: "You can't just bring in digital technology and immediately get a capacity gain. There are a lot of other things involved.

"It's no good putting the digital railway in if you don't replace the trains to get people on and off more quickly." Significant infrastructure improvements would also be needed. "The London Underground is well designed, and in effect self-contained." National Rail was on a different scale – a much wider system, with a wide mix of train types. Freight had to be accommodated. "Spent nuclear fuel can't go on the road," he said.

However, he concluded, "I think we can build on the success of London Underground. People accept that as a metro it's different, but it shows how it will work. Otherwise people will struggle to grasp the concept."

Lord Adonis asked where the process should start. Mr Steer said: "You've got to start by solving some problem where there's a driving imperative – the Brighton main line or the East Coast main line where there's real pressure. You have to concentrate on the big problem areas."

Consultant Jonathan Roberts concurred. "My view is that you can't do one or two small things. The industry must think big and do several large areas, aligned with political priorities. Set out a challenging programme: where are the major sections of signalling that have to be upgraded? "The Brighton main line has to be done. It's one of the most congested areas, and it could fit with Thameslink. I would also look at the northern routes."

Former transport minister Steven Norris referred to the *Turning South London Orange* study in which he had participated, which had focused on "getting more out of what we've already got".

"It's worth remembering there are one or two things we could do very easily." For example, the study had discovered that "there are freight paths in south London that are never used, using up passenger capacity without good reason. We could just switch them off, cost free."

He continued: "I'm obsessed about where the money's coming from." Transport had had some "inordinately generous settlements over recent years", but the tap could just as easily be turned off. "But if you can give me a 20% increase in rail capacity there has to be a way that we can monetise that to bring in private capital."

Natasha Cleeve, a partner in recruitment consultant McLean Interim Management, said there were so many projects in the pipeline that they would be "fighting for resources". "You can't build a new railway with the old skills," she said. Mr Norris agreed that the capacity of the supply chain was "the most pressing issue". Network Rail had underspent by £1bn over its 2009-14 investment period because of this. Over the next five years it was trying to spend twice as much.

Mr Steer said that from a recruitment viewpoint, digital technology could be a way of helping the rail industry appeal to a new generation.

Long-term continuity

Mr Brown said that sustaining the current level of investment to create long-term continuity for the industry was necessary to attract new staff and make sure capacity existed in the supply chain.

Mr Waboso said that capacity at complex junctions such as Aldgate on the Underground could only be unlocked by moving block technology. This would also get the signalling equipment on the train, eliminating trackside infrastructure, which brought great operational advantages. "Trains go back to depots every night where they are easy to work on. Track infrastructure needs people to go out and inspect it."

He said the decision as to whether to go for ETCS level 2 or level 3 on national rail should be driven by risk and timing. Level 3 was behind Level 2 development but would make a big difference to whole-life spending, and improve difficult junctions.

"A big decision when I get into my new job will be how, where and when we apply Digital Railway."

As well as test tracks and de-risking, he favoured going ahead on areas that have a desperate need for capacity, including deployment of traffic management. But he added: "It will only work if the industry comes together."

The digital railway – ready and waiting

Far from being in the dark ages, signalling technology on the UK rail network has undergone a revolution in the last 30 years and still has much untapped potential, says **Roger Ford**

Alistair Gordon's opening to his comment piece on the promise of the digital railway (*TT*, April) was another example of the assumption being promoted that railway signalling and control in the UK is, to quote Network Rail chief executive Mark Carne, "in the dark ages". Alistair posited that if, 30 years ago, you had asked the British Railways Board for their vision of the railways in 2016, "I am certain they wouldn't have dreamt that we would be using the same technology to signal and operate our trains".

And he is right, because 30 years ago the British Railways Board was launching a digital revolution that was to transform signalling. The year before BR had commissioned the first computer-based interlocking at Leamington Spa. Commercialised by two British companies, what was called the Solid State Interlocking went on to become the UK standard and an export best-seller to 10 railway networks including Belgium, France and Hong Kong.

That was not the limit of the vision. Next came the Integrated Electronic Control Centre. Where the previous state-of-the-art had been the large power signal box, with routes set on track diagrams using push buttons and switches, the IECC had the track diagrams on colour monitors at workstations, with routes set by clicking a mouse.

Liverpool Street, the first IECC, went live in 1989. Today, much of the railway is controlled from 12 IECCs plus a similar number of control centres also using screen-based workstations to operate the railway.

A third digital innovation reduced the signallers' workload in IECCs, enabling them to control larger areas safely. This was Automatic Route Setting, first trialled as far back as 1983.

ARS tracks the progress of each train and sets the points and signals according to the timetable. It incorporates algorithms which it uses if a train is delayed to determine priorities at junctions, for example.

Technology does not stand still and more powerful computer-based

interlockings, still using the basic SSI principles, are being installed on resignalling projects across Network Rail. IECC has also been uprated and now provides an enhanced range of functions, making the signaller more productive and improving operations.

So this is the "dark ages" technology from which Network Rail's Digital Railway Programme will rescue the railway, but not until sometime after 2020.

This seems a long time to wait, given that today's IECC technology has considerable untapped potential. A manager who demonstrated the new upgraded Marylebone IECC to me likened this potential to a smartphone, with the train operators able to add apps.

Take a change of platform. An app already available would allow the signaller to call up the train's reporting number, make the change instantly without having to access the stored timetable, and let the Enhanced Automatic Route Setting set the route.

A clever feature, already in use, checks with the timetable when a train arrives at a terminus, determines what train it will form on its outgoing journey and sets the appropriate reporting number for the ARS to use.

Another recent development in digital technology has been the Driver Advisory System on trains. These devices know the train's timetable, its location (from GPS or trackside beacons), and speed. The DAS unit calculates the speed the train should be driven at to arrive at the next station on time and displays it to the driver.

To date, these have been used to save energy by avoiding trains running unnecessarily fast and having to brake or arrive early. But the logical next step has already been trialled on the Great Western. Known as Connected-DAS (C-DAS), a radio link to the signalling system provides real-time advice to the driver on the correct speed to avoid stopping at the next junction, for example.

In the trial, C-DAS regulated High Speed Trains leaving Reading so that they did not have to stop or brake to let a Heathrow Express train on to the fast line at Airport Junction, smoothing the flow of traffic and saving energy.

So far from relying on Victorian signalling technology, thanks to the vision of engineers and managers 30 years ago, today we already have a 21st-century digital railway. What is lacking is the will to exploit its latent capabilities.

Ironically, it is Network Rail's obsession with its long-term Digital Railway Programme that is standing in the way of the significant enhancements to the performance and reliability of the rail network which are waiting to be exploited. Yes, the digital railway may offer an alluring prospect, but great expectations are no excuse for ignoring today's opportunities.

> **"We already have a 21st-century digital railway. What is lacking is the will to exploit its latent capabilities"**

Roger Ford has written extensively about signalling and was made a Companion of the Institution of Railway Signal Engineers for his services to the wider understanding of the industry

A success story vital to the nation

The railway is vital to Britain's economic growth, helping to create jobs and build more houses. But with passenger numbers growing, it needs to modernise to add capacity, says **Sir Peter Hendy**

Rail is vital to Britain's economic success. Every single day, more than 4.5 million journeys are taken by people to work, meet, study or visit friends and family. Freight trains deliver goods all over the country, taking 7.6m lorry journeys off the road each year. Rail links are vital to business and communities; new rail lines unlock growth, jobs and housing. Network Rail itself employs 36,000 people in Britain and the railway and its supply chain support another 216,000 jobs.

We are concealing a fabulous success story. The UK now has the safest, and fastest-growing, railway in Europe. Passenger numbers have doubled in the last 20 years and demand is accelerating at levels last seen more than 100 years ago. Rail freight is also booming, showing a 70% increase since the mid-1990s. None of us has seen such growth in our lifetimes.

Britain has among the highest customer satisfaction ratings of any rail system in the world. We have cut the cost of running the railway by 40% in the past decade. The Government subsidy is half that in France and a third of the level of Germany, and it continues to fall. At the same time the cost of running each passenger train has fallen by 48% since 2004.

Economic growth, jobs and housing are what good transport achieves for Britain, and it is an astonishingly good story when told. It is vital to embrace this success, and in order to do that, we have to keep investing in and upgrading our rail infrastructure.

But because of this growth in demand, large parts of the network are full and we are facing delays and congestion. Our network, our stations and our platforms deal with more passengers than they were ever designed for. Britain has by far the most heavily congested railway in Europe, and more and more trains and stations are overcrowded.

It also means timetables are being stretched to full capacity, with no slack in the system for delays of any sort. A single problem at one place at rush hour can have a knock-on effect on services hundreds of miles away, many hours later. In pure numbers, more passengers are getting on trains and arriving on time at their destination than at any time in the history of the railways. But train performance is not where we want it to be, and too often passengers are still being let down.

That's why Network Rail is investing in its Railway Upgrade Plan, the

Sir Peter Hendy CBE is chair of Network Rail

biggest programme of rail modernisation since the Victorians. After decades of underinvestment, the Government is investing more in real terms than at any time since nationalisation in improving and upgrading the railway. This means massive upgrade programmes, such as Thameslink and the comprehensive modernisation and electrification of the Great Western main line, and new lines such as the Borders line to Edinburgh and the new Chilterns link which will connect Oxford with Marylebone. It also means completing Crossrail, starting HS2 and planning Crossrail 2. We are adding more capacity, with more trains, as well as making possible longer and faster trains through longer platforms and the electrification of key lines.

Network Rail's Railway Upgrade Plan is taking place on a network which is carrying more trains and passengers than ever before, for at least 18 hours a day. It isn't easy and it will take time, with some passengers experiencing disruption while we work. But the result will be a much better service. Our improvements will add 170,000 more seats into London at rush hour, and 30% more into the great cities of the North. The railway is driving economic regeneration through new lines and through modernised stations including Birmingham New Street, Manchester Victoria, King's Cross and London Bridge. Over 400 smaller stations have benefitted from a £150m improvement programme in the last five years.

As passenger numbers continue to grow we need to find innovative ways of squeezing more from the existing network. The railway must harness digital technology. Digital signalling and train control will release more capacity on existing tracks, allowing more trains and making journeys more reliable, safer and more environmentally friendly.

We believe we need to accelerate the transition to digitally run rail-

"We need to find innovative ways of squeezing more from the existing network"

Modernised stations such as Birmingham New Street (top) and new lines such as the Borders railway are encouraging regeneration

ways to unlock the benefits before the network gets gridlocked. The Digital Railway programme will increase capacity and save money. You can see how the technology works already on parts of the London Underground. We need to get on with it so we can unlock the capacity in our network and create many more British jobs in technology and implementation.

Nicola Shaw's review endorsed our direction of travel as a company and Network Rail is geting on with a devolved business model, a northern route and alternative funding. Nicola Shaw says the tenets of her report are growth, passengers and devolution, and I agree. We have to look further than the railway for benefits and growth, and prioritise, ensuring that the right projects are happening at the right time. Network Rail is committed to putting passengers and customers at the heart of what it does and our devolved business model is putting decision-making in the routes, closer to the passengers and train companies. A new "virtual route" for rail freight and national passenger operators will become Network Rail's ninth devolved operational route later this year.

We strongly endorse Nicola's desire to see more private finance coming into the railways. More third-party funding from the people who will benefit from railway improvements – developers, LEPs, suppliers – is the sensible way to build a bigger and better railway for the nation. I predict that most schemes successful in getting funding in CP5 will have some element of third-party funding, just like most projects at TfL.

I also fully support the final Shaw recommendation to "strengthen long-term workforce planning and establish targets for increased diversity". Our general management capacity needs to be measurably improved, particularly in the new era of devolution and the new challenges that will bring. Ethnic and gender diversity is fundamental; how can we meet customer needs without reflecting our customers and the communities they serve? We need the whole railway to embrace it as the future and at Network Rail, we will play our part to make sure this happens.

And I am confident that as an organisation, Network Rail can continue to grow the railway, which is essential to economic growth, jobs and housing for communities across Britain.

A network for the whole economy

UK roads are thought of as either strategic – motorways and A-roads – or local. **David Quarmby** and **Phil Carey** argue that attention should be focused on a third, hybrid group of economically important roads

Highways England is a year old and by all accounts has got off to a good start: chief executive Jim O'Sullivan is focusing on putting into practice the first five-year road investment strategy, achieving a much more customer-centric culture, and targeting vital safety improvements for road users and roadworkers alike. Doubling expenditure by 2020 on the strategic road network of motorways and trunk roads – accounting for 2% of England's roads but a third of all traffic – is a cornerstone of the Government's ambitious infrastructure programme, set out by the Treasury three years ago and designed to sustain the national and regional economies and to support key areas of economic regeneration and growth.

But is concentrating on the 4,400 mile strategic network enough? Its coverage varies between different parts of the country and between conurbations; it doesn't always provide sufficient connectivity for users across the regions (such as in East Anglia and Lincolnshire, or south of London) or to meet new patterns of movement (such as the arc running north-east from Oxford towards Cambridge). It's left to a series of major cross-country local authority roads to meet these needs.

Critically important though it is for the nation, the strategic network does not, in our view, comprise all the roads that drive England's economy at the national and regional level. So, in a project commissioned by the Rees Jeffreys Road Fund, we set out to define on an objective basis a fuller set of economically important roads – strategic and local – that make up a coherent network.

Taking account of traffic levels, the proportion of commercial transport (HGVs and light vans), and connectivity for all towns above 50,000 population, we add 3,600 miles of the more "strategic" local authority A-roads alongside the strategic network, creating a Major Road Network of 8,000 miles (see map).

The result is a balanced and integrated network that underpins national and regional economies.

The 8,000 mile Major Road Network is based on motorways and all those A-roads in England that, using 2014 traffic count data, have average annual daily flow greater than 20,000 vehicles, or greater than 10,000 vehicles as long as the proportion of HGV traffic is at least 5%, or of LGV traffic at least 15%. Account is taken of connectivity for towns and cities of more than 50,000 population. The 2014 data have been modified by type of road and region to take account of the varying rates of traffic growth to 2040 predicted in the 2015 National Road Traffic Forecast (scenario 2)

It provides a framework to plan long-term strategic investment.

But it will only fulfil its potential if there is a consistent regime of governance, planning and funding. This would provide the mechanisms needed to provide the service the country needs from its major roads. It's not only about the infrastructure itself, but about the flexibility to adapt as technology revolutionises how busy networks are managed, and how vehicles use them.

All this is clearly a challenge when more than half this network is the responsibility of Highways England, while the rest belongs to scores of local highway authorities. Highways England now has a clear remit, with five-year planning and funding arrangements; there is a very different regime for local authorities, which are largely subject to annual budget-setting, a complex patchwork of funding sources and no comprehensive performance regime. The gulf is exacerbated by the large and growing funding gap between the two.

But we are not advocating any changes in who is responsible. Instead, there are two changes in the governance regime for roads which are already in train and can ensure the MRN concept is workable and achievable.

First, as part of the Government's devolution agenda, new legislation allows the creation of sub-national transport bodies, formed by voluntary groupings of local authorities and other stakeholders. Each grouping bids to vest its own sub-national body with a range of possible transport powers – either "uploaded" from those authorities or "downloaded" from Whitehall. The Major Road Network is arguably the "natural" network of regional and national roads for a sub-national transport body, provid-

ing wider connectivity to and within its area than the strategic network alone can. The sub-national body would then collaborate with Highways England on the strategic planning and development of this network.

One of the prospective bodies, England's Economic Heartland Strategic Alliance, is in the process of doing just this, adopting the MRN as the strategic network for its area. We understand that alliance would plan to work with Highways England on the strategic development and programming for the MRN in its area. But it would probably also retain the local highway authorities across the south Midlands as the network operators with statutory responsibilities for their bits of the MRN, alongside all the other local roads each one operates. A similar opportunity exists for Transport for the North and Midlands Connect.

Second, the creation of the National Road Fund for strategic roads, fed by hypothecated vehicle excise duty from 2020, provides an opportunity to consider funding the local authority component of the Major Road Network in a similar way to Highways England's strategic network. Based on projections of VED receipts from the Treasury and the Office of Budget Responsibility, and depending on Highways England's future needs, there may well be some capacity in the National Road Fund to contribute to maintenance and development of the local authority roads in the MRN.

Strategic planning of the MRN is not just about addressing network capacity challenges; to fulfil its core purpose in supporting regional economies entails a degree of connection between the spatial, economic and transport planning processes. The variety and complexity of England's local governance arrangements do not make this easy, but the creation of Local Enterprise Partnerships has provided a good opportunity to make this happen, and the MRN is the "natural" road network for this.

In spite of a chaotic start – and continuing overlaps in LEP geography – the LEPs have been using the leverage of local growth funds to "join the dots" with local planning and local transport authorities, and to achieve collective ownership of the resulting plans and priorities for investment and policy action.

Inevitably LEPs' capabilities and degrees of integration with partner local authorities vary. But we believe the concept is sound, and as the LEP movement matures it should grow in effectiveness.

All this needs the MRN to be comprehensively fit for purpose – fit to meet the needs of the wider range of user types, and to maximise the net benefit to local communities. The components of this embrace many aspects familiar to highway authorities through guidance documents and codes issued for the UK Roads Liaison Group, such as *Well Maintained Highways,* but the concept of fitness must be more holistic, embracing safety and environmental impacts as well as users' needs and expectations, and the effective utilisation of capacity.

Highways England is a special case, in that its licence and the targets set and monitored by ORR define much of the mechanism for ensuring the strategic road network is fit for purpose. This new regime provides a strong starting point for ensuring fitness for purpose consistently across the MRN as a whole.

In broad terms, this fitness for purpose to meet the needs of the user and communities should embrace:

- Setting and meeting reasonable service expectations
- Providing the connectivity to sustain local economies and support growth
- Reducing the impacts on communities and the environment
- Meeting or managing current and prospective demand
- Providing effective regimes for safety management and efficient network operation
- Applying an effective asset management regime
- The ability to respond to and exploit innovation and change in technology, in vehicles and in infrastructure management and operation.

These requirements will be differentiated by the road's context, with a distinct form of fitness applying to the MRN in large urban areas. We have identified four separate tiers within the network, each performing a distinct function:

- Tier 1 – motorways and purpose-built limited-access roads (mostly dual carriageway). This accounts for 46% of MRN mileage;
- Tier 1A – an 11% subset of this mileage in conurbations, where frequent junctions and very heavy traffic flow mean they will be particularly subject to the wider transport policy framework and traffic management strategies set by the city or regional authority;
- Tier 2 – mainly all-purpose rural A-roads that also sometimes serve the "place" needs of communities they run through, representing 42% of MRN mileage;
- Tier 3 – major roads in urban areas, often with the greatest mix of user types, and where significant "place" functions will need to be met as well as "movement". They may be associated with air quality problems. As with Tier 1A, these urban roads will be particularly subject to locally determined cross-modal transport policies, and prioritisation of some user types; they account for 12% of MRN mileage.

Handling the potential conflict between the movement and place functions of many urban roads and streets was recently addressed comprehensively in the DfT's *Manual for Streets* series. The London Mayor's Roads Task Force was the first attempt to deal with the conflict on a network basis, establishing a 3 x 3 matrix of street types within which all road sections in London – major and minor – have now been classified according to the relative significance of movement and place. This guides consistent and tailored interventions on roads and streets in the network, and would apply to our Tier 3 major roads. It is a methodology well worth applying in other significant urban areas.

As combined authorities become established in the city-regions, they are beginning to designate key route networks, their interpretation of the significant roads for the conurbation to function effectively. This reflects the idea of the Transport for London Route Network and the first key route network, in Greater Manchester. Understandably, these are more granular than our Major Road Network, which remains the right strategic network for the super-region as a whole – whether this is Transport for the North, Midlands Connect, England's Economic Heartland or other bodies yet to emerge. The key route networks can fit well alongside the less dense, and more integrated, MRN.

At a time when economic sustainability and growth is the government's strategic priority, and an unprecedented programme of road and rail infrastructure spending is under way, this is the moment to ensure that expenditure on the nation's roads reflects the underlying need, not distorted by the current institutional arrangements. We believe the Major Road Network concept is tailor-made for that. It meets the need now, not requiring any disruptive reorganisation, and also provides an enduring framework for the longer term.

The Rees Jeffreys Road Fund

The Rees Jeffreys Road Fund is a charity which supports education and research in transport. In autumn 2014, the fund commissioned a two-year study to develop a long-term vision for England's major road network, for its users, the communities it passes through and for the role it plays both nationally and in the regions. The report will be published in October 2016.

For further information, visit www.futureroadsengland.org

"The Major Road Network is the natural network for a sub-national transport body"

David Quarmby is former chairman of the RAC Foundation and a former member of the London Roads Task Force. Phil Carey is the road user policy adviser to Transport Focus and vice-chair of the Transport Associates Network.

Scotland has announced the ambition of introducing a national smartcard. But smart ticketing schemes in the UK have generally been introduced in an uncoordinated way

A national approach to ticketing

It's time for transport operators and local authorities to join forces in developing a national ticketing system. There would be great benefits for passengers and cost savings for operators, among other advantages, says **Martin Howell**

Martin Howell is Director of External Affairs of Cubic Transportation Systems

For many years there has been a single, well-understood model for unified ticketing across the national rail network, based on the instantly recognisable magnetic stripe ticket, all run through the Rail Settlement Plan. This has served the rail industry well, but there has been only limited interoperability with other modes. There has long been an aspiration for a seamless, multi-modal payment scheme from which the whole country could benefit – but despite some isolated successes, the transport industry appears to be as far as ever from achieving anything like it.

Much of the debate (is it possible the industry has had enough of debating this?) is introspective, and does not put the needs of the traveller first. The travelling public don't care about specifications or platforms or settlement engines – they want to be able to book a journey easily and quickly and be kept up to date if it changes. And they want a simple, easy to use system that means they can change between modes knowing they will always be charged the best fare for their journey.

Many will say that progress is being made. Barely a week goes by without a report of a newly launched smart initiative somewhere in the country (remember that contactless smartcard technology is over 25 years old). The implementation of these schemes is undoubtedly important in making progress, but they leave a residual problem – despite the development and adoption of ITSO, these schemes are not interoperable. Further, multiple schemes are duplicating costs that could be shared: the industry is choosing a very expensive route to a wholly unsatisfactory solution. It doesn't have to be like this.

Other countries are moving forward fast – for example Denmark and the Netherlands. They have done this by making decisions at the national level, ignoring local politics and the seemingly endless discussions on account-based versus EMV; they have simply focused on users and their needs.

So how can the UK combine the simple proposition of a national, well-understood payment system with the technological advances and benefits now being introduced in various locations around the world, to the ultimate benefit of the user? Has the time come for a single back office, covering multiple regions and modes of travel, and based on a single account for travellers? Could this be achieved with an output-based specification that

focuses on the needs of the traveller and which refuses to get mired in commercial rivalries and politics? The answer to these questions is yes.

Looking around the world at a variety of systems and regional implementations in the US, Europe and Australia, the benefits are indisputable. The industry needs to stop over-complicating this. A sensible, workable end-to-end solution is perfectly attainable now.

Take Chicago as an example. The city's Ventra system is working well as an account-based smart solution, and has just passed the one billion transaction mark. Although a city region-based solution, such an approach is scalable nationally if the will is there.

The massive duplication of cost, resources and effort that is going on at present can be removed if authorities and operators join their thinking together. There are encouraging signs, with the big five operating groups clearly heading in this direction.

To be successful, however, any national implementation must have a controlling mind, capable of directing operations, removing ambiguity and making decisions. London's example shows this clearly. The indisputable success of first Oyster and now contactless payment acceptance was only achieved through clear leadership. The national leadership role needs to be grasped firmly and made to work if the industry is to achieve the goal. It requires an individual of stature with a proven record of delivering complex operational systems, probably chosen and endorsed by the DfT, to lead an appropriate organisation.

This would be a bold step – but the UK is falling behind other countries and bold steps are called for. It is no longer enough to be setting the direction of travel, leaving it to the market to sort it out and hoping for the best.

I am not suggesting a reckless leap in the dark. There is a vast mass of contractual complexity and legacy infrastructure that needs to be worked with, and factored into thinking. That infrastructure does not need to be scrapped. An implementation could begin with interoperability between three or four cities, such as Transport for the North is planning. And lessons and expertise from where interoperable systems are proven around the world must be woven into the fabric of the solution.

We can build on the momentum of Transport for the North and the proposed national smartcard for Transport Scotland. Of course there will be challenges. There will always be multiple stakeholders with potentially conflicting priorities. Bold leadership is critically important to overcome and solve these problems.

Not all constituencies will have the means or the powers to move at the same rate, and devolution of powers will mean different rates of response and engagement across regions. Incremental operational and cost benefits will need to be clear from the outset to persuade even just the larger operating groups to participate.

It is not too far-fetched to imagine a very different world, if the industry acts decisively, boldly and with urgency. We could have a single, multi-modal payment system that allocates fares and payments instantly and accurately, for both public transport and for road use – why not? The efficiency savings would be enormous and the customer proposition compelling: seamless intermodality through a single back office, rather than silos.

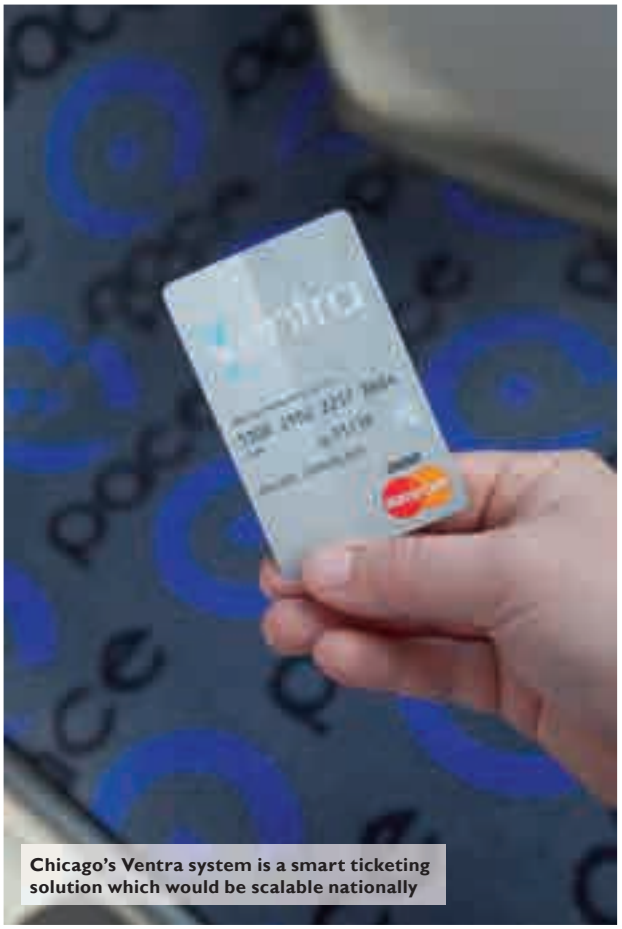
The convenience for travellers would be highly attractive and would come hand in hand with environmental, social and inclusivity gains for society as a whole. Most importantly for the industry, there would be access to rich mines of data on traveller behaviour – data that is currently frequently stored but less frequently analysed and almost never acted upon.

That data can be anonymised to allay privacy concerns – although Transport Systems Catapult's recent Traveller Needs and UK Capability study found that 57% of people would be willing to give up personal data if they felt they were getting something valuable in return. And that data would provide an unprecedented foundation for optimising network and service planning, as well as enabling operators and authorities to provide truly personalised information and intelligence to their customers and users.

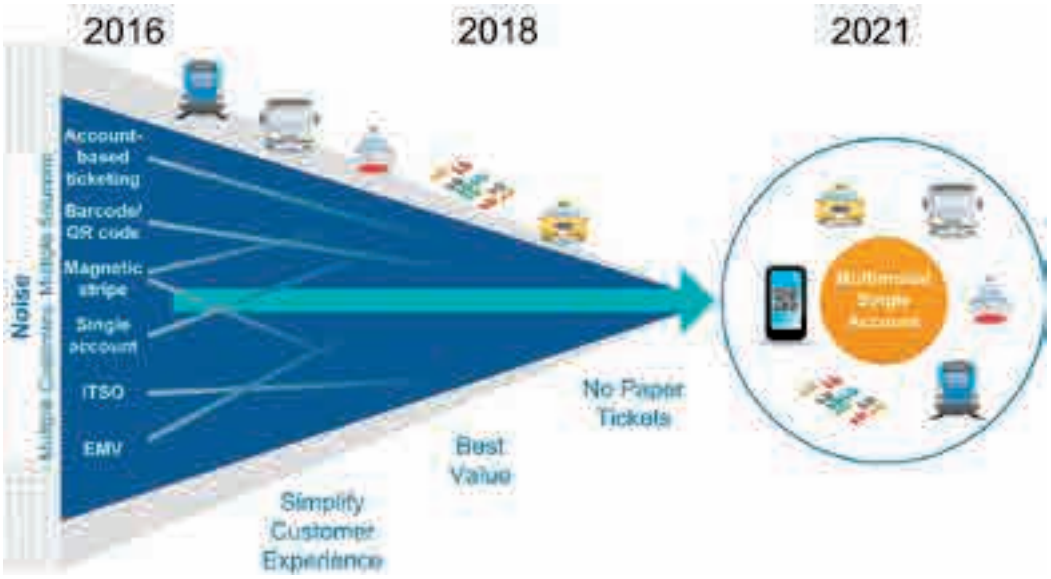
There is a global trend towards the concept of mobility as a service (MaaS). It has been very well received in regions where it is being introduced (Helsinki is the best-known example). The concept of buying one's travel as you would your energy is highly attractive to a whole upcoming generation who do not aspire to car ownership. A nationwide system based on an individual user account run through a single back office for all mobility would be the best possible foundation to catapult the UK into the MaaS firmament.

Can it be done? Account-based ticketing is here now and it works, proven on a huge scale. With the right leadership, a focus on the larger picture and a will to succeed, it could be providing nationwide benefits within a few years. If we really want to.

> **The success of Oyster and contactless payment acceptance was only achieved through clear leadership**



Chicago's Ventra system is a smart ticketing solution which would be scalable nationally



Val Shawcross

Russell Jackson

Shawcross to be Khan's transport deputy

London mayor Sadiq Khan has appointed **Val Shawcross** as deputy mayor for transport and deputy chair of Transport for London. Ms Shawcross served as Lambeth and Southwark's representative on the London Assembly for 16 years, before stepping down at this year's election. She spent eight years as chair and deputy chair of the London Assembly transport committee as well as being Labour's transport spokesperson on the assembly for the same period. She is a former leader of Croydon Council and acts as a judge for the London Transport Awards.

Mr Khan himself will chair the TfL board.

The mayor has also proposed the appointment of Lord Andrew Adonis as chair of the Crossrail 2 board. He will continue his role as chair of the National Infrastructure Commission.

Scotland's first minister Nicola Sturgeon has appointed **Fergus Ewing** cabinet secretary for rural economy and connectivity, a post that includes transport. Former transport minister Derek Mackay becomes secretary for finance and the constitution. Former minister for international development and Europe **Humza Yousaf** takes up the role of minister for transport and the islands.

AECOM has appointed **Russell Jackson** as head of rail for UK & Ireland and continental Europe. He will be responsible for leading and expanding AECOM's rail business throughout the region.

Mr Jackson joins AECOM from Atkins, where he worked in several senior roles, including most recently director for emerging markets in the company's transport division, and regional director west in the rail business. He has more than 20 years' experience in rail infrastructure management, and has led major civil infrastructure, station upgrade, signalling, electrification and rail improvement projects.

Paul McMahon has returned to Network Rail's freight business as managing director, freight and national passenger operators. He takes charge of a new "virtual route" for rail freight and national passenger operators, Network Rail's ninth devolved operational route.

The change is part of the company's strategy to become increasingly customer-focused, consistent with the recommendations of the Shaw report.

His team will take on responsibility for CrossCountry, which runs services on seven of the current eight routes, and will provide greater support for customers which operate nationally.

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