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Electrification and high-speed trains are both key to rail's destiny

Image: Paul Bigland

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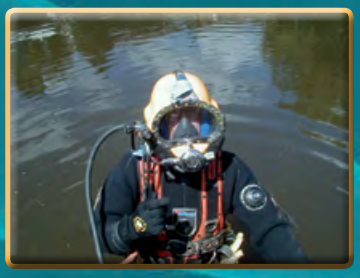

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editor's note

Welcome to the June issue of *Rail Professional* magazine. This month's issue focusses on electrification, high-speed rail, and track and trackside. Our electrification features start off with an opening salvo from **Noel Dolphin** of The Campaign to Electrify Britain's Railway who champions a rolling programme of electrification as key to not only helping achieve a green recovery, but also achieving the green future of net zero carbon emissions by 2050.

Ian Johnson, Head of Profession for WSP's UK Rail discipline, explains how the company is working with Network Rail on 'efficient electrification' and **Joe O'Donnell**, Head of Policy at Rail Freight Group, looks at Network Rail's Traction Decarbonisation Network Strategy (TDNS) and analyses the electrification policy from a freight perspective.

A focus on high-speed rail is ultimately a focus on HS2 but our three contributors on this topic explore the project from three separate angles.

Rail consultant **Simon Kendler** looks at the benefits of HS2 for the Midlands and the North and explains how to ensure they are all captured. Planning and transport consultant **Steve Chambers** asks why Britain is unable to imagine a high-speed future and explores the concept of the railway from a cultural perspective, examining the reality of communicating the benefits of rail improvements to the public. **Jim Steer**, Director of Greengauge 21, looks at the Government's intention to develop an integrated rail plan for the North and Midlands as a whole. A similar theme to The Campaign to Electrify Britain's Railway view that economic stimulus and decarbonisation should be intertwined, Greengauge 21 have also published a report detailing what Britain's railway should look like by the middle of the century – taking the position that much greater value in carbon reduction terms will come from addressing rail network short-comings in the Midlands and North.

Our final pieces cover track and trackside, with **Ben Bingham**, Network Incident Response Manager for the London Underground, telling the story of the Network Incident Response Team and all the incidents they have helped with across the London Underground over their eight-year history.

The second track and trackside feature comes from **Prolectric**, who fill us in on the advances being made in temporary trackside link lighting.

Our two interviews this month are with **Andrew Knight**, Export Manager at Rosehill Rail and **Jim Eldridge**, Regional Managing Director at Rock Rail Australia. Both interviews explore the global rail market and the UK's place in it. Andrew tells me about Rosehill Rail being named Export Champion by the Department for International Trade and what it means to be part of the Export Champion Community. I spoke with Jim about Rock Rail's new venture in Australia and his experience negotiating rolling stock contracts in the UK.

We have our usual collection of **Business Profiles** from a wide variety of companies that continue to operate and provide services during this time. I look forward to sharing more positive news with you next month.

Sam Sherwood-Hale Editor

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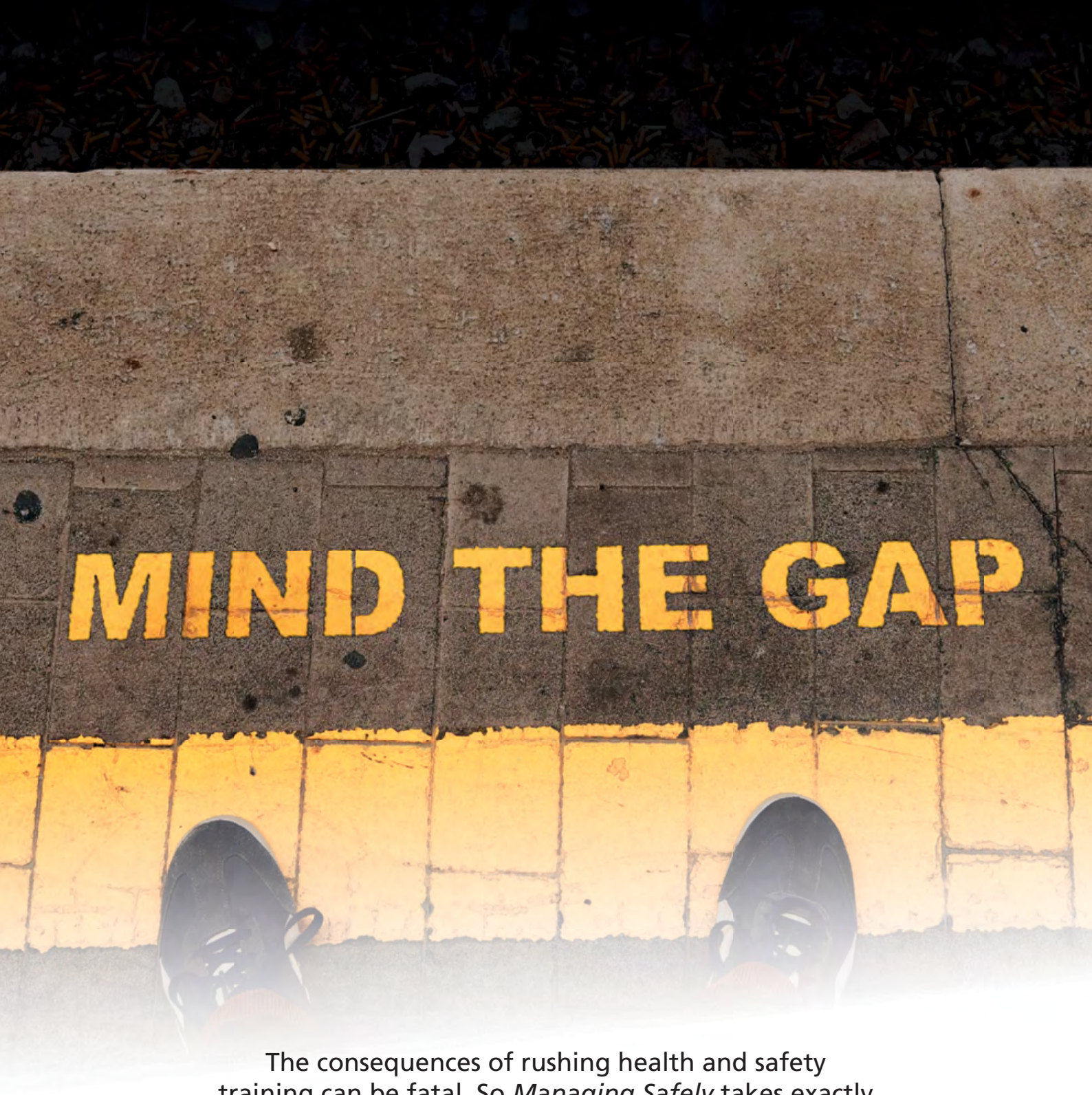

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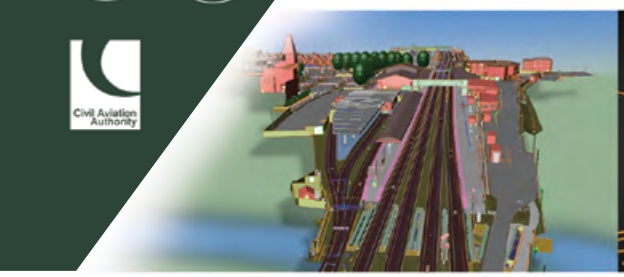

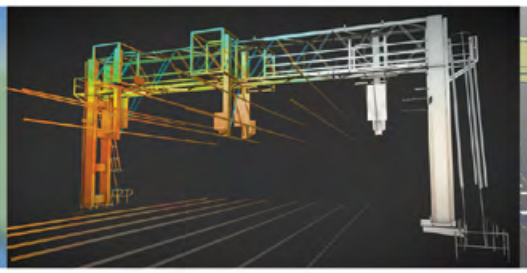

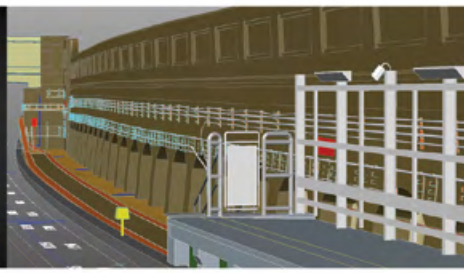

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News in brief

The Railway Industry Association (RIA) has published its submission to the Transport Select Committee on the impact of Coronavirus to rail businesses

The submission sets out that: Whilst there has been positive engagement between rail suppliers and Government, Network Rail and HS2 Ltd, rail suppliers would like to see stronger engagement with clients like Transport for London and the Train Operating Companies.

Suppliers have welcomed the assurance that rail work should go ahead, where it is safe to do so. The industry's main concern is a hiatus or drying up of work. Continued effective communication and engagement throughout the railway industry will be essential as the UK moves to the next stage of tackling the virus.

Translink announces more contactless tickets for safer journeys

Translink has introduced an extended range of new 'mLink' app ticket options as part of its drive towards contactless ticketing. The move reflects huge growth in demand for contactless payments. Single journey tickets are now available to purchase via Translink's 'mLink' mobile ticketing app (free to download) on NI Railways, Metro, Glider, Goldline and P&R services for Adult, Child, yLink and 24+ customers.

Southeastern launches £400,000 community rail fund

Southeastern has launched a £400,000 fund for community rail projects and is inviting proposals from existing Community Rail Partnerships (CRPs) and other local organisations.

Interested parties are invited to

Successful year and a half of trial operation of the world's first two hydrogen trains, next project phase begins

After 530 days and more than 180,000 driven kilometres, the successful trial operation of the world's first two hydrogen trains was officially completed at the end of February. Two pre-series trains of Alstom's Coradia iLint model have been in passenger service since September 2018. From 2022, 14 Coradia iLint series trains will replace the existing diesel multiple units. LNVG was the first company to believe in hydrogen, investing in it with the order of 14 Coradia iLint trains and thirty years of maintenance and power supply.

This project showcases the importance of green mobility for the state of Lower Saxony. As one of the leading rail vehicle manufacturers in Europe, Alstom will produce the fuel cell trains for LNVG and will be responsible for the maintenance of the vehicles at its site in Salzgitter. The gases and engineering company Linde will build and operate a hydrogen filling station for the series trains near Bremervoerde station.

'Our two pre-series trains of the Coradia iLint have proven over the past year and a half that fuel cell technology can be used successfully in daily passenger service. This makes us an important driving force on the way to emission-free and sustainable mobility in rail transport' commented Jörg Nikutta, Managing Director for Germany and Austria of Alstom Transport Deutschland GmbH. 'We have also obtained valuable data from the trial operation of the fuel cell trains for the further development of the propulsion technology.'

'We are proud that we were the first railway company in the world to be allowed to operate the first two fuel cell trains on the Weser-Elbe network. From the very beginning, our passengers were very curious about the trains and their new propulsion technology. Besides its very low noise level, the hydrogen train was able to score with its emission-free operation, especially in times of climate change. The operation of the iLint was a very special motivation for our train drivers' said Andreas Wagner, head of the SPNV division and authorized signatory of the Eisenbahnen und Verkehrsbetriebe Elbe-Weser GmbH (evb).

Carmen Schwabl, Managing Director of LNVG, added: 'With the successfully completed trial operation, the requirements for continuous operation of the hydrogen trains from 2022 are fulfilled. LNVG thus contributes to the implementation of sustainable, innovative and ecological mobility solutions, especially in rural areas.'

Coradia iLint is the first passenger train in the world to be powered by a hydrogen fuel cell, which generates electrical energy for propulsion. This completely emission-free train is quiet and emits only water vapor and condensation water. The train features several different innovations: clean energy conversion, flexible energy storage in batteries and intelligent management of motive power and available energy. Designed specifically for use on non-electrified lines, it enables clean, sustainable train operations.

Image: Alstom

News in brief

submit bids for a share of £400,000 in funding over a two-year period. A total of £200,000 in grants will be paid in the first year (ending 31 March 2021) and a further £200,000 is available in Year 2 (ending 31 March 2022).

HS2 launches signalling contract opportunities

On 15 May HS2 began the search for the specialist contractor that will deliver the state-of-the-art signalling and control systems which will allow the UK to run some of the world's most frequent and reliable high-speed rail services. The new contract opportunities cover the design and build of the signalling systems that will control trains travelling at speeds of up to 360kph between London, Birmingham and Crewe – where HS2 trains will join the existing West Coast Mainline – and up to 25 years of technical support.

LNER to put rail industry at forefront of innovation

London North Eastern Railway (LNER) is aiming to fast-track digital and tech developments into the rail industry through a groundbreaking new innovation programme, called LNER FutureLabs. The programme provides a unique opportunity for tech and digital start-ups to put their ideas to the test in an industry that holds a huge amount of potential when it comes to overcoming the challenges of personalisation, encouraging increased usage and improving sustainability.

Three challenges are set as part of the LNER FutureLabs programme:

- More Journeys, More Often.
- Personalised Customer Experience.
- Responsible Business Innovation.

More at www.railpro.co.uk/news

Bright Blue and WSP: Net zero more urgent than ever for government and business

Bright Blue, the independent think tank for liberal conservatism, and WSP, the leading engineering professional services firm, have today published a major essay collection, Delivering Net Zero, which outlines radical new ideas for how the UK can deliver on its net zero commitment by 2050, with contributions from nearly 40 leading chief executives, politicians, academics and thought leaders from across the private, public and third sectors.

The essay collection from Bright Blue and WSP argues that delivering net zero is both an environmental necessity and an economic opportunity. It rejects the argument that the transition to net zero requires vast amounts of government spending and intervention, highlighting instead the progress that has been made on decarbonisation to date, and could further be made in the future, through well-regulated markets with sensible incentives from government.

The essay collection offers analysis and ideas across nine key areas: transport; land; utilities; buildings; industry; waste; finance; government; and, innovation. The publication provides inspiration to politicians, policymakers, and practitioners in advance of the Conference of the Parties (COP) 26 in Summer 2021 to implement innovative programmes and policies to ensure the UK's market-based economy can meet its net-zero commitments.

Bright Blue and WSP believe that COVID-19 has strengthened the case for action on the challenge of this century – climate change. Governments, businesses and communities need and will be expected to do more to mitigate and build resilience to disruptive crises, such as global warming and extreme weather events.

The collection includes contributions from Nigel Wilson (Chief Executive, Legal & General Group), John Holland-Kaye (Chief Executive, Heathrow Airport Ltd), Peter Jelkeby (Chief Executive, IKEA UK & Ireland), Tony Juniper CBE (Chair, Natural England), Christine McGourty (Chief Executive, Water UK), Richard Walker (Managing Director, Iceland Foods), Nicholas Boys Smith (Co-Chair, Building Better, Building Beautiful Commission), Graham Stuart MP (Minister for International Trade), George Freeman MP (Former Minister for Transport), Ben Houchen (Mayor, Tees Valley), Professor Michael Grubb (Professor of Energy and Climate Change, University College London), Barny Evans (Sustainable Places Director, WSP), and many more.

Patrick Hall, Researcher at Bright Blue and report co-editor, commented: 'The UK has reduced its emissions by just over 40 per cent since 1990 at the same time as its economy growing by 75 per cent. A market economy can and should deliver deep decarbonisation. But achieving net zero emissions by 2050 is by no means an easy feat. Large parts of the UK's economy remain rooted in fossil fuels, and hard-to-abate sectors present the greatest challenge to decarbonisation. The coronavirus crisis should act as a catalyst for governments and businesses to urgently do more to address the challenge of this century – climate change. The transition towards net zero is often seen as requiring vast amounts of government-led investment and intervention. Yet, this neglects the progress that has been made on decarbonisation to date and could further be made in the future through well-regulated markets with sensible incentives from government. This Conservative Government needs to examine and promote how market-based reforms could yield substantial economic and environmental benefits in the journey to net zero.'

Mark Naysmith, Chief Executive at WSP UK, commented: 'Ensuring that big societal ambitions get delivered is what drives our planners, engineers, environmental consultants and technical experts. To us, there is no agenda greater than mitigating climate change and environmental degradation. Delivering net zero will be a team effort. As WSP is involved in all aspects of the built and natural environment, we felt it was important to convene some of the best minds from business, academia and government to explore how this agenda should be delivered, offering constructive ideas to move forward.

'The net zero agenda is an opportunity to build back better, level up the country, boost our national resilience and attract new talent into the built and natural environment , as well as being a societal duty. WSP is committed to being carbon neutral by 2025 and advises both national and local government as well as private organisations on sustainable practices, and I felt this collaborative essay collection would be a timely contribution to the national conversation on delivery.'

Key policy ideas offered in the essay collection include:

The introduction of a 'carbon pound'.

- HM Treasury should introduce a 'carbon scorecard' for all new policies.
- UK net zero emissions should consider consumption emissions.
- An international and privately-backed Green Investment Bank should be established.
- The Future Homes Standard should be implemented now rather than waiting until 2025.
- Decarbonisation standards should be introduced for local authorities to decarbonise small and medium sized enterprises (SMEs).
- New legislation should mandate companies over a certain size to audit their supply-chains and overseas operations to ensure they are not contributing to deforestation.
- Air passenger duty (APD) should be reformed so that flights operated using sustainable aviation fuels (SAFs) are charged a lower rate of APD.
- The Government should ban the burning and extraction of peatland for use in horticulture.
- A de minimis levy should be placed on any good sold, which would go towards a new 'Nature Restoration Fund'.
- Provisions which remove tariff and non-tariff barriers in low carbon sectors should be included in free trade agreements (FTAs).

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Major investment to improve journeys over world-renowned Ribblehead viaduct

North Yorkshire's iconic Ribblehead viaduct will undergo important maintenance this summer to secure its future for decades to come. The 144-year-old viaduct will have its drainage improved and brickwork restored making journeys for passenger and freight trains more reliable on the stunning Settle to Carlisle railway line.

The Great North Rail Project work will start in July and will see an investment of £2.1 million in the Grade II listed feat of Victorian engineering. Ribblehead Viaduct opened in 1876 bridging the gap between Ribblehead and Dent on the exposed and windy Batty Moor.

Work will take place on the viaduct between July and October 2020, when there will be:

- Brickwork repairs along the structure.
- Removal of vegetation and repairing the damage caused by plants and weeds.
- Upgrades to drainage systems across the viaduct's 24 arches.
- Repainting of metal and pipework in one universal colour.


Image: Network Rail

Devon economy handed £3 million boost

Figures released on 14 May confirm that an additional £3 million has been spent locally in south Devon between June 2019 and May 2020 by Network Rail and its contractors as a result of the Government funded project to build a new sea wall at Dawlish.

By the time the first section of the new sea wall is completed in summer this year Network Rail and its main contractor, BAM Nuttall, expect to spend a further £1.56 million in south Devon on local labour, materials and accommodation bringing the total spend in the local economy to nearly £5 million.

The boost to the local economy around Dawlish and Teignbridge comes as a result of Network Rail and BAM Nuttall committing to spend as much money locally as possible whilst they build the new sea wall which will help protect the railway and town from rising sea levels and extreme weather for generations to come.

Based on the amount spent in the Dawlish and surrounding areas to support the construction of the first section of the new sea wall, the team building the sea wall estimate that they will spend a further £5 million locally as part of the plans to complete the second section of the new sea wall.

Network Rail's plans for the second phase of the project to complete the new sea wall, which will be 410 metres in length from Colonnade underpass towards Dawlish Warren, are expected to be submitted to Teignbridge District Council in June. The Government has committed £80 million of funding to complete the upgrade of the Dawlish sea wall.


Image: Network Rail

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Old Oak Common HS2 station gains planning approval and is set to be the largest newly built railway station in the UK

The planning application for HS2's west-London super hub, Old Oak Common, was approved by the Old Oak Common and Park Royal Development Corporation (OPDC) on 19 May. The green light means that work can progress on building what will be the largest new railway station ever built in the UK. The station will have 14 platforms, a mix of six high speed and eight conventional service platforms, with an 850 metre long station box, with a volume to fit 6,300 Routemaster buses.

The HS2 Old Oak Common station will incorporate some striking design features, such as an impressive sequence of interlocking curved roof forms which has been designed to enhance the open environment of the station and provide natural ventilation minimising the need for long term energy consumption. The arch forms also reduce the need for columns to support the roof and provide clear sight lines, allowing views across the station to help visitors orientate themselves. The station design development has been led by engineering professional services consultancy WSP with architectural support from WilkinsonEyre.

When operational, the station will be used by up to an estimated 250,000 passengers each day and is set to become one of the busiest railway stations in the country. It will provide seamless connectivity with conventional rail services through eight conventional train platforms, to be served by the Elizabeth Line (Crossrail), Heathrow Express and trains to Wales and the West of England. The station design has a sufficiently sized concourse and platform space to accommodate passenger growth to 2041 and beyond, provision of a dedicated bus and taxi facility, dedicated drop-off and pickup areas, pedestrian and cycle links, and upgraded highway infrastructure comprising a new traffic signalised junction.

New public spaces are also being created as part of the design including a new public square directly outside the station. It will include seating and cycle parking and could also be used as a setting for public artwork.

The HS2 station will be a catalyst and gateway for Old Oak and Park Royal, one of the largest regeneration sites in the UK. Plans to transform the wider area around the station, a former railway and industrial site, are being led by the OPDC and they project that the area around the new HS2 station will become a neighbourhood with the potential to create tens of thousands of homes and jobs.


Image: HS2

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The Cheek of it | Chris Cheek

More Autumn growth but was it rail's last hurrah?

As demand exceeds 1923 total for the first time despite falls at seven TOCs, **Chris Cheek** analyses the numbers

Demand for passenger rail services in the UK rose during the Autumn, smashing yet more records. Performance was, as ever, variable, with seven TOCs seeing small falls, offset by four showing patronage increases of more than five per cent.

Overall, demand rose by 2.6 per cent during the fourth quarter of 2019, according to National Rail Trends statistics, published by the Office of Rail and Road (ORR). The TOCs that saw a reduction in passenger numbers were Avanti West Coast, c2c, CrossCountry, East Midlands Railway, South Western Railway, TransPennine Express and Transport for Wales. The remainder saw increases.

The provisional figures were published in April, and cover the third quarter of fiscal year 2019/20, finishing at the end of December: across the network, 462 million passenger journeys were made during the twelve-week period, up from 450 million in 2018. Between them, they covered 17.3 billion passenger kilometres, 2.1 per cent ahead, and paid a total of £2.7 billion in fares, 2.9 per cent more than in 2018.

Looking at demand by ticket type, the biggest increase came in advance tickets (6.5 per cent), followed by anytime peak tickets (6.2 per cent). Sales of anytime off-peak tickets were 5.3 per cent ahead. Other products saw a 13.8 per cent rise. These increases were offset by a 3.3 per cent fall in journeys by season ticket holders.

The growth during the quarter was driven by Regional services, which saw a 5 per cent rise in passenger numbers. The troubled Northern business saw growth of 13.3 per cent, followed by Scotrail and Merseyrail each being 3.7 per cent ahead. The Welsh franchise saw a second successive reverse, down by a hefty 8.4 per cent, whilst TransPennine slipped back by 0.8 per cent.

The InterCity sector carried two per cent more people during the quarter, Great Western leading the way again with 2.8 per cent growth. On the East Coast, LNER recovered from last quarter's fall with a 2.2 per cent rise. There were small falls at Avanti West Coast (1.9 per cent), East Midlands (0.5 per cent) and Cross Country (0.1 per cent).

London and South East services saw the smallest quarterly increase of the three sectors, at 1.1 per cent. TfL Rail led the way with 8.6 per cent, followed by London Overground (4.2 per cent) and GoVia Thameslink (3.7 per cent). Greater Anglia (2.8 per cent), Southeastern (1.1 per cent) and Chiltern (0.4 per cent) were also in positive territory, but c2c saw a fall of 2.4 per cent and strike-hit South Western 2.8 per cent.

In terms of passenger kilometres, largest growth came on the regional routes (up 5.4 per cent), followed by the long-distance InterCity franchises and London and the South East (1.2 per cent each).

Overall, income grew by 2.9 per cent, driven by rises of 6.2 per cent on the regional routes, 2.9 per cent in London and the South East and 1.4 per cent on long distance routes.

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Rolling year figures

The national totals for the twelve months ended 31 December 2019 show the number of passenger journeys rising by 3.1 per cent to 1.8 billion. This is the highest total since 1919. Passenger kilometres travelled rose by 3.2 per cent to 68.6 billion, whilst passenger revenue was 5.1 per cent higher at £10.6 billion. The rise in the latter was sufficient to deliver real-term growth: after allowing for inflation, revenue was 3.2 per cent higher in real terms.

The annual totals for sales of different tickets saw advance booking tickets leading the charge, with growth of 7.4 per cent, whilst anytime peak sales were 6.8 per cent ahead. Anytime off-peak sales were 5.5 per cent up. There was another fall in season ticket use, this time of 2.4 per cent.

Looking at the individual sectors, passenger journeys on the London and South East routes rose by 2.9 per cent, with passenger kilometres slightly behind on 2.6 per cent. On the InterCity routes, passenger journeys saw a two per cent increase, whilst 2.7 per cent more passenger kilometres were travelled. On the regional routes, there was a 4.2 per cent rise in the number of journeys, with passenger km was 5.3 per cent ahead.

Revenue yields were up by 1.9 per cent in cash terms. There were increases in all three markets, with London and the South East leading the way on 2.3 per cent, followed by InterCity (1.8 per cent) and regional services (1.5 per cent). After allowing for inflation, yields grew in real terms by 0.5 per cent on the London commuter routes, were unchanged on InterCity and fell by 0.3 per cent in the Regional sector. The overall change was a rise of 0.1 per cent.

Comment

In many ways, these figures are of purely academic interest now. They will no doubt come to be regarded as the high-water mark of passenger rail demand before the scourge of the COVID-19 virus descended upon the world, and everything were pear-shaped. They will be famous and widely quoted not for themselves, but for their significance against what came afterwards.

It was a creditable performance in a quarter of no economic growth, continued pain in the high street retail sector, more industrial action and the political uncertainty of a general election campaign – all of which now seems like a long time ago. Once more the industry suffered the self-inflicted wound of a botched timetable change in December, at least in some parts of the country.

In that context, one could argue that achieving any growth at all was a significant achievement. Once again, this pointed to the underlying strength of the product in the pre-virus world.

Before we plunge into the uncertainty of a world of social distancing and an economic winter of unknown severity, it might just be worth pausing and looking back from the heights of the December figures. If we look back to the turn of the century, we see that passenger demand has grown by 87 per cent. Traffic on the long-distance InterCity routes has more than doubled (106 per cent to be precise), whilst it's 87 per cent up on London and the South East and 80 per cent on the regional networks.

It is interesting to reflect, too, on the fact that ten years ago, we were just coming out of the worst economic crisis we'd seen in the world since the Second World War. There was a wide expectation amongst commentators (including me) that we had reached a high-water mark for passenger numbers then. Yet demand for train services kept on rising. In the subsequent decade, total patronage has increased by another 40 per cent – 33 per cent on long distance, 46 per cent on the commuter routes and 30 per cent on the regional networks.

Nobody would claim that it had all been plain riding – the industry has continued to hit wet spots and stretches of bumpy track along the way. It has at times been – and on occasion continues to be – its own worst enemy.

But in the difficult years to come, the industry – its managers, its staff and its political masters – would do well to remember the tremendous achievements of the last 20 years in achieving and accommodating this huge growth.

At the time of privatisation, or indeed for many years after, the idea that the UK rail network would ever exceed the passenger demand of 1.7 billion journeys recorded in the 1923 would have been dismissed as fanciful. Yet that is what happened last year. When will we see that again, I wonder.

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Laying down the law | Martin Fleetwood

A need for Responsible Contractual Behaviour

On 7 May, the Cabinet Office issued a guidance note on responsible contractual behaviour in circumstances where the Covid-19 emergency has a material impact on a party's performance of a contract (the 'Guidance')

The Guidance has general application covering both the public and private sectors active in the rail industry, with the exception of the devolved administrations in Scotland, Wales and Northern Ireland. Where specific guidance on any matters has been issued by the Government, that specific guidance takes precedence, but otherwise parties should take account of the requirements in the Guidance.

The Guidance has been published to help organisations face the extraordinary challenges of the Covid-19 pandemic and to encourage all individuals, businesses and public authorities to act responsibly and fairly in the national interest in performing and enforcing their contracts. It acknowledges that requirements placed on individuals to change working patterns and for most businesses, at the very least, to alter working practices, will put a strain on many contractual relationships.

A request to act responsibly and fairly

One thing that the Guidance does not do is replace any of the specific rights and remedies that parties have in their contracts. These still remain and can be used to enforce delivery or payment obligations or to try and apply remedies and reliefs, such as force majeure. However, enforcing rights or trying to obtain contractual remedies takes time and is not always as effective as it seems when the contract is drafted. Solutions to the unique challenges presented by the Covid-19 pandemic are, in most cases, required now and not in the many weeks or months it could take to obtain a contractual remedy.

The Guidance sets out a number of areas in respect of which responsible and fair behaviour is strongly encouraged. These include:

- Requesting, and giving, relief for impaired performance – including time for delivery and completion, nature and scope of goods, works or services, the making of payments and the operation of payment and performance mechanisms.
- Requesting, and allowing, extensions of time, substitute or alternative performance and compensation (including compensation for increased cost or additional performance.
- Making, and responding to, force majeure, frustration, change in law, relief event, delay event, compensation event and excusing clause claims.
- Requesting, and making, payment under the contract.
- Making, and responding to, claims for damages, including under liquidated damages provisions.
- Exercising remedies in respect of impaired performance - including enforcement of security, forfeiture or repossession of property, calling of bonds or guarantees or the initiation or continuation of insolvency or winding up procedures.
- Claiming breach of contract and enforcing events of default and termination provisions.
- Making, and responding to, requests for contract changes and variations.

Where there are contractual disputes,

> A key area for any party following the spirit of the Guidance is to accurately and adequately record in writing what the issue was and what the parties agreed as the outcome. The risk is that while there is the current push to act responsibly, once the Covid-19 emergency is no longer so intense, the joint effort to manage contracts effectively may be forgotten

the Guidance strongly encourages parties to seek to resolve such disputes responsibly. This focuses on negotiation, mediation or other, alternative or fast-track dispute resolution. Using the courts is discouraged as in comparison with these other solutions they are relatively slow and expensive.

Record the outcome

A key area for any party following the spirit of the Guidance is to accurately and adequately record in writing what the issue was and what the parties agreed as the outcome. The risk is that while there is the current push to act responsibly, once the Covid-19 emergency is no longer so intense, the joint effort to manage contracts effectively may be forgotten. This is particularly so if the parties continue to struggle to meet their contractual commitments. If there is no written record it is much more difficult to show that extensions of time have been given or changes to scope agreed.

The Guidance itself does not change the contractual relationship between the parties or the terms of the contract. It works through the parties agreeing to accept changes in the way in which the contract is performed. It requires actions by both parties and communication is the key. If it looks like there will be problems in meeting a contractual commitment, the relevant party should flag the problem sooner rather than later. It is the responsible thing to do in the circumstances and potentially help can be provided without a problem becoming a crisis.

It should be noted that the Guidance does not require relief to be given for general poor performance. The Guidance is clear that it is designed to deal with the effects of the Covid-19 pandemic. It is not a 'get out of jail free' card to be used to simply avoid obligations or change a commercial position. The contractual terms still exist and can be used to seek damages, apply payments for poor performance or even terminate the contract if appropriate to do so.

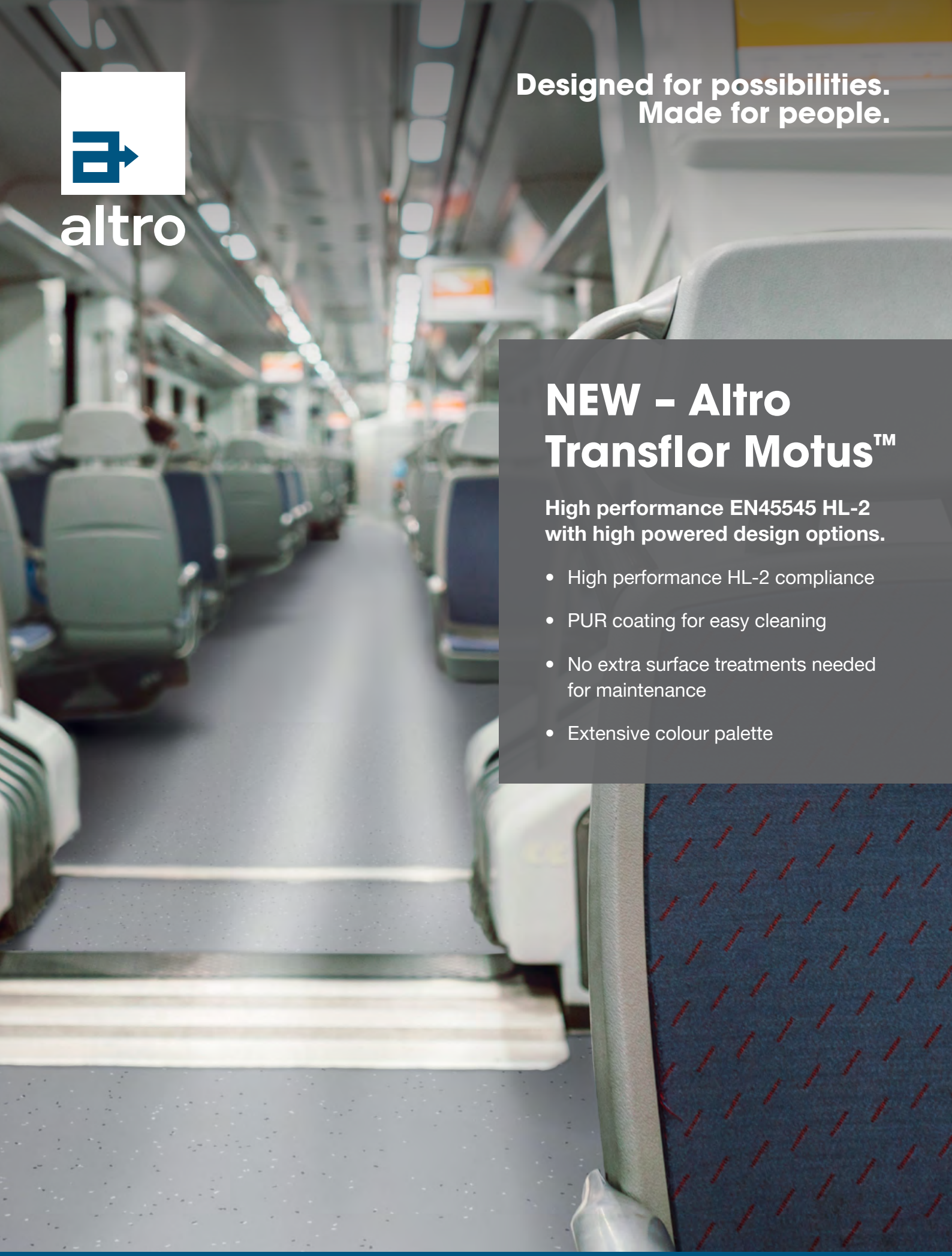
Looking at the bigger picture

Many organisations in the rail industry have long standing relationships with customers and clients. How the relevant contracting parties behave now is likely to influence how each party views and applies contractual rights and remedies once the pandemic has subsided and a level of operational normality has returned. By having an alternative way of dealing with issues, contract managers are provided with a level of support to consider solutions which look at the medium and longer term as well as the short term. There is also a greater level of certainty that if an organisation looks to deal with its counterparties as recommended in the Guidance, those counterparties will do the same.

The Guidance is clear that it expects all contracting parties to behave, not just in accordance with their own self-interest, but to also take account of a higher national interest in supporting the country's response to the Covid-19 pandemic. How this shows itself in a practical application will not be known for some weeks, but by then it may provide a good indication as to how easily the country will emerge from the pandemic and its associated economic downturn.

Martin Fleetwood is a Consultant at Addleshaw Goddard's Transport practice. The Rail Team has over 30 lawyers who advise clients in both the private and public sectors across a wide range of legal areas. As well as contractual issues, the team advises on operational matters, franchises, concessions, finance, regulatory, property, employment, environmental and procurement issues.

Disclaimer: This article is for informational purposes only and does not constitute legal advice. It is recommended that specific professional advice is sought before acting on any of the information given.



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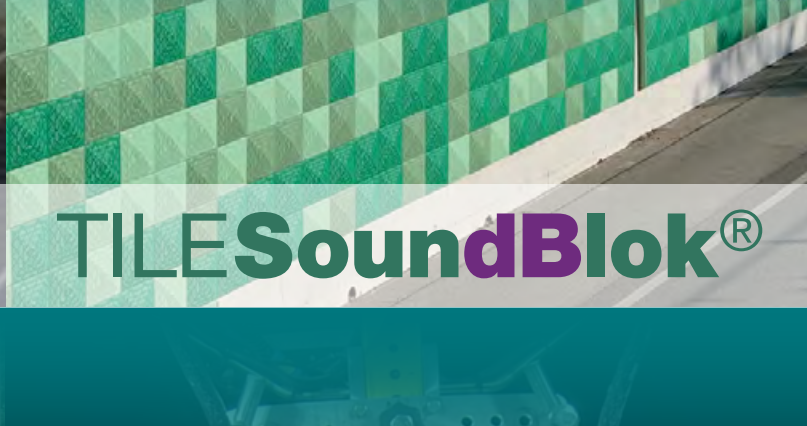

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In the passenger seat | Robert Samson

A new partnership: Government, operators and passengers

As lockdown rules begin to change people are looking for reassurance about returning to rail, **Robert Samson** explains how Transport Focus has begun to examine that key issue

At the beginning of May we started to speak to over 2,000 people about their current travel behaviour and attitudes to travel in future. The initial set of results from the first, benchmark, survey was published on 7 May. We currently intend to track these emerging attitudes and behaviours every week, with the second wave of results published on 14 May. This will help to inform both industry and Government of the emerging and changing behaviours and attitudes to travel.

This tracking survey will be supplemented by more in-depth work with groups of potential transport users – commuters for example. This will also allow us to test out draft communications and scenarios for the return to travel.

Safety concerns

Two themes are already beginning to emerge. The first, not surprisingly, is all about safety and what is being done to make travel as safe as possible. One respondent commented: 'I think I will be reluctant to use public transport once restrictions are eased because of the close proximity of people on trains or buses. You cannot guarantee you will get any distance between you and other passengers.'

With another saying: 'I think that they will have to limit the number of people who can use every bus, train carriage etc. People will have to wear masks, and transport companies will have to disinfect daily. I also think that people will be very nervous of using public transport for a while.'

There was strong support for social distancing to be in place, for face coverings to be worn and for hand sanitiser to be available on public transport. It will be incredibly important for governments and industry to reassure people on these issues. The advice must be clear and consistent across the rail network, but it must also be realistic – as much as they might want it, people understand that it will be impossible to give absolute guarantees.

Travel patterns

The second theme concerns future travel patterns. People are saying that post-lockdown they will drive, cycle and walk more rather than use public transport. Younger people in particular will look to active travel options and there is a clear sign that driving will increase across all regions. Coupled with this is an expectation that people will work from home more often in future.

One respondent commented: 'We will be back to congested roads and because people will be 'raring to go' there will also be mayhem, perhaps a few more road traffic accidents.'

With another saying: 'I'm hoping that more people will walk instead of using the car for short journeys. I also hope that a lot of people currently working from home continue to do so, as it means there is far less traffic and less pollution.'

The emerging safety theme illustrates the need for reassurance. However, people accept that whilst supermarkets are doing all they can to make it safe for shoppers, does anyone think they can eliminate all risks? No one can really promise that transport operators can maintain strict social distancing on every service, every day – something that it hasn't been possible to do on some services being provided for key workers during the lockdown.

People accept that some routes may be busier than usual due to social distancing measures or changes to previous timetables and that it may be difficult to keep two metres away from other travellers. There may be situations where this is not possible, for example when boarding or alighting, on busier services, busier times of day and when walking through interchanges. People will have to try to face away from other people, and keep the time spent within two metres of others as short as possible.

New normal – new partnership

The emerging safety theme is aligned with the recently published guidance from Westminster on safer travel for passengers which advises the use of face coverings, hand sanitiser and maintaining a two-metre distance where possible.

The second theme relating to future travel

patterns also aligns with that government guidance encouraging home working where possible, to avoid using public transport where possible and instead try to walk, cycle, or drive.

Initial results from our survey indicate a correlation between people's concerns and the recently published guidance.

The rail industry now has to build on this guidance to develop processes and information for passengers so that they are clear about what to expect from their operator as well as what's expected of them. Building on the guidance is fraught with difficulties. However, our previous insight indicates that passengers require accurate, timely, clear and consistent information to allow them to make informed decisions about what to do.

Ultimately it will require a partnership between government, operator and passenger – with government setting out the principles, operators setting out with crystal clear clarity what they will provide and passengers being therefore clear on how they can help make it work.

Fares reform – an ideal opportunity?

As we grapple with the immediate challenges facing the rail industry and passengers, there is of course a longer-term challenge on the horizon – how to bring people back to rail.

This moment of maximum uncertainty may not seem like the right time to grasp the nettle on reforming the fares system but with less people using the rail network and those who are travelling being advised to purchase tickets online or using contactless, perhaps it's the opportune time to finally resolve the fares conundrum.

When the immediate public health crisis recedes, there will be an urgent need to make train travel attractive again after months of telling people to avoid it, and reforming the fares system could make rail more attractive.

A start has been made. In 2018 Transport Focus joined the Rail Delivery Group in launching the 'Easier Fares' consultation to better understand what passengers want to see from an up-to-date, easier fares and ticketing system. With nearly 20,000 responses this confirmed an overwhelming desire amongst passengers for change. More than eight out of ten wanted the fares system overhauled.

Following this consultation, in 2019 the Rail Delivery Group published its Easier Fares for All proposals. Transport Focus broadly welcomed these. Much was sensible and long overdue, not least the spread of single journey-based pricing to simplify the system and the promise of pay-as-you-go fares with a 'tap-in tap-out' system to make rail travel more flexible and better suit the way people want to travel today. These changes look increasingly important as we look hesitantly at the future of travel post Covid-19.

It is not Transport Focus's role to specify a future fares structure or write the detailed regulations. What we will do is ensure passengers' views are part of any new system. In our input to the Williams Review we set out the principles that a structure should be tested against to ensure it delivers for passengers. It should offer:

- Affordable flexibility.
- An easier to understand structure.
- Easy ways to buy.
- Greater personalisation.
- A system capable of catering to national and local needs.
- Consumer protection.
- Consumer confidence and trust.

These core principles hold true, no matter the impact of Covid-19, but it is clear that the need for a fairer fares system is an issue where the current crisis will accelerate the need for change to make rail a positive choice for people once again.

Robert Samson is a Senior Stakeholder Manager (Scotland), Transport Focus. He has been with Transport Focus in a number of roles for twenty years. Prior to joining Transport Focus he worked in the privatised rail freight sector and British Rail. He was a football referee for over 25 years and has served on TSSA Executive Committee.

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Delivering the goods | Alex Veitch

Rail freight : stepping up for the nation

Alex Veitch, Head of Multimodal and International Policy at FTA, explains how rail is responding to the pandemic and why operators from across the sector must have increased access to the national rail network going forwards to support society, the environment and the economy

Rail freight is playing a vital role in supporting the public, logistics industry and wider UK economy as it steps up to deliver the essential items the nation needs during Covid-19 outbreak. From launching express services dedicated to delivering essential medical supplies, food and hygiene products to running extended length trains to stock supermarkets, businesses within the rail transport sector have shown themselves to be resilient, flexible and adaptable in the face of crisis. And with rail freight set to play a crucial role in the nation's economic recovery, it is vital government acknowledges its importance.

Rising to the challenge

I have been impressed by the determination of the rail freight sector to keep goods moving across the UK during the Covid-19 outbreak. In Scotland alone, more than 14,000 tonnes of products are being moved across the country's rail network every day during the crisis.

The rail industry has shown itself to be efficient and adaptable in a multitude of ways. In April 2020, DB Cargo UK and Transfesa Logistics launched a new express 72-hour rail service to transport essential hygiene, medical and food products from Spain to London. To ensure as much cargo can be moved as possible in each operation, the companies incorporated a lighter box – a UNIT 45 type – to allow approximately 30 containers of vital supplies per train to be moved. And this is just one example of a rail freight service provider increasing capacity to meet demand; Direct Rail Services (DRS), which provides rail services for sectors including nuclear power, logistics, and distribution for supermarkets, has been running record-length trains, allowing it to transport thousands of shipping containers every week. And with rail able to move such a large quantity of goods, it offers a reliable and safe alternative to transporting supplies should many HGV drivers be unable due to work due to sickness and/or self-isolation; each train is able to move between 40 to 70 equivalent lorry loads of goods.

Another example is GB Railfreight; it recently completed a trial to use redundant commuter trains to transport vital medical supplies. Following the successful trial – the first of its kind in the UK – the rail freight operator is now working with the government to determine how the service could best support hospitals across the country.

While rail may be best known at this time for transporting food and medical supplies, it is important not to forget its role

> As we emerge from lockdown, and passenger rail use returns to previous levels, rail freight operators will once again face a tough battle competing with passenger rail for space

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supporting other vital services, such as the transportation of waste from the streets of cities.

Business within the waste industry are working hard to ensure they are able to maintain essential services for residents across the country throughout the Covid-19 outbreak; for example, each day, Freightliner operates three trains a day on behalf of Suez to move around 1,500 tonnes of domestic waste from Manchester to an energy-from-waste (EfW) plant to be recycled.

Going forward

Now that rail passenger services are significantly reduced – numbers are down by more than 90 per cent in many cases as the public remain at home – rail freight has been granted more paths on the UK's domestic network. But as we emerge from lockdown, and passenger rail use returns to previous levels, rail freight operators will once again face a tough battle competing with passenger rail for space.

Gaining track access is often difficult; at peak times it is very challenging. There are cases where new passenger services entering into contracts with public bodies are allocated paths that have previously been allocated to freight operators.

In the view of FTA, the government should implement a more effective way to resolve competing bids for capacity, whereby competing claims are judged on which bid would make the best use of the network – taking into account the wider economic, environmental and social benefits of rail freight. And while issues with track access can be mitigated by using off peak or night-time capacity (when there is less demand from passengers) noise restrictions – especially where there are residences near the line – limit these opportunities.

FTA, as the only business group representing all of logistics, continues to campaign for regulatory reform and works to support members in addressing the main challenges facing rail, including changing demand patterns, network capacity, network access, and the constant pressure to drive down costs. And of course, ensuring workers are protected and safe during the Covid-19 and beyond.

With rail freight set to play a crucial role in the nation's economic recovery, operators across the sector must continue to have increased access to the national rail network. The demand for rail freight services is growing; we need to ensure we have the infrastructure and regulatory environment in place to embrace new opportunities for growth.

FTA is one of the UK's leading business groups, representing the logistics industry, which is vital to keeping the UK trading, and more than seven million people directly employed in the making, selling and moving of goods. With Covid-19, Brexit, new technology and other disruptive forces driving change in the way goods move across borders and through the supply chain, logistics has never been more important to UK plc. FTA supports, shapes and stands up for safe and efficient logistics, and is the only business group which represents the whole industry, with members from the road, rail, sea and air industries, as well as the buyers of freight services such as retailers and manufacturers whose businesses depend on the efficient movement of goods. For more information about the organisation and its work, including its ground-breaking research into the impacts of COVID-19 on the whole supply chain, please visit www.fta.co.uk.

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Women in rail | Claire Burrows

Women in Rail's message of supporting women and attracting female talent instantly resonated with me

Claire Burrows, legal director at law firm, Shakespeare Martineau, and Chair of Women in Rail West Midlands talks about her role as a Regional Leader for Women In Rail, helping to grow the organisation outside of London and its importance for promoting diversity and career opportunities within the sector

Aside from my role in Women in Rail, I am a legal director at Shakespeare Martineau, specialising in commercial disputes. I advise clients both in and out of the industry in relation to managing risk and litigation, hopefully avoiding or mitigating the latter!

My involvement with Women in Rail began in 2016, when I was introduced to the group's founder, Adeline Ginn, who was looking to expand out to the regions. The group's message of offering a support network to women in the industry and helping to attract and retain female talent instantly resonated with me and I began working with Adeline to grow a regional presence.

Our first event was hosted by Shakespeare Martineau and aside from showcasing an amazing panel of inspiring women speakers, was the birth of the first regional group for Women in Rail, here in the West Midlands. From there, under the guidance of a number of hugely motivated committee members, our group grew and I was asked to formally lead the region in February 2018.

The group is highly relevant for many of my clients and it is great to be able to support both them and the wider industry to promote diversity and career opportunities in the sector. I am particularly keen on getting our young talent engaged with the sector and developing and progressing themselves within the industry.

Since inception, the membership of the West Midlands group has expanded to almost 400 members. Our steering committee has a wide and varied skillset and many committee members do not come from typical rail or engineering backgrounds, showing just how wide the industry is and the variety of roles that are within it. As well as my legal experience,

we have committee members working in recruitment, education and marketing (to name a few) and of course engineering as you might expect too.

In the last few years we've had plenty of moments to be proud of. These include working closely with groups such as Bodyguard Workwear looking at how to make female PPE better-fitting and safer, to our yearly presence at Rail Live, where I've twice had the pleasure of welcoming the Secretary of State for Transport to our stand and telling him all about Women in Rail, what we do and why we do it.

We're currently going through challenging times but the resilience and close bond of the group is shining through. It's often hard to get together face-to-face as a committee amongst the demands of daily work and life, but the current COVID-19 pandemic has shown us what is possible with modern technology. We have already enjoyed Zoom drinks with other regional leaders and we have lots of exciting opportunities coming up for our members, including virtual quizzes, webinars and Q&A sessions.

While we are embracing these new approaches due to the current climate, they are also highlighting the possibilities for us all to continue to feel much closer and more connected once this is all over.

Claire Burrows is a legal director at law firm, Shakespeare Martineau, and Chair of Women in Rail West Midlands

To find out more about the work of Women in Rail West Midlands, please e-mail WRWM@womeninrail.org

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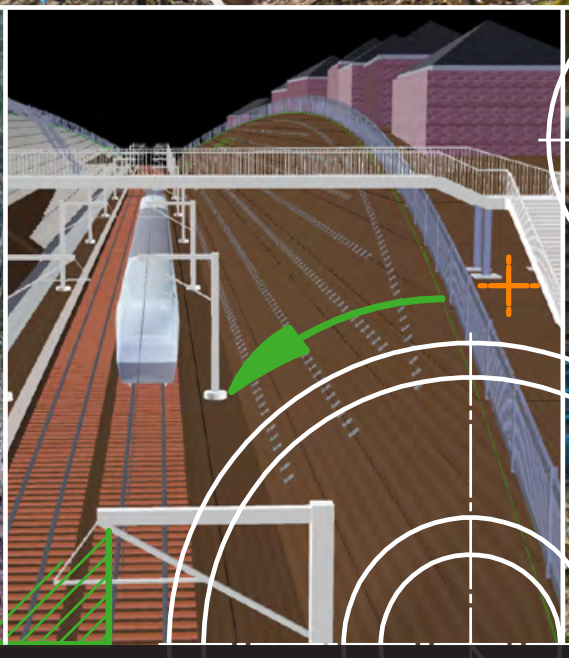

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Ensuring safety through creativity

Lucy Prior MBE explores what the new normal could be

Last month I talked about catalysed, collective cooperation. I suggested that whilst the pandemic is undeniably an awful era-defining experience, that it has also been a force for positive change. Covid has made us do things differently, to think of creative ways to work together safely, to minimize our personal journeys and optimize those journeys that were, and remain essential.

A month on and considering the noticeable shift in thinking from 'coping under Covid' to preparing for the 'new normal', my thoughts are turning more and more to challenging what that new normal could be.

On a personal level, I am worried I am becoming a hermit: I am not missing the squash of a peak-hour service to New Street or St Pancras at all, and no longer fear the video conference. Domestically I am still clutching at the hope that my version of learning through play is a valid equivalent to home-schooling. Professionally, at an organizational level, I am immensely comforted to work for a company that values the wellbeing of its staff and have enjoyed the opportunity to engage with colleagues in different ways. The same applies for external engagement; it feels like we have evolved to embrace a new way of working and communicating at every level.

What of the wider implications of this evolution of communication? Of creating, delivering and supporting one another at a sector level? At 3Squared, we have for example lifted licensing restrictions for clients in order that they are enable to share safety critical information much more widely across their teams than ever before, to an extent that some users have questioned how they ever managed before without this fluidity and ease of communication.

I have seen and heard how operators are collating and visualizing passenger through-flow data in ways they have never needed to before. The ORR has 'adjusted processes' to ensure safety critical staff are still allowed to carry out their keyworker duties, whilst accommodating safe working. The Government has encouraged construction-site visits to be carried out virtually with remote connections to be used as widely as is practicable.

Essentially safety has depended upon a rapid and proactive adoption of digital solutions that may otherwise have lingered in an innovation pipeline or been obstructed by standard practice. Front-line workers, from lineside operatives to on-board crew have all adapted to these new ways all the while adhering to safety protocols. Were it not for necessity, would these new ways have ever been adopted? Covid has arguably made the safety case trump the business case and has driven technological evolution across the piece.

I would love to think that when we do return to whatever normal becomes, that our innate capability to cooperate and our enhanced appreciation of safety really does become the norm. Our transport heroes, as dubbed by the DfT, really are worthy of that badge. To be able to say as a sector that our safety-first mantra was strengthened through this evolution and that cooperative collaboration ensured safe working would be wonderful. To be able to continue to develop and adopt tools and processes that are new, but that undeniably support safe working ad infinitum really should be the new normal.

Lucy Prior MBE is Business Engagement Director at 3Squared, a specialist SaaS provider to the transportation and construction markets. Outside of her day job Lucy also holds roles on the RSG Export Workstream, supports the digital and skills teams within Northern Rail Industry Leaders and is vice-chair on the RIA SME group. Most importantly she is a full-time working parent to two young children who hear an awful lot about just how cool the rail sector is and who are convinced she is a bona-fide engineer.

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British Transport Police: being part of PMART

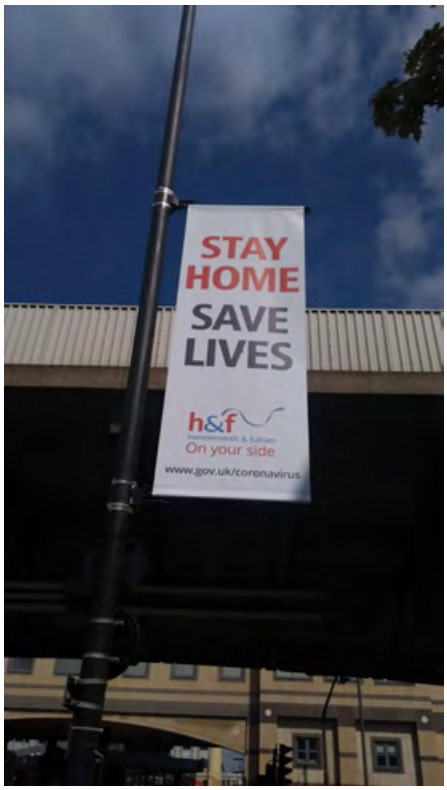
Liam Johnston of Railway Mission explains how Pandemic Multi Agency Response Teams (PMART) respond to Covid-19 in the community

From the earliest days of the railway, our industry has been at the centre of our communities. Perhaps this has never been more evident than during the present COVID 19 pandemic. The rail industry has maintained a constant and consistent service, providing a vital service to our nation. Both freight and passenger train companies have continued to operate, carrying vital supplies and key workers, such as those who work for the NHS, to their final destinations. But there is one group within the railway community that is little thought about, yet their work highlights the railway industries selfless support of the wider society in the UK.

At the end of March, the Railway Mission chaplaincy was asked to assist with the welfare support of British Transport Police officers and staff from the Disaster Victim Identification team, who would be working in partnership with the Metropolitan Police, City of London Police and London Fire Brigade. Set up, to relieve pressure on the NHS and to help ensure it would not be overwhelmed. Known as Pandemic Multi-Agency Response Teams, or PMART, small units of police, and fire service staff were to be despatched to a location where a suspected Covid-19 victim had died outside of a hospital setting.

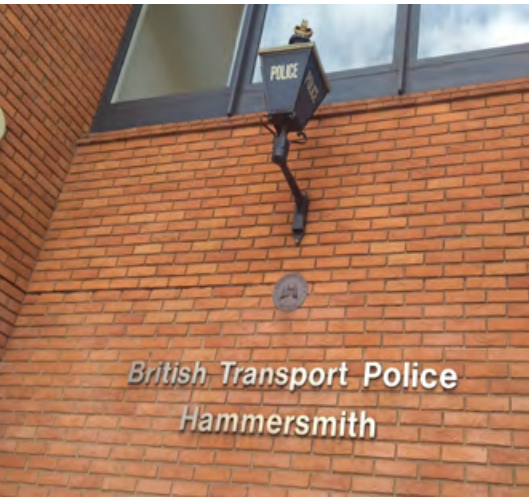
Working alongside the Trauma Risk Management (TRiM) Practitioner, chaplaincy provides pastoral support following the deployment of the Disaster Victim Identification team. The support is designed to ensure that the psychological needs of personnel involved in the event are assessed and managed, thereby improving their psychological wellbeing and building personal resilience; this strategic use of chaplaincy and TRiM support aims to keep officers and staff functioning after traumatic events.

Each team consists of a fire service driver, a police constable and a detective to ensure the death was not suspicious. Health authorities believed around a third of coronavirus deaths in the capital would occur in the community. The teams were to travel in unmarked vehicles and their work would include preparation of the victims' bodies to allow for the safe removal by the undertakers for burial or cremation.



Explaining the role of the British Transport Police officers and staff, Detective Inspector Craig Payne, who has been overseeing the operation, said 'The PMART teams support the friends and family of the deceased through one of the most difficult times in their lives, and at a really difficult time for the country; making the necessary preparations for the deceased to be taken to a funeral home or mortuary, until the arrangements can be made for either burial or cremation.'

Some people might question British Transport Police being part of such an



operation as it is 'not railway related'. However, it is community related, and if our police service is truly to serve the community, then it is right for them to do this work and to be part of something that is important to the wider society within the UK.

When a family has lost a loved one, it is a tragic loss. When that loss is compounded by the death being caused by Covid-19, that tragedy and grief is compounded. Being unable to have the funeral in a way that would be natural for a family's cultural and religious beliefs is all the more distressing. For the family then to have police personnel entering their home in full PPE, with masks, visors and full body suits, could add to their distress. But with the sensitivity, care and professionalism of the team, families were put at ease and reassured that their loved one was going to be treated with the highest dignity and respect. Carefully explaining the process and even on occasions being part of family prayers for the departed, the team have shown why the British Transport Police Disaster Victim Identification team is respected by the other police forces in the UK and is recognised as an example of professionalism in this field.

In recent years the Disaster Victim Identification teams from BTP have been deployed to numerous mass fatality incidents and undertake a role which many, even in the police service, do not fully understand. The team have deployed to terrorist incidents and disasters throughout the UK and abroad to recover the bodies of those who have sadly lost their lives. The teams painstakingly gather forensic evidence on behalf of the coroner to formally identify the victims.

The identification process involves the comparison of fingerprints, dental records or DNA samples with those stored in databases or taken from victims' personal effects to positively identify them. Because people are travelling more, there is a high probability that a disaster or terror attack will result in the deaths of nationals from many different countries, as was seen at the London Bridge terror attack. It is a specialist forensic service that takes commitment.

Liam Johnston is Executive Director of the Railway Mission

To find out more about the Railway Mission visit www.railwaymission.org

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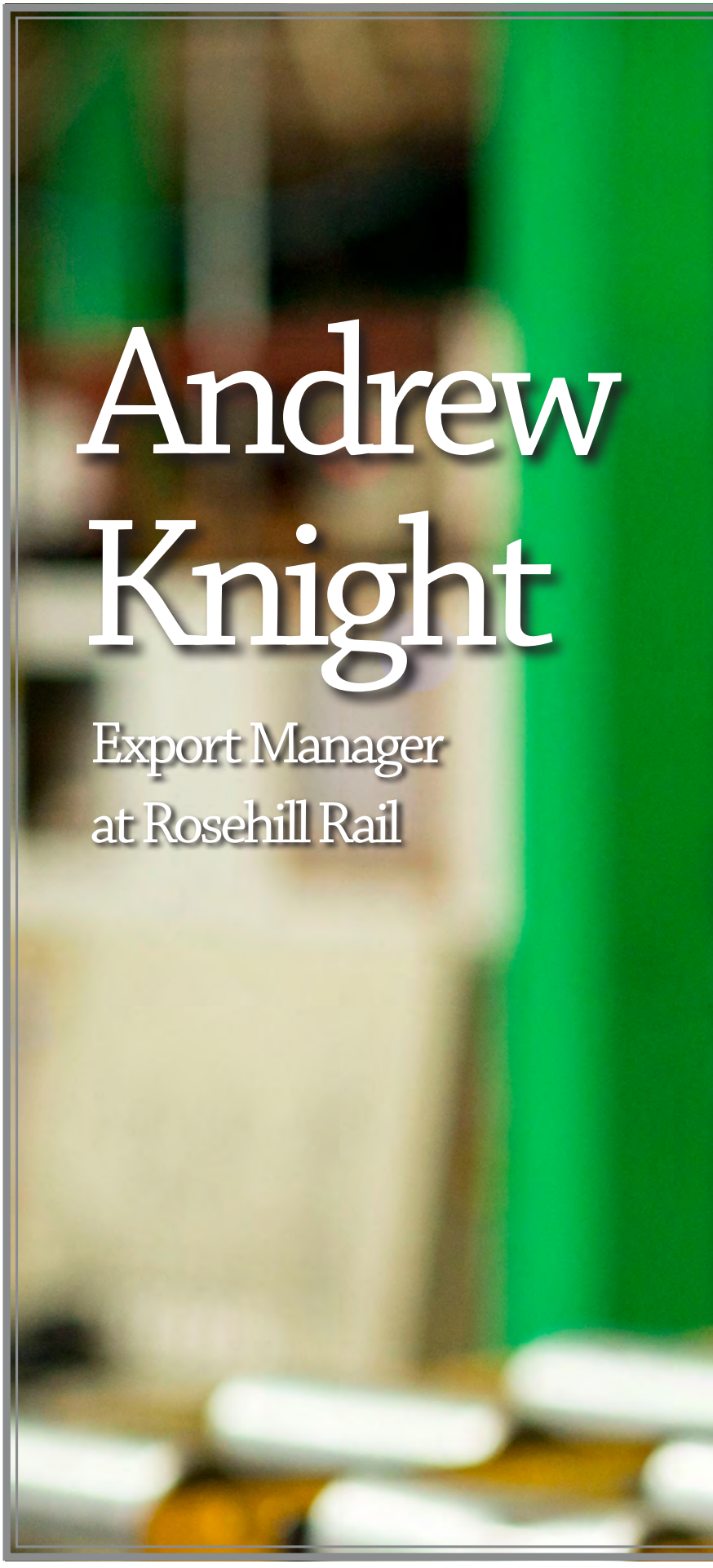

Andrew Knight

Export Manager at Rosehill Rail

Sam Sherwood-Hale, spoke to Andrew Knight, Export Manager at Rosehill Rail, about the manufacturer being named Export Champion by the Department for International Trade, the changing export market and how companies can continue to collaborate through online platforms

Rosehill Rail was recently named Export Champion by the Department for International Trade. What are some of the criteria the company had to meet to achieve this status as Export Champion?

Key criteria included the proportion of our turnover that is accounted for by exports, export growth and our many years of exporting experience. We currently export over half of what we manufacture, and this is continuing to grow as we expand our product range, enter new markets and extend our distributor network.

What are the main benefits of being in the Export Champion Community?

As a business we're keen to support other businesses, providing them with advice based on real world experience. Helping them to succeed will ultimately benefit all of us. At the same time, through networking and other events we're able to discuss opportunities and challenges, share knowledge and make some great new contacts.


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Part of being an Export Champion involves offering practical advice and encouragement to other businesses in the Northern Powerhouse Region looking to break into new export markets. What form will that advice take?

We'll be giving advice at Department for International Trade networking events and via online discussion groups, answering questions and sharing practical advice across a wide range of areas including planning, finding reliable local partners, regulatory issues, marketing and financing.

Would you encourage companies to follow the same path that Rosehill Rail took or is the export market landscape different now?

Like the UK rail market, the export landscape has changed dramatically over the years, but our approach is still the same. We've always been pragmatic, prioritising markets and focusing heavily on those, while being flexible enough to take advantage of opportunities in other markets if they made sense for the company. Businesses need to be on the front foot to make sure they're in a good position – researching markets and understanding the opportunities and the challenges.

The Government's Export Strategy is business-led, how do you expect to collaborate with other Export Champions?

It's a two-pronged approach, a mix of online and face to face collaboration. Via the Department for International Trade portal we can communicate with each other; sharing strategies and offering advice to each other on how best to promote exporting to local businesses. In the coming months we'll also be participating in special events organised by DIT for Export Champions in the Northern Powerhouse Region.

By the end of 2020, it is hoped that there will be up to 150 Export Champions active across the North of England. What role do you hope to play in that?

Moving forward, we'll be promoting exporting more across our social media channels and website and will be actively participating in online discussion groups. As things get back to normal, we'll be attending a range of regional networking events. In addition, through our membership of other business organisations, we're already aware of a number of other great local companies who are successfully exporting into a range of overseas markets, so we'll be encouraging the DIT to approach them about becoming Export Champions.

Via the Department for International Trade portal we can communicate with each other; sharing strategies and offering advice to each other on how best to promote exporting to local businesses

How much collaboration is there with Export Champions in other UK regions?

The DIT strategy is to connect businesses in similar industries wherever possible. So, over the course of the next twelve months we're looking forward to collaborating with rail industry Export Champions from across the UK at events and via the online community portal.

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Jim Eldridge

Sam Sherwood-Hale spoke to Jim Eldridge, Regional Managing Director at Rock Rail Australia about his journey through the transportation industry, his experience with Rock Rail and the company's new venture in Australia

Prior to your appointment as Head of Rock Rail Australia, you spent a career spanning 37 years at the Commonwealth Bank of Australia, as, among other positions, lead financier of major new infrastructure projects and asset sales. How does that experience inform your new position?

During my time at CBA I worked across a wide range of infrastructure sectors and markets, as you might expect after nearly 40 years! Beyond my more recent focus on transport and rail, other projects I have been involved in have also spanned the health, telecommunications and energy sectors. While technical, regulatory and demand aspects vary across these sectors, key project financing issues such as risk allocation, financing structure etc, remain much the same. Addressing these issues across different sectors gives valuable insight for resolving comparable issues going forward.

My experience has also emphasised the importance of having a strong understanding of the technical aspects of a given infrastructure sector and project. With the patient input that I've received over time from engineering colleagues and consultants, I have built up a good understanding of the technical challenges involved which I think is particularly important when it comes to the rail sector. Trains must interact with their rail network and systems, remain responsive to their operational environment and remain adaptable to technological change.

My long-term involvement in competitively bidding complex projects has also fostered a love for financial innovation. The pain of narrowly losing project bids has encouraged me to look beyond the standardised approach to where the specific circumstances of a given project might afford opportunity to financially innovate.

With Rock Rail having forged its existence on its willingness to challenge and change how rolling stock is procured in the UK, it is little wonder why I started to sit up and take careful note of what they were doing.

Finally, I would also point to very valuable experience gained in having had to restructure the financial commitments of major CBA clients who succumbed to financial difficulty. This showed me that when negotiated financing terms are put to the test, some are more important than others. This allows me to focus on key issues and be less prescriptive on the less important ones.

You have experience in other transportation and infrastructure sectors. What is it about rail that drew you in now?

While each infrastructure sector has its unique investment needs and challenges, it was my fascination for the more technical (being a 'would-be engineer' at heart) that led me to what I would regard as the more challenging end of the infrastructure spectrum – rolling stock and hospital projects. Both involve a higher degree of upfront specification, longer construction terms and bigger life cycle issues which must be understood to deliver better value for asset users.

It was my offshore secondment to CBA's London office during the global financial crisis of 2007/8 that sparked my love of the rail sector. UK ROSCO ownership was being turned over at a time when many UK & European banks were more cautious which opened the door to new entrant financiers. It was an opportunity that my Bank fully embraced, leading to my personal involvement and sustained passion for the rail sector.

There is also a real need for increased investment in Australia's railways. As our city populations continue to grow and as environmental challenges increase, new investment is needed more than ever if users are to benefit from cleaner, greener and higher speed commuter services. Given our geography, this is a particularly acute need.

How will your approach compare to say, the aviation industry, which you have experience in?

Within the aviation industry, I enjoyed an early involvement in lease financing of aircraft assets but that was more years ago than I care to remember. What is I think more relevant, was my later role in monitoring of a sizeable equity investment in what was a start-up global aircraft leasing company wanting to enter the market in the aftermath of the global financial crisis.

Overseeing this company's successful establishment from initial incorporation through to IPO listing, has given me a window into the challenges involved in establishing new businesses in new markets which should prove beneficial for introducing rolling stock leasing into Australia.

> The need for specialist input doesn't stop once a fleet is accepted into service. Rolling stock is not a static but a dynamic operational asset that needs to be actively managed throughout its asset life

Aircraft and rolling stock leasing are not dissimilar in that the asset owner assumes genuine residual value risk through shorter lease terms that are afforded to lessee operators. The asset must remain attractive and fit for purpose if it is to remain 'on lease' throughout its life. One key difference however is in the mobility of the asset. The sphere of operation for aircraft is unrestricted compared to rolling stock that must remain compatible to the rail network's infrastructure. This creates different challenges in how best to manage releasing risk.

You were with Rock Rail prior to this appointment, where you led negotiations for Rock Rail's successful East Anglia rolling stock deal. What was it about that experience that inspired you to return now?

While I was working with Rock Rail on their East Anglia transaction, I was struck by the team's passion for bringing about meaningful 'change for good' within their industry. There was a real belief in a better way of doing things that delivered better value to government, rail passengers, industry partners and institutional investors at the same time and it was contagious!

When I joined in May 2016, Rock Rail had only just secured its first rolling stock deal with much scepticism across the industry as to whether it could deliver on a second and more substantive sized procurement. No one is second guessing that now. What a small team of highly specialised people has been able to achieve in transforming the market and in introducing a whole new source of funding, is impressive. It was a bit of a David and Goliath scenario of a small new entrant taking on the 'might' of the incumbent rolling stock providers (ROSCOs) who had seen little challenge since privatisation three decades prior.

My experience with Rock Rail was both invigorating and challenging. It's an environment and culture that I very much enjoyed and one that remains in the business today. It has a 'can do' attitude that I believe will also bring reformative change to the Australian market.

Since 2016, Rock Rail has secured £3 billion of new rolling stock fleets for multiple franchises in the UK. How will your approach to Australia be different?

The uniqueness of the Rock Rail model is in being able to provide operators with a long term, fixed and competitively priced lease rental profile that lessees need only commit to incrementally, through short term leases with options to renew. In this way, operator lessees still maintain the longer-term cost certainty normally provided through longer-term contracts, while also being able to retain asset flexibility through periodic lease renewal.

Rock Rail is able to deliver both these benefits due to having directly accessed long-term, fixed rate funding from major global institutions including pension funds and insurance companies. Institutions welcome the long-term tenor and low volatility (non-GDP driven) return profile that the industry can provide. Rock Rail is supported by a growing number of major institutional investors who have come to appreciate the benefits of its leasing model.

Rock Rail believes these benefits along with its provision of specialist rail asset management services, have application to all markets and are fundamental to how we deliver significant value to the markets that we operate in.

That said, while the need for investment in new rolling stock and infrastructure clearly exists in both the UK and Australia, each market has its own characteristics, challenges and opportunities which will impact where we can bring most value.

While Australia faces many of the same drivers for investment as the UK including growing passenger numbers and the ongoing need to update its rail infrastructure, one of the more immediate specific challenges is dealing with the sheer scale of urbanisation which is occurring, particularly in major cities along the eastern seaboard. More and more people are seeking to live within commuting distance of our major cities. This is pushing up travel distances and the need for infrastructure upgrades and new high capacity commuter rail fleets.

The rail industry model is also very different in both markets. Unlike the UK which saw privately owned ROSCOs and franchise operators take over the supply of

vehicles and operation of services when the industry was privatised in the mid 1990s, the Australian market remains largely publicly funded, owned and operated. This represents a very heavy burden on public sector funding.

So in recognising the real need for increased investment in Australia's railways, our approach here, is on introducing a leasing alternative to help address this procurement challenge, with our priority on the provision of cleaner, greener trains that better service the high growth corridors in and around the major cities such as Brisbane, Melbourne and Sydney.

What does Rock Rail hope to achieve with this move into the Australian market?

Most major passenger rolling stock fleet procurements that have occurred in Australia in recent times have experienced some level of difficulty. Whether pursued in partnership with a privately owned consortium under Australia's standardised Public Private Partnership (PPP) approach or by way of direct procurement from a global supplier, many of these projects have experienced costly program delays with train performance post-acceptance remaining problematic for an extended period.

Rock Rail envisages a more collaborative form of procurement, one where its specialist knowledge and strength of supplier relationships can help optimise whole life cost outcomes. Rolling stock is a global business that needs sector experienced and well-connected players who are able to work alongside local procurement authorities, train operators and global manufacturers for realising the best outcomes.

The need for specialist input doesn't stop once a fleet is accepted into service. Rolling stock is not a static but a dynamic operational asset that needs to be actively managed throughout its asset life. Rock Rail's full-service asset management teams do just that. They manage performance ramp up, monitor maintenance effectiveness and efficiency, while also continuing to evaluate asset enhancement options. These teams are supported by Rock Rail's bespoke 'live' data analysis platform (RockStar). This provides fleet performance diagnostics and risk analysis and underpins critical evaluation of maintenance and other asset management options and strategies for optimising performance.

The long-term institutional funding model I mentioned earlier also comes into play here. This supports the shorter term leasing that generates operational flexibilities and financial efficiencies not otherwise attainable under long-term concession and/or maintenance agreements. The lessee has the opportunity on lease maturity to re-evaluate how a given fleet has performed and/or how it has been maintained and to either renegotiate terms or pursue other options. This acts as a powerful incentive upon the lessor for getting things right.

Rock Rail has financed five large rolling stock fleets totalling more than 1,500 vehicles valued at over £3 billion in just four years. This represents over 40 per cent of all new UK passenger train orders since February 2016 which is all-the-more astounding given Rock Rail has only selectively bid a certain number of procurements.

Seeing the positive change that Rock Rail has wrought in the UK rail market has inspired me to bring about much needed reform to how rolling stock fleets are procured and managed in my own country. The opportunity to introduce a whole new approach that has the over-arching objective of delivering better value outcomes for rail passengers and the public, is both challenging and exciting.

Tell me about Rock Rail's asset specific, off balance sheet funding model. How does it differ to the standard public private partnership (PPP) model?

Rock Rail is focussed on delivering new rolling stock fleets that are well specified for their intended infrastructure and operational environments and are of sufficient size for delivering train services that are essential and significant to the relevant network.

By confining its asset focus in this way, Rock Rail is able to offer public transport authorities and operators a highly competitive, fixed, long term, lease option for procuring rolling stock that limits their initial commitment to rentals payable under a shorter term lease.

Unlike existing publicly funded and PPP models, this allows more public funds to remain available for other investment needs and maintains complete flexibility for the public sector and operators in terms of future fleet choices.

It also means the accounting impact for the lessee can be minimised in that its on-balance sheet capitalisation can be confined to rent payable under the initial lease without extending to all payments that are pre-contracted under a long term PPP project deed.

This is possible because Rock Rail, as asset owner, assumes full residual value risk both in terms of the fleet's releasing and other ownership risks across the life of the assets. This is where Rock Rail's leasing model fundamentally differs from other rolling stock procurement models where ownership risks typically sit with the public sector.

As I mentioned earlier, rolling stock is not a 'fixed asset', it must respond to future changes in technology, regulations, and operating environment. Rock Rail's asset management team is focused on ensuring our fleets do just that by remaining fit for purpose throughout their operational life. This includes actively managing for future mid-life operational and technology upgrades and for providing funding mechanisms for doing so where necessary.

Why do you think the latter model is the standard? What are the benefits of Rock Rail's approach?

Compared to the UK, rolling stock procurement options in Australia have been more limited. Aside from directly contracting a global manufacturer, the only other procurement option in use has been the PPP. As with PFIs in the UK, Australian PPPs involve long term commitments made on standardised terms that have been developed for the purpose of wide application across all forms of infrastructure procurement.

PPPs are better suited to asset procurements of modest technical complexity that have a known or relatively static operational environment, such as schools, courts and housing. They are less well suited to assets that involve greater technical specification and/or obsolescence exposure and, more importantly, that must remain fit for purpose throughout a more dynamic, demand driven operational environment.

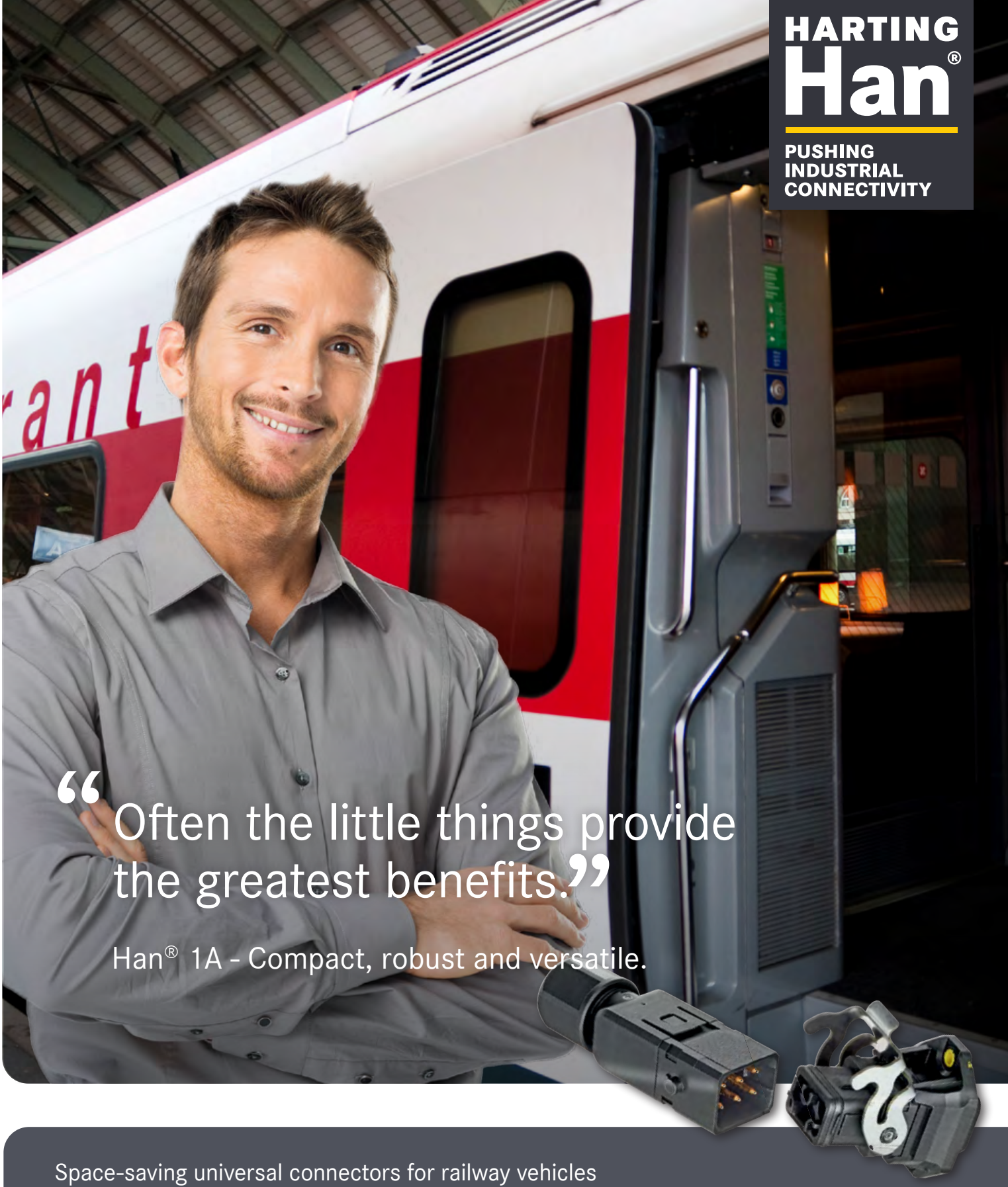
PPPs are essentially a single point in time procurement that seeks to identify and allocate risk for all foreseeable project issues and events as at transaction closure. Assets that are more technical in nature and must respond to operational change need the flexibility that long term pre-contracted arrangements cannot provide. Procurement authorities and operators must be able to change usage requirements without the constraint of a long term maintenance contract.

This is particularly so when it comes to rolling stock. Without a means for accommodating future unanticipated changes in network infrastructure, signalling, train configuration and service frequency or patterns etc, the useful life of a fleet can be curtailed. Longer term pre-contracted maintenance arrangements can also be rendered sub-optimal by changes in fleet service patterns and/or usage levels.

This is where Rock Rail's leasing model comes to the fore. It involves upfront collaboration with the procuring authority to understand the future demands of the fleet and how this can best be reflected in its design. Rock Rail specialists also oversee the fleet throughout its operation, addressing any performance issues or required change or modification for maintaining performance.

However, the ultimate form of comfort afforded is by way of shorter-term leases. Should future required changes to the rail network occur, procurement authorities are no longer 'locked into' long term arrangements with little or no flexibility for re-negotiating. The periodic right of lease renewal gives them the flexibility to be able to adjust terms as a condition of renewal or to even return the fleet where alternative options are considered more attractive at the time.

Jim Eldridge is Regional Managing Director at Rock Rail Australia



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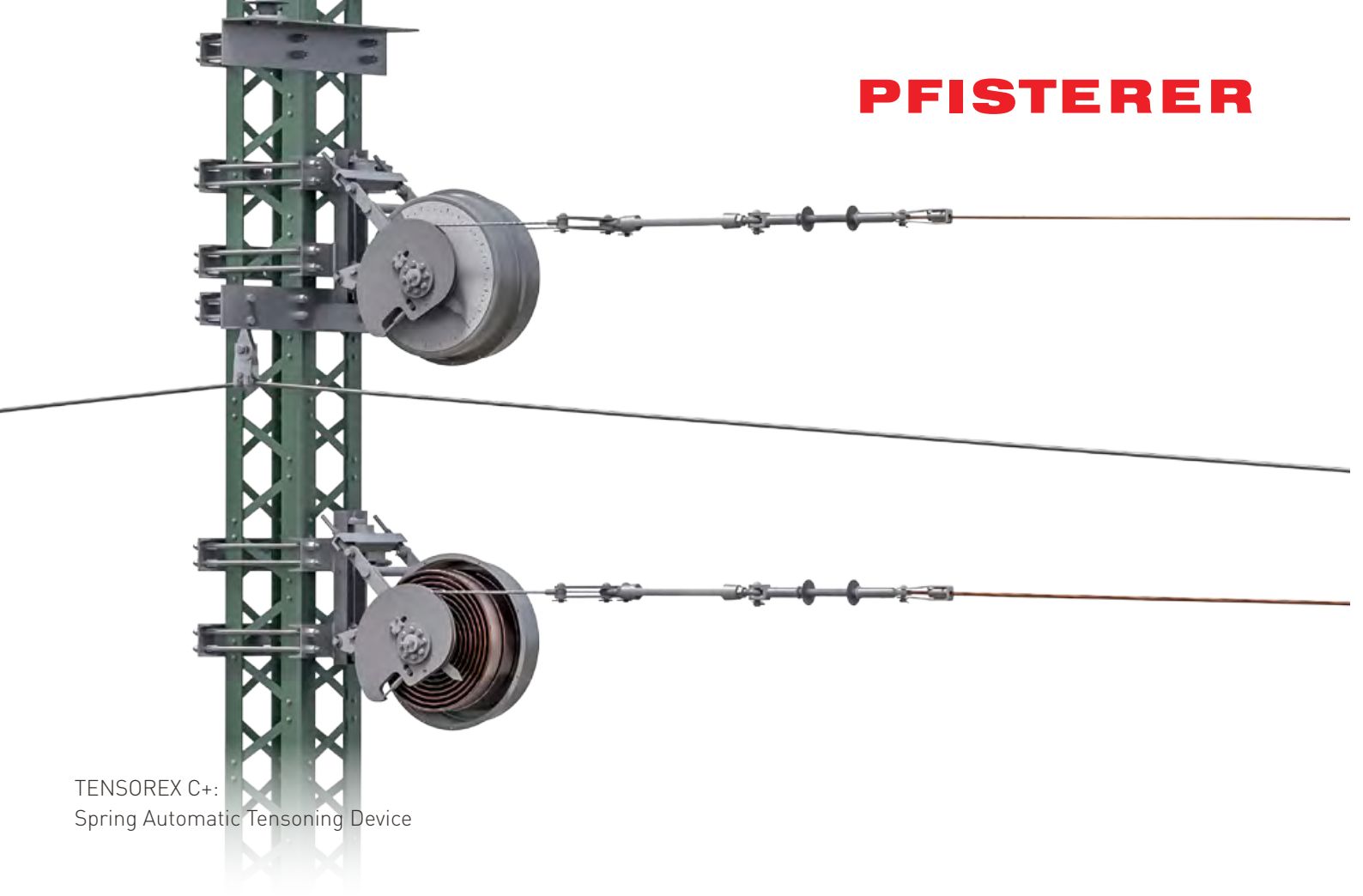

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Electrification, decarbonisation and a green economic recovery

The Campaign to Electrify Britain's Railway looks to the future and decarbonisation over the next 30 years

The impact that COVID-19 has had on the UK is profound. The implications for public transport will be felt for several years to come. In the very short-term this has been through dramatically reduced passenger numbers. In the medium term, for probably the next two years, we expect to see reduced passenger numbers only slowly returning to normal, as operators grapple with how to operate a network with social distancing and how to protect staff. However, the longer-term prospects for public transport are more favourable.

Decarbonisation remains an important long-term issue for the UK. The goal of CO_2 net zero UK will require public transport to be decarbonised, but will also require a modal shift to public transportation. The modal shift will be needed from both passengers and freight moving from road to rail. COVID-19 has also highlighted the critical role that rail freight plays and will increasingly need to hold.

Green recovery

COVID-19 has shown us a world with reduced pollution and a reduced number of cars on our streets. Investment in public transport will allow the UK to meet its decarbonisation targets, minimise pollution and NOx emission. The shift to public transport will also free our streets for those walking and cycling. Investment in public transportation will form an important part of the economic recovery post-COVID-19. Implementing a long-term plan for investment in public transport and rail will be critical to our collective recovery.

A vital constituent of a long-term plan of investment in the railway will be an investment in decarbonisation. Furthermore, an essential component of decarbonisation will be electrification. If the UK is to meet its Net Zero commitment, it will only be possible with investment in rail electrification.

On 8 May a group of companies and environmental groups wrote to the UK Government urging that the UK 'must prioritise green economic recovery'. The group included a broad cross-section of UK business and environmental groups coming together for rare agreement, including: Iceland Foods, Barratt Developments, The Body Shop, Ben and Jerry's, the Royal Society for the Protection of Birds (RSPB), the National Trust and Greenpeace UK.


Garry Keenor

In May 2020 a UBS bank report showed travellers are becoming more climate aware. Despite Covid-19, their report showed people still wanted to move to trains from planes. A post-COVID-19 economy will require more long-distance trains and for these trains to be powered by electrification.

The phrase 'new normal' is often overused, but what is the new normal we want to fight for as our economy recovers?

Real benefits

Rail electrification brings benefits beyond decarbonisation. A recent YouGov poll for the Institute of Civil Engineers found that only three per cent of the public think low-cost should be the main factor in judging the success of a major project. 74% per cent of the people surveyed thought benefits from projects should be considered first, in considering the project's success. In addition to decarbonisation, electrification has major benefits that have real impacts on passengers travel. We used to collectively call these benefits the SPARKS EFFECT, that drove more passengers to use rail when electrification was rolled out in projects in the 1960s.

To date, there has been campaigning by local groups for individual projects. However, we do not believe that focusing on individual projects will deliver the most significant benefits. In March 2019 the Rail Industry Association published their Electrification Cost Challenge Report. The report demonstrated that a rolling programme of electrification is the only way to reduce costs. Furthermore, evidence from Scotland's rolling programme of electrification shows this cost saving in action. Rolling programmes reduce costs because they allow engineering knowledge and managerial skill to grow and improve.

Such programmes also allow lessons learnt to be implemented. Historically the UK has had a boom and bust approach to electrification, with extensive programmes followed by a hiatus of work.

Individual projects also do not support the UK's freight network. The network moves freight across the country, and trains will traverse several lines, thus taking a holistic approach is necessary. If we are to successfully decarbonise the UK railways, increase passenger and freight numbers, we need to take a long-term approach and implement a rolling programme.

That does not mean we advocate wasting more years in planning, more 'paralysis through analysis' that is endemic in the UK government and public transport planning. The electrification of the current section of Midland Mainline is finishing, electrification of Great Western London to Cardiff is also finishing. Teams that have learnt lessons and lowered costs are now likely to be disbanded along with that collective knowledge. Lesson's learnt are now being lost. Great Western project overspent as a whole, and was much maligned in the media for doing so, but the final packages of this project were delivered to budget. The budget improvements showed that lessons were learnt and implemented; there is now the risk these lessons learnt will soon be lost once again.

In Scotland, a long-term programme of electrification has delivered real benefits. It has reduced costs and increased knowledge. Recent proposals for future projects, as well as a National Low-Carbon Freight Network proposed by Transform Scotland

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and the Rail Freight Group are encouraging. However, what is the plan from the rest of the UK, outside of Scotland? Wales has steamed ahead with its plans, this still needs to evolve into a rolling programme, but the first concrete projects are commencing. For England, the journey has been more tortuous.

In 2017, the then Transport Minister, Chris Grayling cancelled parts of Great Western and Midland Mainline Electrification due to costs. However, this nadir was quickly followed by a change in policy and emphasis, which we hope will form a future rolling programme, as the timeline shows.

Electrification the future

Were are we now? The Rt Hon Grant Shapps, MP, Secretary of State for Transport has confirmed that the final decision for future electrification projects will be in Network Rail's Traction Decarbonisation Strategy, which will be published this Autumn. This date will also tie in with the publication of the DfT's plans to decarbonise the whole transport sector.

Pressure has continued to build on the government to announce electrification. Since the Rail Industry Association's report, further studies have shown that decarbonisation is not possible without electrification. RSSB's studies have shown that for busy commuter lines or fast intercity lines, only electrification provides the service requirements as well as decarbonisation. In February an extensive collection of industry groups clubbed together to demand further electrification. These bodies included the Rail Freight Group, Northern Rail Industry Leaders, Campaign for Better Transport, Rail

19 February 2020

Rt Hon Grant Shapps MP
Secretary of State for Transport
Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR

Dear Secretary of State,

Open Letter: We need a rolling programme of electrification to decarbonise the rail network by 2040.

Congratulations on your recent reappointment as Secretary of State for Transport. We write to you on behalf of the organisations that build, enhance and operate on the UK railway network, and represent passengers and communities, to call on the Government to implement a rolling programme of electrification, to meet the goal of decarbonising rail by 2040.

In February 2018, the Government set a challenge to industry to see how it could take diesel-only trains off the railways. As the industry's Decarbonisation Taskforce found, this will require a rolling programme of electrification for intensively used lines, and for regional and rural lines the development of new technologies such as hydrogen, battery and the use of clean bimode and trimode trains, which the industry is ready to deliver.

Electrified railways:

- Are better for the environment, with carbon emissions 60% lower than diesel trains today and 80% less with the estimated 2040 grid mix, and are the only option for decarbonising intensively used lines;
- Produce no air pollutants at the point of use;
- Are quieter, reducing noise pollution for those living and working near the tracks and reduces noise and vibration for passengers;
- Have a strong economic and business case – compared with diesels, electric trains cost less in the long term when compared to the whole-life costs of diesel services, are cheaper to build, more reliable requiring less maintenance, and are cheaper to operate and longer-lasting;
- Are lighter weight, meaning less wear to the track and therefore less maintenance, and carry more passengers; also, acceleration is better and journey times shorter, even with relatively frequent stops;
- Reduce passenger delays, as electric trains are more reliable than diesel trains;
- Will be vital in decarbonising rail freight, which is already a low-carbon mode of haulage and delivers benefits in excess of £1.7bn each year to the economy.

Now is a critical time for rail electrification. The industry recently finished electrifying the Great Western Mainline up to Cardiff and will soon complete the Midlands Mainline up to Market Harborough. Once these schemes are complete, there will be no electrification schemes taking place in the UK and, with no construction-ready schemes in the pipeline, there will likely be a significant hiatus before new projects are ready for construction. This could lead to a loss of capability and skills in the supply chain.

As the Railway Industry Association's (RIA) Electrification Cost Challenge Report shows, the stop-start nature of electrification is one of the key factors in cost increases. With a long-term rolling programme, that provides visibility and consistency to rail suppliers so they can build up and retain expertise, electrification could be delivered at up to half the cost of past projects. We believe delivery of electrification cannot wait until the next rail funding cycle 'Control Period 7', which starts in 2024, and that a ringfenced fund for an electrification programme should be provided immediately to allow work to continue.

We look forward to working with you, officials and Sub-National Transport Bodies around the country to deliver the decarbonisation of our rail system. And we would be happy to meet with you to discuss, if that would be helpful.

Letter to Rt Hon Grant Shapps, MP

Industry Association, Rail Forum Midlands amongst others.

Subsequent to this letter, on 5 May, Transport Minister Baroness Vere, confirmed that 'Electrification will play a significant role in our programme to decarbonise the railway'.

Currently, only approximately 42 per cent of the UK rail network is electrified. Recent studies have shown this will need to increase to between 70 to 80 per cent to decarbonise UK rail. The remainder of the network would need other forms of technology. Some of these technologies along with bi-mode trains may provide a technological bridge to full electrification.

The RSSB studies have shown a further 4,250 kilometres of railway needs electrification, and this equates to approximately 10,000 single track km as much of the railway needing electrification is two or four tracks. If we start the next projects this year, it is still over 330 kilometres of electrification a year needed. If we leave it five years before commencing, 400 kilometres a year will be required. Delaying making a decision increases the issue and subsequent costs. Cost increases on Great Western electrification show boom and bust delivery pushes up prices.

Short term wins

Network Rail's Traction Decarbonisation Network Strategy is published this Autumn.


Simon Skinner

However, it is believed a draft will be available from July. From a strategy, it will take time to evolve into real projects. The issue remains that project teams are being dissolved now, but future projects are a couple of years away.

In May, Rt Hon, Grant Shapps, MP wrote a response to a letter by Lilian Greenwood MP, confirming that that electrification of the remainder of Midland Mainline was actively being considered. Baroness Vere also confirmed in May that the 'readiness of the schemes' would be a critical factor in deciding which electrification projects get the go-ahead. We believe that some short-term projects can buy time for a rolling programme to be implemented. Some projects are ready to go and can fill this stop-gap such as the completion of the electrification of Midland Mainline. Completing the areas descoped from Great Western electrification can also help. Undertaking smaller projects such as Lakes Electrification in the Lake District to Windermere, could be a testbed for low-cost electrification. Other smaller projects could include infill schemes that would support

electric freight, and these smaller projects would also be quick to implement.

Like Scotland, the whole UK could benefit from a rolling programme of electrification. These benefits will only be realised if we avoid a boom and bust approach, but that will require commitment from the UK Government. Our post-COVID-19 recovery could take many forms, but a green recovery can help passengers, freight and the economy. We hope to reinvigorate the railway through a modern-day 'sparks effect'.

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The Importance of HS2

Rail consultant **Simon Kendler** shares his personal view on the importance of HS2 for the Midlands and the North

The benefits of HS2 for the Midlands and the North are clear, now the task at hand is to ensure they are all captured.

The verdict is in. The project is green lit and Notice to Proceed has been issued on the largest infrastructure project in Europe. Once complete, HS2 will bring economic growth to the Midlands and northern regions of the UK and provide a vital increase in capacity for Britain's railways by diverting the fastest trains off the existing network. For example, there will be increased capacity and relief in areas such as the southern end of the West Coast Main Line (WCML), Europe's busiest mixed-traffic main line which is currently bursting at the seams. HS2 will also power the £3.5 billion Midlands Engine plan to transform the region's rail network.

As soon as HS2 opens it is planned that high speed trains will start running between London and towns and cities to the north including Birmingham, Crewe, Glasgow, Liverpool, Manchester and Preston which will also free up extra space on the existing rail network.

According to HS2, the scheme will offer some of the lowest carbon emissions per passenger kilometre – seven times less than passenger cars and 17 times less than domestic air travel. HS2 will be a cleaner, greener way to travel offering some of the lowest carbon emissions per passenger kilometre, significantly less than cars and domestic air travel which will support the transition to a net-zero carbon UK economy. It will take cars and lorries off the road and reduce the need for domestic air travel which will lead to a reduction in carbon emissions and improve air quality.

Not only does infrastructure investment help the economy by providing jobs and tax revenue but in the case of HS2 it also comes with a raft of wider environmental and economic benefits. The project already supports over 7,000 roles including one hundred apprentices and is expected to support 30,000 jobs during the peak of construction including 2,000 apprentices for Phase One.

Greengauge21 estimate that the full HS2 project will create the equivalent of 89,000 full-time jobs over a 60-year time period. This will result in higher employment, a more highly trained workforce and career progression which means more tax revenue,

Passengers ascend the travelator at Manchester Piccadilly station to reach the crowded through platforms 26th July 2013.
Image: Paul Bigland

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A pair of Southeastern High Speed Class 395s head north towards London over the Medway Viaduct on Britain's only current high speed line, High Speed 1 (HS1) 26th June 2015.
Image: Paul Bigland

An N700 series bullet train flies south along the San-yo Shinkansen line in Machikojakuhigashi, Kyushu, Japan 31st October 2017.
Image: Simon Kendler/Author

more disposable income that spread benefits to other businesses and industries. This can close key skills gaps, support supply chains and boost regional economies across the board.

Railways, like the ancient trade routes and waterways before them, allow goods and people to move around. However, the railways have done this at increasing speeds, shrinking continents, countries and regions as towns, cities and economies grow. Time is money as the saying goes.

Clear examples include Japan and France. The Japanese Government originally conceived of a high-speed rail line as early as 1939. Japan entered the post-war period needing to rebuild where its main line railway network was narrow-gauge, slow and congested. As Japan's industry and economy grew, the economic incentive was found to build a new high-speed rail line to relieve the busiest main lines and speed up journeys between Japan's major cities. The first Shinkansen line opened in time for the Tokyo Olympics in 1964 between Tokyo and Osaka. It reached Fukuoka, 600 miles from Tokyo, by 1975 and set a standard that many nations emulated in the following decades.

Closer to home, Lille in northern France had suffered from the decline of major industries in the post-war years. The Channel Tunnel project led to the development of new high-speed lines to connect the tunnel to Paris and Brussels. Lille was chosen and its newfound position as an international high-speed rail hub was the catalyst for new retail, business and commercial regeneration that helped revive the city's economy. Over the channel, economic benefits were also felt in Ashford when Eurostar services started calling there in 1996. Ashford has been described as a beacon within the relatively stagnant economy of East Kent in a study by lecturers at Canterbury Christ Church University, with increased investment, new businesses, and population growth faster than any other district in the county.

This was all achieved before High Speed 1 (HS1) was built. From 2009, domestic high-speed services began running alongside international rail services along the route serving Kent's major towns. On celebrating the 10th anniversary of these

A busy platform scene at Manchester Piccadilly 14th July 2017.
Image: Paul Bigland

Passengers await to board a London Midland Class 350 at Crewe 11th October 2017.
Image: Paul Bigland

services in 2019, Ashford MP Damian Green described HS1 as being, 'the single biggest beneficial change to Ashford's prosperity'. A report commissioned by HS1 and Visit Kent in 2017 found that the line has added more than £311 million to the Kent economy and supported almost 6,000 jobs. Across different scales and metrics it can be demonstrated that high speed rail investment delivers real benefits.

The story of why Britain didn't get onboard with high speed rail is long and complicated but culminated in a very British compromise: the multi-billion pound, disruptive and protracted WCML upgrade between 1998 and 2008. This cut journey times and offered regular interval services to cities along the route. Modal shift to rail took place as the services gained popularity and decimated the domestic flight market between London and Manchester. However, to fit in all those fast services intermediate stations lost out.

We have got the most out of the WCML but before the upgrade was even finished it was recognised that it wasn't enough. Patronage of Britain's railways has doubled and in some regions tripled since the early 1990s; however they have now become a victim of their own success. This has not been limited to London and the South East as the increased congestion and overcrowding seen on the approaches to stations in Manchester and Leeds can attest.


Avanti West Coast Pendolinos await their next journey to London from Manchester. HS2 diverts these trains off existing lines creating capacity for more local and regional services 17th February 2020.
Image: Paul Bigland

The economic benefits of HS2 are already being felt. Stafford has moved forward development plans now that it has been confirmed HS2 trains will directly serve the town. In the West Midlands business confidence has surged and investment increased as HSBC has moved its headquarters to Birmingham quoting HS2 as being a contributory factor. This has also spurred redevelopment and extensions of the region's tram network. Leeds could follow suit as Channel 4 has moved 200 staff from London. HS2 could attract investment and help deliver the rapid transit system the city deserves and finally lose the moniker of being the largest city in Western Europe without a rapid transit system.

The COVID crisis has given us the space to re-assess our working lives, our travel patterns and the opportunities this presents. Local is good and by providing green infrastructure for walking, cycling, and rapid transit combined with 'London-style' rail services we can strengthen our towns and cities. This can relieve the overheating London and South East region, taking pressure off the housing market and transport systems. This also demonstrates that investment in HS2 is not mutually exclusive of investment in the existing rail network. Crossrail, Thameslink, the Ordsall Chord, the Trans-Pennine Route Upgrade, new train fleets and station openings continue alongside HS2. The Government's Transport Decarbonisation Plan suggests more rail investment, electrification and re-openings to come that HS2 will compliment as its phases open up capacity on the rail network.

This all culminates in addressing the Government's levelling up agenda, the climate emergency and the new post-COVID paradigm. HS2 is not the solution, it is part of the solution. We have to look forwards to address the challenges of a post-pandemic recession and the uncertainty surrounding Brexit. Infrastructure investment is a good place to start but it must be sustainable. Active and public transport infrastructure, combined with investment and planning incentives can boost regional economies, relieve the strain on London and ultimately benefit the whole of UK plc.

Simon Kendler is a rail consultant, specialising in operations, planning and rolling stock with an academic background in urban planning, sustainability and transport. He studied a Masters in Town and Country Planning in the UK and a Masters in Sustainable Cities whilst based in Denmark. Aside from his consultancy work he is actively involved with STEM outreach and the Young Rail Professionals network where he is Chair of the London & South East Committee. You can follow Simon on Twitter @SimonZev and contact him at simon.kendler@youngrailpro.com www.youngrailpro.com

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The rail needs of the North and the Midlands

Jim Steer, Director of Greengauge 21, explains what is in the group's new report and how they see rail improvements shaping up across the country

Government's intention to develop an integrated rail plan for the North and Midlands is welcome. This requires strategic planning, not just prioritising projects. The outcome should be a programme of rail network development designed to meet Government objectives.

Today, these centre on national economic recovery and decarbonising the transport sector – both must be regarded as urgent. Planning efforts to date, seeking to tie together HS2 and Northern Powerhouse Rail have been misguided. Creating an £80 billion mega-project doesn't address the problems on today's network and will take at least 20 years to deliver. The Midlands and the North can't wait that long. And it risks creating an investment gap. In our new report, we set out how this can be filled by a short and medium term programme of incremental improvements.

Projects developed pre-Covid centre on better connections between cities. Given that the railway is a network with hubs in city centres, that remains valid but it's only part of what's needed. There is also a Government aim to level up the economy and that means addressing places left behind – the smaller towns and cities of the North and Midlands – and not just the big cities.

With some adaptations to the longer term high-speed rail plans (including leaving some bits out), and with some fresh thinking, known problems and opportunities can be addressed much earlier than 2040 – and help pave the way for a full realisation of the additional benefits of HS2 Phase 2b and NPR in due course.

The reduction of carbon on a trajectory to the Government's committed date of 2050 for net zero will necessarily dominate the way transport investment is shaped. An expansion of the capability of the electrified national rail network will be crucial.

Attention must be switched away from the (already very largely electrified) rail network of the South East and its two new inter-connecting rail lines across London (Thameslink and Crossrail). Much greater value in carbon reduction terms will come from addressing rail network short-comings in the Midlands and North (and across the border to Scotland) where rail market shares are low, but where there is massive potential to reduce the need for both short haul flights and longer distance car and HGV journeys.

A new entity – High Speed North – is charged with creating the integrated plan. It is seeking ways to reduce capital costs and increase project benefits. In our new report we have suggested a prioritised programme consisting of:

- A major electrification programme in England, the obvious starting points being completion of a one hundred per cent electrified trans-Pennine route (via Huddersfield); and the completion of the Midland Main Line electrification.
- 'Burning platform' investments to redress current severe operating constraints. A prime example is creating a 'superhub' at Manchester Piccadilly with underground platforms connected to the west by tunnel to handle all of Manchester's inter-regional services. This can be progressed now, well ahead of HS2 and NPR – and superhubs are also needed for Leeds and for Birmingham where the Midlands Rail Hub (Moor Street) can transform HS2 into an X-shaped network. Better to build these improvements, which carefully staged implementation programmes, now rather than wait to be swamped by added demand form HS2 and NPR later.
- Two priority intercity connectivity upgrades. Early delivery of two parts of HS2's 'eastern limb' between Sheffield and Leeds and between Birmingham and Nottingham (with a connection to Toton and Mansfield). This addresses the busiest city commuter connection in the North and the key east-west connection in the Midlands.
- Deliver a three-hour, ten-minute rail journey time for London-Glasgow/Edinburgh. This requires a line-of-route coordinated investment programme north and south of the Scottish border, benefiting Lancashire, Cumbria, and the Scottish Borders. The main aim is to drive modal switch and make a dramatic impact on carbon reduction. Preston, Carlisle and Glasgow Central stations will each need investment and some new higher-speed cut-offs will be needed.
- International connectivity. Three schemes:
  (i) The planned western connection into Heathrow airport, with new direct rail connections to the airport from the Midlands (as well as the South West and South Wales)
  (ii) An equivalent arrangement for Manchester where (as it happens) there is also a western airport access scheme. (This is also a 'burning platform' issue to tackle rail network congestion in central Manchester – the current Airport railway station is a bottleneck). It will transform access to the airport from Chester and Wales
  (iii) A strategic freight route for a much-expanded rail freight operation through the channel tunnel. This requires a new lower Thames rail tunnel (which can also be used for Essex-Kent passenger rail services) so that rail freight using the channel tunnel can operate directly to/from the Midlands and North avoiding London.
- Modal Integration. This is especially important for 'left behind' places, has low capital cost implications and can be implemented speedily. It entails creating rail <-> express interurban bus hubs and needs a simple policy shift to permit single fares systems to operate across bus and rail in the way it does today across London.

Jim Steer is Director of Greengauge 21

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Managing the flow of the London Underground

Ben Bingham, Network Incident Response Manager at London Underground, explains the work that the Network Incident Response Team does on the London Underground

Twenty-four hours a day, 365 days a year, come rain or shine (or global pandemic) there is a team patrolling the streets of London, poised to leap into action at a moment's notice should anything stop, or threaten to stop, the wheels turning on the London Underground (LU).

The Network Incident Response Team (NIRT), which comprises senior LU operational managers working in partnership with highly-experienced British Transport Police (BTP) medic officers, is a bespoke disruption-busting unit designed to respond rapidly to any situation that affects normal operations on the Underground.

The team was set up in May 2012, in time for the London Olympics, partly in preparation for that unique and challenging event, but also out of a recognition that driving reliability into the future was going to require some original thinking. There is no such thing as a small problem in an operation that has the capability to run trains at less than 90 second intervals, sometimes as far as 25 metres below ground, with upwards of 1,000 customers on board. Something as seemingly trivial as an accidental customer emergency alarm activation, or coat stuck in a door, can lead to trains stalled in tunnels. This could then lead to a customer on one of those stalled trains feeling unwell and another alarm being activated. The issue can grow exponentially within minutes, leading to station crowding challenges and then, very soon after, station closures.

Without good communication, clear understanding and competent on-site leadership we now have the makings of a seriously disruptive incident. So, in order to bring these essential incident management elements to bear, a new grade of manager was created – the Network Incident Response Manager (NIRM), of which there were originally seven (now twelve) offering a pan-London response. The NIRM was teamed-up with a BTP officer in a marked police vehicle and the NIRT was born.

The default area of operation for the NIRT is within zones 1 and 2 on the Underground map. This is chiefly owing to the potential impact of any service-affecting incident in this key area of operations. However, the team can be, and regularly is, deployed to locations anywhere else on the network where an incident, medical or operational, has the capacity to cause significant disruption to train services. In terms of getting to the scene of an incident, the team works to two main targets – within 15 minutes for zone 1 and within 30 minutes for the rest of the network. Because we travel in a marked police vehicle, these targets have proved to be broadly achievable, assuming that the incident we are attending fulfils certain specific criteria which triggers police authority to travel on 'I-Grade', which is the police term for sirens and blue flashing lights. Without that authority we are in the lap of the traffic gods like everyone else.

However, that is not to say that we cannot contribute to the management of an incident while en-route. We are equipped with a telephone and iPad containing any maps and diagrams we might need, along with access to the Underground's incident command and control log which is updated in real-time by the London Underground Control Centre (LUCC). We also have remote access to Trackernet, which shows us the live locations of trains and the disposition of points and signals. In addition to our electronic devices we also carry a wide selection of specialist railway safety and fault diagnosis equipment to assist when we arrive at the scene of an incident. These include thermal imaging cameras, current rail indicator devices and short-circuiting devices. The NIRT vehicles additionally carry a selection of specialist medical diagnostic and treatment equipment. Owing to the unique environmental challenges presented by an Underground train or station, we

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also carry specialist equipment – not found on ambulances - to ensure we can assist customers as safely and quickly as possible. This equipment has been so successful that ambulance crews have started requesting our services when faced with a particularly problematic incident.

The NIRT is critical in delivering the response and resolution to the Underground's highest priority incidents and is the driving-force in ensuring that these are brought to a close as quickly and safely as possible. Using operational knowledge, the medical-first-responder training of the BTP officer, leadership and influencing skills we aim to maintain the best service possible for our customers. At incidents, we operate as part of a highly successful and streamlined formal incident management structure which comprises Gold, Silver and Bronze layers of command. This structure was adopted in order to bring the Underground in line with the emergency services' incident command structure as part of the Joint Emergency Services Interoperability Principles (JESIP) in which we actively engage with emergency services both in training and in practice.

At incidents we will take the role of Silver and provide on-site tactical leadership. In order to do this we will talk to other Silvers (usually from the attending emergency services) and available experts to formulate a plan. Actions to carry out this plan can then be delegated to Bronze task-orientated responders. At Bronze level we have a multitude of resources to draw on – local operational duty managers, station staff and management, technical staff and the Emergency Response Unit (ERU). The ERU - who also have blue light capability - are an invaluable resource for us as they are able to carry out a multitude of tasks ranging from clearing fallen trees and mending holes in fences, to re-railing trains and carrying out emergency track repairs.

So, what does an incident requiring formal incident management look like? An example of one of the most disruptive and traumatic service-affecting incidents we deal with on a regular basis are fatalities and suicides on the railway – or 'persons under a train' (PUT) incidents.

The NIRT will take on overall tactical command-and-control at these incidents, ensuring that saving the life of the casualty, alongside the welfare of any customers on the incident train, is foremost in our efforts. This includes making the track area safe for other emergency responders such as the fire brigade, police, ambulance service or air ambulance and our own ERU. At a PUT incident, our BTP medic colleagues are trained in administering medical aid in confined spaces (including underneath trains), stabilising the casualty and administering life-support while awaiting the arrival of London Ambulance Service paramedics or air ambulance responders. Thereafter if not assisting the paramedics and fire brigade in rescuing the casualty they will become a tactical advisor, working closely with the NIRM in relation to any crime scene, and or other legal requirements, should the incident be deemed suspicious or unexplained.

While this is ongoing we will be assessing the needs of the customers held on the incident train and formulating and executing a plan to assist them off the carriages. This can be as challenging as the initial incident and we have to consider a variety of factors including the potential numbers of persons involved, the area of operation – in a tunnel, for example - and the distance to a place of safety such as a platform.This all takes place in what can be a confined, claustrophobic and hot environment. In tandem with this we need to look further ahead and will put plans in place to facilitate track access for the ERU, who will carry out any necessary actions to ensure the track and station are ready for service resumption. While all this is happening we are in constant communication with the local service control team and the Senior Operating Officer (based in the LUCC) who fulfils the Gold strategic command role. In this way, with up-to-the-minute updates coming from the incident site, impact on the wider network can be proportionately managed and timely, correct and relevant customer communications can be provided. This style of approach to formal incident management has proved extremely successful, not only contributing to the team's National Rail Award in 2015, but also seeing a reduction from 90 to 66 minutes in the average delay times for these types of incidents.

In the eight years since its creation, the NIRT has steadily evolved to become the essential keystone of LU's critical incident response alongside being recognised and welcomed by the other London emergency services. As a team we have attended every major incident in London over the last eight years, including both London Bridge attacks, Westminster, Parson's Green and Grenfell Tower - testament to the fact that very little of significance can occur in London without some measure of impact upon our railway. During the coronavirus pandemic, we've maintained our 24/7 presence, ensuring that the journeys of our essential workers are not disrupted and providing support for our frontline staff. We were once described on television as the Swiss Army Knife of the Underground and, although this has caused some amusement over the years, it does fit rather well. From major multi-agency critical incidents to catching a bee in a train cab (this happened), London Underground's Network Incident Response Team can handle it.

Ben Bingham is a Network Incident Response Manager at London Underground

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Advances in temporary trackside link lighting

The rail sector has seen a huge increase in the development of non-petrol- and diesel-powered technology in the past twelve to eighteen months – from power tools to vehicles, from dust suppression to water stations

Most recently the market has seen the development and deployment of battery powered track side link lighting from off grid lighting experts Prolectric. As with any new technology there is often the initial pushback and resistance to change, however the benefits of the technology could not be ignored or underestimated when considering the significant benefits such technology brought to employees, customers and the public at large and the environment. Battery powered link lighting offers a solution that delivers no noise, no use of diesel or petrol which delivers no emissions and provides a safer work environment.

When working trackside noise is a key concern and counts for a large proportion of public complaints during trackside maintenance and refurbishment works. The growing acceptance of the ProTrack battery powered lighting has now seen widespread use across the sector and includes multiple sites using the technology every week across the UK.

Clearly, the quality of lighting when used within a trackside environment is all too important in maintaining a safe work environment. What follows is a little background to the standards required for trackside link lighting in the UK and how these requirements were applied to factory testing the ProTrack.

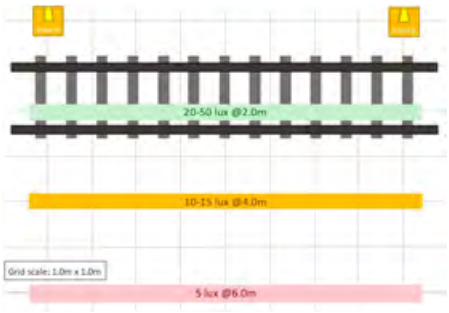
Network Rail lighting requirements

Guidance on lighting requirements for rail maintenance work is provided in the Network Rail document 'Don't get left in the dark: lighting and safety' (2015), which in turn, refers to obligations under the Work Place (Health Safety and Welfare) Regulations (1992), and the HSE guidance 'Lighting at Work' (HSG38, 1997).

From the above, Network Rail identify the following minimum lighting levels as being relevant to rail maintenance work:
5 lux for getting to and from worksites
20-50 lux for general P Way work
100 lux for S&T and E&P type activity where a degree of perception to detail is required.

Trackside link lighting is commonly used as access lighting for getting to and from worksites, and as lighting for general P Way work, and as such must be able to provide lighting levels of at least 5 lux for access applications and to 20-50 lux in working areas. In practice, meeting the requirements will depend on the performance of the specific equipment being used, and how it is set up.

For generic trackside fluorescent link lighting, the Network Rail guide suggests that at eight metres spacing, lighting levels of 20-50 lux at two metres from the light source (along the line of lights) can be expected, diminishing to 10-15 lux at four metres and 5 lux at six metres. This is illustrated in Figure 1 below, in the context of a setup with the lights positioned one metre from the outer track edge.



Lux level expectations at 2, 4 and 6m from source for generic link lights

In practice, depending on the type of lighting being used and the application, it may be possible to use different spacing arrangements to achieve the desired performance.

Figures 2 and 3 show examples of different sites using link lighting. The images in Figure 2 show well-lit sites using ProTrack lighting while Figure 3 shows sites where the setup is producing obvious light and dark patches from more traditional diesel-powered systems, which is not ideal.

Light 'striping' as show in Figure 3 can be reduced or eliminated by decreasing the spacing between the lights, or alternatively, using a lighting system that delivers better light dispersion. The latter option is preferable, since this will require fewer lighting modules and associated set up, saving both time and expense.

Examples of well-lit sites using ProTrack Lighting 2

Light intensity and dispersion testing – setup and approach

Testing was carried out to assess the light intensity and dispersion characteristics of the ProTrack link lighting system.

The testing was carried out during darkness hours in a windowless warehouse to eliminate all background light. A one-metre by one-metre grid was marked out on the floor using tape, and lights were positioned along one edge of this, representing the zero-metre line. A photo showing the test setup during one of the tests is shown in Figure 4.

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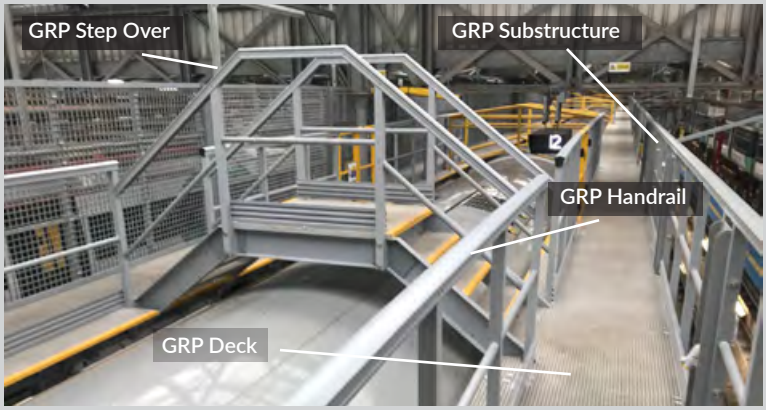

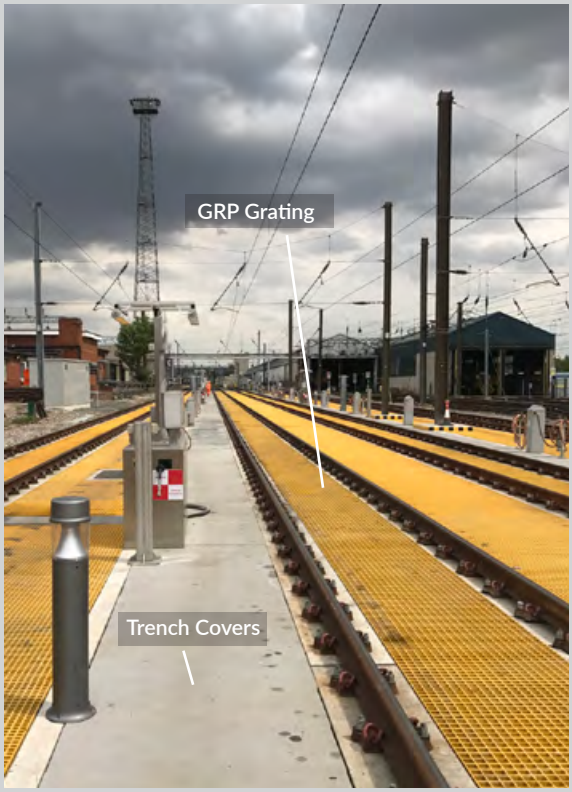

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3

Examples showing light 'striping' with light and dark patches using traditional diesel powered lighting

Using a Testo 540 lux meter, lux measurements were taken at each point on the grid, to cover an area extending up to 5m from line of the light source, and up to 10m along the line of the lights, depending on the arrangement.

For the ProTrack system, testing was repeated with different light head heights and angles. Table 1 one (at the base of this page) summarises the characteristics of the test arrangements.

The results were tabulated and lux ranges evaluated, for comparison with Network Rail standards and expectations. Figure 5 correlates between the typical layout and lux level expectations, and what should be expected from the test results for a system that conforms to this. To account for the gap between 10-15 and 20-50 lux, the 10-15 lux range is interpreted as 10-<20 for the purposes of the analysis.

Test results

ProTrack – 2.4-metre height, 45-degree light angle. Figure 6 shows results for a two-light ProTrack system with a 2.4-metre high, 45-degree angled head and eight-metre light spacing. The light distribution is good, resulting in conformance to Network Rail expectations.

Figure 7 shows results with setup as above except with a ten-metre light spacing. Again, the light distribution is good. While

Typical layout and lux level expectations

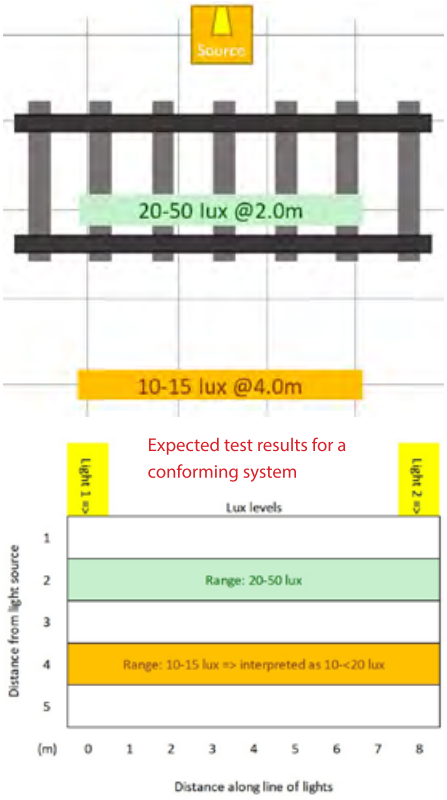

Figure 5 – Typical layout and lux level expectations against expected results for a conforming system


4 Test setup and measurement grid

Table 1 – Link light systems tested, key parameters and test arrangements

System	Electrical rating	Height options (H)	Lamp angle (∅) (from horizontal)	Test arrangements
ProTrack	110V	2.0/2.2/2.4m (adjustable)	0-90 degrees (adjustable)	Two-light system tested H=2.4m, ∅=45°, 8m spacing H=2.4m, ∅=45°, 10m spacing 8m/10m x 5m measurement grid

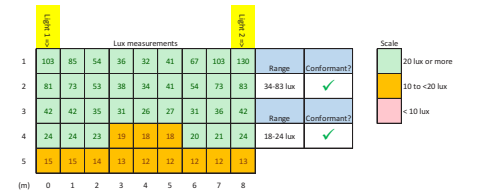

Figure 6 – ProTrack lux grid for 2.4m light height, 45-degree angle, 8m spacing

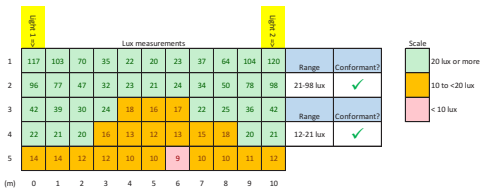

Figure 7 – ProTrack lux grid for 2.4m light height, 45-degree angle, 10m spacing

there is some drop off in lux levels in the central region, lux levels at both two-metre and four-metre from the source are still within the range conforming to expectations.

Test Summary

As shown in the table (above right), the ProTrack link light system meets the requirements of Network rail and HSE standards.

It is important to note, the use of correctly specified and configured lighting is essential for the safe delivery of rail maintenance and construction work. Network Rail and its partners adhere to HSE guidelines on required lighting levels for different types of activity. For activities of relevance to this report, this denotes a requirement for minimum lighting levels of 20-50 lux for general P Way work and 5 lux for getting to and from worksites.

Various different types of lighting are used by the rail industry, depending on specific requirements. Link lighting, comprising lines of separate, but centrally powered lighting modules that are connected together to create light corridors, is particularly suited to long work sites, and for use as access lighting.

This report presents the findings from testing of the ProTrack link lighting system. Performance is compared with Network Rail's expectations for this type of lighting, summarised as a minimum of 20-50 lux along a line two-metre from the light source and 10-15 lux along a line four-metre from the light source.

Test Summary

System	Distance from source	10m light spacing		
		Average	Range	Conformant?
ProTrack (lights with battery pack powered)	2m	53 lux	21-98 lux	✓
	4m	17 lux	12-21 lux	✓

Example of ProTrack Battery powered link lighting

the light source.

Conformance is assessed against the expectations defined above which demonstrates the efficacy of the ProTrack in meeting Network Rail standards for P way lighting.

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Delivering decarbonisation to the UK

Ian Johnson, Head of Profession for WSP's UK Rail discipline, describes the transformational change required to deliver decarbonisation on the UK's rail network

The decarbonisation of the UK's transport infrastructure has come into sharp focus over the last year following legislation signed by the UK Government in June 2019 to bring all greenhouse-gas emissions to net zero by 2050.

Rail has an essential role to play in the UK's transition to a net zero economy. The work undertaken by the rail industry task force in response to a challenge from the former Rail Minister, Jo Johnson MP, to remove all diesel-only trains from the UK network by 2040 concluded that decarbonisation is possible, supporting the landmark legislation.

However, it will require significant coordinated investment in both infrastructure and rolling stock, with a degree of urgency, given the scale of infrastructure works likely to be required and the timescales for fleet replacement or upgrade.

Where are we today?

The Department for Transport has recently published a policy paper explaining how it intends to develop a plan to meet the target of net zero transport emissions by 2050. The plan is scheduled to be published later this year.

In the meantime, Network Rail is due to publish its Traction Decarbonisation Network Strategy (TDNS) in the coming months which builds on the decarbonisation task force output last year. This will inform decisions around which traction solutions could work on which routes for both passenger and freight; it will be a crucial roadmap to inform the industry plan.

A rolling programme of electrification is likely to be required, whilst utilising new technologies such as battery and hydrogen propulsion on other routes, provided that the energy supply can be made zero carbon.

What are the viable solutions?

It is clear that overhead electrification is the only viable option for high speed and long-distance routes, as well as for freight. It is, however, a costly solution, particularly when accounting for the impact on overline structures and other rail systems and is not therefore suitable for deployment on all routes.

Aside from electrification, battery and hydrogen propulsion are the only two viable alternatives. Maintaining the existing loading gauge means that, without sacrificing carrying capacity (passengers or freight goods), both have limitations in terms of achievable performance and range.

While technology is evolving, batteries are currently best suited to support 'discontinuous' or end-of-line electrification, low speed, short stop, applications including light rail. Trials of battery-retrofitted EMUs have been successfully undertaken and we have seen the application of battery technology in the CAF Urbos trams that will run "catenary-free" in the new Centenary Square extension to Midland Metro. Battery propulsion is also proposed for the innovative Very Light Rail (VLR) system currently being developed by Coventry City Council.

Hydrogen trains represent a potentially viable option for rural lines, with trials of re-purposed EMUs currently ongoing in the UK. The German public transport network Rhein-Main-Verkehrsverbund (RMV) subsidiary, Fahma, has placed an order for 27 Alstom Coradia iLint hydrogen model trains to replace existing diesel trains. Interestingly, the contract also includes the supply of hydrogen, maintenance and provision of reserve capacities for the next 25 years. Notwithstanding the success of the ongoing UK trials and the findings of TDNS, the viability of hydrogen as a solution will depend on the ability to generate, distribute and store 'green' hydrogen in a cost-effective way.

One key challenge we face in decarbonising rail in the UK is freight. Despite 42 per cent of the UK rail network being electrified, only 13 per cent of freight trains are electrically hauled today. Given the power requirements for economic operation, electrification is the only viable solution. However, it is worth noting that the Committee for Climate Change (CCC) report, which underpins the net zero legislation, implicitly accepts some residual carbon emissions for rail freight where electrification is not practicable.

How do we reduce the cost of electrification?

Notwithstanding the clear benefits of electrification, the RIA Electrification Cost

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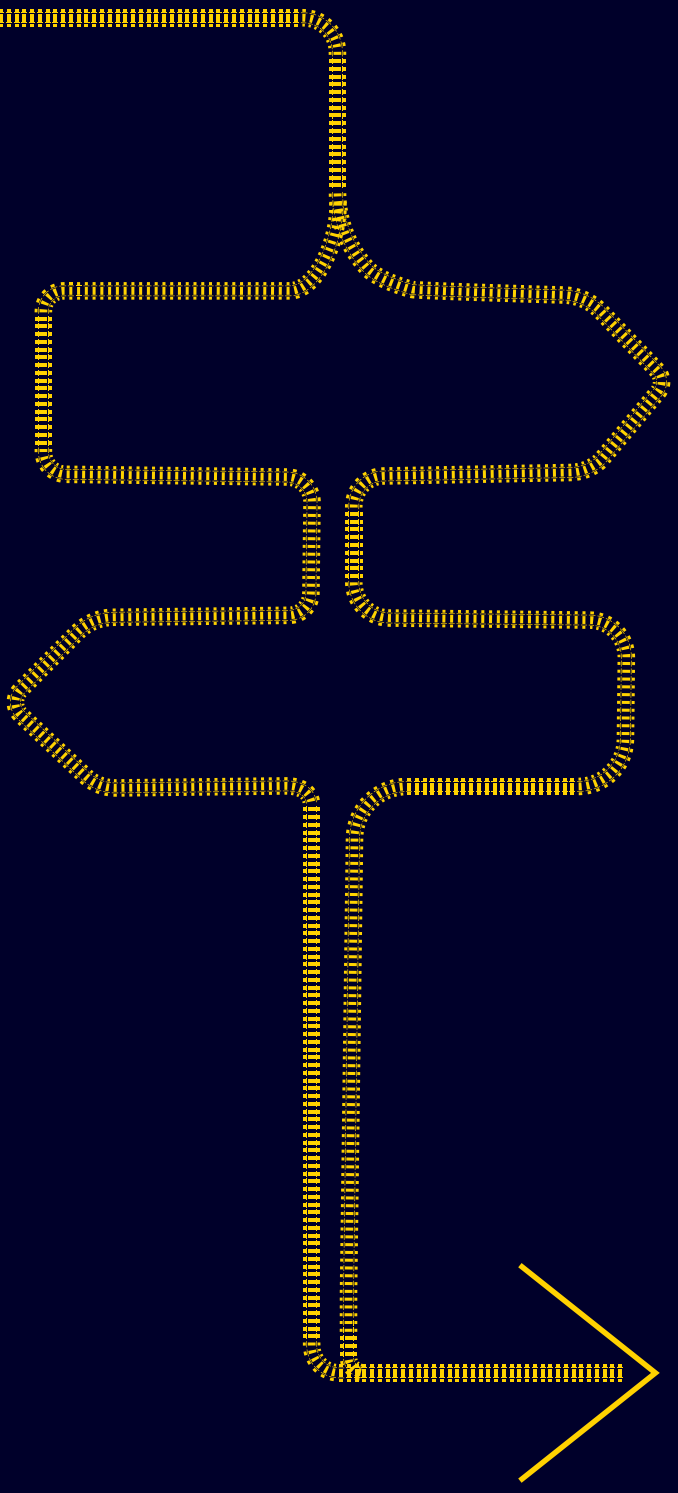

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Challenge Report published last year made it clear that there was little Government support for further electrification without clear evidence of its affordability and deliverability against established industry benchmarks in the UK and overseas.

The Scottish Government is committed to electrification and has funded a rolling programme of seven schemes over the past ten years totalling 500 single track kilometre (stk). These have delivered electrification broadly within the target range of £1 million to £1.5 million per stk and the commitment to a rolling programme has enabled lessons to be learned and passed from one project to the next.

WSP is currently working with Network Rail and stakeholders to apply the emerging principles of 'efficient electrification' to the next tranche of schemes with the aim of further reducing unit costs. This includes contributing to these principles through various industry engagement activities.

The key area of 'efficient electrification' that WSP is currently developing with Network Rail is in relation to the consideration of reduced electrical clearances. For any electrification project, a key consideration is the spatial requirement at overline structures to accommodate the 25kV overhead line equipment. The electrical clearances required from the train pantograph and overhead line equipment to overline structures and from the overhead line equipment to rolling stock dictate the spatial requirements at the structure. Using traditional electrical clearance values has led to significant costs for electrification route clearance, in the form of bridge reconstruction and/or track lowering, on most legacy electrification projects.

The 'efficient electrification' electrical clearance values that are being promoted by Network Rail and WSP at the development stage of key electrification projects in Scotland are far lower than the traditional values. These reduced clearance values have been justified by incorporating cost effective mitigation equipment, supported by trials and testing, and result in significant reduction of bridge intervention works. These initiatives will in turn lead to significantly reduced route clearance costs and help the case for making electrification more affordable.

What are the next steps?

Both UK Government and industry are committed to reducing the impact of rail travel on the environment whilst still offering an attractive service for customers.

While strategies and plans on how decarbonisation will be achieved are eagerly awaited, there is likely to be a strong case for electrifying a significant proportion of the network, including inter-city, commuter and freight routes that are not currently electrified. A commitment to developing a UK-wide rolling programme before current projects are completed is vital to ensure that the expertise, skills and capability are retained and developed to match the likely future demand. A realistic programme, avoiding the peaks and troughs we have seen in the past, will ensure that incremental benefits are achieved and will boost confidence in the ability of the rail supply chain to deliver. It will also enable alignment with short, medium and long-term rolling stock fleet strategies.

From our experience of implementing 'Future Ready' zero emission solutions in other geographies, it is important that the feasibility, specification, procurement and delivery are considered from a whole system approach that includes energy supply as well as infrastructure and rolling stock.

Ian Johnson is Head of Profession for WSP's UK Rail discipline

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Why is Britain unable to imagine a high-speed future?

Planning and transport consultant **Steve Chambers** looks at the public perception of high-speed rail

London is the terminus of a high-speed train service to Paris. The only time I have really been emphatically reminded of this is when visitors from the USA remark how wonderful it is to be able to visit the capital of another nation by train in a little over two hours. In America high-speed rail is located on a left/right culture war that means development is slow and proposals get cut back to the point of being useless. Opponents of high-speed rail in Texas have even tried to argue that a new railway plan is not a railway at all.

It is regrettable that the United Kingdom finds itself in seemingly similar but perhaps more confounding situation with respect to high-speed rail. But first of all, it is worth considering where there is consensus. The development of a national high-speed rail backbone for the UK was always going to take more than a single parliament to complete.

> The new high-speed railway line is being built in the here and now. It is a somewhat delayed achievement of political consensus building and technological ability. The challenge is to situate it in the proud history of railway development and the new aspirations for the kind of country the United Kingdom should become

Rightly one parliament cannot bind another, so HS2 was conceived as a project built on cross-party political consensus. Once agreed, it has become a test of whether this country can do big infrastructure. By way of comparison, Crossrail is still not complete in 2020 and was featured in the Abercrombie Plan.

But not everyone is agreed high-speed rail is a good thing. One reason for this is the benefits of rail improvements are hard to communicate and even harder to imagine. The Thameslink Programme, for example, made busy stations more pleasant, journeys faster and increased frequencies. It can be hard to sum this up in catchy way that passengers understand.

Capacity is a popular catch-all for improvement. But people don't really get to understand what increased capacity looks like until they use the service after the works are complete.

Hardly a new idea in railway marketing, but perhaps an effective one, is the use of headline journey times. 'Norwich in 90 and Ipswich in 60' was used to explain service improvements on the Great Eastern Main Line. This is a clear benefit that passengers can understand. It was perhaps a mistake, however, to focus on time benefits for new UK high-speed rail services. Focussing on time savings alone suggests that this is the main, perhaps only, benefit of the new railway.

Which brings us back to capacity, because that is in fact the main benefit, indeed reason, for developing a new north to south high-speed line. In the example of the Thameslink Programme the felt passenger benefits were innovations like being able to board a train at all at Kentish Town in the morning and at Elephant and Castle in the evening. It might seem underwhelming to make promises of this sort, but being able to board a train to get home instead of waiting for the next one is a big deal to passengers. HS2 has the potential to radically improve many commuter journeys around London, Birmingham and Manchester.

The anniversary of HS1 caused me to reflect on the benefits of that line. The Victoria-Orpington local service doubled in frequency overnight. I don't remember that being explained as a benefit of high-speed rail, but it should have been. The challenge is communicating the benefit of HS2 comes in identifying all these kinds of local improvements. Be they in frequency, headline journey time improvements or by identifying particular journeys that will be transformed.

Realistically work on communicating the benefits of rail improvements will only get so far with the public. As much as it pains me to say it, they just don't care that much about trains. Railways are a means to mobility for most passengers. However, something has gone very wrong somewhere if environmental groups believe a railway is not an environmental solution. It should not be difficult to find common ground in a climate emergency.

Somehow the United Kingdom has found itself in a similar situation to Texas, with the new railway conceived as not a railway at all. According to some campaigners it possesses none of the usual benefits associated with a railway at all. This is clearly nonsense but means high-speed rail finds itself with opposition, which focuses on counterintuitive arguments about the environment.

All campaigning is built around the desire to make things better, or at least not make things worse. In my work as a built environment campaigner I encounter two types of group, those that want to stop something from happening and those that want to see positive change occur. Typically, people don't want a new noisy and polluting new road built near their homes, but do want to see improved local rail services and have mixed feelings about new supermarkets depending on the brand proposed.

So how has the new railway HS2 gathered a small group of vocal opponents? In think there are several reasons for this and none of them are new in campaigning terms. The first is the scale of the project makes it easier to attack as a whole. This is the reason road schemes are often promoted in smaller sections, to make it hard for an opposing coalition to form.

Another is that in a plan like HS2 many of the key benefits are not felt locally, which is why the regional improvements are more important to explain. Finally, there is the long timeframe for delivery, which makes it really hard for people to imagine themselves using and benefiting from the service at all.

What binds the apathy and opposition together is an inability to imagine a better future. High speed rail is an uncontroversial reality in many countries around the world. We even have some of it in England linking London with Paris, but you'd be forgiven for forgetting.

Perhaps Britain's historic position as a leader in railway development now holds the country back. Whereas railway technology was once proudly exported around the world, now we are confronted with the dissonance of playing catch up. But putting off high speed rail for a generation won't salve the discomfort of having fallen behind in the world.

The new high-speed railway line is being built in the here and now. It is a somewhat delayed achievement of political consensus building and technological ability. The challenge is to situate it in the proud history of railway development and the new aspirations for the kind of country the United Kingdom should become.

Steve Chambers is a planning and transport consultant

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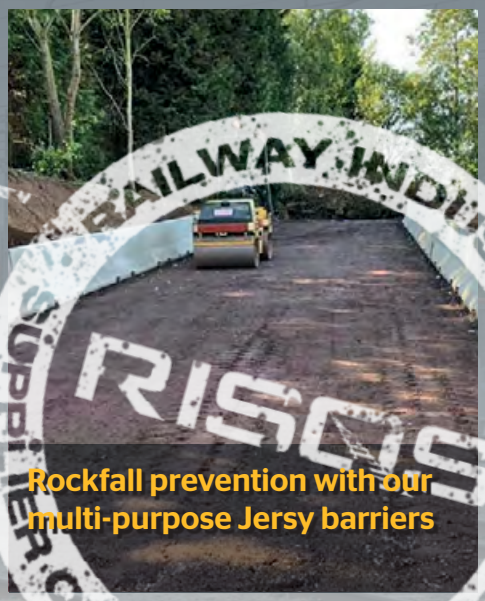

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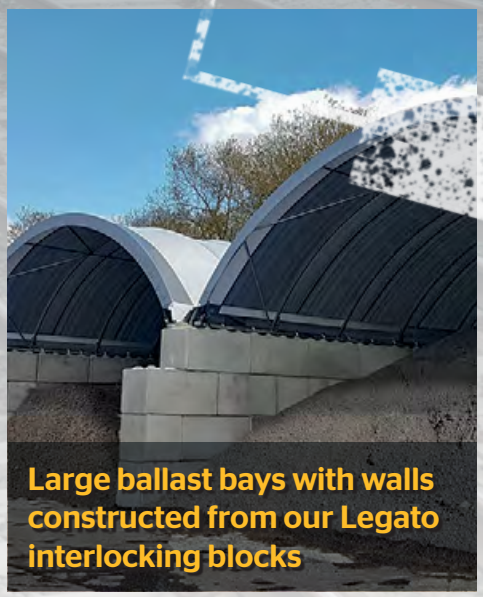

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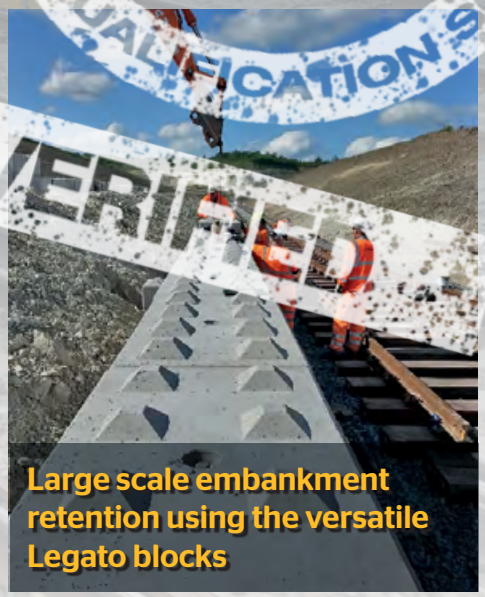

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Decarbonising rail freight

Joe O'Donnell, Head of Policy at Rail Freight Group, explains why Government commitment to electrification is vital to further decarbonisation of rail freight

In January, seemingly a lifetime ago before the lockdown, the Rail Freight Group was one of the organisations which wrote to the Government to highlight how relatively small-scale investment in electrifying a few critical sections of the rail network could immediately increase the number of electrically hauled freight trains. The economic landscape has changed dramatically since then, but the need to tackle the climate emergency and reduce our

> Much work is being done on how best to decarbonise the railways. Network Rail's Traction Decarbonisation Network Strategy (TDNS) is looking at how traction can be decarbonised and will, later this year, suggest those parts of the network where electrification is the prefered option

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> Another key issue is that a large number of freight locomotives are due to be replaced in the next ten to fifteen years. As a first step it is likley is that we will see more diesel/electric hybrids to maintain the rail freight's ability to 'go anywhere'

carbon emmissions has not.

Rail already plays a significant role in decarbonising freight. Moving goods by rail saves 76 per cent carbon per freight tonne mile, compared to using road. Work by the Rail Industry Association suggests that if electric locomotives alone are used this increases to a dramatic 90 per cent carbon per freight tonne mile, compared to using road. If national power generation is decarbonised in the future, then electric freight trains would produce zero carbon. Encouraging modal shift to rail, which has a tried and tested method to achieve decarbonisation, is therefore a key way to rapidly decarbonise freight as a whole.

Much work is being done on how best to decarbonise the railways. Network Rail's Traction Decarbonisation Network Strategy (TDNS) is looking at how traction can be decarbonised and will, later this year, suggest those parts of the network where electrification is the prefered option. The Rail and Safety Standard's Board's are leading research into the traction choices for decarbonisation and air quality improvement of the freight rail industry. This is also expected to report later this year.

It's clear that rail freight is more difficult to decarbonise than manypassenger trains. This is due to the levels of energy required to power the trainsTechnolgies such as battery or hydrogen, which show promise for shorter passenger units do not have the power for heavey freight, and giving over more wagon space to batteries, hydrogen or gas would also make freight trains uneconomical to run. As a result, overhead electrificatyion is seen as the only real alternative for mainline haulage.

Another key issue is that a large number of freight locomotives are due to be replaced in the next ten to fifteen years. As a first step it is likley is that we will see more diesel/electric hybrids to maintain the rail freight's ability to 'go anywhere'. This will allow rail freight to become increasingly decarbonised as, hopefully, electrification of the network progresses. Our January letter stressed that to keep increasing the percentage of freight trains that are electrically hauled there is a strong case for quick infill electrification of gaps between, or into, existing electrified routes whilst TDNS is finalised and the Government works on its forthcoming Transport Decarbonisation Plan.

Infill electrification creates new opportunities to run electric freight trains over long distances, boosting momentum towards decarbonisation and giving confidence to the private sector operators and their funders to support development of new hybrid and electric locomotives. For example, around ten trains a day could be converted from diesel to electric from London Gateway to the Midlands and North West if the branch line of just 1.5 miles was electrified.

The letter's suggested shortlist of infill electrification schemes are:

- Thameshaven branch line linking to London Gateway Port (c1.5 miles).
- Link line between the Great Western Main Line at Acton and the West Coast Main Line and the North London Line (< 1 mile).
- Felixstowe to Ipswich branch line (c17 miles).
- Connections to key container terminals (typically < ¼ mile).
- Link lines between the East Coast Main Line to Leeds and Wakefield terminals.
- Teesport to Northallerton.
- Nuneaton to Birmingham Grand Junctions (via Hams Hall and Landor Street Junction).

The letter urged the Government to give urgent consideration to these schemes to rapidly realise real carbon savings, alongside a strategy for electrification. Another letter with organisations including RIA in February pressed the Government to kick-start a 'rolling programme' of rail electrification before current electrification schemes are completed after which – without other schemes to move on to – many skills and expertise will be lost.

The Rail Freight Group recently responded to the Department for Transport's 'Decarbonising Transport Setting the Challenge' which shapes what policies will be in the 2020 Transport Decarbonisation Plan (TDP). We were pleased that the Government stated that 'the main way to achieve rail freight decarbonisation is to stop using diesel traction, through direct government intervention to roll out further electrification'.

However, we were disappointed that rail freight is not mentioned within any of the strategic priorities for the TDP. This risks rail freight's proven role in decarbonisation not being fully realised and the required investment in electrification, not thought about from a freight perspectiuve. To avoid this, we have urged Government to insert rail freight in the movement of goods strategic priority and ensure that rail freight is represented on the new Net Zero Transport Council. An early Government commitment to inflill electrification schemes will help address these concerns and give rail freight confidence to invest in an electric future.

Joe O'Donnell is Head of Policy at Rail Freight Group

RFG NEWS...

RFG and Transform Scotland call for a National Low-Carbon Freight Network

Transform Scotland and Rail Freight Group (RFG) have published a joint proposal for a 'National Low-Carbon Freight Network' in response to the Scottish Government's consultation on the new National Planning Framework (NPF4).

The transfer of freight from road to rail can offer a 'quick win' by cutting CO2 emissions. There are also significant benefits to be gained from this proposal for people, place, and inclusive growth. In our response, we highlight three factors the development of a National Low-Carbon Freight Network will depend on:

Electrification. Early electrification of the routes from Central Scotland to Aberdeen and Inverness – speeding up transits, improving route capacity and further cutting carbon emissions compared to road haulage. To support electrification there must also be investment in ensuring that the electricity supply will be able to meet the demand placed on it.

Route capacity. Enhancement of route and train capacity and capability (including loading gauge) to secure cost-effective rail freight operations connecting Central Scotland with key ports and terminals across the country.

Terminals. Realising the above potential depends in part on the creation of new rail freight terminals to serve currently neglected regions and undersupplied areas. Amongst the priorities should be:

Speyside – re-opened terminals at Keith and/or Elgin are needed to allow rail freight to help cut down on the 50,000 long-distance whisky lorry trips on the A9 annually.

Direct rail access to key whisky industry sites, such as Cameron Bridge in Fife (the largest grain distillery in Europe) and Cambus/Blackgrange near Alloa (the largest bonded warehouse site in Europe).

Digital Displacement project shows potential to reduce emissions in non-passenger rail

With challenging targets to radically reduce railway CO_2 emissions, one project has shown the potential of Digital Displacement® hydraulics as an achievable route to lower emissions for diesel freight locomotives, shunters and on-track plant

The UK rail industry is committed to contributing to the UK Government's goal of reaching net carbon zero by 2050 – however, the route to getting there is not easy. While low carbon electricity offers an obvious solution, the electrification of GB's entire rail network is challenging and other fuel solutions such as green hydrogen are not yet market ready. Today around 60 per cent of the network is not electrified, and with a UK Government mandate to halt diesel-only powered locomotion after 2040, the industry needs to look closely at all approaches.

One recently completed RSSB-funded project has shown how the adoption of Digital Displacement hydraulic pumps can make a significant impact.

The project – Digital Displacement for Non-Passenger Rail – examined the possibilities provided by Digital Displacement technology as a more efficient alternative to conventional hydraulic pumps for providing traction and auxiliary power for freight locomotives, shunters and on-track plant.

The twelve-month programme, funded by the RSSB as part of the Intelligent Power Solutions research competition, brought together the University of Huddersfield, Direct Rail Services and technology leader Artemis Intelligent Power to identify adoptable opportunities for the ground-breaking Digital Displacement technology.

The project was completed in two phases: an initial research period looking at each application area in non-passenger rail, followed by a more in-depth study of three chosen applications. Each of the three applications included a fuel and carbon saving analysis and business case study.

The three areas were:

- Specification of a Digital Displacement hydrostatic cooling system for a large locomotive.
- Investigation of the pump swap opportunities for road-rail and track maintenance vehicles.
- Development of a modular drive system concept for small locomotives and track maintenance vehicles.

Project engineer with Digital Displacement pump

The completed project has delivered positive results:

- Specification of a Digital Displacement pump hydrostatic cooling system for a large locomotive could lead to annual fuel savings corresponding to 2,500-5,000 litres per vehicle and six to thirteen tonnes of CO_2 emissions depending on duty cycle.
- The pump swap opportunities for road-rail and track maintenance vehicles indicated that fuel savings of 20 percent could lead to 7,200 litres fuel saved per vehicle per year, corresponding to CO_2 savings of around 19 tonnes per year.
- A modular drive system concept already demonstrated as a prototype in a previous project for passenger diesel-powered railcars (DMUs) (see below) could be adapted for use in small locomotive and track maintenance vehicles. This could lead to a fuel and carbon reduction of around 30 per cent dependant on specific vehicle and duty cycle. Further refinement of this estimate could be made with further input from OEMs and operators.

Commenting on the results, Artemis's project lead, Dr Gordon Voller, said: 'At the outset, the project examined four possible application areas for Digital Displacement hydraulics. The first part of the programme helped us understand which areas would most benefit from applications of the technology. We focused on those with greater commercial potential that would most likely motivate the development of specific products.

What is Digital Displacement®?

Digital Displacement is a fundamental innovation which utilises a radial piston machine which enables and disables cylinders in real time, using ultra-fast mechatronic valves controlled by an embedded computer. These intelligent, digital controls mean a Digital Displacement pump is highly controllable and extremely efficient – individual cylinders are only called into action as and when required.

The net result is:

- Dramatically lower energy losses (typically less than a third of swashplate machines).
- Dramatically faster response (typically ten times faster).
- Complete elimination of high-frequency noise.

A new series of commercially available Digital Displacement pumps is now being produced by Artemis majority shareholder Danfoss.

Project engineers at Bo'ness

In 2019 Artemis concluded a £1.7 million, 18-month programme – which was part-funded by the RSSB through its 'Advanced Powertrain' competition – to demonstrate a fully hydraulic transmission for a DMU on a trailer car, from an Intercity 225 (Mark 3 DVT), loaned by Chiltern Railways. The prototype [pictured], was developed using two standard JCB 129kW ecoMAX engines for the primary power units. It underwent a full test programme on a private rail line at the Bo'ness and Kinneil Railway in central Scotland.

Results included:

- Over 30 per cent reduction in fuel use.
- Faster acceleration and shorter journey times.
- Lower pollution in stations.

Gordon believes that all three studies demonstrate the wide-ranging potential for the adoption of Digital Displacement technology in rail.

'If fully integrated, Digital Displacement pumps and motors can be combined to create a hydrostatic transmission suitable for on-track machines. It would be particularly appropriate where vehicles have both transport and working modes – each at extreme ends of the speed range. It can also be used in small shunting locomotives. Hydraulic accumulators can be added to provide energy storage for power smoothing or braking energy capture, with significant performance and efficiency benefits.

'The drive to decarbonisation could also see the growth in light intermodal rail freight as a lower carbon alternative to road haulage. This would take place on largely non-electrified local lines, and further underscores the opportunity for Digital Displacement to reduce emissions and accelerate the decarbonisation of rail freight in the UK and overseas.

'The main challenge remains accelerating the early adoption of this technology into the rail market in the short term' Gordon concludes.

'Commenting on the project, Giulia Lorenzini, Senior Grants and Partnerships Manager, RSSB, said:

'The railway remains a very low carbon form of transport for both passengers and freight. Freight, in particular, has journey characteristics which demand very high energy and power requirements, high acceleration and long periods between refuelling. Our research has shown that there are no suitable direct replacement alternatives to electric and diesel traction currently available for these journey types. Therefore, the Digital Displacement technology is a valuable transitional arrangement for rail freight, where it could be applicable on a transitional basis at least, and perhaps in long-term use, to small locomotives, track maintenance vehicles and large locomotives to help reduce CO_2 emissions.'

The Institute of Railway Research (IRR) at the University of Huddersfield was very pleased to be able to support the project.

Professor Paul Allen, Assistant Director of the Institute sees the project as an exemplar of how industry and academia can work together in bringing new innovations to the rail market: 'Working with our Business School, we have helped demonstrate there is a place for Digital Displacement technology in decarbonising the railways, particularly in the very challenge case of the freight sector, with its reliance on diesel technology, necessitated by high traction power demand coupled with 'go-anywhere' service patterns.'

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Email: Gordon.voller@danfoss.com

'Our results showed some applications, such as driving compressors and cooling fans, could benefit immediately from access to the commercially available Danfoss DDP096 pump.

'Our study confirms that the hydrostatic cooling system in large locomotives can be made significantly more efficient, providing CO_2 reduction and fuel savings with a simple pump swap. For on track plant, almost all of these already use hydraulic systems, making this an ideal application area for Digital Displacement' Gordon says.

Adoption of DDP096 pumps will immediately reduce fuel use in both new and refurbished vehicles. Also, development of a modular drive system for small locomotives and self-powered uses could enable very positive changes to lighter rail vehicles (for light freight and a variety of other purposes) in the UK and elsewhere.

This project is not the first time Artemis has been involved in rail. In 2018 the Edinburgh specialists completed a project with ScotRail to demonstrate using a Digital Displacement pump to replace the conventional pump powering the hotel loads in a Class 170 DMU. The successful trial of 3,500 hours on an operating train indicated a fuel saving of 10,000 litres per vehicle per year (6.7 per cent).

Dura Composites wins royal seal of approval with Queens Award for Innovation for Dura Platform

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One company's journey through the hydraulic industry

Approved Hydraulics started 35 years ago as Geoff Hindle (a man with a van), focussing on repairs and service work to the hydraulic industry, **Adam Hindle** explores the company's journey

The work covered all and everything under the hydraulic banner but was mainly focussed towards the truck hydraulic industry (lorry cranes, skip loaders, hook lifts etc...). Over the years the company has changed and evolved to move into new areas when the repair business became less sustainable due to a lack of skilled traditionally trained engineers coming into the marker and longer free service contracts offered by the equipment manufacturers on new equipment. The company decided to move into more of a sales role and this also allowed the business to be able to scale up more easily using the years of hands on experience to ensure customers would not only receive the correct parts for the job, but also the back up and knowledge support on how to fit and install components correctly.

Company reach

The company has always been based around Manchester, covering the North West of the UK as a service and repair company. However, as the company moved into sales, we now cover the whole of the UK and Ireland and more frequently export to Europe and the rest of the world.

We cover a wide range of sectors involved with hydraulic equipment, however some more prominent than others such as the forestry, rail, truck hydraulic market, industrial hydraulics, demolition and more recently subsea and offshore sectors.

Background and introduction to the company

As the son of the owner, I always wanted to work for the family business, I have been saying it ever since I was around three years old. However, I was not allowed to simply join the company, I first had to study for a National Diploma in Electrical Engineering then a Higher National Diploma in Mechanical Engineering before finally attaining a BEng Degree in Mechanical Engineering.

Joining the business when I was younger meant I had always been around and used to seeing hydraulic equipment and therefore had a slight leg up on many my age at the time. Over the past few years, I have worked my way through the company from handling stock control to sales and now head up the Attachment Sales Department for the company along with also being a shareholder of the business.

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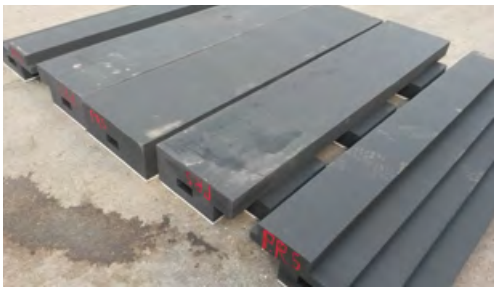

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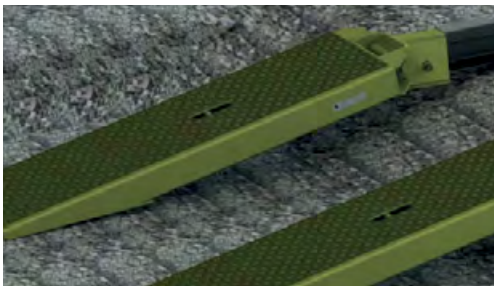

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As well as providing support and knowledge, to become a leader in any market you need to have good quality products behind you. We hold the UK dealerships for five main rail attachment manufacturers that we believe offer all this.

Intermercato AB (based in Sweden)
Officially the sole UK agent for over ten years. Intermercato offers the largest range of log grabs in the worldwide market. They are predominantly known for their strength to weight ratio, and many in the market consider them indestructible. We supply a large number of our TG 42S and TG 35S (amongst others) to the rail industry. These are typically used to manoeuvre rail tracks during construction.

The Intermercato grabs gained their notoriety in the rail industry after customers had been using them to physically rip old rails up from the ground without issues to the equipment. An issue they had been having with another well know brand were jaws had been bending and snapping.

Statement from Lotta Hilderbrand, MD at Intermercato: 'Approved Hydraulics have been our partners and sole UK agents for more than ten years now and we are more than pleased with the way they represent us and our products. They have a very dedicated sales team with high technical ability and sales back-up that can be trusted one hundred per cent.'

Baltrotors LV (based in Latvia)
Baltrotors produces one of the most extensive ranges of rotators available on the market and already have a great name in the rail market. The rotators are used daily on all types of equipment including log grabs, clamshell bucket grabs, sleeper grabs, rail

handling beams and universal beams to name a few. As a sign of their quality and confidence in their products, all Baltrotors GR range of rotators come with a two-year warranty as standard.

We carry a full range of these rotators in our UK stores from 1T to 16T along with a full range of rigid rotators from 5T to 15T.

Statement from Arthur Goliks, Head of International sales at Baltrotors: 'Approved Hydraulics have been our sole UK agents for around ten years. We've always had a great relationship. We are confident that Approved Hydraulics can offer you a fantastic and knowledgeable service when buying rotators.'

FEMAC (Based in Italy)
FEMAC produce one of the most comprehensive ranges of excavator mounted flails and fixed tooth mulchers. This year they have increased the range considerably by making many of the standards or forestall flails interchangeable with a fixed tooth rotor. The range covers flails and mulchers for machines from 1T to 30T in weight.

Network Rail have been taking these units for the past few years and have been very impressed with the product, ordering more units recently.

Statement from Francesco Fratini, MD at FEMAC: 'We have worked solely with Approved Hydraulics for over five years now and we are very happy with their sales and expertise to ensure they can offer you the best out of our range of flails and mulchers they have one of the highest technical abilities of any of our worldwide dealers.'

Approved Hydraulics range of equipment and what was the motivation behind this venture?
Approved Hydraulics began its own product range around five years ago branded HYDRA-Part. This covers a full range of standard hydraulic components including control valve, line mounted valves, pumps, PTO units, tanks, motors, stabiliser pads and storage cages and is an ever-growing range based on customer demands.

We spent a great deal of time investigating, researching and negotiating on quality and price with a world of manufactures and signed UK sole rights on most of the range that is a branded under our HYDRA-Part registered trademark. We had always sold a wide range of products but with no real stronghold or price advantage for our customer so once the world started to buy online, we were left with only two options, compete in this market, or simply bow out!

We have never been the type of company to turn down a challenge, so we decided to compete. Once we found all the best and competitive products we started to sell all

our products on our purpose-built website. This has been very successful as we now sell a full range of standard hydraulic equipment to end users, dealers, and original equipment manufacturers.

We have worked with rail companies for many years, initially on our standard equipment and in the repair sector but as we moved more into sales of hydraulic attachments, the rail market became an obvious market for us. We already had good business relationships with many of the companies in this sector and the type of equipment they were using and were aware that our range of attachments were becoming well recognised in this market for great quality. Once we had supplied the first few attachments the sales grew naturally as our equipment was frequently being cross hired between companies leading into new opportunities.

In addition to our components and grab attachment portfolio, we are also the UK's distributor for Scanreco Radio Remote Controls. The Scanreco radio remote control systems are renowned for their ease of operation, unrivalled reliability and flexibility. As a result, these systems are now adopted around the world by some of the leading manufacturers of lorry loader cranes, forestry machines, mining and general plant equipment. Radio remote control systems are varied and can be used for all types of applications with options to suit many specific requirements.

What demand are we seeing at the moment? What's popular?

Everything in our Intermercato and Femac range are always very popular and we always have around 80 to 100 attachments on order at any one time, however of course, we have some top sellers. For the rail industry specifically our TG 42S Log Grab + GR16S Hydraulic swinging rotator and a bespoke built head bracket (to customers dims) have been popular for years with regular orders for several units at a time.

In more recent times we have seen an increase in clamshell bucket sales to this market, with the Minelli MBB (bulk bucket) and the MBV – FS (between sleepers) clamshell digging bucket proving to be the grab of choice for working on tracks.

How is the rail market generally right now?

The rail market always seems to be very buoyant due to everchanging transport plans and more recently the HS2 line being implemented.

We very rarely see a dip in sales, as we have such a wide range of equipment, so if one product line slows down for any reason, it's very likely we are selling more of something else to compensate. However, there is always great room for manoeuvrability in the rail market as customers are always looking for the next best thing and suppliers are always producing products to meet their demands. This gives us great scope for the future to keep expanding our services and keep offering customers great innovative products.

Memorable deals we have been involved in

Yes, we have been fortunate to have many. When we first started suppling attachments into the rail industry a big steppingstone was when we picked up an order for four grabs at the rail live show (many years ago) from a large well known user. This was a large order for our growing company at the time, but it was a sure sign we were onto something good that we had to pursue.

After many years of knocking on one customer's door with very little success, we received a call from them stating that they had borrowed some clamshell grabs from another of our customers. They were very impressed with the function and quality of the equipment and consequently ordered two bucket grab packages for their fleet. Neither of us have not looked back since!

What's next for the business?

For the future Approved Hydraulics are looking at increasing our own product range and improve our profile. We are keen to work on more bespoke projects as we have a great advantage over many other suppliers through our years of knowledge and hands on engineering experience. We welcome our customers' input as this is how we have evolved new items over the past few years. We also will be adding new products to our ever-expanding Hydra-Part range.

This year, Intermercato are actively producing and marketing a new range of specifically designed attachments for the rail industry and with the success of its other equipment within the UK, it is likely to be very successful for all parties involved. We have, through Intermercato's continual research and development, a complete range of wireless weigh scales suitable for a range of industries and equipment.

Typically used on material handlers and forestry cranes, it allows accurate weighing and monitoring of a wide range of materials to give the perfect solution when purchases and sales and done by weight. It also allows accurate individual weighing of products to enable safety where overloading can have severe implications.

The system works with Windows software so allows a complete array of ways to record and manipulate to data being produced.

We recently took on the UK dealership for a range of hydraulic and electrical rotary manifolds from the manufacturer Bini for use in continuous rotating components such as cranes, excavator turntables, grapples with multi-function and flow a wide range of other applications that require the transfer of fluid between a stationary and a rotating part. The manufacturers, Bini srl, have developed an extensive range of rotary manifolds, each unit manufactured from the highest quality components such as high-grade alloyed steels, quality pressure seals, bushes and bearings

Approved Hydraulics has recently moved to new larger premises to facilitate efficient production and provide improved service to our current and future customers. The move was also motivated by the company decision to hold more stock for faster delivery on products that would normally be shipped from our worldwide suppliers, many of which are now available overnight.

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Doocey Group invests in Elite Precast's Legato blocks and three Zappshelters

In January 2020 the recycling division of a leading multi-disciplined civil engineering and utility contractor, the Doocey Group, contacted **Elite Precast Concrete Ltd** about the company's Legato interlocking blocks

Doocey was planning to contract three new covered storage areas for its recycled construction and demolition waste and utility excavation arisings and the Legato blocks manufactured by Elite provide the ideal way of both segregating the recycled materials and of supporting Zappshelter's tension membrane roof system.

Shortly thereafter Doocey Recycling took delivery of Elite's Legato blocks and over just a three-day period they built the walls themselves. Zappshelter was then on hand to erect three new 14-metre by 12-metre roof structures and the result is that Doocey is able to carry out the recycling operations whilst keeping the finished products at a consistent moisture content and correctly segregated. The shelters have also enabled the recycling operation to introduce SMR a soil stabilising process, increasing the percentage recycled which further helps to reduce Doocey Groups carbon footprint.

Roger Summers, Business Development Manager for the Doocey Group commented: 'Elite's help early on, delivery, products and price were first class, which helped the whole project run very smoothly and on budget. I would highly recommend Elite to anyone who needs their products.'

Doocey Group is a multi-disciplined civil engineering and utility contractor for Water, Gas & Electric. Based in the West Midlands and Cambridgeshire the Doocey Group of companies operate nationally with a circa of 400 direct employees. The group comprises of – Utilities, Multi Utilities, Traffic Management, Recycling, Pipeline Resilience, Directional Drilling, Testing & Commissioning, Plant and transport.

Elite Precast Concrete Ltd has been manufacturing high strength precast concrete products for over twelve years. With two factories in Telford, Elite prides itself on providing good 'old fashioned customer service' to clients throughout the UK supplying a wide range of interlocking concrete blocks, security and traffic barriers and drainage products.

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Dura Composites wins royal seal of approval for second time with Queen's Award for Innovation

Leading composite materials firm **Dura Composites** has scooped a second Queen's Award for Enterprise, this time in the Innovation category, for its pioneering rapid-deployment train station platform solution known as Dura Platform

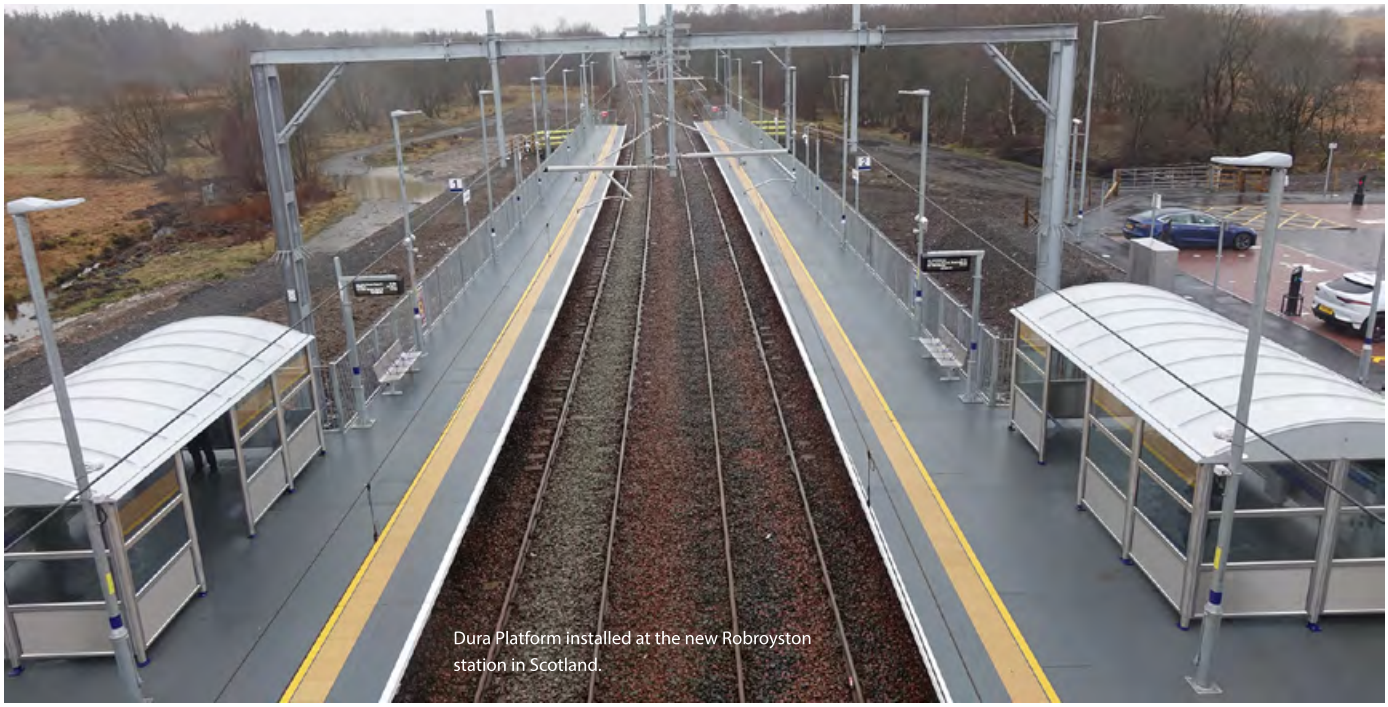
The Queen's Awards are a royal seal of approval for the UK's most outstanding businesses, and Dura's 2020 award follows The Queen's Award for Enterprise in International Trade which was presented to the company in 2017.

The prestigious awards celebrate companies who are making an exceptional contribution to enterprise and the Innovation category honours those that have shown commercial success as a result of demonstrable innovation. Each entry is judged by a specialist panel that makes a recommendation to the Prime Minister's Advisory Committee. Her Majesty the Queen then decides the winners, who each receive an official grant of appointment and an invitation to a celebratory reception at Buckingham Palace.

Dura Composites' award-winning innovation is Dura Platform – a height-adjustable composite train station platform that reduces gaps between the train and platform edge to enhance passenger safety, is rapidly installed and therefore reduces passenger disruption.

With several unique patented features, Dura Platform allows contractors to replace or overlay onto damaged or subsided train station platforms a low maintenance Glass Reinforced Polymer (GRP) structure in modular lightweight sections that are suitable for lifting by hand and which enhance passenger safety by virtue of an advanced anti-slip surface, in-built water management and concealed sub-surface fixings. Fast becoming the de-facto alternative to traditional concrete, Dura Platform is designed to be especially easy to deploy in hard-to-reach station sites where large cranes or heavy machinery cannot be used.

This year over 90 per cent of the Queen's Award for Enterprise winners are SMEs like Dura Composites. SMEs play a hugely significant role in Britain's economy and local communities – providing around 16 million jobs nationwide. With key client Network Rail's commitment to work more



Dura Platform installed at the new Robroyston station in Scotland.

With all businesses experiencing immense challenges due to the Covid-19 pandemic, it's a tremendous morale boost for Dura Composites to have our ingenuity recognised by Her Majesty the Queen

efficiently and closely with small and medium-sized enterprises and to spend a third of its annual expenditure via SMEs by 2022, this award comes at a great time for Dura Composites which is fully committed to continuing to innovate the Dura Platform solution.

Commenting on the award, Stuart Burns, Dura Composites' Managing Director said: 'The gap between the UK's trains and platforms is getting bigger, with new carriages making it harder than ever for passengers trying to board and disembark trains – particularly those with limited mobility or visual impairments. The Dura Platform solution can be easily deployed to accommodate new rolling stock and improve overall safety for passengers, and this award serves as great recognition of the innovation and true problem-solving that's at the heart of everything we do at Dura Composites.

With all businesses experiencing immense challenges due to the Covid-19 pandemic, it's a tremendous morale boost for Dura Composites to have our ingenuity recognised by Her Majesty the Queen. We are truly proud of the passion, determination and skill of our dedicated team in demonstrating the power of composites to our clients across the private and public sectors.'

Company profile

Dura Composites is a leading supplier of composite products with almost 25 years' experience in delivering durable, performance-improving and cost-effective composite solutions to a wide range of industries. We help companies of all sizes unlock the power of composites, and our client base includes businesses in the Industrial, Construction, Rail, Transport, Landscaping, Marine and Leisure sectors.

The company's success is driven by its commitment to innovation and by empowering its staff to inspire, educate and problem-solve for customers. In 2017, Dura Composites was awarded the Queen's Award for Enterprise in recognition of its achievements at the forefront of composite material technology. The range of products we offer is vast, from floor walkway grating, garden decking, building cladding and industrial handrailing to service risers and trench covers. All products offer customers a low life cycle cost thanks to their long-life expectancy and low maintenance requirements.

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Specialist OLE products

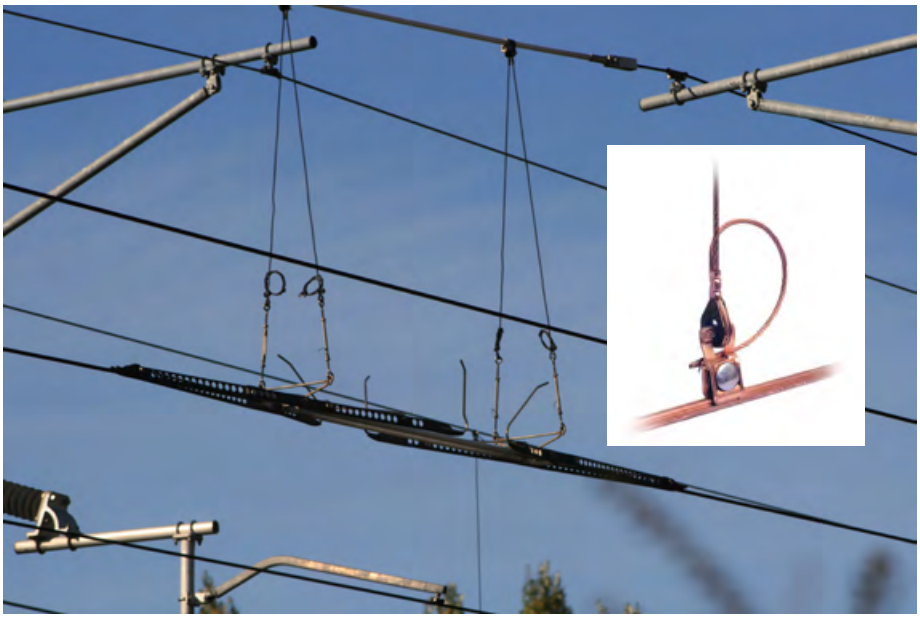
Arthur Flury supplies customers with specialist OLE components from its ISO9001:2015 approved, state of the art factory in Deitingen, a town located just over an hour from Zurich

The factory has recently been expanded to meet the growing global demand for its quality products and the company has also been successfully accredited to ISO14001:2015 and OHSAS18001:2007 which reflects the commitment to the environment and to safety. A business which this year celebrates its 100th anniversary, the company strives for self-sufficiency and trains its workforce to ensure from start to finish that all steps in production and administration are completed correctly, safely, on-time and first-time. As a result, Arthur Flury's precision OLE products have been designed into the catenary systems for railway networks and tram routes around the world and have provided decades of reliable service, under all types of usage and no matter what type of environment.

Around the globe, Flury products have served major projects in nearly 40 nations and a comprehensive network of subsidiaries and sales agents is on hand to assist with all new requirements. Notable successes over the years have been recorded in Australia, Belgium, India and the UK. Whenever the OLE requirement is for quality, durability and ease of use there is almost always a Flury product to meet that demand.

For many professionals within the industry, the brand is synonymous with section insulators and whether for trams or high-speed rail, units are available in multiple configurations, to meet the specific requirements of different systems. Ease of use remains an important consideration in the design process and Flury have deployed the HI25 section insulator with spring dropper suspension to allow quicker and easier installation and maintenance. Completing the picture are neutral sections and again the company has a rich heritage in these products. The unique performance of the NSR25 single rod neutral section permits higher speed passage of trains, compared to conventional equipment – it is the latest offering from a complete range of world class products.

Cold forming of metal is at the core of Flury's reputation for product quality and it is a process which consistently delivers an optimum combination of size, weight and strength. The factory shop floor is populated with presses, lathes and assorted machinery to handle the first stages of production and piece parts are checked to specification before proceeding to the next stages and eventually through to finish. Some parts



ship as discrete items and others may be built into more complicated assemblies but everything leaves the factory in accordance with relevant norms and only having passed rigorous inspection at all stages.

Customers can rest assured that the scope of Flury's support extends beyond delivery of the equipment to the customer, with a team of engineers who are available for training and ongoing post-installation support. And of course, the experience and feedback the team receives leads back into the development of new improvements which will mean that future generations of railways families continue to rely on the precision equipment supplied by a business from Switzerland with decades of experience and knowledge.

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Visit: www.aflury.co.uk

Introducing the 4 Channel Speed Sensor

Rowe Hankins Ltd. specialises in innovative on-train and trackside safety products and components to the world's railways

With a focus on design, manufacture, overhaul and reverse engineering for all railway components and the distribution of electro-mechanical products for railways worldwide. Rowe Hankins Ltd. has industry trained engineers continually working with customers and supporting sales teams to meet and exceed customer requirements and expectations. This customer first approach is a key focus embedded within the new management team.

Speed Sensors are vital for providing high quality reliable signals to various on-train systems e.g. Train Propulsion Control, Brake Control, Vehicle-On-Board-Computer and Communication Based Train Control. At present dual channel Speed Sensors are widely used in the traction industry for the purpose of monitoring train speed, direction and distance travelled.

Rowe Hankins Ltd. however, has designed, developed and manufactured a 4 Channel Speed Sensor, which will be available in late 2020.

Designed for high reliability by using a low component count and two wire current outputs and to operate in harsh rail environments, Rowe Hankins Ltd.'s 4 Channel Sensors are robust in design, resulting in a cost effective solution for speed and direction measurement.

For most applications Speed Sensors are designed to work against a ferromagnetic steel target wheel by using Hall Effect sensor technology. Yet, the added benefit of the 4 Channel Sensors is that they can also be designed for magnetic target wheels with alternating north and south poles.

The innovation of the 4 Channel Speed Sensor is that there are four sensor outputs that are isolated from each other. Therefore, any failure or malfunction of any of the one channel`s will not affect the performance of the three other outputs used. The arrangement is typically designed to provide 2 x 2 independent dual channel sensor outputs. This reduces not only the amount of cabling required but also the physical size of the product. Therefore, having an environmental saving of not only the amount of materials needed to manufacture the product but also an overall lowered carbon footprint due to less Speed Sensors being needed for operation.

With four isolated channel outputs, the 4 Channel Speed Sensors can be used for any application, single channel, dual channel or three channels, giving versatility and flexibility to the product application. The cable type, length, connector and assembly are also available to be customised, allowing the manufacture to be bespoke to a customer's specification and requirements.

The 4 Channel Speed Sensor is designed to be a line replacement unit, packaged for easy mounting. The Sensor unit utilises 4 Hall-Effect devices arranged so that the current pulse outputs are phase displaced from each other allowing for speed and direction sensing.

Tariq Latif, Engineering Manager says: 'The 4 Channel Speed Sensor will provide the rail traction industry with a truly cost effective and multi-interface solution for systems requiring a high reliability and robust product.'

The operational temperature ranges from -40°C to 70°C and the Sensor is compliant to relevant on-board train electronics standards covering environmental, EMC and fire & smoke, BS EN 50155, BS EN 50121 -3 -2 and BS EN 45545.

Focussing on a customer dedicated approach and with a continuation to invest in new rail technologies; Rowe Hankins Ltd. is carrying out extensive research and development. Ensuring Speed Sensor solutions respond to the demand needed for rail technology progress. To both increase operation and improve safety, to keep rail journeys moving.

For more information on the latest 4 Channel Speed Sensor or for general enquiries please contact the sales department at sales@rowehankins.com.

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Keeping Rail Journeys Moving Since 1985.

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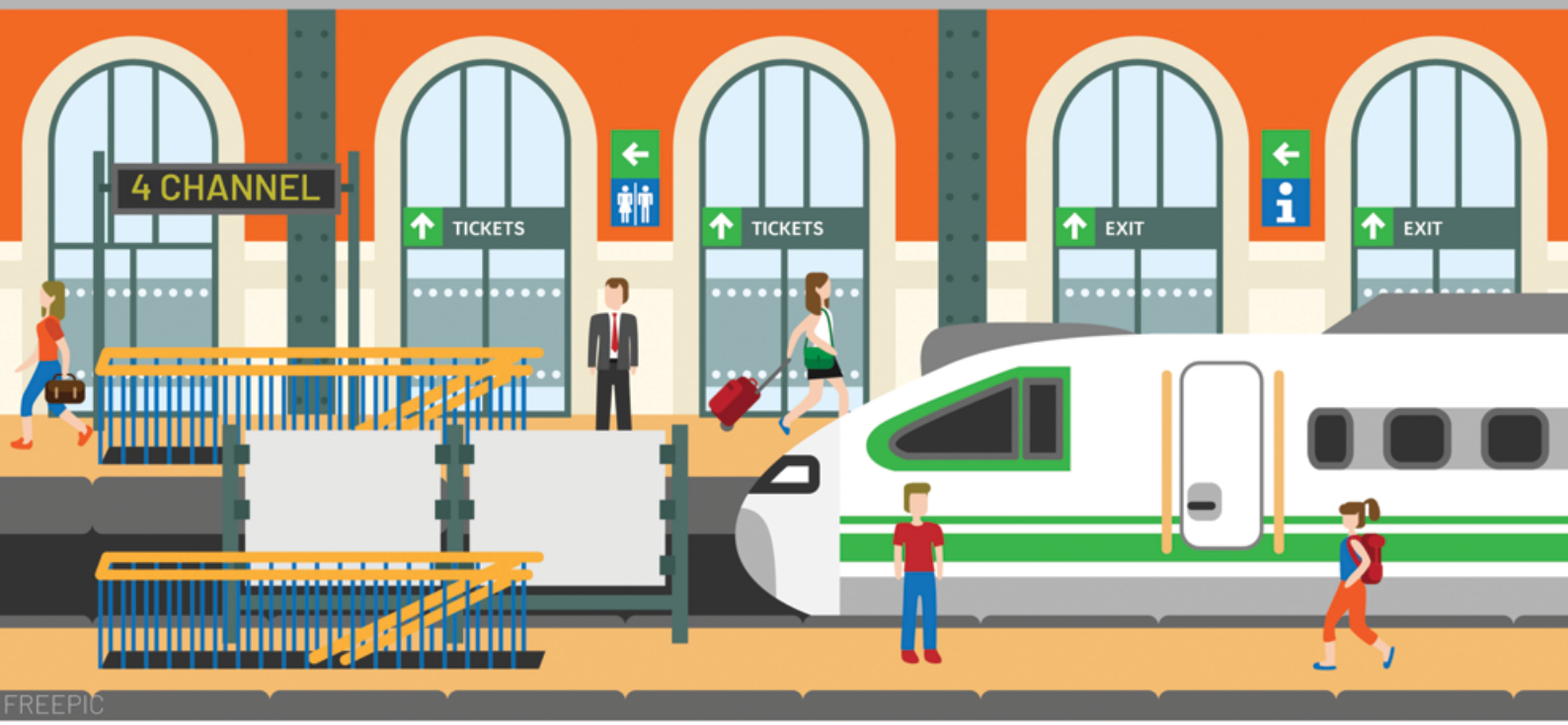
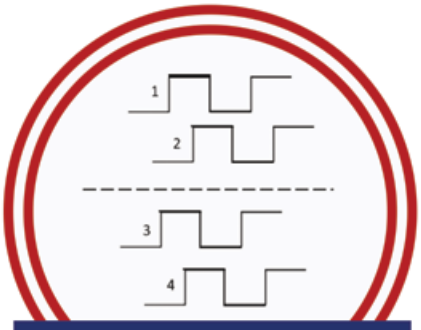


THE ALL NEW 4 CHANNEL SPEED SENSOR

SENSOR FOR HARSH ENVIRONMENTS



4 INDEPENDENT CHANNELS

2 WIRE CURRENT OUTPUTS

Available late 2020, Rowe Hankins Ltd. 4 Channel Speed Sensor will offer two independent dual channel sensors in one sensor housing.

Each dual channel sensor will be fully isolated from the other; allowing for power or signal connections to go from totally separate control equipment.

Contact the Sales Team for more infomation.

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Transforming the rail sector supply chain

Mark Toon, Senior Account Manager from **TVS Supply Chain Solutions**, shares how he and the team have been working with Network Rail to help transform part of its Material & Logistics supply chain since contract award, and more recently during COVID-19

I have worked with TVS Supply Chain Solutions for over ten years, and just over six months ago I was asked to take the lead in working with Network Rail at a really exciting time. TVS had been selected by Network Rail to supply a wide range of general consumables, commodities and rail specific spares for a variety of customers including Maintenance, Works Delivery and Projects, consolidating the supply from over 300 suppliers.

Early on, I was introduced to the Network Rail statement 'Putting Passengers First'. They are creating a more service focussed and customer-driven organisation that does precisely that in looking at service and costs. This ethos is music to my ears, as in a comparable way, putting customers first has been a large part of my background, my experience and critically my thinking and is key to the way TVS operate.

For the next eight years, TVS has responsibility for the supply of all Non-Core/In-Direct materials in support of Network Rail's maintenance and development of the UK Rail Network. It involves providing over 13,000 different products, and the term of the contract will include the supply of materials to a value of around £250 million. The range and variety of products are vast from gloves to rail point heaters, batteries to look out kits, paints to ladders, and much more. All of these are critical to the thousands of engineers maintaining tracks. In doing this, our target is to achieve significant savings while retaining product quality and reducing lead times – all ultimately to the benefit of the rail passengers and UK taxpayers.

TVS is responsible for the procurement, stocking and delivery of this material. In doing so, we need to meet with exacting service levels which are subject to detailed measurement and reporting. Each month I submit our reports to Network Rail, reflecting the levels of achievement in 27 different Key Performance Indicators (KPIs) ranging from resolving product queries promptly to On-Time-In-Full delivery measures. Meeting these KPIs is a crucial driving factor in my role and to date, I am pleased to say that we are working well to meet these even during this difficult period where there are challenges within the supply chain. This achievement highlights how our integrated supplier approach with over 5,000 suppliers gives TVS an enhanced purchasing capability delivering ongoing value and product availability whatever the circumstances.

Supporting Network Rail's maintenance and development of the UK Rail Network

Mark Toon – Senior Account Manager at TVS Supply Chain Solutions

Mark Toon (far left), with some members of the Network Rail and TVS Teams

There was plenty for us to get on with in the lead up to the contract go live in October last year. There was the appointment of over 40 roles across the business from HR, Distribution Centre Operations, Purchasing, Supplies, Engineering, Technical and Quality Assurance to name but a few. The approach taken was a blend of people with existing TVS experience, coupled with the recruitment of specialists from within both the Rail Industry and Global sourcing sectors. Other activities included creating new warehouse locations for circa 3,000 lines of initial stock and setting up supplier arrangements for 13,500 items. We set up a 'meet the Buyer day' in collaboration with Rail Alliance at the University of Birmingham, which was very successful and allowed us to pre engage with over 350 existing Network Rail suppliers. In addition we also had the challenge of creating a bespoke customer EPC (electronic parts catalogue) to enable quick and easy stock identification and order status validation.

My previous roles have been in the management of service-focused areas in the automotive industry such as aftersales management, customer relations, warranty management, technical support, product training – all geared to the delivery of the best possible result for the customer. I have also worked in the utility sector, which draws parallels with the rail sector in terms of health and safety being front and centre of their discussions. It's great to reflect on having established some excellent business relationships with these clients and the Network Rail contract not only brings interaction with a whole new group of client contacts but also those within the TVS team focussed on serving the Rail Sector.

A day in the life

So, what does a 'day in the life' of the Network Rail Account Manager involve? Well, as I pen this piece, we are amid the COVID-19 pandemic, and I have been on lockdown, working from home just like millions of others. The TVS Operations team who deliver the vital hands-on element of the material movement continue to work in our 300,000 sq ft warehouse in Chorley Lancashire observing the social distancing rules but keeping networks moving. Communication with Network Rail has been vital and communication, once face to face, has now adopted a digital approach through Microsoft Teams, so business as usual.

In the last three weeks, we have added another 50 items for Network Rail relating to Janitorial products such as detergents and hand sanitisers. Their needs have changed due to COVID-19, and this demonstrates how we have been able to react rapidly to their circumstances and supply them with what they need in a challenging supply environment.

This activity has resulted in securing follow on replenishment to be supplied each week going forward and demonstrates that even though supply chains are disrupted, at this challenging time, TVS can support.

My Technical Account Managers are adapting to the new way of working and continue working with their primary contacts to progress projects. I am generating the brief for our operational requirement to support the next phase of Network Rail development and our deliveries to their new Regional Distribution Centres which are being commissioned. That's of course while still needing to deal with whatever the next 'today's challenge' is. It is interesting times, we are learning even more about our customers and colleagues, as their children and pets appear in the background of the video calls. Ironically we are getting to know one another better, and I'm sure will emerge from this stronger and even better equipped to deliver excellent service.

Tel: 07342 999 504
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Visit: www.tvsscs.com

Embracing challenges

BAM Ritchies is embracing the challenges within the rail environment, with a track record of delivering innovative, value-driven, successful projects

From the provision of digital ground investigation through to bespoke optimal geotechnical solutions, self-delivery of its ground engineering disciplines provides safe, right first time, sustainable success within the tightly constrained and controlled rail environment.

BAM Ritchies bring more than 55 years' experience, a reputation for innovation and its industry-leading use of digital construction to develop and deliver value-driven geotechnical solutions in the rail sector. The company thrives on resolving the geotechnical and logistical challenges associated with the delivery of a rail project and is well prepared to support you with a broad spectrum of geotechnical expertise, which is available to you in designing and constructing the right geotechnical solutions.

BAM Ritchies' national coverage allows it to support work across the UK, with its Pre-Construction managers available to engage at the earliest opportunity on any project. This supports the early identification of the right solution which reduces change and manages risk. This integrated offer reduces risk from ground investigation through design and ultimately delivery, providing predictable, right first-time solutions for customers.

The Winter 2019 storms created many challenges for Network Rail. Not only did high winds cause tracks to become blocked by debris including trampolines and fence panels the heavy rain caused significant landslips to embankments and cuttings. In total over 63 landslips occurred in just Kent and Sussex during winter 19/20. BAM Ritchies were engaged to undertake work to resolve an older landslip from 2016 where a section of cutting collapsed near Hastings in East Sussex. The back scar of the slip just east of West St Leonards station reached the garden fences of houses built close to the edge of the cutting.

West St Leonards, Jan 2020

Prior to the collapse, both sides of the cutting were very heavily vegetated, with mature trees growing at all levels. The idea that trees are good for maintaining stability is not necessarily true in all cases. Trees add weight. So, if you add this weight at the top of a slope that is failing, any time you have adverse weather they will move around and loosen the soil. Many different types of solution were considered that could be implemented at this location. But considering the constraints, no clear access from the top, and at the bottom there was an elevated trough route which eliminated working from the bottom.

Working collaboratively with the designers and Network Rail, the solution selected was to install a grid of soil nails into the face of the slope using drilling rigs tethered to anchors at the crest, enabling all the work to be done by rope access.

The scope of works was as follows:

- Installation of 120nr machine drilled (DTH) and 70nr drilled top bar anchors on the crest of the cutting to support the Terrapin face rigs and IRATA operatives.
- Installation of over 1400nr 1.5 – 9.0m soil nails (25mm dia bar in a 100mm dia borehole), drilled DTH (air flush) using 3 Terrapin rigs.
- Installation of 6000 m2 of Tecco Green G65/3 mesh, galvanised spike plates and boundary cables.

This method did come with its own challenges and required expertise in rope access. This is something that BAM Ritchies excel in. Once the vegetation was stripped back, an outcrop of hard limestone was uncovered. Drilling trials were carried out which concluded that this hard rock would have an impact on drilling method across the entire site.

All works were undertaken using rope access, with no disruption to the operational railway. Despite the significant variation in

West St Leonards April 2020

BAM Ritchies Disciplines Infographic

the ground conditions on site, combined with some disastrous weather over the winter months and very restricted access from the crest, the works were completed within the required timeframe and handed back to Network Rail right first time.

As part of the CP6 Framework for Network Rail, BAM Ritchies was appointed to undertake soil nailing works solely using rope access techniques on the railway cutting near Hastings and approximately one kilometre down the track from West St Leonards site which was completed in April 2020. The works were commissioned following a landslip that was temporarily stabilised using support at the toe, however the permanent solution was a soil nailing scheme on both the UP and DOWN lines.

The scope of works including the following:

- Installation of 200nr driven cable anchors on the crest of the cutting to support the Terrapin face rigs and IRATA operatives.
- Installation of over 1800nr 1.25 – 10.0m soil nails (32mm dia hollow bar in a 100mm dia borehole), self-drilling grout flush using 2 Terrapin rigs.
- Installation of 8500 m2 of Tecco Green G65/3 mesh, galvanised spike plates and boundary cables.

After a month on site, the location of the previous slip showed further movement following several weeks of heavy rainfall, therefore additional temporary works consisting of soil nails and mesh have been installed to prevent any further movement and risk to the railway line until the permanent works are able to be installed in that area.

Early in the works, multiple badger setts have been discovered in one of the four sections on site. This caused a 100-metre section to become an exclusion zone until ecologists could confirm that badgers were no longer actively using the setts and treatment involving blocking the entrances and grouting had taken place.

Ground conditions were of Wadhurst Clay (stiff clay and extremely weak – weak mudstone). All works are being undertaken using rope access, with no disruption to the operational railway.

To date BA, Ritchies has completed 650 nails (end of April), meshing will begin at the end of May. The company will then have a break whilst BAM Nuttall get the permit for the area affected by badgers, install the badger gates and monitor for activity. Bam Ritchies can then treat the badger setts using a low strength grout, install the remaining 800 nails in the badger area and complete meshing (November 2020).


Harley Schute April 2020


Hartley Schute May 2020

Delivering these works is challenging but delivering them during a pandemic makes this even more so. Bam Ritchies has adapted working practices and methodologies; it has innovated, and it has kept its people safe.

We are coming out of this crisis as a better business and ensuring that critical infrastructure remains operational and safe for all to use in the future.

Company profile

BAM Ritchies is the specialist ground engineering division of BAM Nuttall Ltd.; one of the UK's leading civil engineering contractors and an operating company of the European construction group Royal BAM.

BAM Ritchies started business in Scotland over 55 years ago in 1963 and is now one of the country's leading and award-winning geotechnical contractors. The organisation employs approximately 330 trained and experienced staff.

BAM Ritchies has a turnover of over £60 million carrying out ground investigation, ground engineering, drilling and blasting and concrete techniques: completing contracts up to £30 million in value.

BAM Ritchies operates from offices in Kilsyth near Glasgow (Principal Office), Warrington, Nailsea near Bristol, and Edenbridge in Kent.

Tel: 07740 771075
Email: matt.ewing@bamritchies.co.uk
Visit: www.bamritchies.co.uk

Who is PFISTERER?

PFISTERER

PFISTERER, offering more than just Tensorex to the rail infrastructure and rolling stock industries

The PFISTERER group has been providing innovation solutions to deal with the interfaces in the flow of electricity ever since it was founded back in 1921. The Group core competence is specialising in energy transmission and distribution, offering its customers and business partners a range of sophisticated, future-ready products: For all voltage ranges and for wherever reliable long-lasting systems are needed for powerful energy grids. As well as the energy sector, PFISTERER is also active in transport technology and industrial solutions. The company is already well established in all key global markets and is continuing to strengthen its brand on a worldwide scale.

PFISTERER Rail Business Unit

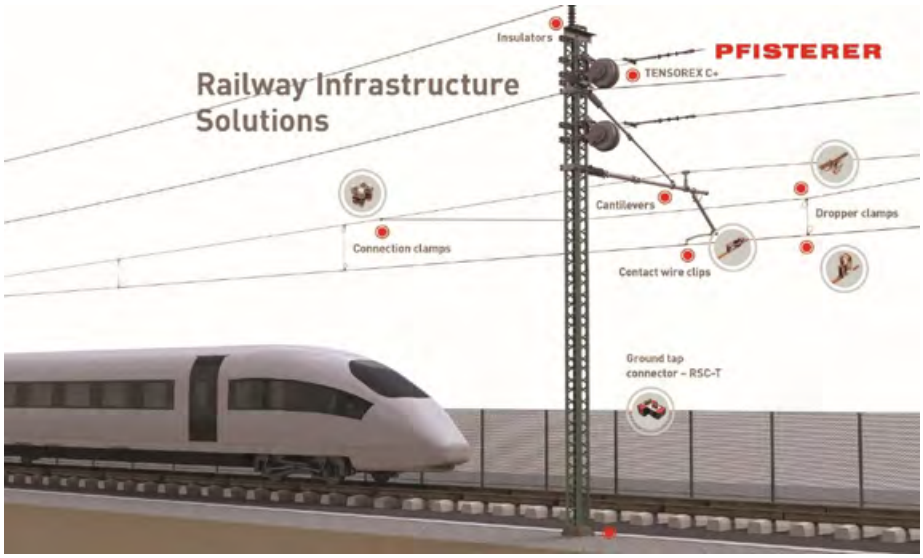
One entity of the PFISTERER Group is the Rail Business Unit which has been based in Sheffield since 2015. The dedicated team of experts manages a global customer base from the Rail Centre of Excellence in Sheffield, supported by a global network of business development executives, local country sales offices, agents and distributors.

PFISTERER's local factory is producing and supplying innovative overhead line products for supply into the UK and international markets. All Tensorex C+ spring tensioning devices are assembled and tested in the UK plant and PFISTERER has a factory facility in Barcelona, Spain, which is manufacturing many more of its product solutions for the overhead catenary system global market.

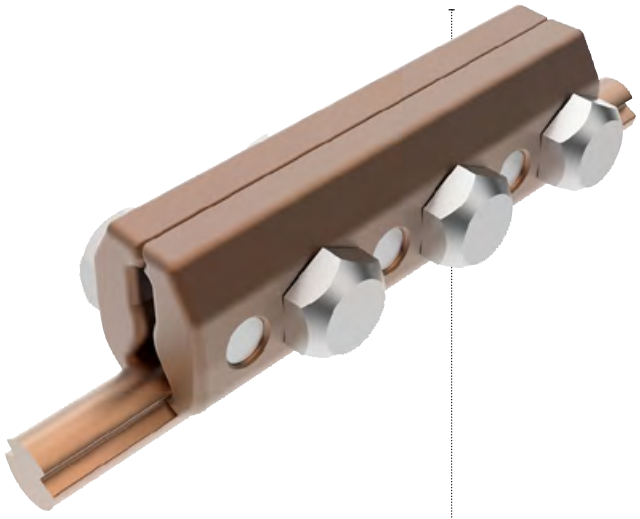
Innovation

PFISTERER has that covered with its technology team based in Milan, Italy working around the clock on new innovation and product solutions to meet the needs of its new and existing customer base.

Modern railway systems need to be safe, efficient and accessible at all times whilst guaranteeing the reliable transmission of electrical energy between the distribution network and the rolling stock and at the same time, they need to be able to withstand increasing loads caused by higher speeds and heavier traffic. PFISTERER has been developing and producing intelligent and efficient solutions for electric railway systems for over 50 years. Thanks to its extensive system experience and expertise in the transmission of electrical energy, PFISTERER has become a valued technical partner in every corner of the world.



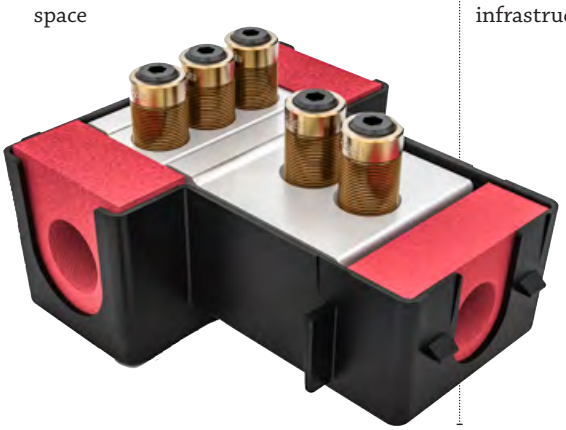
PFISTERER provides modern solutions and expertise for the following applications:
Overhead line construction
Tensioning
Insulation technology
Power supply
Safety equipment.



Full system solutions
PFISTERER is a full solution supplier when it comes to overhead contact lines. The company has supplied full system solutions to many prestigious projects worldwide, from high-speed rail in China to Santiago, Chile. The complete range of RCS products hold approvals with most Official European Railway Authorities including Network Rail in UK, ADIF in Spain and TCDD in Turkey among many others, covering the complete global markets.

Tensorex C+ Spring Automatic Tensioning System
At the forefront of PFISTERER's product portfolio is the Patented Tensorex C+ spring tensioning device. This highly innovative product is currently leading the way when it comes to the tensioning of overhead contact lines. Tensorex C+ was developed to compete against the conventional weight based tensioning systems and provides many advantages in comparison.

- High precision of performance
- Greater reliability in operation
- Health and safety risks reduced
- Easy to install
- Compact and lightweight
- Low maintenance
- Reduced risk of vandalism/theft
- Low impact aesthetics
- Suitable for tunnels/areas of limited space
- Mounting solutions available for all applications
- Reusable in the event of wire failures.



Tensorex C+ is designed to provide optimum performance in many varied environmental conditions such as extreme temperatures at both ends of the ambient scale. Its capability to compensate for a high temperature delta makes it a perfect performance solution in any environment. Using alternative technology such as conventional balance weight products, may involve extensive civil groundworks to overcome the low hanging balance weights and the risk of grounding. With the Tensorex C+ there is no requirement for this as the unit has no parts hanging lower than the contact wire height.

The Tensorex C+ has been successfully used in the high temperatures of Australia and Saudi Arabia as well as the freezing temperatures of Canada and the most northern parts of Norway and Finland. These units are still performing to the expected high standard after years of reliable service. Salt corrosion is a worldwide problem for rail lines alongside the sea and snow based countries who use a lot of salt to counter this. PFISTERER also offers a salt spray resistant variant of the Tensorex C+ which make the product more resistant to the effects of these harsh environments.

RSC-T Ground Tap Connector
Another of the innovative products in PFISTERER's portfolio has been developed for the safe and reliable grounding solution for new and upgraded sections of track. The RSC-T Connector is a simple solution using its own patented contact technology that saves a great deal of time in comparison with established practice.

The RSC-T combines almost one hundred years of contact technology experience as a full service provider in the fields of rail infrastructure. Using insulation piercing technology, main and tap conductors are installed without the need to strip the insulation. The compression of grounding the tap conductor which was previously used, as well as the restoration of the insulation with a heat shrink sleeve, is no longer a requirement.

PFISTERER is soon to launch the RSC-T NG connector, which will greatly increase the range of cable sizes that can be grounded, opening up the product to a wider range of applications and uses.

Other products we offer include Cantilevers, Droppers, PG Clamps, Stich Wire Clamps, Bimetallic Clamps, Wedge Clamps, Splices, Insulators, Termination Assemblies, Midpoint anchors, Tools, Safety Equipment, Measuring Devices and Plug-in solutions for high current connections as well as options for Services, Training and Engineering support.

Market presence
The PFISTERER Group have always had a leading market presence in every area of the business, whether it be MV / HV Cable systems, Overhead lines, Safety Equipment solutions or Rail. With over 2700 employees worldwide and strategically placed local country sales units and partners, we have developed excellent global market presence. We continue to supply PFISTERER products into most countries in the world, for some very prestigious project references:

- Madrid – Barcelona High Speed Rail, Spain
- Nurnberg – Ingoldstadt High Speed Line, Germany
- EGIP Project, UK
- The Great Western Project, UK
- Tianjin – Shenyang, China
- Konya-Karaman, Turkey
- Adelaide Electrification, Australia
- Oran Light Rail, Algeria
- Santiago – Rancagua, Chile
- Awash – Weldia/Hara, Ethiopia
- Mauritius Metro Express, Mauritius
- LA Metro, USA
- Tampere Tram, Finland
- Metro Trains Melbourne, Australia
- Pune Metro, India
- Midland Mainline Electrification, UK.

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Torrent Trackside invests in a new fleet of Rosenqvist CD400SP clipping machines

Torrent Trackside is the only specialist provider of rail specific plant in the UK and has a unique understanding of the needs and challenges facing the rail industry

The company is investing heavily in the latest equipment designed to get projects completed safer, quicker and to budget. As part of this investment Torrent Trackside has recently acquired a fleet of Rosenqvist CD400SP clipping machines which are now available for hire. The CD400SP is an efficient and powerful machine designed to clip and declip Pandrol Fastclips. The machine is controlled by a single walk behind operator, via an easy to use handheld remote control attached to the clipper. The operator can control all basic functions from the handset including speed, clipping and declipping.

The clipping capacity is approximately 30 sleepers per minute and the machine can simultaneously install four clips per cycle. Accuracy is guaranteed by innovative proximity sensors and guiding rollers which centre the machine for optimum precision. The machine can also lift sleepers up to a height of 350mm. The CD400SP is powered by a high performance Hatz diesel engine providing excellent fuel economy, low emissions and outstanding reliability.

The CD400SP has numerous safety features. The walk behind operation eliminates HAVs and the quieter engine assists concentration and comfort. The machines noise output at two metres distance is 75db at idle and 83db at full throttle. Braking to a complete stop is achieved at just 300mm at normal speed and 1900mm in high speed mode.

The Rosenqvist CD400SP is a powerful and efficient walk behind, self propelled clipping machine

Carl Abraitis, Operations Director at Torrent Trackside stated: 'We work closely with our clients establishing their needs then scour the market looking for the best solutions. The CD400SP ticked all the boxes with its combination of speed, reliability, ease of use and proven effectiveness not just in the UK but worldwide.'

The CD400SP is manufactured by Rosenqvist based in Sweden who have been making rail equipment for over 25 years.

'Rosenqvist is an industry leading brand and their determination to make smarter machinery which increases productivity, reduces possession time and improves safety goes hand in hand with our business model and values at Torrent Trackside' added Carl Abraitis.

The machine is operated via an easy to use control box

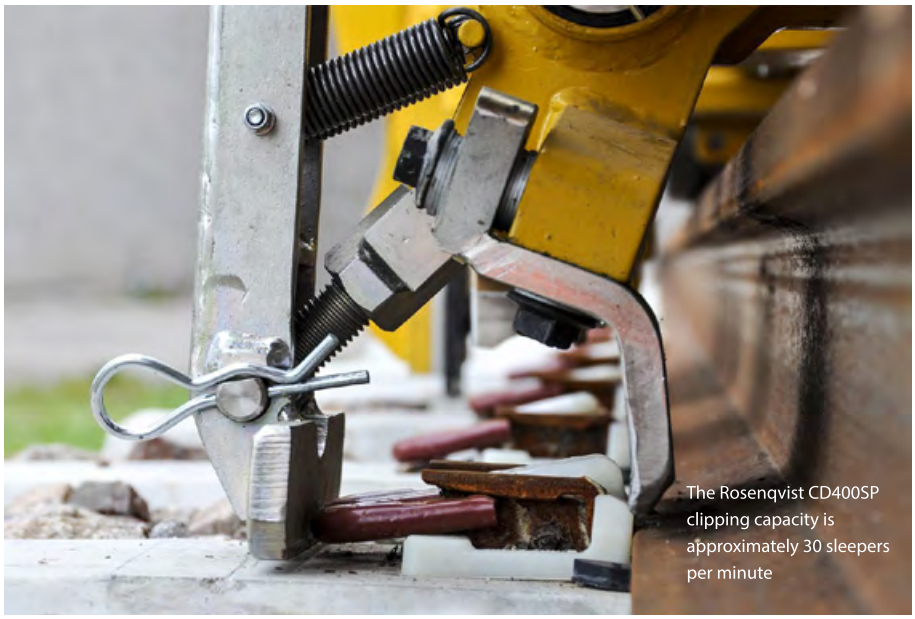
The CD400SP is approximately three metres long by two metres wide and weighs just under three tonnes. The machine is delivered by low loader from one of Torrent Trackside's 9 UK wide depots.

Torrent Trackside provides a complete range of portable track maintenance tools from clippers and rail trolleys to the latest lightweight, low HAV, emission free battery powered tools. The company also has a MEWP and OLE division.

Torrent Trackside is part of the successful Vp plc group and has been supplying rail plant for over 30 years and will continue into the future through a winning combination of innovative products, sound investment and excellent service.

For more information about the Rosenqvist CD400SP or any of Torrent Trackside's products contact Carl Abraitis, Torrent Trackside Operations Director.

Tel: 08457 697 168
Email: carl.abraitis@vpplc.com
Visit: www.torrenttrackside.co.uk



The Rosenqvist CD400SP clipping capacity is approximately 30 sleepers per minute

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Layher's 75th anniversary signals readiness and optimism for the future

As **Layher Ltd** marks its 75th anniversary, UK Managing Director, **Sean Pike** is clear about the platform upon which the company's international success continues to be built

'A clear focus on working as closely as possible with every customer to achieve scaffolding, access and protection results that are both technically advanced and creative – our success has always depended on this philosophy and is now clearly demonstrated by our full stockyards and committed approach to addressing the current situation.

'Today, both our head office and satellite depots are fully stocked with our wide range of equipment and have structures in place to ensure continuing, reliable supply and support' Sean says.

'It underlines our growth from little more than a single production building in 1945 to a state-of-the-art manufacturing facility, global sales and support network and a track record of which everyone at the company is extremely proud.'

Sean Pike believes that, while it is unfortunate that the company is currently prevented from holding its planned series of

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celebratory events, Layher can still extend a genuine thank you to everyone who has made its history possible – 'and, more importantly, who now place us all in an excellent position for the future' he adds.

While building and construction have naturally been central to Layher's operation over the years, the company has also built a leading reputation in other, perhaps more niche, sectors. These range from the rail industry and offshore oil exploration to the event sector and industrial maintenance.

In all cases, a relentless focus on innovation has been central to the organisation's approach – much of which has been inspired by market feedback. Invariably this looks to improve customers' safety and the ergonomic performance of the equipment.

Recent developments such as Allround Lightweight, FlexBeam, a choice of purpose-designed bridging systems and the company's Scaffold Information Modelling (SIM) software, for instance, have all enabled Layher to work closely with its contracting customers to provide solutions for a vast number of projects. These range from simple façade scaffolds to the provision of access and protection on one of the world's most iconic buildings – the Elizabeth Tower, home to the famous Big Ben.

'Our growth in the UK since we moved to our Letchworth head office in 1997 reflects these key factors' continues Sean Pike.

'Importantly, we place great emphasis on making our equipment and support services as available as possible at local level which has seen us regularly grow our nationwide network and storage depots over the years.'

Today, Layher's headquarters is supplemented by facilities in Livingston in Scotland, Eggborough in Yorkshire and Dublin in Ireland while the latest facility in West Bromwich in the West Midlands opened its doors at the end of last year.

'During the current situation, we are fully aware of the need to provide as much support as possible, and to do so while following government advice within our own facilities and those of our customers' continues Sean Pike.

'To an extent, this has gained from the preparations that we had already made to address the Brexit transition process – so the provision of adequate material supplies and our ongoing ability to react quickly to customer needs, for example, are already areas that have been addressed.'

Under the banner of '75 Years of Future', Layher is now looking towards the next phase of its success, particularly as many of its user industries emerge from the current difficulties. At the same time, it is still hoping to undertake commemorative activity in due course to emphasise both its track record and optimism for the years ahead.

'This positive view has been developed on the firm foundation of success in the past and an understanding of how important it is to maintain close links with both our scaffolding contractor customers and, ultimately, their own clients. This has always enabled everybody involved to remain at the leading edge of the industry' concludes Sean Pike. 'We continue to be committed – particularly now – to ensuring that Layher's equipment and support capability always creates opportunities and more possibilities.'

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Keeping the rail sector on-track with sanitising solutions

Arrow Solutions has pivoted part of its operations to increase manufacturing levels of sanitising products to the rail sector as it aims to keep the UK moving during Covid-19

Whilst most of the UK has been in a Government-induced lockdown, the rail sector has remained open for business, playing a critical role in helping to keep society and the economy moving as best it can during Covid-19.

Trains, albeit on a reduced service, have been carrying essential workers to their jobs across every city, town and rural village in this country and, behind every tilting Pendolino or light transit system, is a whole network of specialists committed to keeping them clean and operational.

It is an industry behind the industry most of us see every day and, in order to keep working effectively, it has had to employ the same social distancing and personal hygiene rules as any other.

'Demand from train operators, rolling stock specialists and infrastructure experts has gone through the roof since Covid-19 started to take hold' admitted Alex Campbell, Sales Manager at Arrow Solutions, a specialist supplier of cleaning, degreasing and hygiene products.

'Unsurprisingly, a significant focus has been on getting availability of sanitising products and we have been proactively working with existing and new clients to meet their demand by pivoting part of our manufacturing operations to increase volumes. In some case, we are producing 500 per cent more of some solutions every week.'

The likeable Scotsman, who has been essential in building the company's presence in this market, continued: 'We are fortunate that we have our own dedicated

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manufacturing facility in the East Midlands that has recently benefitted from multi-million pound investment in technology that delivers increased capacity.

> Our solutions are ideal for making sure we protect workers who are cleaning trains, servicing infrastructure or maintaining stock during this crucial time when they are putting themselves on the front line to keep the UK moving

'This means we are able to move with spikes in demand like we are seeing from rail and other industrial sectors and, thanks to the skills and flexibility of our staff, can switch certain production lines quickly if there is a short or long-term need.

'A prime example of this is the way the Arrow Solutions laboratory created a new RTU Summer Train Screenwash as a way of negating the global shortage of ethanol and ensuring this could be directed to our sanitising range.

'The Screenwash is a cost-effective alternative to our usual products and has already been approved and adopted by many Train Operating Companies (TOCs), with the various pack sizes all having Rail Cat numbers.'

It is a capability that has been serving Arrow Solutions extremely well over the last two months and looks set to continue, with hygiene front and centre for the Government, business and society.

The company's pro sanitising range blends 50 years of commercial and industrial expertise in chemical manufacturing pouring to create virucidal and biocidal solutions that rapidly and effectively clean, sanitise and protect both its customers and the places in which they work.

They have been designed and developed for use as personal care products for hand sanitisation by workers and as products designed for hard surface cleaning, with various pack sizes to suit all applications.

The rail sector in particular has ordered significant volumes of products, including Handisan (a sanitising gel with 70 per cent alcohol), Germfree61, Terminex, KR9 Anti-Bacterial Soap, KR10 Hand Sanitiser Foam, Sanifoam and Quat Free Hard Surface Sanitiser.

Alex continued: 'Our solutions are ideal for making sure we protect workers who are cleaning trains, servicing infrastructure or maintaining stock during this crucial time when they are putting themselves on the front line to keep the UK moving.

'Network Rail, Stadler Rail and Bombardier are all currently using our products across various depots and have reported very pleasing results in effectiveness and keeping their staff safe.'

He went on to add: 'All of our biological sanitising products conform to EN1276, whilst our Handisan meets the NHS requirements for 70 per cent alcohol content in alcohol sanitisers. Importantly KR10, an alcohol-free hand foam sanitiser, has been tested by an independent laboratory and proves to be effective against all enveloped viruses, including Covid-19 and SARS-CoV-2.'

Arrow Solutions has been operational throughout the Covid-19 pandemic, continuing to supply cleaning, degreasing and hygiene products to its UK and international clients.

This has been completed with full social distancing measures in place, ensuring its 230 staff are operating safely at all times.

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Innovative Solutions to Rail Noise by GRAMM Barrier Systems

Steve Barnes, Business Development Manager with **Gramm Barrier Systems** gives us the low down on the company's range of noise mitigation solutions for rail projects across the UK and EU

It may seem quiet now given the COVID-19 pandemic with less rail travel but when normality returns so will the noise.

METASoundBlok

METASoundBlok is high-density mineral wool encased in steel panels which provides a lightweight and resilient sound-absorbing barrier. Perforated to protect and maintain the sound-absorptive capability of the fill material which has the highest rating for absorptive at 20 Dla tested to EN 16272.

Individual panels can easily be removed and replaced, as they are not bolted, welded, fastened to each other or support posts.

METASoundBlok can be manufactured in a powder coated finish with an anti-graffiti coating or it is also available in weathering steel COR-TEN. This is similar to bridges like the Ordsall Chord and can offer a 60-year design life.

METASoundBlok on WAML

POLYSoundBlok Barrier and Platform

POLYSoundBlok is manufactured from a high performance/strength recycled plastic modular structure which is interlocking

POLYSoundBlok use high quality materials to ensure acoustic performance is unaltered over time and maximum resistance to external agents (chemical and atmospheric), as well as being more than 90 per cent recycled. The main components of our acoustic barriers in PVC, at the end of their life (>40 years is the estimate) can be one hundred per cent recycled.

Gramm Barrier System's barriers have the highest classes of acoustic performances provided by EN 1793 & EN 16272: sound absorption Class A5 16 DLa and sound insulation Class B3 28 DLr.

The POLYSoundBlok panels do not require grounding systems as the plastic material used is electrically insulating, preventing that the barrier become an electrical conductor. Perfect for sites with OLE.

Also being in recycled plastic material, they are not subject to eddy currents and galvanic corrosion.

GRAMM has also designed and developed a system for railway station applications to protect passengers waiting on platforms from excessive noise coming from trains passing or arriving (whilst braking).

Reduced Install for Rail possession

Most noise barrier products will only span 3M; increasing the installation time which means more downtime on the track. Difficult when night-time install is the only option and can cause unnecessary delays increasing costs & programme.

Both GRAMM's METASoundBlok & POLYSoundBlok systems can span up to 4M reducing the number of posts, foundations and the labour to install. Typically reducing a project programme by over 30 per cent reduction.

POLYSoundBlok on Crossrail

SilentRail

SilentRail® is a revolutionary rail coating that reduces rail noise and protects from damage.

SilentRail's® engineered rail coating, prevents the rail from vibrating, which dramatically reduces the noise. The system also protects the rail from damage and

reflects heat, preventing the rail from buckling.

Key Benefits:

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- Noise Reduction of up to 6dba.
- Quick and efficient install onsite.
- Bespoke design which allows the coating to be applied to any existing rail system.
- Quick and efficient install onsite with minimal setup.
- Life span of up to 30 years.
- Option for heat repelling pigment which prevents to the rail from bucking and welded joints from breaking.

Using the SilentRail system in conjunction with typical noise barriers above, it is found that the performance of the barrier will be even more effective combined as majority of noise is dealt with at source.

Gramm Barrier Systems is fully RISQS assessed and primary sponsor for Network Rail for over 30 years. They offer ECI with full design, supply and installation services. For a site visit, quotation or demonstration contact GRAMM via the details below.

Tel: 07930 558 116
Email: steveb@grammbarriers.com
Visit: www.grammbarriers.com

SilentRail

Trenitalia c2c announces retirement of Julian Drury and appointment of Ben Ackroyd

Trenitalia c2c has announced that current Managing Director Julian Drury will retire in September after 40 years in the rail industry, and that **Ben Ackroyd** will be appointed as his replacement.

Rail monitoring specialist Senceive appoints new growth director

Remote condition monitoring solutions provider Senceive has appointed **Chris Emery** as Growth Director.

GB Railfreight announces new Infrastructure Manager

GB Railfreight has appointed **Alex Kirk** as General Infrastructure Manager. Alex began his new role in May.

WMRE appoints new interim rail programme director to oversee development of new stations

West Midlands Rail Executive (WMRE) has appointed a new interim programme director to work on the development of railway stations in the West Midlands. **Amanda White**, a former head of rail with Transport for Greater Manchester, joins the WMRE at a time of intensive investment and development of the region's network including the construction of five new stations in Birmingham and the Black Country.

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