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MANAGEMENT  
POSTS INSIDE

SEPTEMBER 2015 ISSUE 215 £3.95

# Rail Professional

THE BUSINESS MAGAZINE FOR RAIL

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## Master complainer

David Sidebottom, passenger director at Transport Focus on turning the oil tanker

### Communications

Telling the industry's positive story



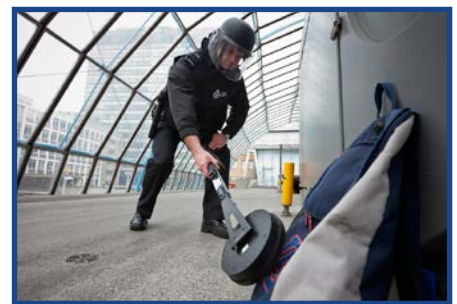
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ISSN 1476-2196

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# editor's note

“Welcome to this large September issue, formed over a summer that contained so much rail news that if we featured it all, the magazine would cost the equivalent of Network Rail's fine to post out.

Is George Osborne happy to let the Treasury force a further 25 per cent cut to Network Rail's budget while trumpeting about a Northern Powerhouse? The news that 'our very own Greece on rails' as the Institute of Director's Dan Lewis describes it, has been informed by a DfT mandarin that it will have to slash another £1.5 billion from its budget will be a shock to many. Network Rail's big bonus culture has been a source of ill feeling for years now, but if capital spending is affected how can Osborne carry on making promises? Does this fiasco just reflect the fact that nobody really knows what they're doing? Network Rail is in for some big changes – that's obvious, and speaking to Alstom's Terence Watson back in the summer of 2013, he suggested alliances with train manufacturers whereby they are involved in maintaining and replacing track and catenary. It seems like the basis of one good idea for an obviously out-of-its-depth organisation.

The demand to re-ignite the paused electrification projects isn't going to go away though and we await Sir Peter Henty's report with interest. Hopefully it won't suggest Network Rail being charged by the hour by its clients.

It was a pleasure to meet David Sidebottom for this month's interview. A key message is that Toc's have to take control of their news agenda, and it makes me wonder whether that is really being taken on-board from the depths of their communications and public affairs departments. As a journalist it's hard enough dealing with certain rail press officers who don't seem to get that the order of the day is to be even semi-polite and helpful.

Talking of communication, aside from a letter to the nationals from the outgoing Michael Roberts about the Northern Powerhouse, where is the RDG in all of this? Its mysterious 'work streams' need to be publicised more, as a refreshing alternative to its usual policy of quote by committee.

Mirroring many of David Sidebottom's comments, Tom Wadsworth, in his fascinating article on why Toc's aren't trusted (page 69) believes this is due in part to the public's lack of understanding of how the industry is set up, and that they feel rail companies have something to hide. Ultimately he says, we must remember that Brits love rail, so the emotional response is there to be had, we just need to tell the positive story more often. Because despite the above, there's lots to tell as we all know.

Lorna Slade Editor



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# Contents

## News

**09** EU to discuss airport-style security; government starts sale of its investment in King's Cross estate; Edinburgh Trams performance on track; closure threat for Millerhill depot; HS2 consults passengers about design; track workers' risk still too high; business accolade for TfGM's head of rail; Rail Inspectorate celebrates 175 years; Virgin axes off-peak price deal; Borders Railway re-opening; public transport operators globally planning to expand surveillance

## In the passenger seat

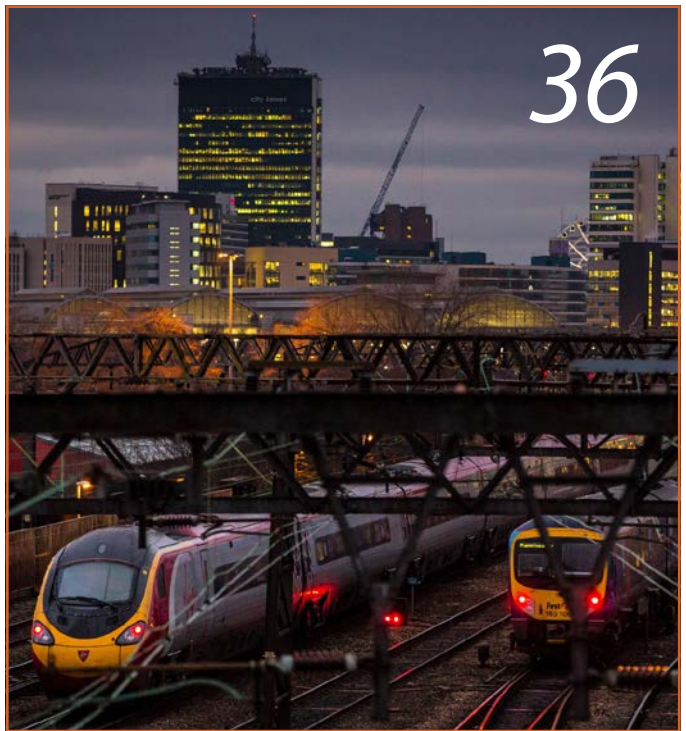
**23** When service issues are fully explained to passengers they become more tolerant, says David Sidebottom

## Delivering the goods

**27** The Channel Tunnel disruption could hit rail freight confidence, but the fundamental issue of costs also needs to be addressed, says FTA's Chris MacRae

## Laying down the law

**31** The short timetable between announcing a winning bid and commencing operations means bidders need to consider possible competition issues at the very beginning of the procurement process, says Rebecca Owen-Howes



# 36

## Open to suggestions

**34** The Competition and Markets Authority's Andrea Coscelli and James Lambert discuss its consultation on possibilities for greater competition in passenger rail services

## Put the past in the past

**36** Professor Chris Nash discusses the Competition and Markets Authority's recent consultation on competition

## Another rolling stock perspective

**39** The DfT has set out its Rolling Stock Perspective, and it seems to Andrew Meaney there is a genuine debate to be had about the rolling stock we will be paying for over the next 40 years

## Time to ride the digital revolution

**43** The industry needs a new solution to what it can deliver with how it currently operates, and a digital railway can provide it, believes Philip Hoare



## Influencing your energy strategies with integrated solutions

“ ... at the end of the day I’m an old-fashioned consumerist. I think the customer is king. People should be complaining more, people should know their rights more ” **Interview - page 62**

**Day tripper**

**46** RSSB's George Bearfield talks about passenger safety on trains and in stations

**All change please?**

**51** Strong and stable leadership to fend off the inevitable political interference is all UK rail really needs, says Toby Ashong

**#womeninrail**

**55** Wouldn't it be fantastic if rail created its own hashtag that lets the world know how amazing our industry is, suggests Jodie Savage

**IRO news and diary**

**59** Latest news and events from The Institution of Railway Operators

**Rail Professional Interview**

**62** David Sidebottom, passenger director at Transport Focus spoke to Lorna Slade about why Toc's need to grab the media agenda, working with the DfT, that *Dispatches* documentary, and difficult questions from passengers



**Getting Toc's the credit they deserve**

**69** The battle to win over the public is not lost, says Tom Wadsworth. So let's rise to the challenge and tell the industry's positive story in a way that really connects with people

**On target**

**72** British Transport Police chief constable Paul Crowther OBE argues that the need for a dedicated transport police is greater than ever

**The 'why's' and the 'what's'**

**75** Professor Andrew McNaughton reviews the book, *The Second Age of Rail: a history of high speed trains*

**At your stations**

**78** Dave Songer reports on the 2015 Station Regeneration and Development conference, which looked at the ever-changing landscape in and around stations

**Stations round-up**

**80** A round-up of recent station building and refurbishment projects

**Places for everyone**

**85** Stations have the potential to become theatres of emotion, providing flexible settings for the dramas of life, says Hiro Aso

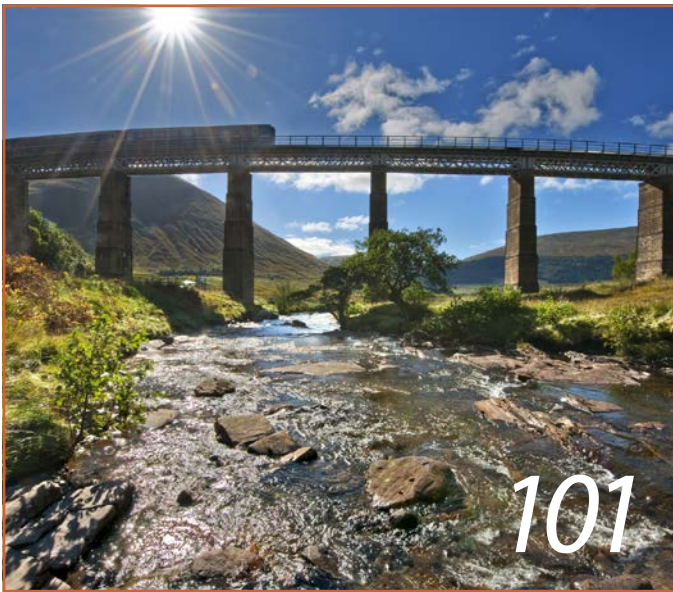


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# Contents



## Spending time on a masterplan

**88** Mike Arthur discusses the complex web of facility interaction, taking into account customer needs while placing design where it is strategically needed to maximise station revenue

## Trust this proposal

**91** Gareth Bacon is proposing an infrastructure funding scheme that could be used to bring rail projects such as the extension of Crossrail to fruition

## The cost of turning away

**94** George Selvanera discusses the opportunities for transport providers to secure the loyalty of disabled customers

## Stemming the flow

**97** Greg Morse talks French philosophers, freight derailments and corporate learning

## Listen up

**101** The rail industry has some unique challenges when it comes to mental wellbeing: do you have the confidence to talk openly about the subject to your employees, asks Adrian Wakeling

## Know thy traveller

**104** Research indicates that in the period to 2030, six key traveller segments will emerge and shape the rail industry, explains Mirja Sickel

## Northern rights

**106** Michael Ireland wants to see a greater sense of urgency from local and national government in providing a rail service for Devon and North Cornwall

## All in the planning

**108** The Safe Work Leaders initiative could have repercussions for hiring and workforce planning for an already skill-short sector, says Nicholas Anderson

## A regional railway salary comparison

**110** Many skilled workers have gone to work abroad meaning the UK has turned into a candidate-driven market, consequently pushing up wages to unseen levels

## Insight for all

**112** Martin Abrams describes the thinking behind the new Passenger's Guide to Franchising and what it is intended to achieve

## Business news

**113** Jobson James; Saft Batteries; Artemis Intelligent Power; OSL; Merseyrail; TERRAM; Trelleborg; ESP Group; Infra Safety Services Labour; Gatwick Express; VGC; Transport Systems Catapult

## Business profiles

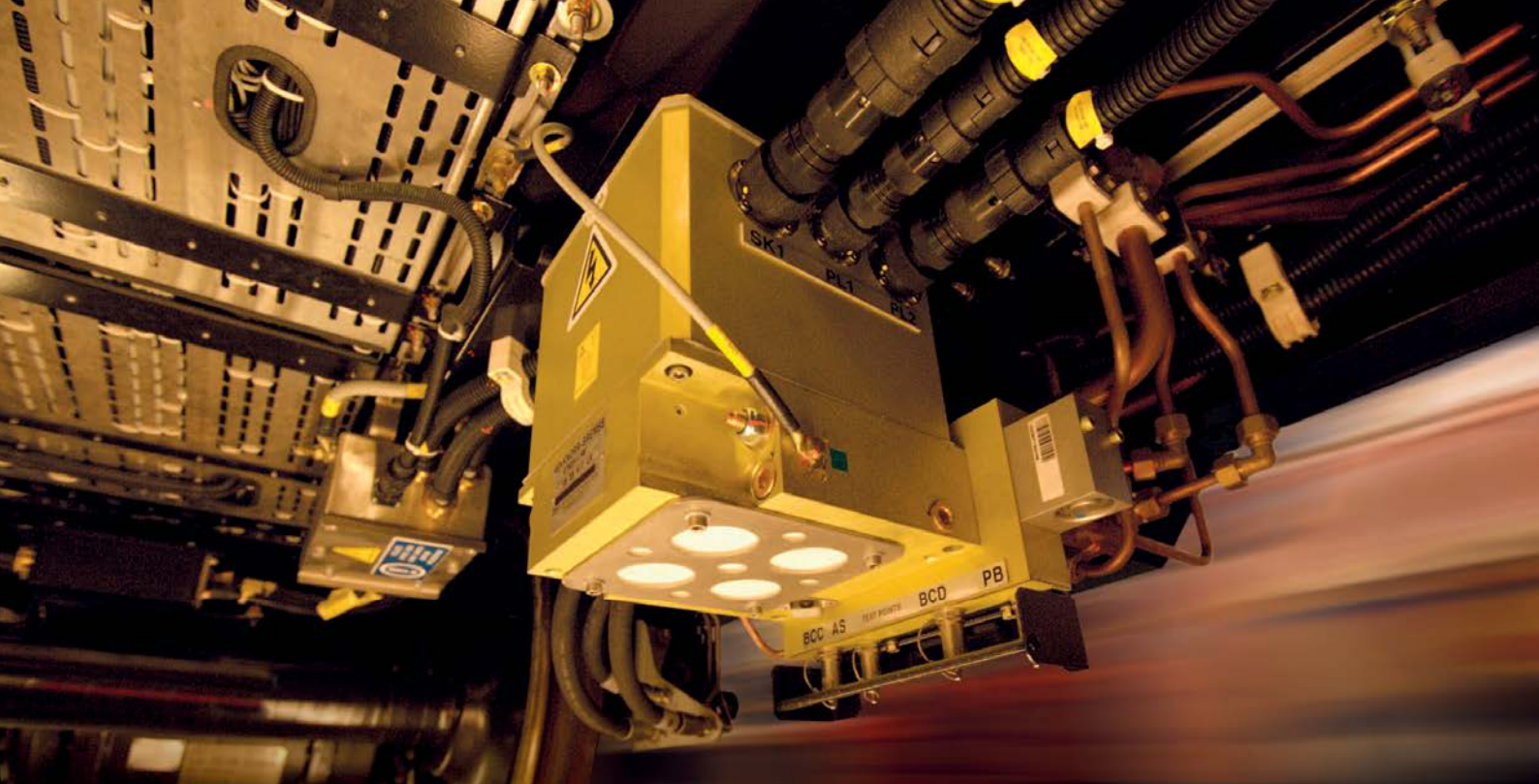
**121** ArchOver; ARM (Advanced Resource Managers); Birley Manufacturing; Bratts Ladders; Cable Detection; Camira Fabrics; Cannon Technologies; Clarity Visual Management; Design MAD; Emico; Executive Compass; Furrer + Frey GB; GAI-Tronics; GHD; Harland Simon UPS; Joseph Ash Galvanizing; Met Systems; Morgan Marine; MTM Power; NightSearcher; Omnicom Engineering; Onis Consulting; Pontoonworks; Quickchange Products; RDG Engineering; REO; Royal HaskoningDHV; Sadler Brown Architecture; Scott Bader; Selectaglaze; SmartRail Asia; Stadler Rail Management; Sulzer; TRB Lightweight Structures; Triscan Systems; Tufnol Composites; Unilite; University of Warwick; Upshot; Walker Construction UK; Weidmüller

## People

**207** Richard Hunter; Merrick Willis; Rob Brighthouse; Zoe Hands; Lord Adonis; Steve Allen; Clare McCaffrey; Jacqueline Starr



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## News in brief...

### Caledonian Sleeper rejects RMT claims

Serco has refuted RMT claims that a fire broke out on a Caledonian Sleeper catering car, resulting in the withdrawal of a train that generated 'total chaos'. A spokesperson told *Rail Professional* there was no fire and said the accusations were 'completely inaccurate'.

In a separate incident, CS had to remove all passengers from a seated car following an electrical fault at Euston; an incident the RMT claims forced pre-booked passengers to make 'alternative arrangements'. Serco also rejected this claim, saying they were 'upgraded into berth'.

### Fine to compensate

**N**etwork Rail should compensate passengers by spending £2 million on improvements rather than having to pay a fine, said Nick Herbert, MP for Arundel and South Downs, during a debate where he said his constituents are 'fed up to the back teeth' with Southern's performance. Herbert believes compensation for passengers should in the form of more staff or information screens.

### Power off for Balfour Beatty

**T**he company has agreed with Network Rail that it will not continue its work on the North West Electrification project as part of a proposed alliance, beyond phase 2, which was completed earlier this year. BB said in a review of future plans the alliance 'was unlikely to meet its stated objectives of delivering the scope of the work on time and to budget.' The company made 400 back-office staff redundant this year as part of a cost reduction strategy.

### ORR is more open

**T**he prospect of further open access services being approved on the ECML has increased with new methods of assessing applications developed for the Office →

## EU to discuss mandatory airport-style security for European rail

■ A committee of transport security experts, including from the Home Office and Department for Transport, will meet in Brussels on September 11 to discuss how to respond to the foiled terrorist attack on a Thalys train at Arras.

The meeting will discuss the feasibility of airport-style screening for European rail passengers, including at UK intercity stations. One option is that Toc's would be obliged to install security cameras in carriages and have scanners at stations for those boarding high-speed trains.

The committee's proposals will be discussed by EU transport ministers in October and any resultant legislation would require support from the European Parliament and member states.

This is the first time Brussels officials have planned to draw up plans for common EU rules on railway security. Prime minister David Cameron is known to favour the idea of sharing passenger data, known as PNR, but EU officials say there are no proposals to collect and share such data with police on a Europe-wide basis, although some European rail companies, including Thalys, do collect PNR.

Ideas being mooted are that passengers and their luggage could be screened systematically or in random spot-checks, with advanced body scanners used to detect plastic explosives, as well as metal detectors to find guns. Other options include compulsory training for rail staff on how to respond to terrorism incidents, after Thalys staff were accused of hiding in their office during the attack.

The new rules, covering domestic as well as international routes, could be approved in Brussels in around a year. Protecting commuter routes should remain the job of national governments at this stage, according to EU officials.

But according to *The Telegraph*, any proposals are likely to be met with resistance from the rail industry due to the costs involved. 'Systematic screening of bags and passengers is an option, but they will want to first talk to the industry to see how practical that is,' said an EU official. 'Perhaps a compromise is that the equipment is in place, and it would be used on a more random basis. It wouldn't have to be that every single passenger is controlled on every single train.'

The expert committee was set up in 2012 to focus on industry concerns such as cyber crime, graffiti and metal theft. It has never before been asked to consider the risk posed by terrorism by member states or train companies, something EU officials described as 'amazing' and 'unfortunate'.

The European Commission's research and home affairs departments are funding new transport surveillance technologies. Officials are interested in the potential for wall-scanners that can detect weapons on people as they move through tunnels on underground metros.

Last month Charles Michel, the Belgian prime minister, called for greater identity and luggage checks on trains travelling across national borders in Europe, and for the rules of the Schengen zone to be changed.

The European Commission said Schengen was non-negotiable, but it already allows for enhanced security checks provided they do not have the same effect as border controls. It means police can ask to see identity papers in targeted operations, but not systematically.

'Security checks are allowed on trains just as they are on aeroplanes,' said Natasha Bertaud, a Commission spokesman.

Guillaume Pepy, the head of the SNCF said there would be more searches of passengers and luggage but rejected the idea for airport-style security, which he said would be 'unworkable' because of the high numbers of train passengers – five million a day in France.



## News in brief...

of Rail and Road. The ORR recently approved the first open access competition on the WCML – from Arriva-owned Alliance Rail to run Blackpool-London services. The methods include a 'gravity model' technique which takes fuller account of the potential of new services to attract new users.

### Rail benefits go nationwide

**R**BF is extending its services to offer advice and support on areas including benefits, debt, relationships and wellbeing. As part of that, new partnerships have been formed with Manchester's Citizens Advice Bureau and charity Turn2Us. RBF is aiming to become the preferred destination for current and former railway workers looking for advice, as a one-stop-shop. It's own offices and telephone helpline remain the first point of contact for all welfare enquiries. Tel: 01270 251316 Visit: [www.railwaybenefitfund.org.uk](http://www.railwaybenefitfund.org.uk)

### A fan of the Tube

**P**art of St Paul's station was kept cool this summer by a fan chiller system that pumped cold air onto the eastbound Central line platform. The heart of the system, a first for the Tube and built by LU's cooling team, is a ventilation fan that pulls fresh air from the street. The air is then cooled by a water chiller system that circulates 16 litres of cold water every second around the pipes in the ventilation shaft, cooling air by up to seven degrees before it is blown onto the platform. The fan, which is capable of moving the equivalent of 15 double-decker buses-full of air every minute, will be used on a larger scale on the Victoria line next summer.

### Abellio upgrade

**T**en Abellio Greater Anglia Class 321 trains are to be fully refurbished in partnership with Eversholt Rail and Wabtec Rail. Abellio describes the upgrade as 'transformational' and evidence of its →

## Government starts sale of its investment in King's Cross estate

■ The government has announced the start of the sale process of its investment in the iconic King's Cross Central redevelopment, a 67 acre site which is being redeveloped with offices, residential and leisure properties.

The decision to sell its 36.5 per cent share in King's Cross Central Limited Partnership (KCCLP) was announced by the chancellor in June. All proceeds of the multi-million pound deal will return to the Treasury.

Transport minister Robert Goodwill said: 'We are selling an asset we no longer need to keep and are realising its value for the taxpayer. The sale will help reduce the deficit and by doing so deliver lasting economic security for working people.'

Chief secretary to the Treasury, Greg Hands said: 'Cutting the deficit and building a strong economy are priorities for this government. Key to this is getting out of the business of owning assets that should be in the private sector.'

The sale is seen as a 'significant opportunity' for private capital to gain exposure to one of Europe's most important city centre regeneration projects.

Lazard has been appointed as financial adviser to conduct the competitive sale process, supported by Savills as real estate advisers.

The King's Cross estate is being developed into eight million sq ft of mixed use space across 50 new and refurbished buildings, and with 26 acres of public realm, including 10 new parks and squares, 20 new streets and three new bridges across the Regent's Canal. Its occupiers include Google, BNP Paribas Real Estate, the Aga Khan Development Network, and University of the Arts London.

Prospective investors should contact Lazard by 7th September 2015.



## Edinburgh Trams' performance on track

■ Edinburgh Trams remains on course to exceed the performance targets set in its business plan, following the publication of the company's first set of annual accounts.

In the financial year 2014 the service generated revenue of £6.4 million in its first seven months of operation, around three per cent higher than projected. Also

Edinburgh Trams received a 95 per cent overall customer satisfaction rating according to Passenger Transport and operated with 99 per cent service reliability, placing it among the top performing public transport operators in the UK.

Concessionary card holders are currently accounting for 10.9 per cent of passengers which is well within the council's budget – set to ensure that Edinburgh resident card holders get free travel on the tram.

The project is not totally free however of the long-drawn out drama that surrounded its implementation. Edinburgh taxpayers are being asked to meet some legal costs of council officials who were allegedly responsible for the problems. The council, which is spending up to £2 million participating in a public inquiry says that



in 2014 the service carried nearly three million passengers and during the full first year 4.92 million people travelled on the trams, around 370,000 ahead of the target set before launch.

helping with the cost of advice and support is 'morally the right thing to do'. It has refused a request from inquiry chairman Lord Hardie to revive its arms length transport firm Tie.



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## News in brief...

efforts to deliver as many upgrades as possible, despite the constraints of a short franchise. Andy Course, Eversholt Rail COO said: 'Our £60 million investment in the Class 321 Renatus upgrade demonstrates our long-term and continued commitment to enhancing our assets.'

### ORR consults on system operation

The Office of Rail and Road has launched a consultation on system operation – to do with how Network Rail operates the network and how decisions are made about the use of the system and its future expansion. The ORR says the consultation is the 'start of a conversation' with industry and users about how greater focus on system operation can deliver a more efficient and effective rail sector. Visit: [www.orr.gov.uk/consultations/policy-consultations/open-consultations/system-operation-consultation](http://www.orr.gov.uk/consultations/policy-consultations/open-consultations/system-operation-consultation)

### Strong growth for MTR

MTR Corporation, holder of the London Crossrail concession and joint operator of London Overground, saw global revenue grow by 3.8 per cent to £1.7 billion, and profits from recurrent businesses rise 7.9 per cent in a strong first half. In the UK the company commenced its TfL Rail-branded Crossrail services between Liverpool Street and Shenfield in May, and ridership of the LO grew by 19 per cent in the first six months to June 30.

### Wafted here from London

London Luton Airport has revealed plans to build a new direct railway line to reduce the journey time from central London to 20 minutes. The new rail link is part of the airport's £100 million redevelopment project that would increase its passenger capacity by 50 per cent. Currently rail passengers take a 20 minute train from St Pancras International to Luton Airport Parkway →

## Closure threat for Millerhill depot

Network Rail has served notice of its plans to move its track engineering and maintenance functions from the Millerhill raid depot in Edinburgh, to south of the border. The depot is also used by DB Schenker and is described as a pivotal link in delivering the Edinburgh Glasgow Improvement Programme.

RMT general secretary Mick Cash has called on the Scottish government to intervene. He said: 'They cannot sit back while a key rail resource, which has cost millions of pounds to develop and which has a vital role to play in the future as rail capacity is expanded across Scotland, is destroyed in an act of industrial vandalism.'

'The depot sits in an area which was ravaged by the destruction of the mining industry and provides decent jobs both directly and throughout the supply chain.'

A spokesman for Network Rail told *Rail Professional*: 'The depot at Millerhill was being used by Network Rail on a temporary basis to assist in the delivery of the Borders Project which has now reached a successful conclusion.'

'It has always been clear that the long-term future of Millerhill was as a permanent stabling and operations facility for the new electrified fleet of trains that will operate across central Scotland as part of the Edinburgh Glasgow improvement Programme (EGIP) with work beginning in September 2015 to create this facility.'

'In addition, we are working with industry partners including DB Schenker to develop a long-term logistics strategy for the railway in Scotland that will improve programme delivery and minimise costs for the tax payer. This includes a further option to develop an additional logistics depot at Millerhill.'

'We will communicate the outcomes of this strategy once it is complete and we continue to work with DB Schenker and with trade unions to address the concerns of employees on the impact of any changes.'

## HS2 – a passengers' eye view

Passengers will expect HS2 trains and services that are a source of pride throughout Great Britain; a national asset from which the whole country can benefit.

That's the key finding so far from research that Transport Focus is carrying out for HS2 Ltd. The company asked the watchdog to set up a passenger panel representing a spread of demographics and travel behaviours that asked members, if they were going to create a train service from scratch, what would they want the railway to look and feel like and what type of service would they expect?

Anthony Smith, Transport Focus's chief executive, said: 'These findings are important not only for the building of HS2, but also for today's rail services. To build greater trust with passengers it is important not only to deliver a punctual and reliable service but, a service with passengers at its heart.'

Professor Andrew McNaughton, HS2 technical director said: 'Building from scratch, we can design a railway fit for the 21st century. That's why it's so important that we listen to what passengers want. This initiative will help us focus on the issues that matter. We will use it to feed into our design work and rolling stock procurement and, ultimately, it will help us build a better railway.'

The research, *High Speed Two: putting the passenger at the heart of design*, also found that:

- the panel wants to be treated as valued 'customers' who have needs beyond simply getting from A to B alone

- the rail industry could improve its customer service to match levels found in other sectors such as retail, technology and on airlines. HS2 should prioritise customer needs to ensure its experience is 'designed for the customer', and there was a strong plea for affordable ticket pricing so that it is truly accessible for all
- the role and approach of staff alongside proactive, accurate communication is crucial for customers to feel valued.

The panel consists of a spread of demographics and travel behaviours. Forty rail passengers have given their views and ideas via workshops and an online community for more than a year, and this will continue until March 2016.

### HS2 Design Panel recruitment begins

Sadie Morgan, HS2 Design Panel chair, has begun recruiting experts from a range of design disciplines to the panel that will oversee the design development of HS2.

HS2 Ltd published its *Design Vision* in March to 'embed design excellence in all aspects of HS2'. The panel will be a 'critical friend' to the new line, ensuring that as it develops its designs it delivers on its vision.



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## News in brief...

but with waiting times and stops along the way, that time can be doubled.

### Mixed messages

**B**romley and Chislehurst MP Bob Neill has told rail minister Claire Perry that Southeastern should be fined for the level of its service, and suggests the franchise should be taken over by London Overground. At the same time, the annual independent UK Customer Satisfaction Index by the Institute of Customer Services has rated Southeastern as the second most improved company in the country – just behind Ryanair.

### Music to the ears

**S**cotRail says it is renewing its commitment to reducing its carbon footprint by providing travel passes for the 89 musicians in the Royal Scottish National Orchestra to venues in Scotland, in a 12 month agreement. The RSNO is one of the busiest of all the UK's major arts organisations covering almost 37,000 miles a year in Scotland alone. As the orchestra's 'official public transport provider' ScotRail will encourage concert-goers to take the train to RSNO events.

### Three is a magic number

**D**B Schenker Rail UK and PD Ports have launched their first rail freight service from Teesport in Middlesbrough to Mossend and Grangemouth in Scotland. The service offers a full train with 40 containers to and from Scotland each week day. ECS European Containers has taken a commitment on a fixed number of 45 foot high cube containers to support this service. This is thought to be the first time a rail freight company has partnered directly with a port to serve the intermodal sector. →

## Track workers' risk still too high

**■** Network Rail's Planning and Delivering Safe Work track safety initiative is too focused on the roles of those working on site and will not significantly mitigate risks created by people in other roles that are 'important in safeguarding those carrying out work on the railway', according to a Rail Accident Investigation Branch investigation.

While acknowledging the PDSW is in its early stages, the RAIB says it has yet to demonstrate its benefits.

Observing a number of operating irregularities in Network Rail's daily incident reports, the RAIB decided to analyse the data over a two year period and found 'significant' irregularities in safety arrangements for track workers that put staff at risk between three and five times per week on average, a number the RAIB said in its report that is 'frequent and not reducing'.

A systematic review of these was then undertaken to identify the various safety issues that would need to be addressed to prevent them occurring and leading to harm. As a result the RAIB has made two recommendations to Network Rail.

The first concerns a request to ensure that NR implements its post-implementation review in such a way as to monitor and assess the impact of its planning and delivering safe work initiative.

The second is that NR should reduce the risk of engineering protection irregularities associated with railway roles that are not currently being considered as part of the planning and delivering safe work initiative.

The RAIB has investigated a number of accidents involving track workers on Network Rail's infrastructure over the years and has identified it as an area of particular concern in recent annual reports.

The report is titled: *Class investigation into irregularities with protection arrangements during infrastructure engineering work.*

## Business accolade for TfGM's head of rail

**■** Transport for Greater Manchester's head of rail, Amanda White, has been named the North West's 32nd most influential woman in business.

The annual list, which is produced by business magazine, *Insider North West*, places White in the top 100 alongside influential leaders and businesswomen from the public and private sectors. She is the only rail industry professional to feature on the list.

White oversees rail policy in Greater Manchester, working closely with Toc's, local authorities and the DfT to improve services for businesses, residents and visitors to the region.

In addition to her role at TfGM, White contributes to strategic transport planning in the North of England

through Transport for the North and Rail North, working to inform northern transport strategy and drive economic growth.

Said White: 'I'm pleased and proud to have been selected for the Women 100 list, an accolade which reflects the work of the whole team at TfGM. Engineering remains a male dominated sector and I'm pleased to represent transport on this list.'

In addition to this accolade, White was

given the Young Achiever award at the Confederation of British Industry awards in July, and praised for her enthusiasm and commitment to the industry.

Her previous roles include senior route engineer for HS2 Ltd and railway systems engineer at Network Rail.





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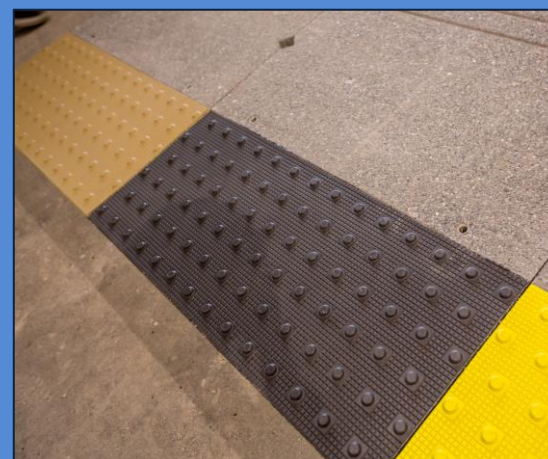
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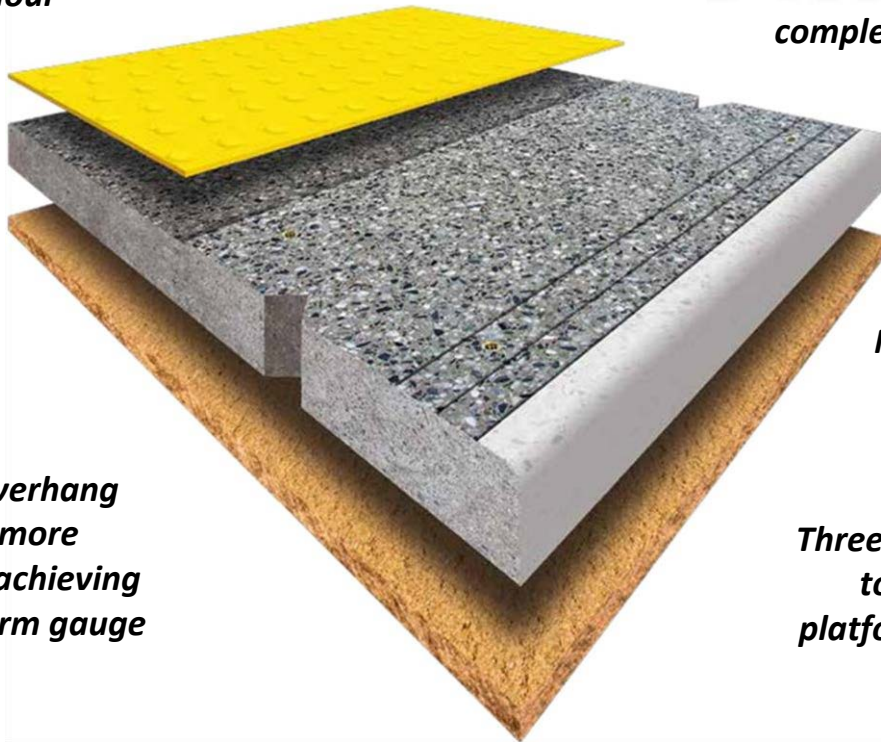
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## News in brief...

### Have you travelled far?

**P**olicy Exchange, a right of centre think tank says ministers need to fund cheaper fares to help commuters travel further. Making it easier for people to commute twenty minutes more would put them in touch with at least one major urban area and potentially 10,000 more job opportunities says its report, *On the Move*.

Damian Hind, author of the report, said: 'Commuting can be expensive and tiring but longer commutes can hugely increase people's job prospects.'

### 20th anniversary for Swanage Railway

**T**he heritage line's volunteers are celebrating the anniversary of the first passenger trains to Corfe Castle and Norden.

Saturday, 12 August, 1995 saw the trains run for the first time since the last British Rail train in January, 1972. Over the past 20 years the award-winning railway has carried four million passengers and last year it carried 216,267. The service is said to boost the Purbeck economy to the tune of £14 million.

# 175 years making Britain's railways safer

**■** August 2015 marked 175 years of service of the Railway Inspectorate (RI). Now part of the Office of Rail and Road (ORR), its safety inspectors have helped bring about huge improvements in health and safety on our railways, and saved countless lives.

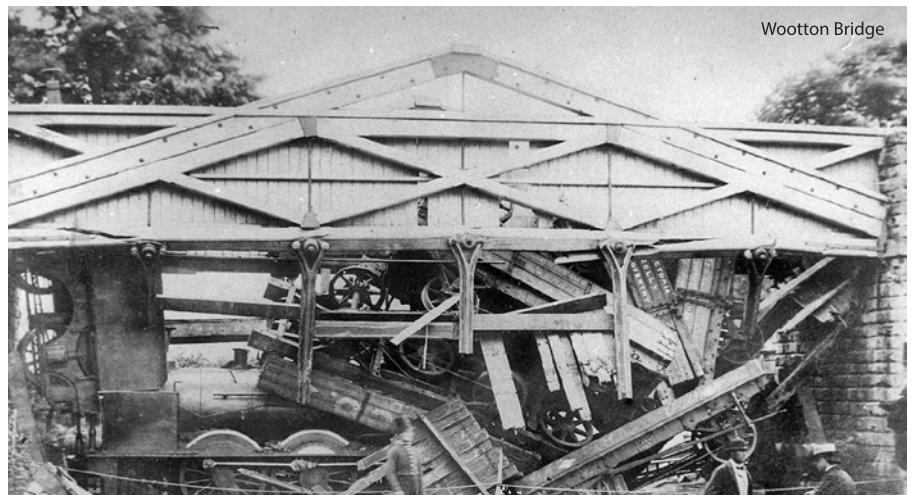
In 1840, through the Railway Regulation Act, the Board of Trade appointed the first Railway Inspector to inspect construction and equipment of new railways.

From 1871, railway inspectors were given powers to look at accidents and recommend ways to avoid them. Some improvements over the years include continuous brakes, guidance on boilers to avoid explosions, block signalling, rules for lookout men, designing cabs for driver protection in collisions, setting noise level maximums in driver cabs, and rules for emergency evacuation from trains.

The RI's most recent health and safety report shows our railways are the safest they have ever been, but there is no room for complacency.

The RI is celebrating this milestone throughout the year and has published a timeline and blog to share some of the history of the last 175 years in railways, with more to come over the next few months.

Visit: [www.orr.gov.uk/news-and-media/orr-blog/175-years-making-britains-railways-safer](http://www.orr.gov.uk/news-and-media/orr-blog/175-years-making-britains-railways-safer)



## Virgin axes off peak price deal

**■** Virgin Trains West Coast passengers will no longer be able to buy off-peak, railcard discounted tickets for use on peak-time trains, potentially more than doubling the cost of a rush hour return to London.

The change could see huge increases for some. For example, an Anytime return between London and Manchester costs £329 but the journey is available to railcard holders at £53.85. With the discount removed, the passenger could pay more than six times the price for the same journey.

Virgin said the move, from September 6th, will bring it in line with the rest of the industry, but pointed out that railcard holders will still save one third off the price of a rush hour ticket – the same discount as at off peak times.

Manchester Central MP Lucy Powell has asked Virgin for an 'urgent' review of the situation. She said: 'Railcards are used overwhelmingly by older people, people with disabilities, young people or people with families. These changes will lead to huge increases in fares for the customers the railcard system should be supporting.'

She continued: 'In the case of services leaving Euston toward Manchester, this means catching a service after 7:00pm, meaning

that people will no longer be able to make day trips to London using the concessionary fare unless they are prepared to be arriving home at 10:00pm at the earliest, which isn't an option for some people.'

At the time of writing Virgin had not yet advertised the move to its customers, but argued that its routes have for a long time been the only ones in Britain to offer such a saving.

A spokesman said: 'Customers can still use their rail card discount on peak time fares and there are many deals available, especially with some planning and flexibility. This brings us in line with the rest of the industry.'

Transport Focus reiterated that the Toc was the only one to offer this special deal, which was in acknowledgement of the high-cost of long distance peak fares, but those fares are still exorbitant.

Passenger director, David Sidebottom, said the watchdog now expects to see a drop in passenger satisfaction on the line: 'Passengers tell us that getting better value for money is one of their top priorities. Currently almost six in ten passengers on this route are happy with the value for money of their ticket – with more than three quarters of railcard holders satisfied.'

'If Virgin continues with this plan then it needs to do more to contact affected passengers and communicate the changes clearly to avoid unpleasant surprises at the ticket machine.'

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## Borders Railway re-opening

The Borders Railway, which runs from Edinburgh to Tweedbank, is set to re-open on 6 September after almost 50 years of closure. A victim of Dr Beeching's axe, the line was closed in 1969 but after years of local campaigning a deal was struck in 2012 between Transport Scotland and Network Rail to restore passenger services.

The railway welcomed its 'first' passengers over the summer, when rail campaigner Madge Elliot MBE and her family took a trip on the new line. She joined a training service at Tweedbank station, making her one of the first people in the country to travel on the new route before it opens to the public.

Elliot is renowned for her fight to save the Waverley Route from Edinburgh-Hawick-Carlisle. She led a petition to keep the line open and, on 18 December 1968 - along with son Kim - hand delivered a petition to Harold Wilson, the Prime Minister at the time.

Unfortunately her efforts were unsuccessful, and the line closed on 6 January 1969.

Not to be deterred, in 1999 Elliot helped found the Campaign for Borders Rail, a grassroots group which pushed for the restoration of rail services to the Scottish Borders.

Ian McConnell, ScotRail's programmes and transformation director, said: 'Madge Elliot is a legend of the Borders and the railways, and it is absolutely fitting that she be the first member of the public to travel



on this line as she was so instrumental in having it reinstated.'

### Danger that history gets re-written

The key role played by community campaigners in the return of trains to the Borders should be properly acknowledged by the political establishment, said the Campaign for Borders Rail. 'There is a danger that history gets rewritten so that the current Scottish government gets all the credit for the Borders Railway, while the absolutely crucial role of unpaid grassroots campaigners over a 17-year period is forgotten.'

CBR says that the opening of the Borders Railway is 'one of the greatest achievements of grassroots rail campaigning in British history.'

CBR's Scottish parliamentary officer, Allan McLean, said: 'We would not be seeing a railway now without the vision and determination of Simon Longland and his Borders Transport Futures company, which did so much to put the business case for the railway on the political agenda in the mid-1990's. This then led on seamlessly to the founding of CBR in 1998, and under the inspired leadership of its first chair, Petra Biberbach.'

## Public transport operators globally planning to expand surveillance

An international survey among public transport organisations has revealed that operators worldwide are continuing to invest in leading-edge security technology, with the majority interested in adopting more widespread use of real-time surveillance and advanced video analytics to better protect their passengers, equipment and installations.

97 per cent of survey respondents have already installed security cameras and reported that video surveillance systems help increase actual and perceived security among passengers and staff, as well as minimise, deter and manage various types of crime and vandalism.

The survey also revealed that public transport staff are generally very positive towards the use of video surveillance, with more than 83 per cent indicating positive or neutral reactions, especially when usage of the system is well-communicated to staff. Some responders do not gather staff or passenger feedback, but from those that do, no responder reported a negative reaction from staff or passengers.

The use of video surveillance within public transport is no longer only a matter of incident evidence, says the report: even if the vast majority

of respondents (86 per cent) find this forensic element the most valuable concrete use.

Real-time detection of incidents also scored highly in terms of potential value (72 per cent), indicating this is a trend to come. Already today, 42 per cent of respondents can share live video with other parties such as police or other authorities, and more than 50 per cent plan on using real-time video surveillance in 'rolling stock' (moving vehicles versus just in static locations).

The survey also evaluated awareness, present usage and future interest in video analytics. The majority of respondents are aware of video detection analytics for intrusion, perimeter breach, fire and smoke and rail track access, with actual usage already between 10-20 per cent. Future interest is high with approximately half of the respondents having indicated that they are considering using these video analytics applications moving forward. Graffiti behaviour detection was a further application which sparked the interest of more than half the respondents.

The survey was conducted by UITP, the International Association of Public Transport, and Axis Communications. Visit: [www.axis.com/files/whitepaper/survey](http://www.axis.com/files/whitepaper/survey)





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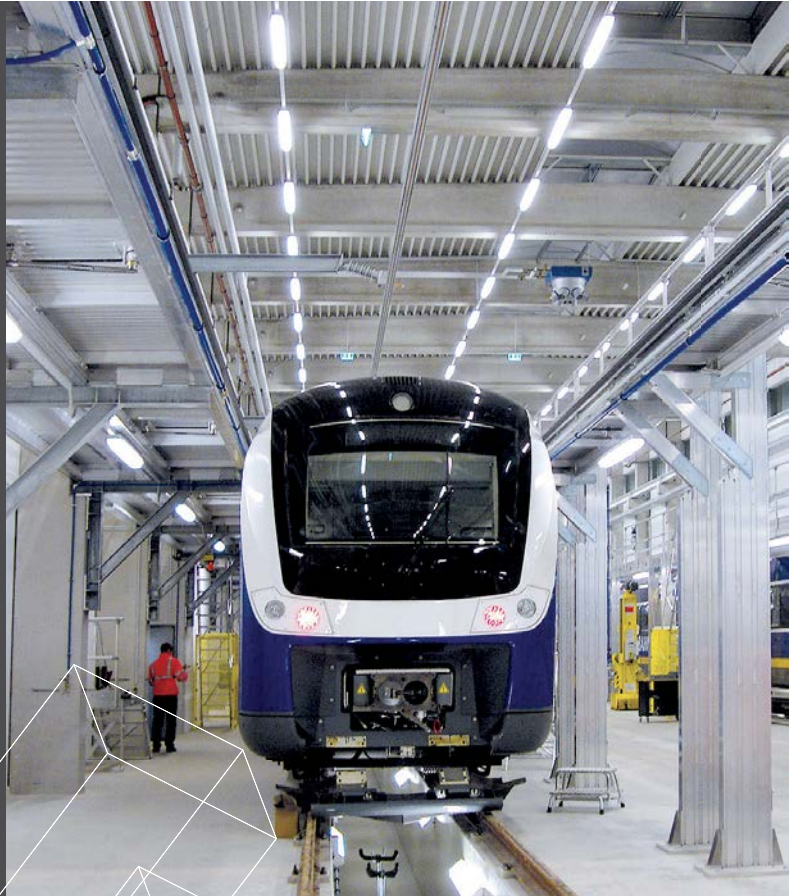
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**In the passenger seat** David Sidebottom



# Tell us quickly if snow will cancel our journey!

When passengers are informed of the level of service that might realistically be possible they express some frustration. However, when it is explained they become more tolerant, says **David Sidebottom**

**W**henver extreme weather affects train services, questions are asked about whether Britain's railways are sufficiently well-prepared. Those incredible shots of First Great Western trains being battered by the stormy

sea and the tracks at Dawlish dangling in mid-air are a stark reminder of the impact the weather can have on Britain's railway.

If you've ever been stuck on an icy platform, wondering whether your train will turn up, then you will see the value of understanding passengers'

expectations in the event of extreme weather.

So how can the rail industry plan ahead and make the right decisions about when services should run or not in the midst of winter?

Our research, *Reacting to extreme weather on the railways*, found that



# ‘There is a big difference between the message ‘no trains until 11:00am because there are trees across the track’ and ‘no trains until 11:00am while we see *if* there are trees across the track’

passengers want accurate, timely, consistent and useful information that allows them to make an informed decision about their journey – in this respect it is no different from passenger information during any type of

disruption. What operators must do is be transparent – help passengers understand why timetable changes and service suspensions have been made.

As passengers are pushed off the road in extreme weather they look to the railway for a stable way to commute to work or make trips home for the Christmas break. Passengers expect that advance warning of bad weather means that train companies have enough time to put measures in place. This leads to high expectations of what train companies can deliver in contrast to what is physically possible. When passengers are informed of the level of service that might realistically be possible they express some frustration. However, when it is explained they become more tolerant.

### Comes down to trust

Passengers have also voiced a strong desire for train companies to run as near to normal a service as is possible whenever it is safe to do so. Operators should publicly commit to run the full timetable during extreme weather unless safety would be compromised or there is a strong likelihood that doing so would result in severe disruption. Delaying start of service until 11:00am attracts strong negative reaction from passengers.

There is a big difference between the message ‘no trains until 11:00am because there *are* trees across the track’ and ‘no trains until 11:00am while we see *if* there are trees across the track’.

What this all comes down to, is whether passengers can trust their train company and are able to believe that it is on their side. Passengers want their train company to demonstrate that it is doing its best for customers. Our research reiterates something we’ve been saying for some time now: the importance of good information to help passengers make informed decisions. The potential benefits of greater winter preparedness by operators and the Rail National Task Force is a critical step towards showing passengers they have their interests at heart.

Acting on our recommendations this winter will go a long way to reassure passengers that they will get to work when faced with the next bout of extreme weather.

David Sidebottom is passenger director of Transport Focus

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## Delivering the goods Chris MacRae



# The core issue

The Channel Tunnel disruption could hit rail freight confidence, but the fundamental issue of costs also needs to be addressed, says **Chris MacRae**

**D**isruption caused by continuing unrest in Calais could seriously dent confidence in rail freight services through the Channel Tunnel, according to Freight Transport Association (FTA) members.

Incursions by migrants and track blockades by striking staff have repeatedly interrupted freight train services over the past few weeks. The impact on road freight and holiday traffic has of course been well-documented, but it has serious implications for international rail freight too. What is worrying is that as

a consequence confidence in rail freight as a viable alternative to road could be undermined. We saw this happen a decade ago when migrants were trying to board freight trains to reach the UK – it was a serious set-back for Channel Tunnel rail freight at the time.

The impact on road freight due to Operation Stack and port delays in Calais has been widely reported, but the long-term effect on international rail freight traffic could be devastating. FTA is keen to encourage multimodal transport and increased use of the rail freight network, which has great capacity for expansion.

But put simply this current situation isn't going to help.

FTA has spoken to one business in Scotland that regularly used the tunnel for rail freight traffic and had managed only five out of a planned 25 train services in the past five weeks at a loss of around £150,000. And another rail freight operator said the situation was 'the worst since 2001/2'.

### Can't continue

From a rail freight perspective this can't be allowed to continue – businesses are losing money day after day because of



delays and cancellations to services caused by the migrants and strikers. FTA has written to the prime minister urging him to work with the French government to find a solution to the problems in Calais, which have cost millions to Britain's economy as a whole.

Historically, before this crisis cross channel via Channel Tunnel rail freight was running at a small portion of the capacity reserved for it through the tunnel. The main barrier to growth is the high freight track access charges (higher than on the mainland network in Great Britain run by Network Rail) that Eurotunnel imposes on through-tunnel freight trains. It is simple economics in FTA's view that were the charges to come down more rail freight traffic would run. The contention is over whether Eurotunnel operates a marginal cost policy or seeks full sunk investment cost asset return on the cost of building the Tunnel (it does the latter), and whether it pre-dates the EU Directives on track access charging and marginal costing for freight as 'special infrastructure'. Eurotunnel has introduced a time-limited discount scheme for new start-up rail freight services and other headline price cuts that have seen traffic grow (pre the

current crisis) albeit from a low base. It really is important that this underlying issue is addressed as the fundamental cause of lower than planned Channel Tunnel rail freight traffic. Obviously the disruption issues of recent weeks like those of a decade ago have been highly damaging, but rail freight volumes were low before them for other cost reasons outlined above.

FTA is engaged in developing the *Agenda for More Freight by Rail* that sets out the industry challenges set by major shippers for rail to win more freight market share from other modes of transport. A key element of this is increasing Channel Tunnel rail freight via reduction in rail freight track access charges to make it more competitive.

A copy of the FTA's *Agenda for More Freight by Rail* can be found on our website: [www.fta.co.uk/export/sites/fta/\\_galleries/downloads/rail\\_freight/14094\\_agenda\\_for\\_more\\_guide.pdf](http://www.fta.co.uk/export/sites/fta/_galleries/downloads/rail_freight/14094_agenda_for_more_guide.pdf)

The Freight Transport Association can trace its origins back to 1889 and is recognised as the voice of the freight and logistics industry, representing the transport interests of companies moving goods by road, rail, sea and air. FTA members operate more than 220,000

**'What is worrying is that confidence in rail freight as a viable alternative to road could be undermined. We saw this happen a decade ago when migrants were trying to board freight trains to reach the UK'**

goods vehicles – half the UK fleet – consign more than 90 per cent of the freight moved by rail and 70 per cent of sea and air freight.

*For further information contact: Chris MacRae, rail freight policy manager  
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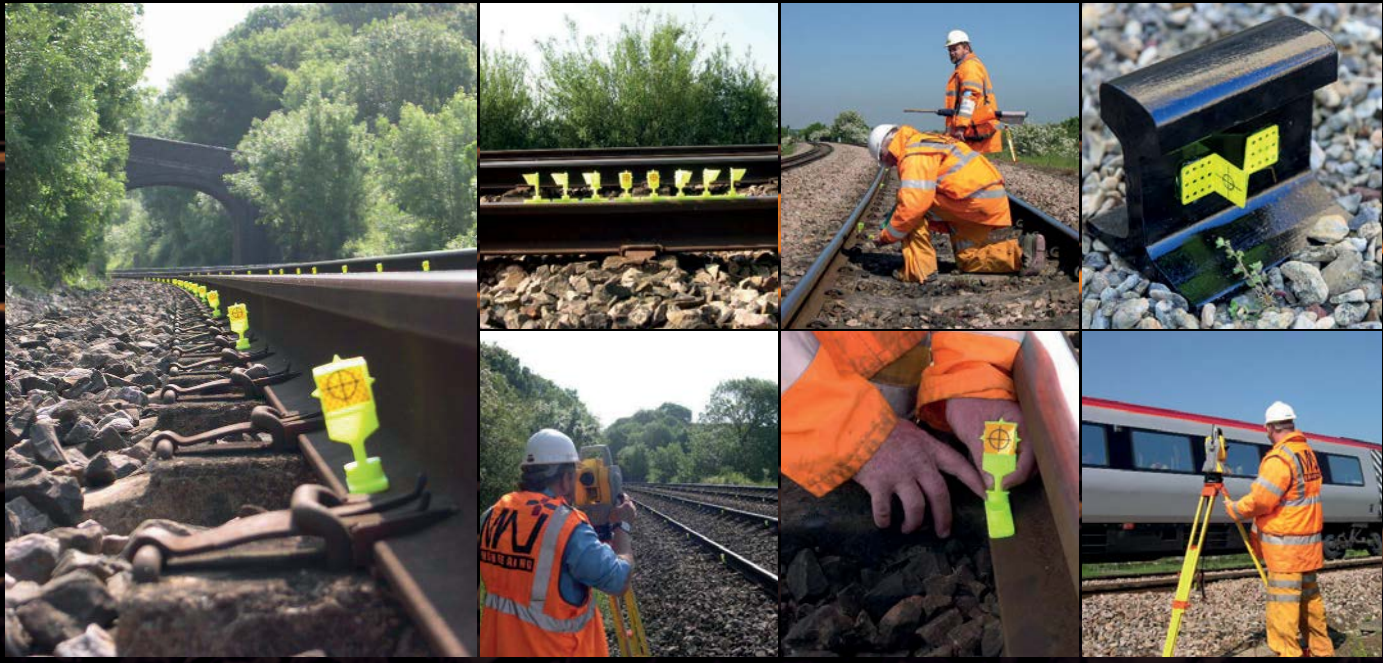
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Laying down the law

Rebecca Owen-Howes



# Merger control for rail franchises

The short timetable between announcing a winning bid and commencing operations means bidders need to consider possible competition issues at the very beginning of the procurement process, says **Rebecca Owen-Howes**

In March 2013, the Department for Transport announced its new procurement programme for rail franchises. Since then, seven franchises have been awarded, including two by subsidiaries of Transport for London (TfL).

## When do the merger rules apply?

The award of a rail franchise may be caught under either the EU or UK merger rules. The application of the EU rules depends on the size of the transaction, as measured by the turnover of both the bidder and the franchise business. If the transaction is sufficiently large, it will be reviewed by the European Commission. Otherwise, the award will be assessed under the UK regime by the Competition and Markets Authority (CMA) (the relevant jurisdictional thresholds are set out below). There is no risk of investigation by both authorities – if the EU merger regime applies, then the UK regime cannot.

At the UK level, the Railways Act 1993 provides that entering into a rail franchise agreement constitutes the acquisition of control of a business and is therefore subject to merger control. This does not extend, however, to the award of a franchise or a concession by TfL, and the CMA can review such awards only if they constitute a relevant merger situation (as defined in the Enterprise Act 2002).

For both of the TfL awards since 2013 (the Docklands Light Railway franchise and the Crossrail concession), the CMA found that the bidder was unable to exercise material influence over the franchise/concession and that therefore

a ‘relevant merger situation’ was not created. The European Commission took a similar view in respect of the Docklands Light Railway franchise (where the parties met the relevant EU turnover thresholds) and found that the EU merger rules did not apply.

## What are the jurisdictional thresholds? EU regime

The EU merger rules apply where the group turnover of the bidder and that of the franchise business satisfies either of the turnover tests, shown in the table below. Where the test is met, the bidder must notify the European Commission of the award and receive clearance before operating the franchise. The penalties for not doing so are severe – the parties risk fines of up to 10 per cent of their worldwide turnover.

	EU Turnover Test 1	EU Turnover Test 2
<b>Worldwide turnover threshold:</b> the combined aggregate worldwide turnover of the bidder and its corporate group and the franchise business must exceed:	€5,000 million	€2,500 million
<b>EU turnover threshold:</b> the aggregate EU-wide turnover of each of at least two of the parties must exceed:	€250 million	€100 million AND the combined aggregate turnover of all the parties in at least three EU Member States must exceed €100 million AND in each of three of those same EU Member States, the aggregate turnover of each of at least two parties must exceed €25 million

The above turnover tests are subject to the ‘two-thirds rule’: where all the parties achieve more than two-thirds of their EU-wide turnover in the UK (or another Member State), the UK merger regime will apply rather than the EU rules.

## UK regime

The CMA may review the award of a franchise under the UK merger rules, provided that either:

- the UK turnover of the franchise business exceeds £70 million; or
- the award results in the bidder supplying at least 25 per cent of passenger rail services in the UK (or a substantial part of the UK – in practice, this can be a relatively small part of the rail network).

Unlike the EU regime, in the UK, parties are not required to notify transactions to the CMA where either (a) or (b) above is met. However, if they do not do so, the CMA can investigate the award on its own initiative and ultimately unwind a franchise agreement if it is found to result in a substantial lessening of competition (SLC) in the UK.

## Competitive assessment

The European Commission can block the award of a franchise if it significantly impedes competition. The CMA can prohibit the award if it may result in an SLC within any market(s) in the UK. In both cases, it may be possible for the award to be cleared subject to the parties giving undertakings to mitigate the identified negative effects on competition.

In assessing whether a franchise may have a negative effect on competition, bidders will need to analyse the extent to which their activities overlap with those of the franchise

business, including an individual assessment of competition on individual point-to-point flows (‘competition in the market’).

The focus of the assessment will be rail-on-rail overlaps, but it will also need to consider rail-on-bus overlaps and rail-



on-coach overlaps if the bidder operates these (or other) modes of transport. Whether the overlapping services do in fact compete will depend on a detailed analysis of factors such as journey time and fares for each flow. Account will also need to be taken of third parties that may also compete on these flows (for example, underground, tram, aeroplane).

It should also be mentioned that the authorities' competitive assessment will also consider 'competition for the market', that is competition for rail franchises in the UK.

Bidders will need to carry out their own competitive assessment at an early stage in the award process, given that the invitations to tender (and to pre-qualify) will require bidders to highlight any

competition issues and demonstrate how these will be addressed to ensure there is no delay to the procurement process.

**Impact on the timetable**

Under the EU merger rules, Phase 1 clearance takes at least 25 working days from the date of notification. Generally speaking, the Commission will not enter into pre-notification discussions with the parties until the preferred bidder has been selected, although the Commission has been more flexible recently.

At the UK level, the CMA encourages bidders to enter into pre-notification discussions shortly after submitting their bids (four to six weeks prior to the expected award date). Ideally, at this time, bidders should also consider possible undertakings *in lieu* of a Phase 2 investigation. Although the CMA will formally investigate only the winning bid, pre-notification discussions with all bidders allow the investigation timetable to start as soon as the winning bidder is selected.

The CMA has 40 working days from acceptance of the winning bidder's notification to announce its Phase 1 decision. In the event the CMA identifies an SLC, there will be an additional period in which to agree undertakings with

the parties to deal with the competition concerns. In the recent case of the InterCity East Coast franchise, the period between notification by the parties and acceptance of undertakings by the CMA was around 6.5 months.

As already mentioned, it is possible that bidders for rail franchises will also meet the EU jurisdictional thresholds. In such a case, it is likely that the matter will be referred back to the CMA for consideration under the UK merger rules (which happened with the Thameslink, Southern and Great Northern franchise award to Govia). The CMA is keen for this to happen since rail franchises concern only the UK, and the European Commission may not be able to impose remedies in the way that the CMA could. The referral-back process adds an additional period to the timetable for clearance.

The key message for all bidders is that merger control must form part of any initial assessment - the short timetable between announcing the winning bid and commencing operations means that bidders need to consider possible competition issues at the very beginning of the procurement process.

Rebecca Owen-Howes is senior associate at Dentons

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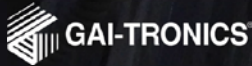
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# Open to suggestions

The CMA's **Andrea Coscelli** and **James Lambert** discuss its consultation on possibilities for greater competition in passenger rail services

**I**n July, the Competition and Markets Authority published a discussion document on possibilities for greater competition between passenger train operators.

Our report recognises the benefits that the recently reformed franchising system is delivering through competition 'for' the market by way of competitive tendering of franchises, including greater passenger satisfaction and growing passenger numbers. The degree of competition 'in' the market ('on-rail' competition – by way of overlapping franchises, parallel franchises, or open access operators) is, however, currently small. While conscious of the complexities involved, we are examining whether it is desirable and feasible to build on existing success stories by introducing a significantly greater degree of 'on-rail' competition between train operators.

As we have developed our early thinking, we have had productive discussions with the industry. Since January we have met open access operators, franchisees, the rail freight industry, passenger groups, Network Rail, the ORR, academics and other experts in the sector.

As well as evidence from existing on-rail competition in Great Britain's passenger rail industry, we have also considered the experience of other European countries in which there is on-rail competition. And we took into account how competition functions in parallel markets such as rail freight and air transport.

Overall, the evidence suggests to us that a material increase in on-rail competition would result in benefits for passengers and taxpayers, including greater incentives to improve service quality and to innovate, downward pressure on fares, operational efficiencies, more effective use of network capacity and cost savings in network operation.

While the fundamentals required for on-rail competition – such as the separation of train operations from network infrastructure – are already in place, we fully recognise the operational complexities of the rail network and our discussion document considers a number of feasibility issues. We think benefits are most likely on the three main intercity routes – the East and West Coast main lines and the Great Western route. We are less convinced about commuter services, where capacity constraints and



Andrea Coscelli



James Lambert

passengers' desire to take the first train appear to pose additional challenges.

We are also conscious of the need to protect funding for investment in the railways, including in network infrastructure, and support for



socially valuable services that are not commercially profitable. Some of this funding currently comes from premiums paid for more profitable franchises.

Greater on-rail competition could potentially reduce franchisees' revenues and, in turn, result in lower premiums for the government. The CMA's proposals envisage that this shortfall could be tackled through a combination of requiring new competitors:

- to bear a proportionate share of network costs, for example through making a contribution to fixed track access charges (from which open access operators are currently exempt); and
- to contribute to the cost of unprofitable but socially valuable services, for example through paying a 'universal service' levy or bearing obligations to provide some of these services themselves.

We are particularly interested to hear from open access operators and other potential entrants into the market on whether they would be able and willing to enter the market on these terms.

More widely, we are asking for views on four options for the future:

- Option 1 – retaining the existing market structure, but with significantly increased scale open access operators competing with franchisees
- Option 2 – introduce two franchisees for some of the current franchise areas
- Option 3 – redesign the franchise map over time to generate more overlapping franchises and hence greater on-rail competition
- Option 4 – replace some of the current franchises with full on-rail competition under a licensing regime, with multiple operators competing subject to conditions including public service obligations

We are conscious that there are no simple solutions and a range of considerations need to be weighed in the balance. However, we think greater competition on the railways could unlock real improvements for both passengers and taxpayers. It could also present an opportunity for operators to develop and balance their rail portfolios, and to have more commercial freedom to innovate in the delivery of services to passengers.

In order to protect the rights of current franchisees and current and imminent franchise tender processes,

we don't envisage changes coming into effect until 2023 at the earliest. By that time, there is also a prospect of more capacity becoming available as a result of new infrastructure and signalling technology. That timeframe would also allow policymakers sufficient scope to plan implementation.

This is therefore a debate for the long-term. We think now, as other broad questions are also asked about the future of the railways, is the right moment to commence that debate.

While we have immersed ourselves in the issues and discussed them widely, we are competition experts, not rail professionals. Given that, we have issued a consultation to test the options further, before we firm up our recommendations. We look forward to hearing your views.

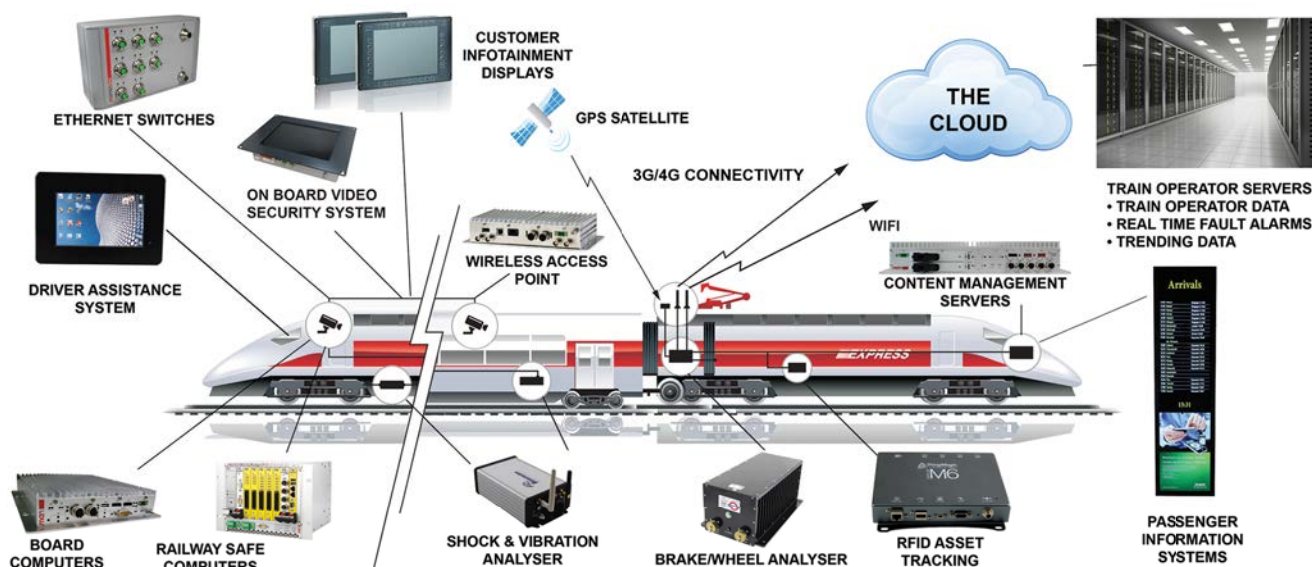
**The CMA's consultation is open until Friday 16 October.**

Email: [rail@cma.gsi.gov.uk](mailto:rail@cma.gsi.gov.uk)

Andrea Coscelli is executive director for mergers, markets and sector regulation at the CMA

James Lambert is director of sector regulation at the CMA and is the project director for the CMA's rail policy project

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# Put the past in the past

**Professor Chris Nash** of the Institute for Transport Studies at the University of Leeds discusses the recent Competition and Markets Authority consultation on competition in passenger rail services in Great Britain

Currently in Britain almost all rail passenger services are provided under franchises let by the government through competitive tendering. Open access competition is only permitted where capacity permits and where it would not primarily abstract revenue from the franchisee. The slightly curious test of this is that newly generated revenue must be at least 30 per cent of revenue diverted from the existing operator (not primarily abstractive which seems to imply that it should be more than 100 per cent). It is unclear how this 30 per cent threshold is determined. In practice, the only two open access operators currently running in Britain both provide through services between cities with no, or almost no, franchised through services.

The Competition and Markets Authority (CMA) in its recent consultation document makes the case for more open access competition. It sets out four ways in which this might be achieved, and the thrust of the consultation is more about how to achieve this end than about whether it is desirable. The four approaches are:

1. to allow a significant increase in open access competition within the existing structure
2. to split each franchise into two, operating on the same route
3. to deliberately construct more overlapping franchises
4. to license more operators subject to conditions including public service obligations.

The report quotes evidence of other sectors, including low cost airlines, airports and rail freight, as well as open access competition where it does exist in Britain and elsewhere, on the benefits of competition in the market. However, none of these addresses the issue of replacing competition for the market with competition in the market, while in some cases claims for the success of the policy have been accepted uncritically. For instance the report seems to attribute the growth of rail freight traffic and productivity in Britain entirely to within mode competition, when the increased

traffic is entirely for two commodities – coal and containers – where there has been a massive growth of tonne kilometres in total (for coal due to substitution of domestically produced coal by imported, and for containers because of the growth of world trade). As is acknowledged, road competition is a powerful force for improving the efficiency of rail freight, regardless of within mode competition. A recent international study (EVES-rail) failed to find any impact of within mode competition on rail freight or passenger efficiency.

used networks, and why the McNulty report in Britain advocated a degree of reintegration, via joint ventures or alliances between the infrastructure manager and franchisees. The CMA options would greatly weaken the ability of such alliances to improve efficiency.

The document fails to recognise two other key characteristics of rail networks. The first is that they provide an integrated network of services with many passengers changing trains *en route*. This is as true of the most profitable main lines as of other services. An attractive timetable and fares structure needs to



## Less spare capacity, not more

The CMA report accepts that further competition should not be introduced until existing franchises have terminated, and until investment (including ERTMS) has produced spare capacity on the network. But given forecast traffic growth, there will be less spare capacity, not more, for many years to come (only HS2 might reverse this for limited parts of the network). Moreover, to actually build-in spare capacity is wasteful. Efficient rail systems require future timetables and infrastructure investment, maintenance and operations to be planned together. This is one reason why the EVES-rail study found vertical separation increased costs on densely

consider the spacing of trains and these connections. Failure to do this loses many opportunities in terms of quality of service, as the recent Network Rail report on East Anglia illustrates. That report demonstrates that we are not currently making the most of the opportunity to achieve this through the franchising system, but all the CMA options would seem to take us further away from this objective.

The second is the widespread significance of fixed and joint costs. It talks of moving to a more cost-reflective system of rail track access charges which would recover more costs from operators. To an extent this is reasonable; existing track access charges in Britain recover

a lower proportion of maintenance and renewal costs than econometric evidence suggests. They actually vary with use of the infrastructure and do not adequately reflect scarcity of capacity. But even if charges genuinely reflected marginal social cost, there would remain a large fixed cost to be covered either by government grant or by seeking to recover it from users in the most efficient way possible. This is likely to be by a two-part tariff (a fixed charge and a variable charge per path) rather than by simply raising the price per path, but reconciling this with efficient charging of open access operators remains a problem.

Reference is made to statistical evidence that rail services have significant economies of density, such that splitting services on a single route between two or more operators will, other things being equal, raise costs. This applies particularly where operators are relatively homogenous, so overlapping different kinds of franchise, such as London commuter and inter city, is less costly than having more than one inter city operator on the route. But existing open access operators have lower costs than comparable franchisees; they pay lower wages, pay less for rolling stock and make more productive use of staff. A major

reason for this is that franchisees are obliged to take over an existing company with its existing wages and working practices. Presumably this would also be the case in options 2 – 4, so it is only really option 1 that would allow exploitation of this as a way to reduce costs. Moreover, it is not clear that open access operators could achieve a significant expansion even for this option at existing wages and conditions.

**Social services**

The advantage of franchising is that it permits development of an efficient timetable, offering attractively spaced and connecting services which can make efficient use of resources. Compare this with CMA option 4, where apparently operators of commercial services will also be required to run social services (the example is given of the operator of a train between 15:00 and 16:00 to Manchester also being required to run the 23:00 to Birmingham). They can then trade with other operators in the social obligations to try to achieve a set of services that can be efficiently operated as a package, but whether an efficient outcome would result seems highly questionable.

It is true that the performance of franchising in Britain has been

**'...the CMA concentrates on the failures of franchising in the past, rather than comparing its options to a reformed approach to monopoly franchises as an alternative to more competition in the market...'**

disappointing in terms of reducing costs, compared with competitive tendering in other sectors and in rail in other countries. The McNulty report set out ways to remedy this. Some are being implemented, such as the growth of alliances between franchisees and Network Rail, and the replacement of cap-and-collar approaches to risk sharing by sharing GDP risk. Others, and in particular longer franchises, have not. But the CMA concentrates on the failures of franchising in the past, rather than comparing its options to a reformed approach to monopoly franchises as an alternative to more competition in the market.

None of this proves that more competition in the market is undesirable. But it does suggest that, before changing policy, a much more in-depth study of the issues is needed than the CMA has so far achieved.

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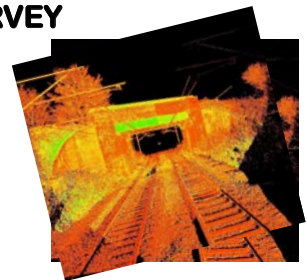


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# Another rolling stock perspective

The DfT has set out its Rolling Stock Perspective. Looking past the photos of new and modern trains, it seems there is a genuine debate to be had about the rolling stock we will be paying for over the next 40 years, says **Andrew Meaney**

**T**he rail industry continues to provide a rich seam for analysts to mine. Between announcements of a restructuring of Deutsche Bahn, the Competition and Markets Authority's discussion document on competition in GB passenger rail, and a number of reports commissioned on Network Rail, there is much to write about.

However, I would like to spend some time discussing passenger rolling stock. This is not just due to recent controversy about the Intercity Express Programme (IEP), which seems to have become the tail wagging the dog in respect of both East Coast path allocation and where to prioritise electrification schemes during CP5.

For me, there are several issues that emerge from reading the DfT's Rolling Stock Perspective, which it launched at the Rail Industry Day in July. The document seems to serve two purposes:

- to provide a response to the National Audit Office's recommendation in its report on IEP and Thameslink rolling stock procurement that the DfT 'should act to ensure that the industry understands its policy on the procurement of trains'
- to offer political direction to feed into the industry's development of its rolling stock strategy.

In this way, the document provides some helpful pointers. With the exception of the ongoing introductions



of Thameslink, IEP and Crossrail vehicles, and the impending procurement of trains to use on HS2, the DfT comments that 'any new trains on the existing franchised network will be bought in the market, by the market'. This should put to rest (at least during this Parliament) market nervousness surrounding a move in recent years away from Toc-led, ROSCO-financed investment in rolling stock. Market-led procurement has the potential to deliver passenger engagement in what is being delivered, and sensible transfer of risk to those in the private sector able to bear it.

There is also a recognition of the importance of the refurbishment of vehicles in the after-market. It is recognised that it is often possible to avoid going to the market for new trains, saving money and carbon, while maintaining the passenger experience at a high level.



Hitachi Super Express mockup

**‘Oxera’s modelling also expects an increase in the overall fleet, but by a rather smaller amount – we predict the fleet needs to grow by between 2,100 and 2,800 by 2024’**

There are also, perhaps, some less helpful elements in what DfT is saying. The Ministerial Foreword sets out a vision for ‘extremely modern, well designed’ trains that enable smartphone connectivity and charging points.

Relatedly, the document reiterates the industry’s rolling stock strategy, which predicts that by 2024 the total passenger fleet will need to have increased by between just over 2,800, and just under 4,000 vehicles. These figures are across the entire GB network, and are driven by a

mixture of new routes, electrification and expected developments in demand.

Oxera’s modelling also expects an increase in the overall fleet, but by a rather smaller amount – we predict the fleet needs to grow by between 2,100 and 2,800 by 2024. As I mentioned in my article in the June issue of *Rail Professional*, I’m less sanguine about the industry’s demand prospects, due to expected improvements after 2020 in the cost and performance of the car alternative.

And this is before accounting for an important item that is completely ignored in the DfT’s document – namely demand management. The DfT’s Perspective is long on solutions to capacity shortages that range from optimised maintenance regimes, to enhanced braking systems and that old chestnut double-decker trains. But in a world in which DfT is being asked by Treasury to model scenarios including 40 per cent reductions in spending, managing demand, as opposed to accommodating it by increasing the number of vehicles (with the associated increase in costs), deserves a mention.

**Carrots and sticks**

A number of pieces of work I have been

involved with suggest that substantial sums of money can be saved – in terms of requiring fewer extra vehicles to be bought – by nudging passengers to use alternative trains to make their journey. The key point is that it is only a handful of passengers who need to move, in order for the existing fleet to be able to accommodate the remainder.

The incentive to move doesn’t have to come through price. Warning people that certain trains are likely to be busy is an excellent first step that some train operators are already employing. ‘Carrots’ can also be employed – such as free beverages for taking earlier or later trains – before ‘sticks’ such as more dynamic pricing that charge passengers more for entering a platform at the busiest times. A mixture of these measures can prevent extra vehicles from being needed to accommodate demand growth on some of Britain’s busiest lines for up to a decade.

My perspective is that before introducing new vehicles that will need to be paid for over a 40-year horizon, alternative avenues – including pushing some passengers onto different trains – have to be worth considering.

Andrew Meaney is partner and head of Oxera’s Transport Team. Visit: [www.oxera.com](http://www.oxera.com)



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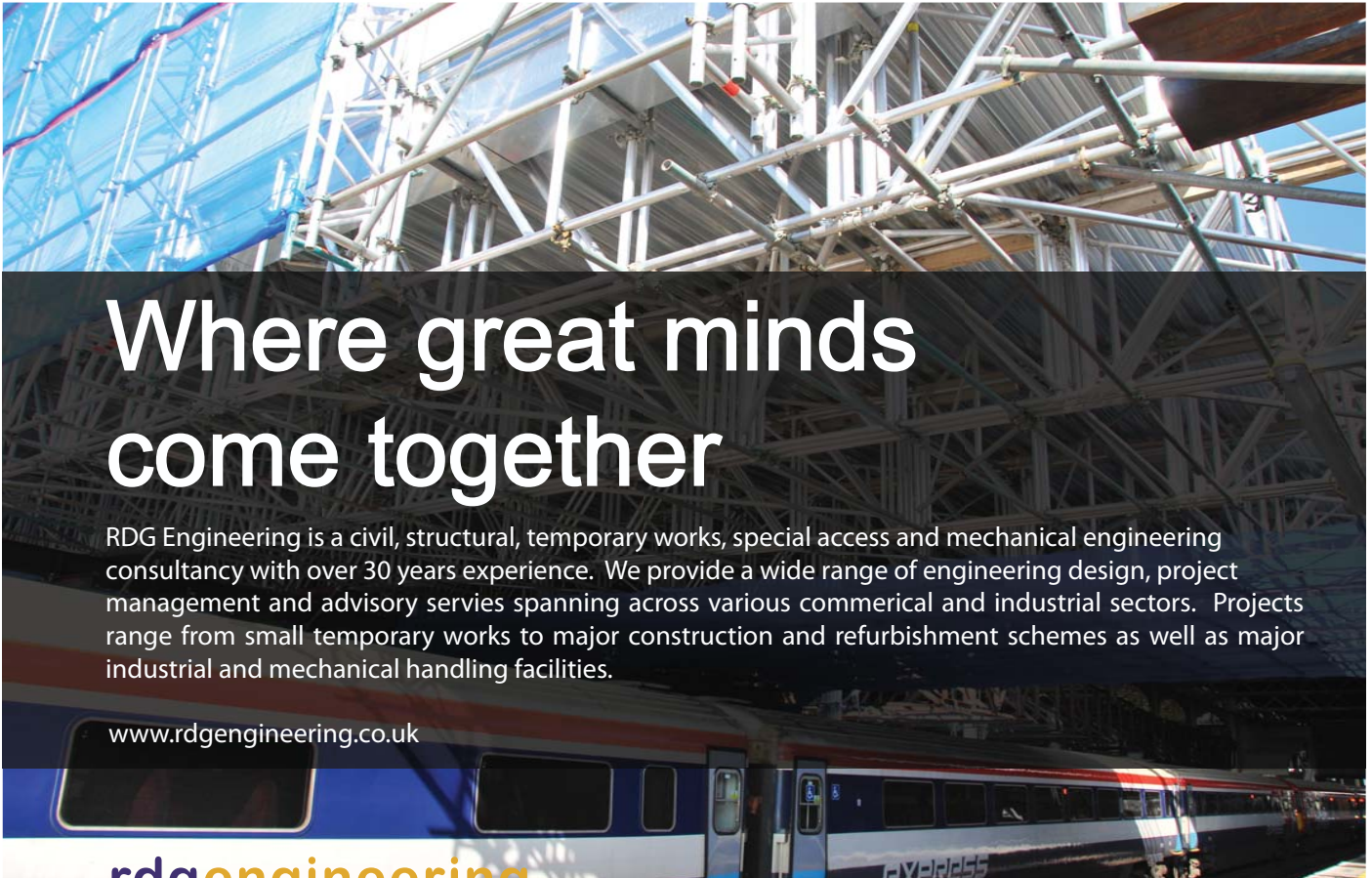
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# Time to ride the digital revolution

The industry needs a new solution to what it can deliver with how it currently operates, and a digital railway can provide it, believes **Philip Hoare**

**D**igital as a subject appears everywhere. Each year the government publishes new papers highlighting how we need to be prepared for a digital future. We hear statements such as 35 per cent of current UK jobs could be automated within the next 20 years and that digital skills are now life skills. All sectors of the economy can't fail to be touched by this, but what will it mean for the rail industry?

In engineering the digital revolution is slowly exploding into life with BIM, big data and automation of the design process becoming commonplace. Data and cyber security are also making headlines.

The UK is seen as having one of the fastest growing and most successful rail networks in Europe. However, it is also operating on some parts of the network

using equipment which is 30-40 years old and in some cases even older. With an increase in urbanisation coupled with the implications of population growth and changing economic priorities, rail infrastructure is set to face a period of incredibly high demand while operating at near full capacity. We have reached the limit in what we can deliver with how the railway currently operates. The rail industry needs a new solution and I believe a digital railway can provide one.

In 2012, the industry published the *Rail Technical Strategy* which focused on the 4C's: capacity, customer experience, carbon reduction and cost. These are all important but the most compelling is capacity, and this is where the digital railway can realise significant benefit. In October 2016 a business case will be made to the Treasury for the creation of a fully-funded digital railway with work

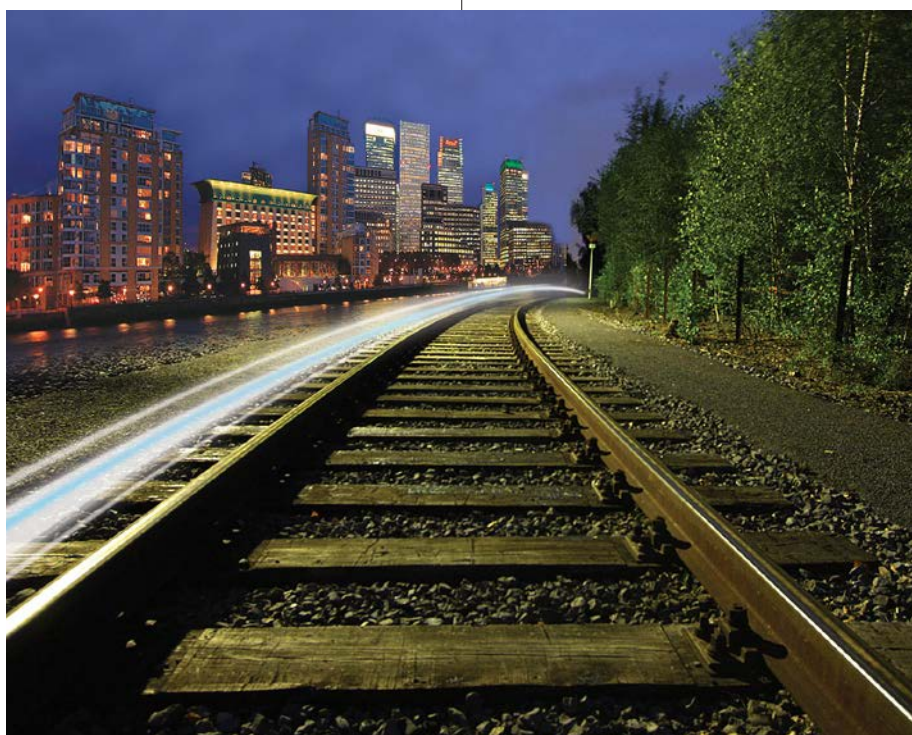


due to start in 2019. Atkins is part of this programme and involved in outlining the business case including creating the architecture for what a digital railway will look like.

It is widely recognised that a digital railway will be a major driver for economic growth, increasing productivity by solving capacity challenges to help people move around the network, encouraging investment and export, providing cost reductions, increasing safety, cutting carbon emissions and improving the customer experience. These are impressive statements to make.

#### So what exactly is a digital railway?

A new method of train control is at the heart of the digital railway. The way trains have been controlled hasn't changed in 180 years. In the future world, the trains themselves will know when to alter speed and how close they are to other trains automatically – speeding up the process,



increasing the number of trains on the line and increasing capacity without the need for additional infrastructure. The anticipated benefits include increased reliability and safety, better utilisation of line speed and, for the environment, trains starting and stopping at stations rather than at signals - increasing fluidity. All of this contributing to providing a better experience for passengers.

But the overall picture gets even bigger. I see a future where, as the Internet of Things evolves, the assets themselves will know their own condition. For example, the inspecting of tunnels and bridges can prove disruptive and be a safety issue for operators. If they were built with smarter composite materials already connected to some sort of IP infrastructure, each asset would be able to report on its own condition without the need for the line to close or for humans to go out and directly inspect.

Another important factor is enhancing the customer experience. Imagine receiving a notification on your phone or device advising you the next train is full but the following one is empty, allowing you to make a real choice regarding when to travel before you leave home and not while stuck on a platform.

Modernising the rail industry is not

a new concept. At present, Network Rail is applying modern signalling systems across the network to enable a safer, more reliable and efficient infrastructure. That is why Atkins is investing in a new signal interlocking system, ElectroLogIXS. In some cases, the structures replaced were up to 100 years old. But these improvements are not just about signalling equipment; they also encompass a broader spectrum of activities and developments to deal with the challenges ahead and pave the way for the digital railway.

The notion of a digital railway is increasingly relevant. It is about defining the next generation of rail travel and creating a step change in industry practices, one which makes room for modernisation and embodies the overall customer experience. The challenges we have today are not simply in relation to the desperate need for increased capacity but also focus on the growing need to develop and implement an integrated rail service system.

In addition to more business opportunities, the digital railway will fuel the demand for new skills and expertise – particularly around big data solutions. Evaluating the information collected and translating this into meaningful

actionable decisions will stimulate growth opportunities. For example, data collected can be administered to improve communication between operators and passengers – providing real-time information which directly corresponds with real-time demand.

We cannot deny the fact that the digital transport revolution is here but we can welcome and be excited by the opportunities that it will present. The time has come for those in the rail industry to embrace modernisation and the positive changes it will bring.

But with the potential turmoil and uncertainty that spending and organisational reviews will no doubt bring to our industry, we must work to preserve a focus on the future that is the digital railway and avoid the risk of falling further behind our customers' expectations and distancing ourselves from the innovation and new technology that will become the norm among our worldwide competitors.

Philip Hoare is group managing director of Atkins' Transportation Division



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# Day tripper

RSSB's **George Bearfield** talks about passenger safety on trains and in stations

**O**ur latest statistics and analysis show that the train continues to be one of the safest ways to travel. Yet no one is complacent and our in-depth annual safety reports provide the evidence base for industry to identify key areas for action, and inspire collaboration to improve even further.

Rail companies have to manage safety to comply with legislation and so they need access to reliable, high quality data to understand the nature of the issues they face.

Likewise, funders and the regulator want to know that investment is leading to outputs and outcomes which reflect a well-performing railway, including its safety aims and an informed understanding of the risk.

Our members rely on us to produce the *Annual Safety Performance Report*, the *Learning from Operational Experience* annual report (and associated regular reports and bulletins) as part of their evidence base for decision making. This is relied on by cross-industry groups to focus on the risk and avoid spending time, effort and money on areas that will yield little or no benefit.

The big picture is that 1.66 billion passenger journeys were recorded in

2014/15: a four per cent increase from 2013/14. There has been a 54 per cent increase in passenger journeys, a 46 per cent increase in passenger kilometres and an eight per cent increase in train kilometres over the past 10 years. Against these increases, the risks affecting those that travel on or work for the railway have generally remained stable or have improved. This is the eighth year and the longest sustained period with no on-board passenger or workforce deaths in train accidents (derailments or collisions). Across Europe, Britain's safety performance for passengers, workforce and level crossing users ranks at or near the top.

This is all positive, but it is important to remember that you can have no accidents but still have risk present, and likewise situations where risk continues to be generally low even if a serious incident has occurred. Decisions about safety would tend to be risk-based and not based solely on past performance. After all, you can take a flight of stairs in your own home ten times without incident, but they still represent a calculable risk of tripping or falling.

### Understanding the risk

So with such a substantial increase in



passengers, what's happening to the risk they face as they use the railway?

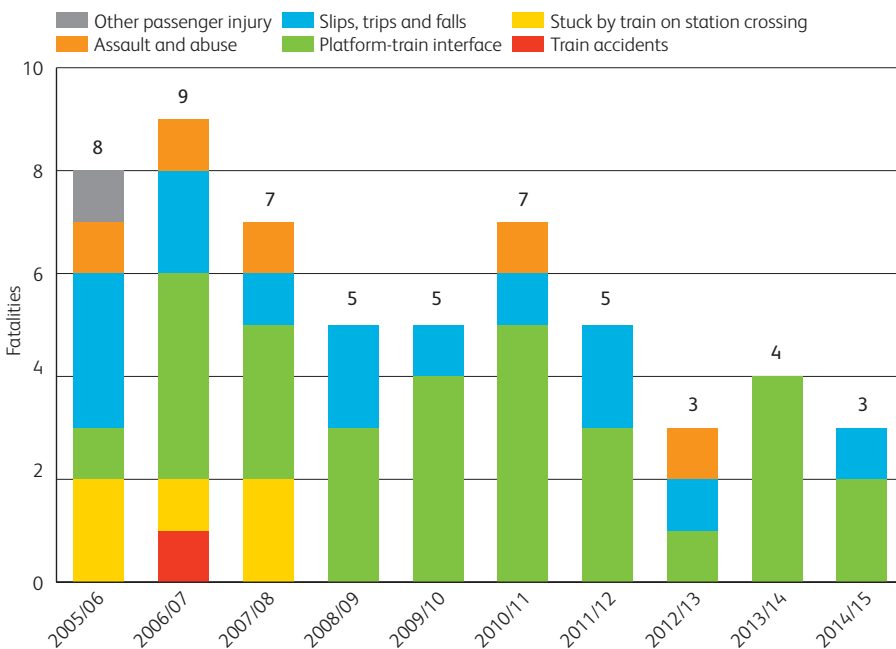
In 2014-5, there were three passenger fatalities. All occurred in stations where the majority of fatalities happen at the platform-train interface. But these are not exactly everyday occurrences (thankfully), and so we need to delve a little deeper into the numbers to understand the risk to passengers more generally.

A universal measure for harm and risk is 'fatality and weighted injury' (FWI). This is a way of measuring the level of harm or risk in a consistent way, by combining the fatalities, major injuries and minor injuries in one unit of measurement.

Specific definitions can be found on our website. By way of example, a major injury – generally requiring more than 24 hours in hospital – is equivalent to a tenth of a fatality. This can seem cold to the uninitiated, but it does provide a relatively rational way of articulating the nature of the total risk present.

By weighting non-fatal injuries by a lesser amount than fatalities, the industry can ensure that safety expenditure is directed in a consistent way; those accidents that have the potential for serious consequences are addressed, without ignoring the types of incident that generally have less severe outcomes. When the number of non-fatal injuries is taken into account, the total level of

### 1. Passenger fatalities by accident type



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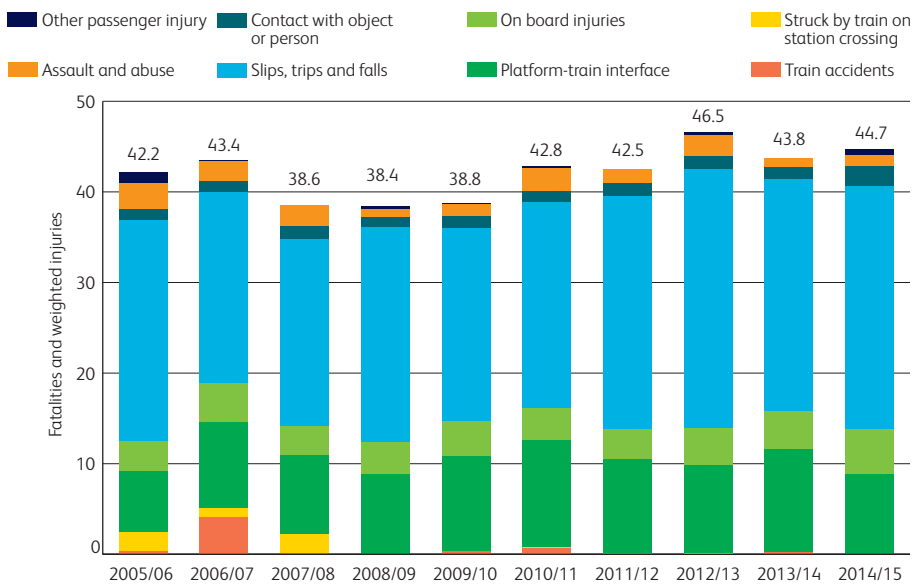
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2. Passenger FWI (harm) by accident type

harm occurring to passengers was 44.7 FWI, compared with 43.6 FWI for the previous year.

The area of slips and trips is particularly worthy of attention, as it is the main source of total harm to passengers, as measured in FWI.

During 2014/15, slips, trips and falls in stations resulted in one fatality, nearly 200 major injuries and around 3,500 minor injuries.

Over the last five years, the greatest proportion of harm from slips, trips and falls in stations occurred on stairs (37 per cent), with platforms being the next most common location (27 per cent).

Escalators typically contribute a lower level of harm but there are fewer escalators than stairs on the rail system. There has been one fatality resulting from a slip, trip or fall on an escalator in the last five years.

It's important to remember that the majority of incidents do not result in serious injury, and that those that do still represent very small numbers in proportion to the 1.66 billion passenger journeys. But the rail industry still needs to manage the risk it faces.

Collective strategies

Opportunities for the railway to collaborate are structured usefully in a framework of cross-industry groups feeding into the RSSB Board. This includes the System Safety Risk Group (SSRG), which exists to understand 100 per cent of the risk facing organisations with a legal duty to manage and cooperate on rail safety issues. The group identifies areas for improvement, facilitating collaboration across the industry including sharing good practice and horizon scanning to identify potential threats and opportunities.

The group includes representation

from Network Rail, passenger train operators/ATOC, freight operators, infrastructure companies and on-track machine companies, suppliers, London Underground, rolling stock leasing companies as well as observers and associate members from the British Transport Police, ORR, and trade unions.

Reporting into SSRG are a range of sector groups, project groups, regional/route-based groups as well as groups dedicated to specific risk areas including a People on Trains and in Stations Risk Group (PTSRG).

These groups provide the opportunity for industry to consider collective strategies for risk at stations, including slips, trips and falls. A key pillar is the *Platform Train Interface Strategy* published earlier in the year, which while focusing on the risk from the gap between the platform and train, has also spawned benefits for broader station safety, such as slips and trips.

An example is the cross-industry *Lead a helping hand* campaign where the key messages include gentle persuasion to avoid rushing and being considerate to fellow passengers.

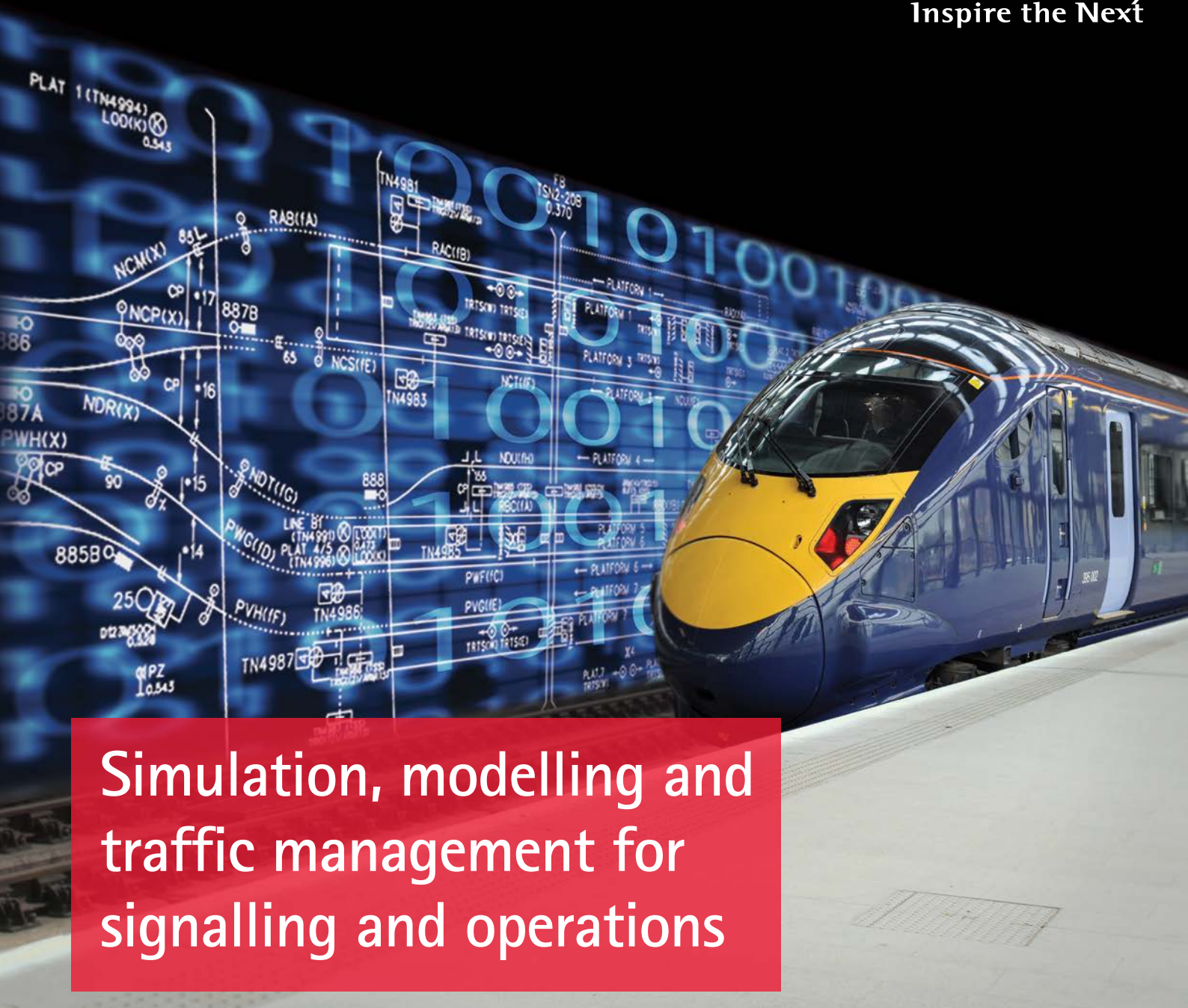
Clearly there are no magic wands, but hopefully our in-depth reports show both that industry is focusing its efforts in the

**'It's important to remember that the majority of incidents do not result in serious injury, and that those that do still represent very small numbers in proportion to the 1.66 billion passenger journeys. But the rail industry still needs to manage the risk it faces'**



right areas but also highlighting those issues which warrant further attention. By providing the evidence base for action and inspiring cross-industry collaboration we can help those that work or use the railway get home safe, every day.

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George Bearfield is director of system safety at RSSB



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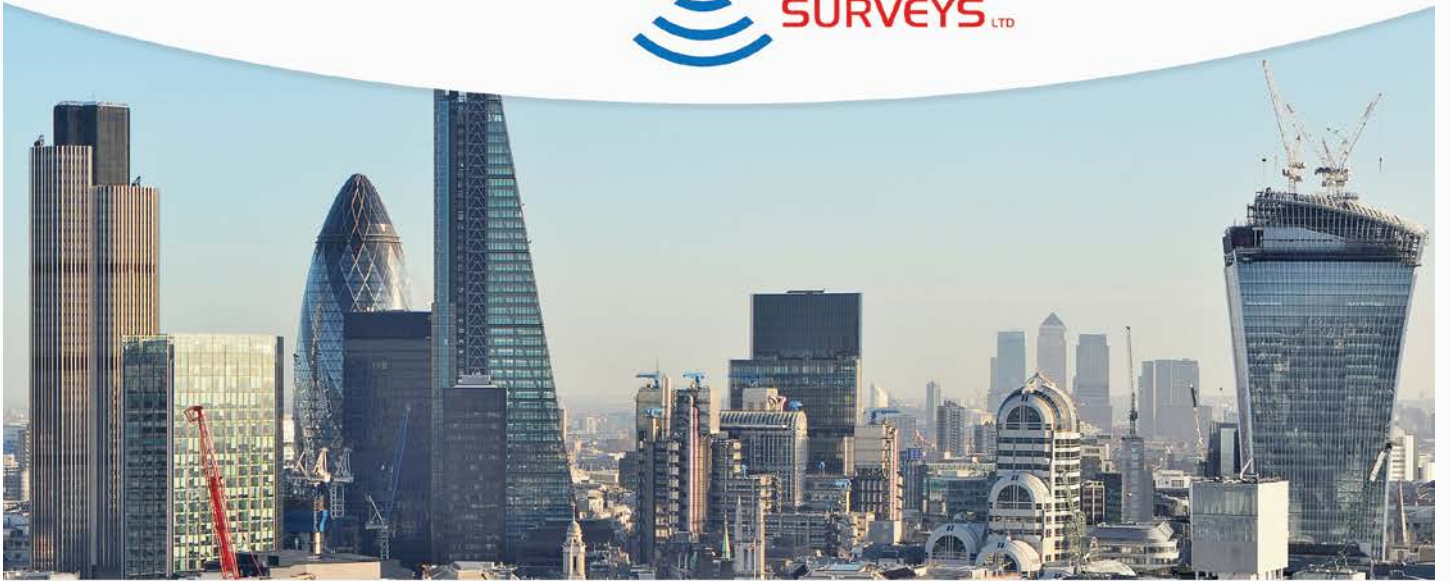
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# All change please?

Strong and stable leadership to fend off the inevitable political interference is all UK rail really needs, says **Toby Ashong**

Half way through the year seems a good time to take stock of UK rail. As with much of our infrastructure, it is still far too politicised and suffers, as a result, from a lack of long-term, consistent direction. Ultimately the tax-paying public suffers for this in the form of long-term inefficiency and slow decision-making. It does, however, also make for a rather tricky industry to operate in. With a flurry of high profile embarrassments from crushed commuters at London Bridge to the nightmare before Christmas at King's Cross; pre-election talk of re-nationalisation and fare freezes; various polls reflecting a general public dissatisfaction with the current state of our railways; and a long-understood but until now little-publicised gap between promised plans and likely deliverability, it was never going to be a vintage year for our railways.

So as Network Rail faces an almost existential threat and a crisis of political confidence, how did we get here and what might the future hold?

1. This phase of the journey has started and will no-doubt end with the notion of devolution, a concept introduced during the last control period and under the previous management team by Sir Roy McNulty's *Rail Value for Money* study. Among many things, the report spoke of the need for more devolved decision making within Network Rail. More recently Richard Price, CEO of the ORR, has stated his belief that handing control of delivery to front line route managers to create competition with the monopoly is the way forward. This of course resonates well with the current general political rhetoric towards devolution. The journey began several years ago but clearly has not yet reached its destination.

2. Last year ended badly for Network Rail with critical work over the Christmas break overrunning and creating a PR disaster. At the time, I accused it of behaving like a PR virgin. While 11,000 engineers toiled on Christmas day to deliver crucial work as part of a £200 million upgrade, they were lambasted for poorly managed communication and coordination allowing work that should

have been celebrated to become the device with which they were flogged. The overruns and the resulting disruption were all very real but I do wonder how far good communications could have gone to preventing much of the reputational damage. There is, after all, such a huge amount of impressive work being done

reflected a clear commitment by the Conservatives to make the franchise model work. On the eve of the re-privatisation, Lillian Greenwood, MP for Nottingham South and shadow rail minister, wrote an eleventh-hour plea (from one of the last East Coast services under public operation of course) on



Jeremy Corbyn – the war is certainly not over as far as he is concerned

every day on one of the developed world's most over-stretched bits of infrastructure while it remains almost constantly in use by passengers who remain mostly unaware. It's impressive stuff but we only hear about the failures.

3. The New Year then started with the East Coast Main Line, an apparent triumph of state-run success, falling (or rather being pushed) back into private hands. With surprisingly satisfied customers and the most engaged employees in a UK train operating company, it even used to turn a profit as one of only two routes in the country that pays more back to the government than it takes in subsidies: for purveyors of privatisation that was a politically inconvenient state of affairs and had to change. But whether more political dogma or just good economic sense, it

why this was not the end of the line for rail reform. 'The fight to keep East Coast public may be over, but the wider battle to reform our railways is only just beginning' she said. This sentiment has since been very much reinforced by Jeremy Corbyn garnering him much support from Unite among others. The war is certainly not over as far as he is concerned.

4. Four years ago, the aforementioned *Value for Money* report spoke much of an efficiency gap. Back in April, I wrote about how the out-of-reach efficiency bar was getting ever further out of reach for Network Rail. Quoting the board meeting minutes on its talk of 'difficult choices' having to be made to 'bring the business back to plan' I spoke of the huge efficiency challenge being faced and the inevitable need for cuts that

**‘Cameron’s pre-election fare-freezing pledge does not help the equation either, although this circle can, and probably will, be squared simply through some fiscal jiggery-pokery that re-allocates a little cost from the fare-payer back towards the tax-payer. So however politically or publically unpalatable it may be, now is hardly the time to cut’**

this would bring. It now seems that my talk of impending doom may even have been a little over-positive. The scale of the challenge that Network Rail faces has now brought the very existence and structure of the business into question.

On the other hand, passenger numbers in the UK are growing faster than anywhere else in Europe and in most cases several times so. On top of that, we still have a great deal of catching up to do (the new blue-eyed boy of UK rail, the so-called Digital Railway, is mostly about catching up with a signalling system already used widely across continental Europe). Cameron’s pre-election fare-freezing pledge does not help the equation either, although this circle can, and probably will, be squared simply through some fiscal jiggery-pokery that re-allocates a little cost from the fare-payer back towards the tax-payer. So however politically or publically unpalatable it may be, now is hardly the time to cut.

5. So, now we have not one, not two, but three government reviews despite the reality that many of the findings of the last one remain entirely valid and at best part-implemented. In an era of unprecedented levels of project and upgrade work that need to be delivered

and run more efficiently than ever before, amidst a looming skills shortage and the ongoing loss of leadership talent; what Network Rail needs is not more good ideas for how it should change but rather more good implementation of that change.

So as the nights draw in: devolution, communication and collaboration, a more stable franchising system, the ongoing drive for greater efficiency (enabled by all the prior items) and government reviews will dominate the second half news agenda. Everything old is new again. The industry can look forward to more of all of them except hopefully the last. In all honesty, strong and stable leadership to fend off the inevitable political interference is all UK Rail really needs.

With the strong personality and hands on experience of Peter Hendy now alongside Mark Carne, Network Rail may just have the required strength and stability to face down the meddlers. Once the reviews have concluded and the political dust has settled - and if the temptation to change for change’s sake can be resisted - far from being the end of the line, this may just be the start of an exciting new journey. All aboard!

Toby Ashong is head of infrastructure at KPMG Boxwood



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# #womeninrail

Hashtags have raised the profile of women with successful careers in STEM subjects. Wouldn't it be fantastic if rail created its own hashtag that lets the world know how amazing our industry is, suggests **Jodie Savage**

**S**ocial media hashtags such as #notjustforboys #distractinglysexy and #iLookLikeAnEngineer are showing the world that girls are owning jobs that are stereotypically perceived as 'male-only'. They champion diversity and show that being an engineer can be much more than wearing a hi-vis jacket and a hard hat.

The government's #notjustforboys campaign was created to promote the flexibility of women's career options. Having begun in January this year, it continues to inspire women to make career decisions that suit their personalities, skills and interests, and not to let the traditional profile of a worker within a certain industry limit their options. Women in Rail proudly supported this campaign by encouraging women in STEM to showcase their job to the world. Social media gave these women a platform to display the variety of

projects they worked on to thousands of girls and boys across the country. A simple hashtag enabled them to show their collective successes that will hopefully have inspired women across the country to consider STEM careers.

Sir Tim Hunt, the 2001 Nobel Prize winner in Physiology or Medicine, made controversial comments at the World Conference of Science Journalists in South Korea on 9th June. His words: 'Let me tell you about my trouble with girls. Three things happen when they are in the lab: you fall in love with them, they fall in love with you, and when you criticise them they cry' caused a social media frenzy, and propelled women in STEM back into the Twittersphere. This comment was followed by the tag '#distractinglysexy' which enabled thousands of female scientists and engineers across the world to unite by sharing selfies of themselves at work. These selfies ranged from women wearing



spacesuits, conducting experiments in laboratories through to women digging in the desert as well as leading their team in



a meeting. Despite Tim Hunt's comments being perceived as negative, they enabled women in STEM to use social media as a medium to demonstrate just how many women out there encompass these roles and the pride they have in their careers.

**Answers on a postcard please**

Most recently, Twitter has become a vehicle for female engineers to dispel the myth that all engineers are men. The hashtag #iLookLikeAnEngineer united these voices by connecting selfies posted by women engineers working in technology groups, universities, software and engineering companies. These women leveraged this opportunity to promote the wide variety of roles females are championing in engineering. What's great about this is that it isn't just about sexism. Tweets have also been flooding in from other engineers who didn't feel they fit the 'stereotypical image' of an engineer, growing this hashtag into a vehicle to promote wider diversity in engineering.

While some of these hashtags began as a result of something negative, they have all succeeded in raising the profile of women who have successful careers in STEM subjects that span multiple industries. The selfies are a powerful communication tool and the viral

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hashtags enables these images to be seen by thousands of people such as: women in engineering who may feel like the odd one out, young girls who are about to make important decisions about which subjects to study, and graduates considering where to begin their career.

I wholeheartedly support these Twitter campaigns and I think it would be fantastic if the rail industry could create

a hashtag which goes viral so that we can let the world know just how amazing our industry is with great careers available for all people. So, get your thinking caps on and answers on a postcard please!

Jodi Savage is sales account manager at Wabtec Rail and a board member of Women in Rail  
LinkedIn: Women in Rail  
Twitter: @WomeninRail  
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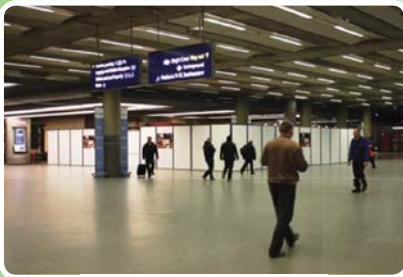
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**IRO students celebrate success**

**O**n 1st July the Institution of Railway Operators was delighted to see students from its certificate, diploma and degree courses in Railway Operational Management attend their graduation ceremonies. These students have all demonstrated their commitment to the industry and professional learning and we would like to wish them all the best for the future.

*Certificate:*

Martin Edwards (First Great Western); Robert Kitley (First Great Western); Jane MacLennan (Network Rail); Jordan Morris (First Great Western); Stephen Parker (Govia Thameslink Railway); Ellie Powers (First Great Western); Matthew Ryder (First Great Western); Alexander Wall (First Great Western); Zac Weallans (First Great Western); Niall Wiggins (First Great Western).

*Diploma:*

Pamela Nakazzi, (Southern).

*Degree:*

Damian Agnew (Translink); Andrew Bolton (Southern); Sandra Bregger



Richard Clevett

(Southern); Helen Bullock (First Great Western); Kathleen Carroll (First TransPennine Express); Richard Clevett (Network Rail); Stephen Duckering (First Tram Operations); Elizabeth Lumber (Southern); Mary McCrum (Translink); Joel Mitchell (South West Trains); Paul Neve (Network Rail); Tony Prankett (Network Rail); Stewart Prentice (Direct Rail Services Ltd); Babita Sohal (Heathrow Express).

with Felixstowe, Southampton, Tilbury and London Gateway. Members further learnt a little about Freightliner Heavy Haul and other parts of the Group such as the maintenance business.

Following this presentation and a lively Q&A session members then moved on to visit the depot itself, just in time to see a Freightliner train arrive from Southampton.

During the tour members were told about the different types of wagons, including those designed to convey 9ft 6in containers that were present. They were also able to see containers being loaded and unloaded by the huge gantry cranes, as well as being moved to and from storage. One crane is 40 years old and still going strong!

The speed of work was impressive and operations were helped by the electronic system for locating the boxes and allocating space on the trains. We would like to thank our hosts for giving IRO members the opportunity to learn and develop their industry knowledge.

If you would like to find out what IRO events are on in your area please visit [www.railwayoperators.co.uk/whats-on](http://www.railwayoperators.co.uk/whats-on) or, if you are not a member, visit [www.railwayoperators.co.uk/about/corporate-members/](http://www.railwayoperators.co.uk/about/corporate-members/) to find out if you are eligible for free membership!



Elizabeth Lumber



Sandra Bregger

**Exploring Stourton Freightliner Terminal**

**A**t a recent North East Area event, IRO members were given behind the scenes access to see first-hand how this busy modern terminal operates. On arrival members were given an introduction to the company followed by an explanation of the train services and how the terminal operates.

Freightliner has recently been taken over by Genesee & Wyoming, which operates railways in Europe and Australia as well as the USA, and members were impressed to hear of the organisation's very strong safety culture. Freightliner's main business is container traffic to and from deep sea ports, and Stourton has six services a day connecting the terminal

**A trip on the New Measurement Train**

**M**embers of the North East Area enjoyed a fascinating and informative trip on Network Rail's New Measurement Train (NMT). The event gave them the opportunity to see at first-hand how Network Rail employs advanced technology to measure the condition of the track and overhead line equipment, and how this data is used. Members were welcomed on board the train's conference room at Newcastle station by Mandy Breen, on train customer support manager, prior to departure for Carlisle, and given a safety



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briefing and an introduction to the NMT and what it does.

The NMT is a converted Intercity 125 full of advanced detection and recording equipment, including scanners, lasers and digital video cameras. It can instantaneously measure and report on the condition of the track and other components.

Among other things it:

- counts every single sleeper and even individual rail clips
- takes high-resolution digital images
- measures even slight oscillation (bounce) and noise
- checks the 25 kV overhead cabling system that powers electric trains

...and all this while travelling at up to 125 mph!

The NMT gives extremely accurate reports on the type and exact location of even very small maintenance

requirements. The sheer volume of data recorded is impressive, as well as the significant improvement in personal safety as a result of the reduced need for permanent way staff to patrol the track on foot.

On the journey from Newcastle to Carlisle members observed recording being carried out both in the operations vehicle, where routine measurements are made, and the development vehicle, where new measuring equipment is tested in a live situation.

After a break at Carlisle the train continued to Leeds. During the journey members were able either to further experience the recording vehicles, or relax in the conference room, enjoying a driver's eye view of the scenic route on the large screen.

Our thanks go to our hosts for giving IRO members access to behind the scenes and the opportunity to learn more about the wider industry.

### Have you joined the IRO?

The Institution of Railway Operators is a focal point for raising standards through operational training, sharing knowledge and expertise to provide their members with the very best

developmental opportunities. The Institution delivers a range of career-enhancing courses tailored specifically to the needs of the industry, all of which lead to internationally recognised qualifications.

As well as this, the IRO has a commitment to lifelong learning and has developed a range of Continual Professional Development activities to identify, define, improve, develop and monitor relevant professional skills and work-related knowledge to support your on-going career. This year *IRO Learn* was also launched – this new online learning platform offers a variety of courses that can be studied at a pace that suits you.

**Why join?** Membership of the IRO will give you access to a great network of professional expertise, professional development opportunities, industry endorsed qualifications and professional affiliation and recognition. Furthermore, if your employer is a Corporate Member of the IRO you are eligible to join the Institution of Railway Operators for free!

If you would to join or find out more please visit [www.railwayoperators.co.uk/](http://www.railwayoperators.co.uk/) membership or alternatively, call 03333 440523.

## Diary of events

**To get involved with your regional IRO Area please get in touch using the contacts below**

### Irish Area

Hilton Parr  
i.chairman@railwayoperators.co.uk

### Scottish Area

Jim Douglas  
s.events@railwayoperators.co.uk

### North East Area

David Monk-Steel  
northeast@railwayoperators.co.uk

### North West Area

Carl Phillips  
nw.chairman@railwayoperators.co.uk

### Midlands Area

Rachel Heath  
m.events@railwayoperators.co.uk

### South West Area

Martin Bonnington  
sw.events@railwayoperators.co.uk

### South East Area

Omar Soares  
se.comms@railwayoperators.co.uk

### Young Operators

Petr Mikyska  
yo.events@railwayoperators.co.uk

### Tuesday 15th September - 16:00-19:00

#### Harrogate line signalling experience and social evening, Harrogate

North East Area  
Members will depart York on the 16:11 train to Harrogate. Following the event there will also be a social at the Harrogate Tap.

### Thursday 8th October - 17:00-19:30

#### Hands-on signalling – Young Operators event, York

North East Area  
This event will give you the chance to have a go at signalling in the new Network Rail Signalling Training Centre. Please arrive at 17:00 for a 17:30 start.  
To book your place at this event or to find out more please email David Monk-Steel: [ne.secretary@railwayoperators.co.uk](mailto:ne.secretary@railwayoperators.co.uk)

### Thursday 8th October - 18:00-21:00

#### New Members' Reception 2015, London

South East Area  
A chance for new IRO members to meet those who have been around for a bit longer, as well as the Council team and invited guests.  
A senior industry figure and long-standing member of the IRO will give the welcome speech. Light refreshments and drinks will be provided. Please ask for directions to the First Class Lounge once at the pub. This event is by invitation only. Invitations will be sent to those newly joining the South East Area.

### Tuesday 13th October - 17:00-19:30

#### Looking to the Future – a talk on Interoperability by Chris Carson, York

North East Area  
This event will be held at the Virgin Trains East Coast Academy, Platform 9, York Station, York, YO24 1AB. Please arrive at 17:00 for a 17:30 start.



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‘... the things we want to see happen, for example good WiFi on all train carriages, why is it taking so long? This is an honest question that passengers ask us. Why should it take millions or billions of pounds to come in? Just get it done...’

The room we were booked to meet in was taken, and without going in and telling the interlopers to jog on as some past interviewees have, David Sidebottom immediately opted for the room next door; but having seen him through the window the women in the first room happily vacated, I got the impression, because they liked him.

With another drop in passenger satisfaction recorded for Spring 2015 I wondered if NRPS figures are influenced by rail’s frequent portrayal in the media as the bane of commuter’s lives? ‘I don’t think they are as the way we deliver and scope out the survey is all about asking passengers to rate the journey they’ve just done, and consistently it’s built a picture that when performance is bad satisfaction takes a dip – that’s the biggest driver. So when services are punctual value for money goes up and we get a halo effect that isn’t affected by a bit of bad news the night before. But bad news does impact on trust, which is not a measure of satisfaction.’

Last year Transport Focus published some work on passengers’ relationship with and trust in the industry, and what came out is that they get a lot of their news about Toc’s through external media, and that Toc’s are not controlling that agenda.

‘When they do control that agenda’, said Sidebottom, ‘through social and traditional media like station posters and leaflets there’s more of a sense of ‘Ah, now we know why this is happening we’ll cut them a bit of slack’, but when it’s via the news media it’s generally negative so our message to the industry is ‘If you can, grab the agenda.’

‘You mean Toc’s should communicate properly and effectively’ I add, ‘Yes, and know who you’re talking to, don’t do it in blanket messages, try and segment your market,’ suggests Sidebottom. ‘I know Toc’s are trying to be more sophisticated about that but there’s still a long way to go in building that level of trust and relationship with individual passengers.’

Talking about the Spring figures being down bar one or two operators, Sidebottom points to the picture in the south east quadrant as reflecting the reality of what has been a really poor level of performance for some time now. To that end Transport Focus has been asked by rail minister

David Sidebottom, passenger director at Transport Focus spoke to Lorna Slade about why Toc’s need to grab the media agenda, working with the DfT, that Dispatches documentary, and difficult questions from passengers

# David



# Sidebottom

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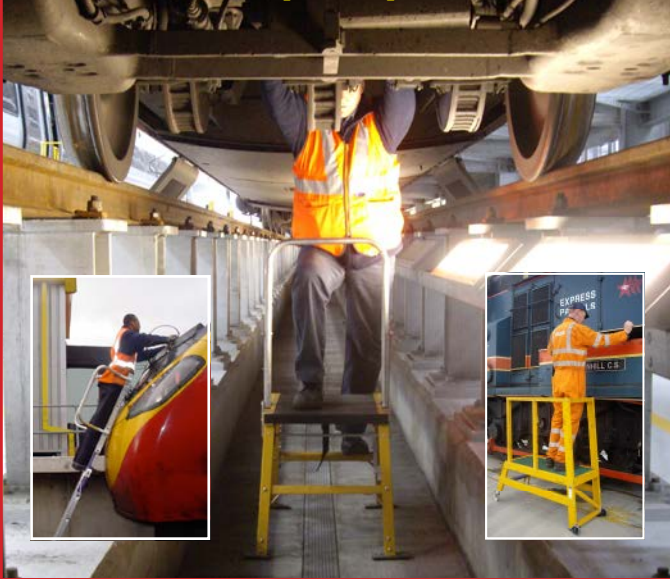
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Claire Perry MP to do some work for the south east quadrant 'task force' consisting of Network Rail, Toc's and DfT. 'She has asked us to sit around the table as a kind of 'honest voice' and as well as using traditional research methods we'll pilot a new methodology that allows us to take the temperature of how passengers feel more instantaneously. We will be a critical friend, a very honest broker in the sense of 'Look, this is getting better or that isn't'. To be around that table and indeed have the minister ask us in the first place is great.'

'But so she should really' I point out. 'Absolutely, yes, and Claire Perry is certainly driving what I hope will be the kind of improvements that passengers will see over the next couple of years.'

### What's changed?

Sidebottom laughed knowingly when I pointed out that a press release from Passenger Focus in 2012 had an identical message – namely that passengers need to have a greater say in the franchise replacement process. What has changed since then? 'A couple of things I think. One is the transformation, under Peter Wilkinson at the Rail Executive. I think what he has done, obviously with colleagues, has reinvigorated the whole franchising process and put a much clearer focus on what passengers are getting out of franchising. So he and his senior team have worked with us, and others, an awful lot to hear that. The bidding groups are encouraged as a result so they come and talk to us and the good thing is they also meet with other local rail user and pressure groups, so they're getting messages from the grass roots as well. The other significant development is that we're now part of the franchise assessment process in that we get to see the customer service elements of the franchise bids – anonymized of course – and we give things a thumbs up or down as the case may be. That's a unique position and comes with some risks and some challenges – we don't know which group is saying what but we can comment on their proposals around innovation, customer service delivery and so on.'

Customer Reports are another big development – does Sidebottom believe passengers will trust these publications? 'Its early days but we did some research around that with Abellio Greater Anglia, c2c and GTR. There is a bit of scepticism that if it's not done in the right way, if it looks a bit glossy and corporate, then it's kind of a turnoff. So the work we're doing to understand what passengers want from this kind of publication is a good thing and we've seen one or two improvements in the AGA publication. But as the franchises role out they'll 'get it' because it's a communications tool and the one thing we know from the work we did on trust and relationships is that if Toc's can control their media agenda more, as I said, they can start to build and deliver in those areas.'

In terms of how these reports will be pushed out, Sidebottom mentioned there are mixed messages from passengers on what they prefer, 'generally they tell us the meet the manager sessions are still valuable, so they could be handed out there, but Toc's

will do things differently: I know ScotRail used to have its management team out on trains,' and we chuckled at the image of men in suits bearing down the aisle looking for an earnest conversation with captive passengers.

### Closer to the heart of the industry

Transport Focus has therefore grown ever closer to the heart of the rail industry and there is no better illustration of this than that the new round of franchise contracts are seeing Toc's committing to targets for satisfaction as measured by the NRPS. 'Chiltern and I think London Midland had it before 2012 but this is something we pushed as a post-Brown review because it focuses the mind. I mean most of the operators and Network Rail use NRPS as a management tool, and even MD's have their own, or part of, their bonus appraisal system geared around that, so that's great. And it's right to focus on what passengers get versus what they want to see improved.'

Since it's sponsored by the DfT, what makes Transport Focus's work different to that which could be done at the Rail Executive, I wondered? 'We are completely independent and not affected by any kind of political pressure,' pointed out Sidebottom. 'We set our own work and agenda and instead of being involved in the box ticking contractual arrangements of franchises we're much more about the heart and mind of the passenger, and we have the ability to work with Toc's across the nation. We talk to some more than others but we get a sense of what's working, or not.'

But does he feel that his organisation's recommendations and findings are acted upon enough by government and Toc's? 'It takes a bit of time. The rail industry can be quite slow at implementing, building and doing things. We've been pleased with what's happened in the south east but that got a real push from the Rail Executive and the department. We've also seen how the industry has reacted to some of the problems in the south east. But the things we want to see happen, for example good WiFi on all train carriages, why is it taking so long? This is an honest question that passengers ask us. Why should it take millions or billions of pounds to come in? Just get it done.'

### Working in a silo

Sidebottom featured in June's Channel 4 *Dispatches* investigation, which didn't portray First Great Western in a great light. Was he surprised by what he saw? 'Well, let's be straight, I was shown some clips and I commented on them, and as a passenger advocate what else could I say? I was disappointed with some things such as the split ticketing issue because there are rules around that, but others didn't surprise me. I wonder why there is a working timetable and a published timetable for example – Marks & Spencer doesn't have two pricing guides – it should be very straightforward, 'here's a product and here's what you buy'. I realise it's much more complicated than that but I'm working on behalf of the passenger.'

Transport Focus has had some 'very sensible and mature

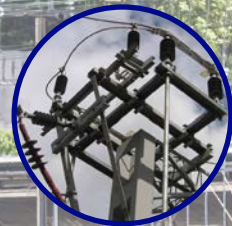


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conversations with FGW' since the documentary according to Sidebottom, who pointed out that lots of great work is being done with the Toc around how passengers are affected by the engineering works at Bath Spa. 'You know it's about lessons learned and then getting on with it. I'm sure they've done things in-house we don't know about as a result of the programme, that's for them to sort out, but passengers will be the judge of how well they perform in future through NRPS and other research.'

But do Toc's really have the right attitude to passengers? What are they getting right and wrong? Sidebottom is thoughtful. 'I think the difficulty for the industry is how do you translate sitting around a senior exec table deciding on innovations with getting them out to four and a half thousand staff working in some quite challenging conditions? There has to be a continual push right through the ranks because this is a customer service business.'

In terms of whether staff are trained well enough in customer service ethics, Sidebottom believes Toc's have to understand better that many commuters have little choice about whether to travel with them and to find ways of improving their experience. For some it's around better use of technology innovation to understand individual passengers, smart ticketing or social media, so they can push information to the customer before they even start their journey rather than them having to hunt it down, and when things go wrong to make compensation easy.

'But technology aside it's about delivery on the day,' he feels. 'Passengers like railway staff for information – we know that, so the guard on the train, the platform staff, they will seek out a human being to speak to, and if that interaction becomes strained and is frustrated it doesn't help.'

Maybe rail works in a silo and would do well to take learnings from other service leaders? 'The answer to that is yes,' said Sidebottom emphatically. 'I know at Group level people are coming into the industry from outside which is good. A colleague is meeting later with someone at Stagecoach who has come from Marks & Spencer. Whether you class that as innovation I don't know but hopefully they won't go native very quickly. You've got to hang on to that; if you trained at M&S hang on to that please!'

### Valuable input

Transport Focus handles nearly three thousand complaints from frustrated passengers per year; I wondered if some make commercially viable suggestions about rail? 'These are intelligent people and we see some very passionate arguments about why the railway should be doing this and that, but again the process of change in rail is like turning an oil tanker at times, and the cultural stuff about passengers being more than just a ticket has to change. We're seeing it slowly through the new franchising process, and it may be another two iterations before it takes hold, that's if we still have rail franchising in ten to 15 years' time; then we might see the long-term benefits.'

Should Toc's be hit where it hurts more around customer satisfaction, perhaps lessening the subsidy for example? 'That's a classic passenger-style question and a good one,' said Sidebottom. Network Rail or the operator may pick up a fine here and there but where does the money go? Couldn't it be better spent on actually improving schemes that feed back to the passenger? I think it's a fair question.'

What's the hardest question passengers ask, I wondered?



'That has to be 'How bad do things have to get before a franchise is removed from an operator?' There are lots of hurdles and steps to go through and passenger satisfaction will always play a part and there's financial stuff involved and it's wrapped up in a contract I don't understand...' So what do you say to them? 'I waffle on just like I've done to you and sidestep the issue. In fact I have every sympathy concerning problems in services, but if there are penalties and fines please invest them back in improvements. Taking two million pounds off Network Rail is not a lot in the scheme of things, it's public money coming back around isn't it, so spend it on something that helps the passenger, just don't let it disappear into the Treasury black hole.'

### Very diverse

Previously regional director of energywatch in the north west, Sidebottom has been with Transport Focus since 2006 and in his current role for one exactly one year when we met in August. His remit seems to be quite

wide and I wondered if the position has been what he expected. 'It's a great job that involves coordinating our research and policy output. I'm working with our chief executive Anthony Smith and the board and externally we're working with the Toc's, bidding groups and RDG among others; in fact I spoke at an RDG event recently on open data and transparency – I took a piece of our research to a roomful of public affairs and communications executives from the Toc's. I get to speak to politicians and I'm doing a BBC interview this afternoon on compensation arrangements in the south east. I cover a lot of bus work as well so no two days are the same.'

Sidebottom is on record as saying: 'I'm often told by rail staff that I know more than they do and I'm handy to have around when it starts to go wrong.' 'Did I say that?' he laughed. 'My knowledge of trains is very limited. I'm not a train geek, what I like about trains is people. I sit on a train and just watch the interaction between passengers and staff – I live in Manchester and I've travelled to London for various jobs for 21 years now and the change is there to see.'

Moving across questions such as whether the CMA's recommendations will enhance customer service – 'as a consumer organisation we believe choice is good', and the fact that half of Toc's have yet to sign up to the Delay Repay scheme – 'these are going to be baby steps to get to a point where automatic compensation arrives and the industry could be more proactive,' it's clear the Sidebottom's focus is innately on how passengers can be better served. As he puts it 'at the end of the day I'm an old-fashioned consumerist. I think the customer is king. People should be complaining more, people should know their rights more, and when you look at businesses such as M&S and John Lewis they make heaps of money but at the same time everyone has a warm and cuddly feel about them. Why aren't other industries in the same feel good space? And when a rail commuter spends five to six thousand pounds a year they're entitled to have their say in how that business runs and get a good service day-in day-out as well as when it goes wrong. That's a test of how a good business works.'

Finally, asked what he would like to see in terms of the future structure of the industry, Sidebottom is sure about one thing. 'I could switch my job tomorrow and do something else to do with consumers but I hope the industry never loses sight of the views and experiences of passengers – its customers – and uses them as its bedrock.'



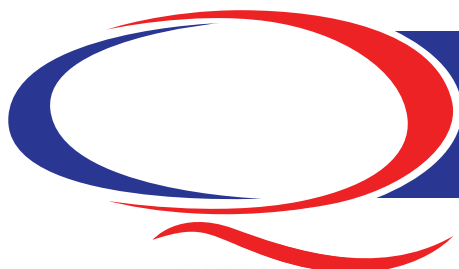
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# Getting Toc's the credit they deserve

The battle to win over the public is not lost, says **Tom Wadsworth**. So let's rise to the challenge and tell the industry's positive story in a way that really connects with people

**I**t will come as no surprise to readers of *Rail Professional* that today's rail companies are not getting the credit they deserve from the media, politicians and general public alike. In spite of growing passenger satisfaction levels, improved punctuality and better and cleaner trains, the transport sector still suffers from poor reputation.

So what's going wrong? At heart, there seem to be two major issues: trust, and communications.

It is in this light that MHP Communications recently carried out some new research to identify exactly why rail companies, among other sectors, are still not trusted today. Indeed, the MHP Effective Communications Index found that just 13 per cent of the UK public think that transport companies are open and transparent. Just eight per cent think that those companies understand their responsibilities to society.

To add to this, one third of all MPs don't trust train operating companies to deliver for Britain's railways either, according to a recent survey carried out by MHP with ORC International.

This isn't surprising. The Association of Train Operating Companies' own figures show that the public trust train operators even less than airlines, supermarkets and online retailers too.

However rail companies are now delivering nine out of ten trains on time. Coupled with the fact that customer satisfaction is around the 80 per cent mark, it is clear that good service and high customer satisfaction is not translating into widespread trust.

So why is this the case?

## The trust issue

Trust is a major driver of reputation. You can be forgiven an awful lot if stakeholders and the public at large think you're trying to do the right thing. Just look at the NHS – it can repeatedly fail to hit its targets and still be loved by the public and politicians because they

trust its motives.

It is this trust in rail companies that is missing. Just a quarter of all Conservative MP's, who might be expected to be more favourable, trust Toc's to deliver for Britain's railways. In comparison, more than half of the MP's polled trust the Department for Transport to deliver.

So, what's driving this so to speak? For some, it is an issue of accountability. A survey last year found that, for the 20 per cent of the population that favours the renationalisation of the railways, far and away the most persuasive argument was that 'railways should be accountable to taxpayers rather than shareholders'<sup>1</sup>.

Clearly, a large proportion of the population don't understand the level of control and oversight that public bodies, letting franchises and concessions, have. It may also be fair to assume that many of those polled might also not appreciate that, typically, Toc's make less than a three per cent margin.

Moreover, there is also a problem in how rail companies communicate their commitment to both customers and the national railway. While rail companies have demonstrated their commitment to both staff and passengers time and time again through the improvement of services and dedicated improvement programmes, the public are still struggling to trust them.

## Open and transparent

Part of the problem could be that people believe that rail companies have something to hide.

In our research, the UK public rated openness and transparency as the most important factor in effective communications by some margin. 84 per cent of those polled stated that this was the most important factor, over and above being a good employer, understanding societal responsibilities, talking the right language, having strong leadership, and having a powerful brand.

Our Effective Communications Index identified that the transport sector lags



far behind other public facing sectors when it comes to the public's view of its openness and transparency. For example, three in 10 of those polled feel that retail and healthcare companies are transparent and open (30 per cent and 28 per cent respectively), compared to 15 per cent for transport companies.

## Telling the right story

It's tempting to blame the media for the common misunderstandings that surround the rail industry, be it that they are greedy, poorly run or unresponsive to their passengers.

Of course these accusations are not always unfounded. Many commentators have stated that Network Rail has experienced its *annus horribilis* this year, both in and out of the press, with delayed services, serious problems at London Bridge and controversy surrounding the hiring of Sir Peter Hendy all acting to build adverse sentiment around the company.



However, the negativity surrounding Network Rail ignores the fact that it is also investing more than £25 billion between 2014 and 2019 to deliver more services and better journeys by lengthening platforms, untangling tracks, introducing electrification and building world-class stations.

With the national papers only ever presenting the public with the business's failures or wrongdoings, it is perhaps no surprise that the public and their representatives get the wrong end of the stick.

But blaming other people for not understanding is not going to get us far, and certainly doesn't solve the problem at hand.

Part of the answer may lie in the public's understanding of the sector as a whole. Just seven per cent of the UK public thinks that transport companies speak in a language that they understand, and through a media that is relevant to them. This is a disappointing result, with the sector scoring lower in this area than the retail, food and drink, healthcare, and even financial services industries.

Rail is a complicated business. But we need to talk to customers in clear and

simple language, cutting out the jargon. 'Train faults', 'track defects' and 'short forms' may be accurate descriptions, but the sector and its businesses would be far more popular if they freely admitted they had 'broken down trains', 'broken track' or 'shorter trains'. There is no real benefit in describing snow as 'inclement weather' either.

**Be clear, be simple, and be human**

Too often, rail companies tell their stories in too complicated a way, which makes them look evasive and as if they are hiding something.

The challenge is therefore to simplify the most complex of stories, and to make sure any communication is easily understandable to the public.

Train and network operators need to communicate early when there is a problem, and must move away from using boring, rational and technical terms to more clear and simple language. They must also be candid, even if that does mean being brutally honest about failings.

The most effective communications are also those that elicit an emotional response. Too few transport companies speak human.

Talking in terms of billions of dollars of investment, tens of thousands of jobs, or minutes saved is, on its own, too abstract. Transport companies need to tell their stories in terms and language their audiences can relate to. Doing so won't just mean they are seen as better communicators, but it will also help them gain the trust of their publics and their stakeholders too.

Punctuality statistics probably best illustrate

the point. The public will never believe trains operate on time, no matter what proportion of trains have arrived on time. If a late train means that a parent misses the children going to bed, it is not the statistics, but the emotional response – be it disappointment or anger – that they will remember.

**Golden years?**

This might sound all too optimistic to the hard-pressed among you battling ever-growing passenger numbers, client demands, funding constraints and a media that seems out to get you.

However, we must remember that Brits do love rail. They watch endless Michael Portillo documentaries, and remember with pride Britain's heritage as one of the world's first rail pioneers.

Clearly, the emotional response is there to be had. Not just for long-distance operators selling leisure travel, but also for the hard-working commuter operators getting people home safe every evening, or for the infrastructure providers creating skilled jobs for people right across the country.

The battle to communicate with the

**'Part of the problem could be that people believe rail companies have something to hide. Our research showed the public rated openness and transparency as the most important factor in effective communications by some margin'**

nation and to win over the public is not lost. So let's not be too depressed about what the results mean now; instead, let's rise to the challenge and tell the industry's positive story in a way that really connects with people.

Tom Wadsworth is director, MHP Communications 1. YouGov survey 2014, 'Why the public want to nationalise the railways' -<https://yougov.co.uk/news/2014/05/11/why-do-people-support-rail-nationalisation/>



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# On target

British Transport Police chief constable **Paul Crowther OBE** argues that the need for a dedicated transport police is greater than ever

**B**TP is transforming the way it works to deal with new challenges and meet the demands of increasing passenger numbers.

What was clear to me when I was appointed chief constable in May 2014 was that we needed to fundamentally change the way we worked to meet the demands of ever-increasing passenger numbers, the ambitious rail infrastructure expansion programme and an evolving terrorist threat.

We've never been afraid of change. Our unique remit to police Britain's railways – rather than a city or county – means our very existence relies on the ongoing popularity of the network. This means we embrace change and are not afraid to take risks in leading the way. More than 100 years ago, we pioneered the use of police dogs, in 2012 we responded to global events by introducing armed officers to stations for the first time, and today, we are continuing that legacy of innovation.

All of this has allowed a valuable and unique mindset to develop among BTP officers and staff over many years. It's what I like to call the transport policing ethos.

Central to this is our deep and clear understanding of the railway industry, as well as a commercial awareness of the economic and social need to keep the network running. A perfect example are our Emergency Response Units' blue light vehicles with police officers and Network Rail staff able to rapidly respond to incidents causing serious disruption to the network.

Today, I believe we are regarded as an integral part of the railway community, with strong links to Network Rail, Toc's and other key stakeholders. Together, we have been able to reduce crime for the eleventh year in a row, reinforcing the railway's reputation as a low crime environment.

I recommend you take a look at our latest set of crime stats in full, published last month (August) alongside our annual report. There are many areas to be encouraged by, not least the fact that in 2014/15, for every million passenger journeys, there were just 25 crimes recorded. While we take great pride in

our measurable achievements, we believe it is not just about keeping passengers and rail staff safe and secure but making sure they *feel* safe and secure. To do so, while passenger numbers continue to rise, is a significant challenge.

### Transforming how we work today to meet the demands of tomorrow

We are currently in the process of fundamentally transforming the way we work, to focus on: problem solving, stopping crime, offender management and a 'first fix' approach. This new way of working is centred on targeted, evidence-based policing and making the best use of modern technology. It is all about ensuring we put our resources in the right place at the right time, so passengers and rail staff are reassured by a visible police presence when the network is at its busiest.

We have already introduced new evidence-based patrol plans for officers at many hub stations, based on rigorous academic research. They use our crime data to put officers in the locations that crime is committed, at the time it is committed. It sounds like common sense, but it is totally new for us and we are already seeing positive results. You may have already noticed changes to the visibility of our officers on your stations and trains.

However, our officers cannot be everywhere, all of the time, which is



why we are investing heavily in new technology. We're currently trialing 250 body-worn video cameras for our officers. We are also investing heavily in our CCTV centre, so we can best use the extensive network of cameras on trains and stations. This includes a pilot of handheld devices able to relay live video footage to officers, in real-time, as they respond to incidents.

Furthermore, our 61016 text service continues to grow in popularity, providing passengers and, increasingly, rail staff with a simple and discreet way to report incidents to us. We continue to be the only UK force to provide such a service, yet another example of where we are leading the way.





**Expert policing for a specialist environment**

We are also using our specialist railway knowledge to focus on specific areas where we can make a real difference to passengers and rail staff. This year, we will be focusing on sexual offending and the unacceptable anti-social behaviour demonstrated by a minority of football supporters.

Raising public awareness of unwanted sexual behaviour and encouraging people to report offences has been a priority for some time, and that has continued with the recent launch of a national campaign – *Report it to stop it*. Developed in partnership with Transport for London, it is aimed at increasing the reporting of an issue we know goes largely unreported, helping us catch offenders and prevent it happening again. The campaign video has so far been viewed by more than a million



people on YouTube.

As the new football season gets underway, we will be taking a more pro-active approach to the policing on match days. While we have come a long way since the years of violent football hooliganism, every week passengers and rail staff are exposed to widespread anti-social behaviour and low-level disorder. I believe we have become too tolerant of such behaviour, which makes some passengers afraid to travel by train on match days. That's why in April this year, I invited leading figures from rail and football to a summit to discuss the issue. We heard first hand from those who have suffered and discussed ways to tackle the problem.

The railway network is a key national infrastructure and it is our job to protect it. Our good working relationship with industry partners has allowed us to adapt to the changing terrorist threat, with minimum disruption to the network by equipping our officers with the skills and equipment needed to effectively combat the threat.

A good example is station closures caused by unattended bags. In 1992, one unattended bag in seven caused a full station closure. In 2014, rail staff dealt with more than 250,000 unattended items but we recommended a station closure on less than five occasions. This is a direct result of the development of agreed response protocols with the industry, along with our officers' highly specialised training and equipment. Not only does this mean that journeys are disrupted less frequently, but intentionally left items are also identified and controlled more quickly.

Over the past year, we continued to expand our Specialist Operations Unit to ensure we have the people with the right specialist skills and knowledge. We



worked closely with partners to ensure we have enough resources at all times. This meant in April, after full training in our patrol strategies and procedures, armed officers from the Civil Nuclear Constabulary joined armed BTP officers on a three month attachment, providing extra visibility at key London railway stations while we recruited and trained the additional specialist resources we needed.

Our history of pioneering the use of police dogs continues, as we have become the first force in Britain to train 'cross-functional' dogs who can both search for explosives and confront violent individuals. Our most recent cohort of Belgian Malinois are close to completing their 22-week training course and will soon be another valuable frontline resource tackling crime and responding to the terrorist threat.

As the railway changes, we change. It's all part of our transport policing ethos that sets us apart from other police forces and makes us a vital part of the railway community.

Paul Crowther is on Twitter @BTPChief  
 You can view BTP's Annual Report 2014/15 and Statistical Bulletin at: <http://brtr.pl/btpar15>



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# The 'why's' and the 'what's'

Professor Andrew McNaughton reviews *The Second Age of Rail: a history of high speed trains*



This new history of high speed rail is most timely. The genre has clocked up its half century last year; it has grown up over the decades. Much has been learned and needs to be recorded as the early years pass out of living memory. Murray Hughes has not only recorded significant moments, often from personal knowledge, he has contributed many insights that are valuable to today's and tomorrow's practitioners.

The author is uniquely qualified for the task. A seasoned journalist, Hughes has been present at many of the key moments in the last twenty five years. He brings them alive which brings out the human stories along with the technical successes. So this is a story of human endeavour as well as facts and technical advances. The book is structured around chapters on countries. This works well, given how, in the early years, high speed rail was developed by teams working nationally, perhaps even in competition.

It starts though with a thrilling recounting of the story of the quest for speed. The French have been at the forefront of this story. Hughes tells the story of the V150 world speed record run vividly and then sets it strongly in the context of previous ones. Speed record runs may make the headlines, but behind them are highly professional technology development programmes driven by dedicated teams. Hughes brings out the way each generation pressed knowledge on to its successors. Effectively, the story of 574km/h in 2007 can be traced all the way back to the 331/km/h, the record of 1955. The golden thread of knowledge handed on didn't just help the V150 programme, it made it possible.

## Far more than speed

Chronologically, the high speed story begins in Japan. Retelling the story of the early years, the author brings out the essence of the system which is far more than speed; it includes capacity, safety and reliability of travel between cities. In approaching this he doesn't duck that not everyone, even in Japan, was convinced

the investment in new dedicated lines was the right solution. Remember, this was in the era of rapid development of air travel. Motorway building was rampant and steel wheel on steel rail was seen in many quarters as 'so last century'. The book brings out the debt we owe the early leaders who succeeded through hard-headed business logic alongside visionary belief.

Just as in France, the Japanese story is about the build-up of knowledge and skills handed on from generation to generation and nurtured by each successive team. So the successful introduction of 320 km/h running and the current striving for higher speeds are the outcome of work continued since the testing programmes for the 210 km/h opening speeds back in 1964.

Hughes brings out how each branch of engineering and of operations have worked together to create an integrated system on which the Japanese people and economy rely on alike. The observation from Mr Morimura of JR Central that the success of high speed rail is 50 per cent technical and 50 per cent human should remain uppermost in the mind of all who develop and operate systems around the world.

The story of Japan concludes with the latest Shinkansen developments and also the fascinating new opportunity of Maglev technology. Here too, the pioneering spirit of the development teams comes alive in Hughes' relating of what he was told and what he observed at key moments on the last few years.

## Political influences

Returning to France, Hughes charts the progressive development from the initial Sud Est line through to the network

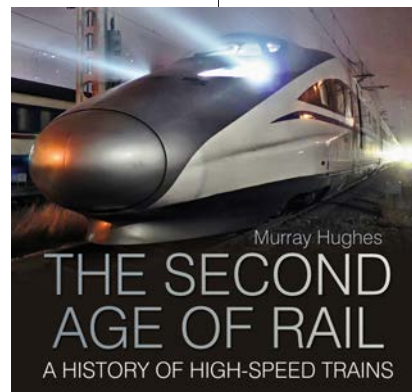
of today. In doing so, he brings in the political influences which have been at least as strong as the business and technical ones. This reminder comes at a timely point before he expands on to Italy, Germany, and Spain.

The story then turns to Italy which Hughes reminds us was off the blocks with early planning very soon after France. The country seemed well-suited to HSR given

the alignment of the major centres along a north-south axis the core of which is Naples to Milan. Italian engineering innovation comes to the fore in a story otherwise determined by politics. The early adoption of ETCS, the European interoperable control system, and the civil engineering to overcome the formidable mountain barrier between

Bologna and Florence stand out alongside other touches of typically Italian flair.

The new story of Italian high speed has been the introduction of genuine competition from NTV and the response of the state operator. The travelling public has benefited not only in terms of fares, but also from the mass of technical innovation introduced to deliver 21st century approaches to ticketing and the total passenger experience. But the challenges of making HSR viable as a business are explored too and the author clearly has concerns for the future even as the operators push for high speeds, above 300km/h to increase competitive advantage.



Germany takes its rightful place in the heart of European HSR development but with a bitter sweet flavour. Hughes details both the early development of a north – south network and the dramatic change of political emphasis brought by east – west reunification. He describes the technical wonder that is the Koln – Frankfurt route and the technical crisis and loss of direction after the terrible accident at Eschede.

The technical director of DB once told me: 'HSR is impossible in Germany. Everyone wants a station but nobody accepts a new line.' Applied to Koln – Frankfurt, the one hour journey time was degraded by conceding stations for small towns. Today the end-to-end average speed of that 300 km/h line is no better than on Great Britain's 200 km/h trunk routes. All in all the story of Germany is a salutary one and Hughes doesn't flinch from telling it.

The European story then switches to the fourth and now biggest network, Spain. The usual challenges of topography and politics were overcome despite the absence of a home grown supply market. So the story of how the Spanish grew a HSR construction industry offers lessons others would have done well to heed.

With commendable pragmatism, Spain led the practical demonstration of European interoperable standards and the integration

of technical systems developed until that point essentially for national systems such as France or Germany. Just how much of the Spanish system will be seen as justified in business terms in decades to come remains for the future. But for now, HSR in Spain is a powerful example of using transport infrastructure for 'nation building' and national modernisation.

#### China – the HSR tiger

Hughes's spotlight then moves to the station that has moved from HSR novice to dominant player – China, the HSR tiger. Separating fact from myth has never been easy but Hughes has been as assiduous in experiencing, investigating and reporting the extraordinary story of the rise of China as a HSR power as he has elsewhere. So his stories behind the stories are fascinating. It remains astonishing that China has, in a decade, built more high speed lines than the rest of the world together using highly developed and standardised equipment and techniques. The growing pains and difficulties are not glossed over but a sense of the extraordinary achievement springs off each page.

The book covers in shorter detail the derivative systems in Europe and Asia where one is struck by how technical lessons are easily shared but political

ones don't always cross borders. The unfortunate story of HSL - Zuid over which our Dutch friends have been commendably open, offers insights into system integration and project risk. The 1990's idea that all risk can be passed down the supply chain and handed-off by the client is exposed for the myth it always was. And the people who should have benefited from their investment in HSR have been the ones to suffer. The author finishes with descriptions of schemes in development or construction: so often the story seems to start with a railway technology and the physical geography and not, where it should, on those two Kipling-esque words 'why' and 'what'. Why should a country need HSR and what socio-economic problem is it going to address better than alternatives are the first questions any politician promoting HSR should focus on. After half a century we know HSR works and, as Murray Hughes shows so entertainingly, works brilliantly!

Professor Andrew McNaughton is technical director at HS2 Ltd

*The Second Age of Rail: a history of high speed trains by Murray Hughes, The History Press July 2015*



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# At your stations

**Dave Songer** reports on the 2015 UK Station Regeneration and Development conference, which looked at the ever-changing landscape in and around stations

**I**ndustry experts, senior consultants and representatives of major transport groups gathered in central London to focus on the benefits and opportunities of developments within stations and their surrounding areas, designing spaces with local communities in mind and improving the passenger experience.

News on the UK's largest new-build station for a century – Old Oak Common, Birmingham's proposed HS2 site and catering for changing traveller habits were among the subjects covered, as well as a panel debate on railway stations' investment and optimising growth.

## Old Oak Common and Crossrail

Victoria Hills from the team behind Old Oak Common, the planned station and development that will be on the HS2 network, began the day by describing the

scale of the site that will eventually serve 250,000 passengers and create 55,000 jobs when it's finished in 2026. The station will bring about regeneration not seen since the Olympics and is the only point where HS2 and Crossrail will meet.

On the subject of Crossrail, Niall Lindsay, head of oversight development for the line that will connect Reading in the west to Abbey Wood and Shenfield in the east, provided an overview of the funding, tunnelling and stations that are being used. Much of his speech centred on 'transport unlocking development' and the positive impact it has on residential and commercial property values.

To illustrate the opportunities that now come from building large transport developments like Crossrail, Lindsay told the audience that Hong Kong's MTR now makes more money from property than it does from rail operations. He then went on to reveal that Crossrail will add

an estimated 18 per cent to the value of property in the area surrounding the line's stations by 2021, with Aviva and Great Portland Estates already on the books.

## Curzon Street

HS2 was again on the agenda as Richard Cowell, development and planning manager at Birmingham City Council, outlined the huge redevelopment taking place at the city's Curzon street site (the plan for which has now been approved by the council's Labour cabinet). Cowell showed attendees 3D mock-ups and representations of the buildings planned for the 141-hectare site and how they would dovetail into the area's existing historic architecture.

## Integrated transport

Representing ATOC, its head of integrated transport, Conrad Haigh,



A computer-generated image of Crossrail's Tottenham Court Road station



How Curzon Street, Birmingham's HS2 hub, may look

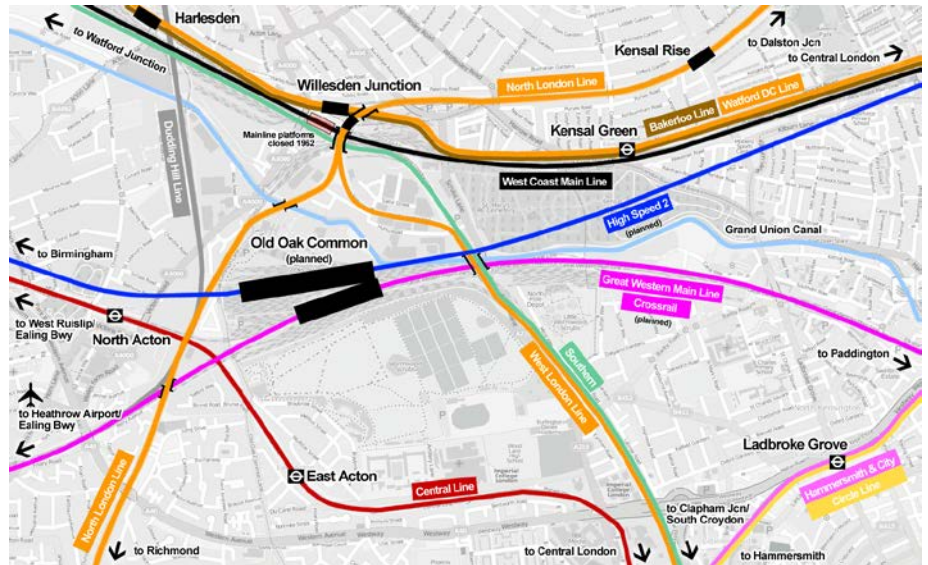


The panel debate at the 2015 UK Station Regeneration and Development conference

dedicated his 20 minutes to how cycling has become an intrinsic part of train travel for so many passengers; detailing the continuing work at stations around the country to accommodate them. Haigh showed examples of stations across the country including Lewes, Chelmsford and Sheffield, that had opened safe and secure cycle storage, but made it clear that that there was work still to be done to promote the facilities 'so people know they exist'. To demonstrate how station designs are changing, he said that developments are moving away from 'how big will the car park be?' to focus on more sustainable forms of travel, such as taxi and bus interchanges.

**Help from overseas**

A look at how other countries operate and what lessons could be learnt from other projects also featured. Manoj Gupta, director of Rail at Capita, described how ongoing work on the North West Rail Link (now the Sydney Metro) and the South West Rail Link in Sydney will transform the city when it opens in 2019. Providing the first fully-automated metro rail system in Australia, the project included construction of twin 15km tunnels – Australia's longest – that



A look at how the proposed Old Oak Common station could link up with existing and planned lines

will allow a metro train to arrive every four minutes at peak hours.

'Creating places that invite, excite and inspire our customers' was the frame for Network Rail's managing director, David Biggs's talk. He spoke of the role of stations acting as 'gateways to the communities' and used the examples of London Bridge, which will integrate over 100,000 sq. ft of retail space into existing architecture; and Bristol, which has a regeneration plan that will breathe new life into the area around the station, creating 17,000 jobs in the process.

**Changing habits**

Designing integrated railway stations as places of interaction was the title of the talk by Anna Rose, director of Space Syntax, who produced evidence-based research that showed how people's

journey's were changing. Unsurprisingly this was especially true in London, where increasing numbers of passengers elect to walk the final leg of their journey rather than take the Tube. It was therefore important, she said, to future-proof the surrounding area to account for this change in behaviour.

Rose also discussed cycling in the context of train travel, asking if London could be turned into a more compact and safe city for cyclists using the existing railway infrastructure. Sky Cycle was one way that she believed it could, which would see the construction of dedicated cycle lanes directly above the train tracks. The network would cover a 'ten-minute catchment area' from station entrances and would have a length of around 135 miles, with 209 entrances that serve around 3.7 million job locations.

# A round-up of recent station projects...

## Stirling station investment is first glass

**W**ork has begun at Stirling station to deliver a £3 million upgrade including a new roof.

Existing glass panels, which are prone to cracking and discolouration, will be replaced with a lightweight polycarbonate glazing system, and a new non-intrusive roof access system will see an end to the results of a lack of access that led to corrosion, damp and vegetation growth. Bruce Crawford, MSP for Stirling, said: 'As well as looking forward to improved services and faster journey times on routes to Glasgow and Edinburgh being enabled by electrification, it is important that work is also being done to improve the stations.'

Phil Verster, managing director of the ScotRail Alliance, added: 'Investing in Stirling station will protect and preserve the building's unique appearance and character while at the same time delivering a safer, brighter more comfortable environment which will shield our customers from the vagaries of Scotland's weather.'

Work to install the 2,440 square metre roof will be completed by November 2016.

## Paddington station overhaul

**T**he Grade 1 listed structure is currently benefiting from a renovation of its roof and an upgrade to its lighting system above the platforms. But now Network Rail is starting a major 18-month programme of work to improve the appearance of the station as a whole and provide growing numbers of passengers – 61 million forecast for this year – with a wider range of places to eat, drink and shop.

The work includes:

- the area known as 'The Lawn' at the back of the main station building will provide better retail choices and more food and drink outlets
- better waiting facilities, including more seating areas
- glazing on the roof will be replaced with clear windows to let in more natural daylight



Paddington station

In addition, First Great Western will be enhancing its ticket office; installing state-of-the-art ticket machines and transforming its appearance using a Brunel inspired design.

Natalie Holden, Network Rail's senior commercial scheme sponsor for the project, said: 'We're working closely with English Heritage to preserve the history of this iconic building, making sure the changes we make are sensitive to the original structure and take account of its Grade 1 listed status.'

## An exciting vision for Cardiff Central

**N**etwork Rail is considering a major redevelopment during CP6 which could see an extension to the Grade II listed building to create a bigger, better and brighter station.

An upgrade to the signalling technology in the Cardiff area is underway and work has also started to electrify the line from Swansea to London, but with passenger numbers



Cardiff Central

forecast to grow significantly, the station needs to respond in kind.

The remit for the initial design work has been to integrate the historic elements of the station into a modern building that better reflects passengers' needs, as well as making it a destination in its own right serving the local community emerging around it. The entire station site will also be enhanced, with work including a new car park, commercial developments and an enhanced transport interchange and public realm.

Mark Langman, route managing director for Network Rail in Wales, said: 'This is a unique opportunity to create a fitting entrance to the capital city of Wales. We're pleased to be working with the Welsh government, Cardiff council and industry partners, including Arriva Trains Wales, to enhance the city and the quality of transport in the region.'

Emerging findings from the Long Term Planning Process, led by Network Rail, suggest that commuting by rail into Cardiff could increase by up to 69 per cent over the next decade.

**Manchester Victoria transformed**

**W**ork to transform Manchester Victoria station has finished and Network Rail will officially unveil the hub later this month. Commuters have watched with fascination throughout the five-year £44 million project, which



London Bridge station

includes the futuristic 'bubble roof' (pictured below). The project was due to have been completed by the end of spring but unforeseen underground obstacles - including a hidden culvert - caused a delay.

The canopies and paving outside the main entrance were finished in April and the building has been painted mushroom grey inside and old advertising boards were installed at the gable end.

**New London Bridge station continues multi-billion pound Southwark renaissance**

**S**tunning new computer-generated images of the development at London Bridge station have been released as the renaissance of the London Bridge Quarter continues.

The massive investment at London Bridge by the government-sponsored



Manchester Victoria

Thameslink Programme is transforming the Victorian station into a 21st century transport hub while continuing to serve more than 56 million passengers every year – a number that is growing by around two million each year.

A key feature of the rejuvenation programme will be the creation of a station concourse the size of the pitch at Wembley Stadium that will enable all passengers to access both Tooley Street and St Thomas Street directly, helping link together previously disconnected parts of the area and boosting opportunities for economic growth.

While work on the station proceeds, development of the third London Bridge Quarter building – following The Shard and The News Building – is set to get underway this autumn, taking investment by the State of Qatar and Irvine Sellar to in excess of £2 billion.

**Leyland station to benefit from step-free access**

**T**hanks to a £4.5 million investment by the government’s Access for All scheme, Network Rail has started work to build three new passenger lifts, a new footbridge, three new staircases and an access ramp.

Councillor Margaret Smith, leader of South Ribble borough council, said: ‘As well as giving wheelchair users and those with limited mobility equal access to rail services in our borough, the start of these much-needed improvements will also be welcomed by local businesses and those looking to invest, who have told us they’re looking forward to the boost this will bring to the area.’

The work is due to be completed in summer 2016.



Woolwich station

**First homes completed above Woolwich station**

**T**he first homes to be constructed above a new Crossrail station have been completed by Berkeley Homes in Woolwich at Royal Arsenal.

More than a thousand homes will be constructed as part of two separate developments at Royal Arsenal Riverside; one by Berkley Homes and another by Crossrail.

The new Crossrail station, including the 250m long platforms, lift shafts, and floor slabs, is nearing structural completion and the fit-out will begin early next year. The station box is 18m deep, 26m wide and 256m long – the tallest building in Canary Wharf, One Canada Square, could be laid on its side within the box.

In total, more than three million sq ft of residential, commercial and retail property is being developed over Crossrail sites across London. Ian Lindsay, Crossrail’s land and property director, said: ‘Southeast London will benefit from some of the most significant reductions in journey times which will encourage further investment and regeneration and make the area even more attractive for homeowners and businesses alike.’

**More than £1 million of station improvements for Eaglescliffe**

**F**ollowing more than £1.2million worth of improvement works, Eaglescliffe station has been officially opened by James Wharton MP, Minister for Local Growth and the Northern Powerhouse.

Passengers are now enjoying the new heated waiting room which includes CCTV and a customer information screen. Station-wide signage has been upgraded, anti-slip stair treads and footbridge handrails installed as well as



Left to right: Richard Allan, commercial director, Northern Rail, Mayoress Nuala Dalgarno, James Wharton MP and deputy mayor of Stockton-on-Tees, councillor Ian Dalgarno



Leyland station

ticket office staff facilities. As well as that a new car park provides 54 extra spaces and there are new cycle storage facilities.

The project was funded by Tees Valley Unlimited, Stockton-on-Tees borough council, Grand Central and overseen by station manager, Northern Rail.

Linda Edworthy, director of strategy and investment at Tees Valley Unlimited said: ‘Eaglescliffe station is becoming increasingly important for passengers with its direct links to London. This project is the final part of a £9.5 million programme of station improvements across Tees Valley, funded by Tees Valley Unlimited, which, alongside our investment in a Network Rail project to increase capacity for freight trains along the line, demonstrates our commitment to enhancing the local transport network.’

James Wharton MP added: ‘This is a great investment which has significantly improved the experience of station users - I should know I use it myself.’



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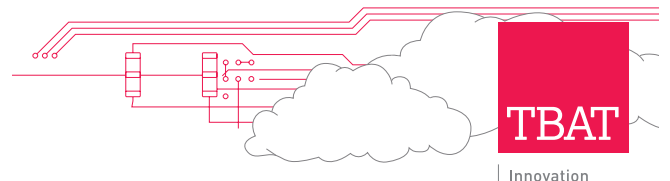


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# Places for everyone

Stations have the potential to become theatres of emotion, providing flexible settings for the dramas of life, says **Hiro Aso**

I have had the privilege of continuously working on fabulous station projects since the early 1990's, in a variety of fascinating locations including London, Moscow, Singapore, and Dhaka. During this time I have witnessed and practiced within an extraordinarily dynamic architectural discipline.

The redevelopment of rail stations has the obligation to promote the future growth of cities and this duty has not changed since Victorian times. Therefore, it is both a paradox as well as an opportunity to refresh many existing locations where the station would appear to have blighted the surroundings, and to ensure that new stations live up to this inherent expectation.

However, if you build it they won't necessarily come. Just as in other sectors, experience is taking over necessity as the driving attraction force. I remain humbled by what I learn every day, particularly to see that another shift is taking place in the way that stations relate to the people that use them.

With ever more connected cities, passengers have greater choice. The cost of rail travel is continually rising, making the imperative to deliver a more positive travel experience all the more important as rail operators compete with each other and with other modes of transport – from buses to bicycles.

In the information revolution, customers are not only responding to notoriously bad as well as good station experiences via Twitter and TripAdvisor – where interestingly 52 per cent of visitors rate their experience of New York's Pennsylvania station as average, poor or terrible; and 80 per cent rate King's Cross station as very good or excellent – they are voting with their feet.

It is no longer 'safe' to assume that passenger footfall at individual stations will be effortlessly maintained if the customer experience does not live up to 21st century expectations. Rail relies on passenger density to run efficiently and just as there are often strong personal preferences between major hub airports, we need to consider if and how rail stations earn this same sense of loyalty.

My team are utterly focused on the design of stations as lifestyle and mobility centres – for leisure and business as well as connectivity – and are interested in

cross-pollinating the trends and ideas we are seeing in associated sectors, from retail to hospitality. Our London and Tokyo offices are currently carrying out research to explore how the power of brand that we so often see demonstrated at sports and entertainment venues can be applied to station design and planning.

## Customers are changing

Fundamentally, the definition of station 'customers' is changing. Stations are no longer only portals for passengers or senders off; they are places for everyone, including those who are stopping to dine with friends or passing through to buy bread and broccoli.

In addition, contemporary lifestyles are blurring the boundaries of live, work and play. The trend of living and working in distinct locations will eventually erode, prompting the need for transportation systems that facilitate convenient, flexible and productive movement for both short and long-distance journeys to, from and while working.

We need to keep up with these dynamic and influential trends. Transport for London is one organisation I note is committed to investing, often in dynamic change, in the way it regards and delivers projects.

## Theatres of contact

What makes a station special is impressive volume, reflection of the city, chance



encounters and the intimacy reinforced – or imposed – by the surrounding hustle and bustle.

In the age of FaceTime and digital communications, when time is short and sense of community constantly being challenged, super connectivity allows us to spend more quality time with family and friends. Stations have the potential to become theatres of emotion, providing flexible settings for the dramas of life.

Rail stations will always be the perfect backdrop for forming and maintaining personal connectivity and it is important that we hold on to these qualities and conceive our station environments to support this agenda.



## Humanising the 'machine'

I see a fascinating dynamic evolving in the station as a construct, with a move away from the default design concept as a 'machine' to churn passengers. Design approaches that focus on transactional forces will soon render themselves irrelevant as we see a greater focus on emotional exchange and interaction.

A successful public realm is seamless across management, operational, ownership and legal boundaries. Anything else acts as an inhibitor to movement and the flows that are crucial to get right within stations, and developing digital information technologies both promote and exacerbate this mandate. If a station is to be efficient and genuinely integrated with its surroundings, the experience of travelling through it needs to feel equally unhindered.

Operational barriers will become softer, less 'in your face' and the modern delineation between unpaid and paid will blur (in parallel with land and air side in the aviation industry). The processing of customers, particularly the travelling sort, will become less obvious, yet remain as a core function of stations. We need to engage this shift.

**'Operational barriers will become softer, less 'in your face' and the modern delineation between unpaid and paid will blur...'**

## Added value

Customers don't mind slowing down – maybe even during the morning peak – if there is some added value to their transition time. How can we augment this part of the journey to elevate passengers' travel experience?

Design can play a leading role in creating a new type of experience and interconnection, and high quality recompose areas are essential – from concourses to restrooms, ticket halls and platforms. However, we also need to start talking about the need for greater mixed-use amenities within stations, to create places where quality time is spent rather than just a necessary moment of daily routine.

Stations have the potential to become places for reading, watching, listening, learning, socialising and creating, through community amenities that complement revenue drivers. Schipol Amsterdam Airport, for example, incorporates a

permanent library, offering customers the opportunity to experience Dutch culture and history, whether they are arriving to explore the city beyond or just passing through on an interconnecting flight.

## Holistic public spaces

In a global society that is reviving community focus, we are prioritising public space and asking what kinds of neighbourhoods we want to live and work in.

The demands of station neighbours, new but in particular those with firm roots in an area, should be taken into greater consideration. It is not acceptable anymore to have stations staining our cities. Why is it that areas immediately surrounding stations have historically

become undesirable as residential neighbourhoods? Why shouldn't we expect all sides of a station site to be as well-considered as the front entrance and how can we make sure this is realised?

The integration of transport, infrastructure, planning and urban design and mixed-use development is essential to establish a sense of place. While this is easier to implement with a clean slate, the real question is how we can address this challenge in established locations.




Successful stations are well regarded by the community they sit in. It is vital that we understand the crux of the locality and build around this to ensure that design proposals are truly contextual. Hiro Aso is regional Head of Transport and Infrastructure at Gensler



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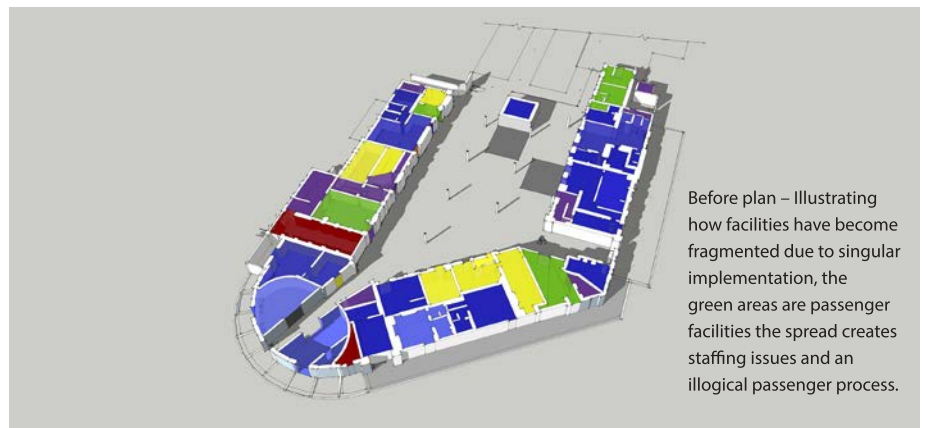
# Spending time on a masterplan

**Mike Arthur** discusses the complex web of facility interaction, taking into account customer needs while placing design where it is strategically needed to maximise station revenue

Station revenue is derived from two sources; the fare-box and retail – two entities that are still regarded by the rail industry as separate disciplines, but when combined into a single strategy can have a very powerful impact on maximizing revenues. There is a problem in that apart from the category ‘A’ stations, our mid-range stations have evolved piecemeal. Schemes are often implemented as singular work streams placing them wherever we can afford or where there is space available, but there is still a passenger process; a sequence of events of placing the right facilities at the right location in sequence, which is critical to maximizing revenues.

This strategy is the equivalent of product placement in high street retail, the good news is that we can have all of this under our control, provided that specialist design is employed that fully understands retail, hospitality, branding and passenger facilities, and that ensures the complex web of processes and adjacencies are optimized to best effect. A seamless process also makes travelling less stressful and more enjoyable, placing everything ‘where you need it, when you need it’ and naturally the more relaxed a person is the more likely they are to spend.

It is generally recognised that the industry still has a segregated view of ‘passengers’ being defined as ‘someone who travels’ and ‘customers’ someone who ‘buys a product’, and this subdivision continues in the way singular facilities are funded, located and implemented in individual working silos, such as waiting rooms or information points. While the end result is generally credible, we should be asking ourselves whether the facility is in the right place and how we can generate revenue from it to turn passengers into customers and provide them with a more enjoyable and convenient experience.



Before plan – Illustrating how facilities have become fragmented due to singular implementation, the green areas are passenger facilities the spread creates staffing issues and an illogical passenger process.



After plan – all frontages have been given a use and facilities are grouped for maximum effect

Because the industry now generally shares in turnover rents, there is a vested interest to make less distinction between customer and passenger – both afford the same outcome, a seamless journey and a process that is logical and as stress-free as possible. This blurring of lines is the same for designing the facilities; it means getting the right mix of fare-box and station facility and retail correct. And so through careful planning and strategic design, customer/passenger manipulation can, and does, increase revenue for the industry while maximising returns for the retailer. If the high streets are all about

customer manipulation, then stations can do the same; it is just a more complex case of fine-tuning the interaction between the facility and customer and understanding how a space should be utilised and defined is a complex web.

## Regenerating lost areas

However, it isn't just about finding a vacant space and making it into a retail box, all stations have wasted space to varying degrees; whether historical or through inappropriate investment due to lack of future vision or, because they lack a defined masterplan. It is often



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# Trust this proposal

**Gareth Bacon** is proposing an infrastructure funding scheme that could be used to bring rail projects such as the extension of Crossrail to fruition

London needs £1.3 trillion of infrastructure investment in its transport network, housing stock, broadband and educational institutions. Recent figures show that in the last financial year there was already a deficit of £130 billion in infrastructure funding in the capital. The upgrade of the Underground is well under way thanks to the efforts of the present Mayor, but the fate of the Silvertown Tunnel, the Crossrail 1 extension to Ebbsfleet and the upgrading of broadband connectivity to name but a few, are very much up in the air.

In the US, the Mayor of Chicago recently said of his own city: 'We have a critical need in this city, which is we have a 21st century economy sitting on a 20th century foundation.' The same could be said for London. Government sources state that 66 per cent of funding for infrastructure will need to come from the private sector, but how? What mechanism can be used to ensure that vital improvements are delivered to maintain the capital's competitive edge in a global economy?

Looking back to Chicago, they have approached the problem by setting up an infrastructure trust that aims to channel private sector investment into



public works that show a clear return on investment to both investors and London. I recently authored a report (*Burrowing for Success*) that has recommended to the Mayor that we should adopt such an approach for large-scale projects in London.

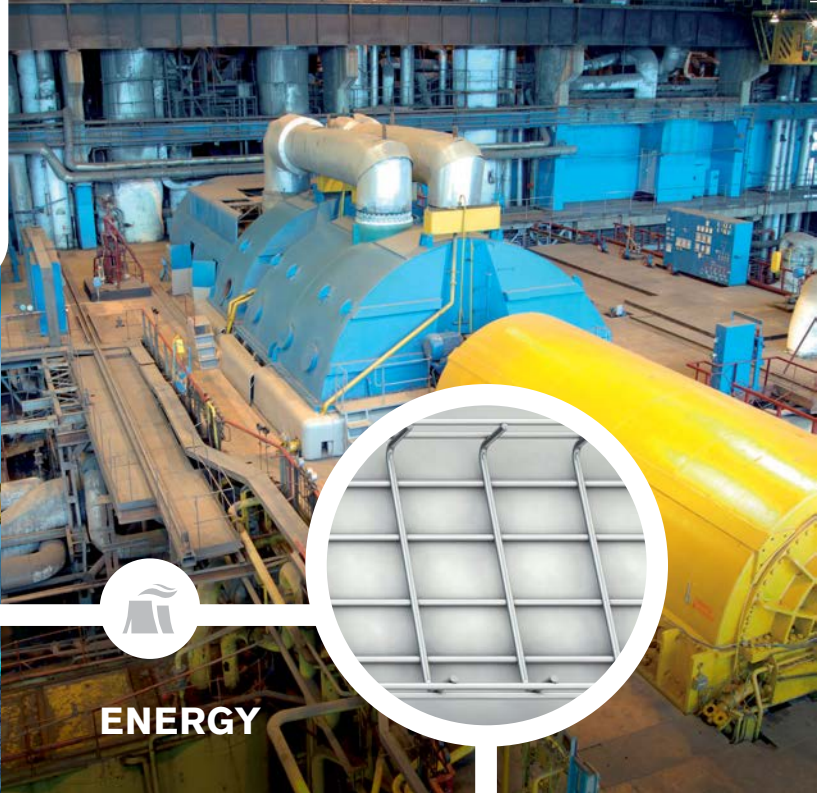
The Chicago Infrastructure Trust

came into life via executive order of Mayor Rahm Emmanuel and city council resolution in April 2012. The Trust's basic mission is to help 'the people of Chicago, the city government and its sister agencies in providing alternative financing and project delivery options for transformative infrastructure projects.'





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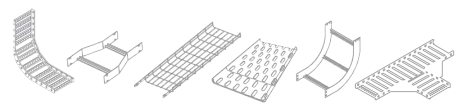


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The board of directors is made up of a mixture of business experts and politicians which includes the former CFO's of the Boeing Company, Sara Lee Foods, a trade unionist and city councilman. To date, one project has been identified and moved through to implementation. The project is a major \$12.234 million energy retrofit programme for 60 public buildings with a share of the energy savings being split between the private sector and public sector over an 11 year period. The project would see an annual saving of \$1,383,918.

#### Failure to invest in vehicle crossings

To demonstrate the suitability of using the Chicago model to create a London Infrastructure Trust (LIT), I have proposed the Silvertown Tunnel as a case study. The tunnel is a major piece of infrastructure that has a clear budget without a confirmed funding plan. Major developments at the Greenwich Peninsula, Canary Wharf, Stratford and Royal Docks have contributed to an increased demand for travel in this part of South and East London. There has been a failure to invest in vehicle crossings in the same way that public transit has

been invested in, whether it is through Crossrail, the DLR, Tube and Cable Car. The average distance between crossings in East London is 8km, compared to 1-2km in central and west London.

The current cost attached to the project is £750 million. My report calculates that a joint funding approach between private investors and the public sector is achievable with a return on investment for private financiers that would prove to be considerably more lucrative than the average government gilt. The average yield on a ten year government gilt is 2.06 per cent (as of publication of my report). Any finance deal that can match or improve on this return would be of interest to the market.

#### Surely a winner

TfL has previously stated that it will make use of the Dartford Crossing charging system for the Silvertown Tunnel, and that it will simultaneously begin charging at the Blackwall Tunnel using the same system. The Dartford Tunnel generated £92,548,000 in fare revenues in 2014/15; if the same return was achieved by the Silvertown and Blackwall tunnels, then TfL would generate £185,096,000 in fare revenues per annum. We can make the presumption that Silvertown revenues would be similar as increasing congestion

in that area of London ensures that these tunnels will be at least as busy as Dartford.

The initial private sector investment provided to the LIT for the Silvertown Tunnel would be repaid through toll revenues. If the private investor (or group of investors) received 10 per cent of yearly toll incomes for ten years, they would receive £185 million over that period. If the investor was offered 10 per cent interest on the initial injection of finance, then the investor would have had to have contributed £168,269,091 to the project. This would represent roughly one-fifth of total funding for the project. TfL would instead invest £581 million in the project, and still receive £1.7 billion in fee revenues over ten years. A finance package that unlike some of the failed PFI deals of the past shares the risk across both the public and private is surely a winner.

If the scheme is piloted and proves a success, it could then be used to fund much needed rail projects such as the extension of Crossrail to Ebsfleet, using ticket sales as a way of repaying investments.

Gareth Bacon is a Conservative London Assembly member



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# The cost of turning away

**George Selvanera** discusses the opportunities for transport providers to secure the loyalty of disabled customers

**N**ew consumer research finds that £37.8 million is lost to individual transport companies each month due to their poor disability awareness - while disabled customers use alternatives.

With more than 20 years of building disability confidence with large business and public sector organisations that account for close to 20 per cent of the UK workforce, the Business Disability Forum has now worked with the Extra Costs Commission on a yearlong report, which examines and makes recommendations about how to reduce the 'extra costs' that disabled customers and households face as a direct result of disability.

The interim report released earlier this year found that 75 per cent of disabled people and their families have



turned away from a service provider at a cost of £1.8 billion to UK businesses every month as a result of their lack of awareness of the needs of the disabled. The release of more detailed research with more than 2,500 disabled customers shows how individual sectors fare with an estimated £37.8 million lost each month to individual transport companies as disabled customers and their families find other ways to travel.

The report has found that 15.1 per cent of all disabled customers and 15.7 per cent of their family members have avoided using particular transport companies because of poor service. This equates to more than 1.2 million disabled customers who have switched or left a transport provider due to its poor disability awareness.

Moreover, the scale of the opportunity for those transport providers that get it right is growing. There are currently three million people aged 80 years or more, a figure which will reach six million by 2030 and eight million by 2050. Ageing is a proxy for growing levels of disability. Close to half of all people aged 65 years or

**'The report has found that 15.1 per cent of all disabled customers and 15.7 per cent of their family members have avoided using particular transport companies because of poor service. This equates to more than 1.2 million disabled customers who have switched or left a transport provider due to its poor disability awareness'**



more have a disability for example. These figures point to how disability know-how is increasingly central to addressing the requirements of an ageing customer base.

Key issues for disabled and indeed older customers include ensuring:

- good train station access. It's great that there are increasing numbers of stations that offer step free access and have both visual display boards and audio announcements. Accessibility should also be woven into the design of station and train fixtures. For example the height of handrails, seats and ticket barriers should all be taken into account
- the company's digital interface is straightforward and wholly accessible to customers with all types of disabilities and impairments. At a minimum, this requires meeting W3C guidelines for web accessibility. But usability goes much further and is about ensuring that disabled customers can easily find out about any access barriers and that they can book support in advance. A study released earlier this year by pan-disability organisation Papworth Trust found one in five disabled people

were unaware of Passenger Assist for example

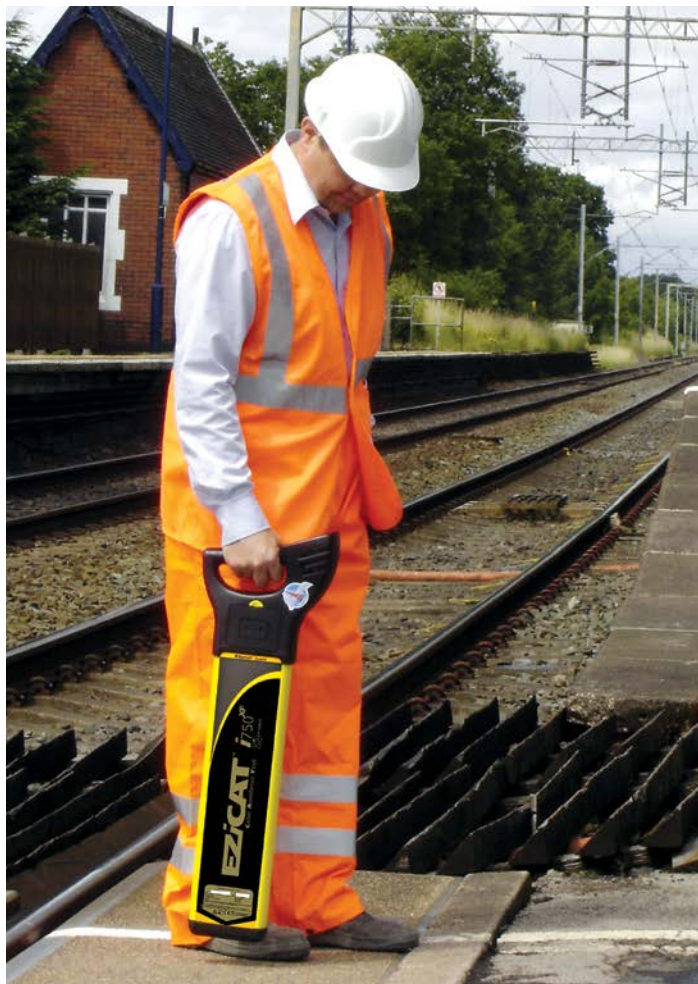
- customer-facing staff are skilled and confident in interacting with customers with different disabilities and impairments. This certainly includes people with more visible disabilities such as mobility and visual impairments, but it's also about customer-facing staff having the confidence and skills with customers with less visible disabilities such as hearing loss and deafness and non-visible disabilities such as dementia and mental ill health
- the organisation's communications are fully inclusive to customers with disabilities. Within train stations, subways, bus stops and airports for example, this refers to 'live time' announcements such as platform alterations being delivered in a way that meets an individual's communications needs. This also points to the format and placement of signage, for example the availability of Braille and tactile fonts. Similarly, for customers who require more time when purchasing tickets, the availability of ticket machines which allow an indefinite amount of time before 'timing out' and automatically

cancelling the transaction.

In short, it is about building into mainstream service design, empathy for the disabled and older customer and the capacity to personalise service for customers with all types of disabilities. Southeastern, for example, offers a good example. The company invited disabled people to 'mystery shop' what it was like to request assistance when using its services and the results were then fed back directly to the teams involved in the exercise.

People often ask me what they should do first. That's easy from my perspective. The first action for any transport provider or, for that matter, any service provider, is around capturing the views of disabled and older customers about how they currently experience services and getting their suggestions for improvement. The market opportunity is there for transport companies to secure the loyalty of disabled and older customers and their families and friends and it starts by talking directly to these customers.

George Selvanera is director of policy, services and communications at the Business Disability Forum (BDF)



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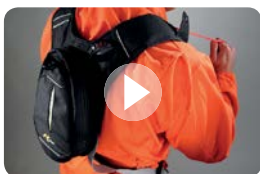
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# Stemming the flow

**Greg Morse** talks French philosophers, freight derailments and corporate learning

In its old Islington offices, RSSB had a meeting room called Fiennes. And I always thought of him whenever I was in there. Gerry Fiennes, that is: celebrated railway manager, author of *I Tried to Run a Railway* (1967), *The Man Who Wrote Too Much*, and *The Man Who Was Sacked* for doing so.

Fiennes was involved with the decision to bring the famous Deltic locomotives to the East Coast Main Line and the introduction of 'merry-go-round' coal trains, but the thing that always comes to my mind is the following line from that controversial book: *When you reorganise, you bleed*.

Some said BR bled when it split into five business sectors in the 1980's, and though the bottom line was clearly improving, the Clapham collision of 1988 – closely followed as it was by two fatal SPAD's at Purley (4 March 1989) and Bellgrove (6 March 1989) – suggested that standards, staff cuts and chains of command may have played

their part in the respective causal chains. The dissenting voices got louder when privatisation loomed.

The privatisation process began on 1 April 1994 and resulted in the creation of more than 20 passenger train operating companies, various freight operating companies, three rolling stock leasing companies, an infrastructure owner, several technical engineering support companies, several infrastructure maintenance units and a number of track renewals units. BR was thus split into around 100 separate businesses, which could have created a world of what the French philosopher Jean-Francois Lyotard termed 'petits récits', or 'little stories'. For Lyotard, this notion exploded the myth of the 'grand narrative', in which we all move in the same direction with shared experiences and cultural reference points. In many ways, BR was a railway 'grand narrative', but though it too had its micro-histories in pockets up and down the country, arguably our privatised world has made it more important to be aware

of the interfaces between them, and of the ebb and flow of corporate knowledge created by people moving in or moving on. RSSB is an example of an attempt to bring all the 'little stories' together by aiding various committees, groups and seminars, and by publishing a *Learning from Operational Experience Annual Report*, the latest edition of which was released in July.

Much of the learning – at national level – obviously comes from RAIB reports. During 2014/15, the Branch published 24, 20 of which involved incidents on the mainline railway. The 20 led to 70 recommendations, which – when analysed – revealed an emphasis on infrastructure asset management. Network Rail's biggest asset is obviously its track; the operator's is arguably the train. When things go wrong with one, the other, or both we get a derailment. Those that occurred at Gloucester and Camden Road West Junction focused minds – not because they both occurred on the same day (15 October 2013), but



This view of the derailment at Camden Road West Junction shows the dislodged 40-foot container and collapsed overhead line stanchion. Image courtesy of RAIB

because they raised a number of issues that had been building for some time. Indeed, by 31 December 2014, RAIB had published 34 reports on non-passenger derailments, 26 per cent of which were caused by a combination of poor track condition and one of the following:

- defective rolling stock
- an undesirable design feature of rolling stock; or
- an unevenly distributed payload.

In many cases, the track and rolling stock faults were within tolerances defined by current standards, but the intersection between the outer limits was enough to cause problems.

The incident at Gloucester resulted from a combination of a track fault and a deficient wagon. When the last vehicle came off while the train was travelling at 69 mph, a container fell, and the rear wagon, four miles of track, signalling cables, four level crossings and two bridges were damaged. The track defect was cyclic top, whose dips had initially formed due to water flowing underneath the formation. Although the local maintenance team had identified the issue, the repairs they carried out were ineffective – and had been so before. Furthermore, the susceptibility of the wagon (an IDA) to cyclic top, especially when loaded with the type of empty container it was carrying, was not identified when the wagon was tested or approved for main line use.

Camden Road West, on the other hand, was caused by an unevenly loaded train running on track suffering from excessive twist. At about 02:40, one wagon came off and ran derailed until the train reached the junction, where an empty container toppled off and damaged the overhead line equipment. RAIB noted that the rules on the loading of such wagons (FEA's) had been relaxed following a derailment at Duddeston Junction in 2007, and wrote to the ORR to point out that this would have the effect of increasing the risk associated with dynamic loading. But, again, the issue was not considered as part of the process for accepting FEA's for operation on the main line.

RAIB's own annual report for 2014 noted that 'Many in the railway industry argue that as long as track condition, and wagon design and operation remain close to that in the past (sometimes referred to as the 'historical norm'), the risk associated with wagon derailments will not vary a great deal from its current level'. However, it went on, the 'industry needs to better understand how container wagons and their payloads are interacting with the type of track faults that might sometimes be encountered.'

A number of RAIB investigations suggest that reliance on this 'historical norm' is no longer sufficient. The overall

level of risk is low, compared with the number of train kilometres run by freight trains every day, but it was decided to establish a cross-industry group to enable rolling stock and infrastructure experts to consider all the issues together. The resulting 'Cross Industry Working Group on Freight Derailments' includes representatives from Network Rail, freight operators, RSSB, Interfleet, Huddersfield University, Lloyds Register Rail and the ORR.

Facilitated by RSSB, the Group is looking closely at derailment data, but will also review the origin of current requirements, with a view to ascertaining what could be done differently to manage the situation in light of both the risk and the changes the industry has seen over the last decade.

### So what has changed?

First, we have enjoyed increases in traffic since 2005, but while our track recording regime is more extensive and track quality has improved, our hours of operation have perforce increased. Secondly, the wagon fleet has fallen by a quarter, though bogie wagons – one-third of the total fleet in 2005 – have doubled in number and now carry more than 90 per cent of the total tonnage. Around 70 per cent of the more 'twist-prone' two-axle wagons have also been withdrawn, but changes to the standard covering a wagon's structural strength has resulted in vehicles which 'flex' less and may therefore be less tolerant of track twist.

At the same time, we've seen a 50 per cent rise in container traffic, while the containers themselves are getting larger both in height (8' to 9' 6") and length (20' to 40', 45' and 50'). These increases may have a bearing on stability, although the two recent incidents involving containers being blown from freight trains (Scout Green 07/03/15, and Deeping St Nicholas 31/03/15) appear to implicate the reliability of the retaining spigots.

In addition, the working group is conscious of the need to ensure that offset loads are not merely rejected from the railway and transferred to road – a modal shift which would actually increase societal risk from overturned lorries. The ORR is therefore working with the HSE and the International Maritime Organisation to try to reduce loading risk at source.

To take the matter forward, the Group has also proposed to:

- update RSSB's risk assessment, including more analysis of derailment risks for combinations of minor track

**'When things go wrong with one, the other or both we get a derailment. Those that occurred at Gloucester and Camden Road West Junction focused minds – not because they both occurred on the same day (15 October 2013), but because they raised a number of issues that had been building for some time'**

- and wagon faults with offset loads
- identify changes to the railway over the last 10 years and ascertain those that may come in the future
- assess the benefits that could be gained from amending the track twist measurement criteria
- review existing loading practice and provide guidance for vehicle testing
- assess the need for and feasibility of testing and computer simulations of existing wagons to establish limiting offset loading conditions and related wheel unloading limits
- analyse the existing wagon uneven load profiles; and
- review the rules and regulations around the loading of containers as a wider transport issue.

By facilitating the group, RSSB has been able to play its part in getting the key players round the table to look at the bigger picture, a bigger picture that involves looking into the past, in order to make the right choices for the future. It's what the corporate memory is all about.

For RSSB's *Learning from Operational Experience Annual Report*, see [rssb.co.uk](http://rssb.co.uk)  
For RAIB's Annual Report, see [gov.uk/government/organisations/rail-accident-investigation-branch](http://gov.uk/government/organisations/rail-accident-investigation-branch)

A new edition of *I Tried to Run a Railway* by G. F. Fiennes has just been published by Head of Zeus



Greg Morse is RSSB's Operational Feedback Specialist. The views expressed in this article are his own. Follow Greg on Twitter: @GregMorseAuthor

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# Listen up

The rail industry has some unique challenges when it comes to mental wellbeing: do you have the confidence to talk openly about mental health to your employees, asks **Adrian Wakeling**

**I**n drafting this article, I was tempted to avoid using the word 'mental' at all. I have often overheard people using the term to mean something negative or derogatory. Some people say that as long as we are all in on how a word is being used, then it doesn't matter. I don't agree.

## Mental health: what we know

It has taken a long time to get to where we are with mental health. We all know the headlines. We know that one in four of us will suffer a mental health illness at some point in our working lives. We know that the cost of mental health to the economy is huge and growing and that the size of the bill (£70 billion) is not just damaging to individuals but to the UK economy (equating 4.5 per cent of GDP) – at a time when many of us are trying to figure out why we have such low productivity rates compared to our European neighbours.

We know that mental health is still viewed differently to physical health (but that it shouldn't be) and we know that we all need to be part of the fight to tackle the stigma associated with it.

The good news is that we are much more aware of mental health than we ever have been in the past. People are much more willing to talk about their feelings and disclose mental health conditions than they were twenty years ago.

## Mental health: the rail sector

I must confess I am a 'rail outsider', but even as a neutral observer it is obvious that the rail industry has some unique challenges when it comes to mental wellbeing. Job insecurity can be an issue, particularly when franchising arrangements are often likely to change. This emphasises the need to manage change effectively and to communicate well.

Other obvious concerns alongside security, include stress and dealing with traumatic situations. There are very few other professions in which employees have to deal with the prospect of confronting someone else taking their own life. Not to mention the increasing demand on rail transport and the levels of customer frustration that can sometimes

be unfairly targeted at frontline staff. But even as an outsider I can see that the rail industry, along with many other sectors, is starting to take stress and mental health seriously.

Although everyone's mental health is unique and individual problems can obviously be difficult to deal with, there are some common ground rules for 1) helping you promote the mental wellbeing of your staff and 2) helping you and your staff to manage yourselves – for example, by considering self-help techniques such as Mindfulness (see below).

## Mental health: Acas's interest

Acas is better known for resolving disputes at work than promoting wellbeing. But as the world of work has evolved, so have we. 'Employment relations' is no longer just about reactively dealing with conflict. It is about proactively promoting the kind of relationships and behaviours (along with the right policies and procedures) that stop problems happening in the first place: prevention rather than cure.

We all have a state of wellbeing that needs looking after; and employers are

Mental wellbeing: what influence does a manager have?

acas



**'I must confess I am a 'rail outsider', but even as a neutral observer it is obvious that the rail industry has some unique challenges when it comes to mental wellbeing'**



realising that you need to look at the whole person and not just the workplace presentation of the individual. If someone is unlucky enough to suffer trauma at work, it's no good just assuming they will talk to their loved ones and it is 'out of your hands'.

Acas has been actively interested in mental health for a number of years. We have teamed up with the mental health charity Mindful Employer, to produce guidance and training to help people like you: people who need to set an example and have the confidence to talk openly about mental health and mental illness.

**Mental health: Acas's top tips for managers**

**know your limits:** you are not a counsellor and don't have to pretend to be one. You may know what bipolar disorder is, for example, but you are not qualified to medicate or offer detailed advice

**listen:** if you are in any doubt that you don't know how to listen properly then get some training. This is a paramount skill as the majority of staff will not feel confident disclosing a medical condition if you are not approachable

**set an example:** do you take your lunch breaks? Do you send emails outside

working hours? Are you enlightened about mental health issues?

**consider 'alternative' techniques** to managing mental health, such as mindfulness

**control the things you can control and don't worry about the things you can't:** for example, you can control work flow, relationships in the team *etc* but you have no control over a person's family life or their medical history (see diagram on previous page)

**be honest:** if you are stressed it will communicate to staff, but honesty is important too, so don't hide how you are feeling.

If you are interested in finding out more, check out our guidance on mental health at [www.acas.org.uk](http://www.acas.org.uk).

**Mindfulness**

A lot has been said about mindfulness recently. I can speak from personal experience and say that I am a fan. I think it teaches good techniques for managing stress and anxiety that can be transferable across jobs and sectors. But, if you haven't already, you need to find out for yourself.

In a recent blog on the Acas website, Acas area director for the East Midlands, Kate Nowicki, addresses this very

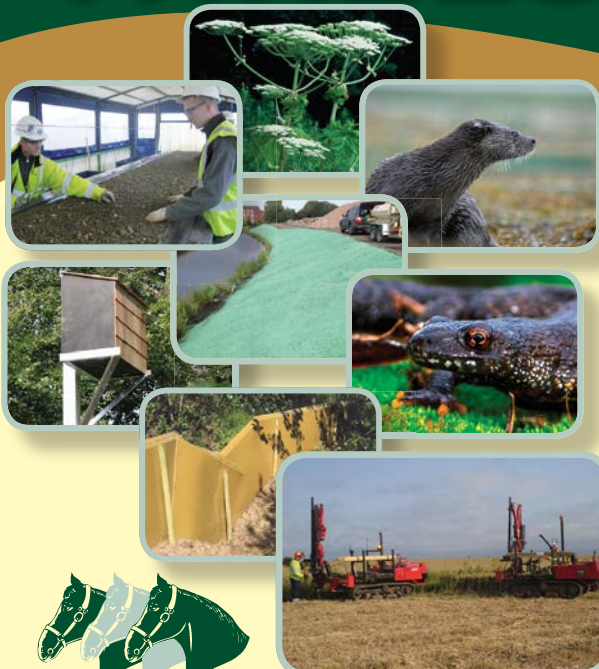
**'A lot has been said about mindfulness recently. I can speak from personal experience and say that I am a fan. I think it teaches good techniques for managing stress and anxiety that can be transferable across jobs and sectors'**

question. She asks is there any value in Mindfulness? Her conclusion is 'Yes': 'Whether it's a walk out at lunchtime to feel the breeze and take notice of the world, or a five minute 'zone out' at our desk, a daily spell of mindfulness could be the medicine that we all need to help us.'

For more information on Mindfulness you might want to visit the 'Be Mindful' website at [www.BeMindful.co.uk](http://www.BeMindful.co.uk)  
Adrian Wakeling is senior policy advisor, Acas

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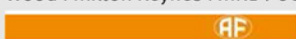
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# Know thy traveller

Research commissioned by Amadeus, indicates that in the period to 2030, six key traveller segments - or 'tribes' - will emerge and shape the travel industry, **Mirja Sickel** explains the implications

**U**nderstanding what customers want is vital for the success of any business. At a time when rail companies face increased competition from other transport modes including coach and car, this becomes even more important: if railway operators are to stand out in a crowded marketplace they need to understand what their customers are faced with in order to secure their loyalty.

Travellers now have access to new travel options, coupled with pertinent information at their fingertips. This means price alone is no longer an adequate differentiator between companies. With the rapid adoption of easy to use travel platforms such as BlaBla Car, rail operators and other players in the travel industry need to introduce new concepts to increase customer-centricity. This will help to provide what a customer wants as well as what they need, and put the customer at the heart of every business decision. Becoming a travel provider of choice is no longer about getting someone from one place to another at a low cost; it is now about providing the right information at the right time in the way the traveller wants to see it, before, after, and during the journey.

Travellers' needs and motivations are becoming increasingly personal, and it is therefore important that rail providers truly understand who their travellers are. It's now necessary to look deeper than the traditional traveller segmentation of 'business versus leisure', and provide a more intimate personalised offer.

In fact, recent research from Future Foundation, commissioned by Amadeus, indicates that in the period to 2030, six key traveller segments - or 'tribes' - will emerge and shape the travel industry: Simplicity Searchers; Cultural Purists; Social Capital Seekers; Reward Hunters; Obligation Meeters; and Ethical Travellers. These tribes are based on traveller motivation and behaviour, rather than demographic segmentation, and each tribe will have distinct preferences and attitudes that will impact his or her booking and travel behaviour – for example, Cultural Purists are keen to



travel 'like a local' and so might choose rail over car travel for the immersive experience it offers when visiting new destinations. Ethical Travellers will view rail as an eco-friendly option for getting from A to B as they seek to lower their carbon footprint. Understanding which category each traveller belongs to is key to meeting customer needs and encouraging their loyalty, today and in the future.

## The rise of multi-modality

Meeting the needs of your customers – whether they are business travellers, holidaymakers, Cultural Purists or Ethical

Travellers – is about the end-to-end journey experience, from booking, to on-trip, to arriving at the traveller's final destination. As a result, multi-modality – combining different modes of transport across the door-to-door journey – is becoming increasingly important. Multi-modality already works on a local level, with city dwellers using a single card to travel across bus, underground, and tram networks. Taking this to a regional level is a bit more difficult, but making the jump to international multi-modality takes on a new level of complexity as each transport provider has its own system, ticketing types, and distribution sales channels. This means that a traveller today, looking to book a journey that includes urban transport, rail, and air, for example, might need to visit multiple websites, or the travel agent booking the journey may need to negotiate a complex array of booking systems.

But from a technological perspective, multi-modality is more accessible than before. Different travel providers – both public and private – can share information to create a more connected travel system. This type of collaboration can give travellers a clearer understanding of the most efficient route for their journeys: for example, using public transportation to connect to a railway to connect to an airplane.

The development of a more connected,



multi-modal travel ecosystem keeps the customer at the forefront as it will help ensure travellers choose the best option based on their needs and preferences. Whether this is the fastest or the most eco-friendly route, essentially, it's now a much more personal choice.

#### Increasing the visibility of rail

To deliver on the vision of creating a truly door-to-door experience for the traveller, it's essential that rail is firmly integrated in the wider travel ecosystem. With the intention to create loyalty, travel providers are working together, sharing information and creating a more connected travel ecosystem that allows potential travellers to more easily see all of their options.

New platforms make it possible to integrate systems and show travellers rail alongside air travel options when they're searching routes and booking journeys. This not only makes it simpler for travellers to see which mode is best for their needs, but also allows them to book rail as easily as air. This ease of access will encourage rail travel where possible, opening it up to a new set of customers. The benefits of integrating rail into the travel ecosystem extend beyond just bookings – Amadeus, for example, is able to integrate rail segments into

PNR's (Passenger Name Record, or in other words a single booking reference), incorporating them into the full journey's itinerary. As a result of this, travel providers at each step of the journey can more easily be aware of the traveller's plans to ensure their needs are met.

#### Revenue management and loyalty: encouraging bookings

Becoming truly customer-centric doesn't stop at understanding the traveller's needs. Establishing customer loyalty and enjoying the resulting increase in bookings and revenue requires new thinking from both an operational and technological point of view.

Personalisation is one way to achieve more loyalty, and has been very successful in the air industry: airlines have learned enough about individual travellers to be able to identify and offer the ancillary services they'll be most interested in. Rail providers, too, can learn about their travellers and identify which extras they'd most like to purchase. Apart from increasing revenue through ancillary bookings, travellers will become more loyal as they are most inclined to book repeat trips with providers who know them and don't require them to give the same information over again. Airlines already do this with frequent flyer

cardholders; the next step is for rail companies to do the same.

Having well-established customer data and knowing details such as preferred class and seating position will also aid with revenue management. Revenue management solutions use forecasting techniques and real-time data exchange to determine how much potential customers are willing to spend for the products they want. Rail providers who know this information will be able to treat high value customers in a more personalised manner. This will encourage repeat bookings while allowing rail providers to benefit from increased revenues.

#### Rail as a customer-centric travel option

Rail travel – specifically high-speed rail – is increasingly under threat from new players such as coaches, car-sharing and on some routes, short-haul air travel. As rail providers work more on being able to seamlessly integrate with other types of travel and become easier to book, and therefore putting the customer first, the knock-on effect will be that travellers will increasingly choose rail as part of their journey.

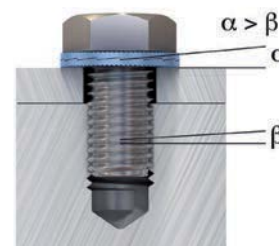
Mirja Sichel is head of sales and marketing, rail and ground travel at the Amadeus IT Group

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# Northern rights

**Michael Ireland** wants to see a greater sense of urgency from local and national government in providing a rail service for rural Devon and North Cornwall

The study *Rural Reconnection: the social benefits of rail reopening rural railways* is a new report for the Council for the Preservation of Rural England (CPRE) prepared by consultants *Greengauge21* and published in June 2015. This report represents an important step in the recognition of the wider value of reopening railways in rural areas. The rationale for the study was presented through the debate around reopening the 'Northern line', the former LSWR route from Exeter to Plymouth, via Okehampton and Tavistock. This was seen in some ways as presenting the perfect case for rural rail development, within a live context. The point is made that the wider public debate has been about resilience and not so much about what a railway would actually do. The

question asked was 'What lessons could be learnt from opening rural railways?'

To answer this question the scope of the study addressed three important issues for rural communities presently without access to the rail network. It asked 'What would be the likely impact of reopening the line?' It provided an outline of the type of service to be delivered, and then asked 'What are the wider lessons that can be learnt from this study?'

The study drew four important conclusions; there is strong support for the entire Northern route to be reopened; the economic development of the sub region to the north and west of the line, particularly North Cornwall and North West Devon suffers from no rail link; remoteness from the network represents a real cost to businesses and better connectivity would benefit the two

major cities (Exeter and Plymouth) and the towns of Okehampton and Tavistock. Of paramount importance is the resilience that a new inland route would bring to the south west peninsula against extreme weather events.

### Critical evaluation

As a piece of consultancy the report is very well-presented and structured with a wide evidence base. It is acknowledged there is a need for more research of the kind Destination Okehampton has proposed on how the re-opening would affect rural areas which it passes through.

Having been one of the participants in the working seminar earlier this year, I can see that the considerations about the wider benefits to the area north and west of Okehampton, namely Hatherleigh, Holsworthy, Launceston and Bude have



The Sunday Train to Okehampton

been subsequently added. For example under the heading ‘Demographics and housing’ the 53,000 population figure for West Devon is misleading. This is an underestimate of the true beneficiaries of the line in North Cornwall and Torridge estimated to be in excess of 100,000. This problem occurs because the original study area remit was the West Devon Borough Council administrative area. This has been redressed to some extent with some very good points from Tina Collins (business advisor to Destination Okehampton) on how businesses are affected by the absence of a railway in NW Devon and North Cornwall.

The report adds legitimate weight to the on-going debate that the line should be re-opened showing the wider benefit of improved connectivity to the rail network for the towns of Okehampton and Tavistock. It is good to see the report challenge the idea that the Northern route is slower, citing a possible 53 minute class 220/221 voyager between Exeter and Plymouth. The points made on the introduction of a regular year-round Okehampton service must be supported and introduced as soon as stock and funding is available. As someone who works to promote the use of the summer Sunday service, I see evidence through passenger numbers (between 60-70 on the first train from Okehampton at 09:55) that there is demand for the reopening of the line. The value of the railway to the report study area is well-made by Terry Cummings, Okehampton town councillor, who said: ‘We must also include the fact that it [the railway] opens up our region to the people of Plymouth and its surrounding areas offering them access

to the Northern Moor; it also makes a central location for companies across the region to provide short education and training courses – a great many of these courses take part in Exeter due to the ease of access from North and South Devon and into Cornwall. It also provides another source of employment giving the people of our area greater choice into where they would prefer to work; each city offers different opportunities to potential employees.’

There is clearly a renewed interest in re-opening the line as the report concludes, but it does not always reflect demand and the benefits to tourism, employment, education and training in the wider catchment area **beyond** Tavistock and Okehampton into North

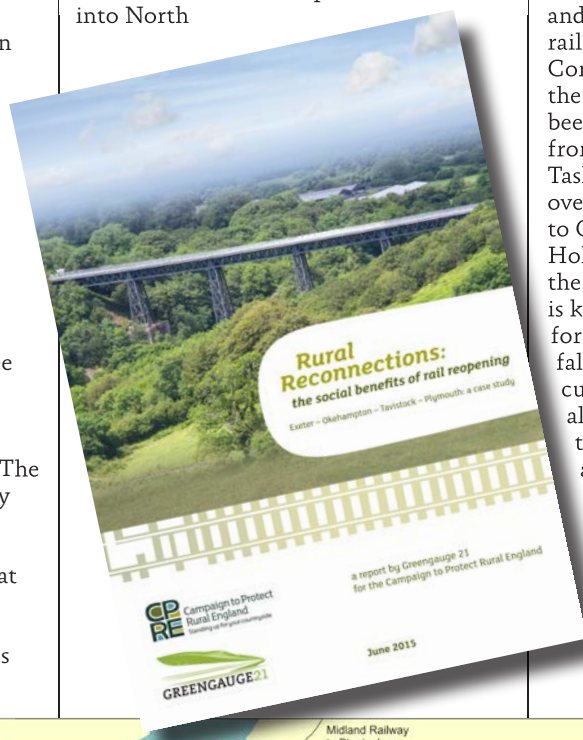
Cornwall and Torridge. In Okehampton we have houses without a rail service, even though we have the line in place; this is a situation that must also be redressed as soon as stock and funding becomes available, and long before the end of control period (CP) 7 in 2024 – 2029.

**The future**

On the 30<sup>th</sup> July First Great Western and the government announced a deal had been agreed for new trains to serve the London to Penzance services with electric/diesel units. There was no mention of the provision of any service to the parts of rural Devon which are the subject of the CPRE report. There seems to be no sense of urgency by local and national government to provide a rail service for rural Devon and North Cornwall. Instead the implementation of the Northern route via Okehampton has been delayed a further five years, moving from CP6 to CP7 (source: Peninsula Rail Task Force). In the face of uncertainty over the provision of rural rail services to Okehampton, to serve Launceston, Holsworthy and Bude, it is essential that the popular Sunday service to the town is kept open and seen as an investment for the future, because once the railway falls into disuse the track bed, bridges, culverts, cuttings and embankments will all decay, making the reinstatement of the Northern route far more expensive and less attractive to government.

What the CRPE report shows is there is now a need to prioritise rail services in rural areas, long neglected by successive governments.

Dr Michael Ireland is chair of Destination Okehampton – a council working group



# All in the planning

While commendable, the SWL could have further repercussions for hiring and workforce planning for an already skill-short sector, says **Nicholas Anderson**

**T**here is no doubt that Network Rail's Safe Work Leaders initiative (SWL) has been put in place for all the right reasons. Obviously all stakeholders in the recruitment process want to eliminate workforce fatalities and major injuries and aside from the moral and ethical standpoint, improving workforce safety is good business. The process for ensuring this safety is clearly business critical and so ensuring that not only is there someone who has overall responsibility for safety and work delivery – but that everyone on site knows who specifically has that responsibility – is vital.

Network Rail has introduced three different SWL competencies aligned with the operational environment in which the role is being undertaken. Level 1 will be for simple activities; Level 2 will be for

sites involving trains or multiple work groups and Level 3 will be for highly complex sites with many interfaces. For each competency the individual will have taken appropriate training so that they can demonstrate the experience and capability to lead the task. The SWL will be an employee of Network Rail or the principal contractor and will be involved throughout the full planning, delivery and hand back cycle.

This all makes perfect sense, but what concerns me is the resourcing of the projects in the first place. As a business which supplies staff into the rail sector, and which has been operating in the construction and infrastructure field for ten years, our company knows that this is an already critically skill short sector. This initiative – while completely understandable – could have further repercussions for hiring and workforce



planning for an already skill-short sector which not only already faces stiff competition for skilled workers – but which also struggles to source candidates with the right qualifications and experience.

Training started back in 2014 and while 5,700 candidates have been on training courses, this is still just under a third of the national target with some contractors expressing concern over the logistics of releasing staff for training and how they allow SWL's to get involved in work planning.

Principal contractors need to consider how many SWL's will be needed for specific projects, who will be capable of receiving the training – and preparing a transition plan – all against a backdrop of a busy programme of works – and that's before they even consider resourcing the projects in the first place.

In the maintenance area alone, we have an ageing workforce where almost 5000 workers will retire over the next ten years. And let's not forget that we are not just talking about replacement hires here, but the additional numbers needed because of the increased investment in infrastructure. And we are also not just talking about technical/engineering roles – the sector is experiencing a major skills

shortage industry-wide at the moment from labourers and skilled tradesmen such as carpenters, bricklayers, painters, electricians and plumbers right through to safety critical staff.

According to TUC figures, HS2 will create 25,000 construction jobs, but only 16 per cent of apprenticeships currently on offer are linked to the trades and occupations needed for high speed rail construction. It's time the government acted to support national infrastructure providers such as Network Rail by creating more apprenticeships so that we can start training the rail workers of the future – and by also doing more at a grass roots educational level to inspire young people to look at construction and engineering as attractive career options. The labour shortages will not be fixed overnight - we need to invest in our future, we need to invest in our 18-25 year olds. We need to make the industry attractive again for our younger generation- I wonder how many know they can potentially earn circa £50k as a qualified trades person?

**Supply and demand issue**

One result of this current and projected future shortage is that rates for skilled contractors are at an all-time high

and according to NoPalaver Group, which provides accounting services to contractors, average pay has increased by almost 75 per cent in the last three years. Contractors can currently pick and choose where they want to work and we have a simple supply and demand issue – the only result of which will be an upward pressure on rates. And while we do not have a large number of migrant workers in the rail sector, we have to remember that workforces are now globally mobile. With rail infrastructure projects going on all over the world, we may not just be looking at issues of attraction and recruitment – but also retention.

I'd encourage employers to work in close partnership with their recruitment suppliers ahead of when they actually need boots on the ground. If we are to help resource projects as efficiently as possible, we need to have clear visibility of workloads, pipelined projects and any potential staff shortages. The message is clear – the very future of our railway infrastructure programme lies not just with our skilled workers – but in efficient and proactive workforce planning.

Nicholas Anderson is rail manager with specialist recruiter One Way Recruitment

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# A regional railway salary comparison

Over the last few years the rail industry has seen many skilled workers going to work on major projects in the Middle East, meaning demand for workers in the UK is very high. This has turned the market into a candidate-driven market and consequently pushing up wages to a level not seen before.

## Wage comparison

Research conducted by Maple Resourcing, using salaries published by Railway People, Mysalary.co.uk, Indeed.com and its own placement figures was used to calculate the average daily rate of four skill-sets across five UK regions.

## About the data set

Information obtained from Railway People shows that the skills that are frequently in high demand are: PTS labourers, signalling engineers, construction managers and project managers. The tables below show the average daily rate of these skills across five UK regions: Scotland, North East, Midlands, London and South West.

Table 1

Region	PTS Labourers
Scotland	£90.00
North East	£120.00
London	£140.00
Midlands	£110.00
South West	£110.00

Table 2

Region	Signalling Engineers
Scotland	£130
North East	£123
London	£170
Midlands	£142
South West	£135

## Analysis of Results

Using the figures in Tables 1 to 4, we were able to calculate the average daily rate of each skill-set, detailed in Table 5.

Analysis of the figures shows that construction managers are receiving on average a daily rate of £223.20.

This is followed by project managers with a daily rate of £219.40, signalling engineers who on average receive £140.00 per day and PTS labourers earning approximately £114.00 per day.

## Regional analysis

Figures for all skills-set in each region were used to calculate the average daily rate for that area.

It is good news for rail workers in London. Not surprisingly they received the highest daily rate. Competition for skilled workers in the capital is high. Large infrastructure projects are pushing up salaries.

Table 7 illustrates the percentage difference in London rates to the other regions investigated.

Compared to the Midlands, London wages are 16.16 per cent higher and 22.31 per cent higher than in Scotland. Workers in the

Table 3

Region	Construction Managers
Scotland	£212.00
North East	£231.00
London	£250.00
Midlands	£231.00
South West	£192.00

Table 4

Region	Project Managers
Scotland	£212.00
North East	£192.00
London	£269.00
Midlands	£212.00
South West	£212.00

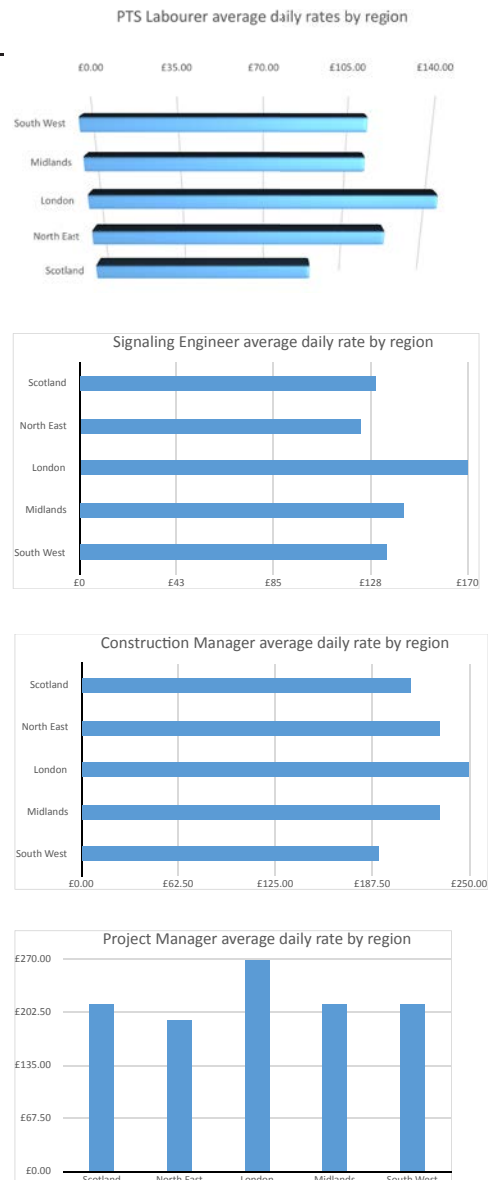


Table 5

Job Title	Average daily rate
PTS Labourers	£114.00
Signalling Engineers	£140.00
Construction Managers	£223.20
Project Managers	£219.40

Table 6

Regional average daily rate	
London	£207.25
Midlands	£173.75
North East	£166.50
South West	£162.25
Scotland	£161.00

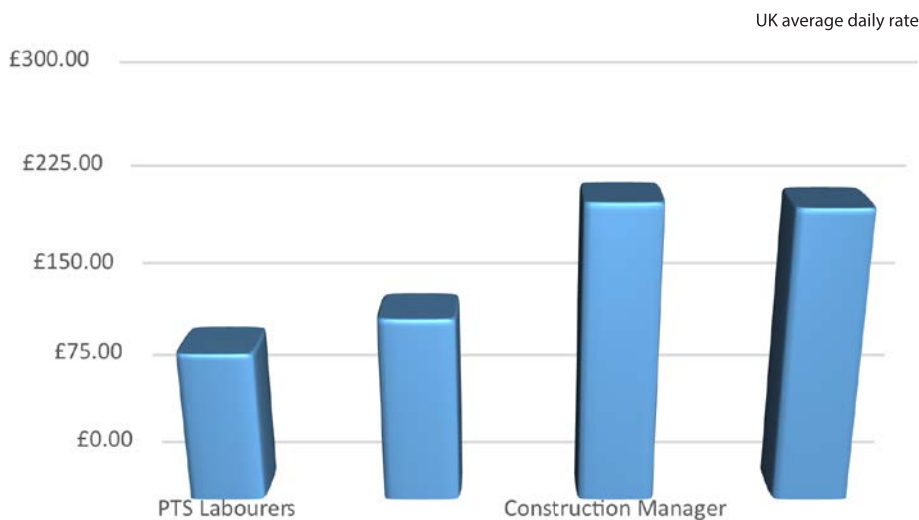
Table 7

% difference in London wages to	
Midlands	16.16%
North East	19.66%
South West	21.71%
Scotland	22.31%

South West are 21.71 per cent worse off than those in London.

**Who earns the most?**

Not surprisingly people who work in managerial roles earn the most. The figures show that construction managers are receiving the highest daily rate of £223.20.



Construction managers based in the capital are enjoying the highest daily rate of £250. Compared to the South West where the average daily rate is £192. However, overall the salary difference is marginal across the remaining regions.

**Who earns the least?**

Manual workers come at the bottom of the pay scale. PTS labourers receive on average a daily rate of £114.00. PTS labourers based in London earn the highest daily rate of £140.00 per day. Compared to Scotland where they can expect to earn just £90 per day.

**What will the future hold for rail wages?**

The future of the UK rail industry is very positive. A report conducted by NSARE in 2013, identified that 10,000 people are needed in order to deliver all the projects currently in the pipeline. In a candidate driven market, such as the one we are experiencing at the moment, workers in managerial positions are to a certain extent being able to dictate their salaries. Whereas as this research shows, workers with less specialist skills have less of an influence on their rate of pay.






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# Insight for all

**Martin Abrams** describes the thinking behind the new *Passenger's Guide to Franchising* and what it is intended to achieve

**T**he rail franchising process is complex and can often be confusing for passengers, so Campaign for Better Transport, working with the Department for Transport's Rail Executive, decided there was a real and urgent need for a new, simple and effective guide to rail franchising, and the result is the *Passenger's Guide to Franchising*.

The guide has been designed and written specifically to answer some of the questions most frequently asked by passengers and will help to explain how the franchising process works and how passengers can have their say before, during and after a franchise competition is run.

While Campaign for Better Transport is, as our name would suggest, a campaigning organisation, this wasn't the first time we had worked together with the DfT on transport projects and throughout the process of writing the guide we further developed our good working relationship with key members of the franchising team.

The DfT has clearly worked hard to steady the franchising ship since the West Coast Main Line fiasco when the government scrapped its decision to award the £35 billion franchise to FirstGroup costing the taxpayer an estimated £50 million. It's vital that, since

**'Essentially we want to help enfranchise passengers in the railway franchising process. Many passengers might not even be aware that they can have their say let alone how to have their say'**



then, the Rail Executive has put together a programme of increased transparency and public engagement that allows passengers to put their ideas across to influence certain outcomes of franchising processes.

The main objective of this guide was to ensure that the most important aspect of the railway network - its passengers - understand and feel able to contribute, use their voice and have their say on what happens to the routes they use regularly. Essentially we want to help enfranchise passengers in the railway franchising process. Many passengers might not even be aware that they can have their say let alone how to have their say, and this guide ultimately addresses all of that. It covers everything from frequently asked questions such as 'Who runs my station?' 'Who decides the price of my train ticket?' to covering the more technical bits such as the franchise competition process from stakeholder engagement, public consultation, pre-qualification, invitation to tender and franchise award. We cut through the technical jargon to provide a simple but effective guide that will be updated regularly as the franchising system evolves.

#### Feeling wholly valued

The franchising model, as we know it, is here to stay for at least the remainder of this parliament and we fully understand that the way our railways are run can often be an emotive subject. This guide does not set out to take a position

on what is right and wrong with the franchising process but merely to simply outline the system that exists in a clear way.

Rail franchises continue to come up for renewal and more will be awarded over the next few years under the government's rail franchising schedule and we hope the guide will give passengers a real insight into the decision making process of the DfT when awarding a franchise to a new or existing train operator.

The franchising system is still by no means perfect and the DfT still has a lot of work to do to open up the process and ensure passengers feel wholly valued, not just in the letting of franchises but across the whole experience of being a passenger. This can only be achieved if the DfT continues to reach out and work much closer with passenger and campaigning groups like Campaign for Better Transport.

Despite the huge increase in passenger numbers since privatisation there is still a significant deficit in people's trust in how our railways are run. Increasing trust levels is vitally important to ensure that our railways continue to improve and it is more important than ever that passengers are a fundamental part of that journey. We hope our *Passenger's Guide to Franchising* plays a small but important role in achieving that.

Martin Abrams is public transport campaigner at Campaign for Better Transport

# Business News

## Safeguarding rail's prosperity



Rail companies are increasingly looking for bespoke insurance packages that could reduce premiums and provide cover that better reflects the risks in the industry, according to insurance broker Jobson James Rail.

Director, Keven Parker, said: 'There is recognition now that specialist and bespoke insurance packages are vitally important as more and more work becomes available to businesses operating in the rail industry.'

He pointed out that companies that used to take their larger premiums 'at face value' and accept that bigger outlays were due to the nature of the works they undertook, were now questioning them. 'Now, they're beginning to wake up and see that insurance is a key investment to be carefully assessed on a bespoke basis rather than a routine expense for an off-the-shelf product.'

Times are changing according to Parker: 'The upturn in investment in the



Keven Parker, director at Jobson James

UK's railways brings more opportunities for rail businesses to prosper.

'Safeguarding that prosperity is where we can help by keeping their insurance costs low and leaving Toc's' management teams free to grow their businesses in the knowledge they have a rail expert insurance broker managing the risk and insurance relationship professionally.'

Visit [www.jobson-james.co.uk/rail](http://www.jobson-james.co.uk/rail)

## The power of the Underground

Industrial battery manufacturer Saft has been awarded a contract worth more than £700,000 by Alstom to provide power units for London Underground trains.

Destined for the Northern Line fleet, Saft's nickel-based SRM batteries provide backup power to functions that include radio, train control and CCTV systems in case of an interruption to the main power supply.

Under the contract, Saft is supplying 212 of its SRM batteries to Alstom's Golders Green Traincare Centre, where they will be installed on the 106 trains that operate on the Northern Line.

Matt Goff, purchasing manager for Alstom, said: 'Alstom awarded the contract to Saft because of its confidence in its technology, competitive price, extended warranty and proven reliability.'

Visit [www.saftbatteries.com](http://www.saftbatteries.com)



The batteries will be installed on 106 trains

## Not thirsty work

A company that has engineered technology to reduce the fuel consumption of trains by ten per cent has been awarded £50,000 and a Royal Academy engineering innovation prize by its senior fellow, The Duke of Edinburgh.

Artemis Intelligent Power's Digital Displacement® power system was originally developed to transform the viability of offshore wind power but can also be harnessed to improve a train's efficiency.

A regenerative braking energy storage system based on Digital Displacement® can be retrofitted to existing diesel commuter trains, with trials by Ricardo and Bombardier showing the ten per cent reduction. The system also generates less noise and cuts exhaust emissions within stations.

Dr Gordon Masterton, a judging panel member, said: 'The team has done for hydraulic engines what James Watt did for steam engines; it has totally transformed the efficiency and range of potential applications.'

Visit [www.artemisip.com](http://www.artemisip.com)

## Putting up defences

Geosynthetics brand TERRAM, has launched a pre-design software tool to help users select the correct product for erosion control and retaining walls. By entering application information, the system generates the applicable product code and pin density to ensure a stable structure when building a retaining wall. The product is suitable for multiple applications, including the construction



Erosion protection from TERRAM



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of railways, pipelines and for use in landscape engineering, allowing for the free flow of water that reduces project costs and minimises environmental impact.

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Visit [www.terram.com](http://www.terram.com)

## Filling the skills gap

**O**SL Rail is due to build a state-of-the-art training facility for railway engineers that will help newcomers, and those already in the industry.

The academy, which will be built on an existing OSL site in Crewe, will use digital technology to provide a comprehensive training environment that will focus on those already employed in the industry, as well as the next generation of engineers.

With plans to open it this year, the facility will offer training packages custom designed to develop core skills in various rail engineering disciplines.

John O'Boyle, OSL managing director, said that the new facility signified 'an innovative, balanced and collaborative approach to training'. 'The aim is to provide young professionals of the future with a systems training focus that will encourage natural progression routes into the rail industry.'

Crewe and Nantwich's MP, Edward Timpson, who backs the academy, said: 'I very much hope that I will be able to be an ambassador for it in Westminster in the years to come, helping it make a significant contribution to the industry.' Visit [www.o-s-l.uk.com](http://www.o-s-l.uk.com)

## An old flame

**S**uspension manufacturer Trelleborg will be supplying Crossrail's fleet of trains with a complete suite of primary and secondary suspension systems bolstered with fire-resistant properties.

The Bombardier Class 345 trains will be fitted with primary conical springs and



The Trelleborg air spring system



Merseyrail is the first Toc on the network to raise the Apple Pay limit above £20

## Apple Pay arrives in Merseyside

**M**erseyrail is now accepting Apple Pay across its network, allowing customers to purchase tickets and passes using their iPhone 6, iPhone 6 Plus, iPad and Apple Watch.

The Toc is the first on the network to allow payments of more than £20, enabling higher value tickets to also be bought with the new technology.

Those using Apple Pay need to swipe their payment-enabled devices over the chip and PIN unit at the ticket gates in the same way as with contactless credit or debit cards, which has been available on Merseyrail since 2013.

Kaj Mook, customer services director, said: 'We're keen to make everything about travel on Merseyrail easier and more convenient, and Apple Pay does just that.'

Visit [www.merseyrail.org](http://www.merseyrail.org)



Trelleborg's protective coating cuts the risk to passengers in the event of a fire

air spring systems, which are protected with Trelleborg's fire retardant protective coating, DragonCoat.

The coating reduces the flammability of the products and delays smoke, toxic emissions and the onset of flames, cutting the risk of passenger exposure to fire by increasing evacuation time by up to three minutes.

Global lead buyer for Bombardier Transportation, Naveen Chandra, said: 'With passenger safety of paramount importance to us, we have taken careful consideration to find products that lower fire concerns.'

Visit [www.trelleborg.com/anti-vibration-solutions](http://www.trelleborg.com/anti-vibration-solutions)

## Silver surfers

**M**ore than a million elderly passengers have been given access to free travel across London, thanks to a concessionary travel scheme renewed by the ESP Group. The Freedom Pass entitles Londoners over the age of 62 to travel for free around the city and must be renewed every five years. Previously only updatable via an offline process (with a majority using the Post Office), London Councils have decided that customers should also be able to do it online.

The ESP Group carried out the latest renewal of the pass, developing online portals for transferrals (from TfL's 60+ scheme), renewals and first time applications. The whole process required the production of 802,000 smart card passes, three online portals, 150,000 calls and 850,000 letters.

Councillor Julian Bell, Chair of London Councils' Transport and Environment Committee, said that the transition was seamless and exceeded expectations. 'Over 74 per cent of senior card holders renewed their pass online this year, which is remarkable considering that 11 per cent of those who renewed online had never used the internet before.' Visit [www.the-espgroup.com](http://www.the-espgroup.com)

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## Life changing' academy

Newcastle College's Rail Academy, the first of its kind in the north east, has formed a partnership with Infra Safety Services (ISS) Labour, guaranteeing permanent positions for students.

The Gateshead academy offers ten students paid work experience at ISS Labour, with five becoming permanent employees after 12 months. It was opened in September 2014 in response to the government's ambitious plans for the UK network.

ISS provides a range of rail site services including overhead line electrification, welding, labour supply and site lighting. Its chief executive, Simon Higgins, said: "There is a huge skills gap in the rail industry at a time when there is going to be enormous growth and we don't have the numbers of skilled people needed to carry out all of the work."

Marc McPake, the Academy's head of rail, said the partnership was a great incentive for the students, with the prospect of full-time employment providing a 'huge boost'.

One of the students offered work experience, Liam Barrass, said: "The Rail Academy has been brilliant. It has changed my life. I want to progress with my qualifications as far as I can."

Visit [www.isslabour.co.uk](http://www.isslabour.co.uk)

## Stimulating innovation

A technology and innovation centre has catalogued more than 200 sources of information and data in an effort to speed up the evolution of transport systems in the UK.

Transport Systems Catapult (TSC) has launched a unique data index for technology developers that for the first time gathers the information in one place.

The Intelligent Mobility Data Index allows developers and technologists to discover open and commercial data across all modes of transport, helping them to develop solutions to transport-related

challenges.

TSC has identified difficult-to-access data as a major obstacle to innovation that could improve UK transport, prompting the company to work with various transport organisations to bring together as many resources as possible.

"Stimulation of the data market is vital if we want to speed technological advancements and innovation in the transport sector," said Dr Yolande Herbath, business unit director for the information exploitation group at the TSC.

Visit [www.imdata.co.uk](http://www.imdata.co.uk)



Transport Systems Catapult's unique data index for developers



The Gateshead Academy's new recruits Marc McPake (centre left) and Simon Higgins (centre right) with some of the students who have been chosen to work with ISS Labour over the next year

## GTM12 M12- Data Connectors

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## New fleet for GTR

The first carriage of the new Gatwick Express train, the Class 387/2, has been built and is undergoing static testing by Bombardier Transportation.

Govia Thameslink Railway announced in November that it had signed a £145 million order for 108 custom-built train carriages. The new trains are due to enter service in 2016 and will replace the 1980s-built 442 trains, which have been operating on the Gatwick Express service since 2008.

Specially designed for the airport route, the 27 four-car 387/2's have improved luggage space, facilities for passengers with disabilities, power points at every seat, Wi-Fi and automated on-board service information.

Angie Doll, passenger service director for Gatwick Express, said it was good news for customers further afield too.

'The benefits our passengers will receive will also be felt by those travelling from Brighton, as in the off-peak some of these trains will be extended to this station.'

Visit [www.gatwickexpress.com](http://www.gatwickexpress.com)

## VGC wins Crossrail contract

The VGC Group is working on a £2.3 million contract with Costain to construct three over-ground sections of the Crossrail route.

The £150 million north-east spur project will prepare the railway between east London and Essex, a 16-mile section that will form one end of the eastern section of Crossrail.

VGC is undertaking the civil engineering works that will entail vegetation clearance, cable route works, and bases for signalling equipment. The company's teams will also install points heating bases, build walking routes and undertake electrical earthing.

The work takes place alongside live, operational tracks, and normal schedules will be maintained while the work progresses.

Visit [www.vgcgroup.co.uk](http://www.vgcgroup.co.uk)

Visit [www.railpro.co.uk](http://www.railpro.co.uk) for  
the latest business news

## Recent New Members of the Rail Alliance as at end July 2015

**HYDRO Systems UK:** designer and manufacturer of ground support equipment for build/strip, maintenance and repair of aero engines.  
[www.hydro.aero](http://www.hydro.aero)

**Rescroft:** designer and manufacturer of public transport seating solutions accredited to ISO 90001:2008  
[www.rescroft.com](http://www.rescroft.com)

**Train Bits and More:** supplier of vacuum and gravity toilets, interior refurbishment products and washroom and water management systems  
[www.tbmrail.com](http://www.tbmrail.com)

**Impreglon UK:** applicator of fluoropolymers, anti-graffiti and anti-microbial coatings onto metallic components, as well as abrasion resistant, non-glare and anti-fog coatings onto plastics  
[www.impreglon.co.uk](http://www.impreglon.co.uk)

**Prysmian Group:** provider of railway-specific technologies, including medium and low-voltage power cables, communication cables and signalling cables  
[www.prysmiangroup.co.uk](http://www.prysmiangroup.co.uk)

**Schaltbau-ME:** designer, developer, manufacturer, repairer and tester of electro-mechanical and electronic components  
[www.schaltbau-me.com](http://www.schaltbau-me.com)

**MGF:** designer and manufacturer of modular and bespoke excavation support systems  
[www.mgf.ltd.uk](http://www.mgf.ltd.uk)

**Humaware:** technology company dealing with condition monitoring prognostics technology for predictive maintenance  
[www.humaware.com](http://www.humaware.com)

**SPX Rail Systems:** designer and manufacturer of point operation equipment, level crossing barriers, as well as supplier of portable hydraulic track maintenance equipment  
[www.spxhydraulictech.com](http://www.spxhydraulictech.com)

**Truflame:** manufacturer and supplier of gas welding and cutting equipment which has an accredited repair and calibration workshop  
[www.truflame.co.uk](http://www.truflame.co.uk)

**Omnicom Engineering:** developer of surveying and inspection systems, including high-resolution image and LiDAR surveillance, pattern recognition software and a range of multiplatform mobile apps  
[www.omnicomengineering.co.uk](http://www.omnicomengineering.co.uk)

**BTRoS UK:** BTRoS interiors and cabling is a build-to-print manufacturing company for refurbishment and upgrade programmes  
[www.btros.co.uk](http://www.btros.co.uk)

**Linbrooke Services:** delivering mission-critical solutions in telecoms, power and signalling  
[www.linbrooke.co.uk](http://www.linbrooke.co.uk)

**Paul Kirk Forming:** UK agent for Schuler Group, FRIMO Group, WF and JG Automotive  
[www.pkforming.com](http://www.pkforming.com)

**Vandalism Control Association:** information hub for issues concerning avoiding, managing and repairing vandalism, including graffiti control and removal and surveillance and security  
[www.vandalismcontrol.co.uk](http://www.vandalismcontrol.co.uk)

# USB SOCKETS

## It's time to upgrade



- USB 1.2 Amp
- Slim back box depth
- Easy to replace and fit
- BS1363 approved
- EMC approved
- EN tested



# SmartRail Asia returns

The Asian rail summit, SmartRail Asia makes a return for 2015, as around £90 billion of investment is planned for rail and metro projects in the ASEAN region

After a successful 2014 exhibition launch, SmartRail Asia returns to Bangkok in November 2015 as the foremost rail technology event in the ASEAN (Association of Southeastern Asian Nations) region. The event comes at a critical time as around £90 billion is due to be spent on rail and metro projects across the region within the next six years.

The ASEAN region, which consists of ten countries with a combined population of around 625 million people (8.8 per cent of the world's total) and has a combined GDP of around £1.68 trillion, is an area of huge growth.

But with this expansion also comes increasing pressure on existing infrastructure, natural resources, population levels and the environment. As a result, ASEAN rail projects, metro developments and planning changes are being rolled out across the region, such as:

- Cross Island Line (Singapore)
- Klang Valley Mass Rapid Transit

- Project (Malaysia)
- Rayong to Nong Khai rail line (Thailand)
- Land Transport Authority formation (Philippines)
- Jakarta and Bandung high speed rail (Indonesia)
- The Hanoi Metro (Vietnam)
- rail signalling upgrade (Myanmar)
- Kunming-Singapore Railway (region wide)

To learn about these projects in detail, the full article is available at [www.smartrailworld.com](http://www.smartrailworld.com) and will be covered at SmartRail Asia 2015.

### About SmartRail Asia

SmartRail Asia is the largest free-to-attend exhibition for the rail technology industry in South East Asia. This year, 2,500 delegates will come together to learn, network and see the latest solutions in the ASEAN rail market. Supported by Ministry of Transport for Thailand, Thailand's Office of Transport and Traffic Policy, Bangkok Metro, SRT, Bangkok



Mass Transit System and KURail, this is a must-attend event for those who want to:

- meet buyers tendering for more than £90 Billion of planned projects in South East Asia
- learn best practice from rail operators around the ASEAN region
- showcase rail and metro solutions
- highlight expertise and successful projects
- make purchasing decisions.

Visit [www.smartrailasia.com](http://www.smartrailasia.com) to learn more and to register attendance.



# Cable location the EZi way

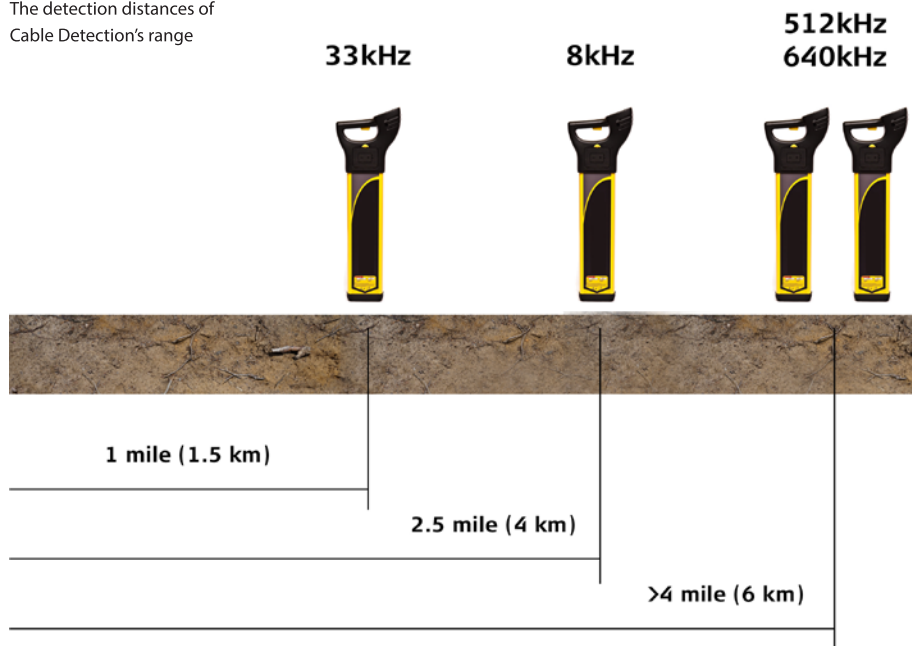
While the dangers of striking buried utility cables or pipelines are clear in terms of workforce injuries and disrupting supplies, what perhaps is less well known is how easy it is to guard against such situations

**C**able Detection offers a range of locating systems to easily and efficiently detect hidden dangers below the ground to increase on-site safety. The company's EZiCAT locator, for example, provides users with a unique automatic pinpointing feature that removes the need for manual adjustments and makes the locator easy to operate. Users need simply to press the trigger to start locating.

With Cable Detection's xf locators, users can detect buried utilities faster and more accurately than ever before, due to the xf range being specifically designed with long-distance tracing in mind. Equipped with 512Hz and 640Hz frequencies, the locators are capable of long-distance tracing and can detect sewer camera inspection systems.

The diagram below illustrates the improved detection distance through the use of the xf cable avoidance tool

The detection distances of Cable Detection's range



Figures are based on the EZiTEX 300xf transmitter connected to a 300mm iron pipe buried at 1.75m



and signal transmitter. The locator can be combined with the EZiTEX signal transmitter (either t100 or t300) to apply a traceable signal that enables users to estimate the depth of a buried cable.

The system can confirm if a cable is present even when it is not emitting power or radio signals. It also has additional low frequencies to locate and trace utilities over longer distances and in congested environments where there may be high signal interference.

#### The company

Cable Detection is part of the technology group Hexagon and is responsible for the design, production and support of a full range of solutions for the avoidance of buried utilities.

Based in Stoke-on-Trent, Cable Detection is focused on providing the best equipment for cable avoidance that protects workforces.

#### Network Rail approved

All of the company's EZiSYSTEM series locators and signal transmitters are Network Rail approved. This means that Cable Detection is the only manufacturer with an entire range of locators and transmitters that can be used across Network Rail infrastructure.

#### EZiCAT provides the when

Cable Detection was the first manufacturer to integrate data logging into a cable avoidance tool, providing the 'when and how' of cable avoidance. It means that fleet managers can analyse the data from the instrument and ascertain how the EZiCAT has been used.

#### But the 'where' was missing

Being able to obtain accurate information about the location of buried utilities has never been more essential to protect employees and equipment during any excavation project and – for the first time – Cable Detection has integrated a GPS module into its design. The EZiCAT i750 cable and pipe location instruments generate GPS readings to provide the 'where'.

Accurately locating underground utilities is straightforward with the equipment that integrates GPS technology, data logging and Bluetooth® connectivity in one easy-to-use device, which documents the where, when and how it has been used.

Every time the trigger is pulled, the EZiCAT i750 will record the geographical GPS position, usage duration, mode of operation, service detection and depth estimation. Using the provided LOGiCAT software, the fleet manager can analyse the onboard data via a PC, tablet or mobile phone.

Having access to this data means that

management teams can ensure the most effective possible use of the equipment, compliance with best practice standards and the supply of evidence in the event of an incident. This is all done while also assessing the quality and thoroughness of the work.

Management teams can engage operators regarding their working behaviour, highlighting it if they are using the equipment correctly, what functions have they searched in and even how fast they have undertaken the search. Data helps to reduce and ultimately prevent utility damage; the EZiCAT 1750 Series offers customers enhanced safety and efficiency.

**LOGiCAT software**

Analysing the data from cable avoidance tools has revolutionised in-field operation, reducing utility strikes by around 75 per cent. LOGiCAT can highlight how the EZiCAT has been utilised, which modes have been used and even whether the operator had undertaken a 'quick scan', which would indicate whether the search was rushed.

LOGiCAT software provides users with a quick and easy on-site data transfer solution, reducing downtime and improving efficiency. Using a single system, the user, plant manager or operations manager can analyse the instrument's data in the field or the office.

When combined with the EZiCAT i750 or i750xf, a geographical location of the survey will record the path of the utility search. Through the LOGiCAT software, the location of the survey will be incorporated into a Google Map image. A photographic aerial image highlights any unforeseen obstructions, such as street furniture, trees and boundary lines, which could impede the utility search.

LOGiCAT software identifies training needs and provides traceability of locating activities following a near miss, utility strike or similar incident.

**LOGiCAT app**

A LOGiCAT app can be downloaded onto a mobile device, which uploads the data files from the Ezicat i600, i650 and i750 cable avoidance tools. The data is then emailed directly to the chosen location where the LOGiCAT PC software will then integrate all the data.

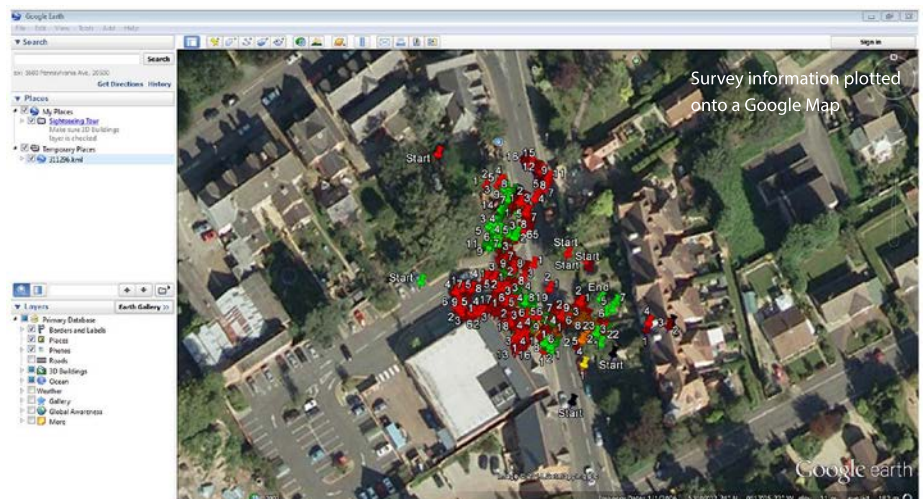
The LOGiCAT app helps to improve work flow and reporting by emailing the instruments log files on a regular basis for analysis. Costs are reduced as the surveyor can continually work off site without visiting the office.

**For further information or high resolution images, contact Ian Guest, marketing manager**

Tel: 01782 384634

Email: [ian.guest@leica-geosystems.com](mailto:ian.guest@leica-geosystems.com)

Visit [leica-geosystems.com](http://leica-geosystems.com)



# Power moves

Power solutions provider **Harland Simon UPS** examines the importance of having the correct uninterruptible power supply – for reasons of cost, reliability and safety

**E**nsuring uninterruptible power supply (UPS) systems are developed to meet specific requirements and are fitted with Lead Crystal® Battery technology, which not only keeps systems cost-effective and energy efficient, but also avoids risks and maximises public safety.

A large proportion of the UK's rail infrastructure is reliant upon clean, uninterruptible power supply, yet many of the technologies available continue to be overlooked. In addition to the main power sources that must be accessible to the trains at all times, other crucial components such as signalling systems and critical lighting in rural locations must also be reviewed. What would happen if a power outage occurs and a traffic warning system fails to signal an oncoming train? As well as fundamental business implications, the safety of the general public would be greatly compromised.

For example, should a situation involving signalling problems arise, the first impact will be delays to trains, which will therefore cause problems to the public who use them. More importantly though, the safety issue

presents the biggest cause for concern; with signal failures comes a greater risk of crashes and risk to life at level crossings. When a simple signalling failure can cause hours of delays to commuters, the fragility of the UK infrastructure becomes very clear.

### The Harland ProtectUPS®

The rail industry comprises many critical locations that require protecting but which are often unmanned, meaning that organisations need reliable

equipment that offers long-term protection. While some manufacturers insist data centre and office UPS systems need to be regularly tested (including monthly discharge tests) this is simply not a practical option for an out-of-the-way, unmanned location.

Demanding monthly maintenance activity creates an unjustifiable whole-life cost in harsh environments and the key is to install a device that is reliable, has a long life and requires minimal ongoing

maintenance. Harland Simons UPS has developed a reliable and rugged UPS that works within harsh environments and which has been engineered, modified, reinforced and tailored to fit within specific site and application space constraints: the Harland ProtectUPS®.

The UPS needs to be the correct form, fit and function. By doing this, and with the right UPS in place, organisations can be assured that these critical aspects of the national infrastructure will keep running irrespective of power outages or glitches. Put simply: by installing a UPS on a key intersection the rail industry can operate as planned and with the public's health and safety guaranteed.

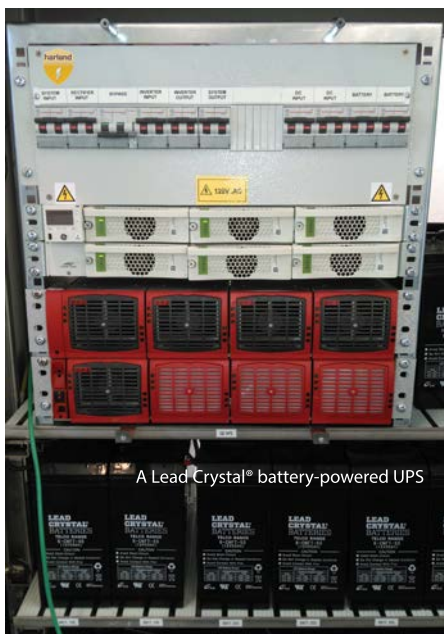
### The battery

Aside from the UPS itself, however, Harland Simon UPS recognises the need to consider the environmental impact, safety, performance and cost of a key component of traditional power supplies: the battery.

There is a new type of battery technology available on the market; a greener alternative to lead acid batteries and a far more cost-effective (and better performing) alternative to lithium-ion



Modular high-efficiency compact UPS system



A Lead Crystal® battery-powered UPS

batteries. Lead Crystal® batteries are now commonly used in a number of storage applications for AC UPS and DC systems. They carry copious benefits, such as longer life spans, temperature controlling abilities, and being safer for the environment, all of which directly address the main priorities of the rail industry. It is therefore clear that only by installing the correct UPS, with the correct battery technology that meets specific requirements, will the rail industry be completely secure and protected from power failure.

**For more information, contact Scott Billson**

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Visit [www.harlandsimonups.com](http://www.harlandsimonups.com)

# Not-so-noisy neighbours

Selectaglaze's secondary glazing helps its customers reduce noise to within internationally-agreed standards, which is quite an achievement if the building happens to be next to one of the biggest infrastructure projects in decades

**W**ith major rail investment in London and the south east to help the rising population travel in the city and across the UK, construction sites are a common sight across the region.

Much of the Crossrail network is cutting through extremely busy parts of residential and commercial areas in London and despite the huge benefits that it will bring when the works are complete, it can be a bane for those living and working next to the busy sites. But how can concentration levels be maintained and a good night's sleep safeguarded when you have a neighbour creating a lot of noise?

Acoustically, windows are the weakest point in the building, with single glazed windows reducing noise by just 25-30dB. Many modern double glazed windows only achieve a reduction of 30-35dB. Considering that external noise levels could reach 70-80dB on a construction site, significant additional insulation is required to meet guidelines set by the World Health Organisation. It states that bedrooms and living rooms should be 30dB and meeting rooms 35dB.

## Reduced resonance

Selectaglaze secondary glazing provides a solution with its bespoke design window system. Set 100mm or more from the primary window, the air gap decouples the two panes of glass to reduce resonance, which means a quieter environment inside the building. In addition, high performance frame seals limit airborne sound and prevent the ingress of dust from the construction site.

Noise reduction in the range of 40-45dB is achievable using standard materials, with up to 50dB possible if heavier acoustic laminates are incorporated into the design. Acoustic ventilators can help maintain a supply of fresh air without the need to open the windows and blinds can reduce the solar gain.

Under the Noise and Vibration Mitigation Scheme (the Crossrail initiative to provide a noise insulation package to properties close to the works), rail professionals have a social responsibility obligation to ensure they maintain a good environment for their neighbours.

Selectaglaze has been working with Crossrail and Network Rail on their framework agreements since 2011 to provide noise insulation in the form of secondary glazing, blinds and acoustic ventilators. Noise insulation has been provided to hundreds of residential properties and many commercial buildings, including schools and hotels.

Secondary glazing has also been provided for Bishops House Children's Centre, which is next to the Northern Line Extension in south London. The products were installed to enhance sound insulation from the neighbouring

construction site and to reduce the ingress of airborne dust and dirt.

## Window treatments

Major stations form an important part of this new infrastructure, where security is becoming a key consideration. Window treatments in strategic locations often need protection against forced entry and the effects of a blast. Selectaglaze has a range of secondary glazing which has been designed to offer high levels of security. Following tests, they have been proven to resist physical attack up to



Selectaglaze at St Pancras station

level 3 of the Loss Prevention Standard LPS1175 and can withstand blast forces up to level EXV15 of standard ISO16933 (100kg of TNT equivalent at a distance of 15m).

Many buildings along the new routes are listed or have special architectural interest, which means the original windows cannot be replaced. Purpose designed secondary glazing can be sympathetic to the character of the building and – with it being a reversible adaptation – will generally receive listed building consent.

Established in 1966 and granted the Royal Warrant in 2004, Selectaglaze is one of the leading specialists in secondary glazing and has an extensive range of products to suit all projects from listed properties to new builds.

For more details on how secondary glazing can work with the environment and its neighbours, contact Selectaglaze to use its free technical advisory service. The company has a suite of brochures available, as well as comprehensive information on its website.

Tel: 01727 837271

Email enquiries@selectaglaze.co.uk

Visit [www.selectaglaze.co.uk](http://www.selectaglaze.co.uk)



Bishop House Children's Centre, south London

# A long-term connection

Transportation is using ever-more modern technology and requires signal and data connections that are reliable and safe; something that **Weidmüller** can help with

**B**e it the rail industry, automotive manufacturing, electricity generation or water management – there aren't many industries that can do without electronics and electrical connectivity. At the same time, the complexity of demands in an internationalised market marked by constant technological change, is rapidly increasing.

Businesses have to face new and more diverse challenges and the key to solving them is not always just a high-tech product. The solution lies in connecting power (signal and data) demands and solutions or theory and practice. Industrial connectivity needs connections – precisely what Weidmüller stands for.

Weidmüller is proud to be a prominent supplier in this sector and of having had a positive influence on the whole industry to this day. The organisation makes contributions that help tackle the challenges of the present and the future and also gives guidance. Its characteristics and skills as an innovative and customer-oriented family business have always been its strength. It has high-performance products and solutions, a comprehensive consultation and service, a flexible approach and offices around the world.

But most of all, Weidmüller wishes to remain true to its values. It is this approach that its customers worldwide appreciate most about its business: a responsible partner with extensive knowledge and understanding of its customers and their applications.

## Smart and safe

As transportation continues to develop across the world, so too does the responsibility to use modern technology intelligently. Solutions are required that are both smart and safe. Whether dealing with locomotives, high-speed trains, metros or trackside infrastructure, a sustainable concept design is required to meet all of the current challenges, and this must also guarantee a consistent, safe power supply and distribution system. From the signal head to the level crossing controls, DIN Rail terminals, to RJ45 connectors or surge protection – every installation relies on approved reliable connectivity.

The efficient and reliable distribution of electrical power and signals in both



Weidmüller helps more than 200 apprentices every year

the rolling stock and infrastructure environment is reliant on a manufacturer that understands the needs of the rail industry. Weidmüller's Industry Award for Asset Safety, in collaboration with Amey Rail, demonstrates its commitment to this market and to the needs of suppliers and installers alike.

For carriage-to-carriage couplings, Weidmüller can provide a solution that allows trains to be connected quickly. It needs to be fault-tolerant, robust, durable and reliable – such as flexible plug-in connectors, which are ideal for rapid stud terminals for permanent connections. Irrespective of the technical concept required, Weidmüller's products are well-prepared for extreme climactic conditions, shocks, vibrations and restricted space.

## The next generation

Weidmüller is not just a business; it's a partnership with its customers, its staff and its future innovators...today's youth. Every year Weidmüller accompanies more than 200 apprentices and talented young people worldwide on their way into working life. More than 3,000 pupils worldwide gain an insight into the working world of Weidmüller.

The company is also conscious of the part it can play in protecting the planet, and following the introduction of smaller energy optimisation measures, which it has put into practice in the past two years, it was able to save around 500,000 kilowatt hours. This equates to approximately 300 tons of CO<sub>2</sub>. When Weidmüller built a new production hall with a footprint of 11,000m<sup>2</sup>, it undercut



the legal requirements for heating and air conditioning by more than 90 per cent. It is also proud to claim that 23,500,000 photovoltaic panels are monitored and controlled by Weidmüller solutions.

In delivering solutions for its customers, every year Weidmüller uses around 2,500 tons of copper, 4,500 tons of plastics, 4,000 tons of steel and 1,200,000,000 screws. In its logistics centres around the world products are held ready for delivery in 160,000 storage containers. Every month 200,000 deliveries are made to 24,000 customers worldwide – from medium-sized companies to corporate groups. Despite the large number of units produced (around 3,000,000,000 in 2011), delivery of Weidmüller's OMNIMATE® device-connection technology direct to the customers' door – wherever in the world that is – takes no longer than 72 hours from the point of order.

It's commitment that counts for Weidmüller in a world full of connections.

Contact Weidmüller to find out more about the solutions and services it provides.

Tel: 01162 823470

Email: [sales@weidmuller.co.uk](mailto:sales@weidmuller.co.uk)

Visit [www.weidmuller.co.uk](http://www.weidmuller.co.uk)

# Shining a light on quality



**Unilite** has come on a long way since entering the market 34 years ago. The company's 2015 range is its most diverse yet, having launched 14 new LED products

**E**stablished in 1981 as a lighting supplier, Unilite has grown into a leading torch manufacturer. Always striving for product excellence, the pursuit of 'even better' has been the driving force behind its evolution.

The company is always eager to embrace innovative technology, as demonstrated when it shifted from filament bulbs to become pioneering providers of LED-based illumination systems.

Unilite has a wealth of experience in dealing with a wide and diverse range of businesses, many of which are in specialised professional industries. Unilite's business has been built on superior quality and excellent customer services, allowing it to expand and develop support from around 5,000 clients worldwide.

## Quality Materials

Materials are essential when designing a lighting product. The housing defines the ergonomics of each product and is fundamental to protect all of its internal components. Unilite materials are machined from robust aerospace aluminium, industrial strength Nitrolon® polymer and synthetic grade rubber; which are all extremely resistant to direct impact, crushing, or bending. Using these materials allows products to be made smaller, lighter and much tougher.

Complementing Unilite's materials are the company's skills in the injection moulding process. Polymers are incredibly durable and normally much lighter than aluminium. Using Nitrolon® polymer is useful for two reasons: it has high-strength impact resistance and is non-conductive, making it suitable in situations that require ATEX for



HV-H5R unit with USB lead

hazardous environments.

## Unbiased ratings

ANSI standards, which ensure that the product's characteristics and performance are consistent, are applied to all Unilite

PS-H7R and PS-H10R headlamps secured with rubberised straps



HV-FL7R USB rechargeable submersible flashlight



products to establish unbiased ratings. These standards are used to ensure customers can easily compare Unilite items to find the most suitable product for their needs. ANSI standards regulate LED products by measuring things such as lumen output, beam distance, battery life, impact resistance and IP rating – all features that are essential to the makeup of any lighting instrument.

Unilite pushes the boundaries of illumination technology and crafts some of the finest LED instruments in the world. Tough, reliable and efficient, Unilite engineers test the products to the highest quality standards to ensure optimal performance 100 per cent of the time.

Technological innovations such as Beamaster lenses, submersible USB

rechargeable units and infrared motion sensor head torches are just some of the examples.

Only the latest LED technology is used in a Unilite product and each product is specifically tailored to each individual item, harnessing its maximum light potential. This process ensures that all of Unilite's optics, lenses and reflectors are more efficient than competing products on the market.

#### LED specialists

Unilite's 2015 range is now its most extensive, with a more varied range of innovative products thanks to recent technology developments. With 14 new LED products being launched, including the addition of three new USB rechargeable headlights, two USB

**“Only the latest LED technology is used in a Unilite product and each product is specifically tailored to each individual item, harnessing its maximum light potential. This process ensures that all of Unilite's optics, lenses and reflectors give more efficiency than competing products on the market”**



PS-H7R headlight secured with 3M adhesive helmet mount

submersible flashlights, site lighting and inspection lights, and many product upgrades, Unilite is now an 'LED specialist' in the portable lighting market.

Particularly proud of its range of headlights, Unilite aims to make them the most versatile on the market by including various extras that make them suitable for a mix of applications. All Unilite headlights come with rubberised straps as standard, and two of the company's new USB rechargeable headlights (PS-H7R and HV-H5R) are equipped with 3M adhesive helmet mounts that remove the need for additional straps. To enable lights to be attached to bike helmets or a bike's handlebars, Velcro straps are also included that make the headlights some of the most versatile on the market.

Unilite's third new USB rechargeable headlight (PS-H10R) is incredibly powerful, producing 1,100 lumens of pure white power, making night-time trackside work clearer and safer than ever.

Contact Unilite for more information.

Tel: 01527 584344

Email: [lisa@unilite.co.uk](mailto:lisa@unilite.co.uk)

Website: [www.unilite.co.uk](http://www.unilite.co.uk)



The stand on the PS-IL6R unit keeps hands free

# Safeguarding the industry's metal

Metal theft once blighted the rail industry until steps were introduced to make it easier to police, but without continued enforcement there are concerns that the crime will return

**R**obin Edwards is an expert in the field of metal theft prevention. He was national project lead for Operation Tornado, the BTP scheme to crack down on metal theft, and deputy lead for the government's National Metal Theft Taskforce.

In 2014 Edwards established Onis Consulting and now works as an independent consultant, guiding industries through the challenges of developing effective asset management, security and disposal strategies. He has spent the last 12 months focusing on corporate theft and developing preventative strategies for UK transport networks, infrastructure, industry and heritage. Edwards sits on a number of expert working groups and his expertise and guidance is sought around the world.



## Scrap Metal Dealers Act

Metal theft was one of the biggest threats to the UK's infrastructure, heritage and transport systems between 2009 and 2013 (when the Scrap Metal Dealers Act was set up) and was never far from headlines. It was costing the UK economy around £770 million a year and was spiralling out of control with little being done to tackle it. The outdated 1964 Scrap Metal Act allowed criminals to effectively operate with impunity, with access to an unregulated scrap industry that was reluctant to change and which often turned a blind eye to what was passing through its gates.

Large sections of the scrap metal industry were not prepared to self-regulate; appeared to be content to overlook criminal activity; and were seemingly more interested in making money than reducing the crime that affects communities on an almost daily basis. During numerous meetings with scrap dealers it was almost impossible to convince any of them that they shared responsibility with the enforcement services to reduce metal theft. Such was the unwillingness of some in the industry to change, it's not unrealistic to expect that as scrutiny diminishes so will their desire to comply.

## Headed overseas?

It has been suggested that stolen metal is leaving the UK in containers but this has never really been substantiated. In reality, the majority of stolen metal is leaving the UK, but only after it has been 'laundered' through the many scrap recycling tiers that exist within the industry. Once scrap has found its way into a scrap dealer and been processed it's almost impossible to trace. Anyone who has visited a traditional scrap dealer will realise how easy it is to conceal illicit material among the large bins and piles of scrap metal.

When Operation Tornado was rolled out across the UK it became the first step towards introducing long-term



Robin Edwards from Onis Consulting

measures to control the unregulated activities of the scrap metal industry. The scheme's enhanced measures introduced traceability – both in terms of scrap dealers and those involved in criminal activity – but also made it much harder to sell scrap metal for cash.

A great deal was achieved with Operation Tornado and it opened the door to the latest scrap metal legislation, which was floundering without evidence that it would actually make a difference.



However, enforcement plans weren't fully embedded in business-as-usual activity and, as police budget cuts start to bite and forces re-deploy their metal teams into other areas, the question arises; who will enforce the new legislation?

Evidence suggests that the opportunists will return and thefts will rise without a network in place to deal with it. It would be naive to believe that those who steal metal and, as a result, destroy our national heritage and disrupt our transport systems, communication and utility networks will not drift back as the risk of being caught diminishes.

### In the hands of the industry

The long-term future of enforcement is limited and the responsibility for preventing theft and protecting assets sits squarely with the owners of metal and the producers of scrap. It would be catastrophic to allow the problem to re-emerge and if the police can't keep up the pressure then it's in the interest of the industry to do it for them. Assets need to be protected and the most effective way is through overt marking, which makes it more difficult to sell and as a result, less attractive to thieves.

The National Metal Theft Taskforce worked closely with The Institute of Materials Minerals and Mining (IOM3) and helped support the development of Signature Materials. This new method to combat metal theft has been used to mark and protect electricity substations in the North West and heritage buildings across the UK. In reality, if something is overtly marked it's less likely to find its way into a scrap dealer, making it more likely that thieves will pass it by and look for easier targets. This doesn't even touch on corporate theft, which is also a significant problem.

How many producers of scrap or redundant metal actually know how much is collected by their current merchants, or how much finds its way into skips at their depots? Very few actually know the full value of their assets, enabling unscrupulous scrap dealers to take advantage of this to increase their returns at the expense of their customers. Internal theft is another threat to industries and raises the questions: where and how is this material sold?

However, companies who monitor their disposal can – and do – become victims of corporate theft as a result of unscrupulous practices that are rarely identified and challenged. This type of crime, which is theft, can be addressed through the development and introduction of effective disposal strategies.

### Alchemy Metals

One company in particular has campaigned tirelessly to highlight the problems and associated impact of



corporate theft and the benefits of new legislation and effective enforcement. Alchemy Metals operates transparently and aims to maximise returns and reduce environmental impact. The company's operating model sets a standard of service and security that all producers of waste metal should expect, receive and, in reality, demand from the recycling industry.

The future of metal theft is on a precipice. Reported crimes remain low, sections of the scrap industry appear to be compliant with the new legislation and infrastructure has suffered little in the last twelve months. However, this situation could quickly change with an absence of coordinated activity or where there is no enforcement activity at all. Small problems have started to appear, which means it's crucial to introduce measures that will prevent metal theft from taking hold again.

The plea to industry is simple: have you introduced sufficient measures both internally and externally to protect your assets? Think carefully about the

companies you are doing business with; do you really know what is happening to your assets? Don't accept anything on face value and always ask: should I really be doing business with these companies? The scrap metal industry will only change and become fully compliant if the new legislation and acceptable standards of business are stringently enforced. There is no reason to accept the level of service being offered. Sections of the scrap/recycling industry are fully aware that they can manipulate disposal processes to their advantage, and this is costing business millions of pounds a year.

With the correct expertise, asset disposal processes can be quickly and effectively revised. The burden of responsibility for waste disposal sits squarely with the producer, so this is an ideal opportunity for companies to ensure they have done everything they can to protect their assets, customers and ultimately their business.

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# All charged-up

Siemens' fleet of Velaro D trains has a braking system that keeps them under control while also harvesting energy in the process. **MTM Power**, the company that created it, explains

**M**TM Power® was awarded a 'star' by Siemens AG Rail Systems for its 'commodity parts' sector in the context of the 'Our Stars for Rail Systems' supplier programme 2014. Evidence of MTM Power's long collaboration with Siemens AG relating to railway technology is exemplified by the recharger unit, which supplies the eddy current brake, on the Velaro D train.

The Velaro D (Class 407) forms part of the ICE fleet and it is also referred to as the new ICE 3. The characteristics of this new generation of ICE include improved energy efficiency and traction, greater comfort for travellers, as well as new passenger information systems and more attractive interior space concepts.

The Velaro D high speed train can reach speeds of up to 200mph, so highly efficient and safe braking systems are crucial. This is the reason why the Velaro D uses three independent braking systems, with pneumatic, regenerative, and eddy current brakes that are all controlled by a brake management system. The regenerative brake is the preferred braking system, which recovers energy during the braking process, thus increasing the train's energy efficiency.

Regenerative braking is not subject to wear because the pneumatic brake system works as a disc brake on the motor bogie wheel sets. However, both regenerative and pneumatic brakes do have one major disadvantage; they are only effective up to the traction limit, in other words, as long as there is a corresponding wheel-to-rail adhesion.

## Eddy current brake

In contrast, the linear eddy current brake of the Velaro D works completely independently of the respective wheel-rail adhesion because it is non-contacting and not subject to wear. Electromagnets are arranged in a row between the wheelsets in the bogie, which can be lowered down as low as 7mm above rail level when braking. Due to movement on the rail, magnetic fields arise that vary over time, inducing voltages in the rail that lead to the generation of eddy currents. The resulting magnetic fields are opposite to

the direction of travel and cause the train to decelerate, due to the brake power of the eddy current brake increasing with the speed of the train.

The recharger developed by MTM Power in cooperation with Siemens AG is used to supply this eddy current brake. The design is based on the capacitor charger from the ICE 3 and has been adapted for use in the Velaro D. The recharger is used in railway power converters and – in the event of power failure – charges the intermediate DC traction circuit from the battery-supported 110 VDC on-board power supply to ensure the supply of the eddy current brake.

The intermediate DC traction circuit from which the eddy current brake is supplied is fitted with a 3 mF capacitor for energy storage. In the event of mains voltage failure and a lack of intermediate DC voltage, the voltage of the intermediate DC traction circuit is boosted to at least 200 VDC during braking and maintained at that level by the recharger.

$$W = \frac{C \cdot U^2}{2} = \frac{3\text{mF} \cdot (200\text{V})^2}{2} = \underline{60\text{W}}$$

The challenge during the development of the recharger was not so much in the choice of a suitable switching topology; the decision was made to use a primarily regulated fly-back converter, which performs well especially at higher output voltages.

However, the decoupling and the protection of the device from the traction intermediate circuit that requires recharging (where voltage spikes of up to 4,200 V can occur), as well as the coordination of the insulation of the individual circuit assemblies (with their different potentials in relation to the intermediate DC traction circuit) were all far more difficult to accomplish.

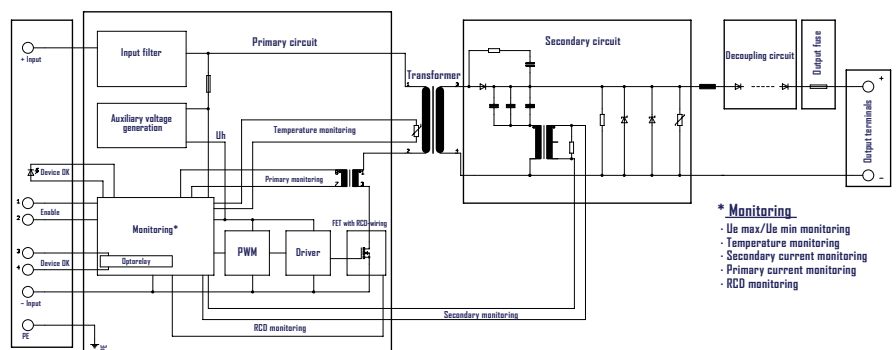
Here, creepage distances, as per EN 50124-1, of up to 85mm arose with reinforced or double insulation. The main transformer needed a design that was sealed under vacuum with solid insulation. The partial discharge extinction voltage specified is 4.5 kV at Q < 10 pC. The dielectric test voltage of the device for those routes with reinforced insulation is 8.3 kVAC or 11.4 kVDC.

## The recharger's structure

In principle, during the development of the recharger the focus was on characteristics such as reliability and robustness; the recharger's size and weight came about from these targets. The following schematic diagram shows the basic structure of the recharger:

The primary side of the recharger unit processes input voltages of 110 VDC with a tolerance of ± 30 per cent (time restricted ± 40 per cent) in accordance with EN 50155, and designed for a maximum input current of 45 A. A two-step filter and transient protection by suppression diodes ensure compliance with the EN 50121-3-2 EMC requirements.

A transverse diode protects the



Block diagram: © by MTM Power GmbH

recharger from reverse-polarity input voltage, triggering the upstream fuse in the event of a fault. Also in the primary circuit, the output voltage is controlled through indirect recording of the measured data via an auxiliary winding in the main transformer. This approach only provides adequate control accuracy. However, advantageously it doesn't need an electrically isolated transmission of the control parameter from the secondary side, which makes the design of the device much more straightforward given the required insulation lengths.

When the recharger is switched on, the intermediate circuit capacity is charged via a switch command of the external drive control device at the 'enable' input. The recharger is only switched on when the traction DC intermediate circuit voltage has fallen under 200 VDC and the intermediate circuit has been disconnected from the grid. The secondary circuit of the recharger, working with a U/I characteristic curve, then provides a maximum current of 10 A, with a maximum output voltage of 250 VDC.

The current is controlled by evaluating the secondary ripple currents, and the data measured is transferred to the pulse-width modulation controls via a



current converter to the primary side. A switch-on command of the drive control device can only be triggered if the 'Power good' condition has first been signalled by the recharger's potential-free alarm contact. In other words, the input voltage is within the permitted range and there are no internal device errors, such as overheating of the transformer. Power good is also displayed by a green LED on the device.

### Surge-proof diodes

Special attention was also paid to a safe decoupling from the traction intermediate circuit and the reliable protection of the device in case of failure. Decoupling is performed by cascading appropriate surge-proof diodes at the output of the secondary circuit. In the case of the breakdown of one or more of these diodes, the secondary fuse has to be capable of safely switching off the resulting short circuit current.

The requirements for fuses to be



used in DC systems are aimed to prevent sparks. With this in mind, the secondary fuse that was used, which has a switching capacity of 50 kA at 4,000 VDC, is 36mm (D) x 400mm (L). The safe triggering of the fuse in the event of failure (and the review of the effectiveness of the protective measures of the secondary circuit) was demonstrated in the context of a fault simulation with Siemens at its Nuremberg laboratory.



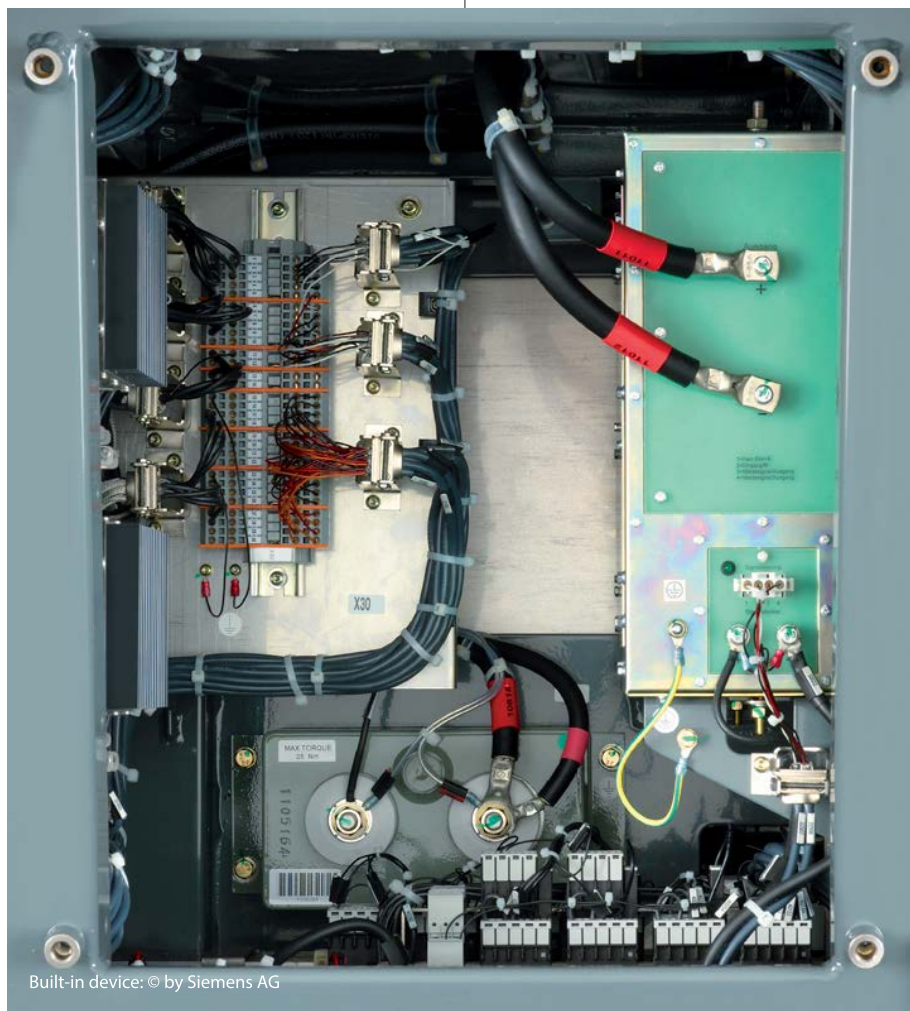
MTM Power recharger: © by MTM Power GmbH

The recharger is housed in a mechanically robust, corrosion-resistant steel sheet enclosure with an IP21 protection, in accordance with EN 60529. The entire construction is designed for shock and vibration that conforms to EN 50155 / IEC 61373 Category 1, Class B. All the printed circuit boards and components have a suitable protective coating that can withstand operating temperature ranging from -40 to +70°C (+85°C for 10 min); temperature class TX (in accordance with EN 50155); and also in connection with moist heat and condensation.

### Unobtrusive service

Much like MTM Power's recharger, electrical systems and components are operating on rail vehicles that serve thousands of passengers every day; in most cases completely unobtrusively. Insensitive to mechanical stress such as shock, vibration and acceleration, the power supplies developed by MTM Power (in accordance with EN 50155) provide a vital contribution to the interaction of the technical components in trains.

MTM Power produces DC/DC converters to supply on-board electrical and electronic systems, specially designed for use in demanding rail technology applications. Also in MTM Power's extensive rail range are multi-power supply systems, inverters and filters.  
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Built-in device: © by Siemens AG

# Stepping up safety

Using the appropriate working platforms and ladders for every job is crucial; **Martin Brooke** of Bratts Ladders explains how its products have enabled simpler and safer working in a variety of rail environments

**B**ratts Ladders has been manufacturing ladders since 1895 and supplying the rail industry with ladders, steps and platforms for more than 80 years. Based in Nottingham, the company mainly manufactures its access equipment in non-conductive glass fibre and timber but it can also produce them in aluminium and steel.

## Alstom Virgin

To improve access for those Alstom employees who work under and around the Virgin Pendolino trains they maintain, Bratts Ladders designed and built a simpler, safer, non-conductive working platform called the StepUp, which Alstom has found invaluable.

Bratts has also manufactured a step to enable cleaners to access carriages more easily and safely with vacuum cleaners.

The company has designed an SLS (safe ladder system) to allow maintenance on the front of trains, which it achieves with a pair of industrial suckers that prevent movement by sticking to the glass or smooth surface.

For National Express and Siemens

maintenance teams, Bratts has designed different types of timber SLS to access the pantographs for servicing.

For improved passenger safety, the company manufactures ladders that are present in the majority of UK carriages, enabling passengers to disembark in an emergency.

## The Bridge

The Bridge is Bratts Ladders' 'brilliantly simple' glass fibre access system that spans almost any obstacle, enabling safer working with minimal disruption.

A number of companies that were previously having problems working over desks, machinery and work benches now use The Bridge – a three-part kit that is height adjustable and which folds flat for storage and transportation.

All of the ladders and steps featured in the Unipart Rail catalogue are made by Bratts. The company also supplies access equipment to other rail companies, including Network Rail, Bailey Rail, London Underground, Thales, Balfour Beatty, Amec, Amey, Southeastern Trains, South West Trains, First Great Western, DLR, Bombardier, Siemens and ScotRail.

## Safe working practices

Bratts has worked with the Health and Safety Executive to help produce the Work at Height Regulations and the HSE Guidance for Employees, giving the company the expertise to advise on ladder and stepladder use within these procedures.

Bratts is the only UK manufacturer of BS1129 Class 1 Kitemark Timber and BS EN131 Kitemark Glassfibre ladders, stepladders, platforms and specialist access equipment for industrial use. All of the company's Glassfibre products comply with ANSI 14-5 and ESI 13-1.

The British Standard Kitemark (BS) is only awarded to products that pass strict regular testing, which guarantees continuous audited quality – EN131 alone does not.

Bratts Ladders are still maintaining timber ladders that it made for Network Rail more than 30 years ago.

For more information contact Martin Brooke, sales director at Bratts Ladders



Glass fibre non-conductive platform for engine access



The StepUp under a Virgin Pendolino train



The Bridge being used by Eurotunnel

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# A new line in rail finance

Getting a major order to supply products or services to a rail company can either make a company or – if the financing is wrong – break it. **Angus Dent** looks at the options available, and some of the pitfalls

**L**anding a contract from a rail company is usually a cause for celebration. The orders are often big, either because of the numbers involved or the physical size of the plant and construction. It is only when the financing for the order is considered that the headaches begin. The gap between paying for materials, components, wages and receiving payment – with no money coming in – can be a big one.

As a crowdfunder company, ArchOver has been looking at the financing of companies selling to the rail industry in some detail, and it is one full of pitfalls for the unwary – especially if factoring or invoice discounting is used. For this reason ArchOver is launching a major drive to help rail industry suppliers in the same way that it has helped companies in a range of other industries, including transport, construction, export and service.

As part of CP5, £38 billion is being invested in the UK rail industry over the next four years, excluding HS2 and CrossRail 2, which in theory will be good news for suppliers. However, the problem



is getting hold of that all-important working capital without personal guarantees, third parties coming between you and your customers or over-inflated costs.

## An active contributor

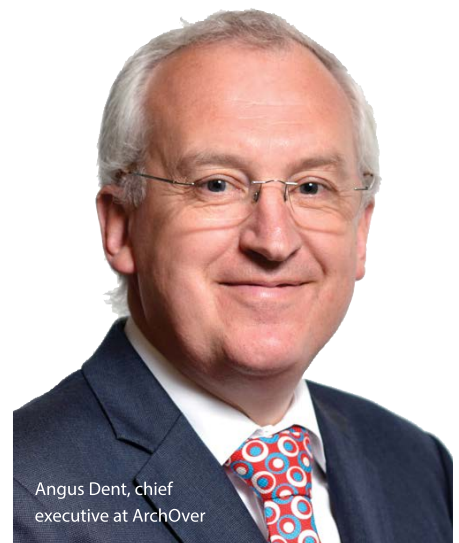
At a time when the banks are turning people down for finance and other lenders imposing restrictions, ArchOver aims to be an active contributor to the rejuvenation of the UK economy by being better on price, process and planning. In simple terms, this means we aim to be more competitive than other lenders, keeping the admin to a minimum and allowing companies to plan with more certainty. With factoring or invoice discounting, the amount of money available from month to month can be very uncertain, while with an ArchOver fixed term loan, businesses always know exactly what they have available.

One company ArchOver has been talking to is Wilcomatic, a division of which specialises in the supply and installation of automatic wash equipment to rail, tram, monorail and APT systems worldwide. The equipment Wilcomatic supplies is manufactured in Germany and has been installed as close as Blackpool and as far afield as Kuala Lumpur.

The company has to pay for the wash systems before they leave Germany, so it can be a long time before these large pieces of equipment are fully installed and signed off by the customer. Wilcomatic currently tackles this problem through a combination of staged payments and invoice discounting.

‘The first payment is usually for 15-25 per cent of the value of the contract at the time the customer accepts the drawings, and then a further 40-50 per cent following the completion of a successful factory inspection,’ said Wilcomatic chairman, Selwyn Rodrigues.

‘That can be a rigorous process, involving the manufacturer and us showing the customer the whole manufacturing



Angus Dent, chief executive at ArchOver

process and supplying them with a lot of detailed information.

‘Most of the balance is paid on completion of the contract, with a small amount retained for payment after the customer’s staff has been trained and it can verify that it is performing as it should. Obviously this can only be done when trains can be run through the systems, and on new lines, or in new depots, and this can sometimes be months after we have finished the installation.’

The stages come only when the part payment becomes due; does that mean that an invoice can be issued that actually gets paid 30-60 days later?

‘Depending on the circumstances,’ said Rodrigues, ‘we sometimes use invoice discounting, which allows us to get 85 per cent of the invoice value straight away and the rest when it’s paid. But obviously we have to pay a fee for that facility.’

‘On the whole this works well, but the finance only stays in place for 121 days, so if for some reason, the customer doesn’t pay by then, the facility is withdrawn. This is one of the reasons we are currently looking at alternative finance options.’

## Not-so-happy customer

However, not everyone has such a positive experience.



An eves and skirt brush, part of a new installation at the North Pole site in north London

We also talked to a former director of a manufacturer based in the midlands, who wanted to remain anonymous. His company supplied products such as doors, luggage racks and dashboards for railways and metros. 'One of the big problems with supplying doors for trains is that they're usually large orders, but seldom repeat business and it can sometimes take up to five months before the bill is paid,' he said.

To bridge the gap, the company used the factoring services of a high street bank. Like invoice discounting, around 80

per cent of the invoice value is paid by the factoring company when it is raised, but it then becomes the property of the factor, which keeps the remaining 15 per cent.

'Our rail business was very profitable,' he added, 'but fell apart because of factoring. We could supply 400 doors to London Underground, but if one of them was scratched, the customer wouldn't pay for any of the doors until it had the complete batch. Because the invoice was not being paid, the factor would snatch back the money advanced, which would leave us with serious solvency problems.'

'In addition, an aggressive employee from the factoring service would sometimes chase our customers for payment, which really damaged our relationship with them. If there is a strike at a supplier or a customer, which is going to delay delivery or payment, you can lose all the advanced money through no fault of your own.'

'It's not just rail, of course. I have been involved in many engineering sectors and the problems with factoring are common to each. There is also a requirement with many bank-backed financing products for the directors to give personal guarantees, which can put one's family home and other assets at risk.'

'If I had known about the ArchOver crowd lending platform back then it could have saved my business. If you need £500,000, you can get the money for a

fixed term of up to two years and nobody tries to snatch it back.'

**Free of the banks**

Crowdfunding, or peer-to-peer lending, is an alternative form of finance, which allows those with money for investment to lend it directly to those who need it, without the involvement of banks, invoice discounters or factors.

ArchOver uses money from its individual investor clients and lends directly to borrowers, minimising the investment risk by ensuring that each borrower is funded by numerous investors, each of which risks a relatively small amount.

To increase security, ArchOver – on behalf of its lenders – takes a first floating charge over the trade debtors and the borrower takes out credit insurance with ArchOver that is jointly insured. This leaves the rest of the balance sheet free, giving borrowers access to other forms of finance should they need it. It also does not demand personal guarantees.

This system provides a higher interest rate for investors than they could get elsewhere, and provides borrowers with lower cost finance and fewer restrictions than elsewhere.

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# Manufacturing that's right on track

**Birley Manufacturing** has more than 140 years of experience and has specialised in train interior refurbishments for more than 25 – welcome expertise when designing the next generation of train equipment

**B**irley Manufacturing has an annual turnover in excess of £12 million and is the UK's largest rail undercarriage protective skirt and egress internal sliding doors provider. Birley's broad expertise in rail enables it to produce everything from luggage stacks, panels, galleys and sleeper berths; to cab back walls, equipment cupboards and platform-mounted ticket offices.

The company's team of in-house designers produces high quality visuals and renders of products for

client discussion and its collective design knowledge means there are few challenges that have not already been encountered and overcome. This is the first step in a system that allows Birley to design, manufacture, supply and install while having full accountability throughout any project.

#### UAT

Birley's latest innovation success is its Universally Accessible Toilet Module (UAT). It has been designed to provide excellent structural integrity in a two-

piece modular construction and is fully compliant with Persons of Reduced Mobility, Technical Specifications for Interoperability (PRM-TSI) requirements, offering much-improved access for those with reduced mobility.

By 2020 all rolling stock companies are required to provide UAT's in their trains and the units need to be designed so that they have a substantial lifespan. Birley Manufacturing's extensive in-house knowledge of the rail industry, with its stringent safety requirements, materials, operating procedures, testing and rail





Under construction at Birley's manufacturing plant



Birley's toilet module is currently being trialled by Porterbrook in their Class 144 Evolution carriage



The UAT allows Birley to build on its rail expertise but its diverse range of clients means the company is not solely reliant on rail industry work. It supplies and installs bespoke solutions nationwide for the rail, education, retail, industrial, health, laboratory, security and banking sectors.

In recent years the company has bucked the current trend, winning significant new business partly by diversifying into new markets and also by building on its core skills. Not resting on its laurels, Birley is determined in its pursuit of new business and has looked at innovative ways to bring in funding to enable the firm to grow.

In May 2015 it secured a deal worth several million pounds to supply another major rail contract – its largest order to date. In December 2013, it was included in the inaugural publication of London Stock Exchange Group's 1,000 Companies to Inspire Britain, a list of the most inspirational small and medium-sized companies in the UK.

Birley's UAT unit is another example of the company's innovation through specialist knowledge and provides a cost-effective solution and a better environment, both for passengers and trackside staff alike.

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group standards, has aided the company to create a suitable product for this major project.

One of the key benefits of the Birley UAT module is that the sealed one-piece floor moulding prevents the leakage of liquids, and so reduces the risk of under floor corrosion. The unit will contain a range of eye-catching and useful features including LED lighting, a hand cleansing system with hygienic infrared activation, a hinged mirror cabinet and baby changing unit. The modern, fresh interior can be adapted to match the style and colour way of any vehicle.

James Taylor, business development manager, rail, at Birley said: 'Initial reactions to the UAT have been very positive and we are confident that this unit will surpass expectations to meet the needs of modern rolling stock companies. It is currently being trialled by Porterbrook in its Class 144 Evolution carriage and early indications are proving to be extremely encouraging.'

**Structurally sound**

Birley's aim was to provide a structurally superior product to withstand the harsh shocks and vibrations created by ageing railway tracks. To address this, the company used an innovative horizontal 'split line' approach to produce a unit comprising only two main sections. Structural analysis calculations demonstrate that the Birley UAT toilet module is probably the most structurally sound unit currently available on the market.

Most other toilet modules are made up of several panels that can start to creep, allowing unsightly gaps to appear which create unhygienic dirt traps. The two secure main modules prevent this while also providing a simple, smooth surface for cleaning and a hygienic contemporary interior.

Taylor added: 'We were able to construct a totally watertight one-piece floor to prevent the egress of liquids into

the vehicle structure. This significantly prevents corrosion thereby reducing future bodyshell floor repair costs'.

This process of encapsulating the core with a GRP phenolic resin moulding creates a strong module platform, providing a totally sealed unit. It also uses a unique design for the lower module to make sure that all liquids are contained and controlled via a floor-mounted drain, which in turn feeds into an underframe effluent tank. These tanks are gradually being introduced onto the older vehicles, as a number of trains without them still dump waste directly onto the track, resulting in a very unpleasant environment for the depot vehicle service teams and track workers.

In addition, the module incorporates proven reliable equipment and is pre-assembled and fully tested, which significantly reduces the installation times into rolling stock. A condition-based monitoring system is being developed which will give access to a full range of real time downloadable data, allowing the preparation of works prior to vehicles returning to the depot.

The first unit was completed in August 2014 and was unveiled at Innotrans in Berlin a month later, marking Birley's first foray into the European market.

**Fully rail compliant**

The new toilet unit draws together skills from across the company's joinery manufacture and metal fabrication plant. Birley is capable of handling wood, MDF and composites, metals – including aluminium and stainless steel – and among others, has machinery for edge banding, veneering, CNC cutting and forming and bending machines. There is also an extensive supply base with partnering skills built up over many years of experience from supplying the rail industry, coupled with careful auditing of partners that ensures the company fully complies with the rail industry's exacting needs.

# Keeping rail fabric specs on track

With experience dating back to 1822, UK textile company **Camira** is one of the leading designers and manufacturers of interior fabrics for trains, underground, trams and light rail systems

**C**amira understands that fabrics for rail interiors don't just need to look good; they also need to conform to the highest technical standards to keep passengers safe. The company's products have wide ranging capabilities that encompass high performance moquette and flat woven fabrics for seating, leathers, vinyls and ancillary trims. Camira's in-house design team specialises in creating custom-made fabrics for branded interior solutions –

from initial concept through to finished fabric.

The company's mission is to be the natural choice for fabric solutions worldwide. Currently manufacturing eight million metres of fabric a year that is sold in 80 countries around the world, it is well on the way to achieving this aim. Its products are used in a wide range of commercial interiors; healthcare, education, and of course passenger transport.

Named Camborne Fabrics when

Just a small selection of the colours in Camira's range



An example of Camira's fabrics on an underground train

it was founded in 1974, the company was acquired by US flooring specialist, Interface, and was then taken back into independent ownership as Camira following a management buyout in 2006. British Furtex Fabrics had been acquired in 2003, then Camira bought the assets and brand name of Holdsworth in 2007 to strengthen its position in passenger transportation textiles. Today, all areas of the business trade as the parent company's name, Camira.

**Full production control**

Camira has 500,000 sq ft of manufacturing space at four sites in Huddersfield and Nottingham, and has a European manufacturing plant in Lithuania. These premises are bolstered by offices and showrooms in Europe, North America, Australia and China and a global network of sales representatives, agents and distributors.

The company carries out the entire production process from wool spinning and yarn dyeing, warping, winding, weaving and finishing, through to specialist cutting and sewing services. This ensures full control of production to provide high levels of service and quality. Camira has a history of winning big contracts, resulting in its custom-designed fabrics being used by millions of rail passengers on a daily basis. Notable examples include London Underground, Thameslink and First Great Western in the UK; the Paris Metro, Swiss Rail, Czech Rail, Israeli Rail and Moscow AeroExpress in Europe; and Korean Rail and Seoul Metro in Asia. Its fabrics have also been used in America to refurbish the Los Angeles' bus fleet.

Camira's in-house design team works in close partnership with professional design houses and rail operators to create



the most appropriate solution not only in terms of corporate identity colour and appearance, but also in relation to meeting specific technical requirements, most notably flammability performance. The company can produce lifelike CAD simulations using the latest textile design software and small production samples of bespoke colour-woven designs. It can match and create custom-made colours at Camira's own yarn dyeing facility, offering technical advice at every stage of the design process.

**Industry standard**

Traditional 83-17 per cent wool, nylon moquette has been the rail industry standard for more than 100 years. The term moquette (derived from the French word for carpet) is a woven pile fabric in which cut or uncut threads form a short dense cut or loop pile. The material's

inherent durability elongates the lifespan of moquette and its capability to weave different constructions makes it possible to produce a variety of surface effects. Flat-wovens, which are durable and lightweight, and leathers can provide that extra level of sophistication for carriage interiors, with Camira's premium quality leather hides providing a very soft and low maintenance alternative. Numerous standard fabrics are supplied by Camira on an ex-stock basis, while made-to-order fabrics are also available.

**Sustainable**

Camira has been recognised for the sustainability of its products. It was re-awarded the Queen's Award for Sustainable Development in 2015, and is accredited to the international environmental management standard ISO 14001. The company's manufacturing processes are supported by a raft of environmental initiatives, including waste reduction; comprehensive waste streaming for re-use and recycling; energy management and intelligent lighting systems; and natural borehole water for dyeing and finishing.

The design team constantly strives to improve the environmental performance of its fabrics and uses high wool content, renewable fibres and cotton backings. It also makes lighter weight moquettes and flat woven fabrics, and closed-loop polyester that incorporates recycled polyester yarn from selvedge waste and yarn remnants.

Autumn 2015 marks the launch of Camira's new Elite range of leathers that are available in 24 colourways. Elite has been engineered to meet the stringent technical performance criteria of the rail industry, particularly in regards to flammability standards.

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# Conservation station

Walker Construction recently completed a £2 million contract to install a new platform canopy at Crystal Palace station. **Clint Martin** looks back on the involving project

It's unlikely that many of the two million-or-so passengers who use Crystal Palace station every year give much thought to its heritage. In its heyday, the south London station was one of two that served what was then the country's top visitor attraction. In 1852, the iconic iron-and-glass home of The Great Exhibition of 1851 moved from Hyde Park to Sydenham Hill. So popular was The Crystal Palace, it had two railway stations to bring visitors from London: Crystal Palace (Low Level) and the long-since removed, Crystal Palace (High Level).

The style of the original, Victorian-era station reflected its importance as a destination: a lofty ticket hall with ornate, cast-iron roof supports flanked by towers topped with mansard roofs; a capacious brick train shed with a glazed ridge-and-furrow roof; broad stairways that led to the platforms; and two parallel, 125m-long bowstring roofs that covered the platforms.

Following an incident at Charing Cross station in 1905, when a failed tie rod caused part of its bowstring roof to collapse, the two roofs at Crystal Palace (Low Level) station were removed as a precautionary measure, which left the platforms open to the elements.

## London Overground

Owned by Network Rail, Crystal Palace station is managed by London Overground and serves trains running between London Victoria and London Bridge and services terminating at Beckenham Junction and Sutton. In May 2010 the station was made a terminus on London Overground's East London Line and the resulting increase in passenger numbers prompted Network Rail and Transport for London to embark on a substantial redevelopment programme.

As a Grade II listed building, Transport for London, the project's client, was determined to ensure that work on Crystal Palace befitted its status. Supported by a substantial grant from the Railway Heritage Trust, all work carried a strong emphasis on conservation and was overseen by London Borough of Bromley's Conservation Officer.

In anticipation of the new services, the

platforms were rebuilt and reconfigured in 2009 and this was followed in 2012 and 2013 with a series of upgrades: refurbishing the previously mothballed Victorian-era ticket hall; building a new café; improving disabled access; linking the platforms with a footbridge; installing three glass-and-steel lifts; and a major upgrade of the station's GIS, PA and CCTV systems.

## Six-platform canopy

Walker Construction's Rail Division was awarded one of the final phases of the upgrade works: a £2 million, ten month, NEC3 contract to install – among other things – a new canopy over six of the station's eight platforms.

The new canopy's structural profile bears a remarkable similarity to its Victorian predecessor, with the new roofline mirroring the visible outline of the original roof – but that's where the similarity ends.

Based on original plans by WSP and John McAslan, Novum Structures, with input from steel fabricators McNealy Brown, developed the design for the 46m-long, 38m-wide canopy, which consists of a circular hollow section (CHS) steel frame that supports Novum Structures' Air Filled Pillow (AFP) System.

Ten columns located along the centreline of the central island platform

# WALKER

CONSTRUCTION



Clint Martin, project manager of the Crystal Palace canopy project

form the backbone of the frame and, from the top of each column, the beams arc over the tracks to the top of both flank walls. Clamped in the bays between the beams are 17m long x 4m wide ETFE (ethylene tetrafluoroethylene) air-filled pillows; their internal pressure being constantly monitored and adjusted by a sophisticated air supply system.

Walker Construction took possession of the site on 3rd November 2014. The



The roof in progress



The original roofline in the train shed wall



The completed roof



Platform 5 and 6

company's first task was to establish a compound in which materials could be received, stored and then craned over the 8m-high south flank wall and, possibly, across all six platforms to the north flank wall. The largest lift, one of the 19m-long roof beams, would also be one of the longest: from the compound to the rear of the train shed where it would span platforms 6, 7 and 8. A 220-tonne crane was carefully manoeuvred through the area's narrow residential streets to reach the site where its location (adjacent to the south flank wall) meant that lifts could only be carried out while using radios.

Having cleared the south flank wall of ivy and cut back the trees overhanging the north flank wall, installation of the pendel-bearing base plates along the top of each wall began. Although scaffolding could be built from the unused track bed running the length of the north wall, it had to be cantilevered over the top of the south wall because the track serving Platform 3 was in constant use. The base plates were bolted to concrete pads that were cast into cavities cut into the top of the walls and stabilised with 3m-long Cintec anchors let into the brickwork.

**Collaborative effort**

Work simultaneously began on the central island, where platforms 5 and 6

are housed. Both platforms had to remain operational but, as services terminated at platform 5, TfL's liaison with LOROL and Southern Trains enabled a temporary car stop to be put in place. This allowed a narrow section of the island to be isolated, creating an incredibly confined working area in which the columns could be installed.

Although the central wall supporting the original roofs was no longer there, the island had been built over its location and there was concern that the stability of the new columns might be compromised by the old foundations. These were soon discovered and, to prevent any risk of the new foundations rocking on top of the old ones, a reinforced-concrete 'saddle' was cast in situ, straddling the old footings and providing a stable location for the column base plates.

Preserving the canopy's smooth lines and curves was an important design consideration and considerable thought was given to hiding the fixings between the key components. The 7m-tall columns, complex, multifunctional column heads, 19m-long beams and pendel-bearing components were fabricated off-site by McNealy Brown. Jigs were used to ensure that the main beams followed the same radius and the various connection points were individually finished.

Although the station remained operational during the 25-week project, very brief windows of 'planned disruptive possession' were necessary to allow the steelwork to be installed: any problems encountered could have had severe consequences. Craned into position, every component had to be an instant, perfect fit if the strict installation timetable was to be adhered to. The tight tolerances of the design and fabrication needed equally accurate setting out and preparation on site.

**ETFE air pillows**

The ETFE air pillows consist of a single 300µm membrane in the upper skin and two 250µm membranes in the lower skin, with the pillows being held in place by a proprietary clamp system. Once inflated (normally to 250Pa, but up to 500Pa to support heavy snow), the pressure in each pillow is electronically monitored and maintained by air fed from an air supply system, in this case, Novum's eLuft 600

which is located at the base of the south flank wall. ETFE, a development of PTFE, makes an excellent transparent building material as it doesn't degrade through exposure to UV radiation, is self-cleaning and is particularly resistant to tearing.

When inflated, the pillows create enough tension for the structure to be classified as non-fragile. In fact, a structural review undertaken by the project consultants, Waterman Infrastructure & Environment, showed that the five tonnes of tension generated by the first pillow would be more than enough to cause the train shed wall to fail if the canopy was attached directly to it.

**Respecting the station's heritage**

Commenting on the completed works, Mike Stubbs, director London Overground at TfL, said: 'We have huge respect for our Victorian railway heritage so it was very important to us that the upgrade of Crystal Palace station provided a station that was both fit to meet increasing passenger demand but remained in keeping with its illustrious past. Over the past few years we have undertaken significant improvements to the station, jointly funded by ourselves, Network Rail and the Railway Heritage Trust.

'The original station had a canopy over what are now the London Overground platforms so, as part of the final work to upgrade the station, we thought it only fitting to reinstate this with a modern gull-wing design that respects the heritage of the station whilst also protecting our customers from the elements'

Having drawn on its skills in the construction industry and its long association and experience of the rail industry, Walker Construction is delighted to have played a part in working with TfL to complete the final stage of revitalising this once iconic station. The finished canopy, with its large panels of uninterrupted sky, makes the platform area feel light and spacious. It's a modern – and successful – answer to what the designers and engineers were trying to achieve 160 years ago.

Clint Martin was Walker Construction's project manager for the Crystal Palace project

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# A superior finish

**Joseph Ash Galvanizing** is a complete one-stop-shop steel finishing service, offering treatments that include spin galvanizing, shot blasting and powder coating that help to keep the UK's rail industry on track

**W**hen it was established in 1857, Joseph Ash Galvanizing operated from a single plant in Birmingham. Now with six plants in Bilston, Bridgend, Chesterfield, Medway, Telford and Walsall, the company provides steel finishing services to all types of customers and companies, many of which service the UK rail industry.

Joseph Ash Galvanizing's core services for the rail industry include galvanizing, spin galvanizing, shot blasting and powder coating; all processes that are designed to enhance the appearance and prolong the life of steel fabrications.

Steel fabrications on the rail network include gantries; station canopies; car

parks; bridges; fencing; lineside cabinets; cantilevers; and CCTV posts. Joseph Ash Galvanizing has galvanized many of these structures for sites that include Birmingham New Street station, Bristol Parkway station, Stoke Gifford depot, Hazel Grove station and the East and West Coast Main Lines electrification projects.

#### **Birmingham New Street redevelopment**

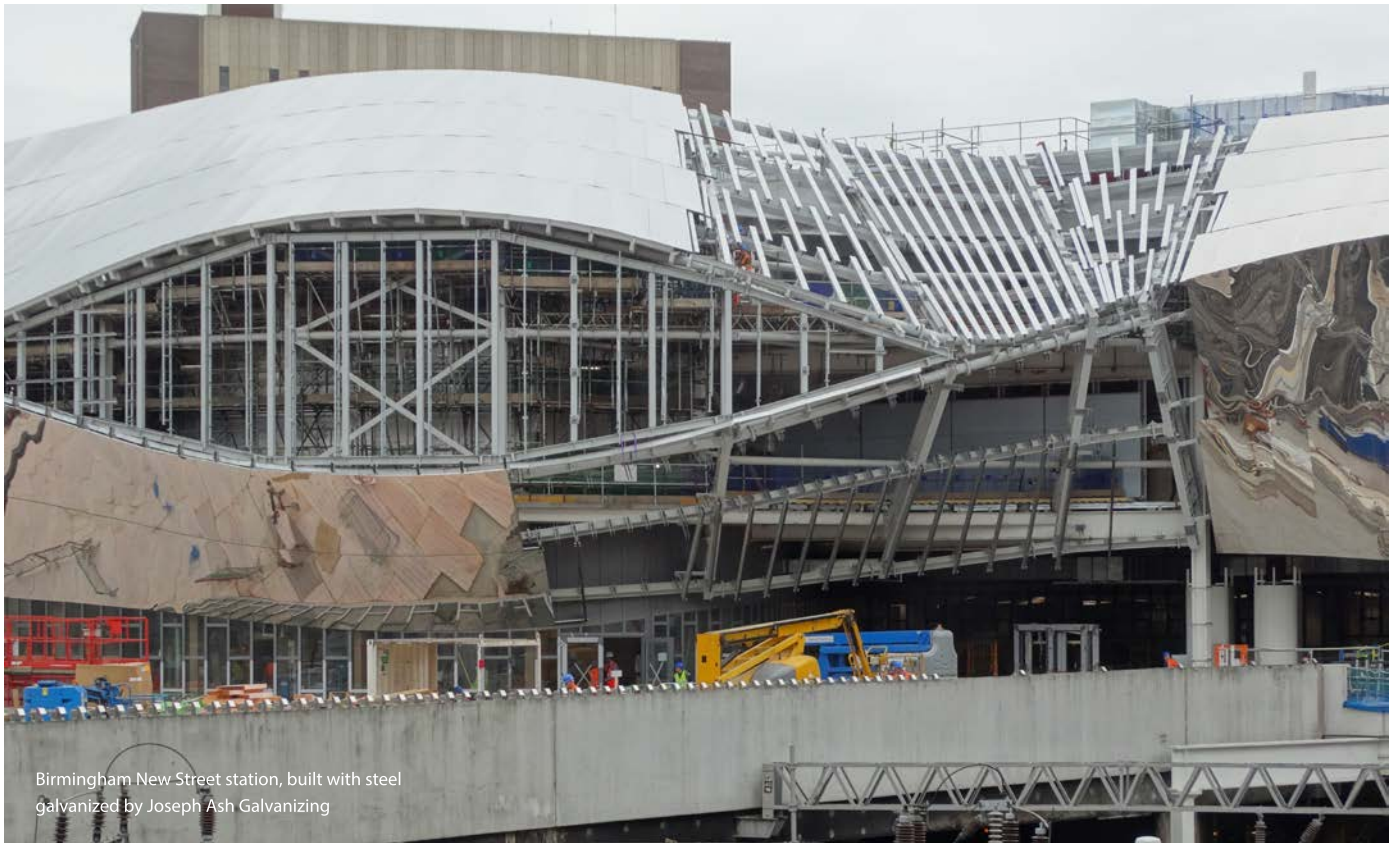
The latest redevelopment of Birmingham New Street has been in progress for five years. The first part of the £550 million redevelopment opened in April 2013 and the final part, which will make the station three and a half times bigger than before, is due to open this month.

The project, which was commissioned



by Network Rail, with support from Birmingham City Council, has improved the old station with a modern façade and much more space on the concourse and platforms for the 35 million passengers





Birmingham New Street station, built with steel galvanized by Joseph Ash Galvanizing



Galvanized steel being lifted from a galvanizing bath



been built specifically to service the company's Class 800/801 trains. The £80 million depot can hold 16 trains and includes a train maintenance building, offices and a train washing facility. It also houses electricity substations, tank farms, pump rooms and a shunter's cabin.

Joseph Ash Galvanizing's Chesterfield and Telford plants have galvanized many of the components used in the development, which include steel frames, rail track support struts, access gantry steelwork, and other miscellaneous items.

**The right direction for UK rail**

With almost 160 years of service under its belt, a railway project that contains steel that Joseph Ash Galvanizing has treated is never far away. The company continues to thrive and plans to be around to help support the UK railway industry for another 160 years.

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 Visit [www.josephash.co.uk](http://www.josephash.co.uk)

that use it every year.

Joseph Ash Galvanizing has worked on the massive redevelopment, galvanizing different pieces of structural steel that range from large beam and column fabrications, to smaller ancillary steelwork and fittings. The project is especially significant for Joseph Ash Galvanizing due to its roots in Birmingham and the west midlands.

**East and West Coast Main Line**

Network Rail is currently in the process of electrifying the East and West Coast Main Lines to make journeys greener, more reliable and quieter. As part of the electrification projects Network Rail has

had to carry out additional works such as reconstructing bridges and lowering track, as well as the main work of installing overhead line piles and masts.

It has also replaced track along the routes, improved stations and renewed switching gear. Joseph Ash Galvanizing has galvanized more than 6,000 tonnes of steel fabrications such as mono beam posts, cantilevers, signal gantries and posts for the works.

**Stoke Gifford railway depot**

Stoke Gifford depot is situated halfway between Filton and Stoke Gifford in south Gloucestershire. Owned and managed by Hitachi Rail Europe, it has

# First line of defence

The UK's rail network is increasingly reliant on IT, and its communications and control infrastructure needs to be protected by robust and reliable cabinets, cabins and modular data centres, preferably from **Cannon Technologies**

**2** 4,500 trains run on the nation's railways every day, and in order for them to run as smoothly and as safely as possible a seamless communications and IT network infrastructure is vital. However, with a growing number of disparate technologies, such as customer information screens, CCTV, access control, ticket machines and signalling, all operating at the same time, the equipment needs to be protected by state-of-the-art passive and active electronic cabinets.

## Work in progress

Network Rail recognises the role that IT is playing in transforming the UK's Victorian infrastructure into one that will be able to support an estimated 400 million extra passenger journeys by 2020.

Central to this objective is Offering Rail Better Information Services (ORBIS), a five-year £325 million project to improve Network Rail's approach to the acquisition, storage and usage of asset information. Network Rail hopes this strategy will transform a 'fix and fail' model into one based on 'predict and prevent'.

Work has already begun on a new traffic management strategy, which involves implementing the technology to support the phasing out of signal boxes and creating 14 regional rail operating

centres across the country. 800 signal boxes nationwide will eventually be removed and the new automated system will allow large areas of the network to be controlled from fewer locations, which will cut costs by around £250 million a year, while improving efficiency and reducing delays.

In addition, controllers and monitors are currently being placed on the tracks to feed information to a system that allows maintenance workers to fix an issue before it causes a train delay. It's already estimated to have reduced delays for the travelling public and freight operators by hundreds of thousands of minutes.

## Safety information

Keeping passengers safe and up-to-date with real-time information is a top priority for rail franchise operators.

The use of CCTV within train stations has grown rapidly over recent years and is widely deployed on platforms, concourses and trains. As well as making passengers feel safer, particularly in smaller remote or isolated stations, CCTV has contributed to deterring criminals and providing evidence in the investigation of crimes.

Customer information screens are also being upgraded to modern systems that provide accurate up-to-the-minute information concerning arrivals,



The C-TYPE is a Network Rail PADS-approved cabinet for communications or electrical infrastructure components

departures and delays. For those who wish to access travel information and book tickets online Wi-Fi is a must. In February 2015, Prime Minister David Cameron announced that passengers will be able to access free Wi-Fi on trains throughout England and Wales from 2017, thanks to nearly £50 million of funding from the Department for Transport.

## Always on

Although anything that improves the passenger experience and overall efficiency of the rail network should be welcomed, such reliance on IT means that downtime must be avoided at all costs. Put simply, with so much technology running over the network infrastructure, any interruption to its performance could throw the whole railway system into chaos.

A failsafe way of maintaining the integrity of a network is through the use of high quality active cabinets that protect the sensitive electronic equipment within them. Adopting the attitude that all cabinets are the same could create problems in the short and long terms. There are products on the market that are manufactured to both enhance functionality and offer greater flexibility, with features that can save time and money.

Active cabinets are used in a wide



Cannon's S-TYPE cabinet range provides up to IP65 sealing against water and dust ingress, along with the necessary cooling for customers' specific requirements



Cabinets can be placed on standard Network LOC roots and wooden platforms, as seen in traditional station sites or modern gantry platforms. This variant provides front and rear-door access to the equipment chamber for ease of installation and maintenance

variety of outdoor locations both station-side and platform-side and are often the first line of defence, meaning they must be as difficult as possible to move or infiltrate. It's because of this that they're usually installed using Network Rail's standard LOC (location cases) bases, or using a 'transformer roof' mounting system for attachment to either a steel platform or concrete pad.

**Tough call**

Exposed to the elements, cabinets are designed to resist the effects of sun, rain, dust and other debris, and must be robust enough to withstand damage from vandalism.

That's why Cannon Technologies constructs cabinets from 2mm thick Z600 pre-galvanised steel sheets. Z600 denotes a total of 600gm/m<sup>2</sup> of zinc applied in an oxygen-free atmosphere to the steel substrate. The weight of the zinc equates to a thickness of 42µm per side, from which a life expectancy of 28 years can be expected without additional treatment. According to trials conducted by the Galvanisers Association, the average consumption of zinc from externally

exposed galvanised products in the UK is 1.5µm per year.

Powder coating adds another layer of protection and can be adapted to meet specific colour requirements. Being made from light colours, it has the additional advantage of reflecting solar light and being UV resistant, which directs heat away from the active components contained within – minimising solar heat gain. This is vital because it ensures that the environmental conditions within the cabinet are kept within defined parameters, maintaining the correct operation of the equipment housed inside. Thermoelectric devices are used to provide active cabinets with an IP65 rating, resulting in no ventilation or change of air between outside ambient and internally circulating air.

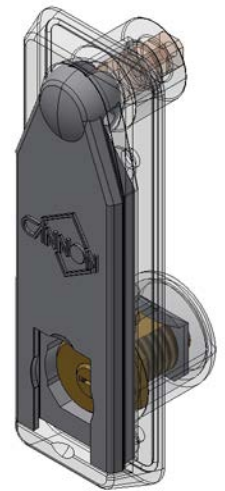
**Lock up**

Protecting cabinets and preventing unauthorised access to the equipment inside them is achieved through the use of sophisticated locking and access control technology. Cabinet locking systems can be approved to The Loss Prevention Certification Board's (LPCB) LPS1175 Security Ratings, providing the necessary delay and means of detection required to protect against intrusion, including the use of a wide variety of power tools.

Train operating companies are also aware that issuing keys to every engineer or subcontractor who needs access to a cabinet is both impractical and a security threat, should it be lost or stolen. Therefore, remote keyless locking and unlocking has been enabled.

By integrating each cabinet into the network, personnel can call the relevant ROC once they are on site to unlock the unit, and then lock it again once work is completed. For those requiring even higher levels of physical security, locking systems can be used in conjunction with a personal identification number (PIN),

Cannon has developed its stainless steel level locking handle to meet stringent security requirements. It also offers the use of commercial 'double D'-type lock cylinders and the option of remote and local electronic access through RFID, biometric, keypad or the company's DCIM software



a radio frequency identification (RFID) device or even biometric fingerprint identification.

**Bigger picture**

Although securing individual cabinets is crucial, such is the need to keep an IT infrastructure up and running that a backup data centre facility is increasingly considered necessary as part of a disaster recovery strategy.

Transportable modular data centre (TMDC) systems offer all the functionality of a conventional data centre but are also energy efficient with low power usage effectiveness (PUE) ratings. They come with full size 19-inch or electrical control cabinets, and each unit is supplied prefabricated with power, cabling, hot/cold aisle containment and cable management. Other key features include pre-installed servers, switches, uninterruptible power supply (UPS) and fire suppression systems, LED lighting, and power distribution units (PDUs). Maximum layout flexibility facilitates a data centre solution that is easy to configure, fast to install and which minimises disruption, while making sure that downtime is avoided.

**On track**

As the public's reliance on the rail network increases, IT will continue to deliver a leaner, more efficient and reliable system that also provides greater value to customers. Active cabinets, cabins and modular data centres are at the forefront in providing a temperature controlled and secure environment for valuable and sensitive active equipment. They create a first line of defence in maintaining a communications, control and IT network that keeps working no matter what.

Contact Glenn Conlon, director of business development at Cannon Technologies.

Tel: 01425 632600

Visit [www.cannontech.co.uk](http://www.cannontech.co.uk)



Dri-Therm is an innovative trackside cabinet that prevents premature failure as a result of condensation within fibre and electrical connections. It does this without the need to provide cooling, heating or anti-condensation devices

# Making excellent connections

A lot of things have changed at **Emico** over the last few years. Here, the company relays news on some of its biggest contracts

**W**hile Emico is a well-established mechanical and engineering (M&E) company, with blue chip clients within the transport industry, it is its approach and high standards that bring it repeat business, putting it in a strong position to maximise its opportunities within the industry.

Emico takes great pride in its reputation as an innovative and dependable partner for rail projects across the UK, but it is also excited to offer broader capabilities and take the lead as principal designer and principal contractor.

## So what has changed?

Emico is growing and it has used this growth as an opportunity to invest heavily in its future success, leading to the relocation of its central operations to offices in Hemel Hempstead. Based in one of the region's largest business areas, the new premises are equipped with the cutting-edge technology and infrastructure needed to properly assist a growing company.

What sets Emico apart from its contemporaries is its approach to offering professional estimating and

bid support to existing and potential clients. The company's experienced in-house estimating staff use the latest surveying techniques and software for mechanical, electrical HV/LV and DC and fire protection to create a well-structured, competent bid. From experience, the company has learned that by collaborating with its clients from the outset it can offer valuable input into the bid process.

The importance of services can often be overlooked when bidding for projects, but by closely working with clients, Emico can provide valuable input into the overall buildability, special architectural heritage considerations and aesthetics of a project. This helps to avoid many of the pitfalls of programme clashes that can frustrate clients and project managers throughout the project.

Emico's open collaborative approach to estimating builds confidence into the bid/project and its quick response to post-tender requirements and changes that can occur ensures that its clients receive the best service. By using this process for every project, Emico can deliver projects with minimal risks but which also include detailed considerations of operational/project requirements and stakeholder concerns.

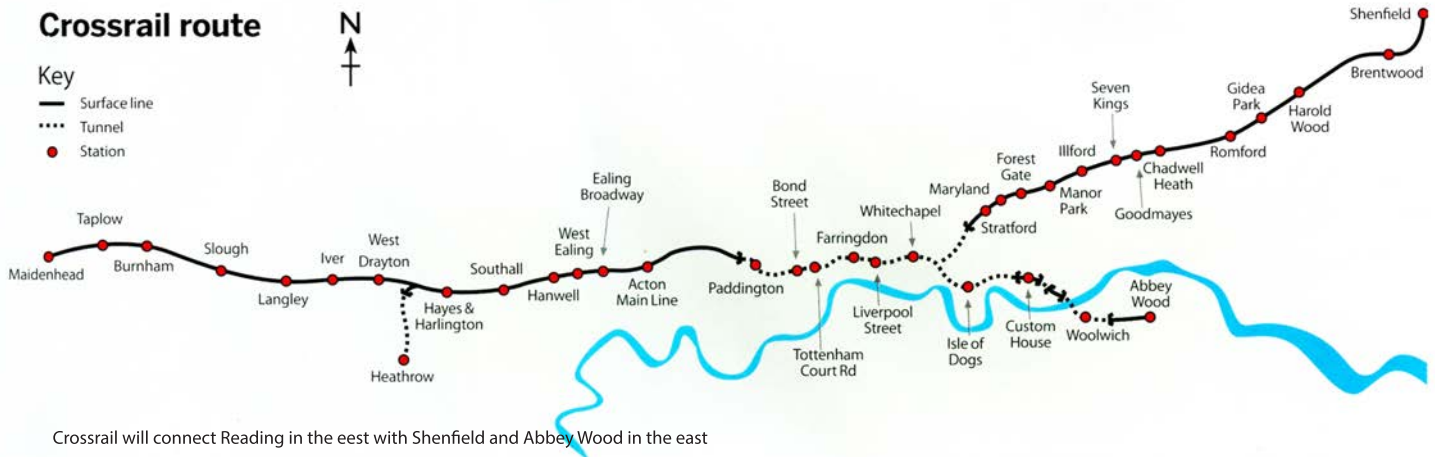
## Investing in the future

Emico has always invested in its employees' futures, from offering apprenticeships and graduate training programmes to ongoing professional CPD programmes. The company also has a strong array of technology skills, with an accomplished in-house design team which specialises in electrical, mechanical and fire system designs that use the latest technologies – such as 3D laser surveying and modelling, MicroStation, AutoCAD, Amtech, and DIALux to produce high quality designs.

Emico's design and engineering service allows it to complete its own design-and-build projects direct to its clients, as well as assisting them and their project team, which may require specialist design knowledge and experience.

## Crossrail

Emico is currently working in conjunction with Vinci on the western section of Crossrail. The project comprises thirteen stations, starting with Acton Main Line and travelling west to Maidenhead. The multi-faceted work varies enormously from station to station. Some of the smaller stations are being upgraded, while a few of the larger stations are being partially demolished





Emico is working with London Underground as part of the network's plan to upgrade the network's stations

and then rebuilt so that they will offer improved facilities befitting a modern station on one of Europe's largest infrastructure projects.

Typically an upgrade will consist of the canopies being cut back and platforms extended to facilitate the larger rolling stock. However, Emico's involvement will be to replace the platforms' column lights with LED's. It will do this by completely stripping out the old circuitry and containment under the modified platform

canopies and installing new containment, cable and lights.

So far, a large proportion of the electrical cabinets around the station have been replaced, which includes the installation of a number of new associated switchgear systems. In carrying out this work, Emico has forged close working relationships with Vinci and its contractors that have ensured a smooth transition between the old supplies to the new. Emico's effective coordination is

vital to keep the station operational and minimise disruption.

For the larger stations, such as Hayes and Harlington, the scope of work is enormous. It will include demolishing a large building adjacent to the station as well as parts of the current station and platform structure in order to make way for a new station building. Precise coordination and planning are vital to ensure that each milestone is met so that the station remains operational.

Emico plays a pivotal role here and its scope of works will include the mechanical and electrical installations for the numerous site compounds and the re-routing of existing circuitry and services to facilitate temporary arrangements. It will also cover the complete installation of the new electrical circuits, equipment, switchgear and mains supplies for the main station building and platform structures.

In addition to its work on Crossrail, Emico is undertaking ongoing London Underground station upgrades and development works, including the SUP (Sub-Surface Upgrade Programme), SWIP and STAKE frameworks to improve and modernise London Underground station facilities for Transport for London.



An artist's impression of the Crossrail's Ealing Broadway station

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# A clear picture

Clarity Visual Management has worked with Network Rail and many Toc's over the years, providing effective visual solutions

## What is visual management?

Visual management (also known as visualisation) is typically a tool of lean programmes, traditionally used in manufacturing environments to achieve higher efficiencies. However, in today's competitive world, lean principles are proving immensely powerful in many other industries, and the rail industry is becoming a prime example of this.

The continual rise in passenger numbers is increasing demand on the rail infrastructure, which in turn is causing the performance of rail companies to become the subject of a lot of media and public scrutiny. As a result of this, many Toc's are looking for ways to improve their performance and are finding it a challenge.

Visual management takes the most pertinent measures that impact on performance, and shows them in a simple visual form which can be understood by the whole team. This can be as simple as a two-colour magnet marking 'on target' or 'off target' in a meeting room, or a shadow board in a depot, which uses



Clarity's magnetic vinyl overlay



Network Rail's LNE control room

'empty shadows' to highlight that a tool is missing.

## Engage the staff and change the culture

For any improvement programme to be truly effective it must change the very culture of a business, and this requires a long-term programme that engages staff at all levels. Staff engagement is the critical point, and Clarity has found that clear visual management has become a proven method of achieving this throughout an organisation. To fully engage a team, it is essential that each person knows their targets and can compare them to their actual performance.

Traditionally, this information tends to be hidden away in multiple systems and databases where it is hard to reach and very easily ignored. Visualisation brings together all of the key performance measures, and displays them in a straightforward way, which allows anyone to see at a quick glance how they're performing.

## Simplicity

Simplicity is the key. Clarity's motto is: 'only measure what is important, and if everything is important, nothing is'. Removing unnecessary information and concentrating on the measures that really make the difference is very powerful.

## Prepared for change

Long-term improvement programmes need to evolve as the business improves, and it is important to empower staff to do this. Clarity has worked with many companies to develop future-proof visual management systems, which allow board content to be updated quickly and without the associated high costs often involved.

An example of this is the work that Clarity has done with Network Rail London North Eastern Route Plan (part of its SMART programme), for which it supplied and maintained Network Rail's control room boards. A key feature of the control rooms has been the installation of Clarity's magnetic vinyl overlays. An economical way to present a professional look, the visual management board can



A shadow board for a cleaning station



Hazard reporting board

be instantly changed to a different design with no mess or fuss, which is essential for sustaining a culture of continuous improvement.

The company has worked extensively with Toc's to supply visual management boards, shadow boards, cleaning stations, document displays and floor markings; products that are effectively designed and also robust enough to withstand the rigours of a railway depot.

Clarity Visual Management employs visual management advisors who are dedicated to driving improvements in the rail industry through effective visualisation. Contact the company to discuss how visualisation can improve performance and drive positive change.

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 Visit [www.clarityvm.com](http://www.clarityvm.com)

# Securing excellence

As **Morgan Marine** marks 50 years of providing tailor-made security solutions for the leading names in the rail industry, it is undertaking some of the biggest changes in its history

**M**organ Marine's parent company, Morgan GRP, is undertaking structural changes designed to double its turnover, which is already approaching £21 million. But amid this, some things remain constant at the company. It is committed to providing the most flexible and cutting-edge security products that are designed, manufactured and tested to the most exacting of standards. For 50 years, some of the UK rail industry's leading names have called on Morgan Marine to provide solutions to their diverse set of security needs.

Provider of security structures and equipment housing solutions, Morgan Marine is the UK's only designer, manufacturer and installer of GRP (glass-reinforced polymer) and steel LPCB security-rated switchgear enclosures, plant rooms and instrumentation kiosks; enclosures that secure and protect valuable trackside components.

## NICEIC

The in-house design team can make bespoke housings in a variety of high performance materials, including mild steel, galvanised sheet steel, stainless steel and aluminium. The enclosures are fitted with full electrical fit-outs (NICEIC); come in a range of insulation levels; and can be supplied with steel base subframes that create a complete packaged enclosure. Morgan Marine's latest range of steel enclosures is LPCB security rated SR2, SR3 and SR4.

Morgan Marine strives to develop new product ranges to ensure it stays at the forefront of the security enclosure and door sets industry. Its approach has always been to invest heavily in R&D and, as a result, it has become the first company in the country to meet LPCB physical security test standard LPS 1175 for all of its GRP products.

The company continues to add to its comprehensive portfolio of LPCB products, the most recent of which are bar-sets that protect windows up to LPCB SR level 4. Also, following tests on its cages, Morgan Marine now has the largest range of LPCB accredited security products in the UK.



Enclosures leaving Morgan Marine

## Major projects

Some of the most well known and highest value rail projects that have benefited from Morgan Marine's expertise in recent years include the Channel Tunnel and Network Rail FTNx wireless network programme, during which it worked with Babcock as sole supplier of custom-built relocatable equipment buildings (REB).

It also worked for London Overground Rail Operations Ltd (LOROL), designing and manufacturing CCTV cabinets to house camera control equipment at stations across London.

Morgan Marine's commercial director, Sue Paton said: 'These are exciting times for us because of our own expansion plans and ambitions. Similarly these are times of change, development and ever-increasing security demands in the rail industry and the other industries and utilities we serve.

'Consequently, it's more vital than ever



for us to keep focusing on developing the most advanced products we can to meet the needs of our clients. It's a challenge we continue to meet with enthusiasm and we look forward to cementing our position in the security manufacturing marketplace for another 50 years.'

Contact Sue Paton for more information

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# Keeping bids on track

**Executive Compass** has provided bid management, bid writing, PQQ and training services to a variety of industries across the UK, Europe and the US since 2009

The core sectors that Executive Compass works with are rail, civil engineering, industrial services, recruitment, health and social care and construction. It is also one of the few bid writing services in the UK that directly employs all of its staff. The company is certified to quality management system standard UKAS ISO 9001:2008 and is a corporate member of the Association of Proposal Management Professionals.

With an auditable 87 per cent success rate, the company has completed more than 1,700 tender/PQQ (pre-qualification questionnaire) submissions in the last six years, with bid values ranging from £80,000 to £6.6 billion.

Recent rail projects have included bids for Crossrail, Network Rail, LU and TfL for a variety of different products and services – such as London Underground station refurbishment (£600,000), platform doors (£20 million) and bridge repairs (around £40 million).

#### Expertise, understanding and resources

Confidentiality agreements prevent Executive Compass from providing details of clients and individual projects, but its processes are tried and tested. The company's 87 per cent success rate provides evidence of its drive to provide companies with the very best service.

Neil Capstick, managing director, said: 'We offer professional services to firms who may not have the expertise, the understanding, the resources or the time to undertake bids themselves. We're

involved as much or as little as they want us to be, but whatever our level of involvement our single objective and priority is to win.'

Executive Compass's eight-point process:

1. read and understand the specification; too often firms begin to write the bid without fully understanding it
2. develop win themes and differentiators and align them to the specification and client. Doing this makes sure the latest innovation, system, process or investment is aligned to the client's requirements and not just those of the bidder
3. appoint a project/bid manager. This gives the individual positional power and the authority to drive the bid forward
4. create a delivery plan with clear milestones and gateway reviews. Without a clear plan that has achievable, realistic and very specific goals and timelines, bid timelines may drift
5. create response templates and write up the responses
6. review, review, review and then review again. Bid submissions cannot be reviewed by committee but each element of the bid must be reviewed by staff who really know the subject and the specification
7. edit, edit, edit and then review again
8. review the submission as a whole, and use a document map to ensure all win themes are included, ensuring there are no contradictions.

Neil Capstick, MD of Executive Compass



Following this process, and responding directly to the question in persuasive, compelling, and convincing narrative, is how Executive Compass experiences continued success in tendering.

Executive Compass has completed its most successful year ever, supporting clients from Singapore, Sweden, India, Africa, US, and the UK – from Brighton to Dundee – with the number of projects and new clients on the increase. To ensure that Executive Compass meets existing and future demand, the company is moving to new, larger and better equipped offices in London and is recruiting two new writers.

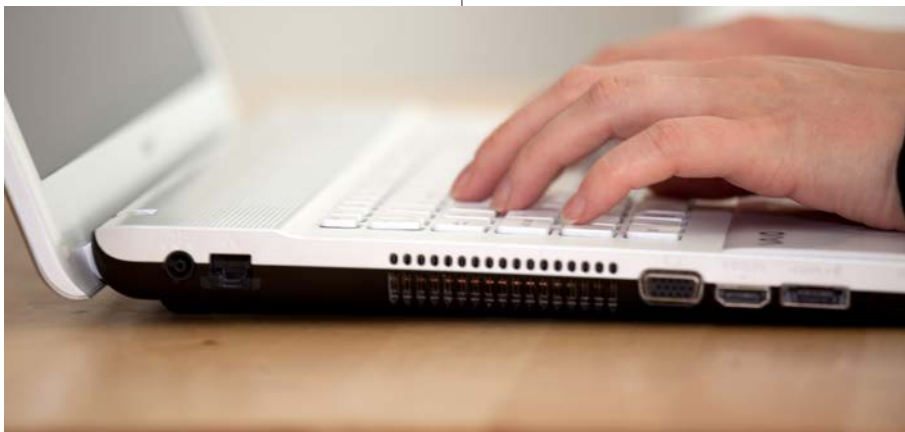
Further developments to support growth include a new website (due to go live in September 2015), a broadening of services to encompass ISO certification and consultancy and the launch of *iBid*, a collaborative bid management tool. A culmination of three years' work, *iBid* will be available in October 2015 and is just one example of the innovative products that the company will progress and develop.

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# Innovation Catapult

The WMG centre HVM Catapult at the **University of Warwick** works to address the global challenge of low carbon mobility. One of its main areas of focus is **Very Light Rail**

The WMG centre HVM Catapult takes a whole-systems approach to the global challenge of low carbon mobility. The centre is one of seven that falls under the national High Value Manufacturing Catapult (HVMC). WMG is an academic department of the University of Warwick, with a mission to strengthen the competitiveness of UK manufacturing through the application of new technologies and skills.

The centre's competencies are specifically focused on lightweight structures optimisation and energy storage and management. These themes (identified as strategic technologies by the Automotive Council) are important to all transport sectors including automotive, motorsport, commercial, off-road, marine and rail.

WMG's leading facilities and engineering expertise support world-class research across all technology readiness levels, with a particular focus on TRL 4 to 7. Expertise developed in the automotive sector is now being transferred to other transport sectors, chief among them Very Light Rail (VLR).

## Very Light Rail

The emerging VLR sector offers several advantages over traditional rail systems for shuttle/suburban transit, including:

- vehicles with low axle weights (below five tonnes)
- self-powered vehicles with energy recovery and storage systems as standard
- reduced capital cost and installation time for track infrastructure, and reduced infrastructure operational and maintenance costs.

WMG centre's research activity in the VLR sector is currently focused on two major activities: an RSSB/Future Railway supported project to develop a Radical Train, and a proposed VLR Innovation Centre at Castle Hill in Dudley.

## VLR revolution project

A consortium comprising WMG centre HVM Catapult, Transport Design International, Prose AG, Trelleborg PPL and Unipart Rail (with financial support from Future Railway) is developing an affordable, low carbon 'Radical Train' demonstrator. A



key aim of the project is to facilitate low-cost connectivity of suburban and rural areas.

The consortium's solution will demonstrate a unique self-powered bogie with integral hybrid propulsion and kinetic energy recovery system. The powertrain development and testing is being led by WMG.

The solution also incorporates a modular, lightweight body-shell using advanced materials currently employed by the automotive sector, such as high-strength steels and fibre-reinforced polymer composites.

## VLR Innovation Centre

Dudley Metropolitan Borough Council, in partnership with WMG, is developing plans for a VLR Innovation Centre at Castle Hill, Dudley. The programme has the support of a number of important stakeholders, including Network Rail, Centro, the Department for Transport, Future Railway, the Knowledge Transfer Network, and West Midlands Integrated Transport Authority (ITA).

The proposed facility will be built on the site of the former Dudley railway station, which is adjacent to a disused railway line running from Stourbridge to Walsall. It will be the national centre of research and innovation for the emerging VLR industry, providing:

- coordination of strategic initiatives
- a resident R&D team and research labs

- a workshop for the assembly of prototype vehicles and systems
- a test and evaluation track for prototype vehicle trials
- conference and exhibition facilities
- meeting rooms and a networking area
- masters-level courses for the next generation of light rail technical specialists
- training courses in the maintenance and operation of light rail systems
- incubator units for SME's engaged in VLR.

A 2km section of the disused railway alignment running south from the VLR centre in Castle Hill will be re-laid with twin test tracks for prototype vehicle and infrastructure trials. The VLR Innovation Centre will support the development of cost-effective transport solutions and also nurture the growth of a new manufacturing sector in the UK.

The government has recommended that the project should be allocated £4.5 million of funding, and the project has also applied for significant further funding from European Structural and Investment Funds (ESIF).

Get in touch for more information

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Visit [www.wmghvmmcatapult.org.uk](http://www.wmghvmmcatapult.org.uk)

# High-speed recruitment

It's a well known fact that the rail industry will face a gap in skills; **ARM** (Advanced Resource Managers) is a rail-sector specialist that will help to fill that gap with the most suitable candidates

**W**ith major projects such as HS2 and Crossrail driving the UK rail industry forward, it faces an ongoing challenge of recruiting the right talent. This is where ARM, with its specialist knowledge of the rail industry, can help businesses to find and build a winning team and a return on investment.

#### Time to recruit

'Now is the perfect time to be thinking about recruiting railway professionals,' explains Alan Betteridge, sector director for ARM's Rail business. 'Network Rail's Control Period 5 (CP5) is currently in a quiet phase, which is unusual, but it won't be long until work gets back to normal levels. While the workload is manageable, it is wise to do some forward thinking and look at hiring plans for the next 12 months, and tackle any pinch-points you foresee.'

#### The ideal recruitment partnership

So what makes ARM different? 'Our focus on niche skill sets in specialist markets, plus our commitment to providing a high-quality service sets us apart from other rail sector recruiters,' said Betteridge.

ARM is a growing business with new offices in London's Tower 42 (the third tallest building in the City). 'This new

office demonstrates our commitment to growth and servicing the needs of our clients, especially in connection with all the London-based activity surrounding Crossrail and HS2. We have a capacity for 40 recruitment professionals and we are also looking for rail industry specialists to join our own team.'

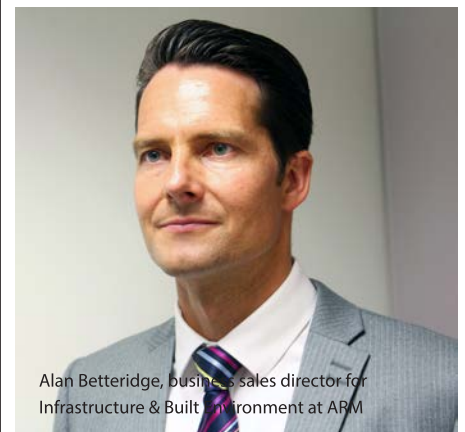
ARM is RISQS (formerly Link-up) approved and its recruitment service falls into two main categories: Infrastructure & Built Environment and Rolling Stock. ARM has an in-depth knowledge and track record for supplying people within signalling and telecoms, overhead line and power, permanent way, stations and property.

#### Infrastructure & Built Environment

Infrastructure & Built Environment recruitment is a central part of ARM's railways recruitment offering. The team provides quality-led recruitment solutions to the UK, Asia and MENA (Middle East and North Africa) regions at middle, senior management and executive levels.

ARM Infrastructure & Built Environment specialises in recruitment for the rail sector. Its consultants are experts in their markets, drawing upon many years' experience that ensures the best possible service.

Key areas of recruitment within the railways sector that ARM specialises in



Alan Betteridge, Business Sales Director for Infrastructure & Built Environment at ARM

include:

- signalling
- OLE (overhead line equipment)
- permanent way
- building and civil engineering
- telecoms.

'We have a proven track record in the recruitment of signalling and telecoms professionals for the rail sector. It's common knowledge within the industry that there is a shortage of trained experts in these fields compared to demand, so our professional recruitment team has worked hard to make us the number one choice both for companies seeking these skills and individuals offering them,' said Betteridge.

'With maybe only 4,000 of these professionals globally, we are proud to be able to offer such a comprehensive and trusted recruitment service for this vital part of the industry.'

With the rail industry gathering pace due to the investment and renewed confidence in it, ARM understands that employers expect to deal with recruitment experts who empathise with the demands of their business and the competitive nature of their particular sectors of the market. They want reassurance that their recruitment partner can provide them the best available talent in the market.



The ARM team takes the time to establish working partnerships based on trust, mutual commitment and honesty. ARM's vision is to provide a customer experience that is unrivalled by its competitors and which always exceeds expectations.

**Rolling stock recruitment with ARM Vehicle Technologies**

Rolling stock development and manufacture recruitment is the other key component of ARM's rail industry offering. The UK rail technology industry is a world leader in design, development, advanced engineering, innovation, and talent. ARM Vehicle Technologies, an operating division of ARM, introduces high-quality engineers to its clients to help maintain their competitive advantage. In the main, ARM clients are original equipment manufacturers (OEM's), consultancies, and tier 1 and 2 suppliers.

ARM Vehicle Technologies offers a targeted recruitment service to clients and candidates alike. Specialist consultants strive to develop a thorough understanding of the skills and technologies required within this space.

ARM's knowledge, passion and extensive network of engineering professionals contribute to its success,

adding value to its clients and their company.

ARM's client list includes a variety of OEM's, consultancies and tiered suppliers across a broad spectrum of vehicle-based industries, which as well as railways includes automotive, aerospace, military and off highway. We grow our business organically through referrals and recommendations from recruitment partners, candidates and contractors alike. In order to offer the benefit of being a true specialist, the company focuses its efforts within a tight range of skills, predominantly around systems, design, development and test and validation. These fall within functional disciplines that include:

- analysis / CAE / modelling (e.g. stress, CFD, NVH)
- electrical and power
- electronics and controls
- mechanical engineering
- project engineering/management
- software engineering.

**An expert recruitment partner**

ARM has always aimed to stand apart from other recruitment agencies by delivering an agile, professional service through a motivated and expert staff.

ARM aims to provide:

- an excellent service based on the ARM 3 P's: **professionalism, partnership and passion**
- the best contractor and applicant care available, coupled with innovative recruitment solutions
- a fast and accurate response to client requirements that provides value for money
- a professional service which maximises new technology and business practices.

ARM also seeks to ensure that:

- all of its customers are given 100 per cent commitment
- all candidates are carefully and comprehensively vetted
- only the most appropriate candidates are put forward for jobs
- its business strategy serves long-term growth, while enforcing the highest levels of customer service.

Speak to ARM's rail recruitment team today about tailored solutions and cost-effective alternatives for interim roles.

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 Email: [ibe@arm.co.uk](mailto:ibe@arm.co.uk)  
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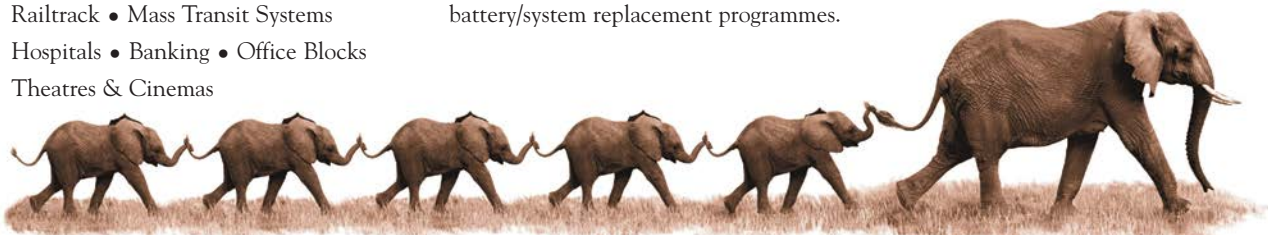
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# Under close inspection

Streamlining the process of on-site inspections for building structures and plant is crucial to prevent works from hitting the buffers. Luckily, **Upshot UK** provides a cost-effective and predictable service that keeps projects going

**U**pshot UK is experienced in a variety of infrastructure inspection tasks ranging from structures such as bridges, viaducts, retaining walls and communication masts, to station canopies, roof building and difficult-to-reach structures and plant. This capability is of great assistance when planning the delivery of inspection work banks and while carrying out the safe and efficient management of the railway infrastructure and associated commercial buildings.

Upshot uses its ground-based aerial solutions to collect high quality information through imagery that gives contractors working for Network Rail and other infrastructure clients a detailed picture of the structure and location. This means that decisions can be made on the scope and nature of the work to be carried out, which in turn helps plan the delivery of the works. In addition, Upshot provides underwater systems that can provide key data on underwater structures such as bridge piers, embankments and sea walls.

The benefits of using remote systems are:

- less need for 'tactile' inspections in places where access is very difficult or impractical
- lower risk to the inspection workforce, as there isn't a need for cherry pickers, roped access or scaffolding
- no need for possessions to gain access
- the majority of tasks can be carried out from outside of the operational railway infrastructure
- inspections can be arranged and carried out at short notice
- it can provide comparative before-and-after imagery to verify successful completion or work progress
- very cost-effective when compared to alternative inspection methods.

Upshot's surveys are safe, practical and cost-effective. Therefore, the company believes its capabilities provide a useful complement to other inspection and surveying methods.

Upshot has grown steadily over the last few years as a result of its work with main contractors that include Amey, Network Rail and transport authorities, councils and housing associations. Upshot's reputation

for safety, quality and competitive costs has been crucial in winning work on a repeat basis, with the company continuing to broaden its services to the wider infrastructure contractor community.

Upshot works to a standard schedule of day rates. Typically three sites can be surveyed in one day (dependent on location), so the service that it provides to its customers is cost-effective and predictable. The company can be engaged directly via a simple purchase order or through call-offs from a basic framework contract.

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# A shining example

**Tufnol Composites** is a manufacturer, machinist and stockist of high performance laminates, composites and engineering plastics and has recently undergone a major investment programme

The company has more than 80 years' experience of manufacturing laminates and has accrued a large and varied client portfolio. It supplies the rail industry in addition to a wide variety of other key sectors that include marine, mining, electrical, aerospace, offshore and construction.

Tufnol Composites works with its clients to create component solutions for all types of applications. Thousands of new uses are created every year and the company works with leading rail brands, such as Bombardier Rail Control Solutions and London Underground.

## Controlled flammability

The company knows how crucial low smoke properties are in underground facilities and tunnels and has developed materials that give exceptional performance over and above standard phenolics. Specially formulated resin systems result in controlled flammability, good resistance to ignition and excellent low smoke and toxicity values.

Tufnol's reinforced laminate has been used in the redevelopment of Birmingham's New Street station. A unique cotton fabric-reinforced laminate, it is manufactured at Tufnol's Birmingham facility and has been specified and installed by the architectural engineers working on the station's car park section.

The Grade 2F/3PTFE laminate was specified for its combined properties of mechanical strength, rigidity, toughness, machinability and low friction. It provides a simple and cost-effective solution to natural corrosion in steelwork by isolating dissimilar metals and preventing the flow of destructive, corrosion-inducing electrical currents. Thanks to its inherent low-friction characteristics, the laminate also allows for 'slippage' that occurs naturally as the structure expands and contracts with differing climactic conditions.

The composite installed at New Street is widely used in the railway industry as a high performance dry-bearing material on rolling stock, where non-contaminating, silent running and long-life bearings are regularly required.



Birmingham New Street is the busiest UK railway station outside of London and Tufnol, being a local manufacturer, is proud to assist with the engineering complexities of such an iconic project. Due for completion this month, the station will provide a welcoming, spacious and easy-to-access hub that is located right in the centre of the city. The project promises to bring major economic growth to the wider region by creating new jobs and stimulating further regeneration.

## Investing in the future

Always innovating, Tufnol Composites strives to be at the forefront of new technology, as demonstrated by the company's latest capital investment



The car park at Birmingham New Street station



programme initiative. It has invested significantly to upgrade key plant and machinery to improve output capacity, including the purchase of a state-of-the-art hydraulic press for its Birmingham manufacturing facility.

The new machine is a six-daylight hydraulic sheet press that uses the latest composites industry technology. It has fully automated controls that offer virtually infinite pressure settings, as well as 'curing' temperatures of up to 200 °C.

Tufnol has also invested in its online presence, updating its website and social

media capacity over the last 12 months. The new website is more user-friendly and aesthetically pleasing; retains important sector information; and offers valuable information for engineers, designers and all users of laminates.

Tufnol now has an active presence on Facebook and Twitter, which the company updates daily with company information and press stories.

Tel: 0121 356 9351

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# Making depots safer

**Furrer+Frey** has been creating overhead contact line solutions for more than 90 years. Here, the company explains its moveable conductor rail system, which offers safety and accessibility improvements

**F**urrer+Frey's innovative moveable overhead conductor rail system for rail workshops and depots ensures that safe maintenance work can be carried out on rail vehicles, while enabling free access to the train roof. The system has been supplied and is operational in more than 65 depots worldwide.

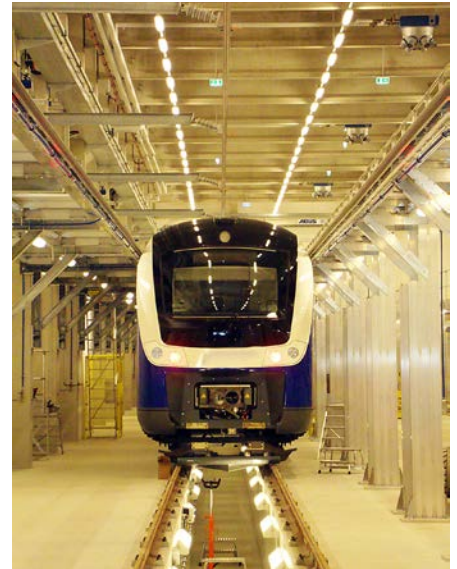
The company has always believed that there is more to great customer service than just technical expertise; successful design involves listening to customers and working closely with them to develop solutions that enhance safety, efficiency and the reliability of railway systems.

As one of the few industries that requires its employees to deal with high voltage electricity and powerful machinery on a daily basis, the rail industry is a potentially dangerous place to work. Furrer+Frey is aware of the need to constantly improve the systems that assure the safety of those employed to keep the rail infrastructure and rolling stock on track.

## Uninterrupted train movement

The vehicle inspection and maintenance tracks in depots are often electrified to allow uninterrupted train movement within the depot or they require diesel/battery operated shunting locomotives. In the case of diesel/battery-powered locomotives, a significant amount of time and logistical management is required to haul carriages into the depot. Correspondingly, if it's electrified, the overhead system causes an obstruction for staff who need to access the train roof, with associated safety hazards similar to that of electrified lines above railway tracks.

Over the past two decades Furrer+Frey has developed and supplied its moveable overhead conductor rail system for depot infrastructure, delivering a positive impact on depot efficiency and safety. 'This has made a real difference to working practices in depots and has helped in improving the efficiency of maintenance work', said Noel Dolphin, director for Furrer+Frey GB.



Based on the company's Rigid Overhead Conductor Rail System (ROCS), the moveable conductor rail can be retracted away from the track, switched off and earthed, enabling obstruction-free access to the train roof and ensuring safe maintenance work on rail vehicles. An integrated control and communication system provides a proven safe and efficient way of controlling depot train movements.

## Simply safe

The system follows a simple procedure: the train is moved from outside the depot via a conventional catenary system OLE (overhead line equipment). Once inside the depot, the power is supplied by the Furrer+Frey moveable conductor rail system. Power to the overhead line is then cut using a switch and the voltage transformer carries out a check resulting in a safe indication light.

The overhead line is then earthed, either by the earthing rod or an automatic earthing switch. The status change is indicated by a signal to lower the pantograph and in some cases by a running light as well. As the system is equipped with a moveable overhead conductor rail, the rail is then moved by the control system to its parking position. Visual and acoustic signalling devices are usually provided to give advance warning



Lifttable moveable overhead conductor rail system



**Control system**

The control system essentially consists of a main control cabinet and the control, signalling and monitoring components that are connected to terminal blocks in the cabinet. For multiple tracks, operating panels are located trackside and are wired to the main control cabinet.

The controls and displays for the system status are usually located on the front door of the control cabinet or on the trackside operating panels. The control system also includes one or more key switches from the interface to the mechanical interlocking system, through which other systems, such as cranes, are secured.

‘The control systems cut out scope for error and give depots control over how they need to work with improved safety,’ said Ankur Saxena, engineering manager for conductor rail systems.

**Specialised Control cabinets**

The control cabinet accommodates all the components necessary to carry out activation, monitoring and display functions, plus additional equipment such as UPS (uninterruptable power supply). Depending on the size or complexity of the system, the controls might be designed in relay technology or with programmable logic control (PLC). Indicator lights or even touch panels can be used to display system statuses.

Of course, PLC’s and touch panels offer greater flexibility than what’s available in traditional designs. The trackside operating panels can either be integrated into the main control cabinet or configured as external units.

**Safe signalling and monitoring devices**

Signalling devices can be integrated into the system, such as running lights or signals, that indicate the status of the overhead contact line. Rotary or flashing lights and acoustic sirens provide a warning before and during switching and moving procedures for the overhead conductor rail. These devices are also equipped to indicate an emergency shutdown or a malfunction.

Most depots have roof working platforms, overhead cranes and access stairs to platforms. The functioning of these systems is safely integrated into the control system of the moveable overhead conductor rail. These can be monitored through electro-mechanical or electrical interfaces.

**Tailored interlocking devices**

Furrer+Frey manufactures purely mechanical interlocking devices which use mechanically interlocked keys for its interface. These keys are protected and the system can be tailored to suit specific customer requirements. These mechanical device are relatively easy to use and cost-effective in comparison to electrical interlocking devices.

Where the system is already used Furrer+Frey has supplied its moveable conductor rail system to a range of customers – from train operators such as Swiss Federal Railways (SBB) and Deutsche Bahn (DB), to conglomerates that include Bombardier Transportation and Delhi Metro Rail Corporation.

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that moving and switching procedures are about to take place.

These devices will also indicate emergency shutdowns initiated by emergency stop buttons or even by fire service control units. Through a control cabinet, safety electrical interlocks monitor all the interfacing services such as doors to roof working platforms, and also release or lock up cranes or similar equipment.

**How the moveable conductor rail works**

The moveable conductor rail system is supported on a set of motorised cantilevers. The cantilevers have the ability to rotate from across-track position to along-track and vice-versa. Once the overhead system is switched off and earthed, the conductor rail can be moved away from the track and towards the depot wall/columns, using the geared motors mounted on the cantilevers.

This provides safe and obstruction-free access to the train roof for maintenance workers. Another key feature – and advantage – of using moveable conductor rails in depots is the flexibility they offer for fixing, as the conductor rail can be used in multiple arrangements to suit the depot requirement. Whereas the sideways-folding conductor rail is most common, it can also be used in liftable and retractable arrangements.

The transition from the conventional overhead line to conductor rail is done through a transition bar and an in-line overlap with arcing horn. The in-line overlap acts as a separator between the fixed transition bar and moveable conductor rail system.



A moveable overhead conductor rail system control unit

# Coming through loud and clear

A robust and reliable means of communicating with passengers at stations is crucial, particularly if they are disabled or have poor mobility. **GAI-Tronics** has products that fit the bill

**B**ritain's railways are the busiest they have ever been; some parts of the network are close to capacity and demand from passenger and freight is increasing. 1.7 billion journeys are made every year – 34 per cent more than five years ago and double that of twenty years ago.

There is an industry-wide drive to deliver a better and even safer rail service. Between 2014 and 2019 there will be investment of more than £38 billion, with the money being spent on improvements that include electrification, building stations and lengthening platforms.

The challenge facing Network Rail and Toc's is to deliver consistently high standards of safety, performance and customer service in all aspects of service delivery. It's important that design across the network is inclusive; making stations easy to access is a huge challenge, due to the fact that so many were built in the Victorian-era and are not always suitable for modern-day demands.

## Fixed help points

While CIS (Customer Information System) services and mobile apps are valuable and play a significant role in the delivery of customer information, there is something reassuring about a fixed help point. A common sight on UK platforms; the press of a button can put the user in touch with a member of staff or central emergency control room.

DfT guidelines state that help points should 'be designed so that visually impaired people can find, recognise and use them.'

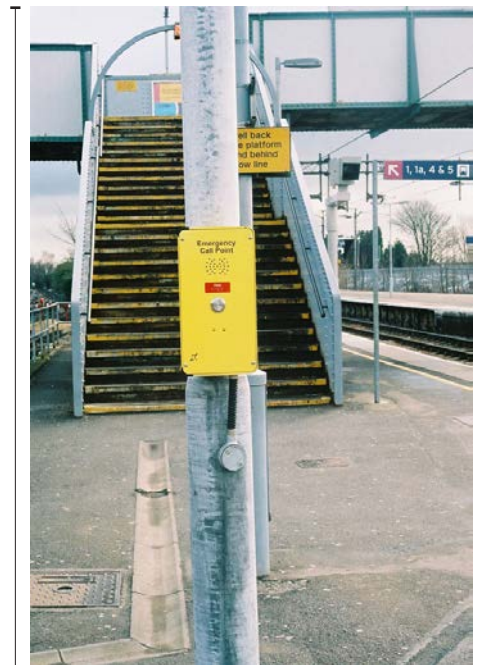
Help points should be positioned in key locations, well signposted and fitted with induction loops. To improve access for wheelchair users, the units should be installed between 700mm and 1,200mm from the ground.

Help points are available from a few Network Rail-approved manufacturers. GAI-Tronics has been manufacturing



PHP400 Help Point

robust telephones for more than 60 years. It started out manufacturing phones for the mining industry, developing communication devices that could withstand the harshest environments. As





GAI-Tronics Burton upon Trent manufacturing plant

mining began to decline, GAI-Tronics expanded into the UK transportation market by providing SOS phones for the motorways and lineside phones for the UK rail industry.

**The company**

GAI-Tronics is a UK company, designing, engineering and manufacturing at its plant in Burton upon Trent. The company believes that by keeping the key stages of manufacturing under one roof it's able to maintain the high standards that its customers have come to expect.

The company's UK facility houses in-house design, engineering and manufacturing teams that adopt the principles of Kaizen and lean manufacturing. By using this method of production its manufacturing model is a more efficient, cost-effective one that can produce high-quality products.

Explaining Kaizen, business unit manager, Jason Allen, said: 'Kaizen goes beyond simple productivity improvement. When implemented correctly, it humanises the workplace by introducing smarter – rather than harder – ways of performing often repetitive tasks.'

'In the process it also empowers team members to learn to spot and eliminate waste. The value it brings to our customers is that we are continually improving; not only the products but also the process by which they are manufactured, allowing us to compete in a competitive global market.'

**Hands-free help**

GAI-Tronics continues to be a major supplier of robust telephones to the UK transport industry, including for trackside and customer information applications, and it has developed its help points to



DDA Help Point

include enhancements that are required by its customers and The Equality Act. GAI-Tronics has addressed physical features on its help points that make it difficult for a disabled person to use and has developed two new products – the DDA Help Point and the PHP400 Help Point, one or two button hands-free help points with integral induction loop and large palm depressible buttons. They have a clear and uncluttered layout, with raised text and Braille included on the face of the unit, and an LED light which indicates when a call is in progress. Help points can also be used by the control room operator to address passengers on the station platform and is available as analogue, GSM (Global System for mobile) and VoIP-SIP, which is connected to an IP phone system using a local area

network (LAN).

GAI-Tronics recognises that open protocol hardware gives telecoms architects the flexibility to furnish an entire estate with the same hardware but with a choice of connectivity that allows projects to be deployed efficiently and cost-effectively. For example, an IP network can provide increased productivity and efficiencies where networks are being installed for CCTV or other station ops. Adding voice communication is a natural progression.

GSM allows customers to deploy its DDA and PHP400 Help Points without having to bear the cost of installing permanent lines. Due to the fact that GSM networks are more resilient and robust, service providers are considering this as a viable option, which makes it an even lower-cost solution. PSTN (public switched telephone network) allows customers to install GAI-Tronics' products where lines are already in place. The company's GAI-Tronics GSM, analogue and SIP (Session Initiation Protocol) phones can be interrogated remotely to check the status of the units, leading to improved maintenance response times.

GAI-Tronics is always looking for ways to enhance its product range, and does so by listening to its customers and being aware of the end users' requirements on the rail network. This in turn allows GAI-Tronics to offer Toc's products that help them fulfil their obligation to their passengers.

GAI-Tronics is a division of Hubbell. Contact Harry Kaur, UK sales manager for more information or to make any comments or suggestions  
 Tel: 01283 703387  
 Email: [hkaur@gai-tronics.co.uk](mailto:hkaur@gai-tronics.co.uk)  
 Visit [www.gai-tronics.co.uk](http://www.gai-tronics.co.uk)

# From astrophysics to consulting

According to the Department for Transport, women make up only 18 per cent of people working in the rail industry. **Cara Murphy** is part of a new generation of technical leaders that wants to improve that statistic

## What does your role at GHD involve?

**M**y current area of focus is developing complex models and using them to provide commercial and strategic recommendations to clients. Some of the things I model include crowding and capacity utilisation, demand and revenue forecasts, timetables and competition impacts. I enjoy modelling because it's challenging and requires an application of theory in a practical way. One rapidly evolving area of work is combining our transport modelling and planning skills with our rail engineering capabilities to offer much more strategic services that support clients in driving change within the rail industry.

## You studied astrophysics at university: how did you get into rail?

I worked in a few different industries while at university because I didn't think that a career in astrophysics would be achievable. I was doing a lot of mathematical subjects, which led to work in the financial services industry. From there I moved to an executive

assistant role at the Transport Ticketing Authority in Victoria, Australia, while it was making the transition to a smartcard ticketing system. I was then recruited by a small rail consultancy before joining GHD in London about three and a half years ago. I've had fantastic mentors both at GHD and with my previous rail employers, which has been the key reason behind my becoming a rail consultant. Previous exposure to non-rail industries has also been helpful and has given me a broader business perspective. This has been particularly useful in business case development work and when advising clients on maintaining operational integrity by properly managing records and documentation.

## What do you enjoy about the industry?

I get a lot of satisfaction from delivering projects to clients but the main highlight for me is working with the people in this industry. In my experience, everyone is supportive and passionate about rail and always glad to share their knowledge and spread their excitement. As a result, the rail industry has become my passion too.



## What does it mean to be part of GHD's global network?

It's about being able to leverage more knowledge and skills to support the work we are delivering to clients. I recently came back from our technical conference in Sydney, which brought together people from across our transport business in Australia, UK, USA, Canada, New Zealand, UAE, Philippines and Chile. It was an opportunity for me to work with my colleagues from all over the world to develop a strategy for how we will grow and evolve our rail business over the next three years.

## How do you feel about so few women working in the rail industry?

It's disappointing. I think this is mainly because not many women pursue maths and science subjects at university. These skills are the foundations for many rail careers but it doesn't mean there are only jobs in engineering. There are many other disciplines in demand, such as information and communications technology, ticketing, station design and architecture and marketing and public relations. I actively encourage women to enter our industry, particularly for its diverse variety of work and supportive environment.





**Why is diversity important for the rail industry?**

The industry is lending itself to innovation like never before. Railways in the UK and around the world are operating systems that in some cases are up to 100 years old. Change is coming though and new entrants to the industry are needed to bring fresh ideas and novel ways of looking at things.

**Improving diversity and gender equality is a core priority for GHD, is this commitment important to you?**

GHD and its employees provide a support network for newcomers and graduates. The company's culture is supportive and I am encouraged to keep working on new ideas. I am currently involved in



setting up GHD's Young Professionals programme for the UK arm of the business, helping younger people grow and develop their careers.

**About GHD**

GHD is one of the world's leading professional services companies operating in the global markets of transportation, water, energy and resources, environment and property. It delivers engineering, architecture,

environmental and construction services to public and private sector clients across five continents and the Pacific region. Committed to creating lasting community benefits, GHD connects the knowledge, skill and experience of its 8,500 people with innovative practices, technical capabilities and robust systems.

Cara Murphy is GHD's senior consultant, Transport Strategy and Planning  
Visit [www.ghd.com](http://www.ghd.com)

# Up-to-the-minute data systems

Today's rail passengers expect to be kept up to date with live travel updates, especially when it concerns service disruptions. **Met SYSTEMS** develops bespoke systems that do just that

## Electronic Service Update Boards (ESUB)

Off the back of several successful London Underground CIS projects, such as the Aldgate station project, LU commissioned Met SYSTEMS to design a prototype for the Electronic Service Update Board (ESUB). Often referred to as the rainbow board, the new system was developed following collaboration between LU and Met SYSTEMS that led to various iterations including numerous mounting options for floor, wall and ceiling.

The final product was taken up by LU and has since been fully deployed across the entire network and is still widely used today, with an early example of the rainbow board installed at Aldgate East station.

## Wiscreen (WiSI)

Implementing any new assets within a station presents many challenges, regarding both the physical installation and the required approval procedures. In order to install an electronic display onto an LU station wall it requires a space application, power application, safe load assessment, technical designs and an installation method statement. Each of the steps in that list need to be written, submitted and approved, but the list merely scratches the surface.

At sites that are considered of historic significance (and therefore subject to heritage rules) it's nearly impossible to hang any displays onto the wall. It occurred to Met SYSTEMS' development team that this problem could be eliminated if the final product was a floor-standing appliance, as such a product could simply be wheeled into a station, plugged in and turned on.

It was this inspiration that led to the development of the fully mobile, battery-powered WiSI (Wireless Service Update) screen. The screen requires three hours' charging for 20 hours of usage and was developed to meet LU's 'engineering hours' period, during which time the

stations are closed for cleaning and maintenance.

## Popular with Toc's

The WiSI has now been taken up by various Toc's, including Govia, Southeastern and Eurostar. Eurostar is currently extending its use across the channel and is deploying it in Paris and Lille, giving the product its first tentative steps into the international market.

One of the WiSI's functions that customers find particularly useful is its ability to show live service information, providing them with detail on service and



extended further.

WiSI has an interleave function that allows the data to be displayed alongside advertising, which is particularly suitable for areas with heavy footfall. The flexibility and ability to deploy



disruption. This data is specifically set up for existing CIS's (customer information systems) and has often been developed at considerable cost. WiSI is able to utilise this information, which means the investment in the feed data can be

these displays immediately into areas where they're needed addresses the major challenges for Toc's to meet PIDD's (Passenger Information During Disruption) requirements.

WiSI users are impressed with its



intuitive graphical user interface, which is available on a variety of touch screens, tablets, terminals and smartphones. It's simple but attractive design eliminates the need for expensive and lengthy training courses because users attain a full grasp of its functions and abilities within a couple of minutes.

The WiSI brings considerable improvements where it is located, providing useful functionality in a sleek design that would not be out of place in a bank, airport or shopping centre. It's installed with minimum disruption, due to deployment often during working hours, and up and running within minutes. They literally roll off the lorry and into full operational service.

**Emirates Airline**

Not strictly rail specific, Met SYSTEMS has also developed a new CIS system for Emirates Air Line, the cable car in London's Docklands. The airline's existing solution was out of date and limited the options to present varying presentations to its customers. It was a fixed asset, which had been installed and commissioned when the Emirates Air Line was opened three years earlier.

**'The WiSI brings considerable improvements where it is located, providing useful functionality in a sleek design that would not be out of place in a bank, airport or shopping centre'**

The possibility for retrofitting the housing of the existing solution was discussed with the client, with various mock-ups produced. Ultimately, however, Emirate Airlines decided that the saving did not outweigh the benefit. This was in part due to the airline's desire for a solution that looked as sleek as the WiSI. A bespoke solution that matched the look and feel of WiSI would help the airline facilitate the introduction of WiSI terminals at the airline's desks, which was another desire of the clients.

The final product is currently in production and is expected to be in use by October 2015.

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**Positioning**

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# Making its position clear

**Omnicom Engineering** was awarded the 2015 RIA/Future Railway Innovation Award for its RailNavigator: a low cost advanced positioning system

**T**he need to have reliable and accurate positional data is essential to many applications in the railway, many of which are taken for granted. The railway is dependent on positioning technologies to provide a safe and reliable service to customers. When there are significant, unplanned disruptions to the network, one of the main customer complaints is the lack of information on their particular service.

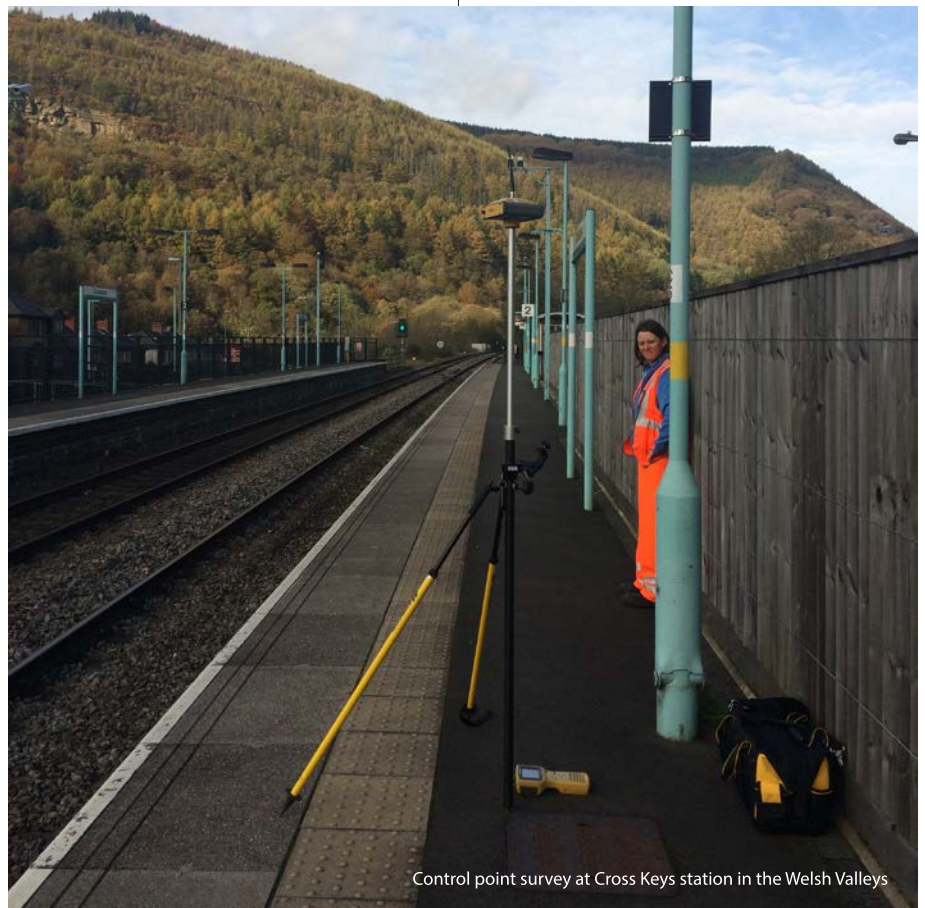
The railway has been using Global Navigation Satellite Systems (GNSS) technologies for many years in a variety of applications, from customer information systems and fleet management to providing accurate timing reference information for communications networks. GNSS technologies are increasingly being embedded in everyday products, such as smartphones/tablets and services. The limitation of GNSS technologies is often overlooked and the availability and accuracy of the service is taken for granted.

GNSS works by satellites broadcasting radio signals, including their location and the precise time from their atomic clocks. A GNSS device (commonly referred to as a GNSS receiver) receives the signal and identifies the exact time of arrival and then determines the distance to each satellite in view. Once the GNSS receiver knows the distance to at least four satellites it determines its own location and time in three dimensional space (latitude, longitude and ellipsoidal height). It is the location of the GNSS receiver antennae that is produced which in many applications is external to the actual point to be measured. So it is important to know the offset of the GNSS receiver antennae position to the actual point that needs to be measured

Global Positioning System (GPS) and its Russian equivalent, GLONASS. Such is the demand and reliance on these technologies for many everyday activities – some of which are safety critical – that some countries have developed their own navigation systems. For example, the European Galileo system will start offering its first services in 2016, with full completion in 2020. Chinese system, BeiDou-2, will be globally available from 2020 and the Indian Regional Navigation Satellite Systems (IRNSS) will be operational from 2016 onwards.

Most of these systems offer two levels of service: a free one for civilian use with a typical accuracy of  $\pm 10\text{m}$ , or a military service with an accuracy of  $\pm 0.1\text{m}$ . The actual accuracy that is attained depends on several factors, including atmospheric effects, visibility of the sky and receiver quality. Commercial subscription services such as differential or real time correction services allow civilian users to achieve sub meter accuracy depending on the type of GNSS device they are using.

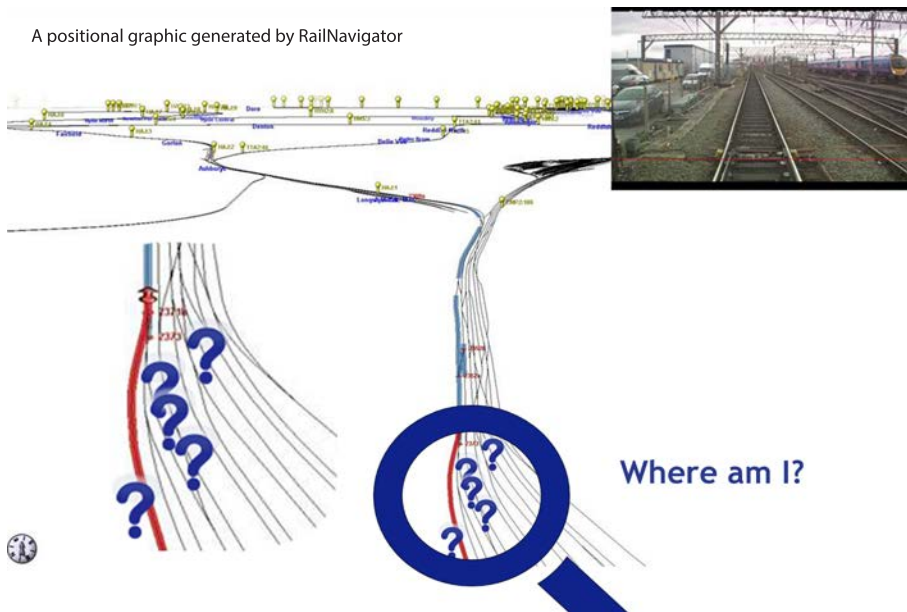
Most countries have reference stations against which data can be post-processed,



Control point survey at Cross Keys station in the Welsh Valleys

**Global Navigation Satellite Systems**  
The most common GNSS are the United States Military of Defence

A positional graphic generated by RailNavigator



Where am I?



The Network Rail NMT (New Measurement Train)

using commercial software to generate centimetre-level accuracy and this system is widely used by surveyors.

**Data coverage for railway operations**

For GNSS to provide accurate, reliable position it requires the GNSS receiver to track the position of satellites with minimal interruption to path between the satellite and the receiver antennae, *i.e.* good and consistent visibility of the sky.

For the railway, it can be a challenge to get continuous accurate position given that the receiver can be moving at up to 186 mph (UK) and that the infrastructure has obstructions such as station canopies, bridges, steep embankments, tunnels and neighbouring buildings. A study by the RSSB T740 *Global Navigation Satellite Systems data coverage for railway operations* looked at the satellite visibility issues for the UK rail network.

The distance between adjacent railway tracks is ~ 3.5m. Given the difficulties within the rail environment of achieving the theoretical accuracy it can be very difficult to reliably determine which track a train is on using a GNSS receiver. For some applications, such as passenger information systems (PIS), this is not an issue. However, applications such as selective door operation will require positive confirmation as to which platform the train is on, which can be

achieved using RFID tags fitted on platforms.

**Inertial Measurement Unit**

To overcome issues of satellite visibility, an Inertial Measurement Unit (IMU) should be used. A typical IMU consists of accelerometers, gyroscopes, bespoke electronics for signal condition/integration and a processor to solve the navigation equations. An IMU can measure changes in orientation and position reasonably accurately depending on the grade of sensors used, however, its output will drift with time. The amount of drift is a function of the type and cost of the IMU.

IMU data can be integrated with GNSS data using dead reckoning or a Kalman Filter approach. The implementation of these algorithms is complex, which is why the performance of suppliers' IMU/GNSS can vary widely even though they are using the same components. In addition to the IMU, the use of an odometer signal can help reduce errors in the IMU/GNSS integration and should be used in train applications. The use of an IMU also provides the additional benefit of higher frequency output.

A typical GNSS receiver has a standard 1Hz update rate, while more expensive GNSS receivers can output positions at 20Hz or better. A train travelling at 70-125 mph that is fitted with a standard GNSS receiver, with a 1Hz position update, will travel 31m-56m between position fixes. The augmentation of GNSS with an IMU will increase the position output rate and can benefit applications such as Driver Advisory Systems (DAS) and in-service train monitoring.

Like GNSS systems, IMU's range from low cost MEMS (Micro-Electro-Mechanical Systems) available for a couple of pounds, such as those found

in cars and smartphones/tablets, to very expensive Ring Laser Gyroscopes (RLG) that can be found in plane/submarine/missile systems, which cost hundreds of thousands of pounds.

The choice of IMU will depend on the type of application and accuracy that is to be achieved. To date, experience shows that MEMS systems can provide accurate position information only if there is good GNSS coverage. As soon as this is lost, the accuracy degrades exponentially with time. RLG's provide excellent performance/accuracy but are very expensive and are therefore suited for the most high value applications, such as surveying. A hybrid solution using medium cost Fibre Optic Gyros can provide a reasonable balance of cost versus performance.

**Map matching**

Further enhancement in performance can be achieved by integrating map matching with GNSS/IMU data. The accuracy of the map matching is dependent on the accuracy of the underlying track link node model.

RailNavigator is proposed as a low cost, advanced positioning system for rail, which will provide a real time vehicle position and other associated information. Initially suitable for PIS, logging driving characteristics and taking ride quality measurements; it could also be used to drive other functions that rely on accurate train position determination. Examples include automated train door opening, temporary block movements or ETCS.

There continues to be a demand for low cost position systems as demonstrated in the recent Shift2Rail Call, The Digital Railway Strategy and the Compass project as part of the Future Railway Strategy. The availability of a low cost positioning system that can be used on passenger trains will also help facilitate the move to service train-based infrastructure monitoring.

For nearly two decades, Omnicom has pioneered and delivered innovative solutions to the rail industry. Many of these solutions have required Omnicom to integrate a number of commercial off-the-shelf (COTS) components to produce products that can be used by the transport industry to meet requirements for monitoring, inspecting and surveying. To deliver the data from these systems, so that it can easily be used for business decision making, Omnicom has also developed a number of software products including desktop applications, databases and web services.

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# Keeping passengers happy

With passenger numbers rising, it's important that all stations and railways perform at a high level to ensure the journey is enjoyable, which is where **RDG Engineering** comes in

Since being voted 'the worst station in the country' in a 2009 Department for Transport-commissioned report, Manchester Victoria station is undergoing a modernisation that was authorised by Network Rail. The redevelopment is part of a £44 million transformation that will make the interchange safer, brighter and more spacious.

The station is a Grade II listed building and an essential aspect of the proposed scheme requires the removal and dismantling of the existing station roof to enable increased capacity. The scheme was approved and work began in spring 2015. Working in partnership, RDG Engineering provided design, drawing and on-site engineering support to Crossway Scaffolding Group, the company responsible for the on-site delivery.

While any work is being carried out on a station it is imperative that it does not impact on the operation of the railway, the public or the stakeholders. In this case, RDG Engineering designed an innovative 9,000m<sup>2</sup> access/protection deck that was suspended over the concourse track and platforms. The deck comprised aluminium lattice beams interlocking with standard scaffold components. This was then overlaid with

There were no disruptions to service during RDG Engineering's involvement in the redevelopment of Manchester's largest station





value engineering, which all allow for a competent service.

Safety-by-design principles actively reduce the risk to site workers during construction, and regardless of what RDG Engineering designs - safety is an integral part of the design process. It understands what influences safe design and then adapts it accordingly.

RDG Engineering believes that, where possible, value should always be added to the project at hand. And due to the fact that the company engineers economically, it will always look for ways to improve its customers' experience, whether that be in a bid to speed up the process, help manage costs or design measures to keep site workers safe.

The company's engineers practise value-engineering throughout the project - from design to completion. If there is a more effective way of using materials or developing more efficient ways in which to execute an aspect of the job, the company will offer assistance.

It strives to provide excellent service to its clients through continuous contact and the exchange of information; from on-site meetings to understand the project requirements and constraints, through to the completion of design drawings.



A 9,000m<sup>2</sup> access/protection deck was suspended over the concourse track and platforms at Manchester Victoria station

**Capability statement**

RDG Engineering has provided temporary work concept and detail design support throughout GRIP Stages 3 to 8 on many rail projects. The company will provide innovative and bespoke solutions should a more conventional method not meet the required specification. It believes no challenge is too great.

RDG Engineering provides: concept design; feasibility studies; structural assessments; temporary works design; special access; civil and structural engineering design; concept draughting; design and construction draughting; construction supervision; and CDM principle design.

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galvanised trapezoidal metal decking with a plywood wearing surface.

Working from the access/protection deck, a safe system of working was established and the existing train shed roof was systematically dismantled and removed from the site. No disruptions occurred throughout this process; either through time lost by the railway/stakeholders or delays to the public. Once fully dismantled the sections of the new roof were craned into position above remaining elements of the access/protection deck.

The work carried out at Manchester Victoria is a typical example of the variety of work that RDG Engineering carries out across the country.

**The company**

Among railway projects RDG Engineering has a vast portfolio in civil, structural and temporary works engineering. As a company, it provides innovative design and consulting services to small companies through to Plc's in the UK, Europe and beyond.

The company has a proven track record of taking responsibility for providing a complete professional consulting service, leading a client-appointed professional team and integrating it with associated professionals as part of an appointed team. With its in-house design engineer and management capabilities, RDG Engineering's services range from fully-costed feasibility studies through to turnkey design, engineering and project management solutions.

To ensure the quality of its service,

all projects undertaken by the company are controlled by a project management team whose role is to liaise with the client and ensure the specification, budget, programme and quality needs of the client and company are successfully achieved.

From inception, the company's policy has been to build a strong combined engineering and project management consultancy. It has achieved this by establishing and developing a team of qualified personnel with a wide variety of disciplines who are trained to fully appreciate and respond to the design relationships and integration between disciplines.

It's RDG Engineering's ability to understand, innovate and efficiently combine and control the individual engineering and project management disciplines that ensure its clients receive the optimum solution for their specific needs, which has resulted in a growing number of clients.

RDG Engineering provides and supports a variety of training courses to enable its employees to reach their maximum potential, with many working towards a chartership in engineering, and its mentoring system provides ongoing tailored support and advice to the individuals concerned.

**Taking a holistic approach**

The company's holistic approach and philosophy ensures every aspect of a project is looked at in sympathy with the other. This philosophy stems from a few key components, including safety-by-design, economical engineering and

# Making the link

Rail professional **Bill Andrew** argues that integrated connectivity must act as the key driver for station redevelopment across the UK's rail network. Here, he explains why

**E**ngineering and project management consultancy, Royal HaskoningDHV, has extensive experience of working on rail development projects all over the world, implementing best practice and innovations from other countries into its work in the UK. Working in collaboration with clients and partners, Royal HaskoningDHV delivers innovative and sustainable solutions to society's infrastructure challenges, not least in rail.

Bill Andrew has more than 30 years' project experience in the rail industry and his work regularly includes feasibility studies and detailed design projects for railway infrastructure on passenger and freight railways.

Part of the design team behind Canary

Wharf Underground station, he has first-hand knowledge on what makes a good station and how they should connect with the community and other modes of transport. Andrew's approach ties in with the focus and ambition of Royal HaskoningDHV and its company slogan: 'Enhancing society together'.

## High flyers

Said Andrew: 'I was at Heathrow Airport recently, where it's immediately obvious that it is totally designed around footfall and the spending power that that brings. The layout and service experience is focused on the visitor; which is perhaps something that traditional rail station developments lack.'

'New station developments also have to connect to other modes of public



Bill Andrew



Royal HaskoningDHV's Leiden project, the Netherlands

transport. Sometimes the design is created from a commercial point of view to provide access to the adjacent retailers. However, all forms of passenger network should connect as easily as possible to bus stations and cycle routes. If you lose this connection it's hard to develop it back in.

'Look at St Pancras International and Kings Cross; fantastic developments with a strong combination of shops, eateries and a transport interchange designed to optimise the use of passengers' time. It's eye-catching, welcoming and accessible.'

**Merseyrail**

The desire to make stations with the full passenger experience and route in mind is exemplified in the work Royal HaskoningDHV is carrying out for Merseyrail. The brief is to conduct

inputting train schedules and the number of passengers expected at peak times, Royal HaskoningDHV uses 3D imaging software to simulate the arrival of trains and passengers onto each platform. Based on the findings, Royal HaskoningDHV will determine possible measures to reduce or eliminate certain safety issues. These measures can be categorised in three main areas: changes to the design of the station and the train schedule, influencing the behaviour of the passengers, and altering the deployment of station staff.

**HS2**

Royal HaskoningDHV has already used this method of information collection during work it carried out with HS2. The company's first major involvement with

the area so, clearly, connectivity from the main HS2 route is key,' said Andrew.

'There is also an argument that the proposed station for HS2 in Birmingham at Curzon Street is not close enough to Birmingham New Street. It may be suitable for journeys to and from central Birmingham, but how about journeys from further out; Wolverhampton, for example?'

Andrew highlights the highly integrated transport systems in Switzerland and the Netherlands as leaders in the industry.

Royal HaskoningDHV's extensive experience of delivering complex schemes and consenting significant national infrastructure projects is exemplified by its work on the largest infrastructure in the Netherlands – the Amsterdam to



a detailed passenger flow analysis at Liverpool Central and Moorfields stations.

With 110,000 passengers each week, the Liverpool-based operator runs one of the busiest networks in England and it is understandably keen to ensure that it can handle growing volumes of passengers in a safe manner.

Using passenger flow simulation software, Royal HaskoningDHV (led by Samir el Gamal, business development director for Transport Hubs) will predict passenger flows and possible congestion based on station layout changes. By

HS2 was a contract to study the feasibility of building a cycleway in the corridor of the new railway, from London to Birmingham and then onto Sheffield and Leeds, Stafford, Stoke and Manchester. In the feasibility study the proposed cycleway could call in at more towns along the HS2 line, either by diverting the main cycle route or as a subsidiary.

'When looking at the issues that would arise with HS2, connectivity needs to be a priority. For example, there is a single rail station proposed for the east Midlands that is intended to serve both Nottingham and Derby. They are the two main hubs in

Paris railway – in addition to various renewables projects such as Dogger Bank wind farm.

Other areas that the company works in include tunnelling; bridges; geotechnics; transport planning and traffic modelling; construction traffic management plans; travel plans; flood risk; airports; due diligence of land surrender; and assessment of environmental liabilities.

**Bill Andrew a principal rail engineer for Royal HaskoningDHV**

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# Better together

**Sadler Brown Architecture** has global knowledge of the rail industry, having worked on Metro projects in the UK and Saudi Arabia. Here, the company explains why collaboration is the key to successful projects

Over the years, Sadler Brown has collaborated with major companies involved in signalling, overhead line, stations teams and permanent way. The practice is currently engaged in the analysis, design and delivery of a series of rail and infrastructure projects throughout the UK and Middle East.

From masterplanning to product design, Sadler Brown Architecture's breadth of experience has provided a grounding to identify constraints particularly applicable to rail environments, namely managing and minimising risk. The practice's creative and holistic approach recognises that disruptions to the operation, possessions, costs, structural and technical constraints must be addressed early on to result in a viable scheme.

## The Metro

The Sunderland Direct and Metro expansion project in 1994 saw the extension of the Tyne and Wear Light Rail Metro service from Newcastle to Sunderland and was a landmark project both for the north east of England and the practice. In the years since, subsequent interchange and halt stations for light and heavy rail, regional, national and international markets has given rise to affiliated research and development work. It is this work that has enabled Sadler Brown to test ideas and push the boundaries to develop possibilities and solutions for both rail environs and their interfaces, using them for the public realm and the urban grain around it.

In addition to infrastructure and station assets, the practice has been involved in several air-rights developments (the empty space above a property) in and around operational railways, whereby third party commercial development fostered by the practice has been the catalyst for station improvements. Air-rights over railways remain an unexploited resource; the opportunities for redevelopment at such sites are a stream of work that the practice continues to develop for a

number of current schemes.

During the evolution of Sadler Brown's rail portfolio, all aspects of working in the sector have featured in its experience, including feasibility studies; drafting Transport and Works Act documentation; expert witness evidence; preparation of design; and build tender documentation. The practice also acts as planning consent, and environmental, coordinators; designs stations; manages



Haymarket Hub ©Sally Ann Norman



Newcastle Central station refurbishment – lower concourse



Sunderland Metro station

Haymarket Hub ©Steve Mayes + Closegate  
Haymarket Hub Ltd



and contributing to feasibility studies and appraisals.

While the scale and complexity of the building – and its integration of mass structure and acutely engineered services – provided real opportunities to use and advance the knowledge from previous similar schemes in the UK, a deliberate move for this project provided the transition to developing and delivering the scheme with BIM, using Revit Architecture 2014.

Working from a project office alongside colleagues from other disciplines has allowed the BIM models to be developed in a fully coordinated manor, using linked files, a central live Revit model and NavisWorks clash detection. The results of a genuinely live, coordinated model to near BIM level 3 status has provided fantastic opportunities for identifying, and to a significant degree, resolving interdisciplinary coordination issues at source.

Furthermore, the advanced and complex nature of a connected synchronised model environment has provided the wider design team with some excellent opportunities. The team can now draw down quantity data and deliver information and qualitative data for analysis with ease at regular intervals, thereby furnishing the client and contractors with a greater degree of certainty that it will be a joined-up solution from day one.

While the scope and geographical remit of the practice's projects continue to grow, Sadler Brown Architecture values the importance of local knowledge and the importance that a direct interface between its award-winning team brings to clients, consultants, contractors and stakeholder partners. To ensure its team remains responsive to the needs of each project, Sadler Brown has recently opened studios in London and Birmingham to complement its established teams in Newcastle and Manchester.

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*9 Frederick Road, Edgbaston, Birmingham, B15 1JD  
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Heritage and Listed Building Consent issues; and carries out value engineering and cost analysis.

**£600m refurbishment**

Fusing enthusiasm for finding creative responses to problems with multidisciplinary skills within an engineering-led arena has helped Sadler Brown bring major benefits to projects. It has also enabled it to deliver cost savings, ease interfaces with local authorities and respond to different procurement models. The practice's adaptability to project-specific implementation has been invaluable to its ensuring that issues arising are resolved efficiently and effectively – with minimum impact to capital costs and risk.

More than twenty years on from its initial work for the Tyne and Wear Metro, Sadler Brown has been appointed as architects for the £600 million refurbishment, construction and upgrade works throughout the network. The work ranges from minor improvements at halt stations to the extensive overhaul of main interchange stations and will continue until 2020.

**Saudi Arabia**

In 2014, Sadler Brown was appointed to participate in the design and delivery of a large deep-underground railway station in Saudi Arabia, which will form part of the new Metro network in its capital, Riyadh. The work came following a number of years of providing consultancy services



## Whatever branch of the rail network **Mitsubishi has the perfect automation solution**

Mitsubishi Electric's automation solutions are trusted and relied on for providing efficient, reliable and high performing monitoring, signalling, operator interface and control solutions. Mitsubishi's wide range of automation products including Programmable Logic Controllers (PLCs), Variable Speed Drives, HMI's and SCADA have been used in many diverse applications within the UK Rail Industry.

Mitsubishi Electric is renowned for manufacturing high quality automation solutions and has supplied solutions for mainline, underground and over ground infrastructure projects over the last 30 years and will continue to bring innovation and reliability to meet future needs and requirements.



For more information on our Rail Industry solutions call: **01707 288780**,  
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# Greater than the sum of its parts

Adhesives and advanced composites business, **Scott Bader**, explains its range of robust and high performance materials for making composites parts and the companies around the world that use them

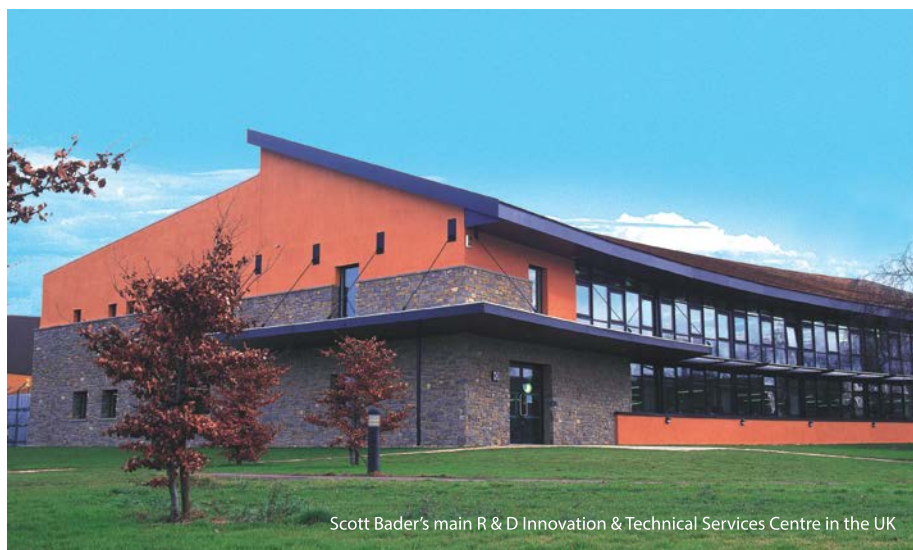
**S**cott Bader is a multinational specialty chemicals group with annual sales of £167 million and more than 640 employees worldwide. The group manufactures specialty resins, gelcoats and structural adhesives for the composites industry, as well as a wide range of specialty products, using water-based and solvent-borne polymer technologies, for the coatings, construction, textile and graphic arts markets.

Scott Bader's headquarters and UK plant is located in Northamptonshire, along with its main R&D innovation centre and technical services, which provides a complete evaluation, testing and application support service for its customers.

Outside of the UK, Scott Bader has manufacturing operations and local research and technical service facilities in France, Croatia, The Middle East and South Africa. It has also added new operations during 2012 and 2013 through joint ventures in India, Saudi Arabia and Brazil, as well as the acquisition of Ontario-based ATC Formulated Polymers to strengthen Scott Bader's position in the US and Canada. The group also has sales and distribution operations in Ireland, Scandinavia, North America, and Eastern Europe, and a global network of distributors and licensees, serving more than 90 countries worldwide.

## New advanced materials focus

Scott Bader's adhesives and advanced composites business unit continues to gain new rail business, as well as more widely in key composites markets globally. New applications have been developed using the company's range of



Scott Bader's main R & D Innovation & Technical Services Centre in the UK

innovative, high performance advanced composites products. These have been specially developed in-house for the manufacture of fibre-reinforced plastic (FRP) moulded and pultruded parts for demanding interior and exterior applications, including those which must meet the latest fire and fume railway regulation, EN 45545.

In more recent years, Scott Bader's R&D team has focused on developing higher performance advanced composite resins and gelcoats which can meet the rail industry's demanding mechanical and fire performance test standards. These materials for manufacturing FRP composite parts are used in rolling stock, buildings and infrastructure and also as structural adhesives for automotive and mass transport applications.

Scott Bader's new range of composites technology products includes new grades of carbon, aramid and glass fibre

compatible urethane acrylate-based Crestapol® acrylic resins for hand lay-up, closed moulding and pultrusion and a range of halogen free, low-surface-spread fire retardant (FR) hand and spray applied Crystic® fireguard gelcoats. Also available are intumescent topcoats, with an extensive range of 10:1 and 1:1 ratio Crestabond® primer-less methacrylate structural adhesives for bonding metals, composites and plastics.

The company's latest R&D development is Crestapol 1216, a hand lay-up back up resin that can be heavily alumina trihydride (ATH) filled, yet still be open moulded to produce a ~3.5 : 1 resin / glass ratio laminate, gelcoated with Crystic Fireguard GC 70PA that meets EN 45545 Level HL2.

## New export rail applications

Scott Bader has supplied the rail industry for more than 30 years, and in the last

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Scott Bader has manufacturing operations and local research and technical service facilities in the UK, France, Croatia, The Middle East and South Africa



seven has achieved significant growth in new rail applications in the UK and overseas. In Europe, the company has formed working relationships with producers of moulded interior and exterior rail parts, such as FRP window frames, cover boards and bottom boards for the latest European high speed trains.

It has also been involved with rolling stock projects in The Netherlands and Germany and has developed its existing business with European pultruders manufacturing composite

Scott Bader has expanded its customer base beyond Europe, into North America, Brazil and key Asian markets that include China, Taiwan and Thailand. Several leading Chinese FRP rail parts manufacturers, having independently tested and approved Crestapol 1212, now specify its use for a variety of closed moulded FRP parts for their rolling stock applications. Chinese company Country Business, previously used a phenolic resin but now supplies rail carriage interior parts produced by Light RTM (resin transfer moulding) using filled Crestapol 1212. The company's switch to an acrylic resin has delivered shop floor health and safety benefits and increased its productivity, while meeting all the mechanical and fire performance specifications.

Other Chinese manufacturers of composites parts for trains have also switched to using ATH-filled Crestapol 1212 and now supply major Chinese rolling stock companies, as well as

More convertors and OEM's are using Crestapol, finding it a much easier and more EHS (environmental, health & safety)-preferable resin to use on the shop floor, along with improving overall productivity. Crestapol also improves productivity due to its low viscosity but high reactivity processing characteristics, which exhibits a very rapid cure at low temperatures, with little if any need to post cure moulded parts.

Compared to typical rail grade phenolic resin, Crestapol resins provide superior mechanical properties, producing more dimensionally-stable parts with an improved surface finish that is stronger, tougher and more resistant to fatigue. Its inherent toughness, which is derived from the urethane acrylate backbone of the Crestapol resin matrix, provides moulded or pultruded parts with very high mechanical strength and impact resistance – even with high mineral filler loadings. Crestapol 1212, 1214, 1216 and 1250LV resin grade options can be heavily filled, with up to 200 phr by weight of ATH.

**Latest EN fire rating**

The most recent European Fire and Fume Railway Regulation EN 45545 HL2 covers FST and replaces national fire regulations (NFF, DIN, BS,UNI). EN 45545 has been met by Crestapol 1212 by using Scott Bader's latest halogen-free low smoke FR gelcoat, Crystic® Fireguard 70PA, which offers strong UV weathering properties for exterior applications. As part of the transition to EN 45545, a number of laminate systems suitable for rolling stock and infrastructure applications were submitted to independent UK fire performance laboratory Exova Warringtonfire.

Prior to the new EN 45545 HL2 regulation, Crestapol-based FRP rail parts met various international FST rail approvals for station buildings, main line over ground rolling stock and underground trains, including DIN 5510 S4/SR2/ST2; French Epiradeateur NFF 92-501-M1 and NFF 16-101-F0; and the Spanish M1/F0 fire resistance test for interior rail applications.

For some interior mass transport parts, such as electrical enclosures, floor sections and roof panels, Scott Bader's Crystic Fireguard 75PA (B) 'Excel' topcoat is applied onto the internal side of an FRP laminate. This intumescent FR topcoat can withstand a direct flame at a temperature of 700 deg. C (1292 deg. F) for more than 60 minutes without the laminate catching fire. When used behind Crestapol 1212, the laminate system passes BS 476 Part 7 Class 1, Part 6, Class 0, M1 F1.

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Three Crestapol 1212 RTM composite parts are used to construct the 'VIP' chairs

profiles that are used for rail and metro building applications, such as Technipul Composites S.L., in Barcelona.

For several years now, Crestapol 1212 and 1214 resins have been specified for pultruded profiles used for fascia panels, cable covers and roof lining parts installed in the Madrid Metro and other underground and main line stations and tunnels. Technipul's decision to switch to Crestapol 1212 resin was down to the good surface finish of the profiles at faster, higher productivity, pultrusion rates when heavily filled to meet specified fire, toxicity and smoke (FST) ratings. Crestapol 1214 is a low profile pultrusion grade that has been developed for parts that need minimal shrinkage, a smooth, glossy high-quality finish and high FST properties.

international train manufacturing companies that include Alstom, Siemens and Bombardier.

Scott Bader has also supplied its Crestapol resin to a manufacturer of luxury 'VIP' chairs designed for high speed trains that operate across China. The chair is made up of three sections and use several mould insert blocks. Each part is produced by RTM using 100phr ATH (ON904) filled Crestapol 1212 and meet the DIN 5510-S4/SR2/ST2 FR standard.

**Phenolic resin alternative**

For the rail industry, Crestapol resins and gelcoat systems are a viable alternative to more traditional phenolic resins, providing strong interior and exterior physical properties that also have the required FST properties.



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Delivering what we **promise**

# A Stadler for detail

**Stadler Rail** has been a supplier of customer-specific solutions for rail vehicle construction for several decades. Here, the company explains some of its products and what they have to offer

**W**hen the current owner and chief executive officer, Peter Spuhler, took over its Bussnang plant in Switzerland in 1989 he started with fewer than 20 employees. Today that number has increased to more than 6,000, with just over half working in the country.

The company now has 18 locations in 11 countries: Switzerland, Germany, Poland, Hungary, the Czech Republic, Italy, Austria, Belarus, the Netherlands, Algeria and the US. Experience, know-how, flexibility and fast response times – coupled with the short decision-making processes of a family company – are the qualities that allow Stadler Rail to guarantee its customers a complete, customer-oriented product range from a single source.

Stadler Rail occupies one of the leading positions in the lightweight aluminium construction sector and, thanks to its modular components, can meet passenger and rail operator needs for small and medium-sized fleet procurements. The rail vehicle manufacturer has never lost touch with its roots, which explains why it continues to develop its traditional product range of tailored specialist vehicles. Stadler Rail is still one of the world's leading manufacturers in the rack-and-pinion rail vehicle market.

## Metro

Some of the best-known vehicles are the articulated multiple-unit train, GTW; the Regio-Shuttle RS1; the FLIRT and the double-decker multiple-unit train KISS in the railway segment; and the Variobahn and the Tango in the tram segment. Metro is another addition to the commuter rail market.

Thanks particularly to its innovative metro concepts, Stadler Rail is able to stay ahead of the demographic transition – one of the major challenges of our time. The company has implemented a number of vehicle solutions that offer increased efficiency and sustainability. For example, the air suspension in Stadler Rail's metro systems allows the vehicles to maintain a constant boarding height regardless of the load. This makes it easier for persons with



KISS Double-Decker Electric Railcar for the suburban railway in Bern, the Swiss capital



The Stadler Rail-built subway, operating in Berlin

“ One of the key contributors to that success has been the work carried out by RMD Kwikform ”

**R·M·D  
KWIKFORM**

Chris Holland // New Street Station, Birmingham / Technical manager / Coleman & Company



Forming partnerships to support the future

## Birmingham New Street Station Redevelopment //

Coleman and Company was removing 7,500 tonnes of concrete from what used to be a car park, using modular Megashor trusses designed and supplied by RMD Kwikform.

The challenge was to remove a mezzanine car parking slab to create the new double height concourse and ticket hall areas. The only barrier between the demolition and twelve busy station platforms was the relatively thin floor below - so there was no room for error or disruption.

This meant taking down large sections of concrete and removing them from the building without causing too much noise, dust and vibration. Most importantly this had to be done without over loading the lower floor, which is only designed to take the weight of vehicles.

- Modular Megashor Truss system
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reduced mobility to use the vehicles.

In the interiors, multifunctional areas, spacious intercar passageways and wide gangways allow for optimal passenger flow. The metro concept is offered in a classic underground train configuration or, alternatively, in a configuration with Jacobs bogies, both of which can be outfitted with various traction components. Standalone coaches can be freely combined and used in a variety of systems.

sold). The FLIRT and the KISS double-decker train are also well-established on the international railway market, with more than 1,000 FLIRT trains and 216 KISS trains having been sold.

**FLIRT**

The FLIRT – Stadler Rail’s most popular vehicle – meets the highest standards in terms of passenger comfort. It is available as EMU, DMU and BMU and many have already been produced and sold. Thanks

easily embark and disembark from the train.

The large multifunctional compartment can be individually designed by the rail operator and the entire interior of the FLIRT – from the first to the last entrance – can be accessed without steps due to the Jacobs bogies. Stadler Rail is also working together with the Swiss organisation Integration Handicap to develop new handicapped-accessible toilets.

The FLIRT and the KISS have been further developed to improve their performance and reach maximum speeds of more than 120mph, allowing Stadler Rail to break into the inter-region, intercity and high speed market segments.

**EC250**

Stadler Rail’s latest product is the EC250, a single-decker low-floor multiple-unit train that can reach speeds of 150mph. It will be operated under the name ‘Giruno’ for the Swiss Federal Railways and will run through the newly-built Gotthard Base Tunnel. The railway tunnel is currently under construction but when completed will measure 35 miles, making it one of the longest train tunnels in the world.

The rail vehicle industry is currently in a dynamic, highly complex restructuring phase and many of the companies operating in this industry are being acquired, merged or strategically repositioned. In some cases, they’re being removed from the market altogether. In this kind of economic environment, it’s crucial for a medium-sized group of companies to ensure that its strategy matches its human and financial resources. Over the past few years, Stadler Rail has met this goal and has even demonstrated exceptional development despite the negative trend prevailing in the industry.

Stadler Rail has positioned itself as a supplier that complements global rail vehicle builders. However, independence is an important basic strategic value for the company. Over the past few years, Stadler Rail has closed the last existing production gaps by selectively expanding into the areas of electrical engineering and bogie construction. In doing so, the company is now able to offer complete vehicle concepts.

Unlike some large suppliers, Stadler Rail not only pursues platform strategies with clearly defined products in clearly defined market segments, it also offers customised solutions to railway companies on the basis of modular concepts that are tailored to their specific needs.

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Lightweight Diesel Rail Vehicle for Capital Metro in Austin, Texas

Stadler Rail has at least one modular vehicle range in its portfolio for each market segment. The company is represented in the regional transport market by the Regio-Shuttle RS1 (497 vehicles sold) and the articulated multiple-unit train GTW (600 vehicles

to its state-of-the-art technology and the corresponding arrangement of the drive components, the FLIRT is particularly quiet. Its large doors and extendable sliding steps make it possible for mobility-impaired passengers, parents with pushchairs or passengers with luggage to



The FLIRT, Stadler Rail’s newest generation operates on the Hungarian State Railways network, amongst others

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# Built to last

Reliability is the key to successful railway operations and effective maintenance has to be a top priority to ensure it is maintained. **Sulzer** has a number of precision servicing facilities that keep things running smoothly

**D**elivering better reliability can be achieved more effectively by working with an experienced and comprehensive engineering partner that is capable of providing locally managed projects anywhere in the world.

Sulzer has established a reputation for repairing and refurbishing a wide variety of rotating equipment related to the rail industry. With considerable experience in all types of traction components, including both AC and DC machines, the

systems and coordinated communications to restore components in an efficient and cost-effective manner.

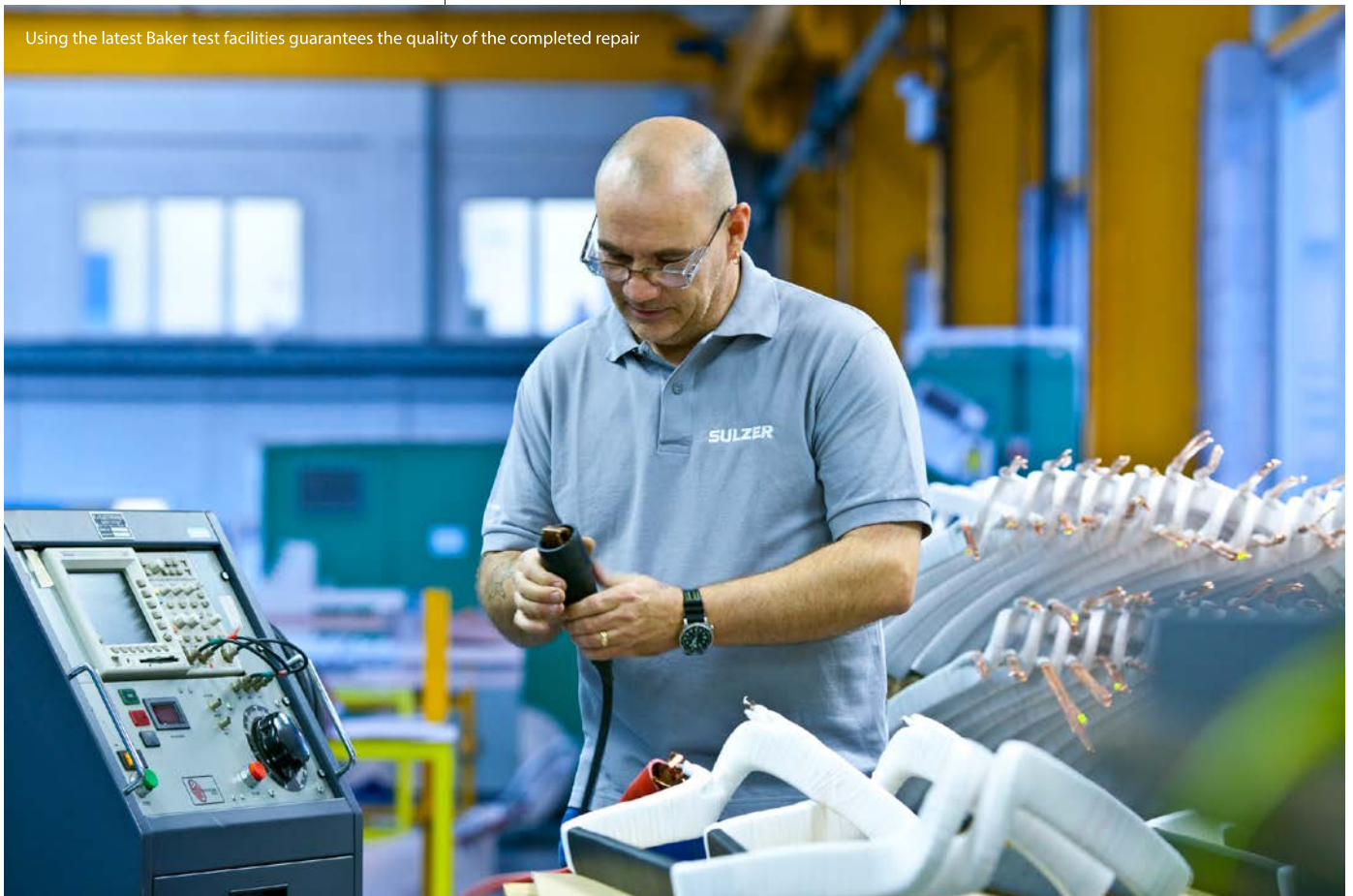
#### Local communication

It is important that a single point of contact is available for an entire project (from initial quotation through to final handover) and that contact should be as local to the customer as possible. This makes the project experience more efficient, enabling the customer to build a relationship with the service centre that forms part of a comprehensive

every conceivable situation. Even in cases where the original data may be missing, it has the technology to reverse-engineer new components that can be manufactured using the latest techniques, and materials to provide efficient and reliable replacements.

By maintaining all of the required processes under one roof and arranging them as a production line, Sulzer can maintain full control of the overhaul process and ensure a consistently high quality of repair. Beginning with an initial assessment and electrical testing, the

Using the latest Baker test facilities guarantees the quality of the completed repair



company can manufacture commutators, traction windings, core packs and brush gears, even for obsolete equipment.

With extensive facilities, equipment and expertise, Sulzer's service network combines detailed project management

nationwide network.

With archive information going back decades along with a huge inventory of coil formers for the older traction motor models, Sulzer has the tools and expertise to create new windings for

traction repair facility is laid out so that large numbers of repairs can be completed efficiently and accurately. This process is carried out while always following the procedures and standards laid down both nationally and by the manufacturer.

# TATA STEEL PROJECTS

## DESIGNING THE FUTURE OF RAIL



**TSP is a highly experienced railway solutions consultancy and principal contractor.**

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With a history going back more than 75 years, our ability to adapt and embrace innovation has led us to become market leaders in the multidisciplinary design and construction of railway projects.

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## Reading Station Area Redevelopment

Opened by Her Majesty The Queen, July 2014



# TSP

**Motors**

Any class of traction motor can be repaired by the Sulzer facility in Birmingham, which has the skills and equipment needed to complete a comprehensive refurbishment. From the latest 3D CAD packages to precision wound coils with the latest insulation technology, the company can design, manufacture and commission a complete motor repair and ship it anywhere in the world.

Every repair is completed to the manufacturer's specification and, with

budget and on time.

By utilising its experience in overhauling rotating equipment Sulzer is also capable of repairing a wide range of traction machines. Automatic undercutting and resurfacing of commutators, commutator profiling, rotor testing and *in situ* commutator profiling are just a few examples of Sulzer's capabilities. These facilities are complemented by automatic commutator TIG welding that not only provides a faster and more accurate repair, it is also stronger than soldered connections.

**Machining**

Sulzer's significant machining facilities enable precision repairs to be effected with minimal delay, which in turn guarantees that any new components, such as slip rings, are completed and ready for installation in time with the new motor windings or commutator.

The company's workforce in the traction department and the traction coil shop each has an average of 30 years' experience repairing and remanufacturing traction equipment. Passing that knowledge onto the next generation is

Sulzer's workforce each has an average of 30 years' experience repairing and remanufacturing traction equipment



on-site vacuum pressure impregnation (VPI) equipment and the latest Baker test facilities, the quality of the final repair is guaranteed. Furthermore, with so much experience in such a wide variety of traction motor designs, the traction repair facility can also ensure the most recent design update is included in the component under repair.

**Commutators**

The in-house commutator production facility at Sulzer's Birmingham service Centre is able to refurbish almost any commutator or slip ring assembly, and Sulzer's is the only one capable of building new Pollock commutators. This design capability, combined with machining expertise and the support of a team of engineers, enables the delivery of commutator and slip ring projects on

**Coil production**

Sulzer's dedicated traction coil production facility manufactures the complete range of stator, armature, interpole and field coils using all forms of the latest insulation. It is accredited to ISO 9001, ISO 14001, ISO 18001, RISQS (formerly Achilles Link-up) and Unipart Technical Dossiers, which ensures that all of the work is delivered safely and to the highest quality.

The Birmingham site has a reputation for large coil production, especially when quality and speed is of the essence. With its own copper mill on site, windings can be created around the clock – keeping repair times to a minimum. This also ensures total quality control throughout the coil production process and complete traceability.

part of the company's ethos: 'making sure expertise is carried through to benefit future customers'.

Sulzer offers the traction industry cost-effective manufacturing solutions that are capable of performing to modern standards of efficiency and reliability. In doing so, the overall standard of maintenance is raised across the industry, bringing benefits to all end users that use the service.

For more information, contact Harpreet Suree, marketing and communications officer – UK and North Sea, Rotating Equipment Services, Sulzer

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# From scour protection to fall arrests

Pontoonworks has spent the last 11 years floating everything associated with major infrastructure projects, and its safety-first approach is starting to pay off



**T**he modular pontoon specialist has seen a considerable rise in business over recent years; progress that it believes is due to its impeccable attention to detail.

The company considers every aspect of a brief and has a wealth of expertise available, ensuring that the safest possible solution is provided.

Working with contractors to maintain the UK's rail network requires a total understanding of the potentially dangerous environment. 'It's our business to know Britain's water courses and the surrounding environment and this knowledge is what we can bring to a project to offer the safest, most efficient solution,' said Pontoonworks managing director, Chris Murphy.

'The service we offer is much more than supplying a pontoon, we provide a consultancy service to our clients that they won't find anywhere else.'

#### Satisfying a number of needs

There are many advantages to using a modular pontoon; it is lightweight, manoeuvrable, strong and durable, and more and more contractors are discovering how it can benefit their projects. The 1m x 0.5m modules can be configured to provide barges, fall arrests, piling and plant platforms, access walkways and any number of uses for working platforms.

Fixed double deck installations with steel decking for heavy plant, or low profile for access under low bridges; Pontoonworks products can be tailored to satisfy any number of needs. The units can be adapted to securely house scaffolding, edge protection fencing and mooring points.



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**‘A recent bridge works project on the River Cynon in Wales required an engineering access solution that provided a stable platform for a piling rig and a debris fall arrest system’**

**In the Valleys**

A recent bridge works project on the River Cynon in Wales required an engineering access solution that provided a stable platform for a piling rig and a debris fall arrest system. Floating on a section of flood river, Pontoonworks provided a 700m<sup>2</sup> single layer pontoon installation with gangway and Combsafe fencing. The installation allowed the client’s team and its contractors to safely complete extensive demolition works on a main line rail bridge – floating two six-tonne excavators without any need for a possession order.

Contractors know that gaining access to many of Britain’s bridges is often difficult and hazardous. Pontoonworks delivers a quality, professional service, quickly and efficiently.

To see if Pontoonworks can help, or to find out more about its business, get in contact.

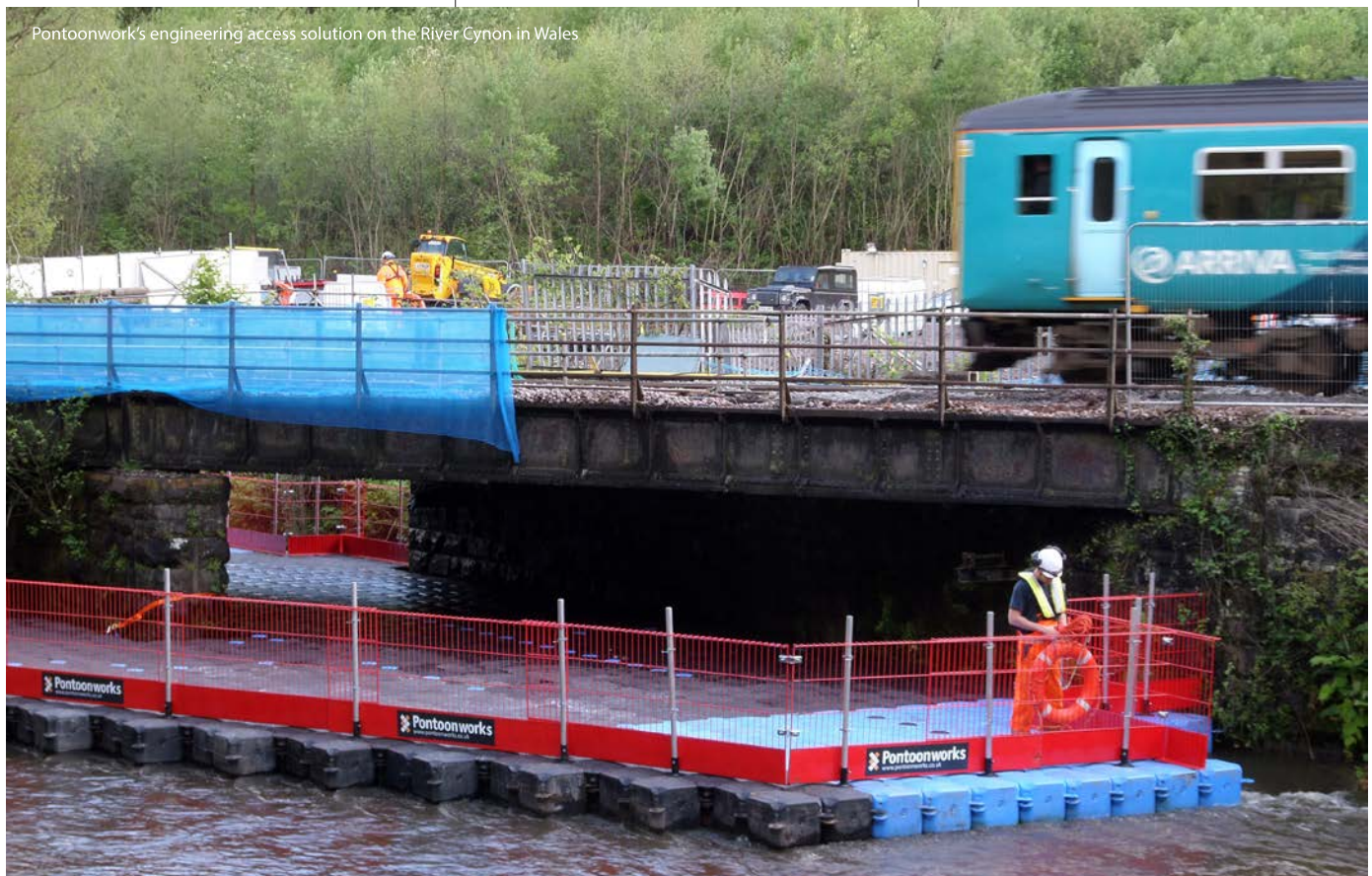
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The 700m<sup>2</sup> pontoon was able to float two six-tonne excavators



Pontoonwork’s engineering access solution on the River Cynon in Wales



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# Aerospace-quality composites for rail

The use of lightweight advanced composites in the aerospace and defence industries has delivered major performance improvements. Now they're being used on rolling stock to bring the same benefits to the UK's tracks

The major long-term benefits from aerospace-strength composites have driven leading manufacturers like Airbus and Boeing to design and build the latest commercial aircraft, such as the A380 and B787 Dreamliner – with more than 50 per cent of their structural parts made from advanced composites.

The composite system primarily specified for commercial aircraft is a honeycomb prepreg composite laminate produced in an autoclave, which is extensively used for interior applications, including sidewalls, ceiling and floor panels, galleys, toilets and partition walls; and also for exterior applications, such as wing sections, flaps, ailerons, antenna radomes, access panels and doors.

Rail is poised to make the same sorts of gains in operating efficiency,

performance and lifecycle cost benefits by using advanced technology composite materials for the next generation of high performance trains, which need to be lighter, faster, more energy efficient and cheaper to maintain.

To meet these new materials needs, TRB Lightweight Structures has increased its composites design and manufacturing facilities, added certifications and hired more people, so that TRB is now able help train manufacturers take advantage of the significant benefits gained from using advanced composites.

#### TRB's new capabilities

TRB has been helping train manufacturers and operators for many years, with a long history as an IRIS-approved, Tier 1 supplier of lightweight engineering solutions for train builders

worldwide. The company has designed, manufactured and sometimes installed components for projects as diverse as Hitachi's new high-speed train, the London Victoria Line and the UK West Coast Main Line. TRB supplies a range of interior and exterior components, from floors, partitions, galleys and storage units, to main doors and speciality detainment doors, for both new-build and refurbished rolling stock.

TRB's design and materials processing capabilities now include alternative lightweight composite materials that comply with the latest and most stringent fire, smoke and toxicity guidelines detailed in EN 45545. These materials include phenolic SMC (sheet moulding compounds), modified epoxy glass prepreg, fire retardant foam cores, carbon/phenolic prepreg, and select



TRB Lightweight Structures has invested in a purpose-built 4,000 sq. ft clean room, which meets ISO 14644 classification standards for manufacturing composites with AS9100 accreditation

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MANAGEMENT  
SEATING  
FREIGHT  
BRIEFINGS  
RIDDER

WORKLOAD  
SKILLS  
POSSESSION  
MANAGEMENT  
SEATING  
FREIGHT  
BRIEFINGS  
RIDDER

TRAIN DISPATCH  
LINESIDE EQUIPMENT  
WORKLOAD  
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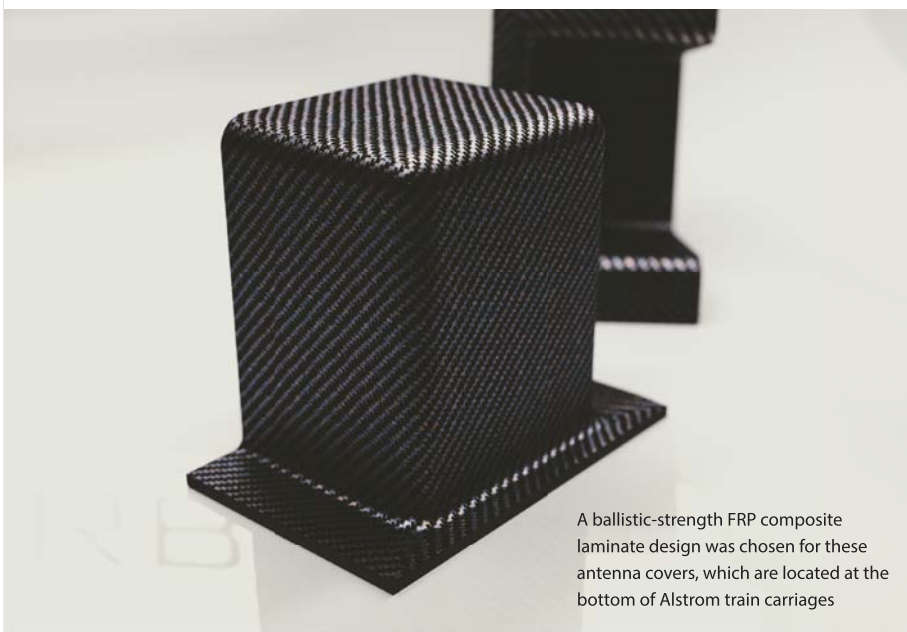
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## BALLYCLARE



New vacuum moulding equipment and experienced composites technical staff have been added to the business



A ballistic-strength FRP composite laminate design was chosen for these antenna covers, which are located at the bottom of Alstom train carriages

thermoplastic materials.

Its new 4,000 sq. ft clean room, built to ISO 14644 standards, along with a newly-installed autoclave (3m long x 1.5m wide) heated pressure vessel, were key investments to meet the exacting needs of the aerospace and defence market. Autoclaving is an established manufacturing processing step where only the highest quality composite structures are acceptable and is used extensively for making aerospace-approved components. TRB has also recently gained AS9100 (BS EN 9100) aerospace accreditation, which is a globally recognized quality standard for the aerospace and defence industry, adding to the IRIS (International Railway Industry Standard) and ISO 9001 certifications already in place.

**Weight-reducing composites**

Some of the latest rail projects have begun to take advantage of more advanced lightweight materials and are reaping the benefits. Bombardier's AVENTRA platform (an update of the Electrostar) weighs around 30-35 tonnes, a decrease of

up to 28 per cent compared to earlier 42 tonne units. The AVENTRA consumes 50 per cent less electricity than the Class 319 train and is also faster, enabling quicker journey times. The new Siemens Desiro City platform is a modern, lightweight and energy-efficient train, which is on average 25 per cent lighter than current UK trains in service and consumes far less energy.

TRB has been working in partnership with rail customers to develop lightweight solutions in a wide variety of applications. Recent composites projects delivered have included developing a new lightweight composite antenna cover for Alstom Transport; reverse engineering a stiffer and lighter coupler hatch for the West Coast Pendolino; and providing an innovative way to repair corrosion damage to sections of the castellated steel roofs on a fleet of train carriages using a new TRB composite-based patching system. TRB is also working with key OEM's to design and build cost-effective composite solutions to remove significant weight from key components – by up to 60 per cent in some cases.

**Reducing maintenance costs**

The new train roof composite repair system developed by TRB engineers has been approved by Virgin Trains in preference to using conventional welded mild steel patch repairs, which remain susceptible to corrosion and subsequent re-repair; polymeric composites materials inherently do not corrode. It is the first composite repair work of this type to be used for rail maintenance in the UK. According to revalidation engineering criteria, the composite patched roof section provides the same structural integrity as a welded steel patch.

The TRB composite roof repair sheet material is made from a glass fibre-reinforced epoxy prepreg resin, which is first laid up in the clean room and then moulded at high temperature under pressure to aircraft specification quality standards in the autoclave. Standard 1m<sup>2</sup> x 0.765mm thick sheets are produced, which can be cut to size, allowing for the train roof design profile requirements. Roof repairs are made by bonding an epoxy glass patch over the damaged section, using a rail-approved structural adhesive certified to BS 6853 and BS 476 fire standards

This cost-effective new roof repair system offers train operators significantly reduced maintenance costs, providing long lasting corrosion-free repairs, and avoids the need to replace the entire train roof at an estimated renewal cost of around £100,000. An added benefit is that rolling stock is out of service for less time; a TRB composite patch can be easily and quickly applied to repair a train roof within 24 hrs.

**Future proofed**

The TRB management team has made major strategic investments to increase its capabilities, while employing continuous improvement programmes across the business to increase efficiency, reduce costs, and raise quality even higher. Over the last four years, the business has expanded by approximately 10 per cent annually and added around 4,000sq.ft per annum of new factory space.

Speaking about the TRB's new strategy and business expansion, Richard Holland, its managing director, said: 'Over the last 18 months, we've put our new composites' capabilities in place and also implemented improvements across the business. TRB Lightweight Structures has a long history of supplying the UK rail industry and is able to design from concept and deliver a broad range of the latest lightweight materials. We're ready to take on and play a leading role in delivering the future needs of the rail industry.'

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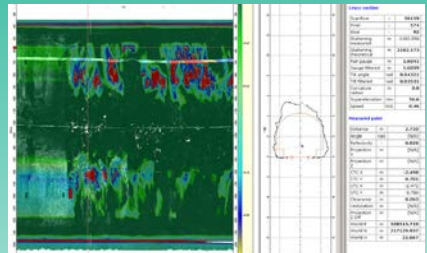
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# Not running on empty

**DataTrack** has been supplying fuel management products across the UK rail industry for more than 20 years

**W**ith a wealth of sector-specific knowledge, DataTrack has successfully worked with some of the major UK rail companies to deliver a wide range of fuel monitoring solutions, well-adapted for use on railway refuelling stations. The company's customers include ScotRail, DB Schenker and Southern Rail, which all involved DataTrack undertaking the initial design and development work to supply and install fuel management systems that it now maintains. Current

projects also see DataTrack at the heart of Garrandale's fuel enhancement programme.

The company's work on the ScotRail refuelling system typifies its approach to all major projects. The core requirements of the ScotRail project were threefold: first, to develop technologies that would integrate easily into existing IT landscapes such as SAP, so as to centralise refuelling operations; second, to better improve efficiency at the refuelling station where there are many fuelling points widely spaced along the platform;

third, to reduce fuel loss by enhancing fuel security.

To achieve these objectives, DataTrack implemented an integrated fuel management solution that enables round-the-clock monitoring of locomotive activities. The hardware and software installations limit refuelling activities to authorised personnel only, allowing only nominated managers to access accurate information on fuel stocks and refuelling data 24 hours a day, 365 days a year. Reports can be generated to streamline the process of accurately logging fuel



# The Global Rail Group



Global Rail have nurtured a multi-skilled and flexible workforce, developed and trained within specific disciplines required to meet rigorous industry standards



Global Rail Construction forms part of the Global Rail Group of companies, established in 2001 incorporating Global Rail Services (Ireland) and Global Rail Australia (Pty) Ltd.



The group has grown their resource base to between 250-300 highly skilled individuals with offices in Hatfield (UK), Dublin (Ireland) and Melbourne (Australia), successfully completing a range of infrastructure projects both on and off rail.

GRCL have appointed an M & E Manager to lead its mechanical and electrical engineering division and are proud to have been recognised by the NICEIC as an Approved Contractor. The M & E Division are also currently working alongside the NICEIC in the development of standards helping to ensure GRCL keep up to date with the latest technology within the industry.



Group Managing Director Marco Lombardelli said *"This is a fantastic achievement for GRCL and the Global Rail Group as a whole. The new M & E division will integrate perfectly with our in-house Signalling, Civil & Structural design capabilities to support and further strengthen our internal core service offering together with providing turnkey solutions to the railway industry."*

*This will enable Global Rail to design and deliver complex, multi-discipline projects with our professionally qualified, in-house resource base by further strengthening our core capabilities. This is a very exciting time to be at Global Rail Construction Limited. Not only are we involved within key high profile railway projects, specialise in Vitreous Enamel, we have also demonstrated our commitment to growth by recently doubling our head office in size with purchasing the office unit next door to open of our new design suite and Signalling Training Academy side by side on the premises".*

The ethos of Global Rail Construction is summed up by our mission statement, which defines our role as "mixing traditional industry skills with technological innovation. Global Rail adopts a flexible management style to empower its workforce to safely meet clients' needs, while providing the highest quality standards at a competitive price".



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usage down to the individual car level in order to increase the speed of refuelling for time-critical journeys and to reduce administration costs.

DataTrack was awarded a contract for the works at ScotRail's Enfield refuelling points in 2012, the scope of which covered all elements of the survey, design, supply, installation and commissioning required to bring the fuel management system into service. To facilitate the works, DataTrack developed and coordinated a fully-integrated schedule, defining critical milestones within the project without disrupting the operational railway. The company delivered on time and on budget.

**Ongoing success**

As a result of DataTrack's ongoing success on the project, it has since installed systems at all of ScotRail's fuelling points in Scotland. As the project illustrates, DataTrack's services, capabilities and expertise cover the spectrum of project requirements. The company offers a completely integrated solution that spans from initial consultancy through to each element of the manufacture, supply, installation and ongoing maintenance and servicing.

ScotRail's energy traction manager, said: 'ScotRail started using DataTrack



fuel system controllers in 2012 and after a trial period decided to roll out the system across all fuelling points in Scotland.

'The system has reduced the time it takes to report fuel figures and removes the possibility of human error that can occur when manually recording fuel figures.

'The databases allow easy recalling of historical data and we can also see our tank levels from the office. Staff say the system is easy to use, and we have more control over who delivers our fuel and what equipment receives the fuel. All of this is used as part of our ISO 50001 reporting and it has helped gain this accreditation.

'We have now started using the system to record heating fuel levels to give us visibility of heating systems with poor efficiency, this will lead to better control and reduced heating costs. The next stage for ScotRail is to automate the DataTrack information into our central finance and purchasing system to have full reporting and ordering control from HQ.'

**UK-based staff**

DataTrack has a network of installation and service engineers based across the UK to ensure that the company can respond quickly and efficiently to customer callouts. The engineering teams are supported centrally by a UK-based technical support desk, customer service centre and experienced research and development team, with personnel covering 6am to 10pm, seven days a week.

As a quality assured ISO 9001 company, DataTrack is a fully integrated, multidisciplinary service which is controlled through a single point of contact. Operating from offices in Lancashire and Glasgow, DataTrack is part of The Triscan Group, the largest provider of fuel management systems in the UK.

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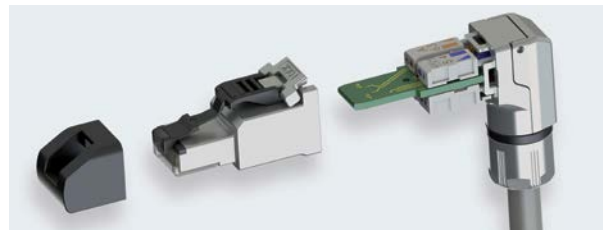
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# Looking after the pennies

More passengers travelling on the network means more cash changing hands. **Quickchange** manufactures cash handling products that ensure this is dealt with in the most secure and efficient ways

**T**he UK rail industry is worth an estimated £12 billion a year. £6 billion of that comprises passenger fares (the other half comes from the taxpayer in the form of government grants). That's a lot of money changing hands.

As anyone who has ever worked on a till will tell you, bank notes and coins are fiddly, which is why it's important to have the correct cash handling equipment. Trays and boxes may be functional and unglamorous products, but a lot of thought goes into how to organise and store cash for quick retrieval – in other words, enabling change to be given to the customer quickly.

## 30 years of design and development

It's from this process that Quickchange got its name. Quickchange Products is a designer and manufacturer of cash handling systems that are the result of 30 years' development. The company has one simple objective: to facilitate the fast, accurate, and above all, secure movement of money between businesses and their customers.

Not only are Quickchange's systems practical and convenient, they're also tried, tested and used by large organisations that include the Post Office, Nationwide Building Society and HBOS. Based in Yorkshire, Quickchange is proud to be a UK manufacturer and distinguishes itself from the competition through its commitment to customer service. Its can-do attitude means that it doesn't have off-the-shelf solutions, but instead designs and manufactures bespoke products for every customer.

'We do everything apart from cash registers and EPOS (electronic point of sale) systems', said Paul Boulton, sales and development director. 'It's everything that comes after that, including cash boxes, coin storage, note storage, flip tills, pedestals, steel cash drawers, specialised units and also the ATM slip bins that are located outside banks.'

## Handling change in more ways than one

Speeding up the business transaction doesn't mean short changing the customer in terms of service, far from it. Today, it's all about providing products that improve a retailer's service and its ability to enhance its customers' transaction experiences. That means developing a whole new range of innovative products, such as LED bank note forgery protection and special fold-down counters for the infirm or disabled.

Indeed, the measures introduced in the Disability Discrimination Act, which took effect in 2004, meant that just about any business dealing directly with its customers could benefit from Quickchange's products.

## Tried and tested in the UK rail industry

With more than 1.3 billion passengers passing through more than 2,500 railway stations, the UK rail industry – like any other large retail organisation – needs the best cash handling equipment. Train company staff need sturdy, reliable, well-designed equipment to enable them to serve their customers quickly and efficiently.

Quickchange provides its systems to Virgin Trains East Coast for use in its ticket offices at York, Tadcaster, Newark and Peterborough and there's also a trial currently underway with Eurostar to provide specially-designed cash boxes for its buffet carts. Carts are big business and handle large quantities of cash; a single trolley on a budget airline can create around £1 million of sales a year.

## Flip tills

At the centre of most modern cash handling solutions is the flip till. Originally developed for the Nationwide Building Society, the flip tills are used by a large number of organisations where safety and security is a priority and cashier working space is at a premium. Easy to install, the flip till drops neatly into the counter and sits flush with the

surface. Each till is supplied complete with a bespoke inner cash box that is lockable and removable. This enables individual cashiers to be responsible for their own transactions and facilitates quicker staff changeovers.

Also supplied is a push button release and power pack to operate the till. It can be fitted easily into most counters and only requires a conventional 13amp socket, which is operated with a simple push button opener located on the



Electronic release flip till



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Mechanical release flip till



It's going to be a long time before we see signs like these

counter top.

A push button flip till is also available that requires no power supply, making them ideal for use in ticket offices and mobile sales points. Available in two sizes, they're supplied complete with a lockable inner cash insert that can be easily removed for cashing up or safe storage.

**The cashless society**

As Mark Twain famously said: 'Reports of my death have been greatly exaggerated', and while it's true that electronic payment methods are on the increase – and have been for some time now – it's going to be a long time before cash is no longer used.

A significant milestone was reached in 2014, when the proportion of cash payments was less than half the total number of payments made – falling from 52 per cent in 2013 to 48 per cent in 2014, according to the Payments Council. However, for the foreseeable future, and as long as we have coins in our pockets there'll always be a need for Quickchange's products.

For those thinking of upgrading ticket office cash handling systems, or for more information, contact Paul Boulton, sales and development director at Quickchange

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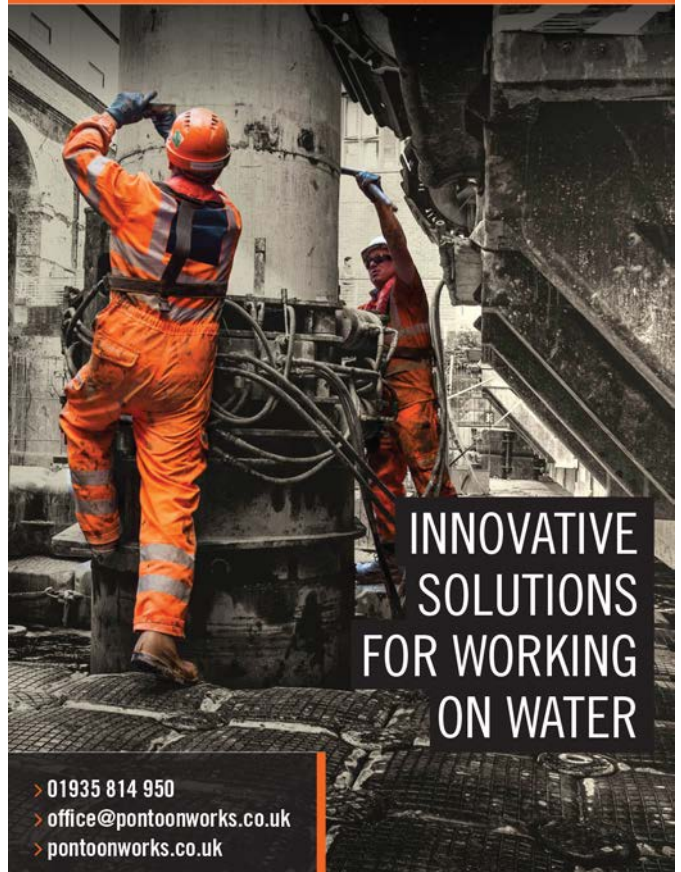
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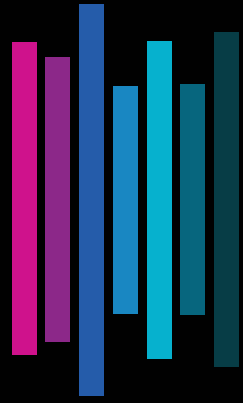


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# Power to the people

The railways are more popular than ever. **Steve Hughes** looks at the role of power quality in the context of this growth and why a leading transport company turned to **REO** for specialist expertise

According to recent research by the UK Office of Rail and Road (ORR), more people are using rail than ever. More than 1.6 billion passenger journeys were taken in the year ending March 2015 (equating to around 39 billion passenger miles), which represents a 4.5 per cent rise on the previous year.

It's very stressful to be on a train journey where onboard facilities and services are compromised. Whether long or short, a satisfying journey relies heavily on a smooth and uninterrupted auxiliary power supply for effective lighting, heating, ventilation, air conditioning (HVAC), water pumps, power outlets and automatic sliding doors.

To ensure the safety and comfort of passengers, Toc's are required by network authorities to conform with operational licenses to agreed levels of service and quality. The price for non-compliance, whether due to non-operational rolling stock, downtime for maintenance or simply lateness, can result in penalties and charges for the Toc.

However, regulatory compliance is not the only driver of continuous improvement. The proposed introduction of HS2 by 2033 is expected to significantly cut journey times and it's these factors – combined with increased market competition – that are forcing innovation at an unprecedented scale.

## Powering up

It is for this reason that when a client of REO, which is one of the world's leading multinational aerospace and transport companies, wanted to expand its range and capability of rail power-equipment, it chose REO to supply REOLAB, a range of high voltage variable power supplies used to test static converters that are employed in the production of auxiliary power supplies for onboard power.

The use of high power frequency converters is becoming prevalent as rail technology moves to the next generation of electrically advanced, high-speed trains. At the same time, the need to test these converters safely and efficiently remains paramount.

Able to simulate three-phase mains



The REOLAB 420

power, REOLAB can be used to test static converters in research and development proving grounds, for regular maintenance, in end-of-line products and also during production.

The ability to manipulate voltage is the key to any good power supply, especially in countries where national energy grids can be unreliable and sometimes dangerous. To combat this, REOLAB is designed with a built-in soft-start, capable of gradually bringing the power up to level.

Designed to meet the client's



Steve Hughes, managing director of REO UK

demanding applications, REOLAB is available in two sizes: 330 and 420. The units are specified to 3x400V at 50/60Hz with output voltages ranging from 0-420V DC. With dimensions of 2,400mmx2,400mmx800mm for the smaller unit and 3,200mmx800mmx2,400mm for the larger one, the units weigh between 2,100 and 2800kg.

REO has also designed the REOLAB on wheels so that it would be suitable for train yard use, alleviating the need to run cabling around the facility. Due to the fact that train yards can often be quite large, extensive use of cabling raises safety concerns as well as potential efficiency and electromagnetic interference challenges.

## Down the line

The world of train travel is continuing to advance at a phenomenal rate, and with projects such as HS2 in the pipeline it's not difficult to envisage the increasing role testing and safety will play in future years.

With adequate consideration of a sustainable development infrastructure, rail travel can meet, even exceed, expectations. In doing this, the industry can continue to provide for passengers as they step from the platform onto the train.

Steve Hughes is managing director of REO UK  
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# Twice as bright

Over the last 26 years, **NightSearcher** and **Selectequip** have become synonymous with the supply of professional, portable lighting solutions to the rail industry



The Solaris power pack

**N**ightSearcher is one of the leading manufacturers and suppliers of a range of rechargeable floodlights (mains voltage also available), searchlights, head torches and flashlights. Established in 1989, NightSearcher's high quality products are designed to give many years' service. The company is qualified to ISO9001:2000 and several of NightSearcher's products are CAD/PAD numbered.

The company is a major supplier to big organisations, including the police, fire services, military, railway, utilities, industrial companies and councils, and its products are also exported worldwide. As a customer and solutions-led company, NightSearcher's policy is to offer innovative products and to minimise impact on the environment through sound business practices.

### Solaris

In 2014, NightSearcher revealed a breakthrough in LED-powered floodlighting, with the development of its Solaris Range. Pushing the boundaries of the latest technology, Solaris offers a lightweight rechargeable alternative to 500W halogens that are powered by a

generator. The latest version weighs only 5.6kg yet illuminates the same area as a 500W halogen head. However, because it uses the latest SMT LED technology, it delivers a glare and shadow-free white light.

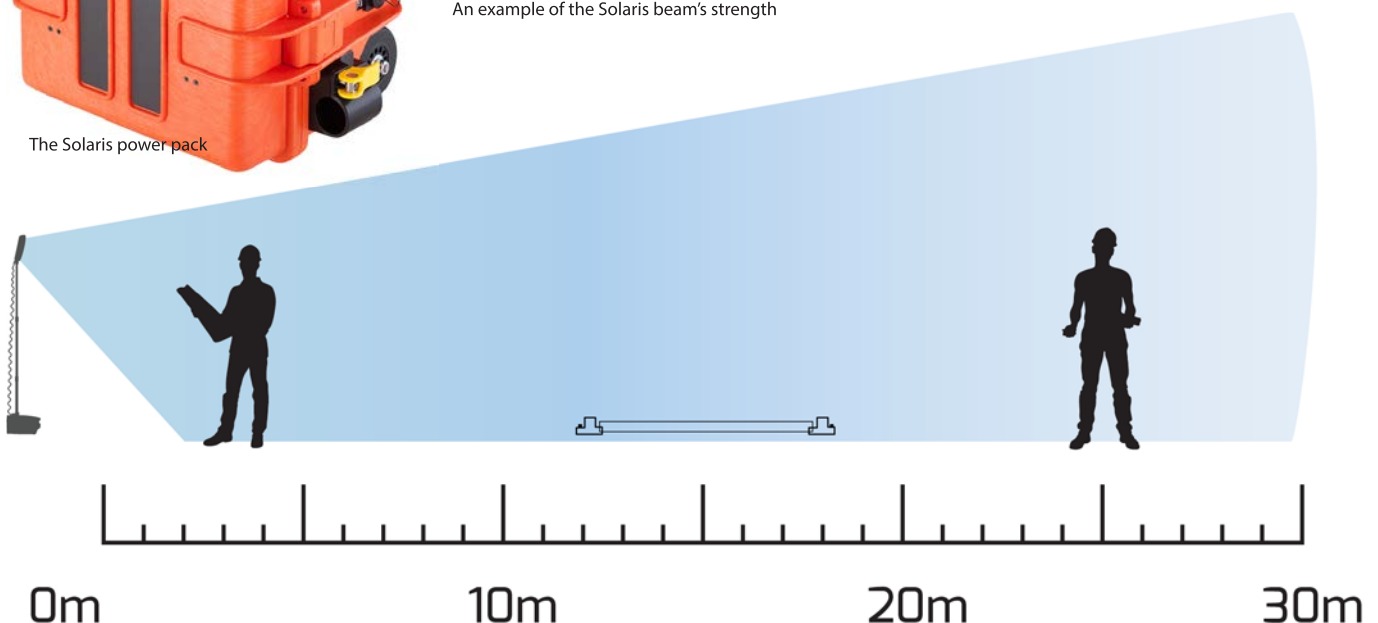
With no noise or emissions, it's environmentally friendly and, most importantly, is still able to run from a rechargeable power pack. This makes it fully portable with no hazardous trailing leads and it runs cool, making it safe for virtually any environment.

While NightSearcher continues to innovate, it has chosen to partner up with Selectequip to deliver its message. Also trading for 26 years, Selectequip has grown to become an innovative company that has a huge portfolio of products and services. It is a specialist within the rail industry and understands the daily requirements needed for its clients. The company's 15-person mobile sales, professional marketing and customer relationship management (CRM) teams have provided key products and services to many of the UK's leading industries, including Network Rail.

### NightSearcher and Selectequip

The partnership has enabled both

An example of the Solaris beam's strength



We provide specialist support focusing on a number of key tasks and processes to develop growth opportunities through new products, market sectors and, where required, between multiple organisations, ultimately providing the creation of long-term value for an organisation from a customers, markets, and relationships perspective.

Our rail experience has been developed over more than 15 years in the industry.

Over this time we have acquired excellent insight into the industry and a network of high level contacts within it that stretches from the Department for Transport (Dft) through to key OEM's in the supply chain, covering train operating companies (TOC's), Freight Operating Companies (FOC's), Rolling Stock owning companies (ROSCO's) and the technical service consultancies to the industry.

Due to the complex and historic nature of the Railways in the UK, our knowledge, experience and relationships within this industry will help companies to maximise their effectiveness in the development and entry to opportunities within the UK rail industry.

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- OEM's & Train builders
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- Comprehensive understanding of the supply chain
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companies to find solutions to several projects for Network Rail, an organisation driven by cost and a desire to reduce its carbon footprint.

Network Rail approached Selectequip to provide a permanent alternative to hiring generator-powered lighting, which was proving increasingly expensive and susceptible to breakages.

Required for a ten-mile stretch of track, NightSearcher and Selectequip worked together and designed a unit based on Network Rail's specifications. The decision was to use Lithium-ion batteries as they could be deployed quickly and easily by one person and, with redesigned optics to give a longer range flood, fewer lights would be required. Once the project was completed, NightSearcher

and Selectequip calculated that the cost of the lighting would be paid back within the first year – with a carbon reduction of more than 200,000 tons of CO<sub>2</sub>.

Following further tests by other Network Rail departments, the lights have returned good results and the company hopes to make the unit a standard replacement for all generator-powered 500W halogen lights, providing the rail industry with a safer, carbon-lighter alternative.

The Solaris range is ideal for a range of applications, including railway maintenance work, track stress testing, welding, points checking and fishplate greasing. Included in the range is a Solaris 16K head, which is safe, cool to the touch and glare-free.

**NightSearcher**

The close working partnership NightSearcher forms with its customers enables it to be involved at every stage of the design process, resulting in a product that is based on the exact specification that was supplied by the client.

The company has also developed a head torch that adapts to its environment. The HT550 automatically changes from spot to flood using a proximity sensor, giving the user the best visibility possible.

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## Full circle for Lord Adonis

The man who first revealed plans for HS2 has been appointed non-executive board member to HS2 Ltd. Announcing the appointment, Transport Secretary Patrick McLoughlin, said: 'His support and expertise will be invaluable as we move towards construction of the railway.'

Lord Adonis, whose appointment will last for three years and contracts him to work an average of two days a month, said: 'Having pioneered HS2 from the very beginning I am really pleased to join the board responsible for delivering it.'

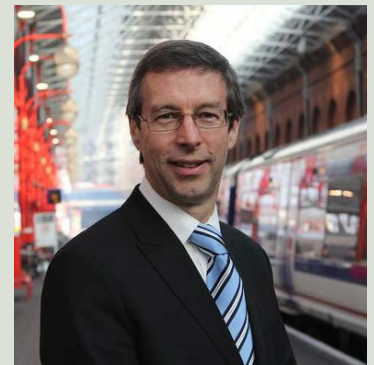
But Penny Gaines, chair of the Stop HS2 campaign group, said: 'It seems the only person willing to take on this job is the one who caused the mess in the first place.'



## New MD for Bombardier Transportation

Richard Hunter, president of the company's Asia Pacific Division, has been named as MD and head of projects for the company's UK branch. He will assume his new duties next month and be located at the Derby base.

'There is a great deal of activity in the UK market at this time' said Per Allmer, president of Bombardier's Western Europe, Middle East and Africa region, who thanked interim MD Noel Travers for his dedication.



## Chiltern boss to join NR board

Network Rail has appointed Rob Brighouse, currently MD of Chiltern Railways, as a non-executive director.

Network Rail chairman Sir Peter Hendy CBE, said: 'Rob brings with him decades of experience at the sharp end of the rail industry, providing expertise in the wide range of issues facing train operators and Network Rail.'

Brighouse is due to step down from his role at Chiltern at the end of the year, and his new appointment will be effective from 10 January 2016.

## Merrick Willis joins RBF board

Willis will take up the role having retired a few months ago from his final position running the UK's largest non-armed service occupational charity. He said: 'I'm looking forward to using my experience to help RBF continue its journey of modernisation and finding new ways to help those in need.'





**A safe appointment at Merseyrail**  
**Zoe Hands** has been made the safety and assurance director at the business. She was previously head of health, safety and environment for Network Rail in Scotland, and before that she led operational safety at Heathrow Airport.  
 Said Hands: 'With twelve years left on the franchise, now is the time to take Merseyrail to the next level.'

**New role created at ATOC**

The Association of Train Operating Companies has appointed **Jacqueline Starr** as managing director, customer experience.

The new position combines two previous roles within the company – commercial director of ATOC and chief executive of National Rail Enquiries. Chris Scoggins, former chief executive of NRE left ATOC in April and David Mapp, the current ATOC commercial director, will be retiring this month.

Starr will work with train operators and wider industry in shaping the experience of passengers as it relates to information, fares, ticketing and retailing. She was previously customer experience director at Barclays UK retail and business bank.

**Steve Allen to lead HS2 finance team**

HS2 Ltd has appointed **Steve Allen** as chief finance officer. He will join from TfL where he is managing director of finance responsible for business planning and financial control across £11 billion worth of annual transport spending and 21 billion of capital investment.

HS2 Ltd chief executive Simon Kirby said: 'On a project as large and complex as HS2, rigorous financial control is essential.'



**Clare McCaffrey joins c2c**

The National Express operator has made **McCaffrey** its first permanent commercial director. The role will be to develop and expand the new customer-friendly products c2c has launched as part of its new 15-year franchise.

McCaffrey joins c2c from car rental giant Hertz, where she was director of strategic sales and marketing.

# Arbil Rail

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### About Arbil Limited

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**Contact Darren Warmington at BSV on 01483 768600 or email [Darren.warmington@bsvrecruitment.co.uk](mailto:Darren.warmington@bsvrecruitment.co.uk)**

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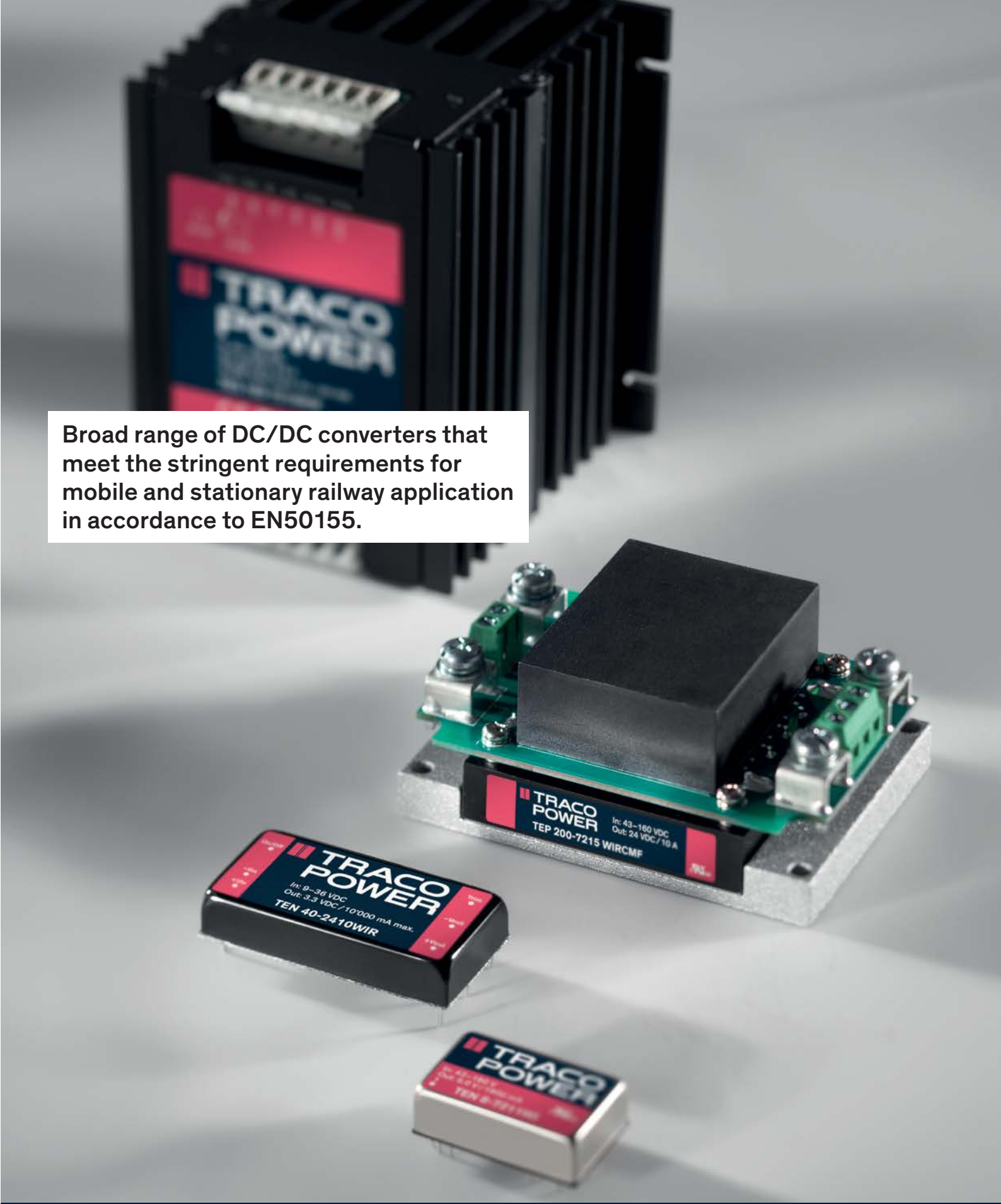
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