Collaboration & Skills

FREE 16-page Special

IN PARTNERSHIP WITH RAIL

SEE INSIDE FOR: Award-winning teamwork on Crossrail West ■ HS2’s skills strategy ■ Increased value for money from 3Squared ■ East Midlands Trains’ life-saving partnership ■ Hitachi and Bombardier up the ante on HS2 ■ Kier’s campaign to close the skills gap

HS2

Skills, Employment and Education Strategy
Opening up new opportunities
Welcome to this 16-page special on skills and collaboration, which have become not merely corporate buzzwords but two of the most critical challenges facing the industry over the next decade and beyond. With main construction works due to commence on HS2 within the next 12 months and record levels of renewals work currently being procured by Network Rail for Control Period 6 (April 2019–March 2024), more integrated working is increasingly being seen by infrastructure clients and the supply chain as the only means to meet this increased demand, while also delivering better value for money.

Meanwhile, a five-figure skills gap still threatens the viability of these work programmes unless industry-wide and carefully co-ordinated recruitment drives can continue to gather momentum. Published on September 13, details of HS2 Ltd’s own Skills, Education and Employment Strategy are available on p46-47, including how Europe’s largest construction project will mobilise 30,000 workers by 2022. All parts of the supply chain that secure contracts on HS2 will be required to work in partnership to support this strategy by attracting greater numbers of school leavers and graduates into the sector, while also widening its appeal to sections of society that have traditionally been underrepresented in UK rail.

This includes whoever is chosen to manufacture a bespoke fleet of high-speed trains for HS2, and you can read on p44-45 why Hitachi and Bombardier believe that their joint bid is best placed to support these objectives. Elsewhere, software solutions provider 3Squared demonstrates how its entry into the rail sector was born out of close collaborative working, and how it is helping redefine the traditional client–customer relationship (p52–53). Kier Group also shows how collaboration with its supply chain is being used to deliver improved results for its clients, and how it is attracting new talent to the industry through its highly successful Shaping Your World campaign.

Finally, we celebrate this year’s winners of RAIL’s National Rail Awards for Major Project of the Year (p50–51) and Outstanding Teamwork (p54–56), where effective and efficient team working has not only led to the Crossrail West project being completed on time and within budget, but lives undoubtedly being saved in the case of the Nottingham station fire earlier this year.

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- Construction
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- Petroleum
- Steel

Extended customer portfolio through acquisition of European Nacco fleet!
Hitachi and Bombardier make the case for their joint bid to build the next generation of high-speed trains for HS2, and why it is well placed to support the project’s ambitious skills, employment and education objectives

For any passengers travelling in or out of Birmingham’s two city centre stations at New Street or Moor Street, there’s tangible evidence that something big is happening. Hoardings have now been erected and construction workers have started to move onto an adjacent site on Curzon Street, where HS2’s new terminus station is due to open in 2026 as part of a £6.7 billion project. This is just the start.

Birmingham has come to learn that HS2 presents a once-in-a-generation opportunity to deliver something big for the city. It is set to transform the city’s transport infrastructure, create a new city centre to rival the West End, and will bring thousands of people to Curzon Street, the heart of the city’s business district.

To stimulate interest in STEM subjects in the region, both companies have established a number of schools and colleges in South and West Birmingham as part of the local schools and colleges partnership initiative. Both companies are working with schools, colleges and universities around Curzon Street, however. Hitachi and Bombardier as a key mechanism in attracting sufficient numbers of apprentices and graduates to the rail sector.

Both companies also champion the Trailblazer apprenticeship standard. Trailblazer produces content for courses that is currently being used, while degree-level content is in production.

Nina Atwal, Responsible Business Lead UK for Bombardier, says: “At Bombardier we’re looking at having more than 200 new trainees across our UK business by 2020 based on current contracts, which gives you clear visibility of our ongoing commitment. These are existing commitments and we will both extend our programmes even further if our HS2 bid is successful.

To showcase the value of new talent in our organisation we hold a Graduate & Leadership Conference each year, which our trainees are involved in planning and then speaking at to give them maximum ‘buy-in’.

This is important because they are our future leaders and this will help create a skills legacy not just at Bombardier but across the whole of the UK as they continue to build their careers.

This year we added to our offering and recruited at Higher Apprentice level within our Engineering function. Whichever level apprentices choose they are all allocated a mentor for their wellbeing and development throughout their career. It isn’t just about bringing in people but nurturing and growing them, giving them a sustainable career path.

Having a sustainable workforce of equal importance to Hitachi and Bombardier, who both work closely with customers and charities to provide training and employment opportunities to groups in society that have, historically, been underrepresented in the rail industry.

For example, Bombardier recently collaborated with Transport for London on a very well received, as a First Time in its history, it is the first time in its engineering function, in order to attract the wider pool of talent that has historically fallen foul of the gap between apprentice and graduate level.

Both companies also support the Trailblazer programme, a programme that enables students to work placements at London depots where female applicants have a stronger influence, which is broader than the current small number of female trainees.

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The construction of HS2 will support 15,000 jobs in the engineering, design and building sectors by 2020, rising to 30,000 just two years later. That is according to the HS2 Skills, Employment and Education Strategy (SEES), which was published on September 13.

The document confirms that with construction on Phase 1 between Birmingham and London due to begin next year, the project is already supporting some 7,000 roles at more than 2,000 businesses which have won contracts with HS2 Ltd.

This includes 100 apprentices, a figure that’s expected to rise to 2,000 over the project’s lifetime between now and when Phase 2 is scheduled to open in 2033. But behind these headline numbers it is important to note that labour requirements will not be evenly spread between now and 2033, with a peak of 30,000 being reached in 2022 to coincide with peak construction of Phase 1, and a second peak of 25,000 in 2023 before Phase 2 is wound down for completion.

Meeting those requirements while delivering the project on time and within budget would be a significant logistical challenge for any project, but HS2 Ltd must also contend with the further problem posed by the conflicting demands being placed on the supply chain over the next decade by other flagship infrastructure projects, such as the construction of a new nuclear power station at Hinkley Point B and a third runway at Heathrow Airport.

To meet these challenges HS2 Ltd has launched an ambitious programme of skills, employment, and education initiatives, which include:

- An Open sesame programme, which has been developed in partnership with the Department for Transport’s Strategic Transport Apprenticeship Taskforce (STAT) and the National Skills Academy for Rail (NSAR) to help meet the labour shortages, as well as the skills and competency requirements, for HS2 Ltd as the client.
- A requirement for apprentices to account for 4% of contractors’ workforces on main construction works, which will be further supported by a range of initiatives. To be launched within the next 12 months, they will stimulate interest in STEM subjects (objective 3), and encourage more school-leavers to consider transport infrastructure-related careers as either apprentices or graduates.
- A Secondary Education Engagement Programme to help combat an annual shortfall of 20,000 engineering graduates in the UK and the low proportion of females (12.5%) in the existing engineering workforce.
- A Future Talent Strategy to address specific skills shortages, as well as the skills and competency requirements, for HS2 Ltd as the client.
- A requirement for employers to provide ‘meaningful encounters’ to encourage new entrants; and
- Maximising opportunities throughout the supply chain; and
- Sustainable skills, employment and education programmes via the National Infrastructure Commission and STAT.

Chief Executive of NCHSR Clair Mowbray says: “Our college sits at the heart of a growing movement to upskill the national workforce that will deliver HS2 and its associated projects. As the SEES testifies, there will be literally thousands of opportunities to work on HS2, and ultimately to benefit from its legacy.

The state-of-the-art facilities [opened in October 2017] that we have available at our Birmingham and Doncaster campuses offer students the best possible environment to get ahead, and to gain the world-class skills they will need to deliver major national transport and infrastructure projects like HS2.”

SEES has already been well received by the supply chain, which has pledged its support for the fulfilment of its four key objectives.

Railway Industry Association Chief Executive Darren Caplan says: “This exciting news from HS2 shows that major infrastructure projects don’t just enhance the rail network for its customers – whether passengers or freight – but they also provide a huge boost to jobs and GVA in local economies and around the country.

“The rail supply community is already actively working on HS2 and we stand ready to deliver even more for this transformational project in the months and years ahead.”
Kier has big ambitions for Control Period 6 (April 2019–March 2024), with its rail business currently bidding for large parts of the £20 billion renewals portfolio being tendered by Network Rail (NR) in signalling, civil engineering, power supply and other disciplines. Having established itself as a major player in the sector with an annual turnover in excess of £50 million, the rail business has set an ambitious target to double this revenue over the next five years. But it is also well aware of the significant challenges ahead, should it be awarded any of the framework contracts that are being tendered. The company believes that in order to meet these challenges, it must drive further innovation, drive development that is needed, while also changing perceptions of the sector to attract potential new recruits.

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With the Central section of Crossrail that runs beneath central London being delivered by Crossrail Ltd, it had been the responsibility of Network Rail to upgrade existing sections of main line to the east and west of the Capital in support of the introduction of Elizabeth Line services from next year.

Work on Crossrail’s Western section covered a 26-mile stretch of Brunel’s iconic Great Western Main Line (GWML) from Paddington to Maidenhead, and were formally completed at the end of September.

With a budget of £1.1 billion (increased by £317 million in December 2017, the wider economic benefits to the region were just £1.4740 per 100,000 work hours, while the programme consistently reported above-average numbers of Close Calls under its ‘no blame’ culture, demonstrating high levels of understanding throughout the workforce.

Integrated safety teams included representatives from each contractor and NR to undertake joint reviews of work methodologies and to drive best practice, while Crossrail West also benefited from Bechtel performing an annual Bechtel Environmental Safety and Health audit.

To ensure that best practice is retained and developed, the programme’s safety team is working with Bechtel to produce best practice advice drawn from other major projects across the globe, such as the Riyadh, Stadler and Saudi Arabia projects.

Although many of the Crossrail West team are now moving to NR’s Paddington to Reading (P2R) programme to work on upgrading other sections of track and stations on the GWML, the programme’s safety team is still working with Bechtel on a number of lessons shared between the two projects.

This is a project that has been delivered to time and on budget with a good safety record, and which is already benefiting passengers. A clear winner in our view.

Although delivered under a traditional ‘hub and spoke’ contracting model, Bechtel as delivery partner recognised at an early stage that a different mindset was required and separate target price contracts were amended to a collaborative approach, with sharing of worksites, possessions and expertise.

The entry stressed the engagement with TOCs and NR Operations to manage access effectively.

With limited physical access, many contractors had to share worksites, possessions and even resources in order to deliver their works within tight timeframes.

Network Rail has worked jointly with Bechtel as the programme delivery partner on Crossrail West to lead, integrate and manage the programme, while building strong collaborative relationships with stakeholders, contractors and communities.

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The judging panel was challenged by the scale and complexity of the network upgrades required on the GWML.

JUDGES’ COMMENTS

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**HIGHLY COMMENDED**

The Norwich Mailbox

The Norwich Mailbox has created a direct link between the three major Manchester stations for the first time.

The 300-metre rail link forms a central part of Network Rail’s Great North Rail Project, which will ultimately enable 2,000 extra services to run on the local network each week, carrying 40,000 extra passengers per day and bringing up to £4.6 billion worth of wider economic benefits to the region per year.

Delivered on time and just under its £300 million budget in December 2017, the project was completed using a ‘turnkey’ design model, which contributed to a shorter build programme and reduced risk. It allowed each participant a stake in budget setting, securing funding, managing change and ensuring delivery, while a single target cost was developed with a shared pain/gain mechanism to make every individual united in the goal of delivering the best value for money.

Around 25% of the contract value was awarded to local businesses. It was important for the project to create a statement, given its proximity to the original Stephenson Bridge opened as part of the world’s first passenger railway from Manchester to Liverpool in 1830, so a ‘network arch’ bridge style was used (the first of its kind on UK railways).

The judges were impressed with the delivery of the project, as well as the knowledge and enthusiasm of those who worked on it.
**COLLABORATION FOR ONE**

3Squared Managing Director TIM JONES reveals how the traditional customer/supplier relationship is giving way to a new era of closer collaboration in the UK rail sector

"Collaboration hasn’t just benefited our business – 3Squared was positively built on it, and it has become part of our DNA."

This is the view of 3Squared Managing Director Tim Jones on the award-winning technology consultancy he co-founded with Commercial Director James Fox in Sheffield 16 years ago.

"Having begun life as a two-man digital and creative business, we were able to use our rapid growth to become one of the rail sector’s leading software solutions providers. This was underpinned by taking a more collaborative approach with clients.

Recognising that forming longer term partnerships with clients was the best way for it to respond to the changing needs of the sectors in which it operates, the company’s ethos was well received in the business community and 3Squared soon required larger premises and a much bigger team.

With a growing portfolio of software solutions for rail, and seeing its market growth, the company started to engage more closely with clients in the construction sector, including Skanska and Costain, entering the rail market seemed a logical next step.

But with little knowledge of the industry, Jones and Fox once again adopted a more collaborative approach by seeking a forward-thinking client to partner with until 3Squared could establish a firmer foothold, and build up a more detailed understanding of the problems it was trying to solve.

Jones explains: “I say that collaboration is in our DNA because our entrance into UK rail was born of it, and we recognise that to continue being successful, it is the way forward. We work very closely with clients on creating a solution to their problems because we think it’s much better to leverage their knowledge of the sector in order to build the best products possible, rather than us doing it in isolation.

“We did this for the first time in 2010 with Stagecoach to try and transfer our management competency programme from construction into rail. We said to them ‘we have the competency but you have the knowledge - let’s work together to create something for the industry’.”

3Squared’s collaboration with Stagecoach-owned train operating companies (TOCs) – East Midlands Trains and South West Trains, plus freight operating company (FOC) GB Railfreight, would eventually yield the first of its flagship RailSmart suite of products in 2014.

RailSmart EDS (employee development system) would also earn 3Squared a Queen’s Award for innovation due to the safety and cost benefits that stem from its ability to reduce the administrative burden of compliance, and to manage competences such as route and traction knowledge while being integrated with crew-planning tools.

The RailSmart platform has grown since 2014 to help streamline other automated processes, such as document distribution (RailSmart DOCs), to improve the visibility of operational information and to help geographically dispersed teams work together more effectively.

Such has been the success of the RailSmart platform that 55% of all TOCs now use at least one of its products and almost 12,000 staff competencies are now managed by RailSmart EDS, helping the rail sector to become the largest part of 3Squared’s business.

Clients include not just TOCs and FOCS but also Network Rail and companies from other parts of the supply chain, such as Bombardier and Cisal Rail.

3Squared also works closely with rail standards body RSSB, which awarded it a customer excellence award in 2013 for its station wayfinding concept ‘Station Master’.

RSSB has since awarded funding to 3Squared to develop an innovative software solution that helps improve access to the railway as part of RSSB’s Rail Accessibility Challenge.

The company is also closely collaborating with the Meteorological Office to develop a predictive tool for low rail-adhesion sites, which contains a crowdsourcing element that encourages drivers coming off a shift to report locations where they’ve encountered poor adhesion.

According to Jones, partnerships such as these are becoming more commonplace in the rail industry as consensus continues to shift among major players towards more joined-up working as the best means to reduce cost and increase innovation.

He points to Network Rail in particular, which is embarking on a new procurement strategy for Control Period 6 (April 2019-March 2024) that seeks to foster more integrated working with the supply chain.

It will also facilitate larger amounts of third-party funding, finance and delivery so that financial benefits and risk are shared more equally between the taxpayer and supply chain.

This could mean trials of new procurement methods and longer term customer/supplier relationships over the next few years, such as NR’s current collaboration with signalling and train control specialist Resonate on the Great Western Main Line, where the Luminate traffic management system has been installed at Resonate’s expense.

If delays are reduced by the system as predicted, then the reduction in compensation paid by NR to train operating companies will be shared between the two parties.

He adds: “To begin with, collaboration was much harder, and many businesses were stuck in the traditional customer/supplier relationship. But in the last three to four years more and more people have realised that we will only see improvements from closer collaboration, and are changing their attitudes accordingly.

“We saw evidence of this in Control Period 5 (April 2014-March 2019) with NR collaborating with Resonate to come up with a new fully funded business model instead of following the traditional route to finding a single-source supplier. That was an early sign of what we’re seeing increasingly today in the ‘pay-and-gain’ relationships offered by alliances and early contractor involvement.”

Jones is hoping that 3Squared will be at the vanguard of the industry’s efforts to increase capacity and reduce operating costs on the network through the deployment of emerging technologies.

The company has, arguably, already begun to do just that, following the success of its latest product in partnership with previous East Coast franchise operator Virgin Trains East Coast (VTEC), and current operator London North Eastern Railway (LNER).

3Squared’s driver interface application is a familiarisation and training tool for drivers switching from traditional lineside signalling to digital in-cab signalling provided by ETCS (European Train Control System) technology. It is now being offered free of charge to other operators as NR considers which routes will receive upgraded signalling in CP6.

There is an inherent belief that nothing is free,” adds Jones. “The app will obviously help raise the profile of the business, but we mainly want to help people understand that it is important to collaborate for the benefit of the wider industry, and not everything costs as much to bring to market as people think.

“What NR is realising too is that given the vast and complex set of systems we have inherited from the Victorians and British Rail, and to tackle 21st-century problems, we need a more joined-up approach. In CP6 the traditional model has been broken – collaboration will be the way forward.

“We’re a digital business and collaborate very closely with clients for the benefit of the wider industry, so we’re looking forward to what CP7 will bring and helping turn Digital Railway into a reality by adding value in that space.”

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The traditional model has been broken - collaboration will be the way forward."

Tim Jones, Managing Director, 3Squared
Paul Stephen examines how the rapid and highly co-ordinated response to a major fire at Nottingham station earlier this year earned East Midlands Trains and its partners the 2018 National Rail Award for Outstanding Teamwork.

East Midlands Trains, Network Rail and the emergency services across Nottinghamshire have been recognised at RAIL’s National Rail Awards for their efficient and effective joint response to the fire which occurred at Nottingham station on the morning of January 12.

Having detected the blaze in ladies toilets on the southern concourse at 0620, staff from the station’s operator East Midlands Trains swiftly effected a safe and controlled evacuation of 200 people from six trains.

Train and bus services were also suspended, while Nottingham City Council’s Traffic Management and Community Protection teams worked quickly to close surrounding roads.

Having reviewed its evacuation procedures just three months earlier, the speed of this first response by EMT ensured that no major injuries were sustained while the flames began to spread rapidly into the roof space, and an adjacent ticket office and footbridge.

As attention swiftly turned to bringing the fire under control, by 0800 a multi-agency structure was in place comprised of EMT, Network Rail, British Transport Police, Nottinghamshire Police, East Midlands Ambulance Service, Nottingham City Council, Interserve and Nottinghamshire Fire & Rescue Service.

Having already generated significant amounts of attention from national and regional news outlets, 60 firefighters from eight fire stations took more than 12 hours to extinguish the flames which had threatened to destroy much of the historical fabric of the Grade 2-listed station - which is an outstanding example of Edwardian Baroque Revival-style architecture.

Used by some 7.5 million passengers per year, the closure of such a vital transport hub affected services across a large part of the regional network, including in Lincolnshire, the Midlands Main Line, Liverpool to Norwich, and local services to Worksop, Newark and Grantham.

As the morning went on, teamwork between EMT and NR helped minimise disruption as far as possible with some services being diverted or replaced by buses.

Following an inspection of the building and railway infrastructure by structural and track engineers, EMT and NR staff then worked through the night (some voluntarily) to reopen five of the station’s seven platforms by 0300 the next morning.

Close teamwork and relentless effort over the days that followed meant that further parts of the station could be reopened, and water, electricity and IT connectivity all restored after suffering significant fire damage.

Network Rail’s London North Eastern and East Midlands Route Managing Director Rob McIntosh was among the first industry leaders to praise the work of station staff and emergency services. He told RAIL: “There are lots of phone calls you dread to receive as a Route MD, and that was certainly one of them.”

“From our frontline staff at EMT, who played a remarkable role in looking after customers, to the firefighters who tackled the fire, to the BTP who took control of the site with detailed forensic investigations, and to all the other partners who played a crucial role in our response to this major incident, this National Rail Award is deserved recognition of your work during extremely challenging circumstances.

“We remain truly grateful for the hard work and support of everybody involved.”

These days after the fire, only the most seriously fire-damaged areas of the station remained closed to the public, including the main footbridge span between platforms 6 and 7, and part of the southern concourse, which was opened in 2014 as part of a £60 million redevelopment which had itself won a National Rail Award in 2016.

These areas remained a crime scene as British Transport Police began its investigation into the cause of the fire, which was being treated as arson.

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Rob McIntosh, London North Eastern and East Midlands Route Managing Director, Network Rail

My first thoughts were for the welfare of staff and passengers, but I have a very capable team who stepped up to the mark alongside colleagues from EMT. I have enormous pride in the whole team at Nottingham, who dealt with it swiftly and brilliantly.”

Jake Kelly, EMT Managing Director adds: “This is a fantastic achievement and one that really marks just how much can be achieved by working as one team.

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CCTV evidence and other items of interest were quickly collected, while an extensive appeal was made for witnesses and members of the public to come forward with footage recorded on mobile phones or dash cams that might help identify the guilty party.

Further appeals were also jointly co-ordinated between all organisations involved in order to maximise coverage.

A 33-year-old woman from Derby was arrested in connection with the incident before being released. No further arrests have been made.

Repair work costing some £2 million has been taking place since January, with the final piece being the toilets on the southern concourse, which reopened on September 17. All those involved are now actively working to build on their response to the fire to help the wider industry learn from the incident and to help better prepare for similar incidents.

EMT, Nottinghamshire Fire & Rescue Service, Nottinghamshire Police and BTP have developed a multi-agency training exercise to support emergency planning and incident management preparation, and are engaging with other train operating companies and industry stakeholders to share best practice.

**HIGHLY COMMENDED**

**Southeastern and NR**

Southeastern and Network Rail were highly commended by the National Rail Awards judges in the Outstanding Teamworking category, owing to the innovative cross-industry partnership they formed with South Western Railway over the August 2017 Bank Holiday weekend.

During this period there was a four-day closure of Waterloo East, Charing Cross and London Bridge stations to enable rebuilding work on London Bridge, as part of the Thameslink programme.

In order to limit disruption to passengers and avoid overcrowding at Cannon Street station, Southeastern, NR and SWR worked closely together to create a one-off timetable that provided enough seats to get people in and out of central London using an alternative route, despite the closure of three of Southeastern’s busiest stations.

The scale of the task was significant – around 7,000 journeys per day were re-routed to Waterloo, where the station’s former International platforms were specially re-opened (the first time in 100 years that Southeastern services would run through and terminate at Waterloo station).

This part of the project involved the use of driver managers as ‘pilot’ drivers who had been trained for three weeks prior to the work so they could drive through Waterloo, and additional staff to dispatch the Southeastern trains terminating at the station. It was also necessary to re-energise the Linford Street Curve to enable Southeastern to run its Class 375 trains into Waterloo, and for an extensive communications campaign to be developed in order to engage with passengers about the timetable change. This campaign contributed to a passenger awareness score of 87%, and much positive feedback being received on social media in the days that followed the four-day closure.

Judges were impressed with the extent of planning and liaison with operations in both Southeastern and NR, in addition to the scale of the task, and felt the overall project was a major success.