



Transport Infrastructure Skills Strategy

Three years of progress

A report by the Strategic Transport Apprenticeship Taskforce July 2019



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Making every journey better

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Network Rail



Rail Delivery Group
National Rail

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RAIL

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Foreword

A skilled workforce is vital to future economic success. Quality training at all levels is fundamental and we need to broaden our talent pipeline if we are to drive productivity and innovation across the transport sector.

Three years after the Strategic Transport Apprenticeship Taskforce (STAT) began its work to deliver the ambitions of the Transport Infrastructure Skills Strategy, we are able to report considerable progress.

In that time, 8,200 apprenticeships have been created in road and rail client bodies and their supply chain, and we have seen commitments to thousands more apprenticeships from leading transport employers. We have made great progress in improving the diversity of our workforce. BAME representation now stands at almost 22% of our apprentice intake, up from our starting point of 14%. The proportion of women taking up technical and engineering apprenticeships is now over 15%. We are also seeing an increase in degree level apprenticeships, with women proportionally better represented at these higher levels than men. Higher level apprenticeships will stimulate innovation across the sector.

As we see increasing automation of jobs across the economy, it is vital that we work together to manage this change so that we harness opportunities, drive productivity, and support individuals as jobs and workplaces evolve. Apprenticeships play an important role in meeting changing skills needs, upskilling and reskilling our existing workforce.

Over the three years, we have seen the growth of a new apprenticeships architecture; an increasing number of new standards; and more investment in apprenticeships through the apprenticeship levy. Members report they are drawing down an increasing share of their levy pot. This is important as we enter new investment periods for our rail sector, as well as for our strategic roads and the whole transport industry, to trigger further investment in jobs and skills across the country.

There remain challenges for employers, particularly smaller employers in our supply chain, and we are pleased to have been able to provide evidence and advice based on our experience as part of the Review of the Apprenticeship Levy post 2020.

Improving the diversity of our sector was a core aim as we began our journey. There is still some way to go in terms of gender diversity, but some real progress is being made. We must build further on this success to date. The opportunity to change and renew how we attract, recruit, train and develop skilled people is a welcome one, as we deliver the skills we need to create and maintain increasingly digital and connected transport networks.

The demand for skills is not a challenge that employers can address individually. Strong collaboration between employers and the supply chain is essential to drive real change. This collaboration has been fundamental to STAT's success and I am pleased that we have grown our membership over the last three years and now cover a broad range of employers from across the transport and logistics sector. This has helped us better understand the challenges that lie ahead, and how we might develop effective strategies to meet them.

Looking back, in last year's annual report I set out our commitment to focus on five key areas against which this report sets out progress;



- Adapting to emerging technologies.
- Promoting better diversity and social mobility.
- Piloting shared apprenticeships.
- Working together to ensure the best use of apprenticeship levy spend.
- Continuing to create more high-quality apprenticeships across the sector.

In the coming year we will continue the important work underway in developing shared apprenticeships, improving social mobility and sharing our experience as levy payers to positively influence the future of the apprenticeship levy.

Added to this, I want to give greater voice to the apprentices taking their first steps into employment on completion of their training, particularly those from under-represented groups. We must

understand their experiences of the sector and whether and why they choose to carry on working within transport on completion of their training. Retention of talent and progression in the industry will be the true test of the quality of our apprenticeships, and our inclusivity as a sector.

I am grateful to all members of the STAT Board for their energy and drive over the year. Without them and their employers we could not have achieved what we have.

I also should like to particularly thank Catherine De Marco and the DfT team for their continuing support and (mostly) gentle encouragement to the board and me personally!

A handwritten signature in black ink, appearing to read "Mike Brown".

Mike Brown MVO
Commissioner,
Transport for
London and
Chair of STAT

Executive summary

- 1** Investment in our infrastructure and transport services brings with it investment in people and skills. The Strategic Transport Apprenticeship Taskforce (STAT) was established three years ago to bring the sector together to meet critical skills challenges and drive the uptake of transport apprenticeships.
- 2** Even in the last three years, we have seen changes to the way that we are designing, building and operating our transport networks. As technologies evolve, so do our skills requirements. STAT's work in understanding this changing landscape helps our industry to navigate this transition and will drive productivity and innovation.
- 3** Three years of industry data on the apprenticeships being created in the sector shows continued commitment to and investment in skills. Larger employers continue to invest significant sums in apprenticeships. Key employers from the STAT membership report that some £47m has been invested via the levy between its introduction and February 2019.
- 4** We will continue to work with the government on the future of the apprenticeship levy post-2020, particularly to set out our key priorities around further supporting pre-apprenticeship training, addressing barriers for supply chain organisations to invest in skills, reducing bureaucracy and exploring the potential and value of levy pooling arrangements.
- 5** Procurement levers continue to drive numbers in road and rail bodies and we are pleased that to date, 8,200 apprenticeships have been created in the roads and rail client bodies and supply chain through the public-sector mandate and our contracts. This reporting year, and next coincide with the end of the Railway Control Period CP5 (for Network Rail) and the current Roads Investment Period, and so there are inevitably fewer new contracts let. Whilst we have continued to see an increase in the numbers of apprentice starts year-on-year, for 2018/19 this is a more modest 4%, as opposed to last year's significant increase of 22%.
- 6** We are expecting a further increase in apprenticeship starts as contracts get underway in the new investment periods. There will be some apprentices who work in the roads and rail supply chain, but cannot be assigned to specific contracts, and therefore will not be captured in our data set. Initial analysis carried out by National Skills Academy for Rail (NSAR) indicates that there may be an additional 20% apprentices working in the transport supply chain who we are not picking up through our reporting. We will carry out more work in the coming months to understand this picture.



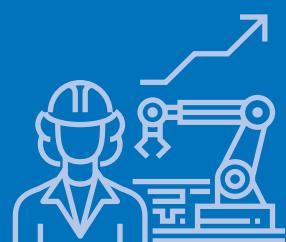




8,200
apprentice starts
since 2016/17



21.8%
BAME representation
(up from 14% in 2016/17)



15.4%
of technical and
engineering starts are
female (up from 10%
in 2016/17)

- 6 There are also some significant achievements in the freight and logistics sector, where there were some 7,000 apprentice starts in warehousing and distribution; 1,200 LGV drivers; and maritime apprenticeship starts have doubled. At Heathrow airport, where there is a commitment to 10,000 apprenticeships with its planned expansion, there have been some 150 apprenticeship starts this year, of the 344 apprentice opportunities that the airport has been able to offer since 2017.
- 7 In the coming year, we will review contractual requirements to ensure they remain appropriate and effective, as well as the overall quality of reporting and the flow down of targets from Tier 1 suppliers. We will also promote commercial models which support closer working with the supply chain to facilitate collaboration on skills and increase productivity.
- 8 It has been clear for a long time that the transport sector does not have as diverse a workforce as needed. Developing and nurturing a diverse pipeline of talent helps us to address this and to meet future skills challenges. STAT has seen strong progress this year in terms of addressing gender imbalance in the apprenticeship intake for road and rail bodies. We continue to exceed our ambition for better BAME representation. 21.8% of our apprenticeship starts this year have been from a BAME background, up from 14% two years ago. Encouragingly, we are seeing a higher proportion of women at higher levels of training. Women currently represent 27% of all degree level starts in 2018–19, reaching 29% of those undertaken in the supply chain.
- 9 As we look at this data, it is important to understand the people behind the numbers; apprentices who are choosing to work in the transport sector – some of whom are featured in this report. They are working across the country, come from all walks of life, with varied experiences and different perspectives. As employers, it is right that we challenge ourselves to ensure their experiences are positive.
- 10 It is important that we fully understand this progress so that we can most effectively roll out successful models more widely. This will be a key area of activity for us over the coming year as we continue to align work on equality, diversity and inclusion to drive change across the sector. A growing focus of our work on diversity will be the delivery of a ‘Year of Diversity’ led by STAT Board Member Tracey Worth for the road freight and logistics sector.
- 11 Apprenticeships also act as an essential tool in addressing other inequalities and driving social mobility. STAT members have worked together to help other employers in the sector, particularly those in the

- supply chain, to support more people from disadvantaged backgrounds into jobs and training in the sector.
- 12** Through our social mobility working group, we will complete work to design, pilot and review a pre-employment training programme to support those facing significant barriers to entry into jobs and training in the sector. We will also continue to raise awareness of the importance of equality of access to jobs and training for more disadvantaged groups.
- 13** We will collaborate to ensure that activity by transport employers during National Apprenticeships Week in 2020 showcases training opportunities in the sector to diverse groups.
- 14** It is particularly important that training at higher levels, often Science, Technology, Engineering and Mathematics (STEM) roles, are open to all. This will help to address pay gaps and is necessary to address skills needs. As we enter the fourth Industrial Revolution, the role of skills in driving productivity and enabling the uptake of new technology becomes increasingly important. Understanding the precise skills needs of the transport and construction sectors is imperative to ensure transport maximises the opportunities of digital technologies and artificial intelligence. Using apprenticeships to upskill and reskill our existing workforce plays a vital role within this and can help individuals progress their careers.
- 15** In the coming year we will develop a body of work to consider future skills in the sector to help inform our programme of work to meet the future skills gap. This intelligence will enable STAT to develop the required skills that drive productivity and support the Construction and Rail Sector Deals, and the Transport Infrastructure Efficiency Strategy (TIES).
- 16** We will also pilot two data based shared apprenticeships to improve our digital readiness. The National Skills Academy for Rail (NSAR) will broker, support and manage a two-year pilot programme to train Level 4 Data Analyst and Level 6 Data Scientist apprentices. This will complement existing work through our shared apprenticeships steering group, to develop pilots for appropriate model schemes. Pilots are being led by TfL, The Civil Engineering Contractors Association (CECA), the Rail Forum Midlands and NSAR.
- 17** A rigorous understanding of skills needs underpins the delivery of apprenticeships. New apprenticeship standards continue to be developed by industry and STAT will work to ensure that new standards reflect key skill shortages across the sector. It is encouraging as we look to improve productivity across the economy that we are seeing more degree level apprenticeship standards being approved.
- 18** As the number of apprenticeship standards grows further, the sector must work together to attract people into jobs and training. Government's Year of Engineering 2018 succeeded in delivering over five million direct experiences of engineering to 7–16 year-olds through 1,500 partnerships with leading employers like Apple, Lego, Facebook and Siemens. Transport employers are proud to have joined the campaign. Through our Year of Engineering Working Group we will work closely with Government through the evolution of the campaign and the development of work to understand how we can best attract young people into STEM jobs and training.
- 19** Looking ahead, STAT is committed to continuing work in creating quality apprenticeships that respond to current and future skills needs, providing opportunities for all, regardless of background. It will work across the sector, with client bodies and supply chain organisations, across all modes of transport, to drive real progress. As we do so, understanding the experiences, development and progression of apprentices in the sector will shape the further evolution of this work.

The work of the Strategic Transport Apprenticeship Taskforce

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Investing in skills supports productivity, and can offer life changing opportunities to people across the country. Addressing skills shortages in transport means thinking strategically about the future and how we can grow the capability we will need in an increasingly digital, automated and connected world.”

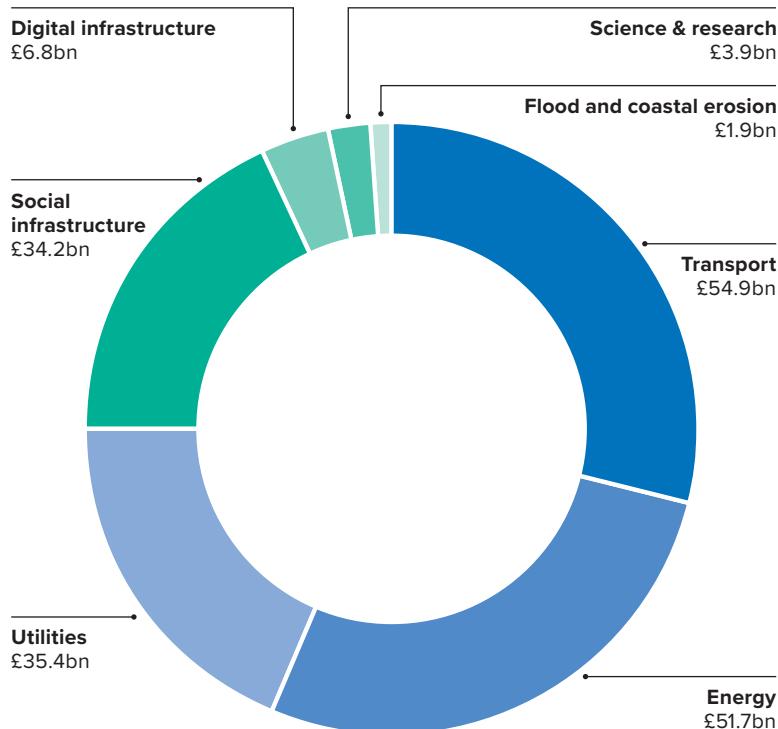
Bernadette Kelly CB, Permanent Secretary,
Department for Transport



Introduction

- 1.1** The Strategic Transport Apprenticeship Taskforce (STAT) was formed to respond to increasing investment in transport and the need for a sector wide approach to skills and people. Whilst this core purpose remains central to our ambitions, we have also brought together work across the sector to drive productivity, innovation and efficiency this year.
- 1.2** Broadening our approach to ensure that skills are a core part of our strategic approach is vital, as we seek to exploit the benefits that modernising the way that we design, build and maintain our transport networks brings.
- 1.3** STAT represents a workforce of over 800,000 people across roads, rail, maritime and aviation. Three years on, STAT's role is just as important in ensuring that across our infrastructure projects, a strategic and intelligent approach is being taken towards apprenticeships. This will create a diverse, highly skilled and responsive workforce, able to deliver the transport networks of the future.
- 1.5** Getting the right people in place within our transport delivery bodies and supply chain to deliver investment is critical. The Transport Infrastructure Skills Strategy (TISS) 2016¹ set out existing skills shortages in key industries across the sector, with recommendations and ambitions to address skills gaps across infrastructure and transport bodies.

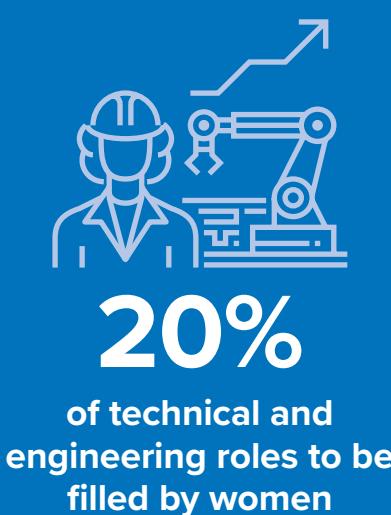
Figure 1.1: IPA pipeline of investment from 2018/19 to 2020/21 by sector



Our infrastructure pipeline and skills

- 1.4** Government has set out its strategy for improved productivity across the economy in the Industrial Strategy and Sector Deals. Investment in our transport networks is a key part of this strategy, and in the coming years transport will receive a growing proportion of public and private funding of infrastructure spend.

¹ www.gov.uk/government/publications/transport-infrastructure-skills-strategy-building-sustainable-skills



- 1.6** The TISS set stretching ambitions for apprenticeship numbers and diversity. These included 20% increase in BAME representation in line with government targets, and 20% of technical and engineering roles to be filled by women, reaching parity with the working population by 2030.
- 1.7** STAT was set up to enable leading employers to work collaboratively to meet these ambitions, and committed to reporting on progress annually. This is the third annual report on progress.
- 1.8** Apprenticeships play a critical role in the future success of the transport sector. Through trailblazer groups, and the direct employment of apprentices and investment in their training, employers are actively involved in designing and delivering the skills needed by the workforce of today and tomorrow.
- 1.9** In a sector with historically low turnover – staff turnover rate in the rail sector as a whole is 3%² – apprenticeships present a golden opportunity to bring in a more diverse workforce and attract under-represented groups.
- 1.10** We will see the increasing automation of different jobs across the economy in the coming years. Apprenticeships will play an important role in addressing changing skills needs arising from new technologies and help develop the innovation needed to take full advantage of these.
- 1.11** Employers like Network Rail are using apprenticeships to offer upskilling and reskilling to their existing workforce to prepare for changing future skills needs, and to drive productivity. In 2018/19 approximately 25% of new enrolments for Network Rail were those choosing to reskill.
- 1.12** As we see profound changes to the way that we design and build infrastructure, it will be vital that the skills and knowledge developed during the construction of major projects is retained and transferred to other major projects.
- 1.13** Apprenticeships can play a role in supporting the transfer of important and emerging skills and knowledge across different major projects. Shared apprenticeships and arrangements that support the pooling of levy funds could support this.

² www.gov.uk/government/publications/transport-infrastructure-skills-strategy-building-sustainable-skills

1.14 Beyond infrastructure construction, the transport logistics sector is vital to the success of the UK economy, employing 2.7 million people and contributing £124 billion in Gross Value Added. In 2018 the wider logistics industry added 200,000 jobs, with rapid growth in storage and warehousing³.

1.15 Furthermore, maritime contributes £14.5 billion to the UK economy, directly supporting an estimated 186,000 jobs. Aviation directly contributes at least £22 billion to the economy and supports around half a million jobs⁴.

Our progress to date

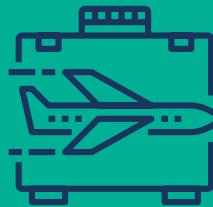
1.16 Since STAT's inception in 2016, membership has grown and now counts representation from roads, rail, aviation and maritime sectors within the Board. Members recognise the value of collaboration in meeting the shared challenges outlined above.

1.17 Members are committed to working together towards a more diverse transport workforce with the capability to harness the technologies that are reshaping transport networks and services across the globe.

1.18 Working collaboratively has enabled the sector to develop intelligence about transport skills gaps and needs, share best practice and drive innovative solutions to shared challenges.

1.19 STAT is supported by a number of different working groups to lead different areas of work, and to draw upon expertise from employment, skills and procurement leads across the sector to drive progress.

1.20 This year's data is set out in full in the next chapter, but looking across the three years of reporting, there are clear achievements and some encouraging trends.



£22bn

**directly contributed
to the UK economy
by aviation**



£14.5bn

**contributed to the UK
economy by maritime**



200,000

**jobs in 2018 alone
in the wider
logistics industry**

³ FTA Logistics Report 2019

⁴ www.gov.uk/government/consultations/aviation-2050-the-future-of-uk-aviation



Trans Pennine Express Apprenticeship

Trans Pennine Express is investing £500 million into new trains and routes to transform the franchise, offering a pathway for apprentices like Caitlin Gent.

Caitlin was looking for a career that offers many opportunities and poses new challenges as technology develops. Catlin's role is varied as she carries out placements around the business and the industry, enabling her to work with other companies within the railway sector. It means

working in the office, in a depot and travelling on the railway network. This approach allows Catlin to adapt to different working environments and broaden her knowledge, giving a vital perspective of how each section integrates.

In the office, Caitlin works alongside Fleet Engineers, where the team overlook the performance of the fleets and investigate technical faults that impact on fleet reliability. Working on the depot is a hands-on placement, maintenance on the rolling stock is carried out, allowing Caitlin to achieve a detailed understanding of how the rolling stock works, improving her technical knowledge and skills.

Caitlin plans to complete her Level 4 apprenticeship in Systems Engineering and secure a full-time job. She would like to continue with her education and go on to do a degree. This would enable her to strive towards roles such as Fleet Engineer, Fleet Technical Manager and ultimately become Fleet Director.

STAT members

Mike Brown MVO
Chair of STAT
Commissioner, Transport
for London



Beverly Bell
Senior Traffic
Commissioner 2012–17
(Member until 2019)



George Clarke
Director of Engineering,
TfL



James Featherstone
Graduate Civil Engineer,
Network Rail



Ali Ghaffar
Former Thames Tideway
Apprentice and Assistant
Training Co-ordinator



Kimmy Hibbert
Construction
Management/Project
Planning Apprentice, TfL



Becky Ivers
People Director,
Heathrow



Katie Kelleher
Former Crossrail
apprentice and Crane
Operator



Iain Mackinnon
Secretary to the Maritime
Skills Alliance



Richard Mould
Procurement Director,
HS2 Ltd



Cameron O'Connell
Assistant Design Engineer
Rail, Degree Apprentice,
TSP Projects



David O'Neil
Supply Chain Division
Director, Highways
England



Eoin O'Neill
Commercial and
Development Director,
Network Rail



Paul Plummer
Chief Executive, Rail
Delivery Group



Neil Robertson
CEO, National Skills
Academy for Rail



Kevin Rowan
Head of Organisation and
Services, TUC



Richard Steele
Chief Executive, Port Skills
and Safety Ltd



Tracey Worth
CEO & Secretary to
Viscount Falkland,
President IoC



Secretariat

Catherine De Marco OBE
Deputy Director
Infrastructure Skills and
Efficiency, DfT



Miriam Lea
Programme Manager, DfT



Hayden Clare
Business Administrator
Apprentice, DfT



Joe James
Policy Advisor, DfT



Martin Lovegrove
Policy Advisor, DfT



1.21 STAT has also developed greater insight into the skills needs across the sector. The publication of The National Skills Academy for Rail (NSAR) Skills Baseline Forecasting Study last year set out⁵:

- The demand for skills in rail and road is increasing over time and without action there will be shortages and gaps.
- There are large numbers of workers in the rail and road sectors who are due to reach retirement age in the next ten years.
- We need more, higher level and commercial skills.
- In general, workforce demand will follow investment.
- In terms of digitalisation, much upskilling of the existing workforce will be required to optimise and maintain new digitally driven assets.
- Productivity is poor and investing in skills needs to be part of any strategy to tackle this.

1.22 Further work with NSAR this year has explored how skills are driving productivity and innovation in the sector. Key findings are set out in Chapter 4 and will be used by employers as they develop thinking on the future skills needs across the sector.

1.23 Perceptions about the type of training being offered through apprenticeships, and the assumption that apprenticeships are for recent school leavers may inhibit our ability to draw diverse talent into transport apprenticeships.

1.24 STAT has an important role in galvanising transport sector employers to highlight the very broad range of training and job roles on offer at all levels. Its role is to raise the visibility of apprenticeships being offered to the existing workforce and to more experienced people who would like to re-train, upskill or switch careers whilst continuing to draw a full-time salary.



1.25 A series of short films to showcase the breadth of apprenticeships on offer and the diverse group of individuals who are taking up apprenticeships in transport has been created to accompany the publication of this report. STAT is urging transport employers across the sector to use the videos to help to raise the visibility of apprenticeships in the sector and encourage employers to consider how apprenticeships can develop their capacity and capabilities.

Our transport apprentices

1.26 Training opportunities in transport span entry level positions to increasingly higher level qualifications, across a growing number of job roles and types across the country.

1.27 The case studies that follow illustrate the different training being undertaken, as well as the motivations and backgrounds of the people who have successfully been enrolled on apprenticeships.

⁵ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/713469/dft-nsar-report.PDF

“

I'm really proud of our apprentices and attracting more young people to join us is really important if we are to deliver on our promise of a safer, more reliable, user friendly rail system. And we're planning for the future. Apprentices are helping us to grow the capabilities essential to managing the growth of demand for train travel. A strong group of apprentices is a fantastic way for us to introduce diversity of background, gender, ethnicity, skills ambition and insights.”

Andrew Haines OBE, Chief Executive,
Network Rail

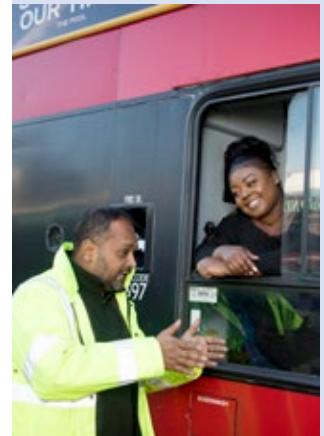


**Ramla Slevin,
Gavia Thameslink
Railway (GTR)**

After joining GTR nine years ago, starting her career as a train cleaner, Ramla has gained a wealth of experience in various roles. In May 2019, Ramla started the level 4 Passenger Transport Operations Manager Apprenticeship and is one of the four new apprenticeship station managers at GTR.

Ramla has had an incredible journey. After completing a dental nurse apprenticeship in Zurich, she traveled to England and decided to stay. Being fluent in three languages, Ramla brings so much to GTR. “I haven't got a qualification in the UK so when the opportunity came up I knew it was perfect”

Once she completes her apprenticeship she will be leading a busy station managing around 200 staff.



**Nickelle Morgan-Scott,
Go-Ahead**

Nickelle Morgan-Scott joined Go-Ahead London as an apprentice bus driver in January 2019. As a former estate agent, Nickelle was looking for a career change.

“An apprenticeship is a great way to learn. The best thing about the job is definitely the people who provide so much support, working with them has been the best thing. It felt so good to pass my driving test, all those hours of training and hard work paid off. I'm only 5 foot so driving a massive bus is an amazing feeling”.

“I'd say to anyone considering a bus driver apprenticeship, definitely go for it. Not a lot of young females can say they hold a PCV license”



Darius Lau, Heathrow

Darius is a third year engineering apprentice, currently on placement at HBS (Hold Baggage Screening). Darius joined a technical college studying Electrical Installations Level 2 and 3, whilst working part time at a supermarket to earn money. Darius wanted on-site, hands-on experience and began looking at apprenticeships. This gave him the opportunity to find a place that aligned to his values, one of which is to work his way up within a business. He enrolled on an apprenticeship in Refrigeration and Air conditioning, which he completed a year before taking on Heathrow's Engineering apprenticeship.

"This apprenticeship has given me an opportunity to start, develop and pursue my Engineering career."



Eunice Fuentes, TfL

As a Finance apprentice at TfL, Eunice is motivated by the chance to have a positive impact. "TfL is where you can make a positive impact, which really motivates me to carry on learning and developing to be able to contribute towards continuous improvement.

I've had a wide variety of opportunities throughout my scheme, including presenting to the Finance Leadership Team, completing and setting a procedure for a newly introduced creative tax relief introduced by government, as well as having the opportunity to become a leader in the internal apprentice support network group and deliver projects to improve apprentices' experiences during their scheme. This has helped me to gain the skills, experience and confidence to undertake more challenging work and add value."



Hannah Resnick, TfL

Hannah's Project Management apprenticeship at TfL has provided her with the chance to excel, maximise her potential and thrive across the business. "No two days are the same. My apprenticeship with TfL has provided me with the chance to excel, maximise my potential and thrive across the business, from the Northern Line Extension to Tech and Data, as I build my portfolio of Project Management experience. I am also Chair of our Graduate and Apprentice Committee, whose aim is to enhance the experiences of all on schemes through forums, apprentice campaigns and skill development sessions."



Kenna Hamilton, Heathrow

Kenna began her career journey at Heathrow as an engineering apprentice and today is a systems specialist working on Heathrow's autonomous Pod On Demand system.

"I studied biology at University but upon graduating struggled to find relevant work but also realised that it just wasn't for me. At the age of 24 I decided I needed to retrain. I heard lots about apprenticeships so began making enquiries. I was surprised to hear people telling me I was too old. I thought I'm only 24, how can I be too old? I kept applying and my luck changed when Heathrow invited me to an interview – they didn't discriminate against my age."

Kenna started a four year apprenticeship programme which was a mix of university learning and onsite training across many areas of the airport.



Jemma Gillman, HS2

Jemma joined HS2 as a transport planning apprentice in September 2017, choosing to build on her passion for STEM subjects, particularly maths and technology, to help plan and manage transport. Since joining HS2, Jemma has sought out ways to share her passion for STEM and transport planning with students, particularly young women. Jemma was awarded the Women in Rail, Female Apprentice of the Year in recognition of her passion for HS2, and work to inform younger generations about the potential opportunities in infrastructure.



Jarrell Anthony, Mango Logistics

"More than anything, my apprenticeship with Mango gave me a sense of direction, a path for success. My colleagues supported me to develop professional and personal skills in a dynamic environment, and made me feel like an important part of the team from day one – I'm now 2000 days in, managing 200 clients and loving it more than ever!"



Wilson Rebello, City Cruises

Wilson had 8 years' experience at sea, starting as a customer service associate and progressing to Embarkation Officer. In 2017 whilst working at City Cruises, Wilson approached a Senior Captain who informed him of the upcoming Boatmaster apprenticeship scheme and encouraged him to apply for it.

"I chose the role as it is a profession that I hold in high regard, and I saw it as an opportunity that I could not miss. It is a great opportunity to pick up experience and qualifications; it also brings financial stability once the qualifications have been gained. The role involves lots of communication with the public, which suits my outgoing personality."



Lee Drsyden, Aldi

Lee has been trained on Bulk Movers & Reach Truck which has given him the skills to complete complex tasks that are usually afforded to older, more experienced colleagues. The management team saw him grow in confidence and noticed leadership skills that they felt shone through in his approach to work & learning.

Lee was noticed by the regional distribution manager who, after a discussion with Lee, offered to continue his development to a second year apprenticeship and Level 3 course.



Megan Rutter, Network Rail

Megan has always been a hands on, practical person but despite holding a number of different jobs and studying a range of subjects, never quite felt like she was reaching her full potential. Whilst working on a construction site in Australia on a year out, Megan was inspired by the engineers and sought out an apprenticeship with Network Rail on her return.

"I have enjoyed learning new things, meeting and working with different people and challenging myself every day. When I tell people what my job is one of the first questions that they ask is 'what is it like being a female in such a male dominate working environment?' and I tell them that I have never felt so 'at home' in a role before."



Amy Anderson, Network Rail

Amy studied IT Business at college and decided instead of going to university to apply for a level 4 apprenticeship in cyber security. The role is highly relevant as the threat of a cyber-attack being conducted on the transport sector is increasing, especially as more systems become digital.

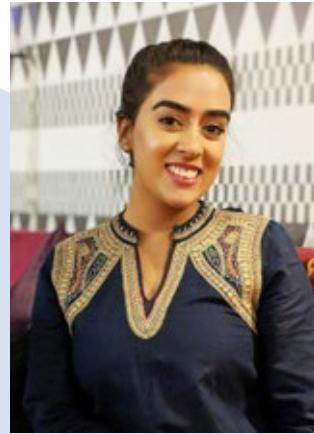
"My role offers me a lot of challenge, it's definitely varied. A typical day for me can include travelling around the country to meet contractors, assessing telecom and security systems and sometimes train signals. Going forward I want to continue where I am and in engineering, there are lots of opportunities."



Hayden Clare, DfT

"I finished my A-levels and I wasn't keen on the idea of university, therefore I was looking at alternative routes and I managed to secure a Level 4 apprenticeship at the Department for Transport as a Business Administrator. I feel this was a great decision, as I am able to get first-hand experience of working life, as well as working towards a qualification. My apprenticeship allows me to earn money whilst learning, which has enabled me to gain financial independence.

I would recommend starting an apprenticeship to anyone, I have been able to gain valuable knowledge of the workforce and have had many great opportunities within my first year at the Department for Transport. Even if you aren't fully sure on what you want to do, an apprenticeship will help you gain skills and enhance current ones, which will ultimately help steer you to the right career path."



Uzma Younis, Highways England

"I joined Highways England as a social media apprentice after spending a few years at university studying computer science. I'm grateful for having had the opportunity to pursue both paths as I now know it's the nature of the apprenticeship that I actually prefer. Being able to gain a qualification alongside working on real life campaigns and delivering results that make a difference to people using our road network has been an invaluable experience. I work with lots of different teams across the business that have a wealth of knowledge and experience. I love learning from them all, but also bringing something new to the mix and proving what I'm capable of."

Creating high quality apprenticeships



“

It is encouraging to see the level of commitment of the transport sector is providing for apprenticeships, many of whom are at the forefront of major infrastructure development for Britain. This presents us with an enormous opportunity to positively impact on our communities, creating jobs and careers and driving the need for skills. Heathrow recognises the need for investing in high quality apprenticeships and has taken a huge step forward in ensuring there are opportunities for people to progress beyond Level 3, with opportunities into the higher echelons of management.”

The Rt Hon. the Lord Blunkett

Introduction

- 2.1** Recruitment of apprenticeships across the sector has, as in other years, followed procurement and contractual activity. As we progress into the new railway control period, and enter the next road period from 2020, we expect to see further need for and investment in skills and people across the STAT membership and its supply chain.
- 2.2** In parallel with these new investment cycles, we will need to continue to deliver on Heathrow's expansion, Aviation 2050, the Maritime 2050 strategy and address the skills needs of the Freight and Logistics industry.
- 2.3** As this work gathers pace, it is important to ensure that apprenticeships policy is working as well as it should. Improvements need to be made to the development and approval of standards, and the current system of End Point Assessments.
- 2.4** Smaller employers need to be able to benefit fully from apprenticeships, as recognised by the recent Public Account Committee progress review on the apprenticeship programme⁶. This is important, given the reliance of the transport sector on smaller supply chain organisations and employers.

Our progress to date

Creating high-quality apprenticeships in roads and rail

- 2.5** We can report 8,200 apprenticeships created in road and rail client bodies and the supply chain since we started our work. These apprenticeships have been created both within the client organisations in line with the public-sector target, and in the supply chain through our procurement contracting, as a direct result of public sector spending. This number excludes apprenticeships that may otherwise have been created in private sector supply chain organisations.
- 2.6** Reported data is set against a backdrop of the wider fall in the number of apprenticeships being created across all sectors following the introduction of the apprenticeship levy in April 2017. The latest year-to-year starts reported by the Department for Education in March 2019, show a 16% decrease for the same period pre-levy⁷.
- 2.7** Looking ahead, the rail sector entered its current five-year railway control period (CP6) on 1st April this year, and as we look towards the next Road Period in April 2020, we will see contracts being let which require further investment in skills and apprenticeships. Industry expects this to stimulate further growth in apprenticeships.
- 2.8** As the apprentice starts in roads and rail reported by the STAT organisations relate only to those working on contracts let through those organisations, the number of roads and rail starts reported will not be fully representative of the true total working in the roads and rail supply chains.

⁶ www.parliament.uk/business/committees/committees-a-z/commons-select/public-accounts-committee/news-parliament-2017/apprenticeships-programme-progress-review-report-published-17-19/

⁷ <https://feweek.co.uk/2019/04/30/monthly-apprenticeships-update-february-starts-up-16-but-down-on-2017/>



starts reported in road
and rail 2018/19



4%

increase on last
years reporting



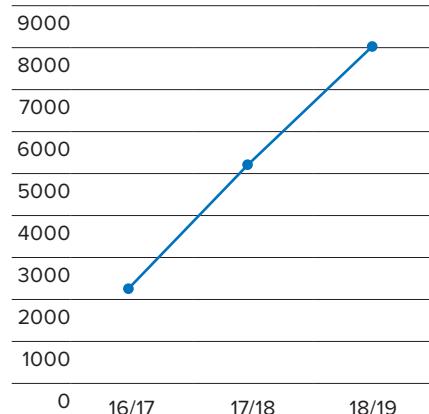
8,200
starts to date

2.9 NSAR has analysed apprenticeship starts, based on its skills intelligence model, published DfE data and individual company data. Two findings emerged: firstly, the outcome correlated well with the STAT reported numbers on a like for like basis, and secondly, there are approximately 20% more apprentices currently working within the roads and rail sectors than are captured in current reporting. These may relate largely to back office roles. Work to further understand and address this will be carried out this year.

2.10 We are seeing:

- 2,900 starts were reported in 2018/19, an increase of 4% on 2017/18 reported starts.
- STAT has now generated 8,200 apprentice opportunities in road and rail alone since 2016, in client bodies and as a direct result of public sector procurement.
- We have seen a real growth in degree level apprenticeships, which now account for 6.8% of starts – up from 3.5% in 2016/17.
- In real numbers, this represents an increase from 69 degree level apprenticeships in 2016/17 to 199 offered this year.
- We are ahead of target for BAME representation (see chapter 3 for detail).

Figure 2.1: Cumulative Starts



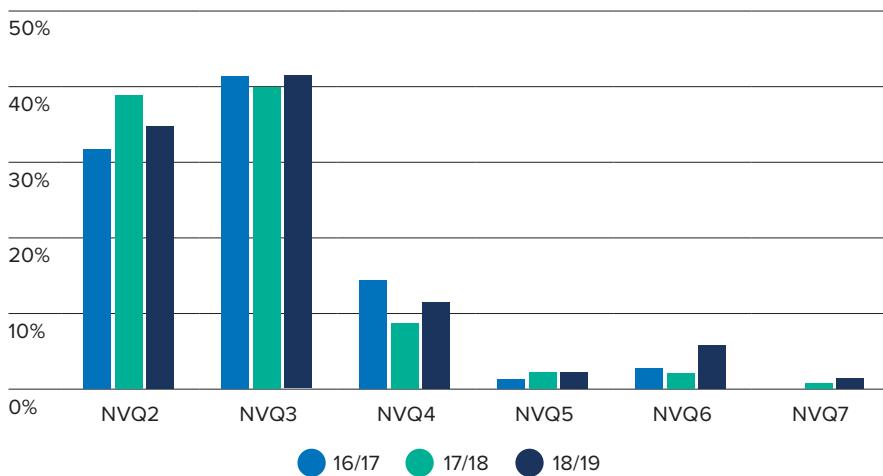
→ We are also seeing encouraging progress toward female technical and engineering starts in our apprentice intake (see chapter 3 for detail).

2.11 Internally within the organisations of DfT, Highways England, HS2, Network Rail and TfL, STAT have reported 1,179 starts, compared to 1,261 last year. There has been real growth in degree level starts, with 7.8% at NVQ level 6 and above up from 4.2% last year.

2.12 In our supply chain we have seen numbers grow against the reported total of 1,523 in 2017/18, with 1,721 in 2018/19.

2.13 The proportion of starts at NVQ level 2 in the supply chain is 41% and 6.2% are at NVQ level 6 and above.

2.14 In line with reporting from the previous year, a recasting of numbers has increased previous estimates. As such the total

Figure 2.2: NVQ Level

starts for 2016/17 now sit at 1,565 and for 2017/18 they are 1,774.

2.15 Behind the numbers, we are seeing apprenticeships deliver real value for employers and individuals. Not only can apprenticeships provide vital skills and pathways into work but they can also increase the provision of training in the organisation.

Heathrow

2.16 Heathrow has committed to double the number of apprenticeships to 10,000 linked to the expansion of the airport and the airport has been working with the Heathrow Skills Task Force chaired by Lord Blunkett to ensure that the airport develops a robust strategy to meet the skills needs of the business.

2.17 Since 2017 in the last two full years of reporting, there have been 344

apprenticeship starts reported by Heathrow. These starts are from a broad range of roles, including opportunities in retail, hospitality, logistics and management.

2.18 For 2018/19 there have been a total of 150 starts and Heathrow continues to show strong diversity, as 46% of starts are female candidates and BAME representation is 41%.

2.19 And overall since 2017, 49% of the 344 starts are female and BAME representation is 42%.

Maritime

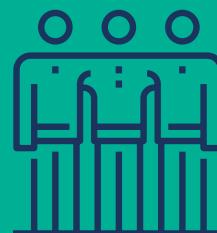
2.20 Maritime data is obtained from apprenticeship figures published by DfE and are therefore presented for 2017–18, to line up with the most recent available year-end publication.

Heathrow



344

apprenticeship starts reported by Heathrow since 2017



49%

of Heathrow starts since 2017 were female



42%

BAME representation



Go-Ahead Bus Driver Apprenticeship

Go-Ahead Group is the only Employer Provider of Bus Driver apprenticeships in the UK transport sector.

In March 2019, Go-Ahead opened the doors to its new training academy in Camberwell; the first of its kind for the transport industry where all bus driver training is through apprenticeships, significantly increasing the number of drive training days from 38 to 64 days.

Go-Ahead aims to lead the transport sector and become a centre of excellence for bus driver training, focusing on service delivery and enhancing individual performance, inspiring the apprentices to display the behaviours that reflect the company values.

There are currently 159 bus driver apprentices on the 52-week programme with a further 300 to follow and progress through the programme, which is accessible to all ages from 18 to 65.

Go-Ahead is an inclusive organisation that harnesses different perspectives and to promote social mobility. Our apprentices will be recruited from the diverse communities we serve, this also supports our goal to promote social mobility. Since the programme launch in November 2018, BAME candidates have increased to 61%, and retention is at 90%, a 10% increase.

Our programme goes beyond driving a bus and is focused on educating and developing well-rounded, accomplished individuals. In fact 75% of current apprentices do not have approved prior learning and attend classroom sessions with individual one-to-one tutoring in maths and English.

- 2.21** The Maritime Skills Alliance sector reported 202 apprentice starts for the year 2017/18, of which Deck Rating was the most popular. It must also be noted that many maritime employers also use other apprenticeships not included in the total above.
- 2.22** Whilst starts have levelled off in comparison to 2016/17, they have more than doubled since 2014/15 and 2017/18, rising from 89.
- 2.23** A third to a half of apprentices are aged 19–24; a fifth are under 19 years. The pattern varies by sector and ports are most likely to have apprentices aged 25 or over.
- 2.24** Data reported online via the apprenticeships and traineeships data gov.uk page only includes starts for 2018/19 up to Q2. However, we can see that there has been uptake of the newly-approved Port Marine Operations Officer and Workboat Crewmember, with 10 starts in each.

Freight and Logistics

- 2.25** Freight and Logistics data is obtained from apprenticeship figures published by DfE and are therefore presented for 2017/18, to line up with the most recent available year-end publication.

- 2.26** There were 7,148 starts in Warehousing and Distribution in 2017/18, of which 87% were at NVQ level 2. This number is consistent with the 3,510 reported for the first half of 2018/19.
- 2.27** There were also 1,271 Large Goods Vehicle (LGV) driver starts in 2017/8. This has grown significantly in comparison to the 208 reported in 2016/17 and 15 in 2015/16. This growth looks set to continue, as at the half-way point of 2018/19 there have already been 946 starts.

Apprenticeship standards and the apprenticeship levy

- 2.28** Growth is underpinned by an increasing number of apprenticeship standards available to employers and apprenticeships, as the new apprenticeship system beds in and increased investment in skills.
- 2.29** We have seen a welcome growth in the development of standards including those at higher levels, notably Data Scientist at NVQ Level 6.
- 2.30** TfL particularly welcomes the new level 6 Transport Planning and family of Continuous Improvement standards Level 2–4. There are plans to create Level 6 Transport Planning apprenticeships to start in 2020 for both new recruits and to up-skill existing employees.



7,148

starts in Warehousing
and Distribution
in 2017/18



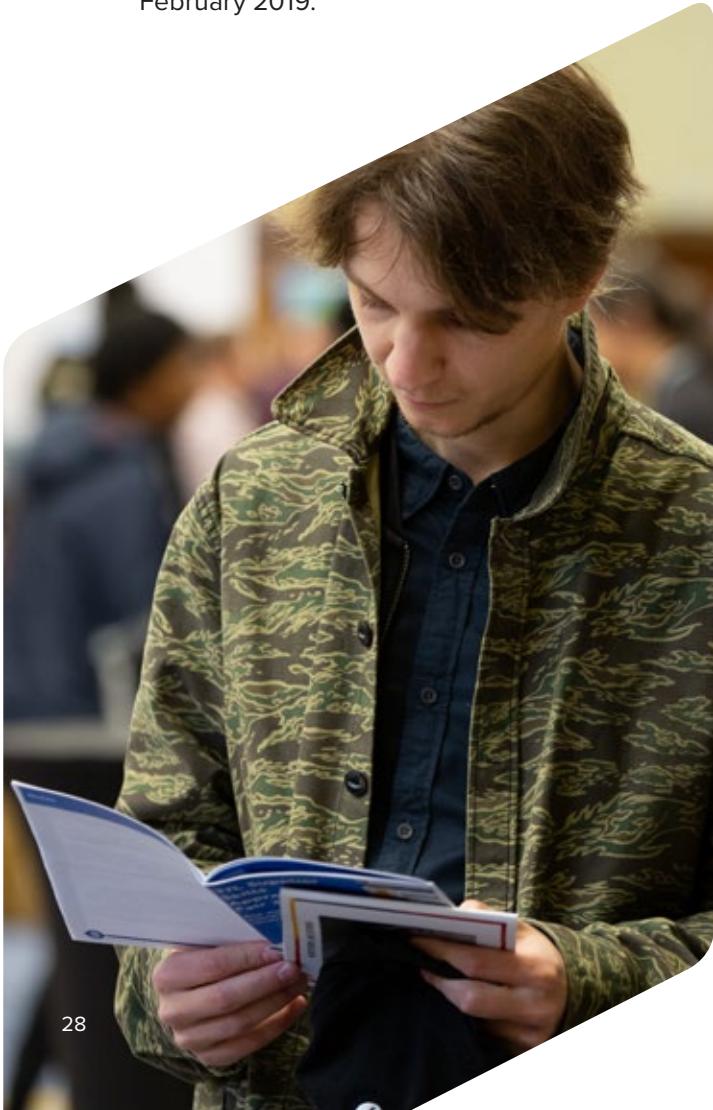
1,271

Large Goods Vehicle
(LGV) driver starts
in 2017/8



Growth in LGV drivers
looks set to continue,
with 946 starts already
reported half way
through 2018/19

- 2.31** Additionally, TfL (as part of trailblazer groups) has contributed to evidence required for some of the funding cap reviews undertaken by the Institute for Apprenticeships and Technical Education (IfATE), specifically Rail Engineering Level 3 and Project Management Level 4.
- 2.32** The table contained in the Annex illustrates the growth in the number of new apprenticeship standards being approved, funded and delivered by transport sector employers since reforms were introduced.
- 2.33** Employers within the STAT membership are investing significant sums in apprenticeships. Network Rail, HS2, Highways England, TfL, Heathrow and some members of the Rail Delivery Group, who represent Train Operating Companies and other rail employers, have contributed over £47m to apprenticeships through the levy from introduction to February 2019.



- 2.34** These employers also report that they are drawing down a higher proportion of their levy pots, from 7% in 2017/18 up to 37% from 2018 – February 2019. Amongst larger employers there is confidence that this will grow further in 2019/2020.
- 2.35** However, many employers across the transport sector continue to report concerns about the implementation of the levy, notably:
- Difficulties in approving the standards needed, for example the Level 6 Express Manager Apprenticeship and Sortation Hub Operative, which has been slowly progressing since 2017 for the express delivery sector.
 - Agreeing End Point Assessments.
 - Funding band decisions.
 - The lack of quality training to deliver the high-quality apprenticeships many had envisaged would be in place by now.
 - The lack of flexibilities within the system.
- 2.36** Difficulties in approving standards has had a significant impact on the freight sector, where there is still no workable apprenticeship standard in place for lorry drivers. This has made it very difficult for employers across freight and logistics to draw down their levy pot.
- 2.37** Unspent levy is now being returned to the Treasury, whilst industry continues to face significant skills shortages and is concerned about the impact of reliance on the non-UK EU workforce post Brexit.
- 2.38** Discussions with DfE Ministers and the Institute for Apprenticeships & Technical Education to resolve lorry driver apprenticeship standards have been welcomed by industry.
- 2.39** STAT was pleased to have been able to set out these experiences and wider evidence during the evidence gathering stage of the 'Review of the Apprenticeship Levy post-2020'. In its joint submission, STAT employers called for:

- Increased flexibilities within the levy, or simpler processes to support the expansion of high quality **pre-apprenticeship training**. This will help employers to develop a pipeline of people coming into transport apprenticeships and ensure a more level playing field in terms of access to these opportunities.
- **Increasing capacity within the provision of apprenticeship standards.** This means the continued approval of more standards, linked to key skills needs and addressing reported issues in End Point Assessments.
- **Addressing barriers to investing in skills for smaller, supply chain organisations.** STAT membership employers and their wider supply chains are not reporting take up of levy transfer arrangements as they do not by themselves offer sufficient incentive and support to smaller employers to invest in apprenticeships. Work is being led by the National Skills Academy for Rail and other sector employers to develop a shared apprenticeships scheme to address some of these barriers.
- **Reducing bureaucracy** in the system would be beneficial for employers of all sizes. ‘Levy Pooling’ arrangements may allow larger employers to use their resource and expertise to navigate the system on behalf of smaller and less well engaged employers. STAT employers would welcome continued engagement with government to explore this.

The wider transport supply chain

- 2.40** Procurement remains a key driver of apprenticeships in the strategic roads and rail sectors. Towards the end of our investment cycles, procurement slows, which in turn impacts upon the levels of investment in people and skills across the sector and its supply chain.
- 2.41** Across our road and rail delivery bodies, skills requirements are embedded in our contracts. These require suppliers to create apprenticeships in proportion to the contract value. This is in the range of one apprenticeship to every £3–£5m of spend, or 2.5% of the contract workforce per annum.
- 2.42** Engaging with suppliers with one voice across the sector continues to be a priority, to provide a consistent and strong core message to our many shared suppliers.
- 2.43** Work in this area is led by the Supply Chain Skills Network, a group of procurement specialists across our client bodies who work together to keep a consistent and united approach to the apprenticeship agenda when engaging with the supply chain.
- 2.44** Increased engagement with suppliers has improved the Supply Chain Skills Network’s understanding of issues facing the suppliers and supply chain. The Network has listened, learnt and established dedicated workstreams to support progress in the table in Figure 2.3.

Figure 2.3: Supply Chain Skills Network’s dedicated workstreams

A focus on:	Objective
Contractual requirements	Continue to review contractual requirements, to ensure they remain appropriate and effective.
Commercial models	Promote commercial models which support closer working with the supply chain, in order to facilitate collaboration on skills and increase productivity.
Subcontracting	Continue to engage with suppliers to identify how and where apprenticeship targets are passed through the supply chain to ensure client organisations are best-placed to monitor and provide support.
Reporting	Seek to improve the quality of reporting on apprenticeship numbers across the transport and infrastructure sectors.

2.45 Following STAT engagement events with key suppliers from across the sector we have seen an increase in the quality of data reporting from the supply chain, particularly relating to gender and ethnicity. This allows us a greater level of understanding of the demographics of the workforce within our supply chain.

2.46 Heathrow Airport recently launched a Shared Apprenticeship Scheme, delivered by the Heathrow Employment and Skills Academy. The Shared Apprenticeship Scheme brings together some of Heathrow's major construction companies and Small and Medium Sized Enterprises (SMEs) in the supply chain to offer local people the chance to contribute to projects, whilst gaining a nationally recognised qualification. The apprentice is directly funded by Heathrow for the duration of their Apprenticeship and hosted onsite by various contractors across the airport, giving them the opportunity to complete their apprenticeship and gain experience with industry leading employers.

Heathrow Shared Apprenticeship Scheme

When seeking opportunities online, Ivan came across a project management role as part of the Shared Apprenticeship Scheme, which is supported by some of Heathrow's leading contractors. This opportunity seemed perfect for Ivan, who was aware of the extensive range of opportunities available and was keen to work at Heathrow. After being referred to the Academy, he was successfully appointed.

Ivan began to struggle with his assignments from his workshops and found balancing time with work and studying a challenge. Despite these early setbacks, Ivan knew he could master the balance and after asking for help, progressed a significant amount of skills in management and has new responsibilities. Most importantly, Ivan 'feels good' about working and enjoys his role within the scheme.

Looking back, Ivan is proud of how far he has come and his determination to build a career. He explains that when you put your head down and focus on your goals "you will do well." He is passionate about progressing up the career ladder and thanks to an apprenticeship, has a head start.



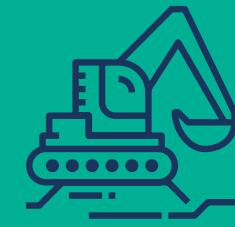
2.47 In our Two years on report, STAT announced its intention to launch shared apprenticeship pilots to increase the access to apprenticeship opportunity for SMEs. We have been working with the Civil Engineering Contractors Association (CECA) to develop a shared apprenticeship pilot for groundworkers in the West Midlands; with TfL in the South East and The Rail Forum Midlands in the Midlands. In March this year we announced our intention to develop a shared apprenticeship in data analytics in collaboration with NSAR.

2.48 CECA has been leading the West Midlands pilot. This will focus on groundworkers due to the significant need identified and discussions are underway with potential providers. However, employers, particularly SME's, are struggling to fund apprentices as the current cost to deliver outstrips the funding band. STAT will look to work with the group to support a review of the funding band.

2.49 TfL is leading a pilot in London and the South East. A number of SMEs in the sector have been engaged through the NSAR. SMEs that currently run apprenticeship programmes indicated that difficulty in sourcing candidates was a significant barrier. This provides an opportunity to link in with the pre-employment and social mobility programmes being developed by STAT.

2.50 Rail Forum Midlands (RFM) has started work on the concept of a shared apprenticeship scheme as part of the Midlands Pilots under the sector deal. The group has identified a number of apprentice barriers from SME's and is seeking wider feedback from FE and HE providers, along with a broader SME survey. The survey includes a number of apprentice standards in which to focus in these early days of the pilots.

2.51 A further group of employers, engaged through the Rail Industry Association, who are not currently running apprenticeship programmes, indicated a desire to trial the approach in order to understand the benefits of hiring apprentices ahead of making an ongoing commitment. Consequently, we have matched TfL apprenticeships to their skill requirements and are now establishing a pilot programme providing external placements with SME's for TfL apprentices. The first two placements, due to start later this year, are planned to be a Level 4 Software Engineer and a Level 6 Civil Engineer.



CECA

has been leading the West Midlands pilot.
This will focus on groundworkers due to the significant need identified

TfL



The first two placements, due to start later this year, are planned to be a Level 4 Software Engineer and a Level 6 Civil Engineer

The impact of Brexit on non-UK EU migration and skills

- 2.52** STAT continues to make progress in understanding its skills needs. Work this year has focussed on identifying the low skilled roles that face existing shortages/have a reliance on non-UK EU workers for a submission to the Migration Advisory Commission (MAC) Call for Evidence for the Shortage Occupation List (SOL).
- 2.53** The MAC recommendations for the SOL⁸, published March 29th, remain based on the current system (RQF 6 and above). This precludes the inclusion of lower-skilled roles, however the MAC expect to review the list again in advance of the new immigration system outlined in the White Paper coming into effect. Large Good Vehicle Drivers and Fork-lift Truck Drivers are reported as being in the top 10 of lower-skilled shortage occupations mentioned in returns.
- 2.54** Transport employers anticipate that the impact of proposed new migration arrangements would lead to regional and speciality sensitive

shortages that mirror planned investment (notably London and the West Midlands, driven by the construction of HS2).

- 2.55** STAT has also started work to explore how skills drive productivity within the sector, working with NSAR to undertake a workforce modelling exercise that supports the work of STAT, the Transport Infrastructure Efficiency Taskforce and the Rail Sector Deal. There is more detail in chapter 4.
- 2.56** It is vital that we are also able to measure our success in terms of the experiences of those undertaking apprenticeships in the sector and the retention and progression of those currently undertaking apprenticeships following the introduction of new standards.
- 2.57** As some of the very first apprentices will be completing their apprenticeships on the new standards in 2019, delivery bodies across the STAT membership will develop intelligence on the destination and progression of apprentices completing their training in delivery bodies in the coming year.

Figure 2.4: Low-skilled roles identified by STAT at risk of shortages

Low skilled-role	Percentage of workforce that are EU workers	Total skills shortage*	By when
Large Goods Vehicle (LGV) driver	12%	52,000 ^{[1],[2]}	Immediate
Seasonal warehouse worker	Up to 75%	20,000 ^[1]	Annually (Q3 specific)
Construction worker* i.e. labourer	Up to 28%	1,870 ^[3]	Annually
Rail operatives	15%	5,325 ^[4]	2021
Customer service assistant	15%	4,780 ^[4]	2021

*CITB estimates a shortage of >150,000 across all skill levels in construction by 2022

[1] FTA analysis

[2] RHA analysis

[3] www.citb.co.uk/research-insight/construction-skills-network

[4] NSAR 2018 Forecasting Study

8 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/804986/Full-review-of-the-shortage-occupation-list.pdf

“

The second roads period (RIS2) will create a wealth of opportunity. Having the right people with the right skills in place to deliver more productively and safely will be key to our success. We must give people the opportunity to develop, to be successful, and to contribute to our society.”

Jim O’Sullivan, Chief Executive,
Highways England



Our commitments for 2019/2020

2.58 Through the STAT Working Group:

- Ensure STAT employers have a holistic approach to quality, including the views of apprentices as well as employers. This work will build on STAT’s work to define quality with Investors in People during its first year.
- Ensure that the standards being developed address key skills shortages across the sector.
- Work with government on the future of the apprenticeship levy, post-2020, particularly to set out our key priorities around further supporting pre-apprenticeship training, addressing barriers for supply chain organisations to invest in skills, reducing bureaucracy and exploring the potential and value of levy pooling arrangements.
- Road and rail delivery bodies will start to develop and share intelligence about the destination and progression of apprentices who have completed their apprenticeships. This will

support greater understanding around whether apprentices are choosing to stay and work in the sector. Data will be captured from Q1 2016 to start this work.

2.59 Through the Shared Apprenticeships Steering Group, led by NSAR, further develop pilots for appropriate model schemes. Pilots are being led by TfL, CECA, RFM and NSAR.

2.60 Through the Supply Chain Skills Network:

- Review contractual requirements to ensure they remain appropriate and effective (led by DfT).
- Promote commercial models which support closer working with the supply chain to facilitate collaboration on skills and increase productivity (led by Heathrow).
- Improve the flow-down of targets from Tier 1 suppliers to sub-contracts (led by Network Rail).
- Improve the quality of reporting (led by HS2).

Diversity and inclusion, and social mobility

“

We know that the transport sector must do better on diversity, particularly in some well-paid roles like pilots, engineers and train drivers. These are rewarding and challenging jobs and they need to be open to everyone, regardless of who they are and their background. The future of the sector, and providing better transport for everyone, relies on drawing on talent from right across society.

In order to reach out to everyone, we must tell them about the great jobs we have in the sector, and employers must strive to create a diverse workforce and inclusive culture.

Our Year of Engineering Campaign last year was very exciting, and shows how a sector can work together to really challenge perceptions of engineering – I am looking forward to building on that enthusiasm in our work on Engineering Take a Closer Look.”

Nusrat Ghani MP, Parliamentary Under Secretary of State, Department for Transport



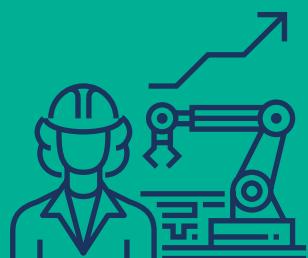
Introduction

- 3.1** Broadening our pipeline of sustainable skills will go a long way to help to address skills shortages in our sector and drive productivity gains. A more diverse workforce, and a workforce that is more representative of those using transport services will also support wider efforts towards more inclusive travel.
- 3.2** Since 2016, STAT has set out to ensure that apprenticeship opportunities are open to all, regardless of background. This has become increasingly important. Employers are alive to the challenges presented by sustained, historically low unemployment. With a diminished pool of latent talent available, competition for skills is stiff. To meet skills needs, employers will need to ensure they reach people from a range of backgrounds and circumstances and support them to enter and progress within the workforce.
- 3.3** Pre-apprenticeship training and other bespoke programmes for those from different backgrounds are providing an important bridge into the workplace and showing real success in terms of supporting participation in jobs and training.
- 3.4** STAT employers are keen to see the roll-out of pre-apprenticeship and pre-employment training across the sector to reach, develop and support those from under-represented groups into jobs and training in transport, provide equality of access, as well as encourage diverse and inclusive workplaces.



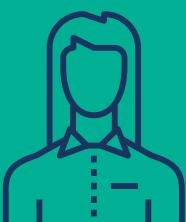
21.8%

BAME representation in apprenticeship starts in roads and rail



15.4%

technical and engineering roles are female



27%

of all degree level starts were female in 2018/2019 and 29% of these were undertaken in the supply chain

Figure 3.1: Ethnicity of apprentice starts in road and rail over time

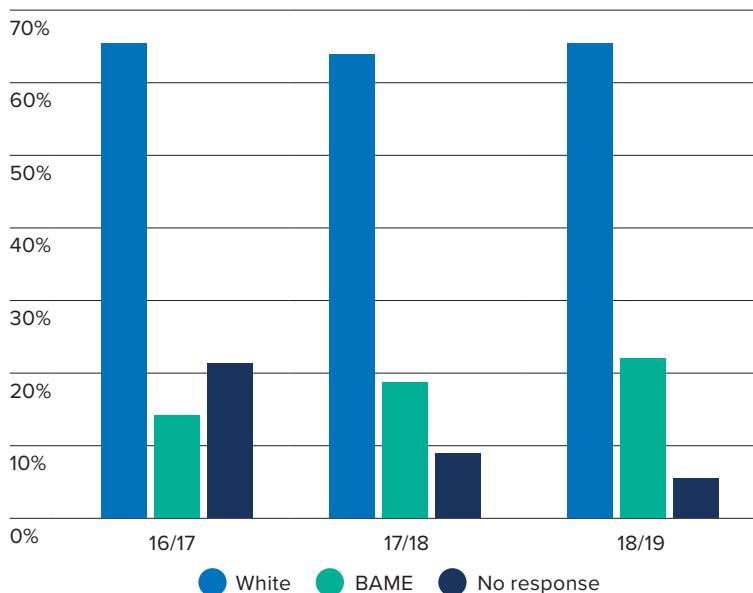
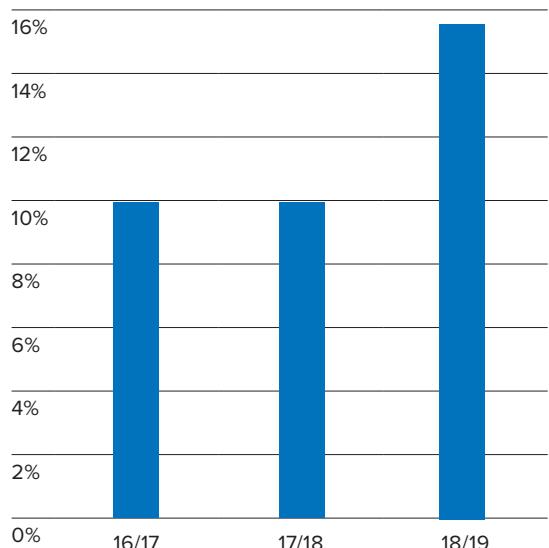


Figure 3.2: Female proportion of technical and engineering starts in road and rail over time



Our progress to date

The diversity of apprentices

- 3.5** We have seen real progress in the proportion of apprentices from under-represented groups over the last year. We continue to far exceed our target to better Black, Asian and Minority Ethnic (BAME) representation.
- 3.6** This year we are able to report BAME representation in apprenticeship starts in roads and rail as 21.8%, against 19% last year and 14% just two years ago. This represents a proportional increase of over 50% from one-year-on, in comparison to an initial target of 20%.
- 3.7** There has been strong progress this year in addressing gender imbalance within apprenticeship recruitment in the roads and rail sectors, with 23.6% of women undertaking apprenticeships. This represents a 18% proportional increase since 2016/17.

3.8 In line with targets laid out in the Transport Infrastructure Skills Strategy (TISS), the percentage of technical and engineering starts that are female has also seen significant growth, to 15.4%, a 5.4 percentage point rise from the previous year which represents a 54% proportional increase in the last year.

3.9 It is difficult to identify a single factor that has underpinned the proportionate growth in female apprenticeships this year. There is a broad range of initiatives in place, including engagement and improvement to recruitment processes which collectively STAT members see as starting to bear fruit. From our supply chain, Amey have made inclusion a strategic priority, whilst Kier have undertaken schools outreach with trained ambassadors, including at least one female representative per event.

3.10 Support is available for employers who want to achieve better gender balance within apprenticeships for their organisation.



This new booklet produced by TUC unionlearn provides guidance on how union representatives in the workplace can improve the recruitment of women into high-quality apprenticeships, especially in occupations and sectors with major gender imbalances.

The guide offers a range of tips on how union representatives can negotiate policy and practices with employers that address apprenticeship gender inequality, including changes to recruitment practices and workplace procedures.

It highlights a range of good practice examples and practical advice on tackling a range of challenges, including improving women's participation in male-dominated industries, addressing the quality and flexibility of apprenticeship programmes, and questions about health and safety and pay.

The guide also considers the direct support that unions can offer women to help them to complete their apprenticeship successfully, including providing access to learning support from the union and giving regular advice to them about their employment and training rights as an apprentice.

Tackling apprenticeship gender inequality



unionlearn
from the TUC

The booklet is available at: www.unionlearn.org.uk/publications/tackling-apprenticeship-gender-inequality.

It is part of a series of unionlearn guides exploring how unions can support under-represented groups to access high-quality apprenticeships. They are available on the unionlearn website at: www.unionlearn.org.uk/publications.

18%

**of transport workforce
is female as estimated
by APS data**



23.6%

**of STAT apprentices are
female (2018/19)**



**There is a long way to
go towards approaching
the national average for
employment of female
staff which is**

47%

3.11 We are also seeing a higher proportion of women at higher levels of training, as we have in previous years. Women currently represent 27% of all degree level starts in 2018/19, and 29% of those undertaken in the supply chain.

3.12 It is encouraging to see this continue as more higher level qualifications are being developed by industry. These roles will be fundamental to driving innovation in the sector. Providing more equal access to Science, Technology, Engineering and Maths (STEM) based roles, and more highly skilled roles, will

support longer-term efforts to address pay gaps. The Equality and Human Rights Commission (ECHR) ‘Fair opportunities for all’⁹ Report welcomes the steps being taken to promote STEM in schools, better careers advice, work experience opportunities and efforts to increase gender diversity.

3.13 Improving the proportion of underrepresented groups in transport apprenticeships will drive change in a sector with low staff turnover – in rail this is as low as 3%. It is also essential to ensure progression if we are to close gender pay gaps.

Mode	Proportion Female
Road	13%
Rail	19%
Maritime	18%
Aviation	35%
Transport manufacturing, retail, repair and maintenance	15%
Transport construction	10%
Other	25%
Total Transport	18%

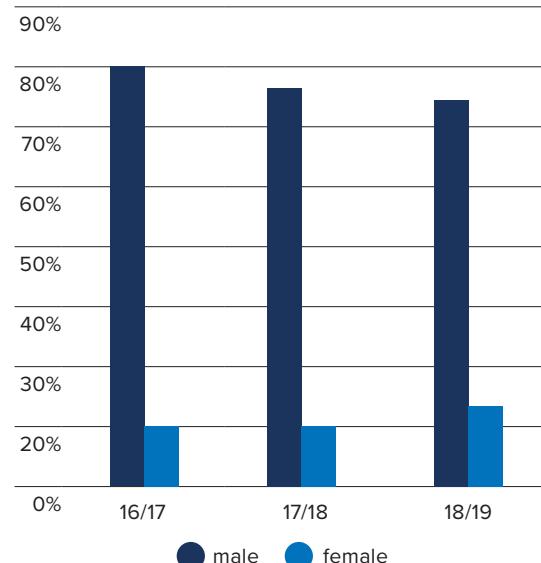
*All data derived from Annual Population Survey statistics and relates to total transport workforce¹⁰

9 www.equalityhumanrights.com/sites/default/files/pay-gaps-strategy-fair-opportunities-for-all.pdf

10 www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/methodologies/annualpopulationssurveapsqmi

- 3.14** Moving towards greater gender equality will be a gradual process, and there is a long way to go towards approaching the national average employment which is 47% female¹¹.
- 3.15** Efforts to increase the proportion of under-represented groups in apprenticeships must take place alongside measures to support and progress candidates into higher skills, senior and well-paid positions. A key part of this will be to continue to deliver and embed Equality, Diversity and Inclusion (EDI) strategies within Network Rail, HS2 and Highways England. Together, these organisations are responsible for a large proportion of our apprentice intake and are driving change through their supply chain.

Figure 3.3: Gender breakdown of apprentice starts in road and rail over time



¹¹ www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/january2019

Encouraging women to become train drivers

Recruitment is a key part of the Train Drivers Academy's work to help diversify a largely male dominated and ageing workforce. Academy members Southeastern and East Midlands Trains recently announced their efforts to encourage more women to become train drivers by introducing such practices as anonymous candidate screening and advertising campaigns targeting women.

Southeastern, which launched its campaign in November, is aiming for 40 per cent of applicants for its train driver roles to be from women by 2021. Currently women only make up 4.5 per cent of its driver workforce. East Midlands Trains has only recently launched its campaign, but has already seen the number of female driver applicants double.



The Train Drivers Academy launched its website in May 2019 with the aim of attracting a more diverse group of applicants to a career in train driving. The Academy has also produced a Recruitment & Diversity toolkit which covers best practice, case studies and research.



52,000

the estimated shortage
of LGV drivers in 2018



The average age of
LGV drivers is

47.9



<9%

BAME representation in
the logistics workforce



<15%

females representation in
the logistics workforce

- 3.16** Work underway in these client bodies places EDI as a strategic goal of each organisation and set out measures to drive change within the diversity of the workforce and the supply chain, with the wider aim of improving the experience of all transport users. Building upon these, understanding what works and sharing best practice widely will help support the wider transformation of the transport and infrastructure workforce.
- 3.19** Key themes within the discussion included the importance of outreach activity, supporting for women in the sector, more inclusive recruitment practices and the rollout of flexible working arrangements to all staff.
- 3.20** In recognising that commitment starts from the top, CEO of Highways England, Jim O'Sullivan invited a core group of Chief Executives and Managing Directors from Highways England's biggest spending suppliers, to a discussion focussed on the case for change. The session provided an opportunity for sector leaders to share ideas and take away actions that will drive the wider inclusion needed to address the challenges faced around skills and attraction.
- 3.21** Across the wider sector, Maritime UK has established a Taskforce to address fairness, equality and inclusion within the maritime sector. The Taskforce will make a series of recommendations and utilise best practice from other sectors to address gender imbalance. In September 2018 the Taskforce launched the Women in Maritime Charter, which creates a framework to challenge companies to make progress on diversity.

- 3.22** Whilst our understanding of the characteristics of the transport workforce is improving, there are still data gaps in terms of ethnicity, disability and sexual orientation, and, to a lesser extent, gender. Efforts are being made by the STAT membership to improve the data picture.
- 3.23** Developing a better data picture is helpful, but it is also necessary to understand and put in place effective action to address inequalities.
- 3.24** STAT members have taken steps to reduce the burden for suppliers who are often required to submit diversity data to multiple client bodies. Since 2011, Highways England have worked closely with key suppliers on the Annual Workforce Diversity Data Benchmarking Exercise to collect data on the diversity profile of the workforce, including their own workforce data as a comparison.

Highways England Benchmarking

This year, Highways England in collaboration with other client organisations (HS2, Network Rail and TfL) is seeking to build more robust data for the sector, by creating a joint platform and inviting 140 suppliers from their individual supply chains to upload their data. The development has taken into account the varying requirements that each client has through aligned categories and terms/definitions used so that wider comparisons and analysis between client organisations can take place. Findings will be played back to participating suppliers during national inclusion week 2019 with the intention of identifying potential actions and focus going forward.

Year of Diversity: Freight and Logistics

- 3.25** STAT Board Member Tracey Worth of the Institute of Couriers has this year scoped and driven an engagement strategy to reach employers across the freight and logistics sector to improve diversity in the sector.
- 3.26** There is currently a shortage of LGV drivers (estimated at 52,000 in 2018 by the Freight Transport Association and expected to rise following the UK's withdrawal from the European Union). Whilst there is a reduction in new entrants and people taking tests, this shortage is primarily caused by a lack of people willing to work in the sector, rather than a shortage of people with the right qualifications and licences.





“

Industry is committed to keeping this country moving and, as we look to recruit the best available talent, we must recognise the importance of reaching out to new audiences and continue to build a diverse and inclusive workforce. The message is clear; a person's background, age and gender is not a barrier to what will be a satisfying and interesting career within this sector. Equality is not philanthropy – it's good for business.

Kate Lester, CEO, Diamond Logistics

- 3.27** The vast majority of employees in the logistics workforce are over 40, white, and male. BAME representation is <9% and female representation is <15%, whilst the average age of LGV drivers is 47.9 as of Q4 2017. In comparison the national average employment is 47% female and 14.9% BAME. 12% of those employed as drivers were over 60 compared to 9% of the general working population.
- 3.28** There is increasing interest in improving the diversity of the sector. Employers are taking steps to increase the number of women in the sector, and those who have had some success are well-placed to encourage and support other employers to drive change within their own organisations.
- 3.29** Leading employers from the Express delivery sector, the Road Haulage Association, Freight Transport Association and the Chartered Institute of Logistics and Transport have come together to create a network of employers who are committed to tackling the lack of diversity. They will develop opportunities to drive change and secure wider support for this, with an initial focus on improving gender diversity in the road logistics sector. There is a recognition that robust data would help this work.
- 3.30** The network aims to create tangible change within member organisations and businesses, with a commitment to action that will increase diversity for their organisation. A programme of events will be delivered for the sector to network, learn from existing best practice in recruitment, progression and retention, and develop a pipeline of talent to equip industry with the skills it needs in future.

3.31 The first event, to set out the vision for the year ahead and engage the wider sector, took place in May. It was hosted by Tracey Worth of the STAT Board and launched the Year of Diversity in Transport and Logistics. Attendees were asked to sign a pledge and commit to taking further action to increase diversity in the workplace.

3.32 Other planned events include bringing employers together with:

- Women in Logistics to develop strategies for employing hard to place workers.
- The Chartered Institute of Logistics and Transport and the industry Trailblazer Apprenticeship groups to promote development through apprenticeships and professional standards.
- Think Logistics to promote the industry to the next generation.

Social mobility

3.33 Apprenticeships can act as an essential tool to address inequality and support social mobility. Not everyone who wants to take up an apprenticeship is able to do so, for a variety of reasons. Lower educational attainment, lack of opportunities locally, health and mental health issues, lack of support and guidance around accessing

jobs and training and caring responsibilities are all significant barriers to the workplace. Helping to address these would support more people enter jobs and training.

3.34 STAT's Social Mobility Working Group was set up in 2018 to help ensure that apprenticeships created within the industry are open to all, and to identify the practical steps members and other employers can take to remove barriers and ensure those from more disadvantaged or lower socio-economic backgrounds are supported into jobs and training.

3.35 This supports wider objectives around accessing talent to fill skills gaps and building a more diverse and representative workforce. The group also recognises that the move towards more higher level and technical skills risks shutting out those with talent and potential, but few qualifications or access to quality training, from these opportunities.

3.36 Led by Becky Ivers, People Director, Expansion, Heathrow, the group began work by defining social mobility to create clear objectives and outcomes for this work. *"The provision of accessible and quality opportunities for all that enable progression in the Transport and Infrastructure sector."*



70,000

teachers, parents, children and young people reached every year by Enjoyment to Employment



103

young people have made positive progressions toward careers in the transport industry with 22 starting apprenticeships

5,000

new apprenticeships to be created over five years as part of the Kier's Collaborative Learning Circle initiative



TfL's BAME into Transportation and Engineering (BiTE) programme

TfL partnered with key suppliers to run the 'BAME into Transport and Engineering (BiTE)' programme which aims to address under-representation and enable social mobility. 16 unemployed candidates completed two weeks' pre-employment training and a two-week work placement in November 2018, completing a Level 1 employability qualification as well as Personal Track Safety awareness. Cleshar Contract Services, Thales, FLO (Northern Line Extension) and Bombardier provided work placements and offered face-to-face interviews or assessments to candidates on completion.

To date a third of the candidates have gained permanent employment, with others currently undertaking interviews or assessments.

Sheryl Opoku-Ware started a HR apprenticeship at Cleshar Construction Services following successful completion of the programme:

"Through the BiTE programme I was introduced to endless career prospects which provided me with the opportunity to learn more about the railway and construction industry, and all that TfL has been able to achieve through the years.

I met many helpful and knowledgeable tutors who guided me and helped me develop all the necessary skills that are required for me to succeed in my career – and it did just that."

Cleshar have employed four candidates from the programme, including Hayden.

Geoff Stickler – HSQE Manager: "Cleshar recruited Hayden as a result of him doing a placement in the BiTE Programme. Hayden has joined as an HSQE Administrator and has enthusiastically engaged with the team and the role. He is a very quick learner and not afraid to ask relevant questions or make suggestions that have added value to the department."

TfL is partnering with more of its key suppliers to run programmes which will bring more women and candidates from a diverse background into employment in TfL's supply chain in 2019/20.

3.37 The group has engaged industry to raise awareness of the importance of activities to address social mobility and better understand successful initiatives in this space. Activity by Heathrow in March 2019 as part of National Apprenticeships Week helped to set out steps that employers can take to support those from more disadvantaged backgrounds into jobs and training.

3.38 The group has worked to understand the wider needs of employers, particularly those within the shared supply chain, to enable them to develop programmes to support better social mobility. This insight led to the production of a leaflet encouraging support for social mobility through work placements, chiefly for supply chain organisations who may be committed to supporting social mobility through their contracts with client bodies.



3.39 It identifies a range of organisations and initiatives, such as; Transport for London's Steps Into Work, work by HS2 to develop trainee archaeologists, and the Experience Skanska initiative, learnings from which can support employers work contribute to social mobility and inclusion.

3.40 Greater understanding of the reasons why individuals may choose to join or reject a job or training in the transport sector would help industry to shape a compelling offer to those with talent and potential. Work by NSAR is helping to reach those who may not have previously considered a job in the rail sector.

NSAR Skills Live, reaching young people digitally

Skills Live is a digital platform that rail industry employers can use to connect with young people. The project has developed a digitally enabled route for young people, below graduate level, into new employment opportunities being created by digital rail. Skills Live offers a new route into jobs by combining skills insight videos with interactive content, to Job Centre Work Coaches and to young people directly, via mobile devices.

Videos feature young apprentices and employees working in various roles across a range of rail employers, showcasing entry-level skills for roles in digital rail. Content is focused on the job role and key skills with functionality from SnapChat and Instagram to allow users to further explore the roles and skills of specific employees and build a profile of their own interests that can be used to target relevant content and information.

Learners demonstrate their aptitude against specific skills, aligned with pathways into new

apprenticeship standards, guiding young people into job roles they may not previously have considered. For employers it opens a new recruitment channel and access a wider potential workforce.

Skills Live is being piloted in rail prior to being rolled out across the other transport sectors and infrastructure.





3.41 Programmes like Movement to Work and TfL's Enjoyment to Employment programme are showing real success in bringing those who are not currently in education or employment into jobs and training.

3.42 Enjoyment to Employment turns childhood enthusiasm into careers in transport reaching over 70,000 teachers, parents, children and young people every year with activities which aim to lead people to choosing a career in STEM and the transport sector. The programme works from ages 0–25 with activities tailored to different age groups. With 16–25 year olds Enjoyment to Employment uses London Transport Museum's collection and links to industry to help young people move directly into careers in transport. Over the last two years 103 young people have made positive progressions toward careers in the transport industry, with 22 starting apprenticeships. Following intensive work with TfL to reach out to young people who may not have additional support at home, seven apprentices have been recruited for their 2019/20 intake.

3.43 Kier's Collaborative Learning Circle is a learning and development forum which engages clients and supply chain partners to help transform the industry approach to improving safety, customer service and delivery through innovation and collaboration.

3.44 As part of the Collaborative Learning Circle initiative, Employers across highways and transportation, including Kier, have partnered OnSide Youth Zones (www.onsideyouthzones.org) to help create 5,000 new apprenticeships over five years in the industry, and provide disadvantaged young people with access to support into jobs and training locally.

3.45 STAT believes there is more scope to deliver initiatives to provide greater access to work experience for those from more disadvantaged backgrounds. Work is underway within the group to design a low-cost pre-employment training programme that will be piloted later in the year for more employers to use.

3.46 It will be important to understand the impact of this pilot and work with industry to understand progression through industry for individuals who have entered the organisation from programmes designed to address social mobility, as well as their experiences of the workplace.

Our commitments for 2019/2020

3.47 Through the STAT Working Group, STAT member organisations will:

- Continue to align work on equality, diversity and inclusion to ensure that delivery bodies are working together to drive change across the wider sector and share best practice.
- Monitor data around the increasing proportion of female apprenticeships in technical and engineering roles to further understand what is driving this change.

3.48 The Diversity and Inclusion Working Group will continue to support employers in the Freight and Logistics sector to deliver the ‘Year of Diversity’ engagement activity to drive improved gender diversity in the sector, highlighting:

- The role of apprenticeships in helping to bring in a more diverse workforce where there is low staff turnover.
- The necessity of putting in place recruitment, selection and assessments that will support those from under-represented groups into jobs and training in the sector.

3.49 The Social Mobility Working Group will:

- Complete work to design, pilot and review a pre-employment training programme, led by TfL, to support those facing significant barriers to entry into jobs and training in the sector.
- Raise awareness of the importance of equality of access to jobs and training for more disadvantaged groups, through their organisations and across the wider sector and supply chain, establishing pre-employment as a preferred route for increasing social mobility.
- Collaborate to ensure that activity by transport employers in National Apprenticeships Week in 2020 showcases training opportunities in the sector to diverse groups, to increase awareness of opportunities in transport.

Productivity and future skills

“

The rate of innovation in technology and the role of digital in the infrastructure sector can be expected to ramp up significantly in coming years. The question this raises is *will the skills we need be available in the workforce to support these new approaches?*

If the talented and sought-after people are going to be found we need to work now to position the rail and construction industry as the go-to place for an attractive career, well in advance of new technologies coming online.

That's why we need to capitalise on the current momentum behind the engineering industry to break down the preconception that the construction and infrastructure sector is out-dated, low-skilled, and low-paid. The reality is that modern infrastructure projects like High Speed 2 require highly skilled, technical, and digital expertise.”

Mark Thurston, CEO, HS2 Ltd



Introduction

- 4.1** As we enter the 4th Industrial Revolution, the role of skills in driving productivity and enabling the uptake of new technology becomes increasingly important.
- 4.2** Modern and accessible infrastructure is central to our lives and work, and essential to our future growth and prosperity¹². Productivity is intrinsically linked to physical infrastructure, facilitating both production and consumption¹³.
- 4.3** UK productivity has grown slowly since the 2008 economic downturn¹⁴ and the Industrial Strategy lays out how the government will solve this ‘productivity puzzle’. The strategy recognises there will be the need to develop skills in order to innovate and drive growth.
- 4.4** This goes hand in hand with ensuring people are skilled in science, technology, engineering and maths (STEM) and the need to upskill the existing workforce. The government will be intervening through sector deals to support productivity growth in specific industries.
- 4.5** Through the Transport Infrastructure Efficiency Strategy (TIES), roads and rail client bodies are committed to driving efficiencies through digital technology in the design, construction, maintenance and operation of assets.
- 4.6** TIES partners have adopted the presumption for offsite construction where it provides value for money and will demonstrate progress in the adoption of Modern Methods of Construction (MMC) through joint monitoring and reporting. They have adopted the definition for MMC as “Digital and construction techniques that exploit the benefits of manufacturing processes to plan, design, construct, maintain and operate faster, cheaper and more sustainably.”
- 4.7** In April 2019 the Construction Industry Training Board (CITB) estimated that adopting MMC could reduce the workforce required to deliver government ambitions for 300,000 homes by 19%. However, roles will change and new skills will be needed¹⁵ to cover tasks such as site management, integration, onsite placement and assembly.
- 4.8** Technology is changing rapidly. The transport systems of tomorrow will be connected, data-driven, shared, on-demand, electric, and highly automated. Ideas are moving swiftly from conception, research and design, testbed to early adoption, and, finally, mass acceptance. According to projections, the pace of innovation will accelerate. This technological change will be underpinned by the availability of data. The National Infrastructure Commission estimated that the value of data to the economy is some £50bn per annum. Sharing data, according to the Commission, will help us to use, maintain and plan our infrastructure better.

¹² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf

¹³ www.wmca.org.uk/media/2230/infrastructure.pdf

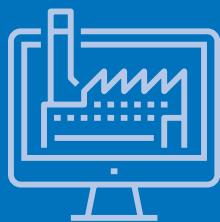
¹⁴ <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06492>

¹⁵ www.citb.co.uk/about-citb/construction-industry-research-reports/search-our-construction-industry-research-reports/innovation-technology/the-impact-of-modern-methods-of-construction-on-the-skills-requirements-for-housing/



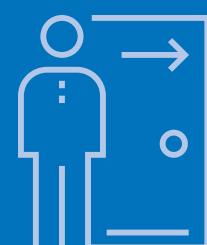
CITB estimated that adopting MMC could reduce the workforce required to deliver government ambitions for 300,000 homes by

19%



£50bn

estimated value of data to the economy per annum



7.4%

of jobs are at high risk of automation

- 4.9** Physical infrastructure will evolve. For instance, the impact of the shift to mobility as a service will impact how commuter cars, commercial vehicles, autonomous vehicles and bicycles interact on our roads – as evidenced in the Future of Mobility: Urban Strategy¹⁶.
- 4.10** Not only will the nature of transport change, but how we deliver it. The Office for National Statistics (ONS) analysed the jobs of 20 million people in England in 2017 and found that 7.4% are at high risk of automation¹⁷. Women, young people and those who work part-time are most likely to work in roles which are in this category, with fairly routine and manual occupations most commonly identified as high risk. There is a clear need to ensure that this change does not lock out under-represented groups from the transport workforce. Upskilling and re-skilling should play a critical role in these efforts.
- 4.11** Network Rail is using apprenticeships to indirectly help re-skill the workforce in preparation for increased digitisation and automation. Due to the large volume of apprentice starts, and the need for apprenticeships to reinforce basic English, Maths, and Information and Communications Technology (ICT) skills, Network Rail and RMT have been able to use apprentice Basic ICT training to help prepare individuals for greater use of technology – putting non-apprentices on these classes where there is availability. The same can be true of Basic Maths and English to help increase inclusivity; the more apprentices there are, the more that Maths, English, and ICT are delivered and the more cost-effective it becomes to enrol non-apprentices onto these classes.
- 4.12** The Construction Industry Training Board (CITB) Report ‘Unlocking construction digital future: a skills plan for industry’¹⁸ highlights the role of digital technology in driving productivity, efficiency and quality of delivery. CITB has committed to a programme of support, including targeted funding, to help meet the skills challenge to enable sector digitalisation.
- 4.13** Understanding the future is imperative to ensuring transport maximises opportunity and is not left behind other sectors. This provides the opportunity to deliver productivity gains through exciting new skills and ways of doing things and attract a new, more diverse intake of transport workers.

16 www.gov.uk/government/publications/future-of-mobility-urban-strategy

17 www.ons.gov.uk/releases/occupationsandtheriskofautomation

18 www.citb.co.uk/documents/research/citb_constructions_digital_future_report_oct2018.pdf



Atkins, realising the potential of adopting digital delivery

Lesley Waud, Design Development Director in Atkins' Transportation business, knows about the challenges and benefits of adopting a digital delivery mindset.

"Some designers and engineers see digital technology as a threat to what they came into the industry to do. They have a technical specialism and, in many cases, a true vocation – one they get immense satisfaction from. They feel technology is taking this away from them, and it puts the work they're passionate about at risk."

"Atkins sees this differently and is transforming the way design engineers work by embracing technology to deliver traditional services in a better way. By using digital tools to automate and re-use design, repetitive tasks can be

eliminated, freeing up time to focus on more value-adding elements of the design process. Engineers of the future will need to broaden their scope, bringing intelligent design, diverse and creative skills and a human perspective to their work."

"Engineers traditionally spend a lot of time performing detailed calculations across a range of attributes. A graduate realised that by automating these calculations, they could substantially speed up the process, enabling the creation of several design options in the time it used to take to produce one; which in turn gives more capacity to focus on delivering better solutions for clients".



Kier, Digital Construction Apprenticeship

In April 2018 Kier launched a first in industry – a digital construction apprenticeship with a focus on applying Building Information Modelling (BIM), to inspire the next generation to consider a career within the built environment. The programme builds on the Digital Engineering Technician Standard which was developed through the trailblazer process.

Following the success of the first cohort of apprentices, and the recognition from industry after winning ‘Digital Training & Skills Initiative of the Year’ at the 2018 Digital Construction Awards, a second cohort of new entrants were selected to start in January 2019.

James Franklin, BIM lead at Kier Group, said: “The reception to our digital construction apprenticeship scheme has been fantastic. We believe this apprenticeship is unlike any other, offering a truly unique insight into BIM and digital innovation and its importance within the built environment.”

The apprentices implement BIM and use a variety of technologies to assist in the delivery of projects as part of the course. Working in partnership with Learning Skills Partnership and BIM experts T3 Training and Development, the digital construction apprenticeship combines theoretical study and practical training.

Rebecca Stabler, Digital Construction Apprentice shares her view on the programme, “The digital apprenticeship has brought me into an industry I had never considered beforehand. Kier have supported me through my transition as a new starter with lots of training and support. Developing my skills and learning about new technologies and platforms has allowed me to open my career path options; having listened to colleagues and suggestions I am intrigued to see where this apprenticeship takes me.”

4.14 One of the most important aspects of work to drive future skills and productivity will be around the availability of high-quality training.

Our progress to date

Sector Deals

4.15 STAT welcomed the announcement of the Rail Sector Deal in December 2018, which followed on from the Construction Sector Deal in July 2018. Both acknowledge the importance of skills.

4.16 The Rail Sector Deal sets out how the UK's already highly competitive supply chain will become even more focused, efficient, productive and confident, with investment in skills, stock and capital equipment.

4.17 It highlights the need for investment in people to ensure the continued successful operation of the railway at the same time as delivering new, transformative infrastructure projects such as HS2 and the Digital Railway. These will require new skills and skills profiles that are yet to be defined. They will need to be identified and developed alongside the continuous evolution of critical existing roles.

4.18 There are three themes which put people at the heart of the approach:

- Digital rail skills to equip the sector's current and future workforce for digital technology.
- Leadership and management development to increase the quality and quantity of leadership and management training.
- Promotion and attraction to achieve a step change in efforts to attract diverse talent into the rail industry at all levels including apprenticeships.

4.19 The Construction Sector Deal set out an ambitious partnership between the industry and the government that aims to transform the sector's productivity through innovative technologies and a more highly skilled workforce, with plans to address the shortage of STEM skills.

4.20 Last year, the Construction Skills Fund (CSF) was launched and to date, twenty-six innovative partnerships across the country, including TfL, have won a share of £22 million to set up new 'hubs' which will train more than 17,000 people to be job and site-ready by March 2020.

The Rail Sector Deal



Putting people at the heart of the approach:

1

Digital rail skills

2

Leadership and management development

3

Promotion and attraction





TfL's use of the Construction Skills Fund

TfL has been successful in securing over £2.5m investment from the Department for Education's (DfE) Construction Skills Fund (CSF), to establish 'pop-up' site-based learning facilities to support the delivery of construction employment and skills interventions. The funding awarded will support over 1,700 learners access training opportunities and over 500 jobs, which will help to meet the needs of employers and tackle the construction skills shortage.

TfL's focus is on developing and delivering interventions targeted at underrepresented groups and attracting talent from non-traditional routes, who will be able to support TfL's housing and infrastructure construction skills requirements.

Since setting up in March 2019, over 200 candidates have been trained, with over 50% from a BAME background and over 25% women. Following the successful completion of training, candidates have the opportunity to access apprenticeships and local job opportunities, with candidates so far progressing on to apprenticeships in Quantity Surveying, Plumbing, Civil Engineering Operations, Steel Fixing and Scaffolding.

To support the delivery of the programme, TfL has been working closely with multiple partners who include employers, London Boroughs and training providers. This includes working closely with employers such as Keltbray to design and deliver training to ensure it is employer-led and aligned to skills gaps within the industry.

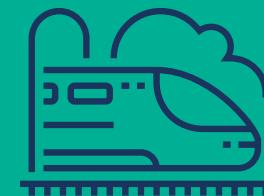
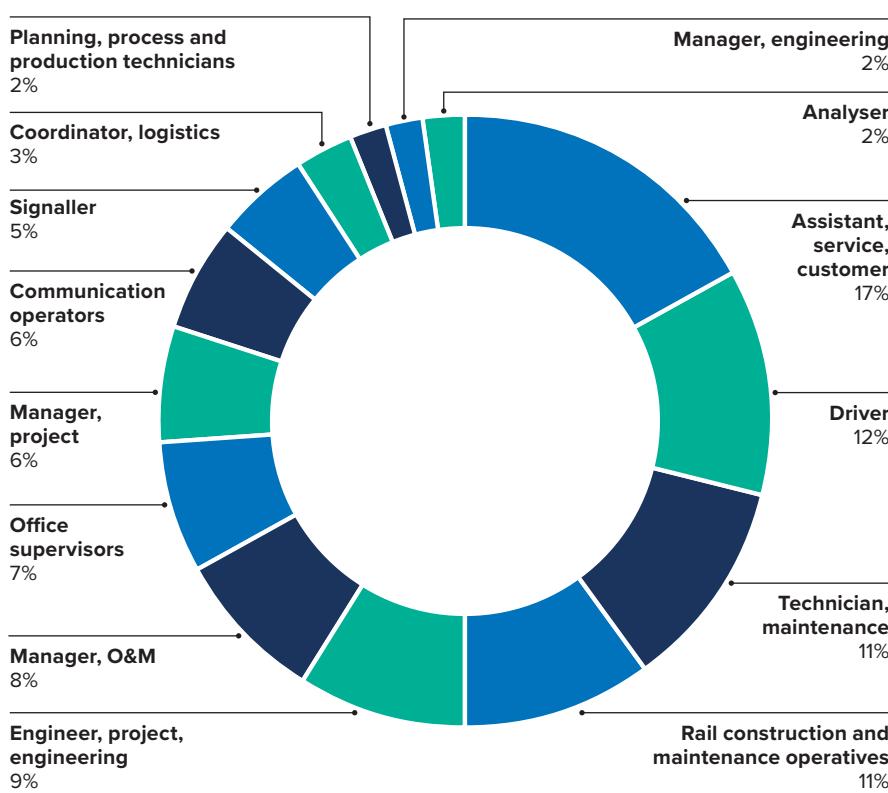
Forecasting

- 4.21** STAT has begun to consider the digital needs of the future, with NSAR undertaking a study into the risk of digital change in rail.
- 4.22** Data shows that transport does not have the digital skills it needs and will have to pay significant sums to attract them in future. For rail alone, it is estimated that 10,000 new specialists will be needed by 2023. Other transport sectors will need about half that. The most extreme case is data analysts.
- 4.23** NSAR identified the roles at highest risk of change from digital transformation to be customer service assistants, drivers, maintenance

technicians and more, as seen below. The vast majority of these (63%) fall within NVQ level 2 and 3.

- 4.24** NSAR identified Drivers, Cleaning Supervisors and Customer Service Assistant Managers as high risk roles from automation.
- 4.25** The impact of digitalisation also raises the question of whether we will require a more highly-skilled workforce to deal with and deliver the changes technology is bringing to the industry, or whether the skill sets for each skilled role will adapt and change according to the digital influences as part of the everyday role. Either way, there is need for high-quality training.

Figure 4.1: Breakdown of roles at highest risk of digital transformation as identified by NSAR

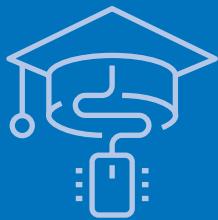


10,000
new rail specialists
needed by 2023



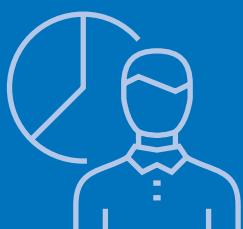
NSAR

identified customer service assistants, managers, drivers and specialist drivers and cleaning supervisors as high risk roles from automation



199

**degree level apprentices
in 2018/19, nearly three
times the total reported
in STAT's first Annual
Report, One Year On**



28

**apprenticeship standards
that follow the digital
route now ready
for delivery**

Apprenticeship standards

- 4.26** Apprenticeships continue to provide the opportunity to effectively manage how we provide capability. We have seen a continued rise in degree level apprentices, with 199 reported in 2018/19, nearly three times the total reported in STAT's first Annual Report, One Year On.
- 4.27** In the face of new technology, the level and content of apprenticeships remains paramount and there are significant number of apprenticeships that follow the digital route which are ready for delivery, with 28 now approved, spanning NVQ levels 3–7.
- 4.28** The Institute for Apprenticeships & Technical Education also hosted a pilot digital review consultation in Autumn 2018, reviewing standards such as Data Analyst and Infrastructure Technician. Roles such as data analyst will be essential as we develop and maintain both smart and legacy infrastructure assets.
- 4.29** In recognition of the importance of data analysts to the sector, the STAT Shared Apprentice Working Group, headed by NSAR, is working with a broad range of employers to launch a shared apprenticeship in data analytics. Two cohorts are intended: one at Level 4 in data analytics, and the second at Level 6 in data science.

Attraction

- 4.30** Whilst apprenticeships can be used in part to address skills shortages, it is still a challenge to make the industry attractive. A recent study found only 3 out of 10 young people would consider a career in rail and wider transport¹⁹.
- 4.31** Digital technology offers an opportunity to support the attraction, retention and inspiration of new generations of talent.
- 4.32** In recognition of the need to develop a pipeline of talent into digital skills, Heathrow have trialled a six-week work placement in the IT/Digital team, before the roll out of the digital T-Level next September. This opportunity provides a stepping stone for candidates into a relevant apprenticeship when they qualify with their T-level.
- 4.33** Working collaboratively offers the opportunity to more strategically target key audiences and present a more holistic picture of training and job roles right across the sector and its shared supply chain. The STAT membership is exploring ways to join up communications and outreach work undertaken by individual employers during events like National Apprenticeships Week.

4.34 The Year of Engineering (2018) was a cross government communications campaign, delivered through over 1,500 industry partners. It highlighted to young people from different backgrounds the vast number of opportunities that engineering offers and demonstrated the many different routes into engineering careers.

4.35 The campaign received very positive feedback from attendees at events and delivered over five million direct experiences of engineering to 7–16 year olds across the UK, far exceeding the one million target.

4.36 The campaign contributed to enhanced teacher confidence when giving advice on engineering careers and the number of STEM Ambassadors promoting engineering to young people has increased by 10,000 (50%) since May 2017. This confidence extends to talking with parents about the campaign and careers in engineering. The school resources page is the most visited on the Year of Engineering website, guiding teachers through activities linked to the curriculum, amongst other support (www.yearofengineering.gov.uk/school).

Network Rail, automating defect detection

Over the last five years Network Rail's existing Buildings & Architecture (B&A) Asset Management System has been collating photographs of defects and risk scores from asset surveys. Network Rail therefore has created a large dataset of classified defect images.

With the advancement of machine learning, Network Rail identified an opportunity to automate parts of the defect detection process by applying machine learning technology. The benefits include:

- Improving the accuracy and reliability of building defect assessments.
- Reducing the cost of operating this critical safety responsibility.
- Freeing up people to focus on more strategic tasks.

A team of Data Scientists developed a Convolutional Neural Network (CNN) to predict defect image risk-levels on brickwork defects.



* image demonstrates the model in action

They achieved a prediction accuracy of 72.3% across all brickwork defects and a prediction accuracy of 84.3% on selected defects that had optimal imagery.

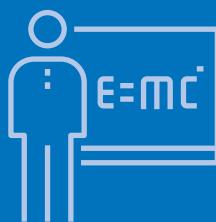
In these first scientific and rigorous assessments of Network Rail's B&A asset management data, it has been demonstrated that value can be extracted through the application of cutting-edge machine learning techniques and that artificial intelligence can make use of the available data to learn to predict defect risk levels.

“

I'm delighted to see the Strategic Transport Apprenticeship Taskforce doing such excellent work to support and encourage young people from all backgrounds to pursue careers in engineering, particularly through the apprenticeship route. This is critical – STAT have grown female representation to 15% of engineering apprentices in the past year, however wider engineering remains below 10% nationally and even fewer are from BAME backgrounds.

“It really matters that we have a workforce that reflects the society it serves. From creativity to innovation, motivation, talent retention, health and safety and competitiveness, the evidence base is clear and growing regarding the benefits of diverse teams. To achieve efficient and inclusive infrastructure, it is vital that the people responsible for designing and maintaining our future transport systems understand everyone's needs.”

Dr Hayaatun Sillem, CEO,
Royal Academy of Engineering



10,000
more STEM
Ambassadors
promoting engineering
to young people since
May 2017

- 4.37** Partners were crucial to the success of the campaign and have provided very positive feedback. Partners came from industry, education and the charity sector, with well-known brands supporting the campaign including Apple, Siemens, FIFA, the BBC, the RAF, Rolls Royce, Facebook and LEGO.
- 4.38** Going forward, the campaign will continue to build on its reach and success under the banner ‘Engineering: Take A Closer Look’. This campaign will continue to provide young people, their parents and teachers with more chances to ‘Take a Closer Look’ at engineering, challenge traditional perceptions of engineering, to have face-to-face engineering experiences and the opportunity to discover role models.
- 4.39** Events will encourage more girls to consider careers in engineering, as demonstrated by Siemens on its biggest ever SeeWomen roadshow. The Black Panther movie was screened in partnership with the Science Museum and the Royal Academy of Engineering followed by a panel discussion on the representation of women in STEM in cinema.
- 4.40** Other campaign events have brought girls face-to-face with women engineers at Crossrail, Network Rail, Transport for London, Facebook and Apple. Many more women engineers have helped inspire young people through volunteering to speak in schools and sharing their stories on social media.



- 4.41** Research by Engineering UK showed the desirability of engineering as a career among the core audience of 7–11 year olds had increased by 35 percentage points among those aware of the campaign.
- 4.42** While the next phase of the campaign is being developed, government, partners and engineering institutions will be working together to create a Code of Practice. Organisations will be able to demonstrate their commitment to transforming how engineering is perceived by tomorrow's workforce by signing the Code and promoting careers in engineering, considering those from under-represented backgrounds.

- 4.43** The STAT Year of Engineering Working Group has shared and driven pan-sector efforts to promote STEM, seeing a significant increase in ambassadors. It has co-hosted pre-employment events to myth-bust engineering as a career and working across client/supply chains to develop sustainable activities such as the London Transport Museum 'Future Engineers' exhibition.
- 4.44** Beyond engineering, transport employers have put in place programmes of activity to reach school age children to help promote and inform around the skills, jobs and opportunities within STEM and the wider sector.





HS2 STEM outreach

HS2 visits schools to deliver STEM workshops that use hands-on activities to help young people develop the essential skills that are needed to succeed in a STEM career. In the 2018/19 academic year, the workshops will reach at least 75 schools and more than 4000 students.

HS2's Education Programme aims to inspire young people who are at an early stage in their career decision making process, by challenging perceptions about the diversity of people and jobs in the transport infrastructure sector.

HS2's workshops are supported by Education Ambassadors from the business, who give technical advice during the challenges and

provide real life context from the HS2 project. Meeting people who work in STEM jobs helps young people to build their science capital and raises awareness of alternative routes into work, such as apprenticeships.

The Zoom Rail workshop for 7–11 year olds includes a route planning activity, team building games and careers films, while the EPIC Engineers workshop for 11–14 year olds features augmented reality, a station design activity, hands-on tunnel building challenge and a custom made board game.

HS2 have also produced online curriculum resources related to the workshops, which are available to all schools through the HS2 website.

Our commitments for 2019/2020

- 4.45** STAT will develop a body of work to consider future skills in the sector to help meet the future skills gap. This intel will enable STAT to develop the required skills to drive productivity and support the Construction and Rail Sector Deals, and the TIES.
- 4.46** STAT will pilot two data based shared apprenticeships to improve our digital readiness. NSAR will broker, support and manage a two-year pilot programme to train a significant number of Level 4 Data Analyst or Level 6 Data Scientist apprentices.

- 4.47** STAT will collaborate to ensure that activity by transport employers in National Apprenticeships Week in 2020 showcases training opportunities in the sector to diverse groups, to increase awareness of opportunities in transport.
- 4.48** The Year of Engineering Working Group will continue to work collaboratively to deliver the aims of the 'Engineering – Take a Closer Look' campaign.

Innovate TfL in association with Cleshar

Students were tasked with suggesting an innovation to deliver the Mayor's Transport Strategy and this year entries included ideas such as refurbishing old tube carriages to be used as self-contained flats and redesigning train barriers on the underground. The winning innovation was to introduce a fob device to be used by wheelchair customers. The device would be activated whilst waiting for a bus sending an alert to the bus driver to activate a message for customers and pushchair users to create space for the wheelchair. The winning team attended the 'Access all Area' event at the Excel to promote their initiative to industry and customers.

Following excellent growth in 2017/2018, 61 schools registered to take part in this year's competition, an increase of 39% in entries compared to last year. This year saw our first entry from a Special Educational Needs



school and 12 from girls' schools, the highest number to date.

The four finalist teams presented their ideas to an expert judging panel, including representatives from Cleshar, TfL and the Department for Transport. All finalist teams will complete two weeks work experience and a feasibility study into the winning idea is underway.

Our commitments

“

Apprentices are essential to our business and I am really pleased that we are bringing in people with genuine potential. STAT's work has begun to shift the dial on the diversity of our apprentice intake this year. By continuing this collaboration, we will further build on this success.”

Mike Brown MVO, Commissioner,
Transport for London and Chair of STAT

Introduction

5.1 The commitments that follow set out the activity that STAT and its working groups will undertake in partnership with other transport employers and bodies over the coming year, to further drive the skills agenda across the sector.

Our commitments for 2019/2020

5.2 Through the STAT Working Group we will:

- Ensure STAT employers have a holistic approach to quality, including the views of apprentices as well as employers. This work will build on STAT's work to define quality with Investors in People during its first year.
- Ensure that the standards being developed address key skills shortages across the sector
- Work with government on the future of the apprenticeship levy post-2020, particularly to set out our key priorities around further supporting pre-apprenticeship training, addressing barriers for supply chain organisations to invest in skills, reducing bureaucracy and exploring the potential and value of levy pooling arrangements.
- Road and Rail delivery bodies will start to develop and share intelligence about the destination and progression of apprentices who have completed their apprenticeships. This will support greater understanding around whether apprentices are choosing to stay and work in the sector. Data will be captured from Q1 2016 to start this work.

5.3 Through the Shared Apprenticeships Steering Group, led by NSAR, further develop pilots for appropriate model schemes. Pilots are being led by TfL, CECA, RFM and NSAR.

5.4 Through the Supply Chain Skills Network we will:

- Review contractual requirements to ensure they remain appropriate and effective (led by DfT).
- Promote commercial models which support closer working with the supply chain to facilitate collaboration on skills and increase productivity (led by Heathrow).
- Improve the flow-down of targets from Tier 1 suppliers to sub-contracts (led by Network Rail).
- Improve the quality of reporting (led by HS2).

5.5 Through the STAT Working Group, STAT member organisations will:

- Continue to align work on equality, diversity and inclusion to ensure that delivery bodies are working together to drive change across the wider sector and share best practice.
- Monitor data around the increasing proportion of female apprenticeships in technical and engineering roles to further understand what is driving this change.

- 5.6** The Diversity and Inclusion Working Group will continue to support employers in the Freight and Logistics sector to deliver the ‘Year of Diversity’ engagement activity to drive improved gender diversity in the sector, highlighting:
- The role of apprenticeships in helping to bring in a more diverse workforce where there is low staff turnover.
 - The necessity of putting in place recruitment, selection and assessments that will support those from under-represented groups into jobs and training in the sector.
- 5.7** The Social Mobility Working Group will:
- Complete work to design, pilot and review a pre-employment training programme, led by TfL, to support those facing significant barriers to entry into jobs and training in the sector.
 - Raise awareness of the importance of equality of access to jobs and training for more disadvantaged groups, through organisations and across the wider sector and supply chain, establishing pre-employment as a preferred route for increasing social mobility.
 - Collaborate to ensure that activity by transport employers in National Apprenticeships Week in 2020 showcases training opportunities in the sector to diverse groups, to increase awareness of opportunities in transport.
- 5.8** STAT will develop a body of work to consider future skills in the sector to meet the future skills gap. This intelligence will enable STAT to develop the required skills to drive productivity and support the Construction and Rail Sector Deals, and the TIES.
- 5.9** STAT will pilot two data based shared apprenticeships to improve our digital readiness. NSAR will broker, support and manage a two-year pilot programme to train a significant number of Level 4 Data Analyst and Level 6 Data Scientist apprentices.
- 5.10** STAT will collaborate to ensure that activity by transport employers in National Apprenticeships Week in 2020 showcases training opportunities in the sector to diverse groups, to increase awareness of opportunities in transport.
- 5.11** The Year of Engineering Working Group will continue to work collaboratively to deliver the aims of the ‘Engineering – Take a Closer Look’ campaign.

Acknowledgements

The STAT Board would like to thank the following individuals who have contributed to its work over the past year through the working groups:

Alasdair Reisner – CECA
 Amit Kotecha – Network Rail
 Andrew Robb – TfL
 Ceri Payne – RSSB
 Daljinder Chatta – Network Rail
 Dan Forbes-Pepitone – formerly Skanska
 Dana Skelley – formerly Skanska
 Elaine Clark – East Midlands
 George Lee – HMTA
 Grace Reidy – TfL
 Georgette Foster-Bell – Highways England
 Iain Murray – TUC
 Ione Ojanguren – RDG
 James Lloyd – TfL
 Jacqueline Walcott – Highways England
 Jennifer Walpole – NTAR
 Karen Wallbridge – TfL
 Karl Chamberlain – DfT
 Kate Myers – HS2
 Kevin Bennett – Bam Nuttall
 Leila Rahimzadeh – RDG
 Lydia Fairman – Network Rail
 Martin Keeves – Institute for Apprenticeships & Technical Education
 Michelle Nolan-McSweeney, Network Rail
 Natalie Jones – Highways England
 Nici Thompson – DfT
 Nicky Ensert – Highways England
 Nikki Beattie – HS2
 Patrick Malone – DfT
 Peter Batten – DfT
 Phillip Martin – DfT
 Poorvi Patel – Heathrow
 Rebecca Vaughan – DfT
 Richard Turner – Network Rail
 Richard Winter – HS2
 Robbie Chedburn – TfL
 Sally Fern – Jacobs
 Sally Scott – Skanska
 Scott McKenzie-Cook – Science Museum
 Shamit Gaiger – NSAR
 Sheila Devine – DfT
 Simon Walters – Jacobs
 Steve Fox – Bam Nuttall
 Steven Gregory – Heathrow
 Susanna Dillon – Go-Ahead
 Tim Rudin – TfL
 Tony Ellender – Balfour Beatty
 Viv Nissanka – DfT

Annex

7.1 Apprenticeship Standards Approved for Delivery since 2016

New Trailblazer Standards approved for delivery

The table below shows standards approved for delivery since 2016 which are explicitly transport related, or where STAT member organisations have been involved in trailblazer committees.

LEVEL 7	LEVEL 5
Postgraduate engineer – industry wide	Air Traffic Controller – aviation
Systems engineering masters level – industry wide	Transport and warehousing operations manager
Rail & rail systems principal engineer – rail	Rail & rail systems engineer – rail
Digital and technology solution specialist – industry wide	
Chartered Town Planner	
Marine technical superintendent	
LEVEL 6	LEVEL 4
Building services design engineer – industry wide	Associate project manager – industry wide
Chartered surveyor – industry wide	Building services engineering technician – industry wide
Civil engineer – industry wide	Commercial Procurement & Supply (formerly public sector commercial professional) – industry wide
Civil engineering site management – industry wide	Construction Site Engineering Technician – industry wide
Digital and technology solutions professional – industry wide	Cyber intrusion analyst – industry wide
Supply Chain Leadership Professional	Cyber security technologist – industry wide
Rail & rail systems senior engineer	High Speed Rail & Infrastructure Technician – rail
First officer pilot	Passenger Transport – Operations Manager – rail
Harbourmaster	Policy Officer – government
Transport planner	Rail engineering advanced technician – rail
Express delivery manager	Propulsion technician
Data Scientist	Vehicle damage assessor
Cyber security technical professional	

LEVEL 3	LEVEL 2
Boatbuilder – maritime	Able seafarer (deck) – maritime
Civil engineering technician – industry wide	Airside operator – aviation
Highways electrician/service operative – highways	Arborist – industry wide
Engineering construction erector/rigger	Aviation ground operative – aviation
International freight forwarding specialist – aviation	Express Delivery Operative
Marine Engineer – maritime	Engineering operative
Maritime operations officer	Formworker
Passenger Transport Driver – rail	Groundworker
Port Marine Operations Officer – maritime	Highway electrical maintenance and installation operative – highways
Port plant machinery operative	Highways Maintenance skilled operative
Rail engineering technician – rail	Large goods vehicle (LGV) driver – highways/transport
Railway engineering design technician – rail	Marina and boatyard operative
Safety, Health and Environment Technician – industry wide	Metal recycling general operative
Surveying technician – industry wide	Maritime electrical/mechanical mechanic
Highways Maintenance Supervisor	Passenger Transport – Network Operations – rail
Transport planning technician – Transport	Passenger Transport Driver – Bus and coach
Boatmaster-tidal inland waterways	Passenger Transport – Onboard & station team member – rail/bus
Workboat crewmember	Port Operative
IT solutions technician	Rail engineering operative – rail
Digital support technician	Rail Infrastructure Operator – rail
Heritage engineering technician	Road surfacing operative
Motorcycle technician (repair and maintenance)	Scaffolder – highways
Vehicle damage mechanical, electrical and trim (MET) technician	Steel Fixer – highways
Vehicle damage paint technician	Tramway construction operative
	Express Delivery – Express sector
	Waste Resource Operative
	Bicycle mechanic

7.2 Apprenticeship standards in development

Trailblazer Standards in development

The table below shows standards under development which are explicitly transport related, or where STAT member organisations have been involved in trailblazer committees.

LEVEL 7	LEVEL 4
Systems thinking	Infrastructure asset management technician
Archaeological specialist	Construction Site Supervisor
Artificial intelligence (AI) data specialist	Information manager
Electronic systems principal engineer	Construction Design and Build Technician
Power and Propulsion Engineer	Automation & controls engineering technician
LEVEL 6	LEVEL 3
Infrastructure asset management leader	Small vessel engineer
Marine surveyor	Construction Site Supervisor
Construction Site Management	Construction surveying technician
Construction assembly and installation operative	
Construction design management	
Construction quantity surveyor	
Express delivery manager	
Transport planner	
Harbour master	
LEVEL 5	LEVEL 2
Transport and warehousing operations manager	Airside operator
Air Traffic Controller	Temporary Traffic Management Operative
	Express delivery sortation hub operative
	Mastic asphaltier
	Construction plant operative
	Construction industry maintenance mechanic



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p39	RDG
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