

Jasper Beston

Williams Rail Review

Department for Transport

Great Minster House

33 Horseferry Road

London

SW1P 4DR 5th June 2019

By email to: [jasper.beston@dft.gov.uk](mailto:jasper.beston@dft.gov.uk)

Dear Jasper,

**RE: Rail in the future transport system: an evidence paper**

I am writing to you with TSSA’s contribution to the above aspect of the Williams’ Review.

**TSSA’s Future of Rail Conference**  
Our contribution comes from a Future of Rail event that the Union organised on 22nd March 2019 and which attracted a number of speakers. A series of presentations were made by those speakers, including:

* David Waboso, recently Head of Digital Rail at Network Rail;
* TC Chew, Global Rail Leader, Arup;
* Neil Robertson, Chief Executive, National Skills Academy for Rail;
* Kevin Rowan, Head of Organising, Services & Learning, TUC;
* Martin Abrams, passenger representative, Association of British Commuters
* Faiza Shaheen, CLASS

Many of them made presentations which can be found at: <https://www.tssa.org.uk/en/campaigns/future-of-rail/presentations/index.cfm>

There are also summaries of speeches which can be found at: <https://www.tssa.org.uk/en/campaigns/future-of-rail/index.cfm>

**TSSA Research**  
Prior to the event we carried out some research designed to helps us examine where we see rail going, acknowledging the move to an increasingly digitally controlled railway at a time of dramatic increases in the number of passengers.

Our concerns with this trend revolve around the future for our members and how developments may change or even replace their jobs whilst also potentially negatively impacting on pay and conditions. A central concern is about how staff will be upskilled to be able to meet the challenge, thus enabling them to carry on with jobs and careers that many tell us they love.

On this point, we are aware that many members do not receive developmental training today. In a TSSA survey, only 37% of our members said they had received any training intended to advance or improve their career, with a significant proportion of that training only being career relevant because of shared competencies. In the same survey, 71% of respondents said they would like to make the railway industry their career.

For this reason, we have been pursuing a strategy that would make use of the Government’s Apprenticeship Levy as a way not only to train staff new to the railway industry but also to upskill existing workers whilst maintaining current pay and conditions. Research by the National Skills Academy Rail (NSAR) confirms the need to upskill and agrees with our perspective about using apprenticeships for existing staff.[[1]](#endnote-1)

The effect of change will be different for different people. TSSA members work in ticket offices, on stations, as controllers, engineers, managers and technical staff in rail firms like Network Rail, its contractors, Train Operating and Freight Operating Companies as well as in TfL and London Underground.

TSSA research considered:

**a). Trends**

We don’t know what will happen, but the major trends appear to be:

1. There will be more demand for public transport   
2. There will be an increase in the frequency and intensity of extreme weather events

Therefore it is right to assume that more passengers and more trains will provide challenges for our rail network. More maintenance crews could be needed to deal with the increased wear and tear of the track, more trains could mean a need for quicker turn arounds in cases of incidents on the track, extreme weather incidents or maintenance. Staff will need to be on hand in stations to improve the passenger experience, keep everyone safe and provide information in the case of journey changes, lost property or station information.

Control rooms will be key to providing drivers, operations and platform staff as well customer services information with real time information in a useable form for passengers and staff to use. The increase in data will need to be analysed to influence decisions about how to allocate resources and improve the railway infrastructure.

Even if more people buy their tickets online, any increase in passengers will mean an increase in questions and support provided by our members in many forms.

The **Fourth Industrial Revolution**[[2]](#endnote-2) is the current and developing environment in which disruptive technologies and trends such as the Internet of Things (IoT), robotics, virtual reality (VR) and artificial intelligence (AI) are changing the way we live and work.

See below for tech trends.

**b). Technology/Automation**

Britain is investing in major infrastructure schemes worth more than £600bn over the next decade[[3]](#endnote-3). This will need training and skills of new and existing staff to deliver the labour to make these projects real.

Following an underinvestment in research and development, the UK is behind its counterparts in its creation of new technologies. Between 1984 and 2013, for example, fewer than 2,000 rail patents attributed to the UK, while Germany has secured nearly 4,000, the USA 8,000 and China nearly 18,000.[[4]](#endnote-4)

Digital Rail will allow more trains to travel faster and closer together and passengers are more and more using their phones to buy tickets and get real time travel information.

This is not what the technology will be, but whether it will be physical technology or an ‘Uber for rail.’[[5]](#endnote-5) Either way, the rail industry will need to skill up the workforce to manage the change and be at the cutting edge of this internationally staffed industry. The most effective and cost efficient way of doing that is to ensure existing staff are up-skilled or re-skilled over a planned period of time.

Some potential tech developments are:

* **Intelligent Apps** Since 2016, half the world’s population use mobile phones, while the [average daily time](https://www.statista.com/statistics/428425/daily-time-spent-online-mobile-age/) spent accessing online content from a mobile device, such as a smartphone, a tablet computer or wearable, has reached 185 minutes daily among Millennials, 110 minutes for Generation X and 43 daily minutes for Boomers.[[6]](#endnote-6) Apps can be built that use both historical and real-time data to make predictions and decisions and deliver a personalised experience for users. More than just booking tickets, for organising travel and making the user aware of changes or delays to schedules. They could also be a part of on-board for both passengers and staff offering a real time and accurate view of the journey and improving customer experience.
* **The Internet of Things** (IoT) enables metros, passenger and freight services to use sensors and Machine2Machine learning, to gather and analyse information from a wide variety of sources and data streams. This is getting cheaper and could affect not just IT but also engineering, maintenance, signalling, communications, ticketing and on-board experience.
* Augmented Reality (AR) and Virtual Reality (VR) are being used   
  eg: Bombardier is developing its ‘[virtual manufacturing](https://www.smartrailworld.com/how-virtual-manufacturing-is-quickening-production-and-lowering-costs)’ technology which allowed designers to create a 3-D model of a product and to also virtually test the efficiency of its performance.   
  eg. Greater Anglia has been showing passengers what they might expect from their incoming train services with an interactive virtual reality headset that lands people in a simulated train carriage, visualising a £1.4bn investment slated for 2019.
* **Cyber breaches** - Rail and metro operators are susceptible on two fronts to cyber threats; losing control of the operational aspect of the trains themselves and of the increasingly large data they harvest be it of a technical, passenger or financial nature. Network Rail, the owner and operator of most of the UK rail infrastructure acknowledged the threat stating; “We know that the risk [of a cyber-attack] will increase as we continue to roll out digital technology across the network.” These vulnerabilities are coming from a wide variety of sources, it’s estimated that 90% of IoT devices and unsecured, and one industry insider recently told me that a UK train had been accessed through an unsecured coffee machine on-board. The battle to keep ahead of the cyber-criminals will be a big part of 2017 and beyond.
* **Alternative technology disrupters** Uber, the world’s largest taxi company, owns no vehicles. Facebook, the world’s most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world’s largest accommodation provider, owns no real estate. Who knows what could turn up in the rail industry?
* **Increase in big-data partnerships** The Rail Delivery Group has a sustained campaign to simplify rail fares.[[7]](#endnote-7) However TOCs react to this call for regulatory changes, we can deliver “what customers have told us they want: an up-to-date, easier to use system where they have more control over when they travel and how much they pay”? Apps from Trainline, Great Western Railway and Virgin Trains already mine countless terabytes of information from their user bases; it’s ripe for sharing with brands like Uber, who can offer further travel bolt-ons within the same application, making a long journey more convenient? Big Data is another huge incentive for the changing nature of the rail industry. By collecting real-time reports of passenger volume, network faults, repair schedules and weather forecasts, organisations can predict where a delay might occur and minimise debilitating hold-ups for passengers.

**c). Skills**

It’s clear that the Fourth Industrial Revolution will exacerbate a job market divided by low skills/low pay and high skills/high pay. It is not necessarily the case that all jobs will disappear, there may be a net gain, but job types will change.

Many workers have reported that they are disillusioned and fearful that their incomes will stagnate.

The rail industry is currently in a process of transition because of an ageing workforce, the introduction of new technologies and the lack of diversity (see sections on women and equalities).

The **Rail Sector Skills Delivery Plan**, l[aunched by DfT and the wider industry in December 2016](http://www.railtechnologymagazine.com/Rail-News/rail-industry-leaders-launch-joined-up-plan-to-tackle-rail-skills-shortage/158676), aims to support ambitious rail investment initiatives by attracting a new generation of workers to join the industry, the issue of equalities and greater diversity have been recognised in the Rail Sector Skills Delivery Plan.As part of a wider plan to attract 100,000 people into the industry over ten years because of an ageing workforce, new technologies and a lack of diversity, the government has set the rail industry a target of 20,000 new apprentices by 2020. 20% of engineering and technical apprenticeships in this time frame must be given to women and by 2030 there must be parity between the genders. A target has also been set for a 20% increase in the number of BAME candidates undertaking apprenticeships.

TSSA wants to convince employers to plan ahead, as they invest in new technologies and develop workforce strategies to plot how existing staff can be re-skilled and upskilled to adapt to these advances.

In our survey, the sort of developmental training that members have requested comes in two areas. The first is about additional skills and recognition for their current role, partly with a view to advancement. The second is more direct and related to gaining the necessary knowledge and experience to become a team leader, supervisor or manager. These aspirations can be supported by research from the NSAR (National Skills Academy for Rail) which identifies that about half of the required apprenticeships by 2022 will be at higher skill levels (levels 4-7) and designed to meet the need for supervisors, managers, professional, higher technician and engineer roles.

* **Training/Apprenticeships**

The **Apprenticeship Levy** (it operates differently in England, Scotland and Wales) came into effect in 2017, ensuring large employers pay 0.5% of their total pay bill as an annual levy allowance that they can claw back by offering apprenticeship training to their employees.

We believe the Levy offers an opportunity to break the glass ceiling that many people feel exists above them. Employers can offer apprenticeships to upskill existing employees, to develop their careers.

At least half the anticipated apprenticeships are in grades represented by TSSA. We want to make sure that our members have all the opportunities to gain the extra skills that would make them able to adapt to a changing workplace.

In a recent TSSA survey only 37% of our members said they had received any training intended to advance or improve their career, with a significant proportion of that training only being career relevant by accident. 71% of respondents said they would like to make the railway industry their career.

TSSA have an Apprenticeships Bargaining Standard that we will be launching later in the year, to keep our members’ skills at the forefront of our negotiation’s agenda. We want to make sure that any apprenticeship offered is a good standard, that staff are given adequate support and time off to complete their studies and that the skills they gain really advance their careers in rail.

* **Women and equalities**

Developing the skills of a diverse workforce, reflecting the diversity of passengers is important for good customer service.

Currently across the UK just 7% of engineers are women. In the railway industry this drops down to just 4.4%.

INDUSTRY-WIDE 2015 research shows that amongst a total workforce of 85,723 covered by the survey, 14,024 or **16.4% are female**. Network Rail, The Office of Rail and Road, Department of Transport - of the total of public sector bodies account for 31,945 staff, 4,157 (13%) of which are women.[[8]](#endnote-8)

The government’s 2016 Rail Delivery Plan has set the rail industry a target of 20,000 new apprentices by 2020. 20% of engineering and technical apprenticeships in this time frame must be given to women and by 2030 there must be parity between the genders.

* **Passengers**

Every year, 1.7 billion people travel by rail – and every day more than 4 million passenger journeys start, end or pass through the stations on our network.

Fares rose by 3.1% at the beginning of this year. Britain’s rail fares have grown faster than wages, with real pay having fallen in the last decade.

70% of rail costs are paid for by the passengers themselves and London now has no public subsidy, one of the only major cities in the world to be funded solely by passengers. The *Guardian* reported in February that rail passengers and taxpayers are “paying price for Department of Transport failures”[[9]](#endnote-9), calling 2018 the year from hell, resulting in the Williams Review which said the DfT was “still not adequately protecting taxpayers’ money”.

In the 2018 National Rail Passenger Survey, satisfaction with value for money by individual routes within TOCs varied widely, between 30% and 78%.

Network Rail have launched a ‘Putting passengers first’ campaign to highlight a more customer focussed, service driven organisation that puts passengers first:

‘Following an extensive review, Network Rail is making changes in how it operates. The proposal is a new model for the organisation; one that will better align with train operators and franchises. It will bring track and train closer together, embed a customer service mindset and ensure a better focus on performance. We will push devolution further than ever before, making routes more responsive to local needs and cutting through red tape and bureaucracy.’[[10]](#endnote-10)

However, as passengers are getting older (eg. Boomers), but have the resources and leisure time to travel, they will require trains, platforms and stations to be designed and staffed to suit their needs.

* **Environment**

As mentioned in Trends, there will be an expectation to move to greener technologies. These investments will help develop a zero-emission, energy-efficient and cost-effective alternative to diesel trains (noting that the UK government has set a target to replace diesel traction by 2040 whilst not applying the same condition for HGV replacement (thus losing the environmental benefits from the worse transport polluters) whilst also cutting rail electrification schemes. Deploying fuel cell and battery technology for rail transportation may usher in a new era for non-electrified routes.

Following recent drone strikes at airports, particularly at Gatwick in December, passengers may no longer rely on cheap and easy flights.

UK air pollution could cause 36,000 deaths a year. A new report led by King's[[11]](#endnote-11) and published by the government's Committee on the Medical Effects of Air Pollutants (COMEAP) estimates that between 28,000 and 36,000 people die as a result of air pollution every year in the UK. This year, an investigation was launched into the death of 9yo Ella Kissi-Debrah who lived near the South Circular in Lewisham, but who died after experiencing three years of seizures. During that time, local air pollution levels regularly breached EU legal limits. Her last fatal seizure, and all 9 hospital visits happened during a spike in air pollution levels[[12]](#endnote-12).

* **Passenger and staff safety and security**

There were 7 passenger fatalities in 2017-18 – thankfully down from 15 in 2016-17. 4 occurred on the mainline and 3 on London Underground. However passenger injuries were up 20.5% from last year overall and 5.3% on London Underground. There were 2 workforce fatalities in 2017-18, one more than the previous year.[[13]](#endnote-13)

TSSA intends to submit a further paper to the Williams Review about the high level of Near Miss incidents affecting rail staff because members are telling us that tey are waiting for the number fatalities to increase due to the constant pressure for increased performance whilst short cuts are taken about safety arrangements.

In February (Waterloo incident linked to airports) we were reminded that the rail network is still a terrorism target and rail staff need to be trained to efficiently evacuate stations and underground platforms, to liaise with emergency services as well as be the eyes and ears for passengers.

Three-quarters of national ticket offices are part-time staffed or unstaffed (2011 figures) with passengers relying on machines at the station or online. (See figures on staffing below)

London Underground removed almost all their ticket office windows in 2016 apart from 7 visitor centres and outlying stations.

Figures on staffing (2011)[[14]](#endnote-14)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Number (2011**[[3]](https://en.wikipedia.org/wiki/United_Kingdom_railway_station_categories#cite_note-3)**)** | **Description** | **Trips per annum** | **Example** |
| [A](https://en.wikipedia.org/wiki/Category:DfT_Category_A_stations) | 28 | National hub | over 2 million | [Birmingham New Street](https://en.wikipedia.org/wiki/Birmingham_New_Street_railway_station) |
| [B](https://en.wikipedia.org/wiki/Category:DfT_Category_B_stations) | 67 | Regional interchange | over 2 million | [Manchester Victoria](https://en.wikipedia.org/wiki/Manchester_Victoria_station) |
| [C](https://en.wikipedia.org/wiki/Category:DfT_Category_C_stations) [1](https://en.wikipedia.org/wiki/Category:DfT_Category_C1_stations) [2](https://en.wikipedia.org/wiki/Category:DfT_Category_C2_stations) | 248 | Important feeder | 0.5–2 million | [Welwyn Garden City](https://en.wikipedia.org/wiki/Welwyn_Garden_City_railway_station) / [Burgess Hill](https://en.wikipedia.org/wiki/Burgess_Hill_railway_station) |
| [D](https://en.wikipedia.org/wiki/Category:DfT_Category_D_stations) | 298 | Medium staffed | 0.25–0.5 million | [Abergavenny](https://en.wikipedia.org/wiki/Abergavenny_railway_station) |
| [E](https://en.wikipedia.org/wiki/Category:DfT_Category_E_stations) | 679 | Small staffed | under 0.25 million | [Boston](https://en.wikipedia.org/wiki/Boston_railway_station) |
| [F](https://en.wikipedia.org/wiki/Category:DfT_Category_F_stations) [1](https://en.wikipedia.org/wiki/Category:DfT_Category_F1_stations) [2](https://en.wikipedia.org/wiki/Category:DfT_Category_F2_stations) | 1,200 | Small unstaffed | under 0.25 million | [Bishop Auckland](https://en.wikipedia.org/wiki/Bishop_Auckland_railway_station) / [Winchelsea](https://en.wikipedia.org/wiki/Winchelsea_railway_station) |
| **Total** | **2,520** |  |  |  |

I look forward to your response to this submission

Yours sincerely

Rob Jenks  
Policy Officer

**Sources**

1. “Transport Infrastructure Skills Strategy - One year on: A report by the Strategic Transport Apprenticeship Taskforce July 2017” (at: https://www.gov.uk/government/publications/transport-infrastructure-skills-strategy-one-year-on ) published 12th July 2017 [↑](#endnote-ref-1)
2. The term was coined by WEF’s Klaus Schwab in 2016 https://www.weforum.org/about/the-fourth-industrial-revolution-by-klaus-schwab [↑](#endnote-ref-2)
3. National College for High Speed Rail https://www.nchsr.ac.uk/all-change-for-britains-rail-and-engineering-workforce-as-national-college-leads-diversity-drive/ [↑](#endnote-ref-3)
4. [Women in Rail: Industry survey](https://womeninrail.org/wp-content/uploads/2014/04/WR-Industry-Survey-Report-December-2015.pdf) [↑](#endnote-ref-4)
5. https://www.smartrailworld.com/it-and-wifi/seven-rail-technology-trends-set-to-shape-our-industry-in-2017 [↑](#endnote-ref-5)
6. https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/ [↑](#endnote-ref-6)
7. https://www.bigplanbigchanges.co.uk/easierfares [↑](#endnote-ref-7)
8. [Women in Rail: Industry survey](https://womeninrail.org/wp-content/uploads/2014/04/WR-Industry-Survey-Report-December-2015.pdf) [↑](#endnote-ref-8)
9. https://www.theguardian.com/uk-news/2019/feb/27/rail-passengers-and-taxpayers-paying-price-for-failures [↑](#endnote-ref-9)
10. https://www.networkrail.co.uk/who-we-are/putting-passengers-first/ [↑](#endnote-ref-10)
11. https://www.kcl.ac.uk/sphes/newsrecords/air-pollution-could-cause-36000-deaths-a-year-in-the-uk.aspx [↑](#endnote-ref-11)
12. https://www.bbc.co.uk/news/health-46823309 [↑](#endnote-ref-12)
13. https://orr.gov.uk/\_\_data/assets/pdf\_file/0016/39103/rail-safety-statistics-2017-18.pdf [↑](#endnote-ref-13)
14. https://en.wikipedia.org/wiki/United\_Kingdom\_railway\_station\_categories [↑](#endnote-ref-14)