

Transport for London Health, Safety and Environment report

Quarter 3 2018/19 (16 September 2018 – 8 December 2018)

MAYOR OF LONDON



**TRANSPORT
FOR LONDON**
EVERY JOURNEY MATTERS

About Transport for London (TfL)

Part of the Greater London Authority family led by Mayor of London Sadiq Khan, we are the integrated transport authority responsible for delivering the Mayor's aims for transport.

We have a key role in shaping what life is like in London, helping to realise the Mayor's vision for a 'City for All Londoners'. We are committed to creating a fairer, greener, healthier and more prosperous city. The Mayor's Transport Strategy sets a target for 80% of all journeys to be made on foot, by cycle or using public transport by 2041. To make this a reality, we prioritise health and the quality of people's experience in everything we do.

We manage the city's red route strategic roads and, through collaboration with the London boroughs, can help shape the character of all London's streets. These are the places where Londoners travel, work, shop and socialise. Making them places for people to walk, cycle and spend time will reduce car dependency and improve air quality, revitalise town centres, boost businesses and connect communities.

We run most of London's public transport services, including the London Underground (LU), London Buses, the DLR, London Overground (LO), TfL Rail, London Trams, London River Services (LRS), London Dial-a-Ride, Victoria Coach Station (VCS), Santander Cycles and the Emirates Air Line. The quality and accessibility of these services is fundamental to Londoners' quality of life. By improving and expanding public transport, we can make people's lives easier and increase the appeal of sustainable travel over private car use.

We are moving ahead with many of London's most significant infrastructure projects, using

transport to unlock growth. We are working with partners on major projects like Crossrail 2 and the Bakerloo line extension that will deliver the new homes and jobs London and the UK need. We are in the final phases of completing the Elizabeth line which, when it opens, will add 10% to London's rail capacity.

Supporting the delivery of high-density, mixed-use developments that are planned around active and sustainable travel will ensure that London's growth is good growth. We also use our own land to provide thousands of new affordable homes and our own supply chain creates tens of thousands of jobs and apprenticeships across the country.

We are committed to being an employer that is fully representative of the community we serve, where everyone can realise their potential. Our aim is to be a fully inclusive employer, valuing and celebrating the diversity of our workforce to improve services for all Londoners.

We are constantly working to improve the city for everyone. This means freezing TfL fares so everyone can afford to use public transport, using data and technology to make services intuitive and easy to use, and doing all we can to make streets and transport services accessible to all. We reinvest every penny of our income to continually improve transport networks for the people who use them every day.

None of this would be possible without the support of boroughs, communities and other partners who we work with to improve our services. We all need to pull together to deliver the Mayor's Transport Strategy; by doing so we can create a better city as London grows.

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Introduction

Performance in the third quarter of this year was mixed. Unfortunately there were 2 accidental customer fatalities on our public transport network, one as a result of a fall on a bus and the other as result of a customer falling from a platform and being stuck by a train. The latest provisional road collision figures (July - September 2018) also indicate that the number of people killed or seriously injured on London's roads has increased. This emphasises that building strong partnerships with key stakeholders to drive improvements is key to eliminating deaths and injuries from our road and public transport networks.

With this aim in mind, during the quarter:

- We held our first Vision Zero Summit in November which brought together London politicians, councils and business leaders with victims of road trauma, emergency services representatives and international Vision Zero experts, to understand how they can help eliminate deaths and serious injuries from London's transport network
- We held our second Bus Safety Summit in October, with key players from the bus industry, policy-makers and research specialists. The event launched our world-leading Bus Safety Standard, which sets out our plans to make buses in London the safest in the world
- Our second Zero Harm Forum brought together over 30 of our key suppliers from our capital programmes. The agenda was led by our supply chain partners and looked at ways to strengthen health, safety and environmental performance across all parts of the supply chain

Overall, we are meeting our targets to reduce customer and workforce injuries:

- There were 5% fewer customer injuries across our network this quarter and 8% fewer workforce injuries compared to the same quarter last year
- Although the number of customer injuries on LU has increased by 14% compared with the same quarter last year, bus customer injuries have reduced for the fourth consecutive quarter
- There were 17% fewer injuries to bus customers than in the same quarter last year. The majority of the improvement was achieved in our two key areas of focus over the past year; slips, trips and falls (down 14%) and collisions (down 28%)

We also continued our programme of asset and infrastructure changes to eliminate risk at source. Key improvements delivered during the quarter include:

- Realigning the edge of the platform at Victoria and East Putney Stations to reduce the gap between the train and the platform and continuing our programme to install improved platform cameras and escalator signage
- Completion of works at Bruce Grove to deliver improvements for pedestrians and cyclists and the start of on-site works for the Old Street Gyratory improvements
- The opening of 3 new Quietways for cyclists
- The creation of five new Low Emission Bus Zones and the installation of new signage in advance of the introduction of the Ultra-Low Emission Zone

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Passengers using transport at Aldgate East

Performance at a glance

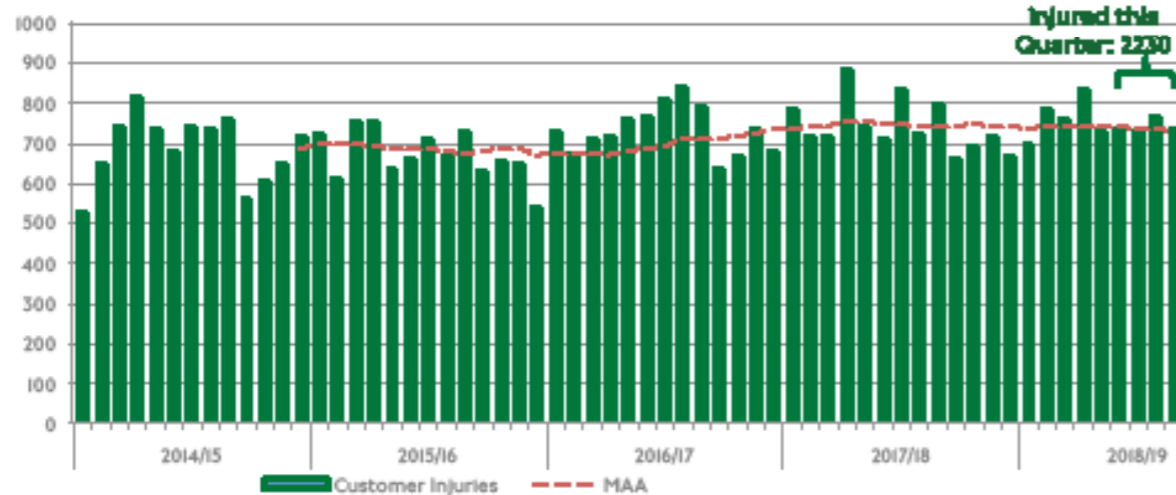
2018/19 TfL Scorecard

Long Term Objectives	2018/19 Scorecard	Year to date	
Outcome	Measure	Actual	Target
Healthy Streets and healthy people (18%)			
London's transport system will be safe and secure.	Reduction in people killed or seriously injured on the roads from 2005-09 baseline (%)	34.0* ■	45.4
	Reduction in people killed or seriously injured on the roads from 2005-09 baseline (incidents involving buses)(%)	57.7 ■	58.0
	Injuries on the public transport network	8134 ■	8266
London's streets will be clean and green.	Number of London's buses that are Euro VI compliant	6000 ■	n/a

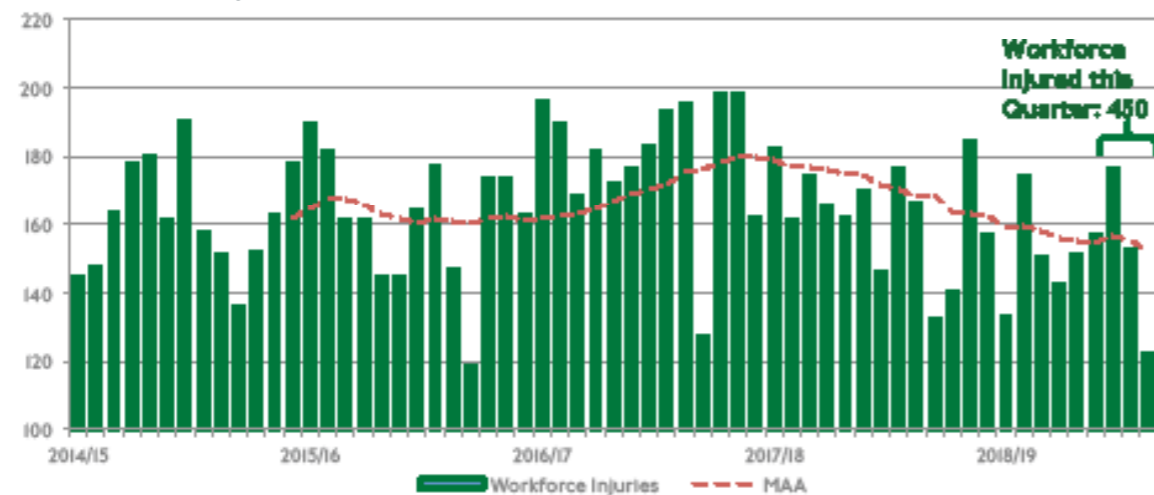
* All 2018 data is provisional. This data is subject to change as this information is reviewed and managed by the Metropolitan Police Service (MPS).

Customer and workforce injuries

Public transport customer injuries



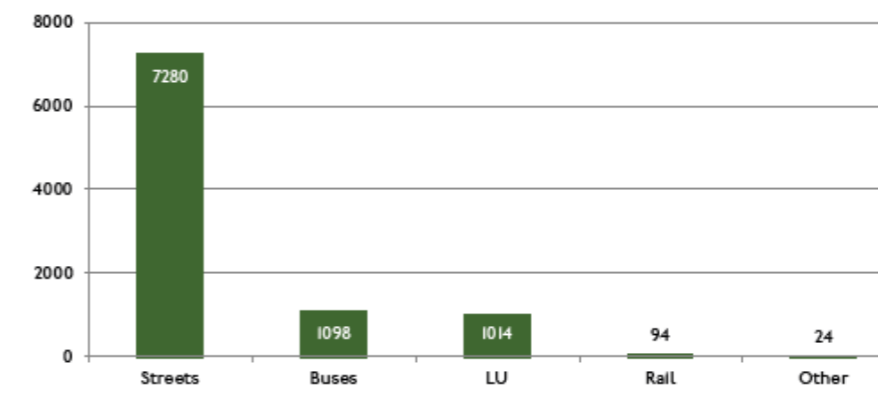
Workforce injuries



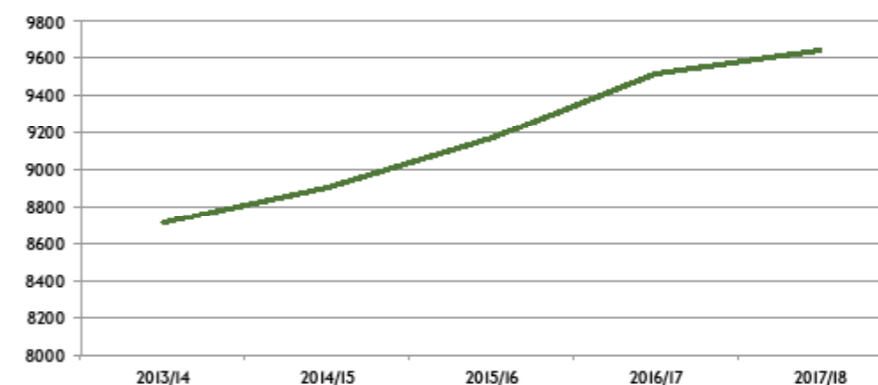
Injuries on London's road and public transport networks

For the most recent quarter available (July-September 2018), there were 7,280 injuries on London's roads. This included 31 fatalities. All 2018 data is provisional. This data is subject to change as this information is reviewed and managed by the Metropolitan Police Service (MPS). Across our public transport networks, a total of 2,230 customers were injured, 5% fewer than the same quarter of last year. There were 2 customer fatalities during quarter 3, 1 on buses and 1 on London Underground (LU) compared with 2 fatalities on buses last quarter.

Number of customer injuries on the road and public transport networks (Quarter 3)



Number of customer injuries on the road and public transport networks (Annual totals)



2.9
Number of injuries per million passenger journeys on the LU network (12% ▲ against Q3 2017/18)

2.1
Number of injuries per million passenger journeys on the bus network this quarter* (14% ▼ against Q3 2017/18)

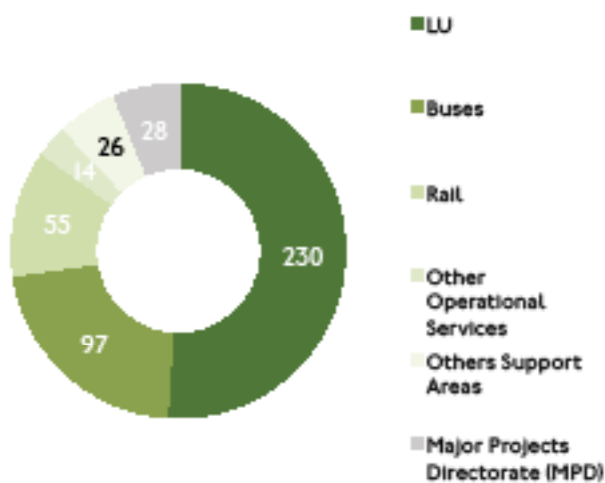
0.9
Number of injuries per million passenger journeys within our rail operations this quarter (4% ▼ against Q3 2017/18)

4.4
Number of injuries per million passenger journeys within our other operations this quarter (4% ▼ against Q3 2017/18)

* Injuries to members of the public who are not bus customers are included in the Killed or Seriously Injured (KSI) figures within the streets section.

Number of workforce injuries on the network (Quarter 3)

There were a total of 450 injuries to our workforce, a 8% decrease on the same quarter last year.



230

Number of workforce injuries on the LU network this quarter (2% ▼ compared to Q3 2017/18)



97

Number of workforce injuries on the Bus network this quarter (30% ▼ compared to Q3 2017/18)



43

Number of total construction workforce injuries quarter (19% ▼ compared to Q3 2017/18)



Significant incidents

Significant incidents are incidents that result in either a fatality, 3 or more people requiring hospital treatment, or those resulting in a loss of more than £1 million. This quarter there have been 27 significant incidents across London's road and public transport networks, 25 of which were accidental fatalities:

- A customer was fatally injured at Farringdon station as a result of falling from a platform and being struck by a train
- A bus customer died from injuries sustained in a fall on a route 55 bus
- Three pedestrians were fatally injured in collisions with a bus on routes:
 - 225 on Deptford Broadway, Deptford
 - X26 bus on Pound Street, Carshalton
 - 114 Kenton Road, Harrow
- A further 20 people were killed on London's roads (provisional data for the period covered by this report, subject to change); 8 pedestrians, 3 cyclists, 3 motorcyclists, 6 car drivers

Other significant incidents arising from our public transport activities were:

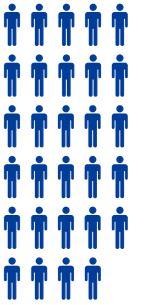
- A route 198 bus collided with a car, another bus and a bus station canopy in West Croydon. A 15 year old female suffered serious injuries with a broken collar bone and a punctured liver. A total of 18 people were injured in this incident. The bus driver was tested and failed a drugs test at the scene. He was arrested
- A fire at Orpington bus garage. The garage was successfully evacuated with no injuries sustained. Twelve buses were damaged due to the fire

Police and Regulator investigations are underway for these incidents. Fourteen historic incidents were concluded by the Coroner during the quarter. Causes of death were recorded as suicide (5), accidental (2), as a consequence of mental illness (1), and road traffic collision (2). A narrative verdict was given in respect of 3 deaths and an open verdict was recorded in respect of 1 death. Additionally the inquests into the deaths of those who were killed during the Westminster Bridge terror attack on 22 March 2017 were concluded.

25

Number of accidental fatalities

(13% ▼ against Q3 2017/18)



On 22 March 2017, 4 people were killed on Westminster Bridge in a terror attack when they were struck by a vehicle that was driven by the attacker along the pavement. The attacker also stabbed a police officer who died from his injuries in the grounds of the Palace of Westminster. The Coroner concluded that all 5 victims were unlawfully killed. He did not find the lack of barriers or the parapet height of the Bridge to have caused or contributed to the deaths of the victims. The Coroner issued a Prevention of Future Deaths (PFD) report, and suggested that we consider:

- Whether there is any further work we can do to improve protective security on major roadways and bridges in the capital, in response to national advice and known threats
- Reviewing the height of parapets and railings of bridges for which we are responsible. A response to the report is being prepared

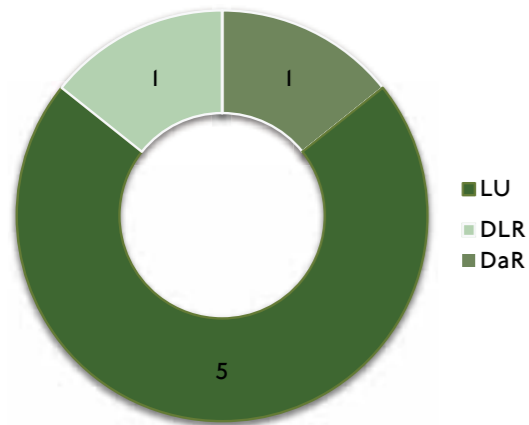
At Kingston (Cromwell Road) Bus station on 22 March 2014, an elderly bus passenger was hit by a reversing bus. The Health and Safety Executive prosecuted the driver of the bus from which the deceased alighted, but he was found not guilty in late 2017. The jury gave a narrative conclusion of accidental death by road traffic collision and detailed a sequence of events contributing to her death including there being inadequate signage for pedestrians at the back of the bus station. The Coroner indicated that he may issue a PFD report to us about signage in the station, the report is awaited.



Barriers to protect pedestrians on Westminster Bridge

Statutory reporting of customer and workforce injuries

Customer RIDDORs*

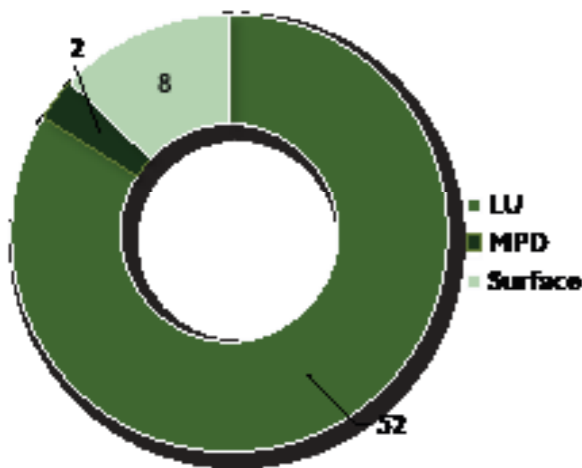


A total of 69 customer and workforce injuries were reported to our regulators; the Health and Safety Executive (HSE) and Office of Rail and Road (ORR) this quarter.

Customer RIDDORs

There were 7 customer injuries that required reporting to our regulators this quarter. Five injuries related to LU, of which 4 were the result of falls. A further incident related to an injury to a customer due to a fall on a train on the DLR. A customer was taken to the hospital with hip strain after slipping on a Dial-a-Ride vehicle.

Workforce RIDDORs*



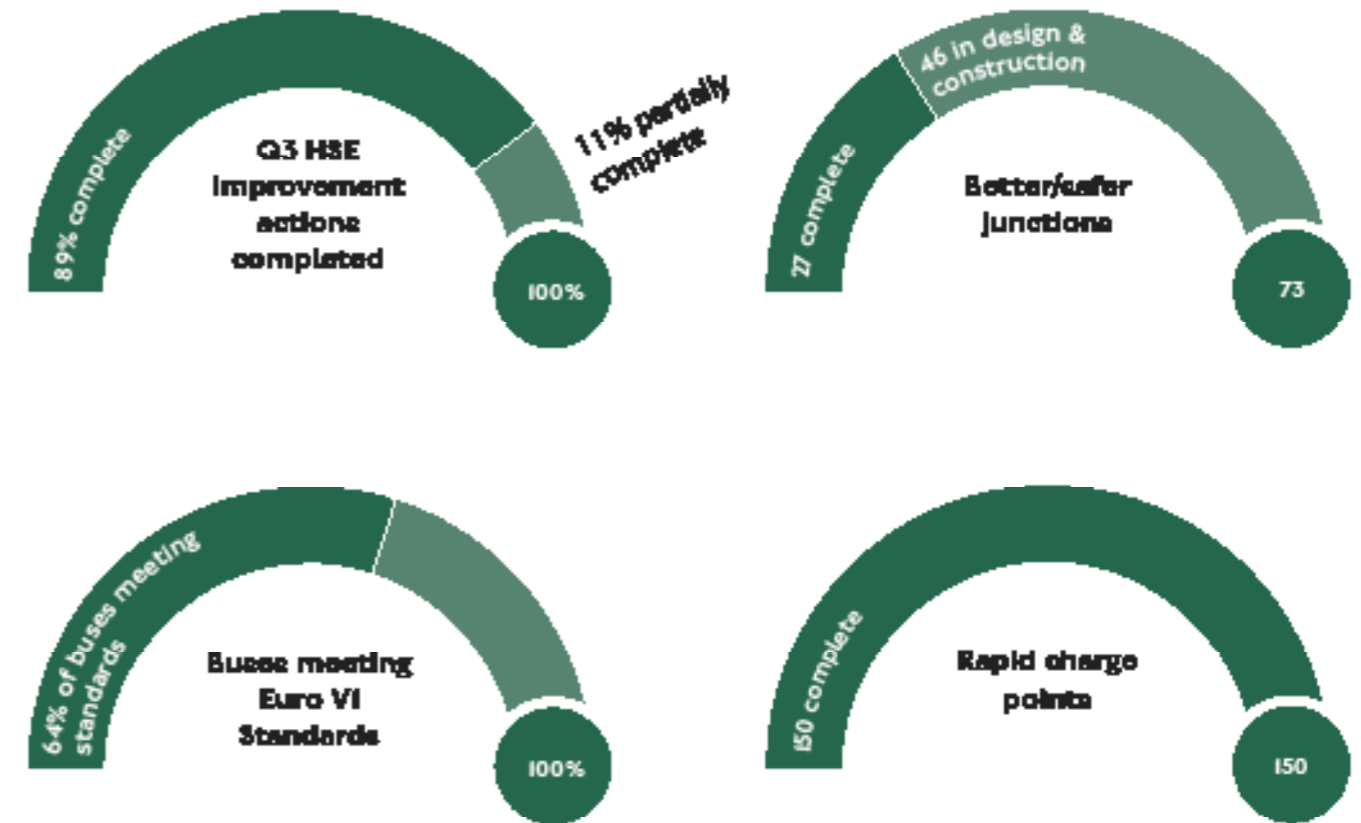
Workforce RIDDORs

Two of the reportable incidents affecting our workforce this quarter were major, 1 arising from a slip, trip, fall and the other the consequence of an assault.

The other reported incidents related to minor injuries, and were triggered by the 7 day absence criteria within the regulations, rather than the severity of the injury.

Slips, trips and falls, workplace violence and injuries connected with contact with machinery/equipment or power tools were the main cause of injuries across Surface Transport and LU. Manual handling of tools was the cause of injuries in our Major Projects Directorate (MPD).

Health, Safety and Environment Improvements



* Reporting of Injuries, Diseases and Dangerous Occurrence Regulations (RIDDORs).



London's
transport
system will
be safe and
secure

Spotlight on... Bus Safety Summit

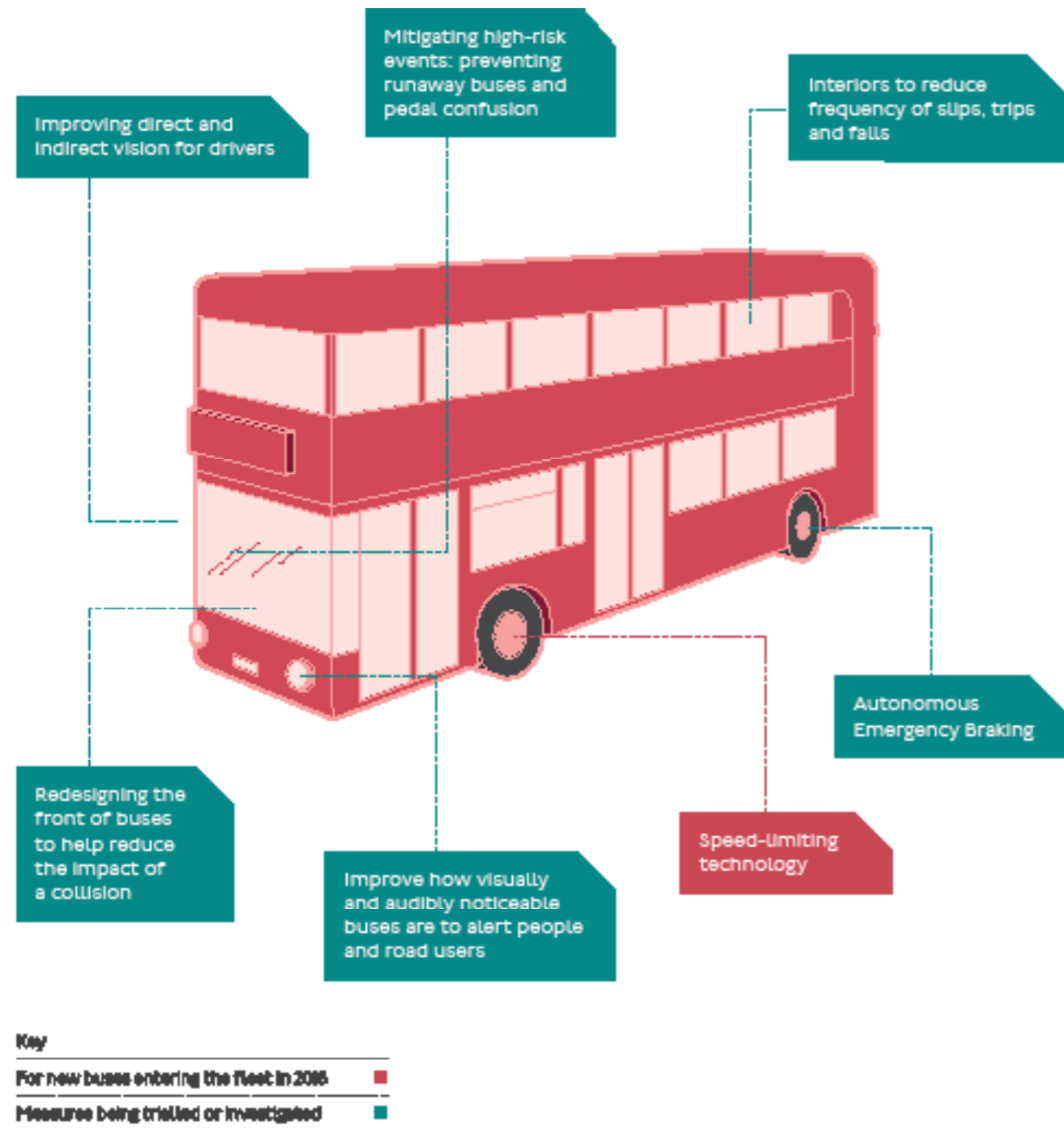


Figure I. Bus Safety Standard features

On 16 October we held our second Bus Safety Summit bringing together bus operators, bus manufacturers, policy-makers and transport research specialists. The event was opened by Heidi Alexander, Deputy Mayor for Transport. Delegates were reminded of the ambitious targets set in our Vision Zero action plan to end the toll of deaths and serious injuries on London's streets and the specific targets set for buses.

The event launched our Bus Safety Standard (BSS), which sets out our plans to make buses in London the safest in the world. It featured a number of stands and practical demonstration spaces which enabled delegates to gain a better understanding of the features and functions being trialled and introduced by the BSS. It also provided an opportunity for bus operators awarded funding for safety improvements under our Bus Safety Innovation Fund to feed back their findings and learning to the wider industry.

Bus Safety Standard launched

In February 2016, as part of our bus safety programme, we committed to developing the BSS. Since then we have commissioned the Transport Research Laboratory (TRL) to research and develop that standard. This has been an evidence-based and collaborative project, consulting with the bus manufacturers and operators on technical feasibility, timelines and implementation, so that we have the confidence that the safety measures will make a real contribution to Vision Zero.

The BSS is focussed on vehicle design and safety system performance. As such it will be a substantial contribution to helping us achieve the Mayor's goal of no-one being killed in or by a London bus by 2030.

We already set higher standards for London buses than regulations require; including the areas of environmental and noise emissions, accessibility, construction, operational requirements and fire suppression systems. The new BSS goes further.

Ground-breaking safety features

The requirements all operators will need to adopt by 2024 address 4 themes:

- **Driver Assist** - helping the driver to avoid or mitigate the severity of incidents
- **Partner Assist** - helping the other road users involved, to avoid the collision
- **Partner Protection** - reducing the severity of injuries for road users outside the bus in a collision
- **Occupant Protection** - reducing the severity of injuries for people on board the bus

These are illustrated in **Figure I. Bus Safety Standard features**.

Benefits delivered in the near term

The BSS will also reduce road danger and injury in the short term. From the end of this year, any new London bus entering the fleet must include the following safety measures:

- Technology that automatically limits the speed of the bus to the sign posted speed limit
- An audible alert for pedestrians and other road users of the presence of quiet-running electric buses, which ensures the bus can still be heard by those who are blind or partially sighted
- Slip reduction measures inside buses such as high-grip flooring
- More blind-spot mirrors and reversing cameras
- Special warning pedal indicators for drivers to correct pedal confusion

These innovative safety measures have been thoroughly tested by the TRL, bus manufacturers and operators to ensure they can be implemented as quickly as possible.

Continuous Improvements

The BSS complements initiatives that have already been implemented to improve the overall safety culture within our bus operations, such as regular assessments of safety management and culture within the bus operating companies and the use of a Safety Performance Index to monitor performance. The BSS is intended to be a rolling programme, so this initial large programme of research is just the starting point. The specifications will be updated



A pre-use check of a London bus

regularly to keep extending the preventative and protective benefits of these and future safety measures on buses. Testing and trials will continue to investigate the capability of new technologies and bus features via our Bus Safety Innovation Challenge.

Strong steps towards safer buses for London are achievable through this world-leading Bus Safety Standard, which we hope will be taken up by other transport authorities, bus manufacturers and operators globally.

Streets - overview

31

Number of fatalities on streets this quarter
▲ Up from 28 in Q3 2017



1,220

Killed or seriously injured on London's roads
▲ Up 26% from Q3 2017/18*



Long term trend - Killed or seriously injured on London's roads

Performance headlines

- ✗ The greatest increase in those killed or seriously injured was amongst cyclists (83%)*
- ✓ Pedestrians killed or seriously injured fell by 8%* compared with the same quarter last year

Did we deliver our planned improvements?

- ✓ Commenced on-site enabling works for the Old Street Gyrotory improvements
- ✓ Opened Quietway 6 between Wanstead Flats and Barkingside, Quietway 14 from Blackfriars to Tower Bridge Road and Quietway 22 (Newham Greenway)
- ✓ Commenced detailed design on the TfL Road network sections of segregated Cycleway 4
- ✓ Completed works at Bruce Grove to deliver pedestrian and cycling improvements
- ✓ Completed consultation on proposals for pedestrian improvements to Tooting town centre, including improvements to pedestrian and cycling facilities, and a reduction in vehicle speed limits

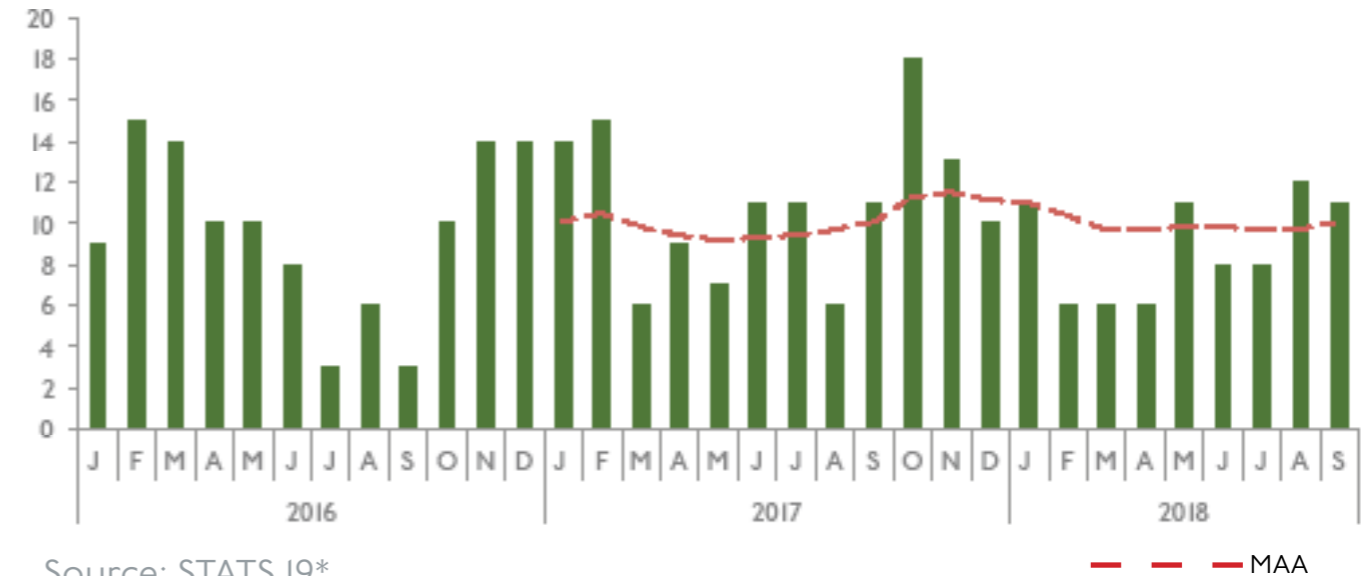
Our plans for the next quarter

- Launch the Temporary Traffic Management Handbook to improve safety at roadworks
- Continue with our programme of Supplier Assessments for highway contractors
- Complete installation of zebra-crossings at bus-stop by-passes
- Continue regular high profile police enforcement operations
- Release a slower speeds toolkit to inform the developers of highway schemes
- Trial the effectiveness of localised interventions in influencing customer behaviour
- Open consultation on final proposals for the introduction of a Direct Vision Standard for HGVs
- Develop a methodology for predicting road risk
- Provide each London Borough with bespoke information on injury trends, risks and issues
- Start construction of segregated Cycleway 10
- Consult those with direct experience of road collisions and their aftermath, to inform future improvement plans

* These figures are provisional and subject to change as a result of the MPS's data validation processes. In the last six months for which validation has been completed, on average the effect of MPS validation has been to reallocate approximately 20% of collisions that were initially believed to be 'serious' to the 'slight' category. This means that it is not possible at the time of writing to reliably compare this provisional data to previous years' performance.

Streets - performance

Fatalities on London's roads

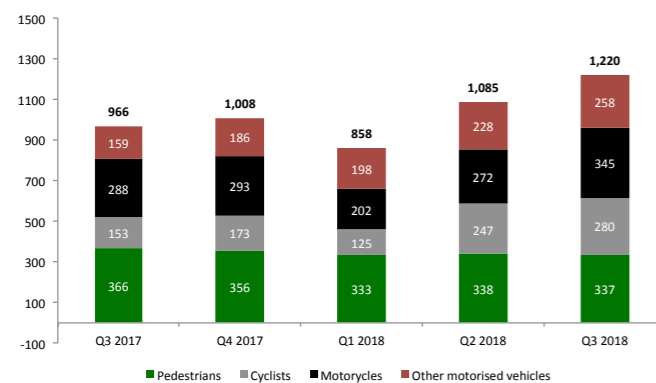


Source: STATS 19*

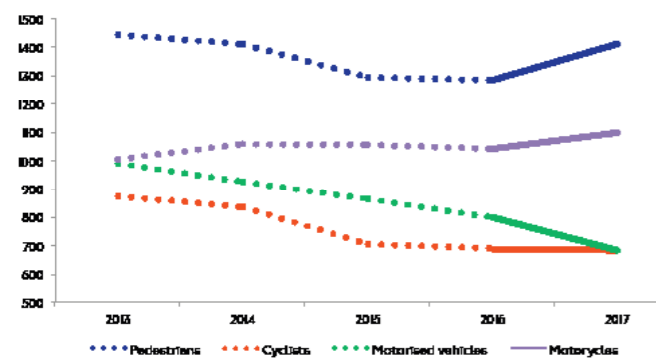
Road casualty data is reported by calendar month. For the most recent quarter available, July - September 2018, a total of 31 deaths were recorded on London's roads, compared with 28 for the same period in 2017. Road safety data is based on calendar quarters rather than financial quarters. All 2018 data is provisional. This data is subject to change as this information is reviewed and managed by the MPS. All incidents involved adults over the age of 18; 11 were 60 years of age or over. The individuals killed in these incidents included pedestrians (16), pedal cyclists (6), motorcyclists (6), and car drivers (3).

People killed or seriously injured

Past five quarters (type of user)



Annual totals*



The provisional figures for July-September 2018 indicate that the number of people killed or seriously injured has increased compared to the same quarter last year. These figures are provisional and subject to change as a result of the MPS's data validation processes. In the last six months for which validation has been completed, on average the effect of MPS validation has been to reallocate approximately 20% of collisions that were initially believed to be 'serious' to the 'slight' category. This means that it is not possible at the time of writing to reliably compare this provisional data to previous years' performance. Taken at face value, however, the greatest increase (83%) was amongst cyclists. This may be because there were more people cycling: levels of cycling in central London increased by 7.5% during quarter 3 2018 compared the same quarter last year, to the highest level on record - possibly as a result of the extended dry and warm weather conditions. The number of car occupants killed or seriously injured and the involvement of cars in killed or seriously injured collisions with cyclists increased. KSIs involving motorised vehicles and motorcyclists increased by 40% and 18% respectively compared to the same quarter in 2017. During quarter 3 there was an 8% reduction in the number of pedestrians killed or seriously injured compared with quarter 3 2017.

* Figures from the end of 2016 have been reported using a new system (COPA). The dotted lines in the graph for calendar years 2013-2016 denote back-estimated figures following analysis undertaken with the Transport Research Laboratory to indicate how KSIs would have been reported under this system in previous years.



Old Street gyratory to be removed as part of Safer Junctions Programme

Actions to reduce death and serious injury on London's roads

Vision Zero Summit engages key partners

On 13 November 2018 we held a Vision Zero Summit to inspire senior leaders across London to take ownership and accountability for Vision Zero within their organisations. London politicians, councils and business leaders joined victims of road trauma, emergency services representatives and international Vision Zero experts to understand how they can help eliminate deaths and serious injuries from London's transport network. It enabled networking across these organisations to build momentum and enable joint delivery of initiatives. The London Boroughs are key partners in delivering the Vision Zero approach, and have embedded this approach into their local implementation plans.

Immediate action to reduce risk and injury

We have launched a new process for site visits to locations that have recently experienced fatal or serious traffic collisions on or near our assets. These ensure that any quick precautionary actions that reduce the risk at that site, or at similar locations, are taken.

Targeting dangerous drivers

In November, our Roads and Transport Policing Command (RTPC) partnership with the MPS began Operation Vision Zero, to focus on the most dangerous drivers. During an enhanced two week programme of enforcement, 4758 offences were dealt with by on-street officers. There were 507

drivers stopped for mobile phone use, 654 for speeding, 559 caught driving without insurance and 1,394 for mechanical defects. Officers also dealt with 519 cycling offences such as red light jumping.

Infrastructure improvements to reduce road danger

Our programme of infrastructure improvements to reduce road danger and deliver specific improvements for Vulnerable Road Users continues.

Making road junctions safer

In the quarter, construction was completed at 3 key locations on the Safer Junctions programme*: Charlie Browns Roundabout in Redbridge, Farringdon Road/Clerkenwell Road and Farringdon Street/Snow Hill in City of London. Construction also started at Euston Road/Judd Street in early November to deliver safety improvements for cyclists.

The initial stages of construction commenced at Old Street Roundabout in November, with the main works due to follow in spring 2019. The project will transform the area, with the removal of the gyratory system and new and improved pedestrian and cycling facilities. We also published our plans for the redesign of Stoke Newington gyratory, which includes new pedestrian crossings, a 20mph speed limit and a new cycle lane.

Improving town centres

Public consultation on proposals for improving Tooting town centre took place between October and December. These include

improvements for bus customers, pedestrians and cyclists, and a reduction in speed limits.

Safer cycling - Mini-Hollands

The Mini-Holland Programme involves 98 infrastructure schemes and 5 behaviour change schemes across 3 outer London boroughs – Waltham Forest, Enfield and Kingston. Thirty two of the 103 Mini-Holland schemes are now complete, including the A105 Green Lanes scheme, a five kilometre protected cycle route linking Enfield Town to Palmers Green.

Further schemes currently under construction include segregated cycle routes on Wheatfield Way in Kingston, on the A1010 in Enfield and on Lea Bridge Road in Waltham Forest.

Safer cycling - segregated Cycleways

Work continues on the remaining non-core parts of East-West segregated Cycleway. Handover of West and South Carriage Drive to The Royal Parks took place in December 2018, Detailed design work for North Carriage Drive has begun, with build due to commence in January 2019, subject to works licence and approvals. Main construction works at Trinity Square were completed in October and the final resurfacing works were completed in December. Following the public consultation on segregated Cycleway 4 in late 2017, the Response to Issues Raised Report was published in December 2018, with construction work planned to start in summer 2019. The detailed design has been progressing well, with draft detailed designs for 2 out of the 5 sections completed in December.

Safer cycling - Quietways

In October we launched 3 new Quietways:

- Quietway 14 - a 2km route connecting Blackfriars Road and Bermondsey which will eventually connect to Deptford and Thamesmead. Five main roads are now safer to cross by bike or on foot and 2 streets have been closed to motor traffic.
- Quietway 22 - a 6.5km route connecting Stratford High Street to Cycleway 3 at Newham Way via West Ham and Plaistow Park
- Quietway 6 - a new 6.5km route connecting Wanstead Flats and Barkingside via a newly-built bridge in Valentine's Park, and a new two-way cycle track on Forest Drive



*Improving those with the highest vulnerable road user collision rates between 2013 and 2015.

Reducing risk at bus-stops

The project to retrofit zebra crossings onto 43 bus stop bypasses on existing segregated Cycleways is progressing well. Sixty per cent of the sites are complete and the crossings are in use. The remaining sites are planned to be complete by the end of March 2019.

Lowering speed limits

The completion of the programme is on track to meet the Mayoral target of May 2020. We are continuing to look at other locations across London where the posted speed limit can be reduced as part of planned schemes, such as the Camden to Tottenham cycle route where a 20mph speed limit will be introduced.

Making HGVs safer

We plan to improve safety for vulnerable road users through setting higher safety standards for Heavy Goods Vehicles (HGVs) coming into London with our Direct Vision Standard. This Standard will use a simple zero to five star rating system to define how much an HGV driver can see directly from each vehicle's cab, rather than through mirrors or other equipment. It will give regulators, manufacturers, operators and contractors an objective standard by which to rate and improve the safety of HGVs.

As the Standard and the associated HGV Permit Scheme proposal for London amount to a technical regulation, we were required to notify the European Commission to ensure that it did not conflict with 'free movement' within the European Union. On 6 December we were notified that the European Commission had no objections

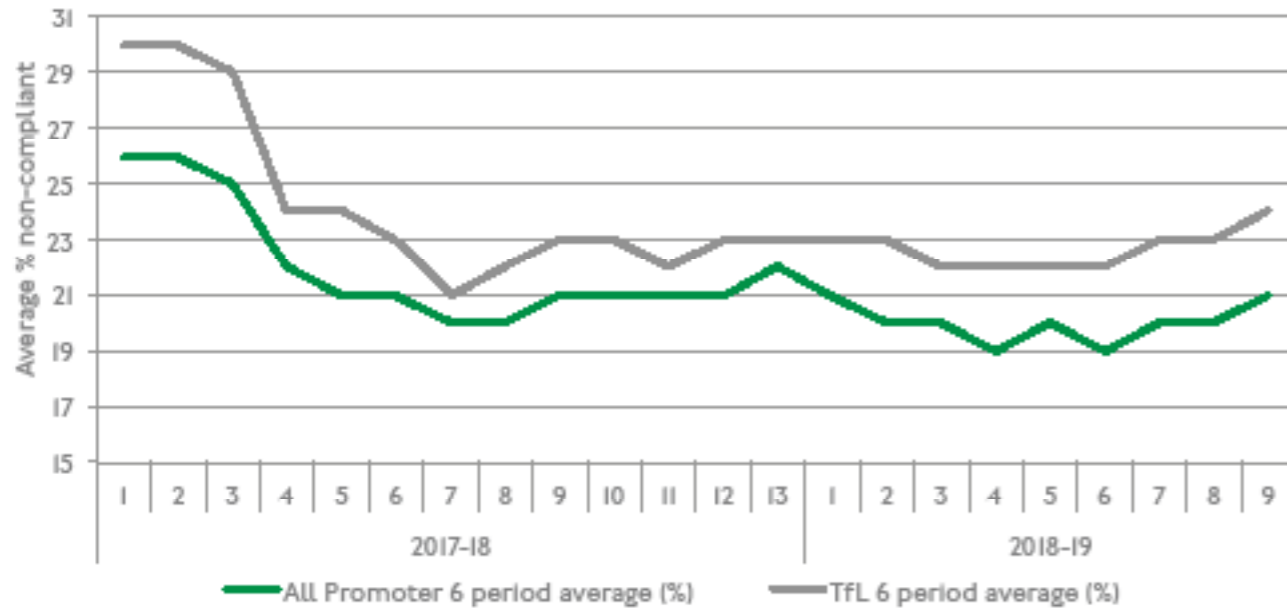


Cyclists on new Quietway 14

to our proposals. Achieving this milestone means we remain on track for issuing permits in October 2019. Although we have consulted on these proposals in the past, as the scheme has developed, we want to share more detail on how it works in practice. As such, an additional consultation was opened in January 2019.

Actions to make roadworks safer

Safety at roadworks (Inspection failure rate) 



Making roadworks safer

The 'Safety at Roadworks' measure monitors the number of signing, lighting and guarding (SLG) inadequacies at roadworks sites, observed during safety inspections (undertaken in line with the New Roads and Streets Works Act [NRSWA] Code of Practice for Inspections).

Following a period of improvement at the start of 2017/18, our own performance plateaued, and has remained static for some time. To drive improvement, performance recovery plans have been agreed with each individual London Highways Alliance Contract (LoHAC) contractor.

Within each recovery plan, the same stepped targets have been set:

1. A maximum of 15% failures by end of Q4 (2018/19)
2. A maximum of 12.5% failures by end of Q2 (2019/20)

Innovating to improve safety

At 25 October we launched London RoadLab, our first open innovation programme where innovators pitch ideas for tackling some of the problems caused by roadworks; including how we can make them safer. The programme brings us together with partners like London Councils and utility companies to work together to solve issues. Those shortlisted will join a ten-week programme and work with experts to develop products that could have a positive impact across the Capital.



Protecting cyclists at roadworks

Buses - overview

1,098
Number of injuries on the bus network this quarter
(17% ▼ against Q3 2017/18)



2.1
Number of injuries per million passenger journeys on the bus network this quarter*
(14% ▼ against Q3 2017/18)



Long term trend injuries per million passenger journeys

Performance headlines

- ✗ Four fatalities (3 pedestrians and a bus customer)
- ✗ Pedestrians continue to make up the largest proportion of Vulnerable Road Users (VRUs) killed or seriously injured by a bus
- ✓ Reductions in injuries arising from collisions 28% and slips, trips and falls 14%

Did we deliver our planned improvements?

- ✓ Launch the Bus Safety Standard and Roadmap at our second Bus Safety Summit on 16 October, including a revised Bus Vehicle Specification
- ✓ Complete on road fatigue tests
- ✓ Interim report from the bus driver fatigue research.
- ✓ ISA operating on 700 buses and 50 routes
- ✓ Operators' forum to enable participants in the Safety Innovation Fund projects to share their learnings
- ✓ Safety campaign day at Croydon in December 2018, led by Abellio
- ✓ Consult operators and stakeholders to inform the design of new driver training to embed Vision Zero

Our plans for the next quarter

- Follow up on actions arising from the Safety Campaign in Croydon
- Hold a Safety Campaign day in February 2019 led by by Arriva
- Extension of the Bus Operator HSE Maturity Assessment to include greater engagement on environment issues and engineering
- The Bus Safety Innovation Challenge will provide Bus Operators with a new opportunity to test new technologies on-bus to improve safety (Q4 – Q1)
- Customer safety campaign at bus depots by all major operators

Buses - performance

Overview: customer injuries in Q3

Accidental Fatalities	Major Injuries*	All Injuries	Near Misses**
4	225	1098	6140

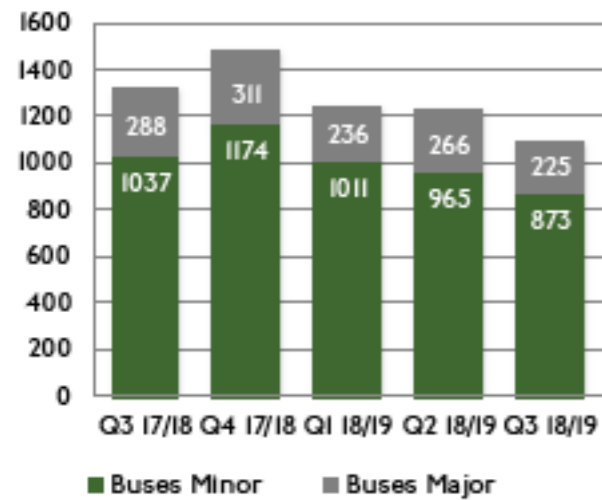
* Injuries requiring hospital attendance

** All incidents where no injury or damage arose

There were 1,098 injuries in quarter 3, equating to 2.1 injuries per million passenger journeys. This is a 14% improvement on the same quarter last year, when the rate was 2.4 injuries per million passenger journeys. 20% of injuries required hospital treatment; 12% were treated at the scene and the remaining 68% required no treatment. In the quarter, 4 fatalities were connected with our bus operations. They involved three pedestrians killed in collisions with our buses and a customer who later died from injuries sustained following a fall on a bus.

The number of incidents involving pedestrians increased. However, several of these cases involved pedestrians stepping out into the path of buses due to distraction, with little or no time for the drivers to react.

Customer injuries 5 rolling quarters



Bus customer injuries in quarter 3 have reduced by 17% when compared the same quarter last year and the trend shows a significant decrease over the past 4 quarters. The majority of the improvement is due to fewer injuries on buses as a result of slips, trips and falls down (14%) and collisions down (28%).

Top 4 causes of all bus customer injuries

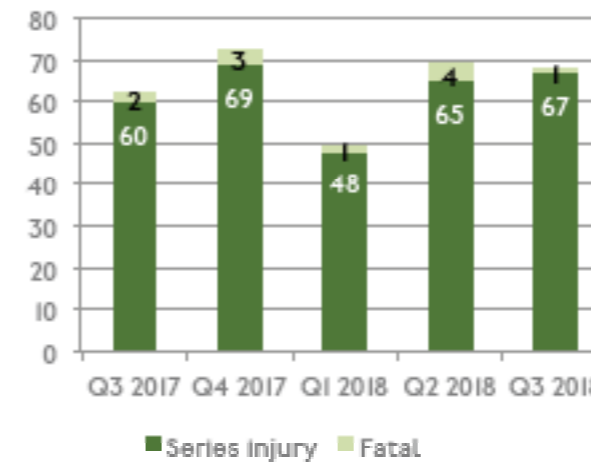
Slip Trip Fall	Struck by/ against object	Trapped fingers/ limbs	Collision
58%	22%	8%	7%

Despite slips, trips and falls having reduced for the past 3 quarters, they remain the dominant cause of bus customer injuries; accounting for 58% of all injuries and 59% of major injuries in the quarter. There were 632 customer injuries as a result of slips trips or falls in quarter 3. This equates to 1.2 slip, trip and fall injuries per million journeys (an improvement on 1.5 compared with the same quarter last year). The majority of slips, trips and falls occur within bus aisles, with sudden bus movement being the key contributory factor to this type of fall.

All major operators have committed to run a specific customer safety campaign at each of their depots over the coming 3 months.

Killed or seriously injured in or by London buses

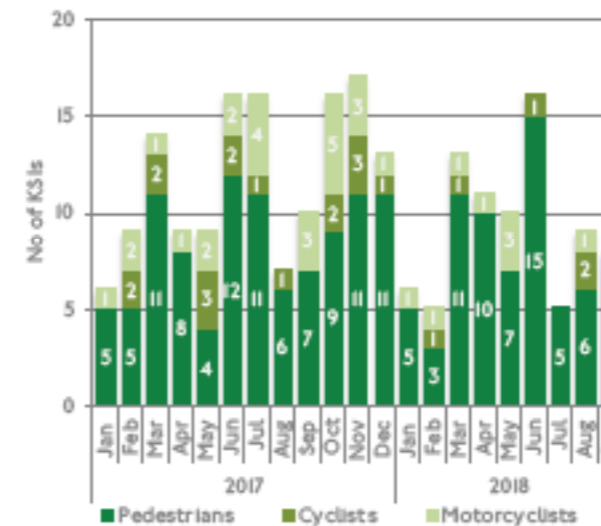
Past five quarters



Source: STATS 19

Road safety data is based on calendar quarters rather than financial quarters. All 2018 data is provisional. This data is subject to change as this information is reviewed and managed by the MPS. The number of KSIs reported by, or to, the police in quarter 3 rose by 10% compared to the same quarter last year.

Vulnerable road user KSIs from collisions involving buses



Source: STATS 19

In quarter 3, 22 (32%) bus-related KSIs involved VRUs. Pedestrians continue to make up the largest proportion of VRUs killed or seriously injured by a bus, accounting for 77% of all VRU KSIs during quarter 3. When compared to the same period last year, the number of KSIs involving a bus has reduced by 33%, with fewer pedestrians and motorcyclists killed or seriously injured. However the number of cyclists killed or seriously injured has increased from 2 to 3.

Actions to improve bus safety

Targeted safety campaign at hot-spot

As planned, Quarter 3 saw a third large-scale safety campaign at a bus incident hot spot in Croydon on 5th December, supported by all the major bus operators. Operators took the opportunity to raise awareness of our Fatigue Research programme and encourage drivers to complete the fatigue survey.

There were no reported collisions on the day of the campaign, but the following issues were identified and will be followed up during quarter 4:

- Pedestrian behaviour on alighting trams, then stepping into the road
- Concerns regarding the availability of dedicated crossings
- Concerns regarding local anti-social behavioural issues

Bus Operators act to improve safety

In addition to participating in TfL-led safety improvement activities, the Bus Operators are continuing their own programmes. Key activities this quarter include:

- The Go Ahead annual risk competition open to all staff to find new ways to improve welfare, safety and the environment
- The RATP Dev London awards ceremony to celebrate excellence in safety by staff
- The launch of a mobile Safety App by Tower Transit and Go Ahead for all staff to be notified of safety tips, bulletins and news updates

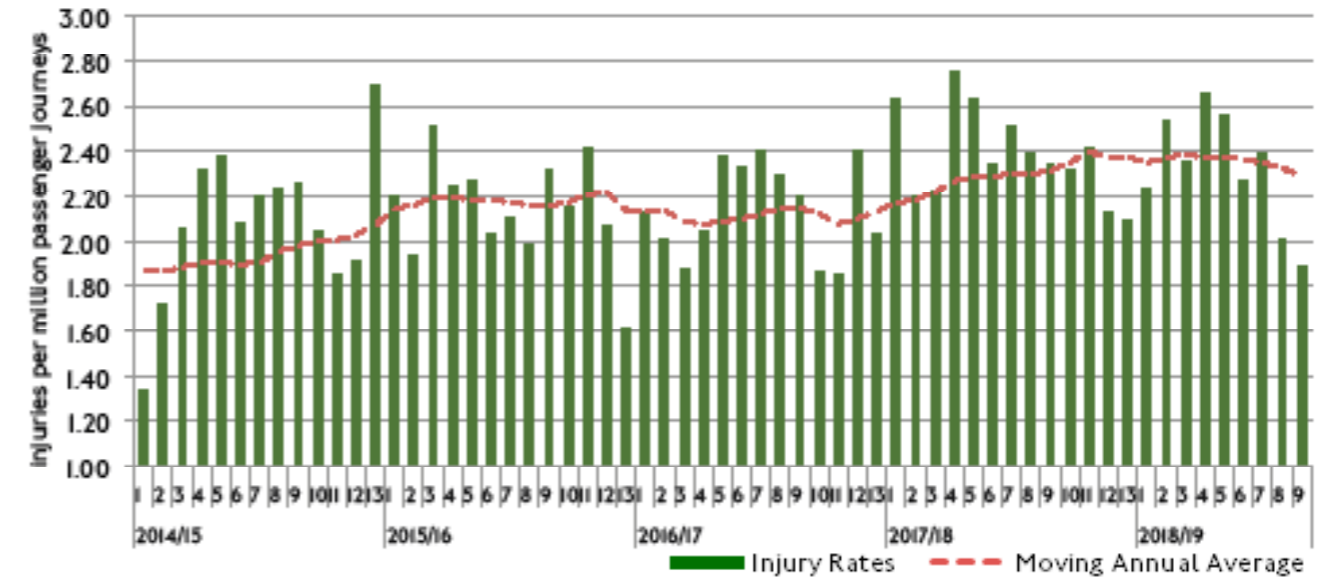
- Refresher courses for drivers by two Operators to promote driving with greater care and attention. Abellio use the 3 See's (see more Time, Mirrors, and Close Distance Following) and Metroline use A.C.T. (Assess, Check, Take Time)
- Applications for Certificate of Professional Competence (CPC) accreditation for training courses including; cycling and pedestrian awareness (RATP), the ACT course at Metroline, and Driver Quality Management (DQM) requirements at Stagecoach. These courses are also being embedded in the induction process to ensure all new and existing drivers receive this training as standard

Sharing best practice to improve network safety

All bus operators attended a safety forum with us in quarter 3, where each representative shared their best practice safety ideas and initiatives. Many of these can be replicated by other operators, and as such, we will start to see some campaigns being replicated across London in 2019; for example fatigue equipment being tested in Go Ahead following RATP Dev's innovation fund trial, and London Cycling Campaign working with Abellio after a successful trial with RATP Dev.

Long term trend

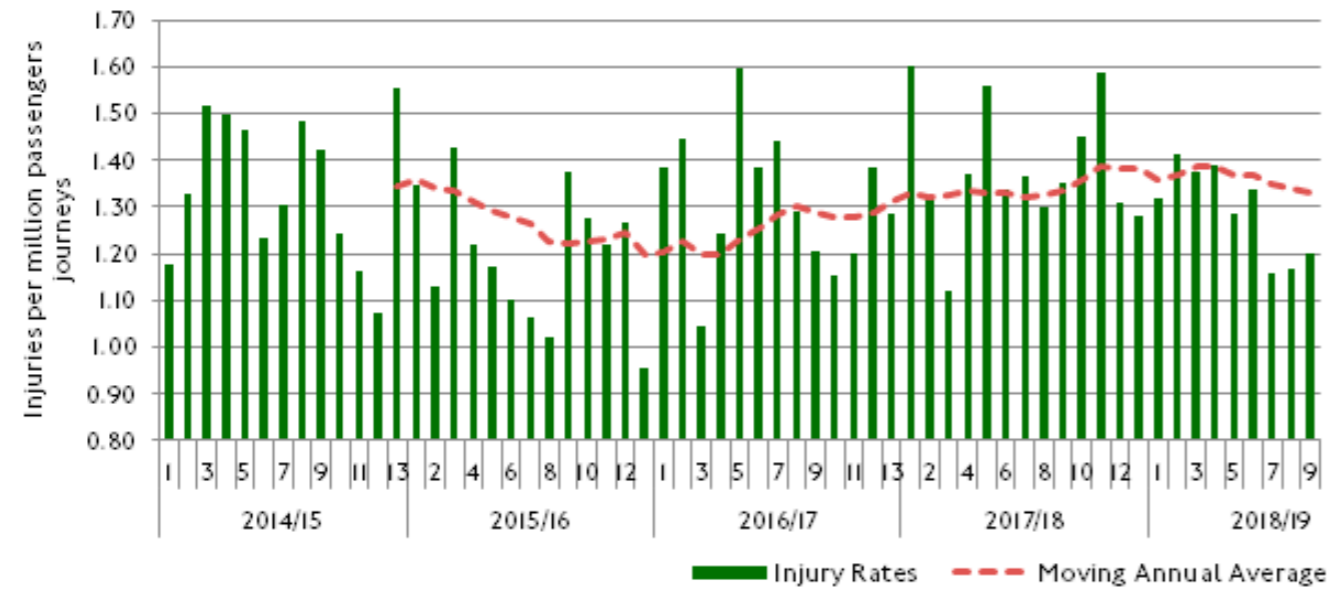
Bus customer injuries per million passenger journeys - long term trend 



Over the long term bus customer injuries per million journeys have shown a rising trend. While the number of injuries has remained broadly constant, the number of journeys has been declining over a five year period.

Since 2017/18 bus customer injuries have declined by on average by 2.5 incidents per period, although this reduction is not statistically significant.

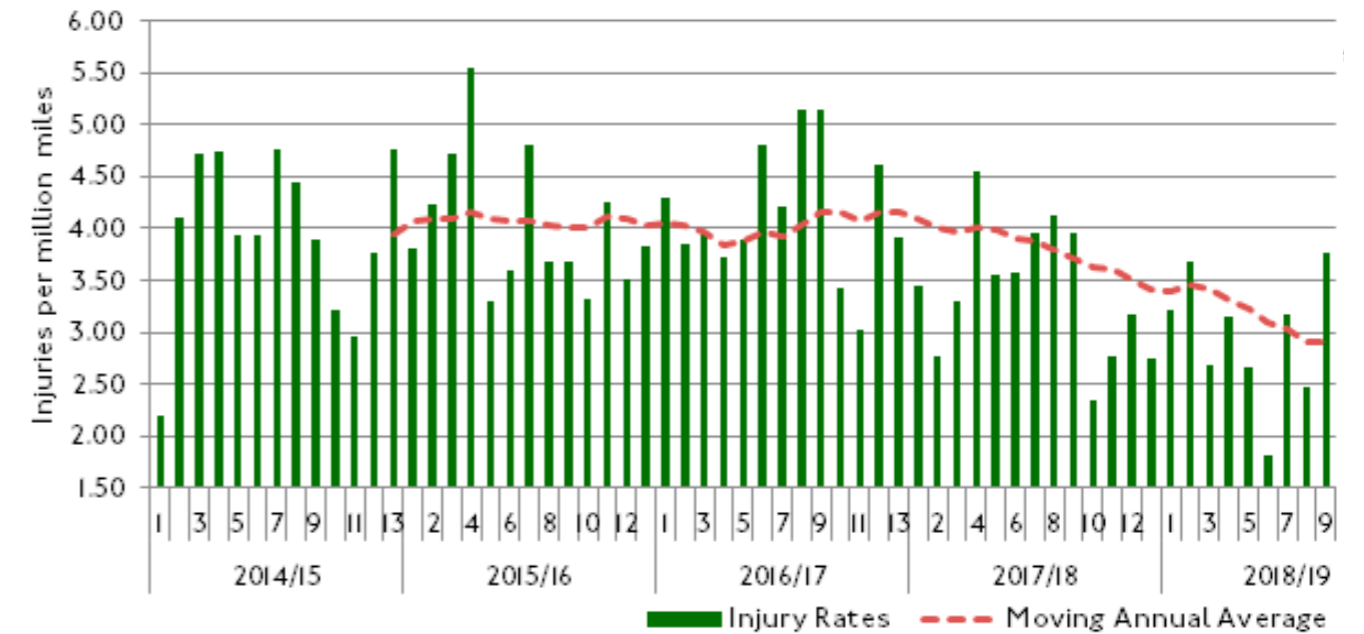
Customer safety - bus customer injuries from slips, trips and falls on buses 



Over the past 5 years, falls on buses have been the major factor for injuries to customers. Bus customer injuries resulting from slips, trips and falls are increasing with 1.3 injuries per million passenger journeys in the quarter, the same as the five year average.

Most of the falls (48%) that resulted in injury occurred within the bus aisle. Injuries sustained while boarding or alighting buses account for 20% which is an improvement from 734 injuries in quarter 3 of last year to 632 injuries this year.

Customer safety - customer injuries from bus collisions 



The number of collisions involving buses have been steadily falling, over the last 5 years, with the injury rate caused by collisions also falling over the last 2 years. When compared to quarter 3 of last year, there were 500 fewer collisions a reduction of 7.6%. The collision rate, drops from 96 collisions to 67 collisions per million miles this quarter compared to the same quarter last year.

London Underground - overview

1,014

Number of injuries on the LU network this quarter (14% ▲ against Q3 2017/18)



2.9

Number of injuries per million passenger journeys on the LU network (12% ▲ against Q3 2017/18)



Long term trend injuries per million passenger journeys

Performance headlines

- ✗ 14% increase in injuries on escalators compared with the same quarter last year, accounting for 42% of all customer injuries
 - ✗ 7% increase in injuries on stairs compared with the same quarter last year, accounting for almost a quarter of all customer injuries
 - ✗ Injuries at ticket gate-lines up 28% compared with the same quarter last year
 - ✗ Slips trips and falls accounted for 86% of all injuries
- Passenger numbers have increased 2% compared with the same quarter last year.

Did we deliver our planned improvements?

- ✓ New 'hold the handrail' escalator signage for stations outside of the top 20 for incidents
- ✓ Check escalator excellence standards are being maintained
- ✓ Roll out Stair Excellence in full across the top 18 stations for incidents
- ✓ Update line-based Platform Train Interface (PTI) plans to align to the overarching plan
- ✓ Roll out a PTI video featuring a train operator sharing their experience of a serious PTI incident
- ✓ Roll out specific safety communications over the festive holiday period
- ✓ Realign the edge of platform at Victoria and East Putney stations to reduce the gap between the train and the platform
- ✓ Continue delivery of our Platform Camera Improvement project

Our plans for the next quarter

- Roll out Escalator Excellence to stations outside of the top 30 locations for incidents
- Review signage at the top 20 stations for escalator incidents to encourage vulnerable and restricted mobility customers to use the lifts
- Review of the customer safety plans for the top 20 stations for Escalator Excellence
- Review of the impact of Stair Excellence and development of a further rollout plan
- PTI Focus days at PTI hotspots.
- Trial of selective door opening at Baker Street to prevent customers using a set of doors where the gap between the train and platform is largest
- Installation of high impact vinyl signage with customer safety messages at 4 stations
- Continued delivery of our Platform Camera Improvement project and on site improvements at 3 platforms
- Installation of under platform flashing blue lights at Baker Street platforms 1 & 2

London Underground - performance

Overview: customer accidental injuries in Q3

Accidental Fatalities	Major Injuries*	All Injuries	Near Misses**
1	28	1014	150

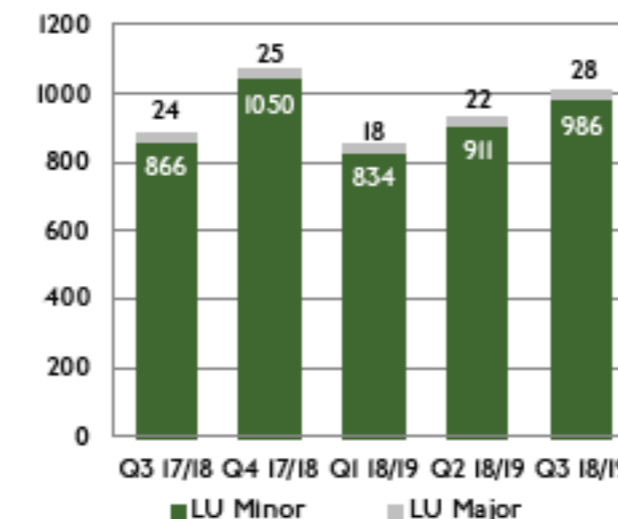
* Injuries requiring hospital attendance

** All incidents where no injury or damage arose

In quarter 3, there were 1,014 customer injuries, equating to 2.9 injuries per million passenger journeys, 12% worse than the same quarter last year. 2.7% of LU customer injuries this quarter were major injuries.

A customer was fatally injured at Farringdon station as a result of falling from a platform and being struck by a train.

Customer injuries 5 rolling quarters



LU customer injuries have increased by 14% compared with the same quarter last year, with increases in both minor and major injuries. This is against a backdrop of a 2% increase in customer journeys. In quarter 3 most accidental customer injuries were on escalators (42%), on stairs (23%) and at the Platform Train Interface (PTI) (16%). Injuries on stairs rose 7% compared to the same quarter of last year.

We have seen an increase in the number of escalator incidents reported in response to the launch of targeted customer communications and staff interventions as part of our Escalator Excellence† campaign.

Top three causes LU customer injuries

Slip Trip Fall	Hit by doors, gates or other objects	Other
86%	12%	2%

There has been an increase in injuries at gate-lines (28%) and on platforms (16%) this quarter, compared to the same quarter last year. We have recently completed a fresh review of our improvement plans to reduce customer injuries.

In response new actions will be implemented relating to leadership, accountability, local station plans and communications.

† Our 'Excellence' programmes set standards for good management practices and award 'Excellence' status to locations that meet those standards.

Actions to improve safety on London Underground

Tackling slips, trips and falls

Slips, trips and falls continue to be the biggest cause of customer injuries (86%). These occur mainly on escalators, stairs and at the PTI and continue to be the focus for our improvement activities. To reduce injuries on escalators and stairs:

- Escalator Excellence* awards are in place 30 stations for accidents; with checks completed by the Senior Management Team at the top 20 to make sure that standards are being maintained and improvement actions are being implemented
- New escalator signage ('hold the handrail') has been installed at the remaining stations with escalators across the LU network
- Stair Excellence* has been rolled out to 36 stations (18 more stations than planned in Q2). The programme focused on completing an asset condition check

and customer behaviour survey with improvements put in place to address the findings. Improvement themes included public address announcements, posters, staff engagement with customers and a focus on wet weather. These stations are being monitored for trends and to identify the impact on customer injuries

Safer boarding and alighting

During quarter 3, we completed an in-depth review of the PTI plans for the top 8 locations for incidents to ensure they are focussing on the right areas. Actions taken during quarter 3 to raise staff and customer awareness of PTI risks and to prevent injuries included:

- PTI monthly focus days; including a focus on actions to prevent customers getting caught in the doors
- A trial at Baker Street to extend PTI safety announcements beyond 8pm; supported by noise monitoring to minimise noise for

local residents

- Launch of a staff awareness-raising video featuring a train operator talking about their involvement in a PTI incident
- Project works to realign the platform edge at Victoria and East Putney to reduce the gap at the PTI
- Under-platform flashing blue lights were installed at Farringdon to test the functionality of new prototype lamps to make the gap clearer to customers

Preparations made for future works included:

- Platform camera improvements at Stratford (platform 14) and Green Park (platforms 1 and 2)
- Safety workshops examining the feasibility of Active Gap Fillers, a device which extends from the platform to reduce the gap between the train and the platform

Famous name supports festive campaign

We launched our seasonal customer communications campaign at the end of quarter 3. This focused on the hazards associated with intoxication with a key message to take care of yourself and your friends. The campaign included posters, targeted public address messages recorded by the London Ambulance Service staff and our senior managers, as well as singer Mariah Carey.

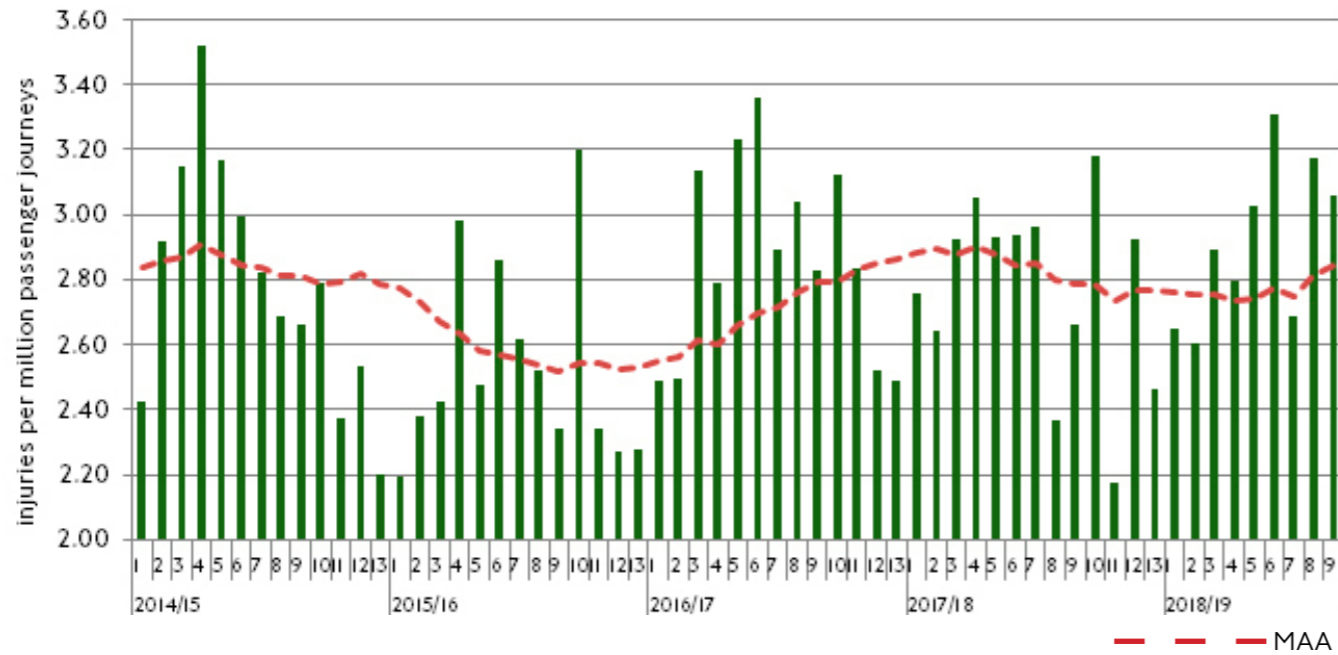


New escalator signage to encourage handrail use

*Our 'Excellence' programmes set standards for good management practices and award 'Excellence' status to locations that meet those standards.

Long term trend

LU customer injuries per million passenger journeys - Long term trend 



Since quarter 1 of 2015/16, LU customer injuries have risen at a rate of 0.6 injuries per period. There were 2.9 injuries per million journeys on the LU network this quarter compared to 2.7 for the same quarter last year, an increase of 12%.



Platform train interface at King's Cross

Rail - overview



94

Number of injuries on our rail network this quarter (19% ▼ against Q3 2017/18)

0.9

Number of injuries per million passenger journeys within our rail operations this quarter (14% ▼ against Q3 2017/18)



Long term trend injuries per million passenger journeys

Performance headlines

- ✗ One major injury reported by London Overground (LO) due to an assault at Clapham Junction
- ✓ 44% reduction in customer injuries on TfL Rail compared with the same quarter last year, despite a 22.5% increase in customer journeys

Did we deliver our planned improvements?

- ✓ Formally launch the Trams HSE Improvement Programme.
- ✓ Report the results of the DLR 'readiband' fatigue management trial
- ✓ Commence the trial of the RSSB's new PTI tool to evaluate its value for DLR
- ✓ Launch an autumn/winter slips and trips poster and public announcement campaign across the DLR network
- ✓ Continue to work with the manufacturers of our trams to implement in-cab warnings to alert drivers to higher risk locations
- ✓ Prioritise tram crossings for risk assessment

Our plans for the next quarter

- Start a review of the London Trams Safety Management System, to improve alignment with our operator's system
- Launch a periodic LO Safety Assurance Meeting for the principal safety stakeholders to collectively review performance, monitor trends and risks and initiate improvement actions
- Continue use of the RSSB PTI tool to assess the PTI across the DLR network
- Continue the DLR slip/trip/fall campaign through the winter
- Start an annual review of the Risk Matrix for Trams
- Start installation of the higher specification film to tram doors and windows

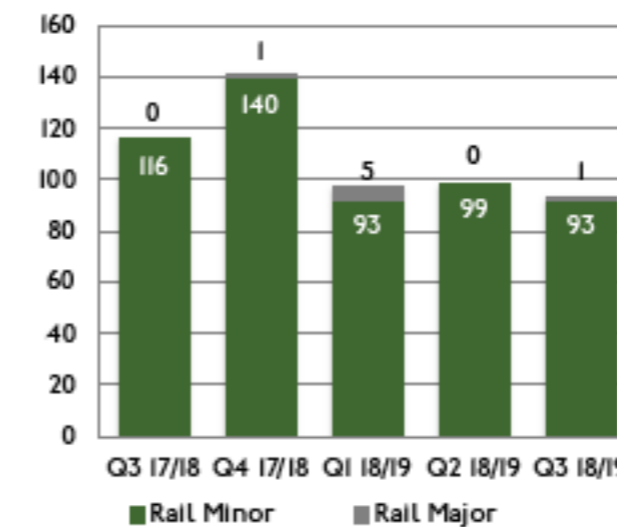
Rail - performance

Overview: customer accidental injuries in Q3

Accidental Fatalities	Major Injuries	All Injuries	Near Misses*
0	1	94	N/A

*This data will be collated across our rail division and included in future reports

Rail customer injuries 5 rolling quarters



A total of 94 customers were injured on our rail network in the quarter. This equates to 0.9 customer injuries per million passenger journeys, an improvement from 1.2 at the same time last year. The injuries occurred within TfL Rail (15), DLR (20), LO (49) and Trams (10). One of the injuries was major, resulting from a customer being stabbed at Clapham Junction station.

There were 19% fewer customer injuries compared to quarter 3 last year. A significant proportion of the decrease occurred within DLR, where the number of injuries decreased from 27 to 20 compared with quarter 3 last year. Sixteen (80%) of the customer injuries on the DLR resulted from falls, with five occurring on escalators.

The Trams network reported 10 customer injuries, up from 5 for the same period last year. This is equivalent to 1.4 injuries per million customer journeys, up from 0.7 in the same quarter last year. These were predominantly as a result of slips, trips and falls.

Actions to improve safety on our rail networks

LO reported 49 injuries, equating to 1.1 injuries per million customer journeys in the quarter, compared with 1.2 injuries per million customer journeys in the same period last year. Slips, trips, and falls were the main cause of customer injuries (56%).

On the TfL Rail network, 15 customers were injured, a reduction of 44% compared with last year despite 22.5% more customer journeys across the network. This is equivalent to 1.1 injuries per million customer journeys; a significant improvement on the same quarter last year (2.4).



Customers using the stairs at Hampstead Heath Overground station



Trams signage at Mitcham

New technology to improve tram safety

Work continued to implement the recommendations from the Rail Accident Investigation Branch (RAIB) investigation into the over-turning of a tram at Sandilands Junction in 2016. The contract to install a new safety system, which will automatically bring a moving tram to a controlled stop if it is exceeding the speed limit at designated locations, was awarded to Engineering Support Group limited on 14 December 2018. London's tram network will be the first in the UK to have an automatic braking system.

The RAIB listed 15 recommendations aimed at the UK tram industry following the overturning. We have progressed work on all the recommendations which are relevant to us, with some of the most vital already completed including a permanent speed reduction across the tram network, speed monitoring and signage at significant bends, an enhanced customer complaints process and the installation of a driver protection device that alerts to any incident or driver distraction or fatigue.

A new emergency lighting system, that will operate independently of the trams' battery has also been procured and will be installed over the summer of 2019. A new higher specification film will be fitted to all doors and windows to improve containment, as per recommendation 6, by spring 2019.

The Trams HSE Improvement Plan was formally launched on 5 October. The plan includes the following areas of focus:

- Fatigue management
- Review and update of Tram Safety Awareness training
- Level crossing risk assessments
- Management of plant on site
- Correct side door enable (CSDE) to prevent doors being opened on the wrong side

Preventing fatigue

Work continued to investigate fatigue across the rail networks. The results of the DLR fatigue survey using a wearable fatigue monitor have been analysed; providing a baseline against which we can track improvements to user alertness arising from fatigue self-management and the implementation of revised fatigue management procedures.

Safer boarding and alighting

Work continues to improve the management of risk at the PTI:

- On the weekend of 29/30 September, DLR conducted a trial of the service with a one-second door chime. This was part of our ongoing efforts to find the optimal length of warning chime from a safety and operational perspective. The three-second chime required by the Rail Vehicle Accessibility Regulations (RVAR) can encourage customers to rush, leading to the potential for injury. The outputs of the trials have been discussed with the DfT
- PTI assessments started across the DLR using the new version of the RSSB PTI tool. This version requires more detailed data and will therefore result in the extension of the timescale for completion of all assessments to July 2019

Customer injuries on the DLR have dropped

to nearer quarter 1 levels following a spike in quarter 2. This is partially due to the communications campaign featuring network wide station announcements targeting slips, trips and falls. The campaign will continue throughout the winter period.

Safer travel for mobility impaired customers

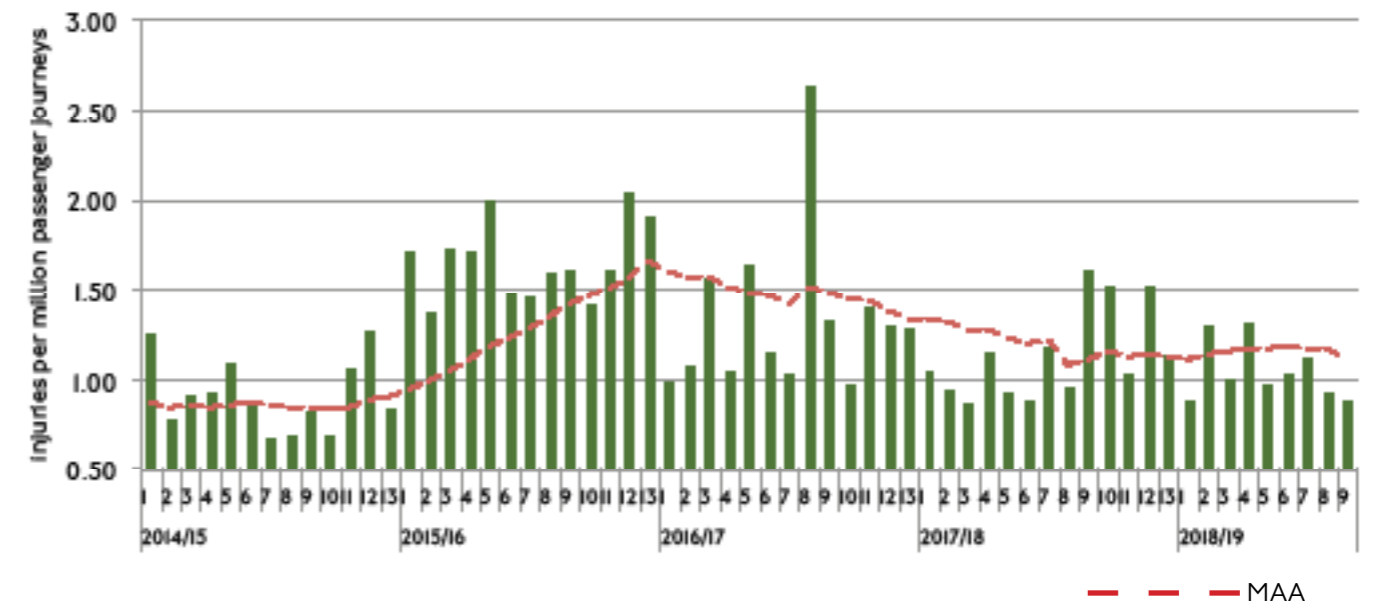
Keolis Amey Docklands (KAD), operator of the DLR has introduced free advice and training to mobility scooter and wheelchair users to help them stay safe while traveling on the network. Ambassadors, who have received accredited training from Whizz-Kidz, are available to meet those who need mobility support and their carers, to provide training on safe use of the network and guidance in how to request assistance during journeys.



A wheelchair user travelling on the DLR

Long term trend

Rail customer injuries per million journeys – annual moving average 



On the LO networks, injuries in the quarter are 44% lower than the same quarter last year. However, Trams has shown an increase by 5 injuries since quarter 3 last year. In respect of DLR, the longer term trend is steady, but shows a reduction in injuries when normalised by passenger journeys. During 2018/19 injuries on TfL Rail are showing signs of improvement with average numbers falling.

Other operations - overview



24

Number of injuries within our other operations this quarter
(4% ▲ against Q3 2017/18)

4.4

Number of injuries per million passenger journeys within our other operations this quarter
(4% ▼ against Q3 2017/18)



Long term trend injuries per million passenger journeys

Performance headlines

- ✗ All 'other operations' major injuries arose from 2 causes; collisions and slips, trips and falls
- ✓ Work on the first safety improvement plans for the Thames commenced.
- ✓ There were no injuries on London River Services this quarter
- ✓ Contract for new Dial-a-Ride vehicles introduced new safety and environmental features

Did we deliver our planned improvements?

- ✗ Formally launch the Safety Improvement Plan for the Thames

Our plans for the next quarter

- Launch Safety Improvement Plan for the Thames
- Enhancing the investigation process in Dial-a-Ride to ensure lessons are learnt and assist the prevention process

Other operations - performance

Overview: customer accidental injuries in Q3

Accidental Fatalities	Major Injuries*	All Injuries	Near Misses**
0	6	24	105

*Injuries requiring hospital attendance

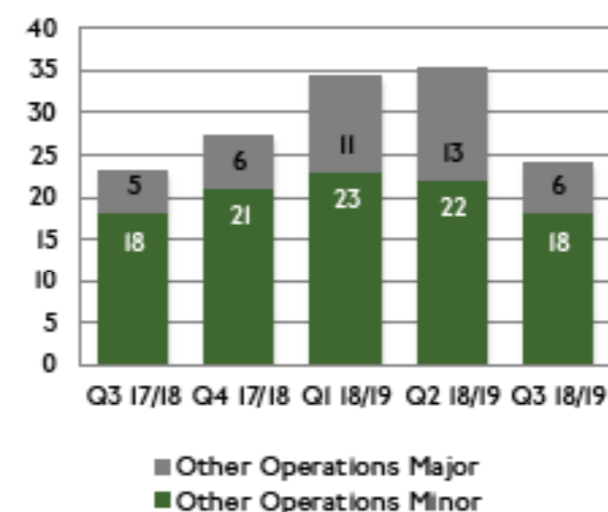
** All incidents where no injury or damage arose

Twenty-four customers were injured across our other operations. This equates to 4.6 customer injuries per million passenger journeys. This is better than the same quarter last year when it was 4.9 injuries per million customer journeys.

Six of the injuries were classified as major:

- 3 on Santander Bikes; 2 collisions and 1 from a fall from a bike
- 3 in Victoria Coach Station (VCS); 2 from a fall; 1 due to intoxication

Other operational services customer injuries 5 rolling quarters



There was one more injury reported this quarter when compared to the same period last year. In the quarter, a significant proportion of injuries occurred within Dial-a-Ride (46%). Seven were due to falls, 2 by being struck by/against objects and 2 from trapped fingers.

Victoria Coach Station (VCS) accounted for 25% of injuries, with 6 injuries this quarter compared to 1 in quarter 3 of last year. Santander Bikes and Emirates Air Line (EAL) accounted for 21% and 8% respectively.

No customers were injured on the London River Services (LRS) as compared to 3 in the same quarter last year.

Actions to improve safety of our other operations

Top 4 causes of injuries

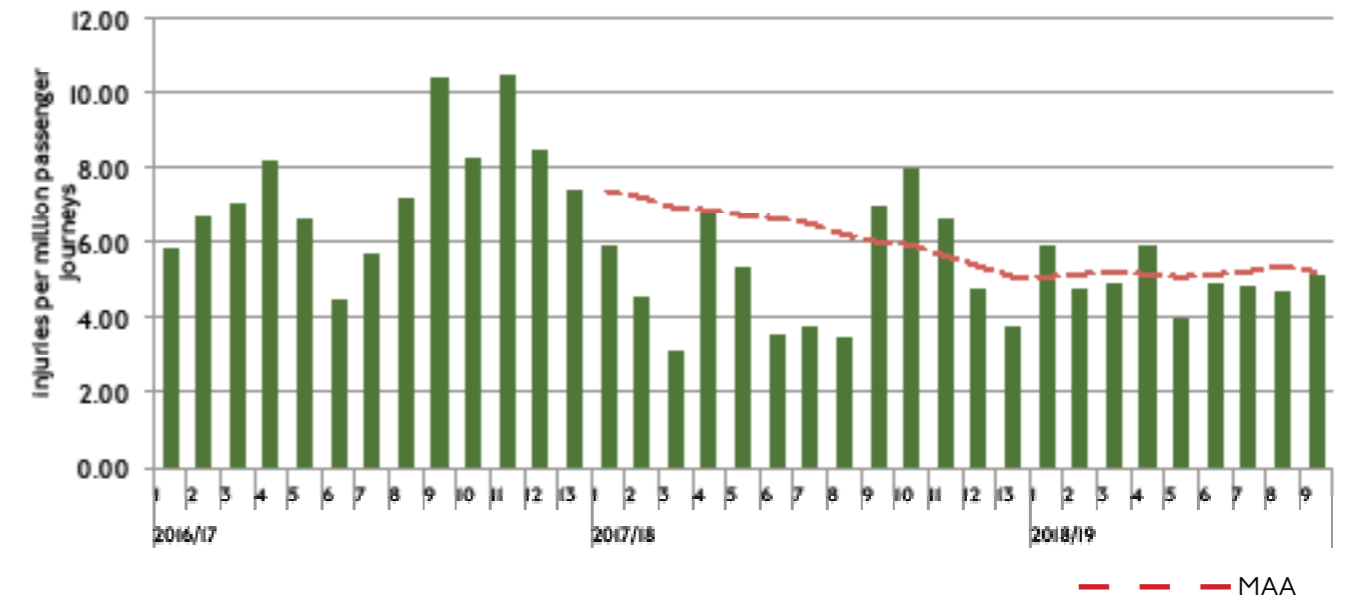
Slip Trip Fall	Collision	Cut/abrasion	Trapped fingers/limbs
50%	14%	14%	9%

Work to develop a safety improvement plan for the Thames was completed during the quarter. We are working in collaboration with the Port of London Authority and other key stakeholders on the river. The formal launch of the plan will take place in February 2019.



Long term trend

Other operational services customer injuries - long term trend



Overall, the trend for our other operational areas continues to show an improving trend indicating injuries have been declining since quarter 3 of 2016/17. This is also the case when normalised by journeys completed across our other operational services. However, more recently performance has plateaued.

Safety feedback from customers

	Q3 2017/18	Q3 2018/19	Trend
London Underground	345	387	⬆️
London Buses	1,133	1,437	⬆️
DLR	23	24	⬆️
London Overground	38	67	⬆️
TfL Rail	22	21	⬇️
London Trams	13	8	⬇️
Emirates Air Line	1	0	⬇️
Congestion Charge	0	0	↔️
Dial-a-Ride	4	9	⬆️
London River Services	5	1	⬇️
Santander Cycles	1	0	⬇️
Taxis	3	2	⬇️
Private Hire	0	2	⬆️
Total	1,588	1,958	⬆️

The rise in safety-related incidents compared to the same quarter last year can largely be attributed to the improved ease of reporting safety issues through our website. Safety feedback about buses continues to be the main reason for contact, the main themes are as follows:

Injury to person which includes:

- Drivers moving off before customers have sat down, causing a fall
- Drivers breaking harshly/emergency stops, causing customers to fall
- Drivers closing the doors as customers are boarding/exiting and so trapping customers

Damage caused by buses which includes:

- Buses hitting other road users
- Buses clipping parked cars

LU safety feedback has also increased from quarter 3 last year. The key themes are:

- Customers getting trapped in closing doors
- Escalator related (customers falling, having clothing trapped in mechanism)
- Customers slipping on wet floors

Actions to improve safeguarding of vulnerable customers

We are in the process of reviewing and strengthening our safeguarding principles and guidelines. Safeguarding is now recognised across the organisation as an important topic and all service areas and directorates have a role to play in protecting children and vulnerable adults.

Our front line and back office teams already provide support to vulnerable customers. To ensure good practice is shared and to reward those areas across the organisation who deliver this, we will establish a monthly forum. This will ensure all activity to improve safeguarding is co-ordinated across the organisation.



Call centre taking details of safety concerns

Counter-Terrorism and Security improvements

Our strategy for security is to understand the threats to our business; assess our vulnerabilities and consider the risks; and put proportionate measures in place that protect our customers, workforce, operations, infrastructure, information, assets and deliver our vision for a safe, secure and reliable transport system for London.

We are working closely with the Mayor's Office for Policing and Crime (MOPAC), Metropolitan Police Service (MPS), National Counter Terrorism Security Office (NACTSO) and London Councils to help determine a coherent London-wide approach to physical protective security, which reflects the Mayor's Transport Strategy and aspiration for Healthy Streets and enhancement of the public realm. This is being progressed through the Counter-Terrorism Strategy Board (CONTEST). Furthermore we are investigating, in conjunction with MOPAC, options for replacing the temporary security measures on the eight central London bridges (Vauxhall, Lambeth, Westminster, Waterloo, Blackfriars, Southwark, London and Tower Bridge) with a permanent solution. To date, we have undertaken engagement with the associated boroughs and other key stakeholders, including the MPS and Centre for the Protection of National Infrastructure (CPNI) specialists, and Threat and Vulnerability Risk Assessments (TVRA) have been conducted.

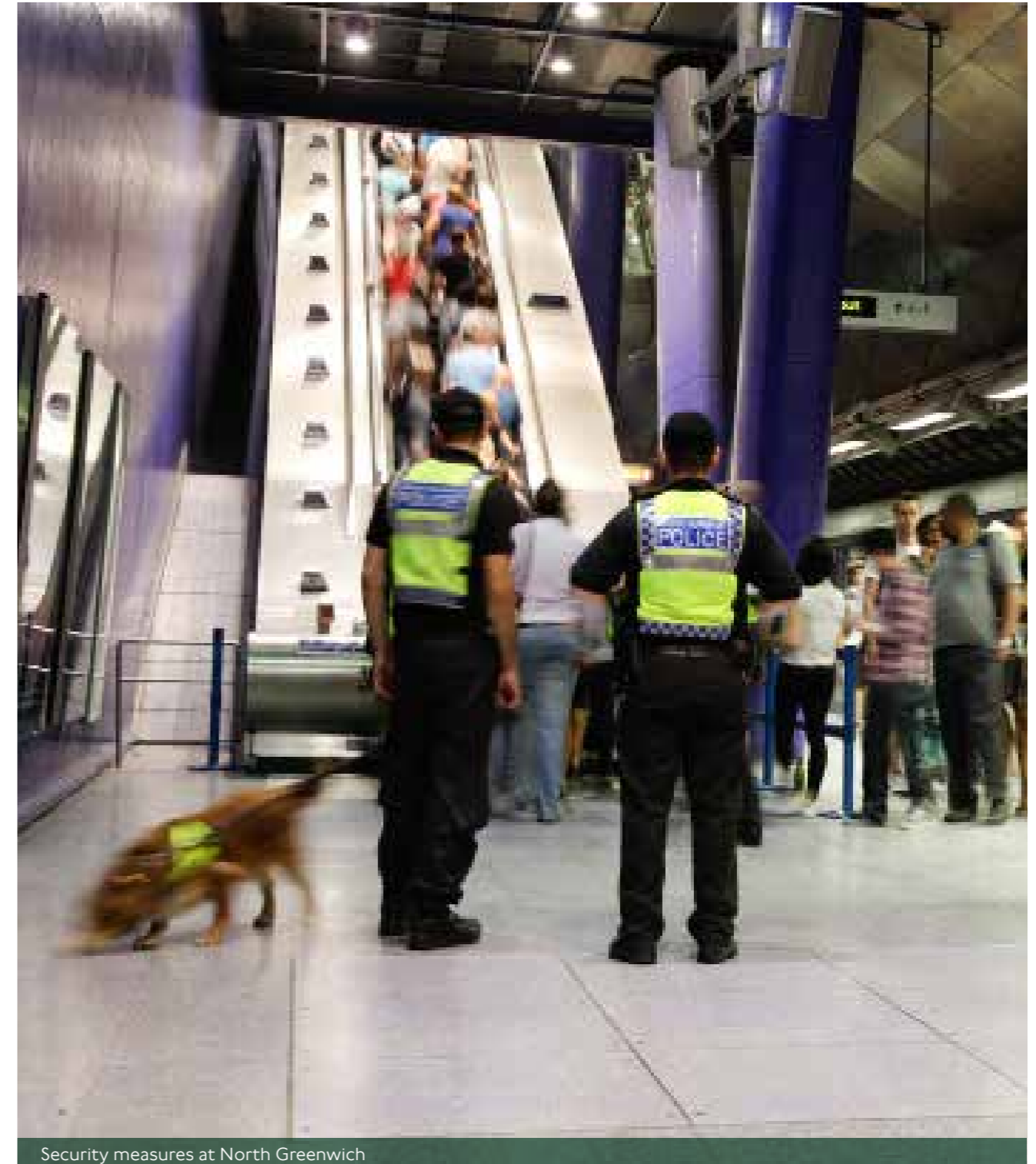
We are progressing with the pan-TfL Protective Security Programme which covers physical; people and personnel security and complements the cyber-security programme and the advanced security work in place in LU. The programme includes internal awareness amongst staff and training on risks and their role and contribution to better security.

The long term partnership with the British Transport Police and regulatory relationship with the Department for Transport means that mature risk controls are in place across LU.

A range of further improvements are underway which include:

- Integration of security management throughout our management system
- Speeding up security decision-making
- Ensuring that security guidance and associated arrangements reflect best practice

These plans are underpinned by objectives for senior directors to ensure effective accountabilities for security.



Security measures at North Greenwich

Workforce safety - overview



Performance headlines

- ✓ Workforce injuries 8% better than same quarter last year
- ✓ Accident Frequency Rate improving for LU construction teams and there have been no reportable injuries associated with our highway projects this quarter
- ✓ Violence against our total workforce 17% better than same quarter last year, including a 4% reduction for our direct employees
- ✗ Sickness absence due to mental health issues is 5.8% worse than the same quarter last year, continuing the rising trend

Did we deliver our planned improvements?

- ✗ Extend the successful near miss reporting campaign used within LU Renewal & Enhancements to our LU operations and maintenance teams
- ✓ Start a root and branch review of the communication of safety critical information in LU
- ✓ Deliver additional bus driver toilets on 20 routes by December 2018
- ✗ Launch new HSE training for middle managers
- ✓ Complete gap analysis of fatigue management for tram maintenance staff
- ✗ Launch the revised Beacon award scheme across the organisation
- ✓ Extend the use of the reporting app for incidents and near misses
- ✓ Hold a pan-TfL Zero Harm Forum to promote a partnership approach to HSE management with our supply chain
- ✓ Continue the Finish Safe campaign on Crossrail



Long term trend
TfL direct employee
injuries



Long term trend
TfL direct employee
physical assaults



Long term trend
TfL direct employee
sickness absence
(% available working
days lost)

Our plans for the next quarter

- Introduce conflict management training for our bus operations and enforcement workforce
- Launch a construction 'urban' safety plan to respond to an increase in violence against our construction workforce
- Refresh manual handling training for our DAR drivers following the introduction of our new vehicles
- Extend the Bus Operator assurance arrangements to include engineering
- Develop a workforce safety video for LU train staff
- Improve LU's processes for communicating operational messages
- Develop an improvement plan to address injuries arising from contact with machinery and tools on LU
- Launch the new HSE training module for managers
- Launch the revised Beacon award scheme across TfL
- Provide additional knowledge and skills to our internal design teams to designing out risk
- Facilitate joint workshops for our design supply chain partners to share their ways of working with sub-contractors
- Facilitate roundtable discussions for subcontractors to learn from main contractor experience of behavioural-based safety programmes
- Hold our third Zero Harm Forum to engage all tiers of the supply chain
- Start roll-out of body-worn cameras to the top ten LU stations experiencing assaults
- Promote the NHS-sponsored Sleepio App
- Train a further 50 Health and Wellbeing Champions
- Hold a Peer Support Network Conference



Contractors working on highway works

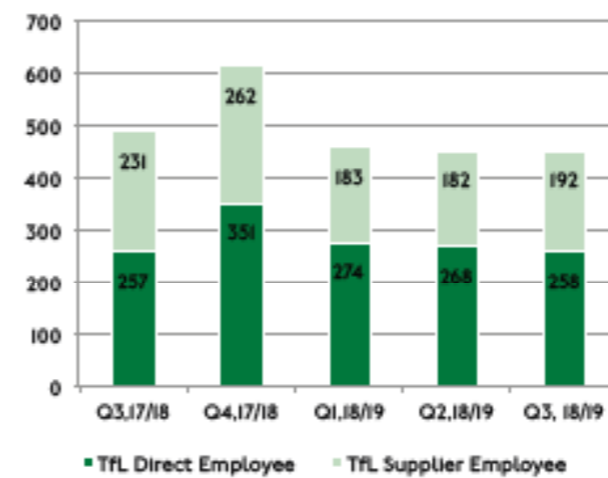
Workforce safety - performance

Overview: workforce accidental injuries in Q3

Fatalities	RIDDORs*	All Injuries
0	62	450

There were 8% fewer workforce injuries compared with the same quarter last year. There were 16% fewer injuries to our supplier staff and 27% fewer injuries to our direct employees in the quarter when compared to quarter 3 of last year. Of the 450 workforce injuries during the quarter, 62 were reported to regulatory authorities (information on page 12). A further 27 were classified as major reported injuries mainly in connection with bus drivers as they required hospital attendance. These were due to 13 collision incidents, 5 assaults, 4 as a result of fall, 3 as a result of strain and 2 due to cuts.

Workforce injuries 5 rolling quarters



Our direct employees accounted for 57% of workforce injuries, 86% of these incidents occurred within LU, which accounts for 71% of direct employees within TFL.

Injuries to our supplier staff accounted for 43% of our workforce injuries. Bus drivers were the group most affected, accounting for 48% of supplier staff injuries.

Top 3 causes of injuries (all areas)

Machinery/ Equipment/ Powered Tools	Slip, Trip, Fall	Manual Handling
39%	29%	14%

In LU, most workplace accidents were due to contact with machinery, equipment and powered tools, eg. bumping arms, legs, or heads. There has also been a slight increase in the number of injuries due to slips, trips and falls this quarter (83) when compared to quarter 3 last year (75).

Actions to improve workforce safety

Building a positive safety culture

On the LU network, an injury free week was held in early December, focusing on a different accident type each day. A review of the data and findings from the week is underway. Specific winter weather guidance was issued to raise staff awareness of the hazards and how to take care of themselves.

As part of our ongoing promotion of a positive culture, there has been a focus on completion of Go, Look, See visits. The Go, Look, See visit involves the senior manager meeting with the member of staff at the location of the incident to show that we care and discuss the employee's thoughts on how the injury could have been prevented.

Improving operational communication

In response to the quality of operational communications being a key factor in a number of incidents, we started our review of 'Operational Communications'. Key actions during quarter 3 included:

- The review of existing rules, drawing on learning from RSSB and Network Rail
- Identification of potential improvements to the process, system and forms used for monitoring the quality of operational communications
- Analysis to identify gaps in LU training and competence management for operational communications against the RSSB's standards and identification of potential solutions

New training for managers

We finalised the content of our online training for all our managers. This will

remind them of their responsibilities for HSE management and engage them with the Vision Zero agenda. The course focuses on the key management activities required to ensure that health, safety and environmental risks are being managed on a day to day basis and how to build a positive culture. It also highlights the tools and guidance available to managers to assist with these activities. For managers involved in front-line delivery of services or projects, the online learning will be supplemented with classroom-based sessions. The online course launched in January 2019.

New training for Designers

Work is underway to provide additional health and safety knowledge and skills to our internal design teams. This will ensure that opportunities are taken to design out risks in new or modified assets and ensure that we meet our legal duties under the Construction (Design and Management) Regulations.

Improving fatigue management

A review of the maturity of our fatigue management systems was undertaken during quarter 3. As a result of this review, the following recommendations will be actioned to improve the quality and consistency of fatigue management across our organisation and our suppliers:

- Extend the LU and Rail Fatigue Risk Management System (FRMS) to the rest of TfL and embed good practice consistently across all areas
- Continue to monitor the various fatigue work streams with a view to sharing any pertinent findings
- Update fatigue management

requirements within contractual/framework arrangements with suppliers, informed by the current funded research

- Provide guidance to support conducting fatigue management assurance activities, including investigating how we can ensure that temporary labour is subject to an adequate FRMS

Work continued to investigate fatigue among employees across the rail networks:

- The results of the DLR fatigue survey using a wearable fatigue monitor have been analysed. This provides a baseline against which we can track improvements to user alertness arising from fatigue management and the implementation of revised fatigue management procedures
- A 3 month trial of the same device is underway across the London Trams team. Data from the trial will be utilised to understand the fatigue levels of staff and will influence the fatigue management system

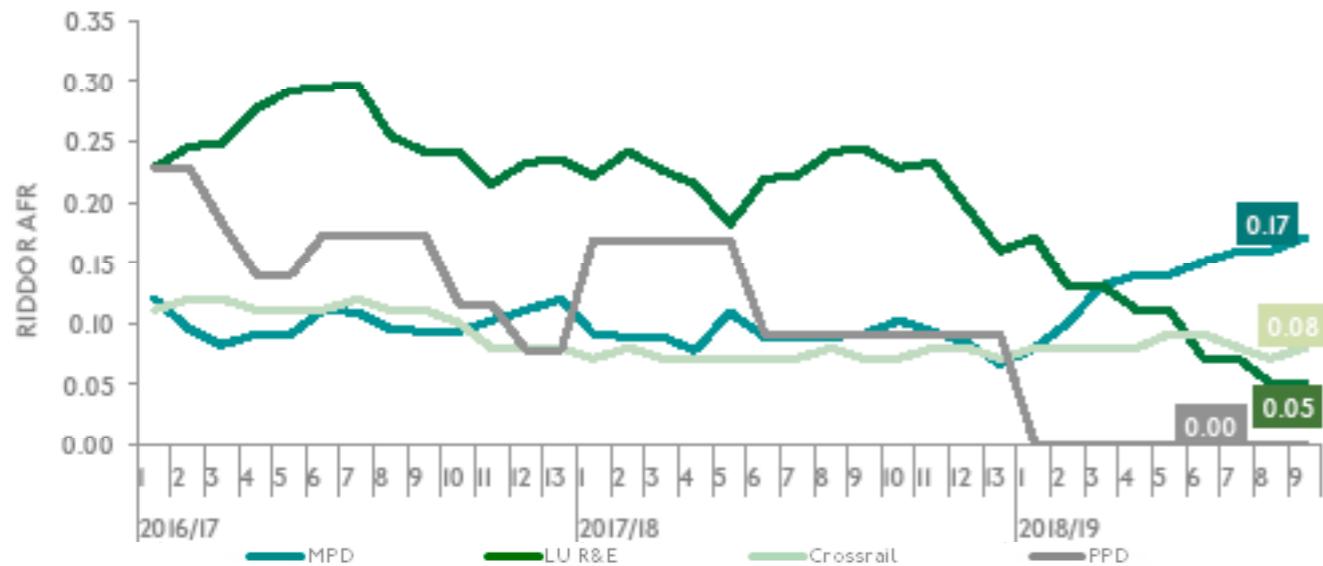
Work continued with our enforcement, bus operations and Dial-a-Ride workforce to shape their programmes for improving manual handling and conflict awareness training. Monitoring and review of bus operator workforce injuries continued as part of the safety assurance programme.



Track workers on the London Tram Network

Actions targeting construction safety

Construction workforce Accident Frequency Rate (AFR)



Our construction workforce accounted for 42 of our workforce injuries in the quarter. This is a 12.5% increase on quarter 3 last year. Two of the injuries in the quarter were reported under RIDDOR, triggered by the length of absence from work, rather than the severity of the injury. There has only been one major injury this year, but there is an increasing trend for our reduced level of minor injuries becoming Lost Time Injuries and reportable under RIDDOR. While we seek to better understand and influence this, our core effort is going into reducing the number of injuries of all types, through good housekeeping and enforcing safe systems of work by improving awareness of the consequences of injury. We are working with our supply chain to understand the causes of this and ensure that those injured at work are receiving the appropriate support. For our direct employees, housekeeping and health hazards were the main cause of injuries. The majority of these occurred within LU, where there has been a stable trend since the start of last year. Slips,

trips and falls and non compliance with HSE rules (e.g. Safe System of Work & Personal Protective Equipment) are the second most common cause of injury for our construction workforce within LU and MPD.

On Crossrail, the RIDDOR Accident Frequency Rate (AFR) reduced again this quarter. The rate for the last two periods was 0.07, which is well below the target of 0.15 and matches the lowest rate this year. CRL will maintain our objective of achieving below 0.06.

'I am safe for..'

Within our major projects, we are rolling out the 'I am safe for..' campaign. Our workforce will be asked to write down who they are keeping safe for. The campaign has already been rolled out on our works at Ealing Common, where we are the Principal Contractor and has had a positive effect.

Reducing utility strikes on highways

Although the overall trend for workforce injuries across our highway-related construction activities continues to show improvement, we remain focused on reducing the number of utility strikes by:

- Ensuring accurate and correct information is available and shared
- Sites are clearly marked up before breaking ground
- Appropriate working methods are used in close proximity to identified underground services
- Knowledge-sharing of best practice; a successful session was held on 12 October

Safety on Crossrail

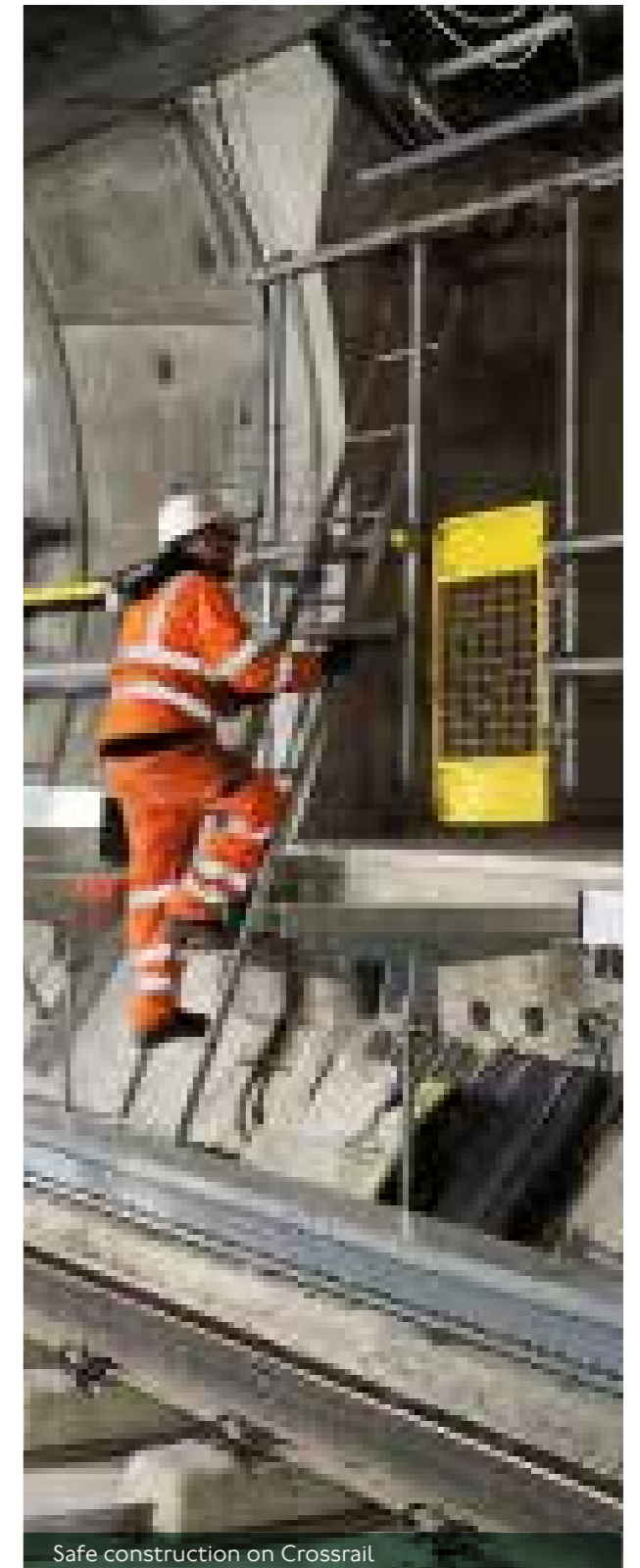
From June 2018 Crossrail Limited (CRL) began to plan and roll out a 'Finish Safe' campaign. Although the end date of the project has been extended, CRL continued with this approach throughout quarter 3. The key elements are:

- Ensuring basic safety rules are followed
- Increasing the impact of senior management engagement on site
- Promoting the importance of the role of site supervisors in ensuring site safety is being managed

Campaigns during the autumn and winter weather conditions and the festive holiday shut down/back to work activities.

CRL are now planning to deliver separate campaigns and initiatives for the final quarter of 2018/19.

The CRL Health and Safety Performance Index (HSPI) has been the cornerstone of



their leading indicators to highlight the drive to achieve the right safe behaviours. This quarter:

- All indicators have performed well
- The overall performance was 2.59 - significantly above the target level of 2.20

While significant safety incidents remain relatively infrequent across the CRL programme, this quarter saw an increase in the number of incidents classified as High Potential Near Misses (HPNMs), an important precursor indicator to more serious incidents. The rate for these incidents increased in each of the three periods. There was a particular focus on electrical incidents. At the end of the quarter we organised a 'Special' SHELТ meeting, where CRL brought together senior representatives from their supply chain to develop targeted work streams to tackle the adverse trend. Several work streams are now being delivered to address specific risk areas, and the trend for HPNM has reduced significantly. These will further feed into the next stages of the 'Finish Safe' approach.

The monthly CRL Health and Safety Learning Forum continued to share lessons from both incidents and best practice initiatives. Themes during the quarter included:

- Electrical safety
- Health and wellbeing
- Protecting underground services
- Working and height
- Controlling falling materials

CRL distributed a learning pack of the key findings from incidents to ensure that those who cannot make the meeting still benefit from this learning.

Health and wellbeing remains a significant issue for the Crossrail project. Maintaining a clear focus on mental resilience from top to bottom of the organisation, controlling factors that can lead to fatigue and maintaining high morale will be a key focus in quarter 4 for both CRL and the contracting companies.

Collaborative working for a positive HSE Culture

On 5 November, we held our second TFL 'Zero Harm' forum which involved over 30 of our key capital suppliers. This pan-TfL forum brings together our internal project delivery areas alongside our suppliers. The Zero Harm initiative is led by Directors across our TFL capital programme through the control of a Zero Harm Leadership Group, with the agenda for the Zero Harm Forum led by our supply chain partners. A number of groups have been established to look at ways to strengthen performance, such as:

- Improving the relationships with sub-contractors throughout the supply chain
- Working together for a common purpose
- Involving suppliers at the right time to maximise HSE effectiveness
- Improving how we report positive and negative findings

The session demonstrated genuine enthusiasm and collaboration between us and our suppliers to improve safety, with a large number of strong ideas being generated for how we can work together and bring about real safety improvements. The ideas are being analysed and taken forward by each group, with progress to be reported back at the next Zero Harm event.



Our HSE awards

Promoting and recognising best practice within our supply chain

The preparatory work to extend the Beacon scheme for construction across all our capital delivery projects continued during the quarter. The scheme establishes a model example of what our construction sites should look and feel like, and how they are managed, from a health, safety and environment perspective. It is designed to encourage best practice beyond statutory requirements and recognises:

- A consistently high level of HSE compliance and performance
- Care about appearance
- Respect for the community
- Valuing the workforce's health, safety and wellbeing

Beacon is currently being evaluated with the programme delivery teams to understand how best it can perform throughout the varied projects across TfL and how it can improve HSE performance by embracing 'what better looks like on site'.

During the quarter we extended our Supplier Assessment Tool (SAT) to a number of our suppliers undertaking highway-related works, to gather assurance that they are achieving the expected levels of HSE performance. The SAT checks cover a number of areas, including verifying suppliers have the relevant skills and competence, adopt a positive HSE culture, communicate effectively, and have robust arrangements to control risk throughout their work. The findings and actions are being shared to ensure learning and continuous improvement.

During the quarter, the TfL Supplier Awards were held. Winners in the Health and Safety categories were:

- The Northern Line Extension (NLE) team for the Best Health Initiative. The NLE Mental Health Programme is delivered collaboratively by the NLE Mental Health Steering Committee, made up of volunteers from our supplier Ferrovial Laing O'Rourke, LU and our subcontractors. Over the last 18 months the team has raised awareness of mental health and improving workforce wellbeing
- The Bank Station Capacity Upgrade (BSCU) team for the Best Safety Initiative. This was for their Sprayed Concrete Lining tunnel radial construction joint, which can be formed without the need for persons entering the excavation or under freshly sprayed shotcrete

The Innovation Award was presented to a safety-related initiative; the Go Ahead Safety Pledge (GASP). The pledge encourages attitude change through local staff engagement. The initiative has now been adopted across the wider bus industry.

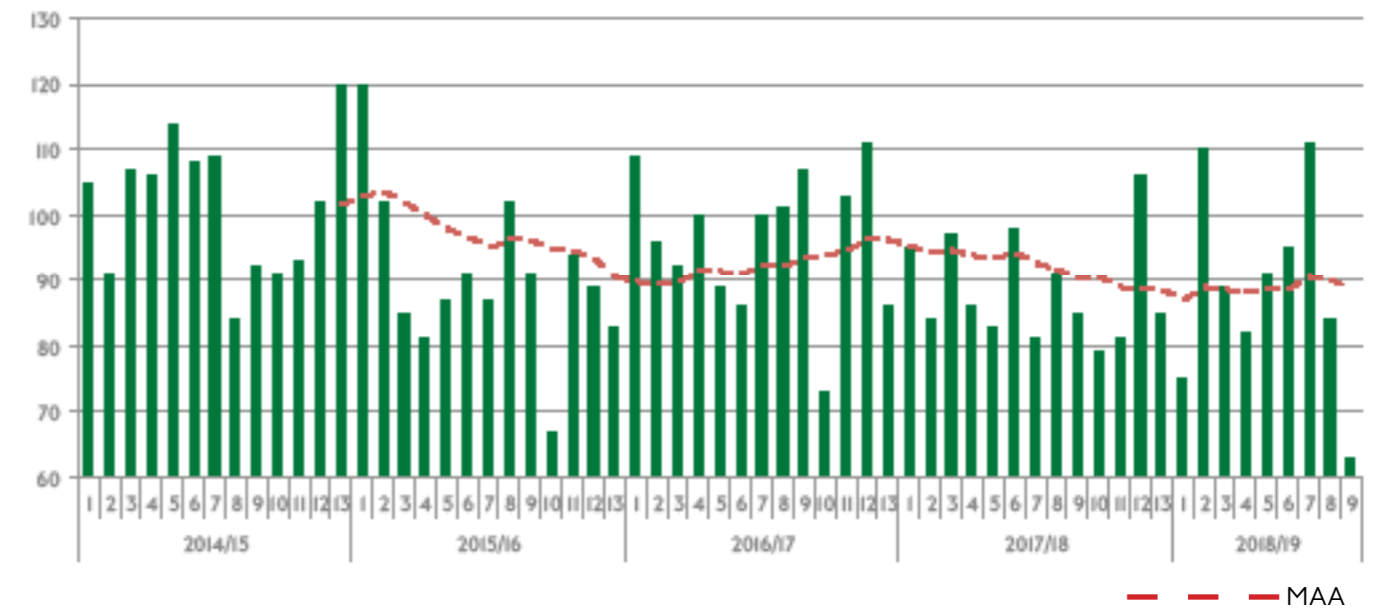
Our major projects have also been recognised for good HSE management at the New Civil Engineer Tunnelling festival. BSCU won the 'Innovation in Technical Product or Equipment Award' for the Orion environmental monitoring system, and also the 'Innovation in Instrumentation and Monitoring Award' for their fibre optic monitoring solution deployed on St Mary Abchurch (built by Sir Christopher Wren in 1681) whilst tunnelling underneath it.

Improving ease of reporting of incidents and near misses

The reporting app for HSE-related incidents has had successful trials within one of our major projects. Technical changes have been made during the quarter to ensure the app is suitable for wider use in other areas of TfL from quarter 4.

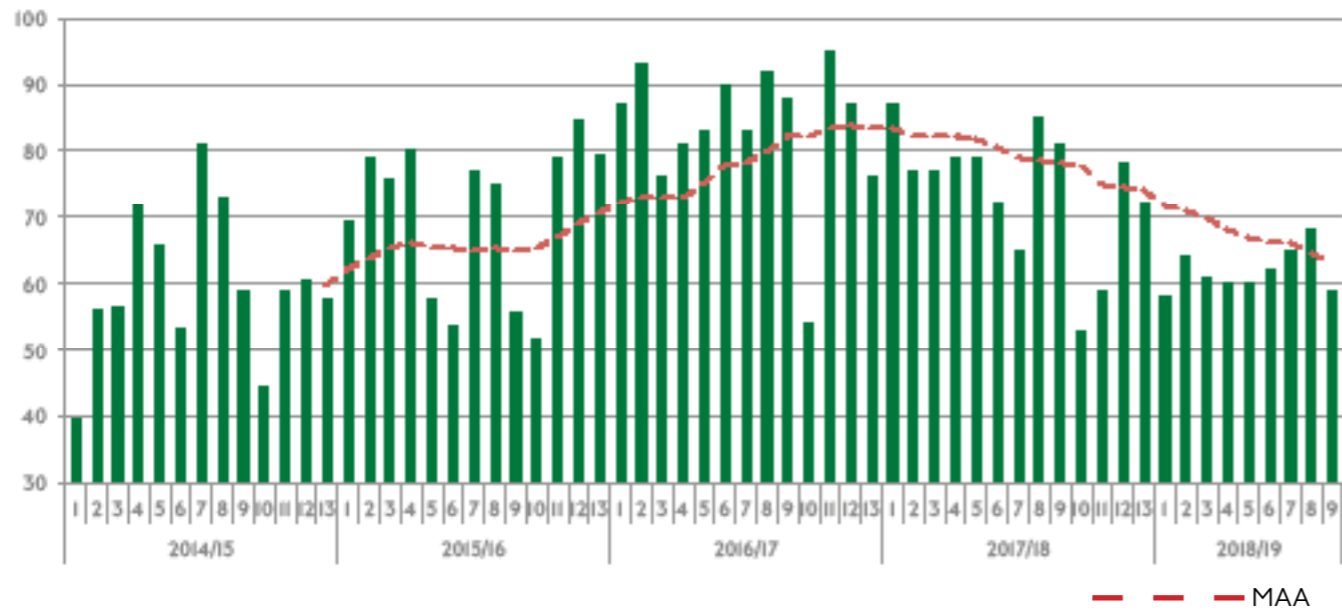
Long term trend

TfL direct employee total injuries - long term trend 



The overall trend for injuries to our direct employees since 2015/16 is improving by 8 fewer injuries on average per period. When compared with the same quarter last year, there has been no change to this number of employees injured.

TfL supplier total injuries - long term trend 



Injuries to our supplier employees shows a slight increase over the last 5 years, however we have seen a reduction in injuries within our supplier workforce since the start of 2017. This is mainly driven by the fall in injuries to our bus drivers who account for the majority of our supplier staff. Year to date when compared with last year, there has been a reduction of 21% reported by buses which equates to a 31% fall when compared to the previous quarter. Injuries caused by assaults have reduced by 48% since quarter 3 last year.



An apprentice learning safe working practices

Workplace violence and aggression

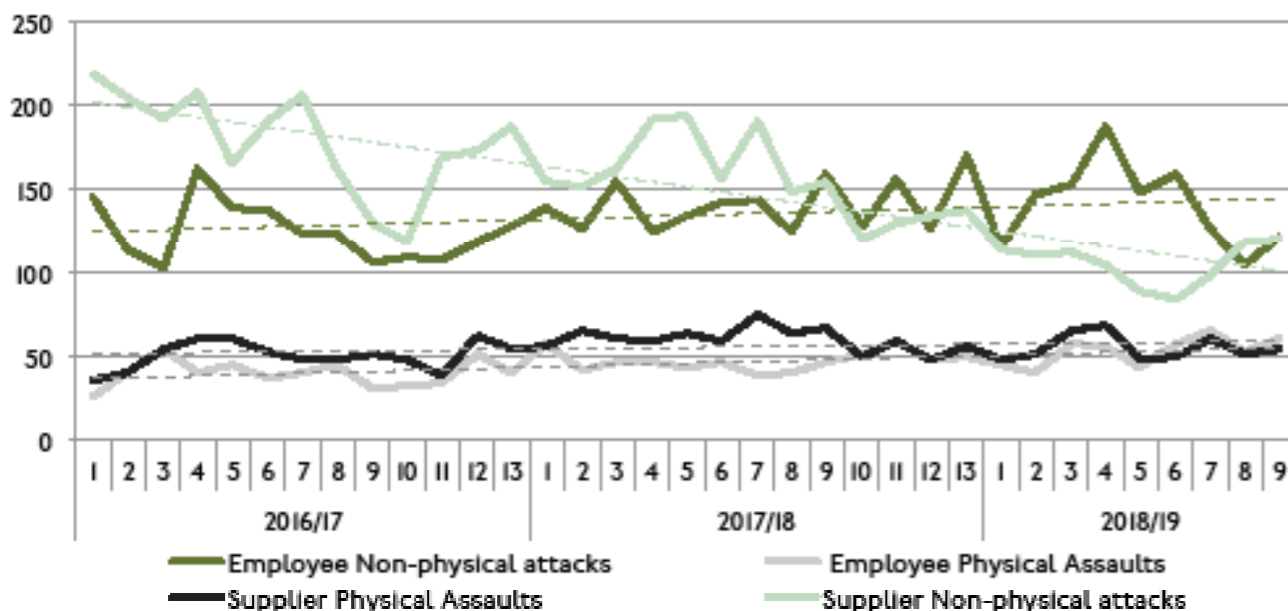
Overview: workplace violence in Q3 (TfL recorded data)

Physical Assaults	Non-physical Assaults	Total Assaults
345	691	1036

In the quarter, there were a total of 1,036 acts of violence towards our workforce, 33% of which were physical assaults. The total level of violence against our workforce in the quarter shows a reduction of 17% compared to the same quarter last year, resulting mainly from a reduction in assaults to supplier staff, 31% and 19% for non-physical and physical attacks respectively.

Long term trends

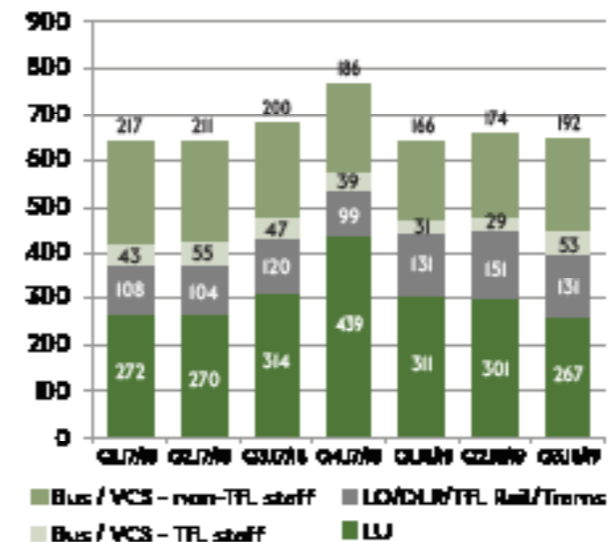
Workplace violence - long term trend



The general upward trend in workplace violence for London Underground which has prevailed since the later periods of 2016/17 has continued, with revenue disputes remaining the major underlying cause. The majority of this is fare evasion, principally double-gating, jumping over gates and forcing through gates. The re-introduction of Neighbourhood Policing is helping to address some of these fare evasion concerns.

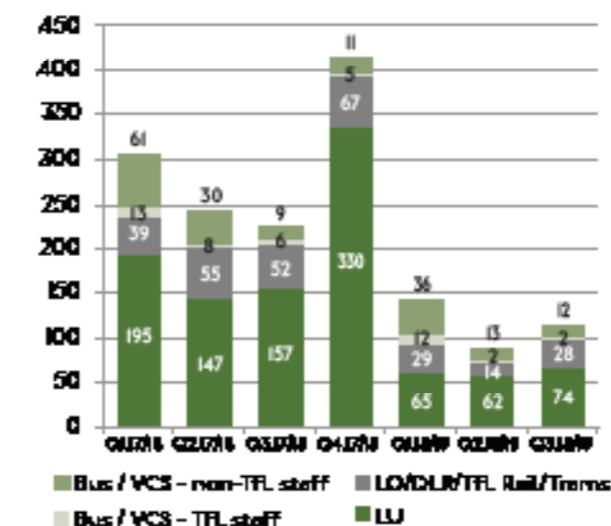
Data shown above are assaults recorded by TfL through internal reporting mechanisms. Not all assaults are reported to the police, and not all assaults will meet the threshold of being classified as a crime and included in police data.

Police recorded staff assaults (volume)



We work closely with the MPS Roads Transport Policing Command and the British Transport Police (BTP) to support investigations into violence (physical and non-physical) towards our workforce. The BTP and MPS report this information differently; the BTP reports on a broad range of outcomes, while the MPS reports the number of crimes detected through a formal sanction (a suspect being charged or cautioned for an offence). Positive outcomes include detections and take account of restorative and reparative outcomes. The rate comprises the number of positive outcomes and detections recorded (which can relate to crimes committed in any year) as a percentage of crimes recorded during the year.

Police recorded staff assaults positive outcomes (volume)



In the quarter the overall positive outcome rate was 18%. This value fluctuates greatly between the BTP and the MPS and is reflective of the live nature of ongoing investigations with many cases open at time of reporting. The majority of recorded staff assaults were on the bus and LU networks (38 and 42% respectively), with the positive outcome rate for this quarter being 6% on the bus network and 26% on the BTP-policed TfL networks.

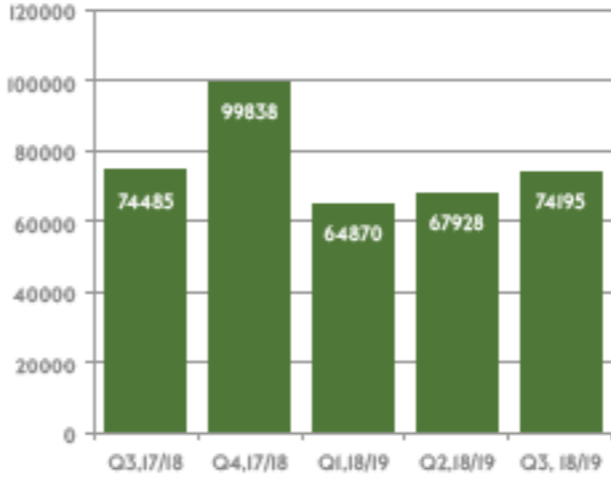
Health and Wellbeing

Workforce sickness absence

Working days lost to sickness	% working days lost to sickness
74,195	4.79%

We employ almost 26,000 people and within our direct employee workforce, 82% of the working days were lost within LU (where 71% of our direct workforce is employed), and 13% within Surface Transport. We currently provide risk controls and employee support in respect of musculo-skeletal issues, mental health as well as accidents and assaults. During the quarter, 52% of the days lost were attributed to these 3 causes.

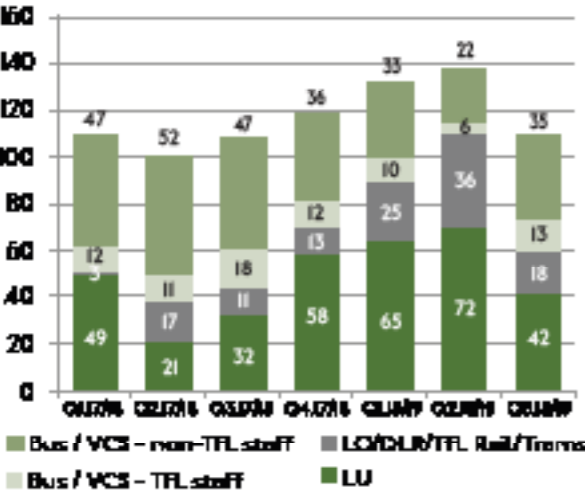
Days lost to sickness absence – 5 rolling quarters



The total number of working days lost to sickness has decreased 0.04% (290) compared to the same quarter last year. In addition:

- The number of working days lost due to mental health increased by 5.8%
- The number of working days lost due to musculo-skeletal issues reduced by 4.3%
- Absence due to accidents and assaults reduced by 1.9%
- The proportion of working days lost to neurological issues and heart disease increased by 13% and 6% respectively

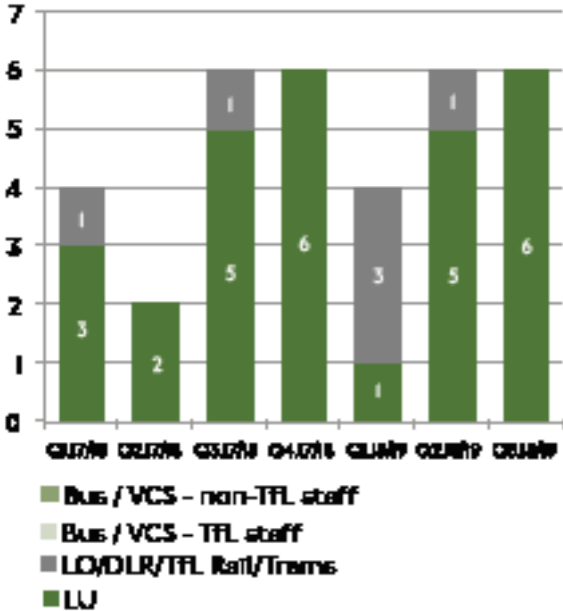
Police recorded staff assaults which are deemed hate crime (volume)



The police will flag an offence as a hate crime if it is motivated by one or more of the factors of race, religion/faith, sexual orientation, disability or transgender identify. Tackling hate crime against our staff and customers is a priority for us and our policing partners. We lead a range of activities to deal with hate crime on our transport network to reassure our staff and passengers who feel more vulnerable to victimisation, and encourage people to report incidents to the police.

In the quarter the rate was 17%, a slightly lower rate than in the preceding two quarters. The majority of hate-related staff assaults are racially motivated (in excess of 80%) and this is consistent across all modes.

Sexual offences against members of staff



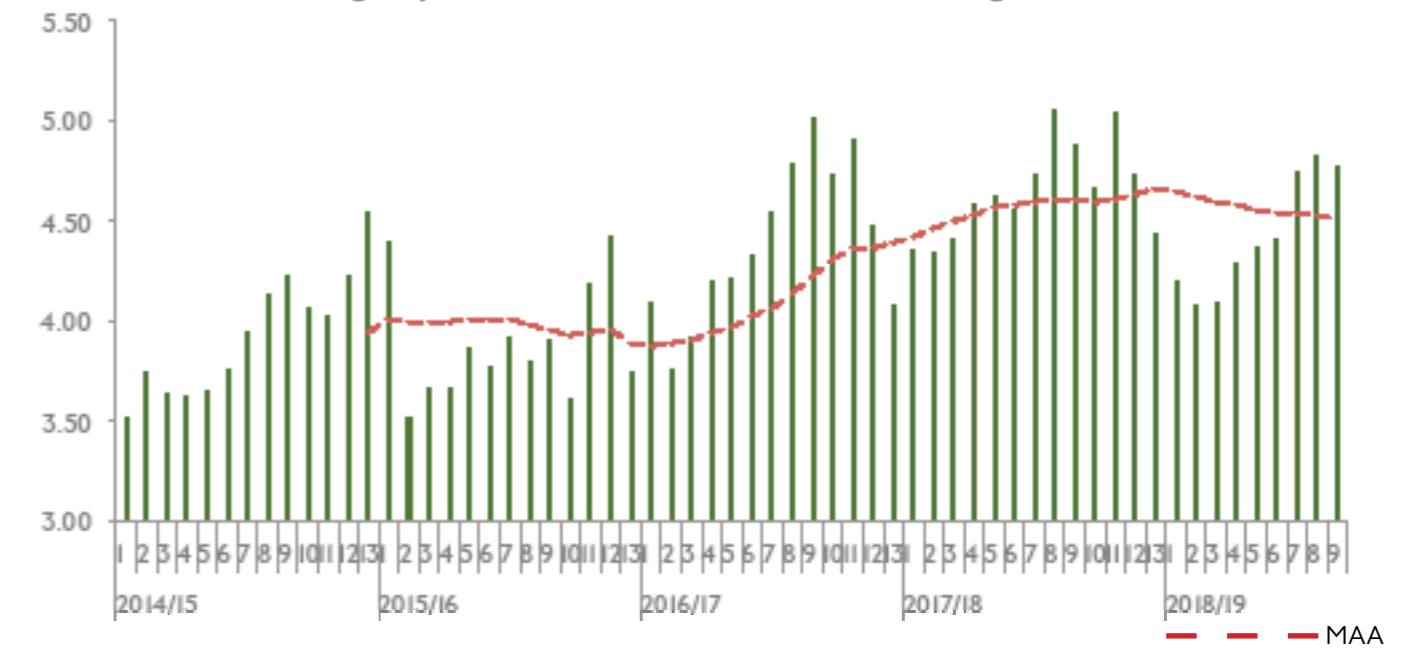
The volume of offences remains low and are all of a low level nature (exposure and unwanted touching). There were no reported sexual offences against staff working on the bus network.


We continue to work with the BTP, City of London Police and the MPS on Project Guardian, a partnership initiative to increase the confidence in reporting sexual offences which occur on the London's public transport system, reduce the risk of becoming a victim, challenge unwelcome sexual behaviour and target offenders.

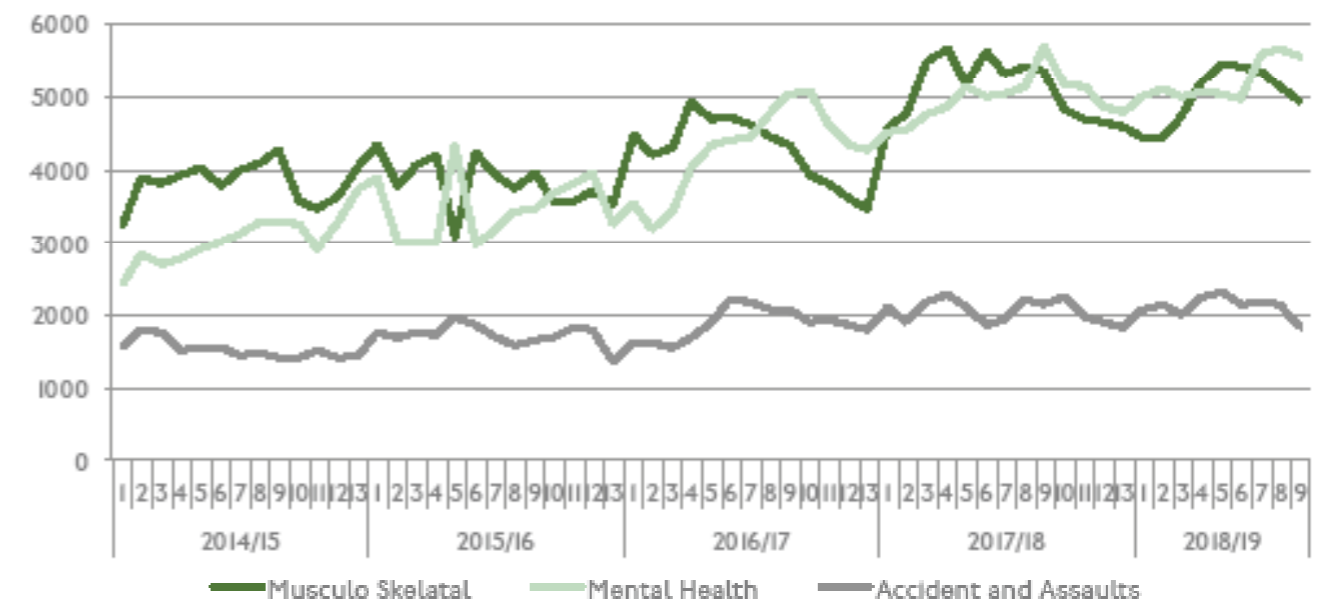


Long term trend

% Available working days lost - all sickness absence - long term trend 



Working days lost due to sickness causes for areas with specific work related risk controls - long term trend 



The number of working days lost since the start of 2014/15 shows a marginal increase over the past 2 years. The percentage of working days lost due to all sickness this quarter is 2.2% lower than the same quarter last year. The long term trend for the number of working days lost due to musculo-skeletal and mental health causes is increasing by approximately 40 days per period over the last two years.

Health matters

In September the Health Matters part of the our Health and Wellbeing Programme was launched, encouraging a focus on adopting a healthy lifestyle. Staff engagement activities included:

- Know Your Numbers Week 10-16 September: Our employees were encouraged to take part in the UK's biggest blood pressure testing event by having their blood pressure checked at one of Blood Pressure UK's Pressure Stations and to take an online test to find out their heart age, (an indicator of increased risk of suffering a heart attack or a stroke) and how to reduce it
- National Fitness Day 26 September: Our employees were encouraged to take part in the 90 free activities across the capital designed to get people active and encourage healthier lifestyle choices. We partnered with Public Health England to challenge employees and Londoners to walk briskly for 10 minutes twice a day and track their progress with the Active 10 app



World Mental Health Day

On World Mental Health Day, which took place on 10 October we promoted techniques and support available to promote good mental health, including:

- The three step approach 'Taking in the Good' to enhance resilience, which encourages reflection on positive experiences
- Promoting our staff network groups and awareness of mental health issues faced by these groups
- A focus on the importance of sleep in maintaining good physical and mental health, including promotion of our online sleep assessment tool, which provides tailored advice on changes to help employees get the most from their sleep

We also provided guidance to staff on managing the stresses and pressures that they may encounter leading up to and during the Christmas period and how to access support during this time.



Know Your Numbers Week - 10-16 September

London's streets will be clean and green



Cyclists on Quietway 13 in Haggerston

Environment - overview

3.5%
Reduction in non-traction energy use



1.5%
Reduction in traction energy use



35%
Reduction in CO2 emissions from head office use



Performance headlines

- ✗ Year to date increase in London Overground traction energy of 4.8%
- ✓ On track with plans to prepare for the launch of the Ultra Low Emission Zone on 8 April 2019
- ✓ On track with roll out of 12 Low Emission Bus Zones
- ✓ On track with launch of green Dial A Ride vehicles

Did we deliver our planned improvements?

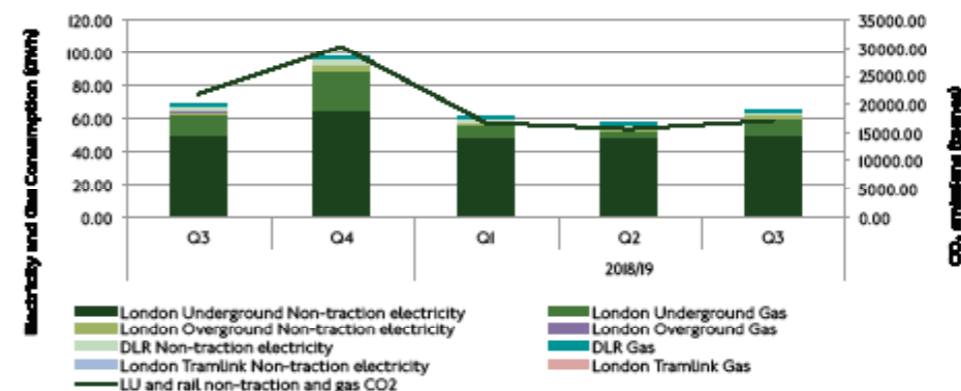
- ✓ Deliver 3 Low Emission Bus Zones (5 were delivered)

Our plans for the next quarter

- Continue preparations for the launch of ULEZ in April 2019
- Launch a package of measures to reduce air pollution and congestion in central London

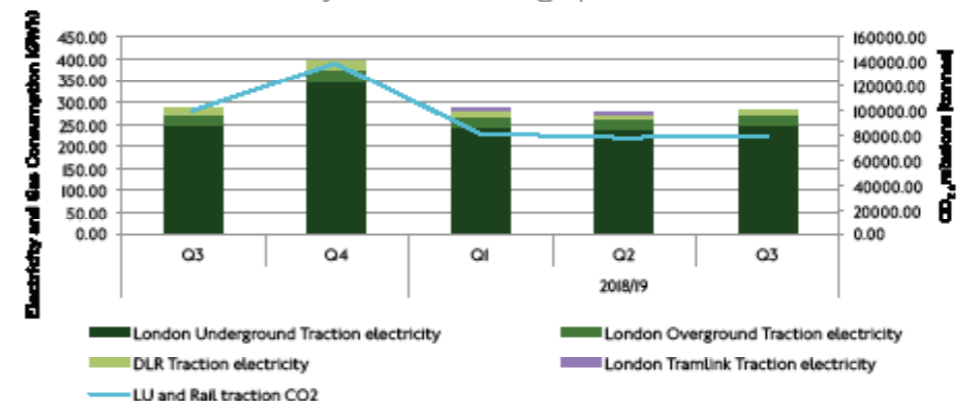
Environment - performance

Non-traction electricity and gas use 5 rolling quarters (GWh)



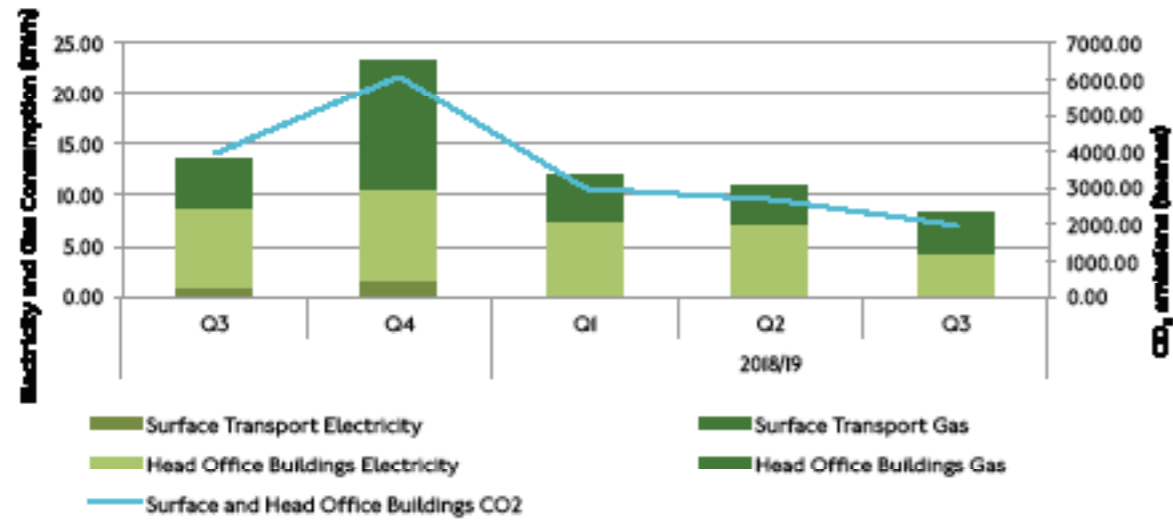
Our usage of non-traction energy fell by 3.5% with a total of 53.7 GWh used during quarter 3. So far this year, we have used 160.6 GWh of non-traction energy (down 1.3% on the equivalent period of last year). LU is responsible for the majority of consumption and recorded a 0.6% decrease on quarter 3 last year. Energy use reduced in London Overground and DLR. CO₂ emissions have reduced by 21% this quarter when compared to the same quarter last year.

Traction electricity use 5 rolling quarters (GWh)



Our usage of electricity to run our trains fell by 1.5% with a total of 280.2 GWh used during quarter 3. So far this year, we have used 837.7 GWh of traction energy. LU is responsible for the majority of consumption and recorded a static performance compared to the same period last year, despite increases in service levels, such as the introduction of the new Jubilee line timetable in May 2018. For London Overground, there was a 4.8% increase and DLR recorded a reduced consumption by 38.4%. Total CO₂ emissions from rail traction energy were 80,177 tonnes in quarter 3, an improvement of 20% compared to quarter 3 last year.

Surface transport and head office gas and electricity consumption (GWh)



In our head office buildings, we used 3.94 GWh of gas, down from 4.74 GWh used in the same quarter last year. For electricity, we reduced our energy use by 43%. As both our gas and electric usage has decreased, overall energy efficiency and carbon emissions have improved by 35% this year to date. This is predominantly the result of the successful recommissioning of the gas Combined Cooling, Heat and Power plant at our Palestra head office building in December 2017. This plant generates electricity by burning gas, resulting in an increase in gas consumption, as electricity consumption has decreased.

Environmental incidents in Q3

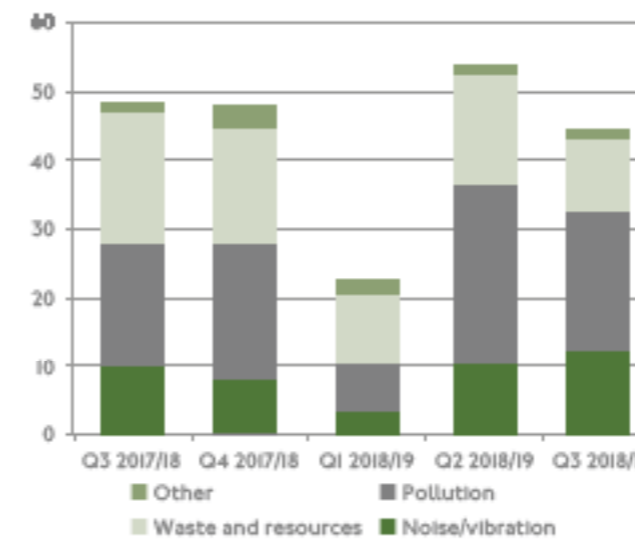
Streets	Buses	LU	Rail	Major Projects	Total
0	0	32	0	12	44

There were 44 incidents in quarter 3, an 8% improvement on quarter 3 last year, when there were 48.

Top 4 causes of environmental incidents

Pollution	Waste & Resource	Noise & Vibration	Other
48%	23%	27%	2%

Environmental incidents - 5 rolling quarters



Actions to improve London's environment

Environmental complaints

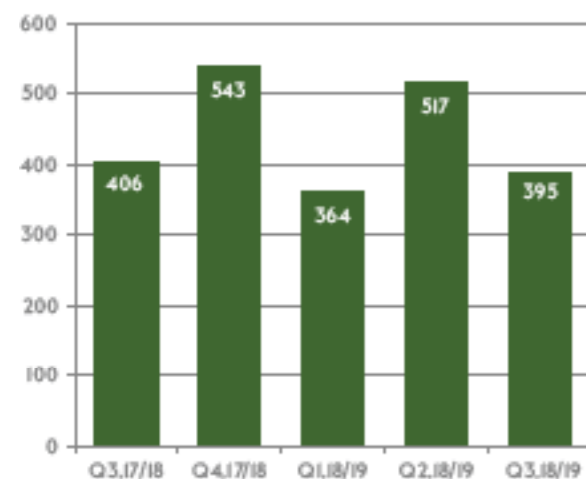
Streets	Buses	LU	Rail	MPD	Other	Total
15	119	185	70	6	0	395

A total of 395 environment related complaints were received during quarter 3, compared with 406 in quarter 3 last year. LU had 185 complaints in quarter 3 compared with 184 last year. Of these, 68 complaints related to operational noise, 39 to odour or cleanliness and 34 to works noise. For buses, 45 complaints related to odour or cleanliness, 25 to air pollution, 25 to noise and 24 to graffiti, waste and litter.

Top 4 causes of environmental complaints

Operational noise	Smell/Cleanliness	Works noise	Vegetation
28%	23%	21%	10%

Number of environmental complaints in last 5 quarters



Environment-related complaints have fallen 6% compared with the same quarter last year. This has been driven by a fall in complaints related to air pollution, operational noise, smell/cleanliness and vandalism/waste/litter/graffiti associated with our bus operations. Improvements have also been seen in the number of complaints related to habitats and vegetation on the LU network; although there has been an increase in complaints relating to street vegetation. On our rail networks, complaints relating to operational noise and smell/cleanliness have increased. The LU network has seen a rise in complaints about works noise.

Ultra-Low Emission Zone (ULEZ)

We are continuing to prepare for the launch of the ULEZ in central London on 8 April 2019. We have begun installing more than 300 ULEZ warning road signs across central London. The signs, which are being installed at the same locations as existing Congestion Charge signs, warn drivers at all entry points to the zone, and on a number of key approach routes, to ensure their vehicle meets the tough new emission standards.

We have been running an extensive multi-channel communications campaign since spring 2018 to prepare drivers for the ULEZ. In addition to advertising to raise awareness of the ULEZ and how the scheme works, we have sent more than 2.5 million emails and contacted registered Congestion Charge users whose vehicles do not meet the ULEZ standards, to remind them the new zone begins on 8 April 2019. We are also contacting other drivers identified in central London whose vehicles are not currently ULEZ-compliant. This has helped encourage 1.3 million visits to our online compliance checker, where people can check if their vehicle complies with the ULEZ emission standards and over one million visits to the ULEZ home web page.

The volume of communications has increased since September and will continue, including the use of new channels such as high profile large format roadside posters at seven high traffic locations.

We have been engaging extensively with key stakeholders in London, including the automotive industry, leasing companies, business groups, arts and culture sector, community and accessibility groups,

customer and active travel groups, Borough communications and transport teams. We have produced a leaflet on ULEZ, which is being distributed to key organisations such as the Federation of Small Businesses, to pass on to their members.

Low Emission Bus Zones Go Live

We are more than half-way towards the roll out of 12 Low Emission Bus Zones in London following the launch of five more clean corridors, bringing the total in place to seven. These busy roads are now served only by the cleanest diesel buses which emit a fraction of the most harmful tailpipe emissions and have been contributing to healthier streets and people as each bus was upgraded during the conversion process. The Mayor formally announced these in Camberwell on 15 November. They lie between:

- High Road to Green Lanes
- Camberwell to New Cross
- Wandsworth to St John's Hill
- A12 Eastern Avenue to Homerton Road
- Edgware Road - Kilburn to Maida Vale

Their creation follows the launch of the first zones in Putney High Street and the Brixton to Streatham zone and is part of a much larger upgrade of all buses in the 9,000-strong fleet between now and 2020. More than 60% of diesel buses are currently at this ultra-clean engine standard and the rest will follow through a combination of retrofitting or replacement with new vehicles over the next couple of years.

The launches were supported with PR, posters along the route and customer relationship management activity using the TfL database.

Electric Bus Depot

RATP Dev, who operate a number of our bus routes, upgraded their Shepherd's Bush depot to run electric vehicles. The depot houses buses for routes C1 and 70, which will be all electric. The aim is to progressively turn Shepherd's Bush into a depot with a full electric fleet, to make it RATP's first zero-emission bus garage in London.

Greener Dial-a-Ride Vehicles

The first batch of 90 green Dial-a-Ride vehicles arrived in London - the new low-emission vehicles will be introduced 4 months ahead of the ULEZ. Emissions will be reduced further as the majority of these vehicles have technology to stop engines unnecessarily running when the vehicle is not moving. The wider fleet of around 300 will continue to be upgraded ahead of the expansion of the ULEZ to the North and South Circulars in 2021.

Reduction of Single Use Plastics

We launched our action plan for cutting unnecessary use of single use plastic and disposables within our estate, including plastic bottles, disposable coffee cups, plastic cutlery and micro plastics in cleaning products. These requirements were included in the contract for our new head office canteen provider appointed in December 2018.

Support for World Car-free Day

Around 50 streets across London went car-free on 22 September as part of World Car Free Day. The event supported London Play, a charity that works to give children the freedom to play safely in the street.



Our new low emission Dial-a-Ride vehicles

Regulatory investigation and enforcement update

In November, following the hearing into an incident on 4 June 2016 where a contractor working on track improvements was injured as a result of being crushed against a platform at Whitechapel Station by a road rail vehicle, LU was fined £100,000 plus costs and its Principal Contractor Balfour Beatty Rail Limited was fined £333,000 plus costs.

Surface Transport previously reported an incident on the A40 in November 2011, in which a motorcyclist was injured as a result of temporary bridging plates installed over defective expansion joints on the A40 Westway. The Health and Safety Executive investigation is still ongoing and no formal warnings or notices have been issued to date.

In October, the RAIB issued their report into the detrainment of customers onto live electrical track on the LO network near Peckham Rye station, 7 November 2017. They concluded that:

- The incident occurred because the driver initiated the detrainment of customers without the traction current being switched off
- He did this because he was given instructions by control room staff who had misunderstood the actual location of the stranded train
- The train driver and the signaller did not reach a clear understanding about the actions that were required to safely detrain the customers. The delay caused unrest among the customers on the train and contributed to stress and task overload of the driver, which affected his decision making

- The driver's experience and skills did not enable him to cope with these demands, and Network Rail did not effectively implement its own procedures for managing an incident involving a stranded train

Underlying factors were that:

- Arriva Rail London (ARL) strategic command and Network Rail signalling staff were not adequately prepared to manage the incident
- The railway industry standards and procedures relating to stranded trains place little emphasis on the need for practical training for those involved

The RAIB also observed that there were a number of deficiencies in the training and briefing of staff and in the ARL control room arrangements.

The RAIB has made three recommendations, directed to Arriva Rail London and Network Rail, intended to improve the response of the railway industry to train failures and other abnormal events, and has identified three learning points relating to the importance of following the correct procedures when preparing to evacuate customers from trains, ensuring that communications are properly understood, and passing on the details of incidents promptly and effectively.

We will monitor ARL's action against these recommendations via the ARL Safety Executive meeting.

Audit conclusions



A total of 8 health, safety or environmental related audits were conducted in the quarter. Three were concluded as 'adequately controlled'.

One audit had a conclusion of 'poorly controlled'. The testing of LU station staircase pressurisation testing was concluded as poorly controlled due to the absence of a maintenance regime for the related assets. These staircases and associated systems may be used by the London Fire Brigade (LFB) to access stations in an emergency and the corrective actions have included consultations with the LFB.

Four were concluded as 'requires improvement':

- Following a change of supplier to manage legionella risk, the audit found there are a number of key activities that require implementation to meet statutory requirements
- The audit of testing of LU Station Emergency Lighting concluded not all British Standard requirements were met which meant compliance with the Regulatory Reform (Fire Safety) Order 2005 cannot be fully demonstrated
- Following a previous 'poorly controlled' audit of earth structures, this audit found the action regarding inspection backlog was complete but three areas still required implementation
- The audit of asset data changes being handed over from projects into the asset management systems concluded compliance with the project management system was not consistent and the absence of a central project register hindered planning and assurance

Appendix I: Sandilands investigation recommendations applicable to TfL

Table I: Sandilands investigation recommendations applicable to TfL and its subsidiaries

Recommendation	Progress to date
UK tram operators, owners and infrastructure managers should conduct a systematic review of operational risks and control measures associated with the design, maintenance and operation of tramways. [RAIB recommendation 2. Links with RAIB Recommendation 1, 10, and TfL Recommendation 5]	<p>Together with Tram Operations Ltd we are represented on the UK Tram Industry Sandilands Sub Committee, established to consider the RAIB findings and take action on behalf of the UK tram industry.</p> <p>Our (together with TOL) review of route risk assessments and the network risk model has been shared with the wider UK tram industry. The industry is reviewing all risk assessments within the industry to agree a standard approach. The LT/TOL risk assessments have been reviewed and revised in line with this approach. An industry risk model is under development via UK Tram and the Light Rail Safety and Standards Board.</p> <p>We presented an overview and findings of Risk Model work to Rail Safety and Standards Board Risk Management Forum in June 2018.</p>
UK tram operators, owners and infrastructure managers should work together to review, develop, and install suitable measures to automatically reduce tram speeds if they approach higher risk locations at speeds which could result in derailment or overturning. [RAIB recommendation 3. Links with TfL recommendation 2]	<p>The tender process for the installation of a new safety system on the London Trams network that will automatically apply the brakes should the speed limit be exceeded at high risk locations, continued.</p> <p>The Invitation to Tender was issued 31 July and the contract was awarded to Engineering Support Group limited on 14 December 2018. The system will be installed and in operation by the end of 2019, including a period of training and familiarisation with tram drivers ahead of it becoming fully operational. TOL are an active stakeholder in this.</p> <p>The new system will automatically bring a moving tram to a controlled stop if it were to exceed the speed limit at a designated location. The system will also automatically alert the operations control centre.</p> <p>The system will initially be configured to priority locations as suggested by the RAIB but will have the flexibility to be introduced elsewhere on the tram network.</p>
UK tram operators, owners and infrastructure managers should work together to research and evaluate systems capable of reliably detecting driver attention state and initiating appropriate automatic responses if a low level of alertness is identified. [RAIB recommendation 4]	<p>In progress: Working closely with TOL, LT has procured and commissioned the 'Seeing Machine Guardian' driver protection system fleet wide. This system uses proven facial movement technology to monitor driver fatigue and distraction. The system was fully installed across the LT fleet in October 2017.</p> <p>An additional feature of the Guardian system is that it is programmed to alert drivers if the maximum speed goes above 70kph.</p> <p>TOL were closely involved in the selection and implementation of this system and played the major role in securing driver support.</p> <p>LT and TOL have already hosted several delegations, including UKTram and others, to demonstrate the technology in operation.</p>

Recommendation	Progress to date
UK tram operators, owners and infrastructure managers, in consultation with the DfT, should work together to review signage, lighting and other visual information cues available on segregated and off-track areas required by drivers on the approach to high risk locations.	<p>UK Tram commissioned a review of systems capable of reliably detecting driver attention state and initiating an appropriate automatic response if a low level of alertness is detected. We will evaluate the systems identified by the review when it is published to see if the Guardian system fully implements this recommendation or if further work is needed.</p> <p>We undertook a comprehensive review of tram speeds and speed signage across its network.</p> <p>As a result the following measures were put in place by September 2017. TOL are an active and engaged stakeholder on this initiative:</p> <ol style="list-style-type: none"> 1. The maximum tram speed on the network was reduced by 10kph, from 80kph to 70kph. The effect is that the potential for coasting in high speed areas has been removed, and that continual speed management is required in these low workload areas so increasing driver alertness. 2. Additional step down speed signage was implemented in all locations where speeds reduced by more than 20kph, enhancing driver visual cueing and orientation. 3. Where speed signs are located immediately in advance of higher risk locations, e.g. a tram stop or a curve with low approach visibility, the sign has been enhanced with the addition high visibility outer border as an additional visual cue to drivers of an approaching hazard. <p>iTram</p> <p>We will implement iTram to provide audible in-cab over speed alerts. iTram is a performance monitoring tool that as well as driving safety improvements by trend analysis of tram speeds, also utilises GPS technology to provide over speed warnings to drivers at all points across the network. It is therefore an enhancement on the Guardian system which can only alert drivers if they exceed the maximum speed limit.</p> <p>Fitment across the fleet will be completed by December 2019</p> <p>Review of Visual Cueing</p> <p>Together with TOL we have completed a comprehensive Route Hazard Analysis. The conclusion is that the already completed installation of additional speed signage work improves driver visual cueing on the network. Conceptual designs for enhanced visual cueing in Sandilands tunnel are under TOL driver consultation.</p> <p>Tunnel Lighting</p> <p>Post the Sandilands incident we installed additional temporary lighting on the approach to the Sandilands tunnel. While our road tunnel lighting experts developed a permanent solution.</p> <p>The new design will adopt best practice from the automotive industry to reduce the impact of glare on driver's eyes both when entering and exiting the tunnel. Work is expected to be complete on the improved tunnel lighting by December 2019.</p> <p>We are also trialling illuminated warning signs, similar to those used on roads to warn drivers their speed is above the limit. The effectiveness of these signs will be evaluated in summer 2019 and the feedback will be shared with the UK tram industry.</p> <p>[RAIB recommendation 5. Links to TfL Recommendation 1]</p>

<p>UK tram operators and owners should, in consultation with appropriate tram manufacturers and other European tramways, review existing research and, if necessary, undertake further research to identify means of improving the customer containment provided by tram windows and doors.</p>	<p>We have commissioned the manufacture and testing of several prototype windows that may provide an appropriate level of additional containment. These prototypes have been assessed against the conditions likely to have been encountered during the Sandilands incident, and take into account any affect they may have on ease of access for the emergency services.</p>
<p>[RAIB recommendation 6. Links to TfL Recommendation 8]</p>	<p>We concluded that mainline rail crash worthiness standard GM/RT2100 is more likely to offer protection against the conditions experienced during the Sandilands event. Strengthening film on top of the existing tempered glass has been selected as the immediate solution to strengthen glazing on trams.</p> <p>The extensive testing with safety experts has progressed and a new higher specification film that is 75% thicker (from 100microns to 175microns) will be fitted to all doors and windows to improve containment by spring 2019.</p> <p>We are investigating the practicalities of modifying tram doors and we will consider the recommendations made by the RAIB when designing new vehicles in the future.</p>
<p>[RAIB recommendation 7]</p>	<p>In conjunction with industry experts, we have formulated a Technical Specification for the retrofitting emergency lighting to its fleet. The system will be fully autonomous, and will operate independently of the trams battery system in the event of an emergency.</p> <p>A new emergency lighting system, that will operate independently of the trams' battery in the event of an emergency, has been procured and will be installed over the summer of 2019.</p> <p>TOL are an active and engaged stakeholder on this initiative.</p>
<p>[RAIB recommendation 8]</p>	<p>We will work with tram operators and tram manufacturers to identify and evaluate options to achieve this objective.</p>
<p>[RAIB recommendation 10. Links with RAIB recommendation 2]</p>	<p>The network risk model and route risk assessments have been reviewed and updated. They have been shared with the wider UK tram industry and we also presented an overview and findings of Risk Model work to Rail Safety and Standards Board Risk Management Forum in June 2018. Work has also been completed on our tram crossing risk assessments for Croydon town centre.</p> <p>A joint management process for the embedment of the models has been developed.</p> <p>The industry is reviewing all risk assessments within the industry to agree a standard approach. The LT/TOL risk assessments will be further reviewed and revised in line with this approach.</p>

Recommendation	Progress to date
<p>TOL should review and, where necessary, improve the management of fatigue risk affecting its tram drivers with reference to the ORR's good practice guidance. [RAIB recommendation 11]</p>	<p>TOL are implementing a safety improvement plan designed to address the intent of this recommendation through their own internal safety governance arrangements.</p>
<p>TOL should commission an external organisation to review, the way that it learns from operational experience. [RAIB recommendation 12]</p>	<p>TOL have implemented a 'Just Culture' Programme designed to address the intent of this recommendation through their own internal safety governance arrangements.</p>
<p>TOL and LT should review and improve the process for managing public and employee comments that indicate a possible safety risk. [RAIB recommendation 13]</p>	<p>Complete: We have reviewed our customer complaints procedure and implemented improvements to ensure that any safety issue raised by a customer is dealt with efficiently and thoroughly across the TfL network.</p>
<p>TOL and LT should review and improve their processes for inspecting and maintaining on-tram CCTV equipment to greatly reduce the likelihood of recorded images being unavailable for accident and incident investigation. This recommendation may apply to other UK tram operators. [RAIB recommendation 14]</p>	<p>All LT Bombardier fleet has been fitted with new CCTV image recorders. CCTV health checkers which actively monitor the status of recording units and identify faults.</p> <p>A review is underway to establish whether similar remote monitoring capabilities can be introduced on the Stadler vehicles as is now used on the Bombardier vehicles. We are progressing with procurement documentation.</p>
<p>TOL and LT should review and revise where required existing tram maintenance and testing documentation to take account of experienced gained, and modifications made, since the trams were brought into operational service. [RAIB recommendation 15]</p>	<p>LT has undertaken a comprehensive review of its written standards, maintenance processes and identified quality deficiencies. LT has appointed an independent entity to author new written standards, maintenance processes and forms addressing all quality gaps. This process will be in two phases, with sixteen critically prioritised standards and associated documents being delivered in the first phase. 4 standards have been issued for review.</p>
<p>Review available driver cues in relation to braking points on approaching a curved section of the tramway. [TfL recommendation 1. Links to RAIB recommendation 5]</p>	<p>Overall network top speed has been reduced from 80kph to 70kph. Additional 70kph signs have been provided to aid driver awareness of the permitted maximum speed.</p> <p>A design and signal sighting exercise has been concluded and the provision of additional step down speed signage to aid driver speed awareness and visual cueing is complete.</p> <p>Additional visibility signs have also been provided, which will heighten driver speed awareness in high risk areas.</p>

Recommendation	Progress to date
<p>Review of arrangements for the monitoring and management of speeding.</p> <p>[TfL recommendation 2. Links to RAIB recommendation 3]</p>	<p>LT has commissioned the installation and commissioning of the 'iTram' system, which will provide driver over-speed alerts network wide. iTram will also provide oncoming hazard awareness to drivers of high risk areas.</p>
<p>Review of traction brake controller (TBC) driver's safety device design.</p> <p>[TfL recommendation 3]</p>	<p>LT has procured and commissioned the 'Seeing Machine Guardian' driver protection system fleet wide. This system provides proven driver fatigue and distraction management via facial recognition technology.</p>

