

Date: 22 November 2017

Item: Quarter 2 - 2017/18 TfL Health, Safety and Environment Report

This paper will be considered in public

1 Purpose

- 1.1 This report provides an overview of the health, safety and environment (HSE) performance for London Underground and TfL Rail, Surface Transport (including London Rail) and Crossrail services for Quarter 2 - 2017/18. This report covers 25 June – 16 September 2017 inclusive.

2 Recommendation

- 2.1 **The Panel is asked to note the report.**

3 Background

- 3.1 There were 18 customer fatalities on the TfL network, 14 of which occurred on the London Underground (LU) and TfL Rail network. Our investigations identify factors that suggest suspected suicide in 13 of these cases. There was one fatality at Greenford Tube station where a customer fell from the platform edge and was hit by an oncoming train. British Transport Police (BTP) and Office of Rail and Road (ORR) investigations concluded this to be an accident, and a date for the inquest is awaited. Four fatalities occurred in connection with the bus network: two pedestrian fatalities as a consequence of collisions with buses; one customer who fell on the stairs of a bus as it pulled away from a stop; and a motorcyclist involved in a collision while overtaking a bus. Our investigations consider these to be accidental. All fatalities on our network await the outcome of inquests.
- 3.2 Ten historic incidents were concluded by the Coroner and recorded as suicide (five) and accident (four). In the tenth historic incident, the Coroner concluded accidental death contributed by neglect, and issued a Prevention of Future Deaths report to TfL concerning a fatality on Cycle Superhighway 8 on 1 March 2016 when a motorcyclist lost control of his motorcycle on the blue surfacing. We assured the Coroner that we have an adequate procedure for determining grip levels, and detailed work is under way, including an updated policy to monitor skid resistance and raising the issue of road grip variation between sections of the highway with the UK Roads Board.

- 3.3 Regulatory authorities issued two improvement notices to LU. The City of London Environmental Health Office issued an improvement notice for the presence of rodents near Aldgate High Street (26 July 2017). Compliance has been achieved by clearing waste and implementing a pest control regime. The ORR issued an improvement notice to LU following its investigation into a customer fatality in a non-public area at Canning Town Tube station (22 January 2017). The improvement notice relates to risk assessments and management systems for lone workers at Canning Town and West Ham Tube stations. Actions to address the issues and achieve compliance include: development and implementation of a revised lone worker risk assessment; implementation of a buddy system for lone working at stations on the Jubilee line; and briefing employees on the revised arrangements. We have received formal closure from the ORR.
- 3.4 There remains an issue of proposed enforcement action from the Environment Agency (EA) for non-compliant assets containing Polychlorinated Biphenyls (PCB). A decision from the EA is expected by the end of 2017. High voltage power transformer assets have all been decontaminated or registered with the EA. Removal of other assets found in signal equipment rooms and on some of our older train fleet is under way. All asset types and locations have been subject to a comprehensive safety and environmental risk assessment, and all were found to be very low risk.
- 3.5 Slips, trips and falls continue to be the main cause of customer injury across the network, with incidents on station escalators, stairs, at the platform train interface (PTI), and on buses. LU customer safety initiatives are focused on changing customer behaviour (through direct and 'nudge' messages) and on making infrastructure changes to eliminate or reduce the risk. On Buses, we continue with the delivery of our behaviour campaign which advises passengers to use the handrails, specifically focussing on handrails on stairs. We have commissioned the Transport Research Laboratory to conduct a statistical review of injuries on buses and expect recommendations on possible safety interventions in Quarter 4. The 2017/18 customer safety plans for LU and Surface Transport have short, medium and long term actions. The plans focus on all customer injuries and aims to reduce injury by 17 per cent (LU) and 10 per cent (Surface Transport) compared to 2016/17.
- 3.6 The introduction of a new nationwide system for recording road casualties has resulted in more injuries being categorised as 'serious' when they would have previously been recorded as 'slight'. We are working with the Department for Transport to back-estimate numbers of seriously injured casualties that would have been reported to allow comparisons to be made. This review is critical as we continue to take forward the six main work streams to meet the Mayor's Transport Strategy targets of achieving a 70 per cent reduction (against 2005-09 levels) in the number of people killed or seriously injured by a bus by 2022, with zero people killed in or by a London bus by 2030.
- 3.7 We will test a minimum of five per cent of our safety critical workforce to ensure compliance with our drug and alcohol policy. There were two positive drugs test within LU in the quarter, both of which are under investigation.

- 3.8 There were 14 HSE and Technical audits carried out in the quarter, one of which concluded with a 'poorly controlled' result; 'Inspection of LU premises'. There were four audits with a 'requires improvement' result. Corrective actions are identified and being tracked for all.
- 3.9 The Mayor's vision was published in the draft London Environment Strategy (LES) earlier this year, setting out how London will become the world's greenest global city. The draft LES and draft Mayor's Transport Strategy set out the actions required to support this vision. We launched the T-Charge on 23 October, adding an additional £10 surcharge to the Congestion Charge for older more polluting vehicles. The first Low Emission Bus Zone is now running in Putney High Street and initial results show a decline in pollution.

List of appendices to this report:

Appendix 1: Health, Safety and Environmental Performance – Quarter 2 - 2017/18

List of Background Papers:

None

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HSE Quarterly Report

2017/18 Quarter 2 Update

In this report:

- Executive summary
- Performance at a glance
- Significant incidents
- Customer safety
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- Workforce safety and well being
- HSE and Technical audit
- Resilience
- Environmental management

Executive summary

This report provides an overview of the health, safety and environment (HSE) performance for London Underground & TfL Rail, Surface Transport (including London Rail) and Crossrail services for Quarter 2 2017/18. This report covers 25 June – 16 September 2017 inclusive.

There were 18 customer fatalities on the TfL network, 14 of which occurred on the London Underground (LU) and TfL Rail network. Our investigations identify factors that suggest suspected suicide in 13 of these cases. There was one fatality at Greenford Tube station where a customer fell from the platform edge and was hit by an oncoming train. British Transport Police (BTP) and Office of Rail and Road (ORR) investigations concluded this to be an accident and a date for the inquest is awaited.

Four fatalities occurred in connection with the bus network: two pedestrians as a consequence of collisions with buses; one customer who fell on the stairs of a bus as it pulled away from a stop; and a motorcyclist involved in a collision while overtaking a bus. Our investigations consider these to be accidental. All fatalities on our network await the outcome of inquests.

Ten historic incidents were concluded by the Coroner and recorded as suicide (5) and accident (4). In the tenth historic incident, the Coroner concluded accidental death contributed by neglect, and issued a Prevention of Future Deaths report to TfL concerning a fatality on Cycle Superhighway 8 on 1 March 2016 when a motorcyclist lost control of his motorcycle on the blue surfacing. We assured the Coroner that we have an adequate procedure for

determining grip levels, and detailed work is under way, including an updated policy to monitor skid resistance and raising the issue of road grip variation between sections of the highway with the UK Roads Board.

Regulatory authorities issued two improvement notices to LU. The City of London Environmental Health Office issued an improvement notice for the presence of rodents near Aldgate High Street (26 July). Compliance has been achieved by clearing waste and implementing a pest control regime. The ORR issued an improvement notice to LU following its investigation into a customer fatality in a non-public area at Canning Town Tube station (22 January). The improvement notice relates to risk assessments and management systems for lone workers at Canning Town and West Ham Tube stations. Actions to address the issues and achieve compliance include: development and implementation of a revised lone worker risk assessment; implementation of a buddy system for lone working at stations on the Jubilee line; and briefing employees on the revised arrangements. We have received formal closure from the ORR.

There remains an issue of proposed enforcement action from the Environment Agency (EA) for non-compliant assets containing Polychlorinated Biphenyls (PCB). A decision from the EA is expected by the end of 2017. High voltage power transformer assets have all been decontaminated or registered with the EA. Removal of other assets found in signal equipment rooms and on some of our older train fleet is under way. All asset types and locations have been subject to a comprehensive safety and environmental risk assessment and all were found to be very low risk.

Slips, trips and falls continue to be the main cause of customer injury across the network, with incidents on station escalators, stairs, at the platform train interface (PTI), and on buses. LU customer safety initiatives are focused on changing customer behaviour (through direct and 'nudge' messages) and on making infrastructure changes to eliminate or reduce the risk. On Buses, we continue with the delivery of our on-board behaviour campaign which advises passengers to use the handrails, specifically focussing on handrails on stairs. We have commissioned the Transport Research Laboratory to conduct a statistical review of injuries on buses and expect recommendations on possible safety interventions in Quarter 4. The 2017/18 customer safety plans for LU and Surface Transport have short, medium and long term actions. The plans focus on all customer injuries and aims to reduce injury by 17 per cent (LU) and 10 per cent (Surface Transport) compared to 2016/17.

In support of the Mayor's Vision Zero approach, where no fatality is treated as inevitable on the Capital's highways, the Bus Safety Programme continues. Engineers and technical specialists are working with us and bus manufacturers to trial a range of innovative safety measures. These include automotive braking, alert systems and redesigned bus interiors.

The introduction of a new nationwide system for recording road casualties has resulted in more injuries being categorised as 'serious' when they would have previously been recorded as 'slight'. We are working with the Department for Transport to back-estimate numbers of seriously injured casualties that would have been reported to allow comparisons to be made. This review is critical as we continue to take forward the six main work streams to meet the Mayor's

Transport Strategy (MTS) targets of achieving a 70 per cent reduction (against 2005-09 levels) in the number of people killed or seriously injured by a bus by 2022, with zero people killed in or by a London bus by 2030.

There were no workforce fatalities in the quarter. Common themes in workforce accident trends include slips, trips and falls, manual handling and employees coming into contact with machinery and objects. In most incidents 'lack of awareness' and 'personnel behavior' are identified as key causes. We are focused on improving our accidental injury performance through: improving our leadership; encouraging individuals to be aware of safety issues; and tackling risk areas (slips, trips, falls, manual handling, and workplace violence). We aim to achieve a reduction of 17 per cent within LU and 10 per cent within Surface Transport by the end of the year.

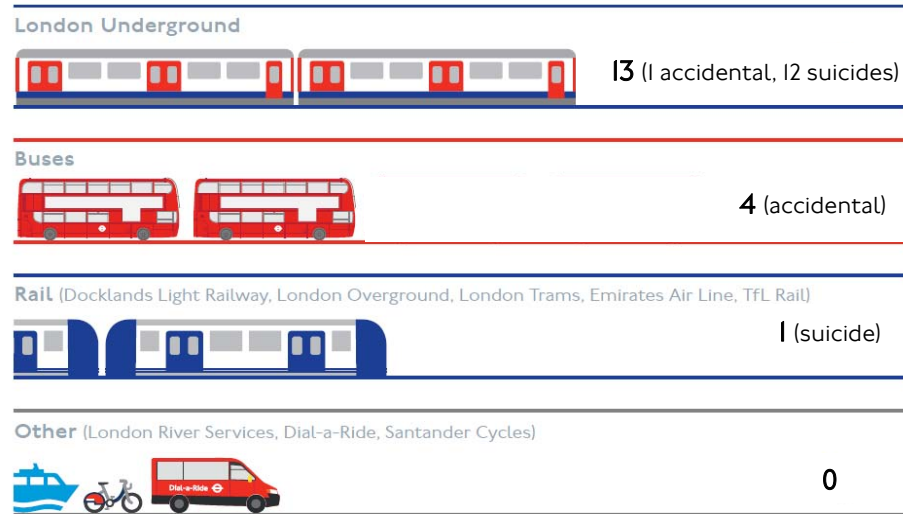
We will test a minimum of five per cent of our safety critical workforce to ensure compliance with our drug and alcohol policy. There were two positive drugs test within LU in the quarter, both of which are under investigation.

There were 14 HSE and Technical audits carried out in the quarter, one of which concluded with a 'poorly controlled' result; 'Inspection of LU premises'. There were four audits with a 'requires improvement' result. Corrective actions are identified and being tracked for all.

The Mayor's vision was published in the draft London Environment Strategy (LES) earlier this year. To support the LES and MTS, we launched the T-Charge on 23 October, adding an additional £10 surcharge to the Congestion Charge for older more polluting vehicles. The first Low Emission Bus Zone is now running in Putney High Street and initial results show a decline in pollution.

Performance at a glance

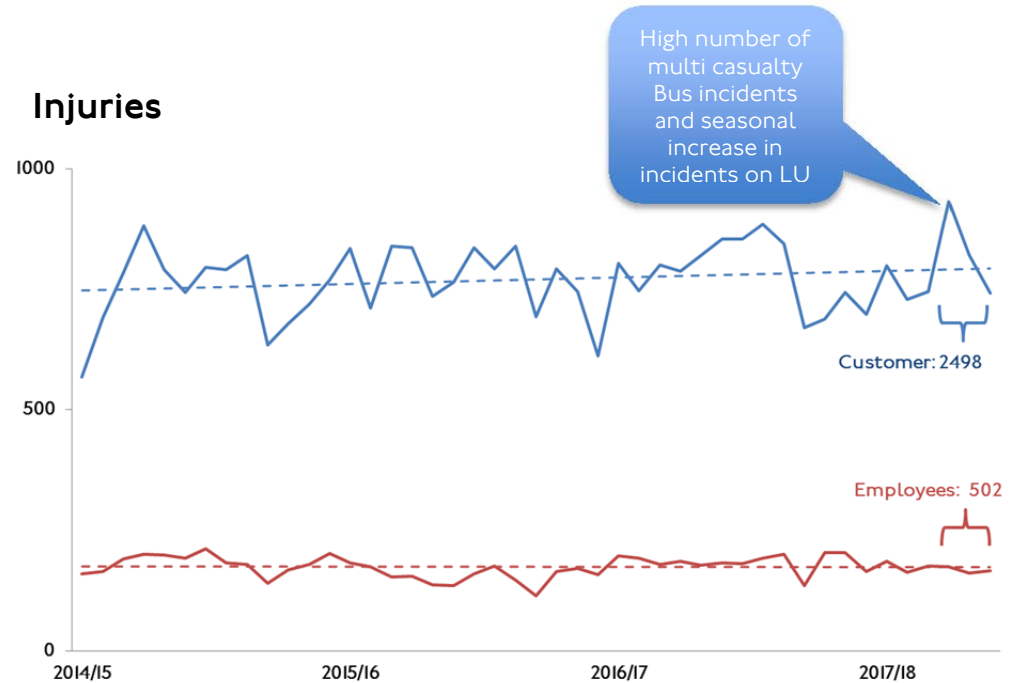
Customer fatalities



Regulatory matters

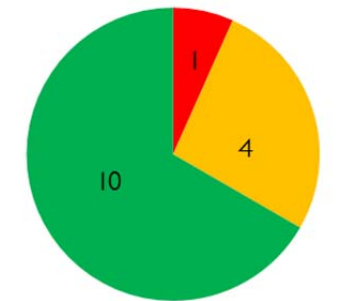
- Prevention of Future Deaths Report issued to TfL following Coroner inquest concluded historic fatality on Cycle Super Highway.
- Improvement notices issued to LU: presence of rodents at Aldgate and lone working arrangements at Canning Town and West Ham Stations. Compliance achieved and notices closed.
- Proposed enforcement action from the Environment Agency (EA) for non-compliant assets containing Polychlorinated Biphenyls.

Injuries



Safety audit and compliance

- Poorly controlled HSE and Technical audit: Inspection of LU premises. Remedial actions underway.
- Two positive drug and alcohol tests, both under investigation.
- Mayor's T-Charge launched: additional £10 pollution charge for heavily polluting vehicles in operation.



- Poorly controlled
- Requires improvement
- Adequately controlled

TfL significant incidents

This section of the report covers significant incidents that occurred across our businesses in Quarter 2 2017/18.

There were two incidents where trains entered areas of track when access was prohibited, potentially putting LU workers at risk. A train approached workers on the track at Monument (2 July), and there was also an incident at Marlborough Road disused station (24 August). The investigations identified poor communications between the working parties and management teams. A TfL-wide formal investigation into track access issues has concluded. The 'Track Access Modernisation' programme will launch in winter 2017/18 to eliminate hazards posed to track workers.

There were five incidents involving buses colliding with bridges and temporary scaffolding structures. A vehicle with a driver under tuition collided with a low bridge on Breakspear Road (17 July). The operator instructor has been dismissed. The investigation led to a broader review of bridge height signs on our scheduled services by the operator, to be shared with us when complete. Buses on routes 12 and 453 collided with the arched segment of bridges (21 July and 11 August). The investigations identified in both incidents that the buses mounted the pavement to negotiate around other vehicles (an HGV being attended to by police, and an ambulance attending an incident on bus route 453). Operators are making drivers and controllers more aware of height restrictions of bridges.

There were two incidents involving buses making contact with scaffolding structures (24 and 26 August). The investigation into the route 156 incident showed the bus had approached the stand at an angle, which led to the front of it overhanging the pavement and making contact with the scaffolding. The investigation into the route 35 incident identified that the scaffolding juttred onto the highway, and the operator had failed to effectively communicate to their drivers the TfL notification that the bus stop was out of service.

There were two incidents of buses colliding with residential and commercial property. On 7 July, an out of service route 13 bus collided with a house on Woodhouse Road. There were major injuries to the driver and minor injuries to the occupant of the house. The investigation revealed 'pedal confusion' as the cause of the incident. The driver had been route and bus-type trained and had driven this type of bus previously without issue. The driver will undergo re-training on return to work from sickness absence following the incident. On 10 August, a route 77 bus collided with a shop front in Lavender Hill, resulting in nine minor injuries to passengers and the driver. Two passengers were trapped on the upper deck and were freed by the emergency services. Nobody on the pavement or in the building was injured. The operator's investigation is under way, but preliminary indications are that no third party factors are believed to have been contributory, and no fault was found with the vehicle. The operator continues to support the police investigations.

There were two utility strike incidents. An operative cut through a live high voltage cable at Holborn (15 August) and an encased telecoms cable was exposed during preparations for the installation of a new gas main at Highbury Corner (7 September). There were no injuries. The

investigation for the Holborn incident identified opportunities to ensure clearer identification of cables and opportunities to improve awareness of following safe working practices. The investigation at Highbury Corner identified standard safe digging and cable identification processes were not followed. Recommended improvement actions have been put in place.

There were four fires across the network. At Oxford Circus Tube station, an electrical fault caused a fire on a Bakerloo Line train (11 August), resulting in evacuation of the train and station. A fleet-wide inspection and a review of firefighting equipment at high capacity stations are now complete. On 2 September, a trespasser entered the tunnel at Leytonstone and set alight to trackside maintenance materials. The culprit was apprehended by the BTP. There were two bus fires, both in engine compartments. The investigation into the fire that occurred on a route 210 bus (3 August) identified the cause to be the ignition of hot gases escaping from a pipe leading to the turbo exhaust. Improved maintenance is now complete. The investigation into a fire on a route 113 bus (13 August) identifies a worn alternator cable as the source of ignition. All similar vehicles have been inspected to ensure safe routing of alternator cables and a revised inspection regime has been implemented.

There was one incident on LU that had high potential for derailment of the train. On 9 August, there were repeated occurrences of under train parts being knocked off between Charing Cross and Embankment. The investigation identified equipment left trackside by a contractor had fallen on to the track. The LU Track Access team is conducting a review of our track access arrangements to make sure contractors do not leave equipment behind.

Improvement actions are expected to be implemented by the end of the next quarter.

There was one incident of a bus rolling (20 August). A route 453 vehicle rolled out of a side road across Marylebone Road while the driver left the cab to advise a passenger the bus was terminating. There were no injuries. The operator's investigation has confirmed the driver failed to apply the handbrake. The driver has been dismissed and we are supporting the police investigation. The operator has advised its drivers about the incident, and implemented a programme of random CCTV checks in relation to the application of the handbrake.

Where any incident occurs on our network, the party accountable for the activity conducts an investigation to identify the causes and contributory factors, and identify action to prevent re-occurrence. This may include reinforcing safe behaviours through on-site briefings to workers, revising risk assessments and implementing new controls, or increasing safety messages to our customers. We communicate lessons learned from significant incidents across our relevant businesses.

TfL Customer Safety

Customer safety: London Underground (LU) and TfL Rail

Fatalities

Thirteen customer fatalities occurred on the LU network in Quarter 2. All fatalities await the outcome of coroner inquest, however LU investigations identify contributory factors that suggest suspected suicide in 12 cases. There was a fatality at Greenford LU Station (Central Line). A customer alighted from a train, lost their footing at the platform edge and was hit by an oncoming train. This fatality awaits the outcome of coroner inquest, however the BTP and the ORR investigated and concluded this was an accident. The investigation included a thorough check of the platform at the station but did not identify any hazards. The investigation into a fatality that occurred on TfL Rail (Chadwell Heath) identified contributory factors that suggest suspected suicide. This fatality awaits the outcome of the Coroner inquest.

Coroner Inquests in the period have concluded seven historic fatalities that occurred on the LU network. The fatalities were recorded by The Coroner as; suicide (5) and accident (2). The accidental fatalities included; a person under the influence of alcohol was struck by a train whilst walking in a tunnel at Old Street Station (21 April 2016), and a person fell on an escalator at Kings Cross Station (11 February 2017). The Coroner did not issue any Prevention of Future Death reports or issue any recommendations in these matters.

Customer accidental injuries

In Quarter 2 2017/18 a total of 1142 customer accidental injuries were recorded on the LU and TfL Rail network. The total number of incidents in Quarter 2 17/18 is down by 6 per cent when compared to the same quarter in 2016/17 (Fig. 1). The total number of incidents in Quarter Two is the highest in the 17/18 year to date, repeating a similar pattern that we observed in the holiday period of 2016/17.

Incidents on the LU network occur in three main areas: on escalators (40 per cent), stairs (20 per cent) and at the Platform Train Interface (20 per cent). Causes of incidents include; being encumbered with luggage, rushing for services, being under the influence of alcohol and distraction from hand held devices such as mobile phones and music devices.

London Underground customer safety improvement plan

Customer safety initiatives are focused on changing customer behaviour (through direct messages and 'nudge' messages) and on making infrastructure changes which will eliminate or reduce the risk. The 2017/18 LU customer safety improvement plan focuses on all customer accidental injuries and aims to reduce the total number by 17 per cent compared to 2016/17.

To reduce the 40 per cent of incidents that take place on LU escalators, enhanced escalator safety measures were rolled out to 41 escalators across 14 stations in Quarter 2. These measures are designed to 'nudge' customers towards safety behaviour. A review of the effectiveness of the escalator initiatives indicates a reduction in the severity of customer accidental injuries,

but the number of minor injuries remains comparable to last year.

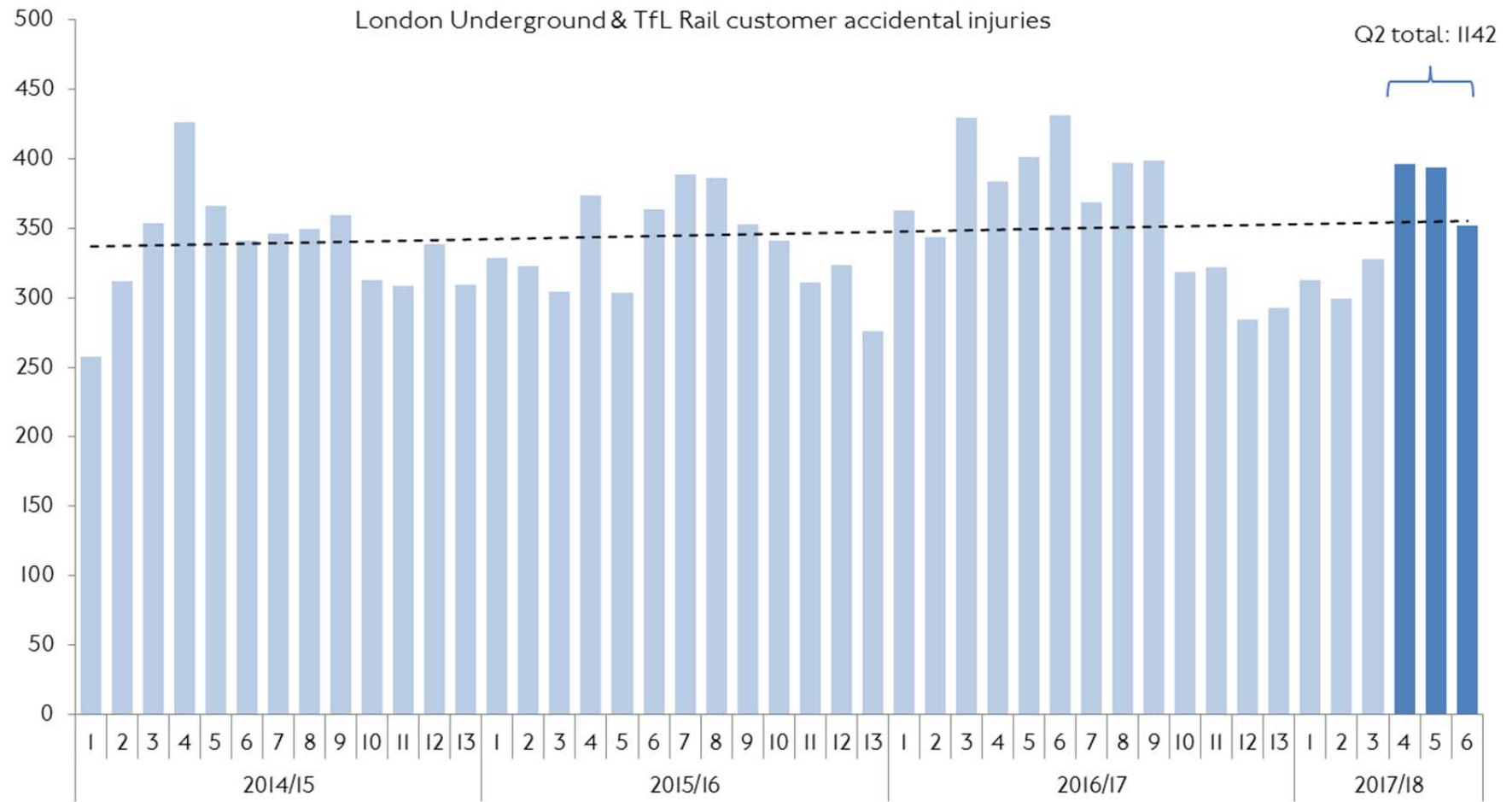
We trialled the use of additional Travel Ambassadors to support customers in the summer holiday season. The trial focussed on managing risks on escalators at the top 4 stations where most accidents happen. The Travel Ambassadors helped direct customers towards lifts, helped nervous customers on escalators and intervened where they could help reduce accidents. LU is exploring how this approach could be further used in holiday periods.

To support the reduction of incidents on stairs (20 per cent) and at the platform train interface (PTI) (20 per cent) safety communications focusing on encouraging customers to change their behaviour have been rolled out across the network. The 'Managing my Platform' initiative extended to stations where employees carry out platform management duties. The initiative provides staff with tools and guidance to help them manage safety at the PTI. We continue to receive positive feedback from our customers about this initiative.

A quarter of all customer accidents happen on 10 stations on the LU network. Employees at these stations are now developing detailed customer safety plans that address the specific issues causing customer injury. These localised safety action plans are expected to be complete and put in place in the winter of 2017/18.

On TfL Rail, customer safety improvements and the regulator's interest focus on the platform train interface. In Quarter 2, MTR (the contracted supplier) held disruption response workshops with Network Rail at Liverpool Street to explore options for improving congestion management.

A small number of trains have been operating in passenger service in the TfL-Rail timetable, now that Driver Only Operation (DOO) CCTV is complete. RFLI, the TfL organisation that will operate and maintain the Elizabeth line, continues to build its safety case supporting the application for authorisation from the regulator to become an Infrastructure Manager.



Above: Figure I. London Underground and TfL Rail customer accidental injuries 2014/15 – Period 6 2017/18.

Customer safety: Buses

Fatalities

Four accidental fatalities occurred on the Bus network as a result of bus service operations. An elderly customer fell on the stairs of a route 75 bus as it pulled away from the bus stop (28 June); a route 216 bus collided with a pedestrian on Thames Street (29 June); a route 476 bus collided with a pedestrian at the junction between Pentonville Road and Kings Cross Road (10 July); and a motorcyclist was fatally injured during a head on collision with a route 224 bus that was overtaking a route 440 bus on Abbey Road (10 July). All fatalities are under investigation by the Operators and Police, and TfL have undertaken site visits. The findings of these investigations, along with the outcome of Coroner Inquests will inform the corrective actions to be implemented.

Coroner Inquests in the period have concluded one historic fatality (9 April 2017) on the Bus network. The Coroner concluded accidental death when a pedestrian that was seated went to get up and stumbled forwards and fell under the rear wheels of the bus.

Customer injuries

In Quarter 2 2017/18 a total of 1274 injuries were recorded on the bus network. This is a 13.6 per cent increase on the same quarter in the 2016/17 year (Fig. 2). This represents an increase in the rate of injuries from 2.25 per million passenger journeys (Quarter 2, 2016/17) to 2.54 injuries per million passenger journeys.

In the first reporting period of the quarter, there were a number of multi-casualty events; 14 separate incidents resulting in total 51 injuries. Falls on buses, striking an object or being struck

by an object within buses accounted for 64 per cent of all injuries to bus customers during the quarter. In a majority of the cases, including the multi-casualty events, the bus drivers were forced to take action to avoid collisions which resulted in passengers sustaining injuries through falls or striking against objects.

Smoothness of ride is a key risk control for falls on buses. We work with bus operators to conduct covert and overt bus driver monitoring of driving standards. This provides valuable information on driving standards and areas where corrective actions are required.

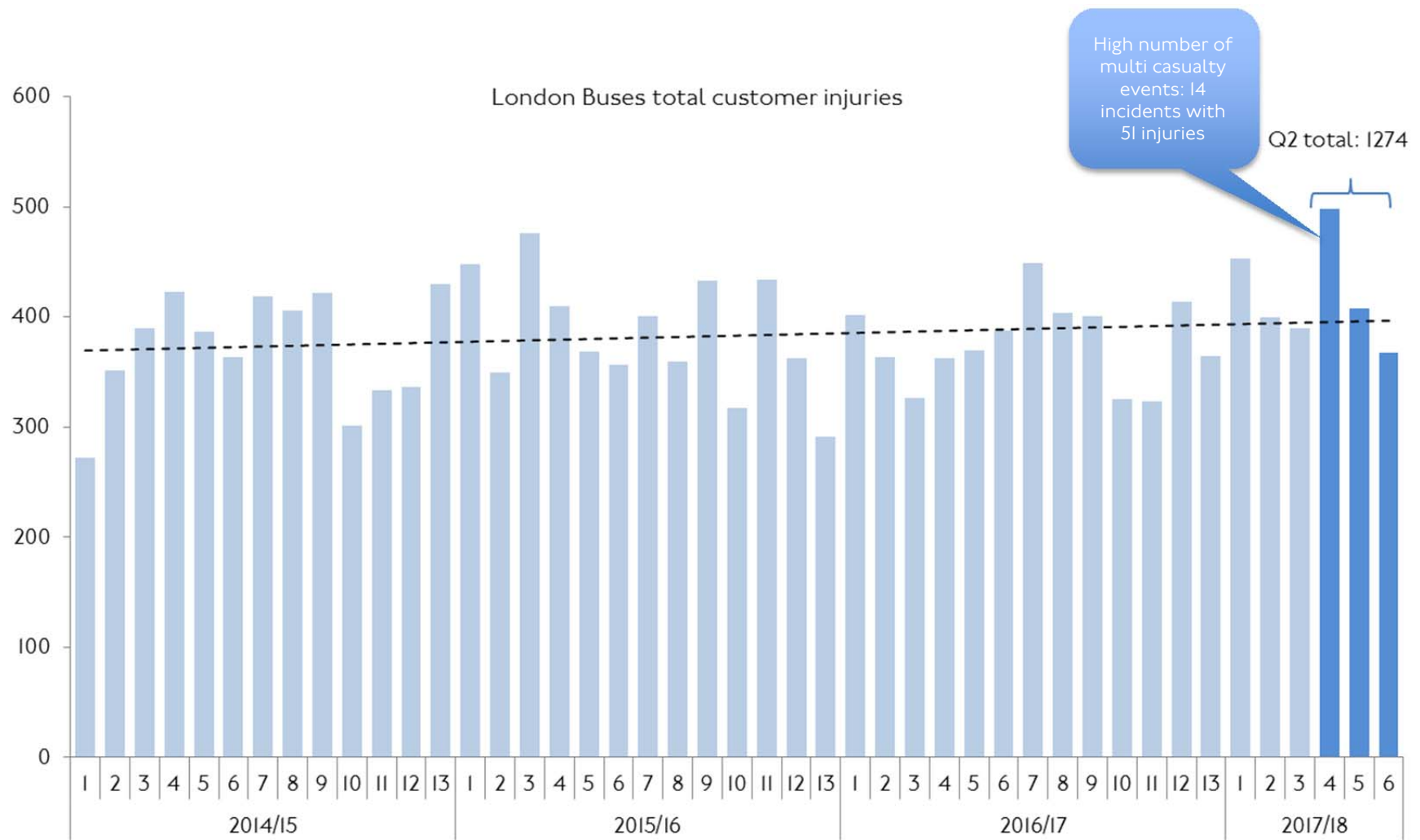
In June, we held a casualty reduction workshop with bus operators to identifying new safety interventions. We are now evaluating suggested measures and working towards implementing them alongside our existing measures in our customer safety improvement plan.

Buses collisions

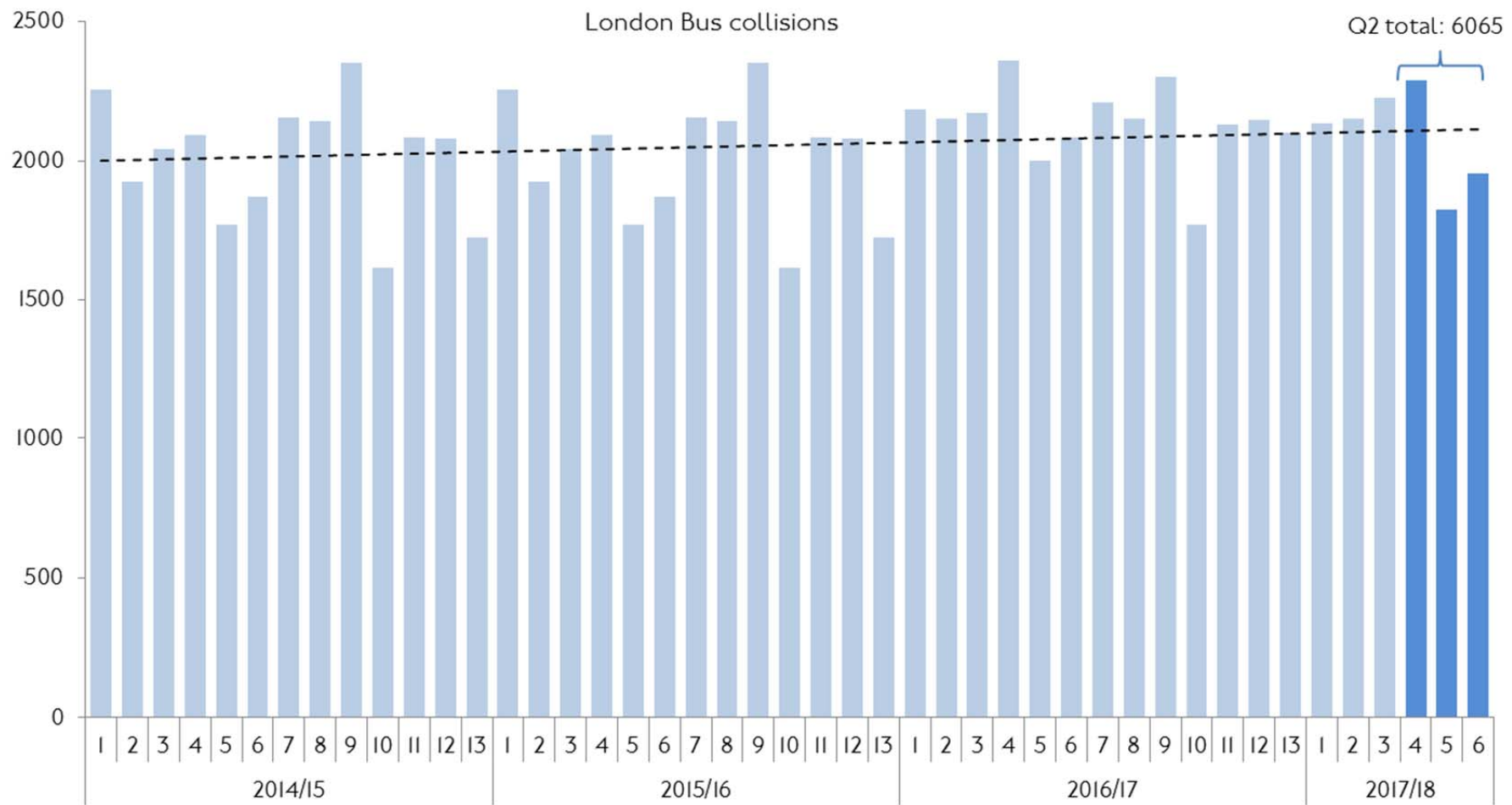
In Quarter 2 2017/18 a total of 6065 collisions involving buses were recorded, a six per cent decrease on the same quarter in the 2016/17 year (Fig. 3). Just under four per cent of the collisions resulted in injuries to other road users or bus customers, including three collisions that resulted in fatality of vulnerable road users. Seventy-eight per cent of all the collisions involved another vehicle, with the actions of the bus driver stated as potentially contributory in 30 per cent of the incidents. We work closely with bus operators to monitor bus drivers and to identify drivers that would benefit from additional training to improve their driving standards. We monitor the follow up action taken by the Operator.

Falls on buses

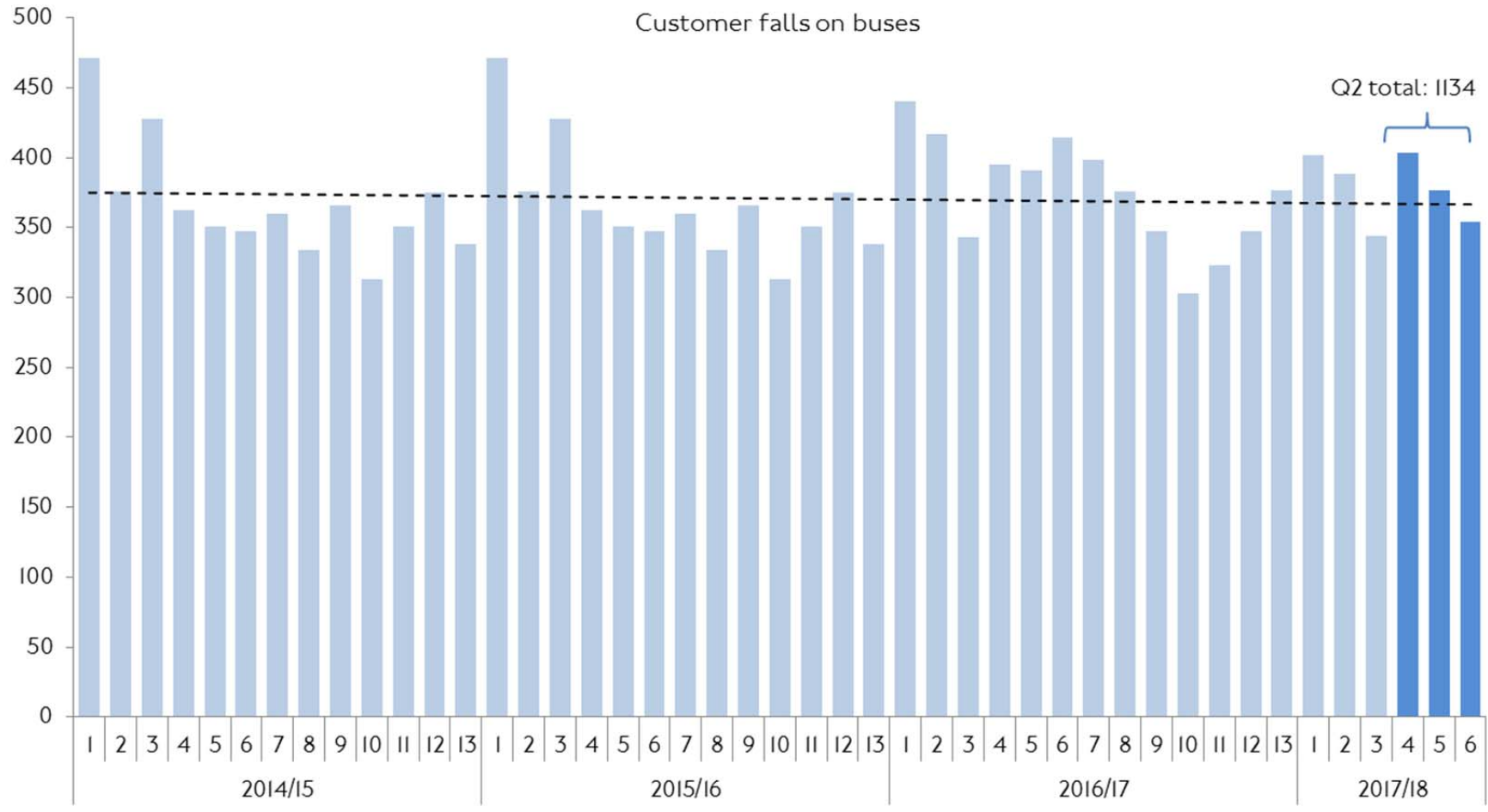
In quarter two 2017/18 a total of 1134 customers fell on buses (Fig. 4). This is a 5.5 per cent decrease on the same quarter in 2016/17. Sixty-one per cent of slips, trips and falls resulted in injury, compared with 62 per cent in quarter one. In one of the instances, a customer died from injuries he sustained when he fell down the stairs of a bus slowly departing a stop. The quarter recorded 154 instances of falls downstairs, up from 137 in Quarter I. Customers alighting or boarding buses saw increased from 251 in quarter one to 275 in quarter two. A new plan specifically focusing on customer safety is being developed, this will supplement the bus safety programme and the parallel work being undertaken with bus operators to identified additional bus occupant safety initiatives.



Above: Figure 2. London Buses total customer injuries 2014/15 – Period 6 2017/18.



Above: Figure 3. London Buses total collisions 2014/15 – Period 6 2017/18.



Above: Figure 4. Customer falls on buses 2014/15 – Period 6 2017/18.

London Buses Customer safety improvement plan

In July 2017, the London Assembly Transport Committee published the findings of its review of Bus safety. The report, 'Driven to Distraction - Making London's Buses Safer' suggests a number of recommendations to improve the safety of travelling by bus in the capital. These include:

- Setting safety targets for bus operators
- Revising senior staff bonus schemes to introduce a direct link between bus safety and performance-related payments
- Improving the data used for bus safety analysis and trend reporting
- Reducing the number of distractions and difficulties facing drivers
- Delivering driver safety training, in the same way it delivers customer service training
- Reviewing bus maintenance practices in garages

TfL will be providing a formal response during Quarter 3 2017/18 outlining the actions to be taken in response to the report.

The Bus Safety Programme

The Bus Safety Programme is contributing to the 'Vision Zero' approach to reducing road danger set out in the Mayor's draft transport strategy. It aims for no one to be killed or seriously injured in or by a London bus by 2030, and for deaths and serious injuries from road collisions to be eliminated from London's streets by 2041.

In late July, we held a workshop with bus operators to strengthen the quality and speed of investigations into bus incidents, to ensure we learn lessons

and share them across the industry in a timely manner. All our operators attended and gained a greater understanding of the causes of fatalities and injuries. We will maintain this focused engagement with operators to help inform their risk control measures and improvement plans. We now carry out additional peer reviews of bus operator incidents to ensure that investigations into the most significant incidents are robust, identify the root causes and contain clear recommendations that prevent recurrence. This provides the opportunity for bus operators to highlight any matters that we need to act upon and ensures that all potential causes and contributory factors are fully explored.

In August, we announced plans to test new safety technology on London buses. We have appointed leading engineers and technical specialists to work with us and with the bus manufacturers and operators to trial a range of innovative safety measures including:

- Autonomous emergency braking systems that allow the vehicle to detect its surroundings and automatically apply the brakes
- Features to alert pedestrians and other road users of the presence of buses, such as lights or audible warning
- A re-design of the front of buses, which could reduce the impact of a collision
- Changes to bus interiors to improve passenger safety, such as higher-grip flooring and softening sharp edges
- Improvements to vision for drivers, including improved mirror design

The results of the trials will feed into a new Bus Safety Standard that will be incorporated into bus operator contracts from the end of 2018.

Buses Customer Experience programme

More than 60 per cent of London's 25,000 bus drivers have now attended the 'Hello London' training course, which supports their pivotal role of safely carrying 55 per cent of public transport passengers across the capital each day. Whilst the primary focus of the training course is improving customer service, many of the mechanisms for doing so also have safety benefits. For example, a smooth journey and correct positioning of the bus at bus stops will contribute to a reduction in injury from falls.

Bus Innovation fund

In Quarter 2, the Bus Safety Innovation fund was launched. This invites bus operators to bid for seed funding for safety improvement initiatives aimed at reducing incident and casualty numbers on the network. In order to qualify, any initiative must have potential network-wide benefit. The following criteria are applied to assess applications;

- Addresses a known safety issue
- Value for money
- Is an innovative and original idea
- Is feasible and achievable
- The effectiveness can be monitored and evaluated

TfL will be assessing submitted bids in Quarter 3 2017/18.

Customer safety: London Rail (Docklands Light Railway, London Trams, Emirates Airline, London Overground)

Customer injuries

There were no customer fatalities in Quarter 2 2017/18.

A total of 49 customer injuries were recorded on the London Rail network in Quarter 2 2017/18. This is a 39 per cent decrease on the same quarter in 2016/17 (Fig. 5). Seventy-three per cent of the customer injuries were recorded on the London Overground network. Similar to LU, being encumbered with luggage, under the influence of alcohol, or rushing for services are the key contributory factors in causing injury. All of the London Rail businesses are active in sharing experiences and best practice.

London Rail Customer safety improvements

London Overground

Rollout of the wrong side door opening protection system for the remaining London Overground routes (West Anglia and Gospel Oak Barking lines) continues. The system provides additional mitigation against doors being opened on the wrong side of the train by providing a visual and audible warning to drivers. Trackside beacons are being installed at identified locations and will be commissioned ready for the entry into passenger service of the new Class 710 London Overground trains in 2018.

Arriva Rail London (ARL), the operator of London Overground services, have recently reviewed and refreshed the Stations Safety Working Group. Whilst the number of slips, trips and falls across London Overground stations

remains low compared to the rest of the UK rail network, analysis of incidents have identified there are specific stations at which proportionally more injuries occur. The Stations Safety Working Group brings together line management teams and safety professionals to review these trends and identify and evaluate whether anything more can be done to reduce these incidents further.

ARL have also developed a plan designed to address the underlying cause of operational incidents on the London Overground network, such as Signals Passed at Danger, incorrect door operations, station overruns and persons being over-carried past the final destination of the train. The plan addresses human factors elements as well as looking at the interaction of drivers with infrastructure and train equipment.

Docklands Light Railway (DLR)

In 2016/17 95 customers were injured on the DLR network. Our analysis has shown that 79 per cent of injuries are caused by slips, trips and falls. To maintain the downward trend since the start of 2016/17, we have continued our work to further prevent these incidents by adopting best practice improvements from the London Underground escalator safety study. In quarter one, a trial was held at Cutty Sark station, with a red entry / exit comb plates fitted beside an escalator with the conventional yellow comb plates. The trial demonstrated that the red plates had a positive effect on passenger behaviour. Following this successful trial we have now installed red comb plates at Cutty Sark Station, Tower Gateway and London City Airport, locations where we see most of our incidents. At Woolwich, this initiative has been further supported with a high impact customer communication campaign

encouraging passengers to “hold the handrail and watch your step”.

Following the approval of our PTI incident reduction strategy in quarter one, we have started to launch the safety improvements that are due for implementation throughout 2017/18. The main focus of activity has been the review of train despatch mirrors and CCTV monitors on the network, which can be used to despatch trains when the passenger service agents (PSAs) are required to be positioned at the front of a train. Following a survey of the network by a joint working group consisting of Docklands Light Railway Limited (DLRL) and Keolisamey Docklands (KAD) staff, a number of adjustments to existing infrastructure have been proposed. KAD will be launching a door safety awareness campaign to further prevent PTI incidents.

We continue to engage with customers, and have delivered a series of passenger engagement roadshows. The roadshows are being delivered across the network and involve staff from DLRL and the Franchisee. The roadshows help us understand why customers make decisions that lead to injury on the network. We will hold a road show at London City Airport in quarter three to further identify customer behaviours associated with carrying luggage whilst using escalators.

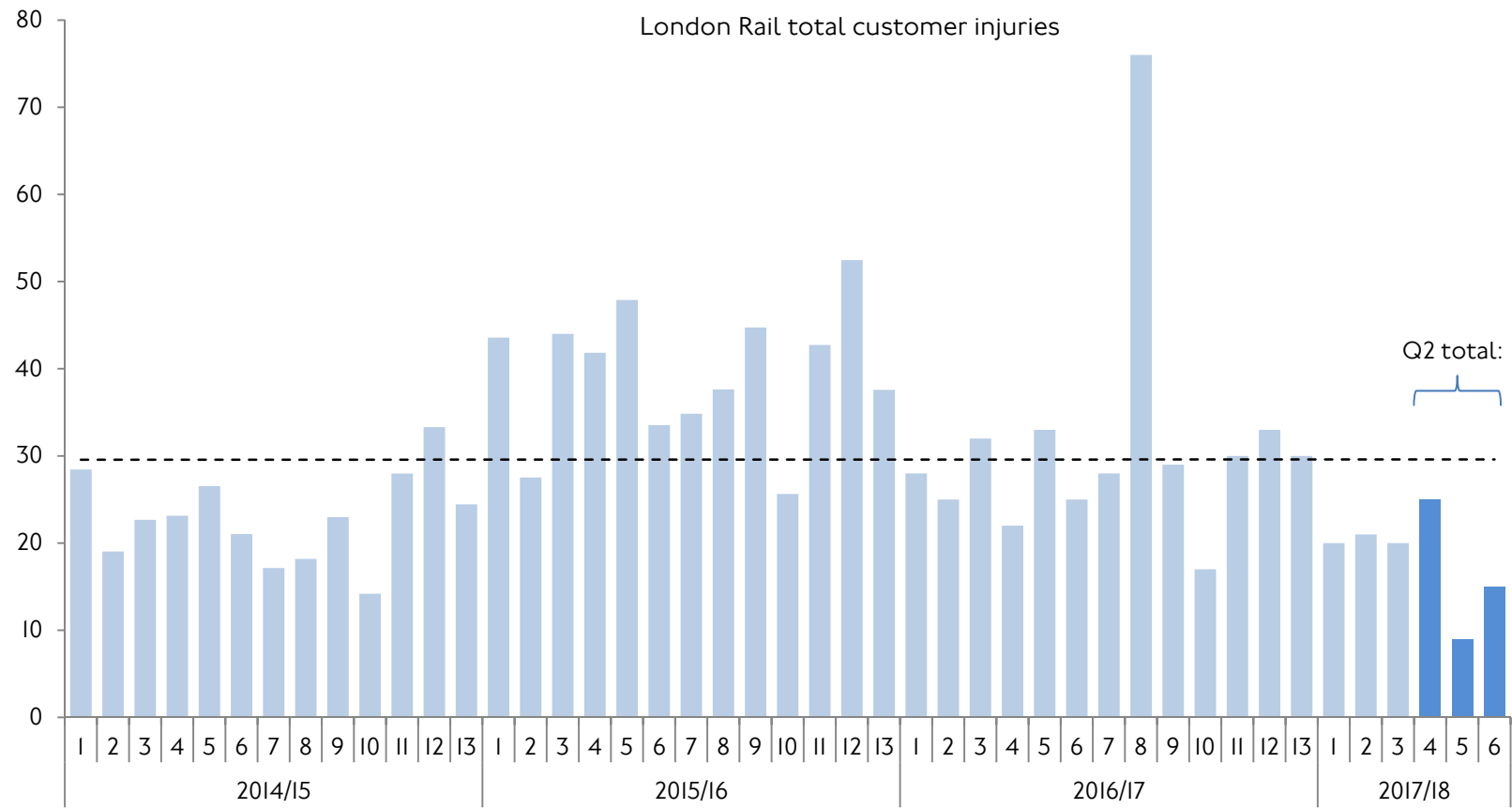
In October, KAD will be launching a safety culture survey - the second of its kind that will run across the franchise. The results will be used to further drive continuous improvement in the safety culture of the organisation. This follows on from the recent award for a Significant Safety Initiative at the Light Rail Awards, which was won in recognition of KAD identifying ways to continually improve the safety culture of the organisation.

London Trams (LT)

We continue to work with the Rail Accident Investigation Branch (RAIB), the ORR and the BTP on their investigations into the tragic incident at Sandilands in November 2016. We are taking action in line with the recommendations we expect to be included in the RAIB’s formal report to be released in December 2017.

Since the incident, we have introduced a number of extra safety measures including; additional speed restrictions, improved frequency of speed monitoring, new signs for drivers and an upgrade of the CCTV recording system. Trials commenced on the network of Tram Activated Signage at specific locations, based on similar technology which is commonly used on highways. These additional illuminated signs are designed to give tram drivers visual reminders to reduce their speed on approach to sections with lower speed limits. The signs act as an additional visual cue at appropriate locations. Feedback from tram drivers continues whilst we evaluate whether this technology is appropriate for the tramway. Tram Operations Limited (TOL) continues to take daily speed gun readings across the network. The Driver Protection Device has been fitted to the tram fleet. This system provides immediate alerts to the driver if the system detects loss of attention of vigilance whilst the tram is in motion. The Tram Operator is leading the consultation with Trade Unions.

Additionally, and not related to the Sandilands incident, TfL customer education campaigns specifically tailored to the Trams environment have been rolled out across the tram fleet. These messages focus on the need to look out for moving trams whilst on the network and to ensure that care is taken within the tram if standing.



Above: Figure 5. London Rail total customer injuries 2014/15 – Period 6 2017/18.

Customer safety: Other Operational Services (London River Services, Cycle Hire, Taxi and Private Hire, Victoria Coach Station, Dial-a-Ride)

Customer injuries

There were no customer fatalities in Quarter 2 2017/18.

Coroner Inquests in the period have concluded one historic fatality (2 February 2017). The Coroner concluded accidental death in the case of a Dial-a-Ride customer who was struck on the leg whilst the driver was moving another customer in a wheelchair.

A total of 33 customer injuries were recorded on Other Operational Services within Surface Transport in Quarter 2 2017/18. This is a decrease of 27 per cent on the same quarter in 2016/17 (Fig. 6). Forty-five per cent of the customer injuries were Dial-a-Ride customers and 30 per cent from Cycle Hire users.

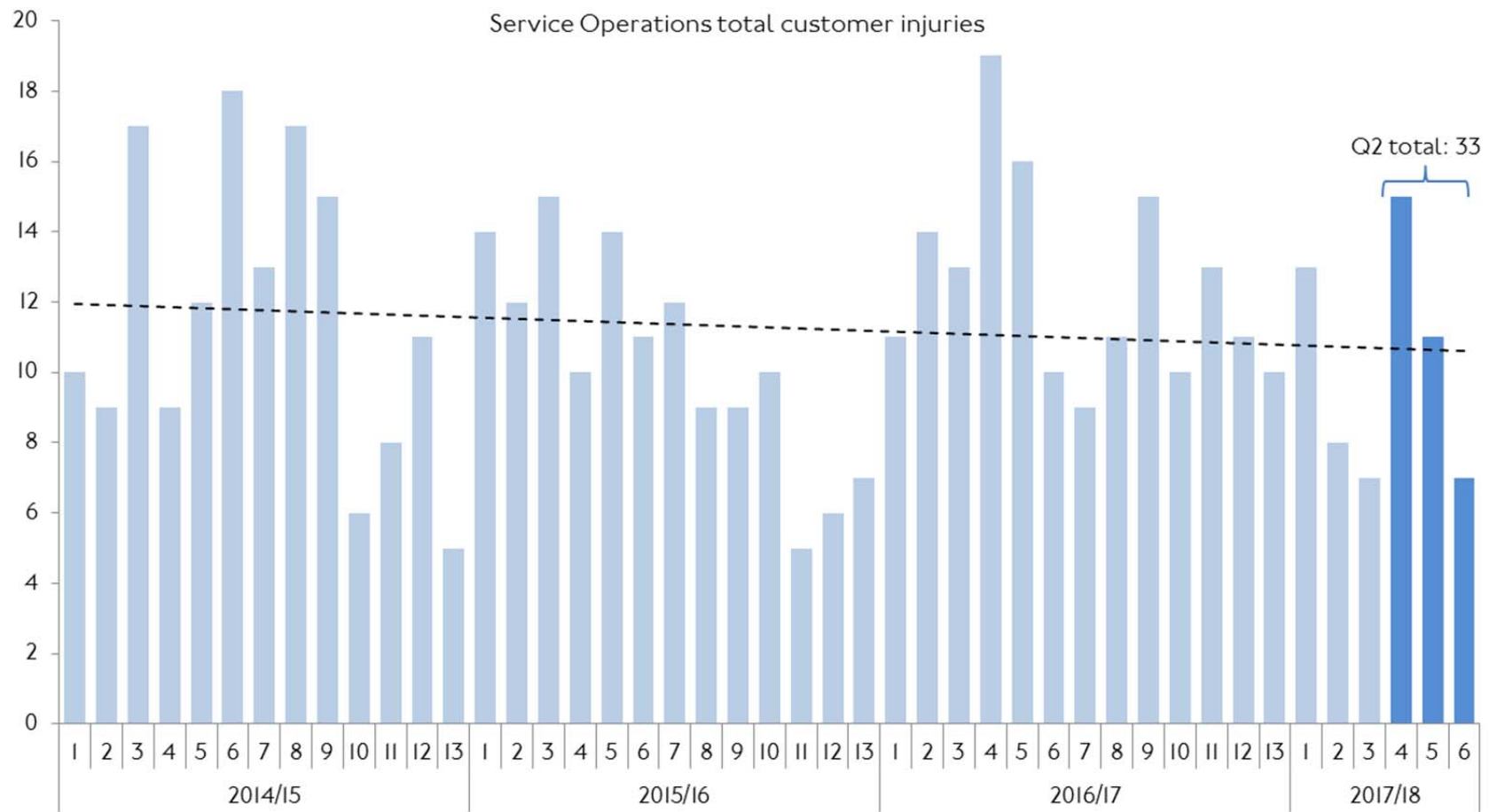
On 5 July 2017, an inquest hearing took place concerning the death of a motorcyclist who lost control of his motorbike on a section of the blue surface of the Cycle Superhighway on Battersea Park Road on 01 March 2016. The Coroner concluded accidental death contributed by neglect, and issued a Prevention of Future Deaths report to TfL, concerning the use of blue coloured surfacing on the Cycle Superhighway with reduced grip. TfL responded to the Coroner on 6 October 2017 providing assurance that TfL has an adequate procedure for determining grip levels and applies an appropriate method to measure grip of road surfaces in line with current scientific research. TfL has implemented a revised approach to monitoring skid resistance through an updated policy that sets out the testing method and frequency of application.

TfL will be raising the issue of road grip variation between sections of the highway with the UK Roads Board.

Dial-a-Ride service users are the group most affected within the Other Operational Services customer profile. During the quarter, six service users were injured after falling while boarding or alighting a bus. On three occasions, injuries were sustained by users whilst being escorted to or from buses. Within Cycle Hire, five users were injured in road traffic collisions and four received injuries after falling off their hire bikes. In Victoria Coach Station, five customers were injured after falling in the building. On two of these occasions, the falls occurred while boarding a coach. London River Services recorded one incidence of a fall when a customer tripped over a maintenance hatch. The predominant cause of injuries in the quarter was slips, trips, and falls. This is the primary focus of a new safety improvement plan being developed.

Taxi and Private Hire Compliance

Last year, the Mayor committed to increase the size of our Taxi & Private Hire Compliance Unit and asked us to recruit 250 new compliance officers. We have now completed this process and we have significantly enhanced our capability to tackle non-compliant and illegal taxi and minicab activity in London. We are now checking more than five times as many Taxi and Private Hire drivers and vehicles than we were in the 2016/17 year. We have also boosted our compliance checking on PHV operators and compliance levels are improving; 90 per cent of taxis and 89 per cent of PHVs checked are now compliant, which is an increase of two per cent in both areas.



Above: Figure 6. Service Operations total customer injuries 2014/15 – Period 6 2017/18.

Road danger reduction

On 21 June 2017, the Mayor of London published a draft of the MTS. The document sets out the Mayor's policies and proposals to reshape transport in London over the next 25 years. The Mayor, through TfL, the boroughs, police and enforcement authorities, will adopt Vision Zero for road danger in London. This will involve more demanding targets as the Mayor's aim is for no one to be killed in or by a London bus by 2030, and for all deaths and serious injuries from road collisions to be eliminated from London's streets by 2041.

We receive all recorded personal injury collision and casualty data for Greater London (as reported under STATS19) from the Metropolitan Police Service (MPS) and City of London Police (CoLP).

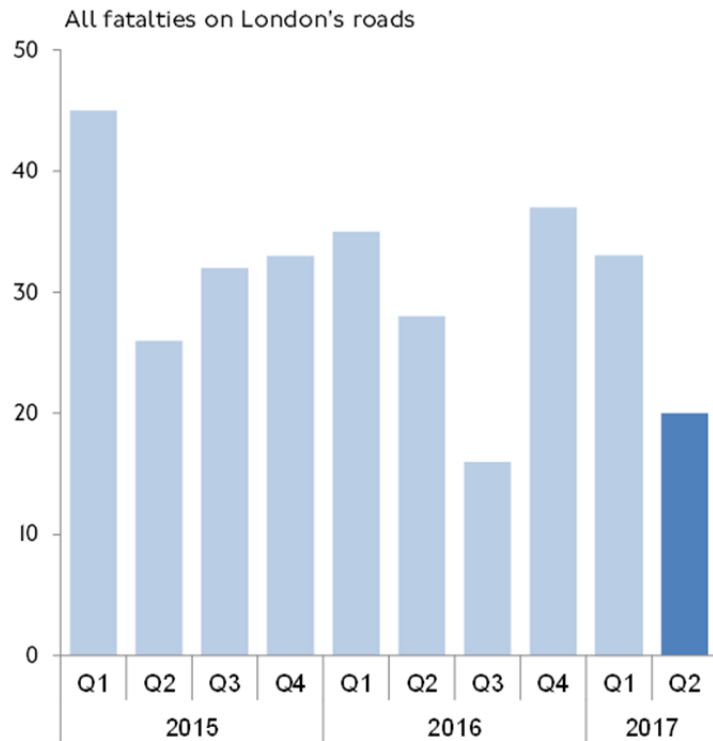
Figures for road traffic collisions from September 2016 onwards have been reported by the MPS using the new Case Overview and Preparation Application (COPA). CoLP adopted the DfT Collision Reporting and Sharing (CRASH) system in October 2015. Data presented for 2017 (Figs. 7 – 10 inclusive) is sourced directly from these systems and has not yet been fully validated into the TfL ACCSTATS system. Finalised figures are scheduled to be published during spring 2018 inline with the DfT.

COPA and CRASH use a new method of assessing the severity of injury sustained in collisions, as recommended by the DfT. The use of these systems aims to improve accuracy in the recording of injury type, with more injuries being classified as serious rather than slight.

Figures for the number of slight and serious injuries reported by the police since September 2016, using injury-defined systems, are therefore not directly comparable with data collected using previous systems, and should not be used to interpret year on year or quarterly trends. Provisionally a total of 1,261 Killed or Seriously Injured (KSI) casualties were reported by the police during Quarter 2 of 2017, using the new methodology of reporting serious injury severity outlined above.

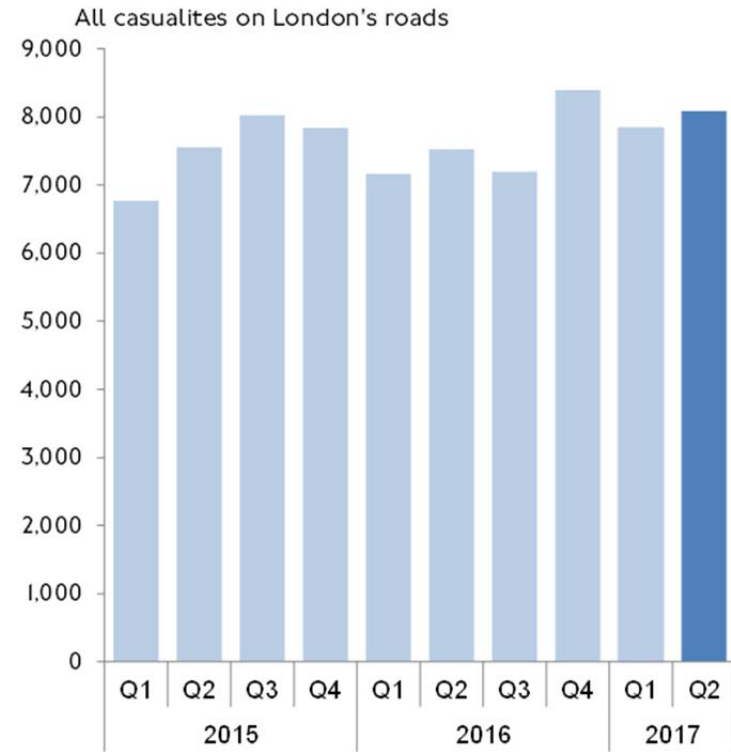
We are working with the DfT to back-estimate the number of seriously injured casualties that would have been reported by the police using an injury-defined rather than a severity-defined system. This will allow comparisons to be made between 2017 serious injury figures and previous years.

The provisional data presented below is for road traffic collisions and casualties occurring on the public highway, involving personal injury in the Greater London area, and reported to the MPS and CoLP during Quarter 2 of 2017 (01 April to 30 June 2017) in accordance with the Stats 19 national reporting system. These figures are provisional estimates and subject to change. Further information on this data and previously published data and reports is available on TfL's website at tfl.gov.uk/roadsafety



Above: Figure 7. All fatalities on London Roads.

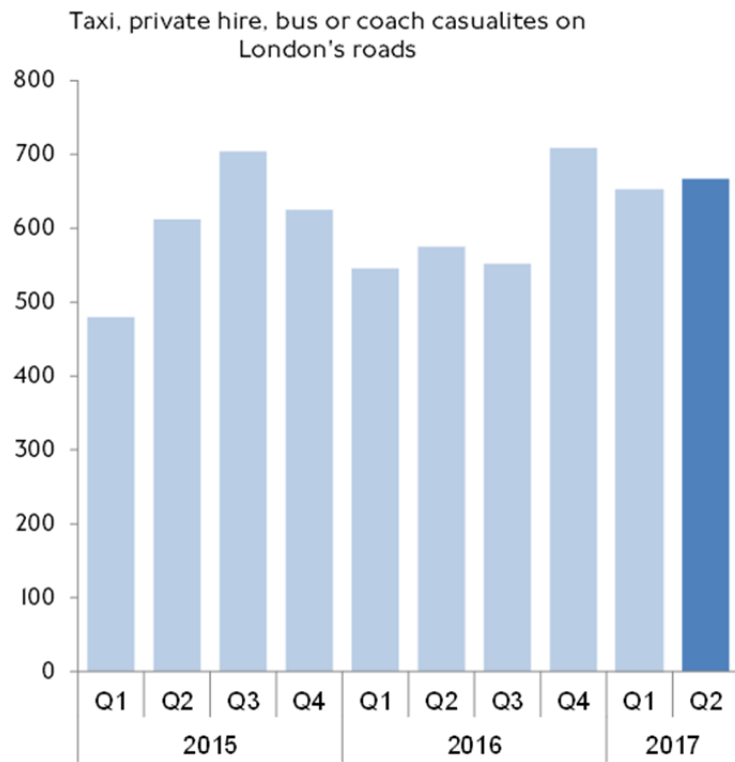
The provisional number of fatalities during Quarter 2 of 2017 fell by 29 percent to 20 fatalities, to the lowest level on record for that quarter. The greatest reductions were amongst pedestrians and motorcyclists. Pedestrian fatalities fell from 14 to 10 (the lowest level on record) and motorcyclist fatalities fell from 8 to 5. There was one pedal cyclist fatality during the quarter, and car occupant fatalities increased from 2 to 3 fatalities. There were no bus or coach fatalities and one private hire occupant fatality.



Above: Figure 8. All casualties on London's roads.

Provisional figures show that there were a total of 8,085 casualties during Quarter 2 of 2017. This is a seven percent increase compared to the same quarter of the previous year, partly reflecting self-reporting of collisions using MPS road safe¹. However, the increase in pedestrian casualties, from 1,244 casualties during quarter 2 of 2016 to 1,653 casualties during quarter 2 of 2017, is of particular concern and TfL is undertaking further analysis of this trend.

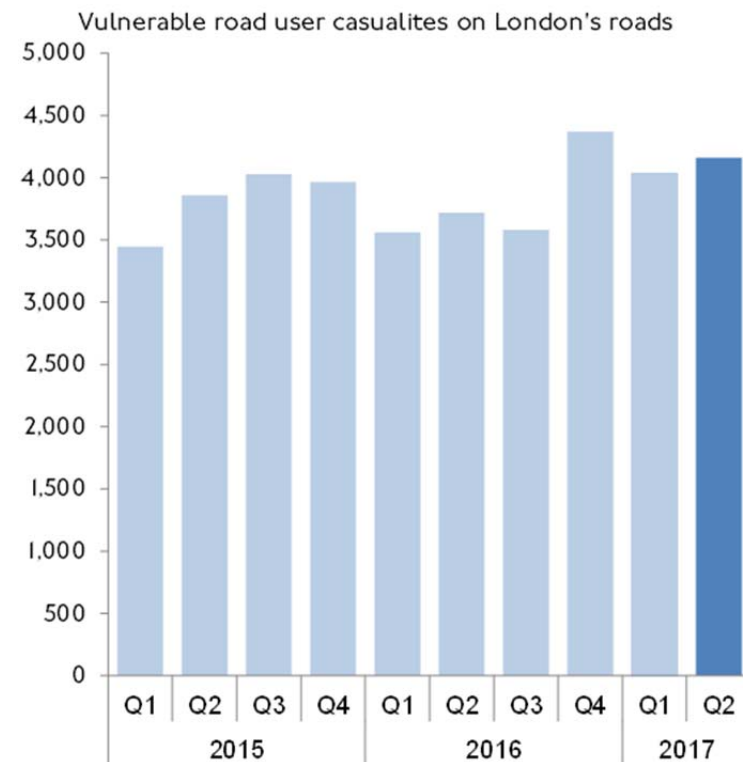
¹ <https://www.met.police.uk/roadsafelondon/>



Above: Figure 9. Taxi, private hire, coach or bus occupant casualties on London's roads.

Provisional figures show that there were 667 bus, coach, taxi or private hire vehicle occupant casualties during Quarter 2 of 2017. This is a 16 per cent increase compared with the same quarter in the previous year. This increase should be seen in the context of a 28 per cent increase in private hire drivers during 2015/16² compared to the previous year, to the highest number on record.

² <https://tfl.gov.uk/corporate/publications-and-reports/travel-in-london-reports>



Above: Figure 10. Vulnerable road user casualties on London's roads.

Provisional figures show that there were 4,159 vulnerable road user (cyclist, pedestrian and motorcyclist) casualties during quarter 2 of 2017. This is an increase of 12 per cent when compared with the same quarter in the previous year. Within this total pedestrian casualties increased by 33 per cent and motorcyclist casualties increased by 8 per cent. However cyclist casualties fell by 5 per cent.

Road Safety improvement initiatives

Lambeth Bridge northern and southern roundabouts

Proposals to transform the road layout at the northern and southern roundabouts at Lambeth Bridge to create a safer cycling and walking environment closed on 20 August. Focussing on road safety, our proposals are designed to keep traffic moving along these key routes, whilst providing a better balance to the way that road space is allocated. This includes changes to the way traffic moves through the area, including new left or right turn traffic restrictions on some roads at each end of the bridge. The MPS has installed barriers to increase security on London's busiest bridges and our proposals aim to ensure this is maintained. Subject to the outcome of this consultation, we would look to start construction in late 2018 to coordinate with other planned works.

Nine Elms

In partnership with the London Borough of Wandsworth and the Nine Elms Vauxhall Partnership a public consultation was completed in August for proposals to transform the 2.5km stretch of Nine Elms Lane and Battersea Park Road. Our proposed changes would act as a backbone to the major developments taking place in the area, improving conditions for pedestrians, cyclists – connecting to Cycle Superhighway 8 (CS8), and bus passengers, as well creating a more pleasant and characterful environment.

Ahead of these proposals and in response to the ongoing levels of construction in the area, we implemented a small scale, interim scheme during summer 2017 to increase

safety in the area and enhance the urban realm.

Waterloo roundabout

In partnership with the London Borough of Lambeth, we completed a public consultation (26 June – 20 August) on the transformation of the area around Waterloo roundabout and Waterloo Road. Our proposals would create a larger, greener and more accessible public space and bring safety benefits for local communities, pedestrians, bus passengers and cyclists. We are now considering the consultation responses and we will publish a report detailing our responses to the issues raised and a way forward for the scheme in due course.

Charlie Brown's roundabout

A public consultation on proposals to improve connectivity and a safer environment for walking and cycling at Charlie Brown's roundabout, South Woodford, closed on 4 August. The proposals would introduce new signalised pedestrian and cycle crossings as pedestrians and cyclists currently use the informal crossing points and need to wait for a safe gap in the traffic to cross, which can be difficult at times and make them feel unsafe. Responses to the consultation are now being considered before a way forward for the scheme is announced.

Redbridge roundabout

A public consultation for safety improvement schemes at the A12 Redbridge roundabout in the London Borough of Redbridge also closed on 4 August. We are planning changes to Redbridge Roundabout to improve safety and traffic flows. Key features include changes to the lane markings and widening the road to make it easier for drivers to navigate and exit the roundabout. Responses to the

consultation are now being considered before a way forward for the scheme is announced.

Oxford Street

Road safety is a significant concern on Oxford Street. From June 2013 to May 2016 there were around 60 collisions a year on Oxford Street which resulted in a personal injury. The transformation of Oxford Street will tackle a range of issues, including road safety, overcrowding, air quality, and traffic, to enable Oxford Street to continue to thrive as a busy shopping district.

A public consultation on initial proposals for the western section of Oxford Street's transformation (Orchard Street to Oxford Circus) closed in June. Over 11,000 responses were received, with around 61 per cent of respondents either fully or partially supporting the proposals. We have carefully considered the consultation feedback and a detailed report will be published in due course.

In collaboration with Westminster City Council, we plan to hold a second, more detailed consultation in late 2017, outlining our proposals for the transformation of Oxford Street and the effects our proposals are likely to have. Works for the western section are planned to coincide with the opening of the Elizabeth line in late 2018.

Other road safety schemes

In August an 18 month 20mph speed limit trial was introduced on Upper Street in the London Borough of Islington, from its junction with Pentonville Road to Highbury Corner. Measures comprised of 20mph signs and carriageway roundels. Repeater signs were also installed on adjoining roads to ensure road users were aware of the changes. The changes are part of a number of trials across London and are well supported by the London Borough

of Islington in their desire to change the driving culture towards lower speeds.

A crash barrier road safety scheme (vehicle restraint system) was introduced on the central reservation between the A3 Kingston Bypass and the slip road opposite the junction with Elmcroft Drive in the Royal Borough of Kingston Upon Thames. The scheme aims to improve visibility and reduce collisions caused by drivers not seeing the central reservation. Collisions will be monitored over the next 36 months to determine safety benefits.

Design also continues for specific road safety improvements at key junctions and corridors on the Transport for London Road Network, including the A205 at Tulse Hill, A10 High Road in Bruce Grove, and along the A23 at Streatham Hill. Proposals will bring safety, cycling, walking and urban realm benefits.

Marketing campaigns

Throughout quarter two, TfL delivered communications campaigns to encourage drivers and powered-two-wheeler riders to reduce their speed, and educate motorists and cyclists on the common causes of collisions. The campaigns ran on radio, on-street posters and online advertising mediums.

Post campaign analysis has shown that there has been a significant reduction in the number of Londoners who claim to ride/drive faster than they should (65 per cent vs 71 per cent in April 2017); and a significant improvement in the number of Londoners who strongly agree that it is getting safer to cycle in London (14 per cent vs 10 per cent in April 2017). There has also been a significant increase in the number of people who agree that London's roads would be safer if everyone was more considerate (57 per

cent vs 51 per cent in April 2017), and a corresponding reduction in the number of Londoners who claim to ever act inconsiderately to other road users (57 per cent vs 62 per cent in April 2017).

Youth Travel Ambassador End of Year Expo

The End of Year Expo for the Youth Travel Ambassador (YTA) scheme took place on 29 and 30 June 2017. Held at the London Transport Museum, the two day event was attended by over 600 YTA pupils from 53 London secondary schools. YTA's showcased the results of their campaigns, shared their experiences with the other YTA teams and explored the Transport Museum, investigating past, present and future transport developments in London. During the 2016/17 academic year, 43 road safety campaigns were delivered by YTAs across the Capital.

Improving cyclist and driver safety

On 21 July, the MPS launched a new tactic to improve cyclist and driver safety. Officers from the MPS Roads and Transport Policing Command held a number of operations in hotspot sites across London, to ensure drivers were obeying the rules of the road. The officers worked in plain clothes, wore video cameras and rode unmarked bicycles. In particular, they found:

- Unsafe following (tailgating)
- Unsafe overtaking (close passes)
- Unsafe turning (left or right turns across a cyclist's path)

During the first week of action, officers in Bexley, Hackney, Southwark, Bromley, Lewisham and Richmond stopped 18 drivers and offered advice, while charging five drivers with other traffic offences. The next phase of the campaign will be focused on taxi and

private hire drivers and bus drivers. We will also be working with the MPS to develop a social media film to further support this activity.

TfL workforce safety and wellbeing

TfL employee safety

There were no workforce fatalities in Quarter 2 2017/18.

There were a total of 288 injuries to direct employees in Quarter 2 2017/18. This is a 6 per cent decrease on the same quarter in 2016/17 (Fig. 11). Seventy-nine per cent of these injuries were recorded by London Underground employees.

TfL supplier employee safety

There were no supplier employee fatalities in Quarter 2 2017/18.

There were a total of 214 injuries to supplier employees in Quarter 1 2017/18. This is a 10 per cent decrease on the same quarter in 2016/17 (Fig. 12). The majority of these incidents were recorded by employees of Bus Operators (49 per cent) and London Underground major construction project suppliers (20 per cent).

Reducing accidental injuries to direct employees

LU aims to reduce the number of accidental injuries to employees by 17 per cent in 2017/18 compared to 2016/17. Common themes in accident trends include slips, trips and falls, manual handling and contact with an object accounting for approximately 60 per cent. In over 60 per cent of incidents 'lack of awareness' and 'personnel behavior' is identified as key cause.

In August, representatives from across LU came together to share ideas on how to tackle common issues across operations, maintenance and project teams. The output from the workshops has been developed into a workforce safety plan with the aim of reducing injury by 17 per cent. The key areas of focus are: 'showing we care' (through safety leadership) and 'making safety personal' for everyone in the workforce. Our focus this quarter has been to make sure all employees understand the workforce safety plan. Tools and materials to cascade the plan to local teams will start in October 2017.

Surface Transport has established a target to reduce accidental workforce injuries by 10 per cent in 2017/18 compared to 2016/17. During the quarter, we worked towards identifying key priorities and actions as part of a new safety improvement plan in a bid to realise the target. The plan comprises short, mid and long term goals, that will:

- Reduce slips, trips and falls through improvements in process, new uniform shoes and infrastructure improvements on piers, alongside the existing deliverables from the Bus Safety Improvement Plan
- Reduce manual handling injuries through the introduction of physical capability assessments for Dial-A-Ride drivers and wheelchair training for Victoria Coach Station staff
- Prevent assaults on frontline staff, through the roll-out Alert-Comm to enforcement staff
- Improve protection arrangements for works on Tram network; including a new Safe System of Work for the Beckenham Corridor adjacent to Network Rail infrastructure

- Improving incident reporting in Trams, by trialling the use of observation cards to address low levels of incident reports in the maintenance section of the workforce

The action will be undertaken alongside existing control measures. We will also make strides towards our mid and long term goals which have been identified as part of a planning exercise intended to drive down injuries to our staff and that of our suppliers.

Reducing accidental injuries to supplier employees

Our operational suppliers are central to our service in London Rail and other Surface Transport networks. We work with our supplier organisations to support their measures for improving safety of their workforce. This will include TfL's contribution to addressing the staff safety and welfare findings of the Greater London Authority (GLA) 'Driven to Distraction' report published in July 2017.

Across TfL, we continue to work with our construction delivery teams (both internal and external) to ensure they have the necessary culture and competence to safely deliver our capital investment and upgrade programme.

Figure I3 shows the safety performance of our construction supplier teams for our major projects, Crossrail and our 'Renewals and Enhancements' team embedded within London Underground. Renewals & Enhancements (R&E) delivers a portfolio of projects to improve and upgrade London Underground and make our customers' journeys better. The work of R&E

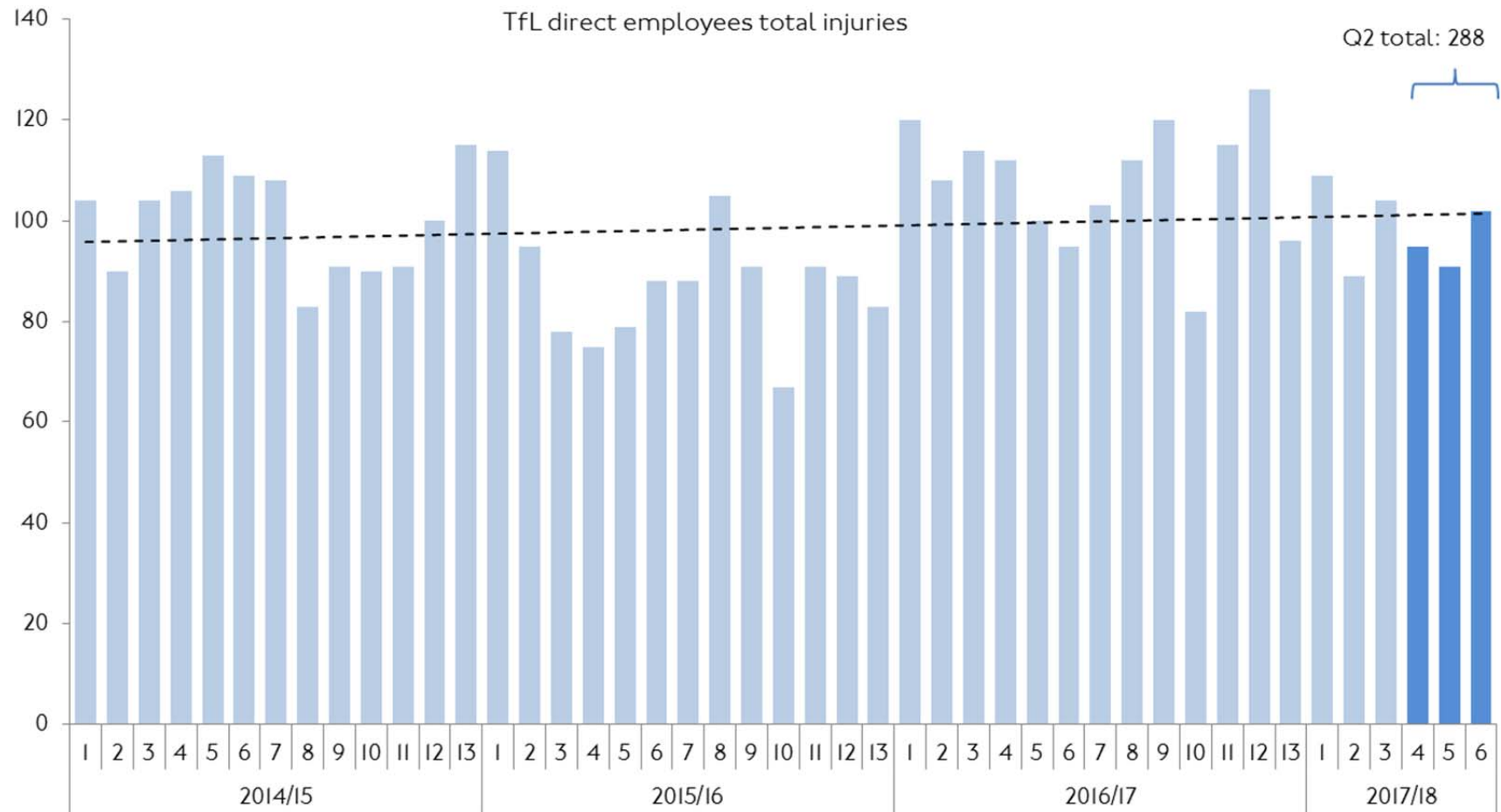
includes; the replacement of assets with modern equivalents to prevent safety and reliability concerns; and delivery of programmes that improve facilities on the railway, including making the railway more accessible.

We are focussed upon improving our accidental injury performance through; improving our leadership (showing we care) and making HSE personal – helping individuals to enhance their commitment through self motivation.

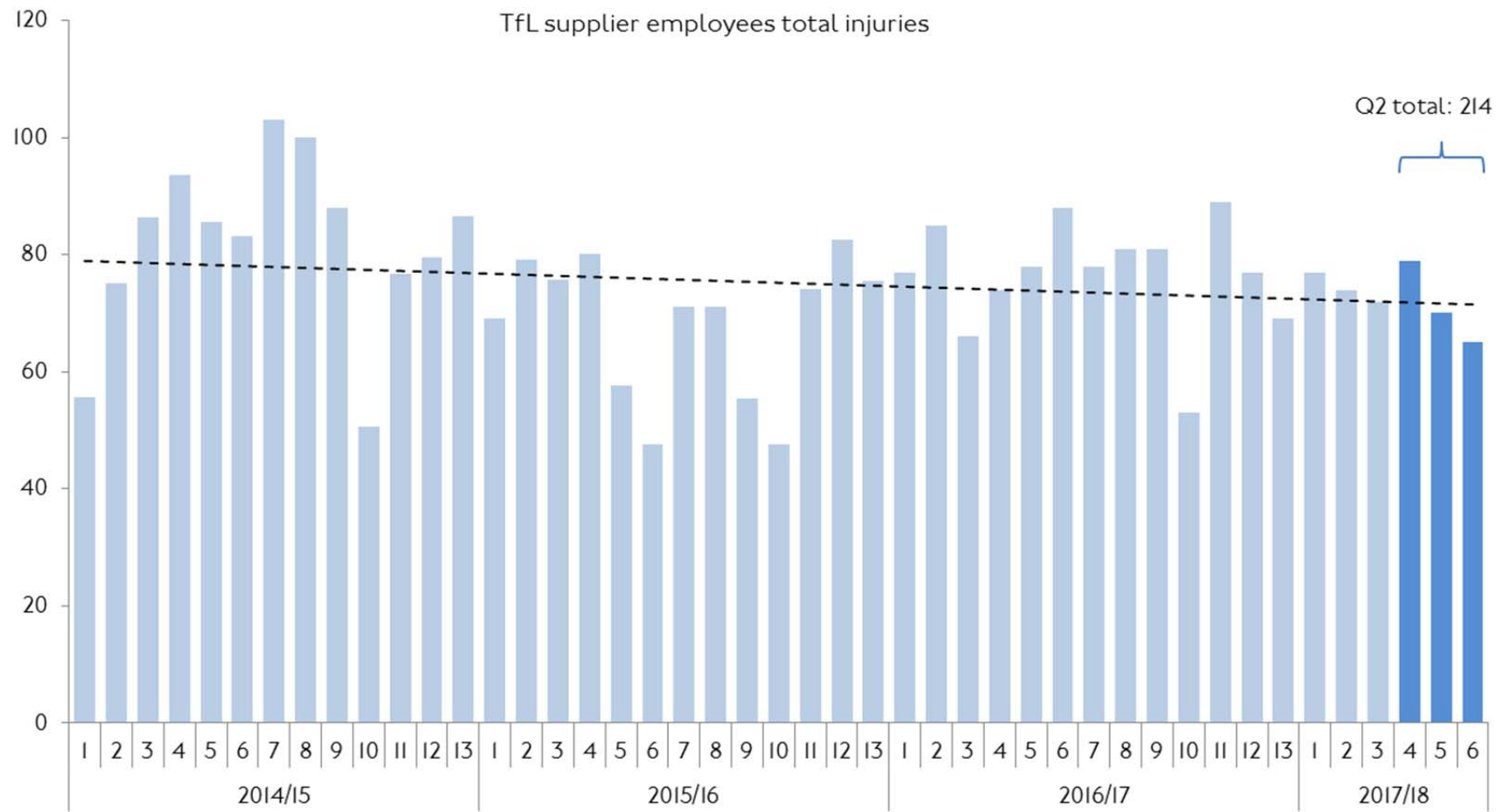
As part of our approach, we utilise a supplier 'Zero Harm' forum, and Safety Improvement Groups, to bring TfL and construction supplier representatives together. The sessions promote collaboration across the client and contractor boundary on key HSE issues to improve performance. The focus of the next forum (January 2018) shall be on preventing musculoskeletal injuries.

We continue supplier engagement and have recently trialled a new approach by hosting sessions at supplier premises with their workforce. The intention is to use a different angle to get across the HSE messages and to keep the sessions lively and interesting. An example is 'Team Me Up Scotty' which is based on NASA Astronaut team integration principles. It explores how our suppliers manage new people coming into a team whilst maintaining high safety standards.

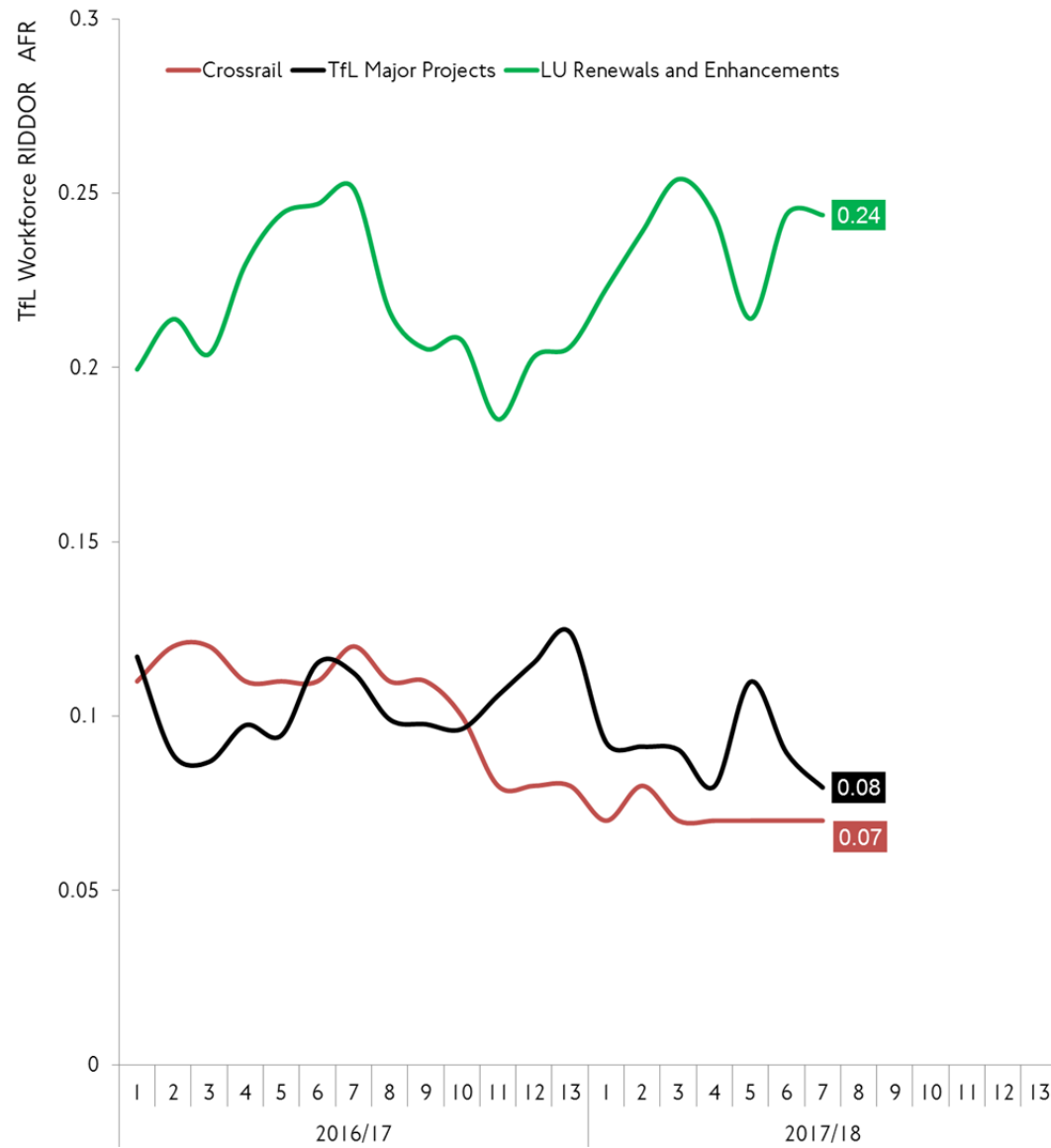
At a tactical level our dedicated night HSE team and construction teams are working on the front line with our suppliers to further understand cultural barriers and / or unsafe behaviours.



Above: Figure II. TfL direct employees total injuries 2014/15 – Period 6 2017/18.



Above: Figure 12. TfL supplier employees total injuries 2014/15 – Period 6 2017/18.



Above: Figure I3. TfL construction workforce RIDDOR accident frequency rate comparison Period I 2016/17 – Period 6 2017/18.

TfL workplace violence

TfL takes workplace violence extremely seriously and we always encourage staff to report any instance of abuse whether physical or non physical so that preventative measures can be taken, and the strongest penalties brought against offenders.

TfL direct employees affected by work place violence

There were a total of 533 TfL direct employees affected by work place violence in Quarter 2 2017/18 (Fig. 14). This is a 5.3 per cent increase on the same quarter in 2016/17. Eighty-eight per cent of these injuries were recorded by London Underground employees.

TfL supplier employees affected by work place

There were a total of 590 TfL supplier employees affected by work place violence in Quarter 2 2017/18 (Fig. 15). This is a 4.2 per cent increase on the same quarter in 2016/17. Ninety-five per cent of these injuries were recorded by supplier employees operating within Surface Transport.

Managing workplace violence

Our operational suppliers are central to our service delivery. In London Rail and other Surface Transport areas, the main customer-facing service is provided by private sector suppliers. Across TfL, the main cause of injury is from work related violence incidents involving direct and supplier employees in frontline customer service. Incidents tend to be connected with revenue collection and temporary LU station closures as part of our congestion control plans, mainly resulting in verbal abuse.

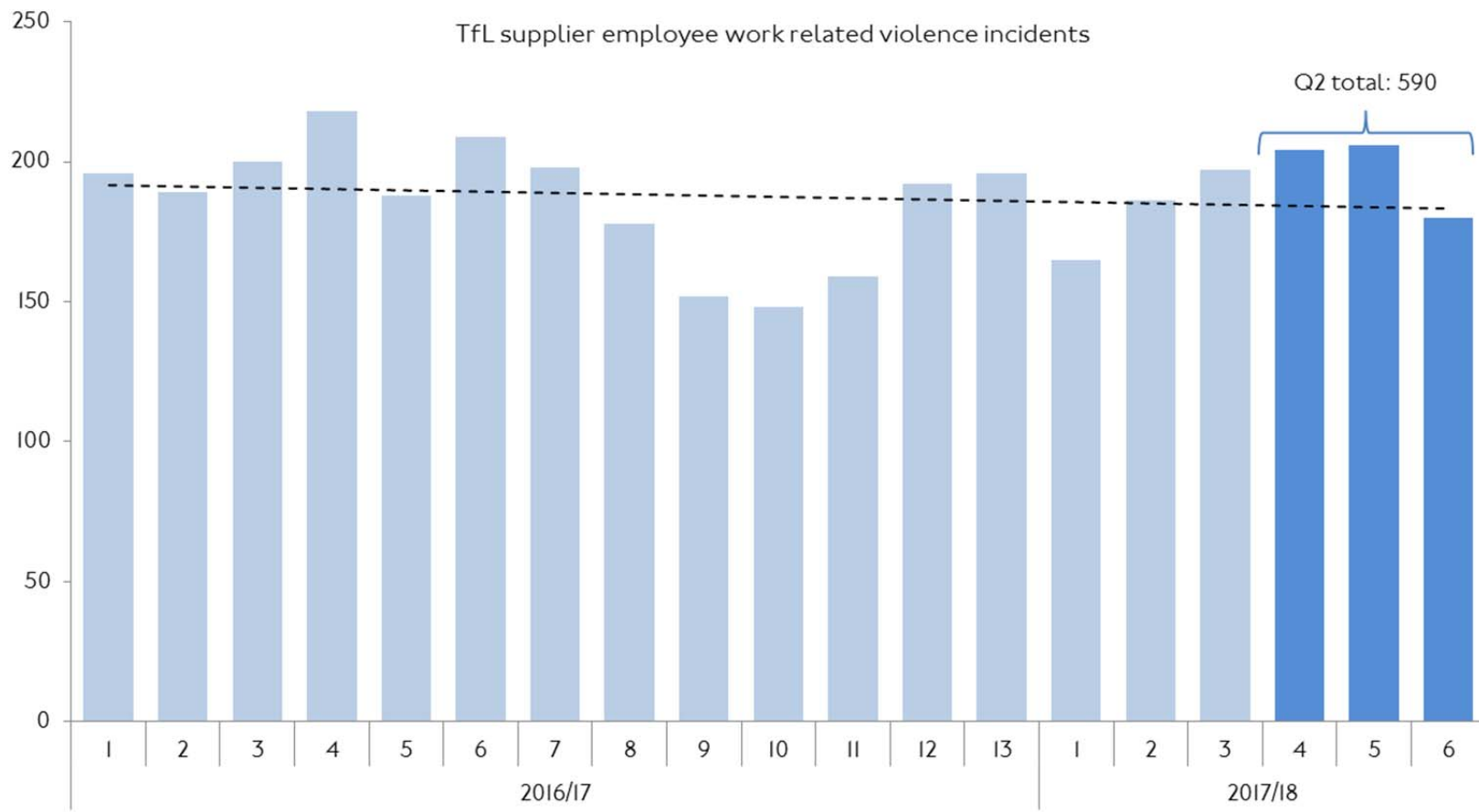
To support our workforce, we use a range of activities that aim to reduce incidents of work place violence, these include:

- Intervention and engagement activities across all TfL business units and those of its suppliers
- Delivery of training courses that include important aspects such as how to understand human behaviour, how to develop positive interactions with customers, and how to resolve incidents

Review of work related violence incidents that inform updates to operational procedures and provide



Above: Figure 14. TfL direct employees affected by work place violence Period I 2016/17 - Period 6 2017/18.



Above: Figure I5. TfL supplier employees affected by work place violence Period I 2016/17 - Period 6 2017/18.

TfL workforce wellbeing

Drug and alcohol testing

Across London Underground and Major Projects, 13,705 employees were within scope for drug and alcohol testing. In Quarter 2, the number of employees tested on each monitoring code was: Unannounced (219) For Cause (23), Monitoring (69) and Post incident (22). There were two positive unannounced test results, both drugs related, which remain under investigation.

In Surface Transport, 1156 operational employees were within scope for drug and alcohol testing in Quarter 2. The number of employees tested on each monitoring code was: Unannounced (1), Monitoring (9), For Cause (3) and Post Incident (0). There were no positive results in Quarter 2.

In the event of a failure, appropriate disciplinary action up to and including dismissal is taken against anyone who is found to be in breach of the drugs and alcohol policy.

Sickness Absence

TfL headcount full time equivalent (FTE) (not including contracted employees) for Quarter 2 was 24,846. The average sickness absence per TfL employee was 11 days, for the period Quarter 3 2016 to the end of Quarter 2 2017. The UK annual average day's sickness absence is 4.3 days per year (Office of National Statistics, Sickness absence in the labour market: 2016).

Mental health and musculoskeletal injury and continue to be the top causes of TfL employee absence.

At the end of Quarter 2, 240 employees received trauma counselling for; work place violence (15 per cent); observing

suicide incidents (28 per cent); and near miss / other (57 per cent). There were 345 persons who received non-trauma related counselling for; stress (28 per cent); anxiety (34 per cent); depression (19 per cent); and other (19 per cent). The causations for non-trauma counselling are not conclusive whether caused by personal or work related issues.

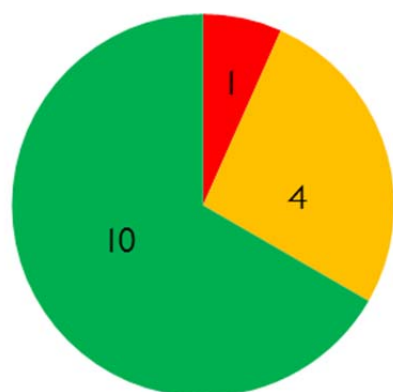
Early referral to TfL's physiotherapy support services is a key management strategy to minimise duration of absence from musculoskeletal injury. The average sickness duration is three times less for those employees who are referred within the first month of absence, compared to those who are referred later. At the end of Quarter 2, the duration of symptoms at time of first physiotherapy appointment was; less than one month (37 per cent); one to three months (36 per cent); over 3 months (27 per cent).

We continue with the delivery of our five-year Health and Wellbeing Improvement Programme, focussing on lifestyle health factors by engaging with employees to improve musculoskeletal, mental health and general health. In Quarter 2 employees participated in a walking challenge, mental health and diabetes awareness workshops.

TfL Internal Audit

HSE and Technical audits are undertaken across TfL to ensure our strategic risks are being monitored and adequately controlled. Fourteen HSE and Technical audits were undertaken in Quarter 2 (Fig. I6), one resulted in a 'poorly controlled' conclusion; Inspection of LU Premises.

Six audit memorandums were distributed to highlight issues identified outside the scope of the audit programme. Where any risk is identified to be deficient of the required standard, a corrective action plan is implemented to ensure improvements are made.



- Poorly controlled
- Requires improvement
- Adequately controlled

Above: Figure I6. TfL HSE and Technical audit results Q2 2017/18.

Summary of 'poorly controlled' audit: Inspection of LU Premises

TfL HSE incident data shows that objects falling from ceilings in LU stations was an increasing trend, but this has now been reversed. Planned inspection regimes are used to reduce the risk of falling objects. Inspection arrangements for the Jubilee, Northern and Piccadilly Lines were found to be adequately controlled. Issues identified on the remaining lines include:

- LU's internal advisory standard of inspection frequency was not being adhered to as there was insufficient resource
- Administration of inspection planning was documented locally, rather than on enterprise-wide systems
- Management of works to address asset deterioration was affected by incomplete historical inspection information
- Incomplete verification of inspections completed by LU's contractor

The corrective action plan to address this audit result includes;

- LU's internal advisory standard of inspection will be formalised into a mandatory procedure by 31 December 2017
- Mobilisation of resources to enable historical station inspections to be completed by 31 March 2018, a recovery programme for other buildings and verification of contracted historical inspections by January 2018

Key themes of 'requires improvement' audit results

There were two audits within LU that concluded in a 'requires improvement' result:

Bakerloo and Victoria line signals team HSE management: site-specific workplace risk assessments needed completing; senior manager safety tours were not being completed; management of excessive working hours was not taking place; and awareness of fatigue management controls was poor.

Warranty process: weaknesses were identified in the process for returning failed parts under warranty to a manufacturer, potentially exposing LU to unnecessary cost.

There were two audits of KeolisAmey Docklands (KAD), a TfL franchisee, that concluded in a 'requires improvement' result:

Competency management of customer facing staff: whilst a robust system was found and assessments were being completed, assessment notes were not being completed in line with ORR guidance and management checks of the system were not being completed as planned. KAD has developed improvement plans to amend the system to correct these deficiencies.

Quality assurance process for rolling stock: KAD were not completing audits and quality checks as required; the management of calibrated measuring equipment was not robust; suppliers were not being assessed and validated in accordance with the KAD Accreditation Process.

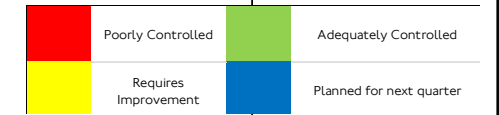
Audit memorandums

Six audit memorandums were distributed to highlight issues identified outside the scope of the audit

programme. Memorandums were issued based on the following findings;

- The arrangements for fatigue management by Tram Operations Limited, a TfL franchisee operating London Trams, differs from guidance issued by the ORR
- The arrangements for competency management of staff at LU's Railway Engineering Workshop (REW) is not governed and recorded by LU competence enterprise systems and does not follow guidance issued by the ORR
- Batch management processes within REW had not achieved the level of maturity that was expected by the management team that requested the audit. An audit will be conducted once the batch management system has been implemented in 2018.

TfL Internal Audits completed in Quarter Two 2017/18

Strategic risk	SRI: Safety Standards			SR3: Governance Suitability	SR7: Financial Sustainability	SR9: Delivery of commercial revenue Targets	
Audit: Q2 17/18	17 706 DLR Competence Management for Passenger Service Staff	17 759 Signals Bakerloo and Victoria HSE Management	17 757 LU Operations Ealing Common Rolling Stock Depot HSE Management	17 129 Thorntask Lessons Learnt Review	17 123 Traffic Enforcement	116 740 mplementation of new e-Tendering System	17 633 Internal Audit Work on the procurement of Development Design Services for Crossrail 2
	17 760 Consideration of learning from Crossrail audits by Northern Line Extension Project Tunnelling	7 719 LU REW Competence Management	17 757 LU Operations Ealing Common Rolling Stock Depot HSE Management	17 108 Data Privacy and Protection - preparation for GDPR	17 104 Construction Industry Scheme (CIS)	16 025 Contract Management of the TfL Advertising Partnering Agreement (APA)	16 205 Contract Management of the TfL Advertising Partnering Agreement
	Issue arising from Internal Audit 17 719 – REW Competence Management	17 780 Management of Fatigue in Tram Operations Limited	17 705 LU Managment of Fatigue	17 601 Follow up to Garden Bridge Project audit	17 113 Transformation - Assurance on Transition to Go Live	17 200 Use and prioritisation of Car Parks	17 207 Property Management including vetting of tenants
	17 753 LU Projects Working with Electricity	17 756 LU Operations Victoria Line HSE Management	17 758 LU Operations Cockfosters Rolling Stock Depot HSE Management			17 203 Arches Strategy	17 204 Exterion Capital Expenditure Programme
	17 774 DLR Control of Legionella Risk	17 115 Safety Complaints Handling					
							

Resilience

The TfL Resilience function combines prevention activity, preparedness, implementation of emergency arrangements, and ensures continuity of operations during periods of business strain. Resilience activities are designed to reduce the impact of incidents on our customers, recover TfL services to customer expectations and minimise costs of failures.

Significant resilience incidents

On Friday 15 September, a terrorist attack took place at Parsons Green London Underground (LU) Station. An attempt was made to detonate an improvised explosive device, which failed to fully function.

Alongside implementing incident response protocols, TfL closed Parsons Green station. On site staff moved customers and members of the public to safety and supported the emergency services. There were 19 casualties taken from the scene to hospital.

As part of the debriefing work, further stakeholder engagement took place with partner organisations to review security and incident management processes and capabilities.

Partnership working

TfL has close working relationships with all emergency services and continue to engage with resilience stakeholders across London.

The London Resilience Forum (LRF) met on 28 June to discuss the creation of a 'Blue Lights Group' and to discuss recent major incidents across London. TfL will

be included in the formation of the 'Blue Lights Group' and input into the development of the London Emergency Services Liaison Panel Major incident Procedures Manual.

We continue to work in partnership with the MPS, Security Services, Centre for the Protection of National Infrastructure and Mayor's Office to deliver the Mayor's Healthy Streets agenda. Part of this work includes delivery of Hostile Vehicle Mitigation (HVM) measures on London bridges, following the London Bridge terror attack (3 June 2017). We are also considering appropriate protection at London Ceremonial sites, the London Overground network, and popular visitor attractions.

Terrorism threat levels

Threat levels are used to indicate the likelihood of a terrorist attack in the UK, and can change at any time based on intelligence gathered. The threat level is set by the Joint Terrorism Analysis Centre and the Security Service (MI5). There are 5 levels of threat; low (an attack is unlikely); moderate (an attack is possible but not likely); substantial (an attack is a strong possibility); severe (an attack is highly likely); critical (an attack is expected imminently). Current threat level assessment:

- The threat to the UK from international terrorism: severe.
- The threat to UK mainland from Northern Ireland-related terrorism: substantial.
- The threat to Northern Ireland from Northern Ireland-related terrorism: severe.

Environmental Management

The Mayor's vision was published in the draft LES earlier this year, setting out how London will become the world's greenest global city. The draft LES and draft MTS set out the actions required to support this vision. We are committed to supporting these measures through our transport services and other activities.

Air quality

Following a successful public consultation earlier in the year we launched the T-Charge on 23 October, adding an additional £10 surcharge to the Congestion Charge for older more polluting vehicles. It has been billed as the strictest emission standard in the world and generated significant media coverage.

Low Emission Bus Zones

The first Low Emission Bus Zone, in Putney High Street, is operating seven low-emission routes from a fleet of 145 ultra clean Euro VI buses. Since the launch of the zones in March, there has been a sharp fall in excessive pollution according to provisional monitoring results collected by Wandsworth Council. The council has two high street monitoring stations and the first recorded six exceedances in nitrogen dioxide between February and June this year compared with 742 times during the same six months in 2016. The other recorded no hourly pollution incidents since February compared with 200 last year.

Zero emission buses

The number of pure-electric buses in the fleet will rise to more than 170 next year, following agreements to convert another six routes to fully electric. These include: route 360 between Kensington and Elephant and Castle; route CI from White City to Victoria; route 70 from South Kensington to Acton; route 46 between Paddington and Holborn; route I53 between Finsbury Park and Moorgate; and route 214 between Highgate Village and Camden. Route 360 will convert to fully-electric buses later this year, and routes 70 and CI in spring 2018. Routes 45, I53 and 214 will convert by mid-2019. Earlier routes that have gone all electric include routes 312, 507 and 521.

We currently have eight zero-emission hydrogen fuel-cell buses on route RVI between Covent Garden and Tower Gateway, which will rise to 10 in late 2017. The hydrogen fleet will grow by at least 20 more fuel-cell vehicles from 2018.

Improving air quality on the Tube

Air quality is one of the biggest health challenges of this generation and we are committed to doing everything we can to tackle it. The Mayor has already introduced new measures to lower emissions from cars and buses, and is now also focused on wider sources of pollution, including the Tube, river transport and construction sites.

On 23 June, the Mayor instigated a review of air pollution on the Tube, introducing measures to minimise dust levels to ensure employees and passengers breathe the cleanest air possible.

The work is part of a wide-ranging review across planning, housing, construction, transport and river

services to protect Londoners from the damaging health impacts of air pollution.

Previous independent scientific research funded by us in 2004 found that the composition of dust particles on the Tube was different from that above ground, and concluded that the dust did not contain components at levels that are likely to pose a health risk.

We will review the evidence and the findings will help us do what we can to ensure that the Tube system is as clean as possible. We have requested independent support and advice from the Department of Health's independent expert Committee on the Medical Effects of Air Pollutants.

We have also launched a new air quality action plan on the Underground that will result in immediate improvements. This includes an enhanced air quality monitoring programme, testing at more than a dozen stations and a more rigorous cleaning regime. We are using the best examples of dust management in metros around the world.

Safer and greener working in tunnels

We are trialling an alternative fuel for construction equipment in London Underground tunnels, which is reducing emissions significantly. This is helping us to support the Mayor's clean air vision and is particularly beneficial to our workforce.

EcoPar is a low-carbon fuel based on natural gas that almost completely eradicates harmful particulate matter. It is especially effective in poorly ventilated areas and needs no modifications to engines.

The modernisation of the Circle, District, Hammersmith & City and Metropolitan lines has been trialling the fuel in diesel

generators in tunnel sections to mimic working conditions. Normally, people working in tunnels or areas of restricted air movement wear carbon monoxide monitors and stop work to move areas when the monitors are triggered. So far there have been no carbon monoxide monitors triggered when using EcoPar.

Energy consumption within our managed sites

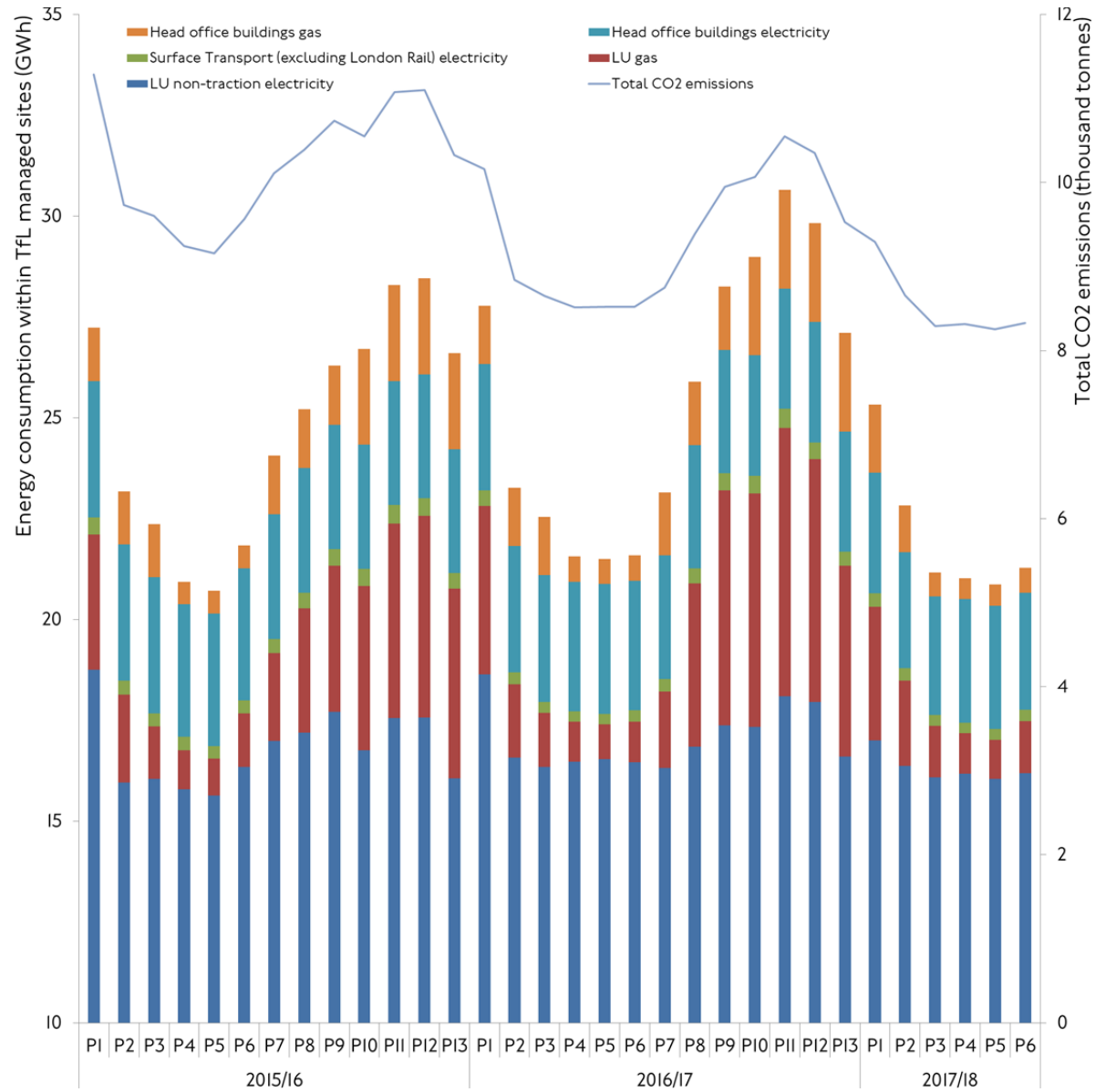
Our directly consumed energy per period, excluding traction electricity, is shown in figure 16. This includes Surface Transport infrastructure, London Underground stations, depots and other assets, and head office buildings. The chart also shows the CO₂ emissions associated with this energy consumption.

The total amount of CO₂ emissions associated with energy consumption at our managed sites was 8,332 tonnes at the end of Quarter 2 2017/18. This represents a two per cent reduction compared with 8,522 tonnes at the end of the same period in 2016/17.

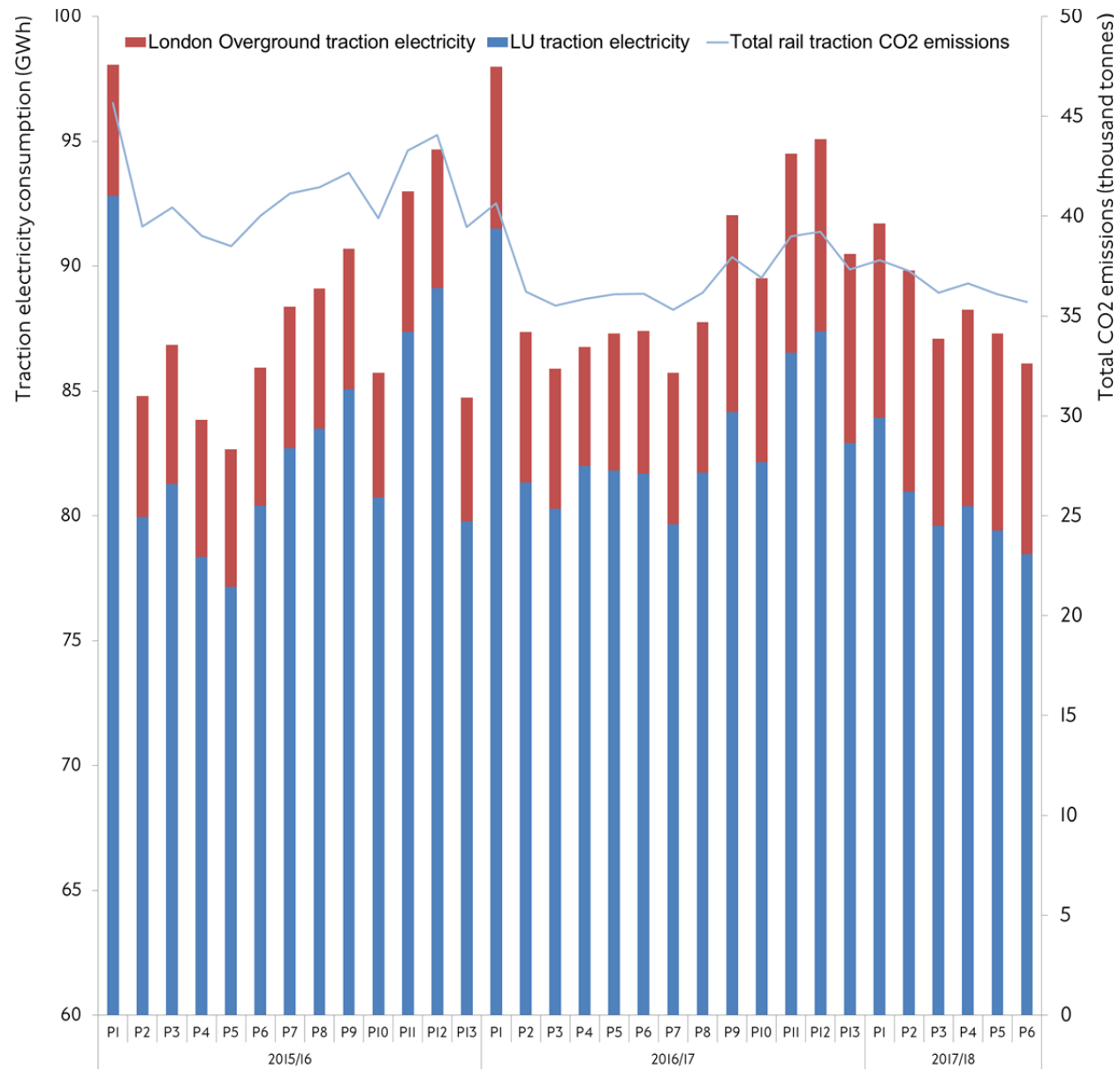
We recently completed a project to upgrade the energy efficiency of nine buildings across our portfolio. Delivered through the GLA's Re:FIT framework, this included three head office buildings, four train crew accommodation buildings and two bus stations. This will save more than 830 tonnes of carbon and over £250,000 in energy costs per year.

Periodic consumption of traction electricity (energy used to power trains) for London Underground and London Overground, and the CO₂ emissions associated with this, is shown in figure 17. As traction electricity represents approximately 75 per cent of our total energy consumption, this is shown separately from other energy use.

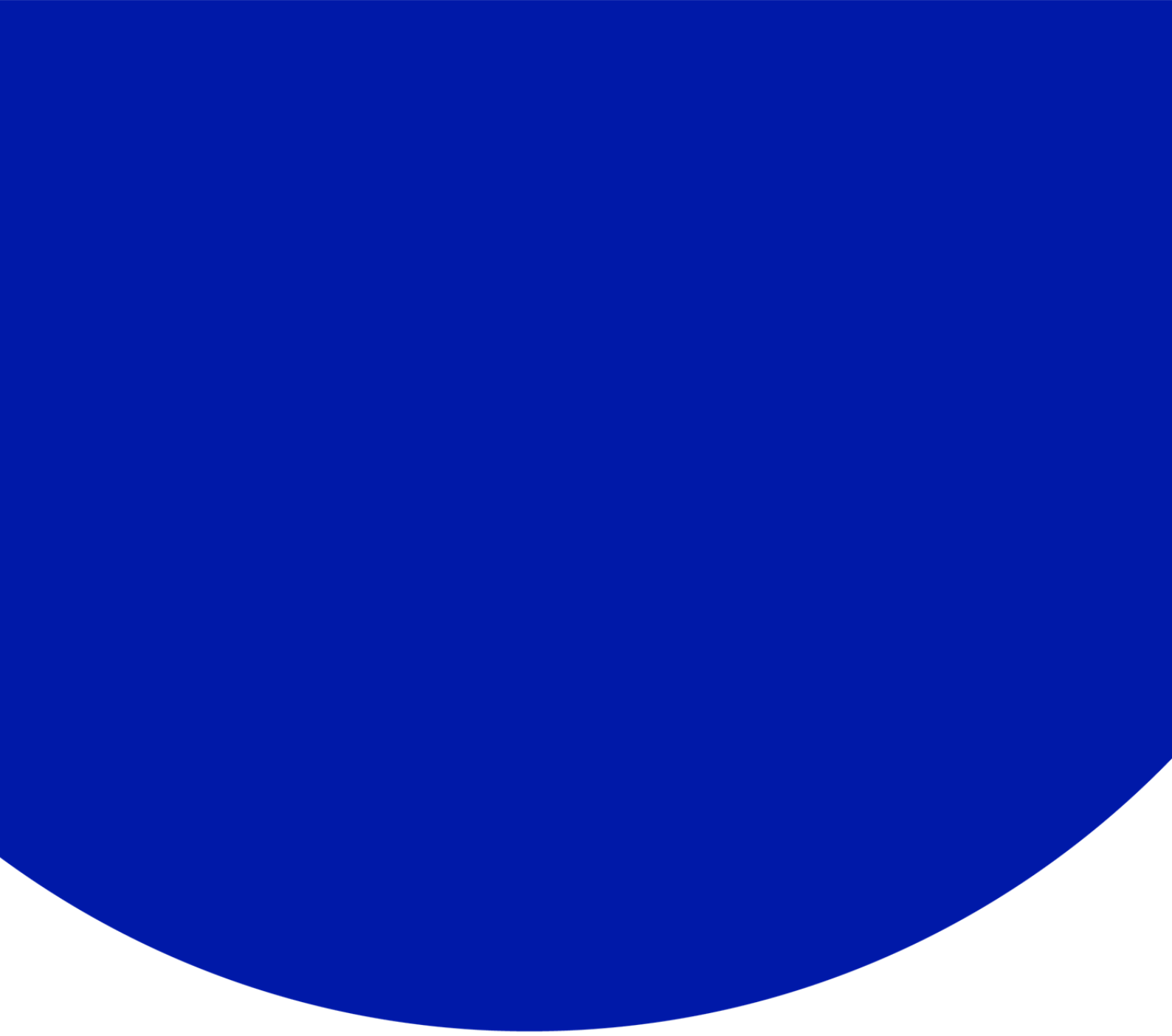
The Mayor of London's vision was published in the draft London Environment Strategy (LES) earlier this year, setting out his vision for London to be the world's greenest global city. The LES and draft Mayor's Transport Strategy (MTS) set out the actions required to support this vision. TfL is committed to supporting these measures both through its operation of transport services and in its other activities.



Above: figure 17. Energy consumption within TfL managed sites P1 2015/16 – P6 2017/18.



Above: figure 18. Traction energy consumption on London Underground and London Overground network PI 2015/16 – P6 2017/18.



EVERY JOURNEY MATTERS