

Date: 26 June 2017

Item: Health, Safety and Environmental Quarterly Report

This paper will be considered in public

1 Summary

1.1 This health, safety and environment (HSE) quarterly report provides an overview of the HSE performance for London Underground, TfL Rail, Surface Transport (including London Rail), and Crossrail services for quarter four 2016/17. This report covers 11 December 2016 – 31 March 2017 and is the longest quarter of the reporting year featuring four periods of performance.

2 Recommendation

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

3 Background Information

- 3.1 There were 21 customer fatalities on the TfL public transport network in the quarter. 12 fatalities await the outcome of Coroner inquests. Four fatalities have been recorded by the Coroner as; open (one), narrative (one), and suicide (two). Five fatalities are attributed to pre-existing medical conditions. There were no employee or contractor fatalities in the quarter
- 3.2 Slips, trips and falls continue to be the main cause of customer injury across the network, with incidents occurring on station escalators, stairs, at the platform train interface (PTI), and on buses. Programmes to mitigate against customer injury remain on target to deliver planned improvements.
- 3.3 The number of employee statutory reportable injuries is the same as quarter four 2015/16. Ninety eight per cent of these were due to the injured persons taking more than seven days absence, rather than the severity of the injury. Slips, trips and falls resulting in musculoskeletal injury remain the main cause of injury. We continue to work with our teams and our suppliers' teams on the importance of personal responsibility for HSE and we continue to reinforce safe behaviours through on site briefings, revised risk assessments and lessons learned from investigation processes.
- 3.4 Provisional road safety killed or seriously injured (KSI) data is reported quarterly in arrears. When compared to quarter three 2015/16 performance results show; a 13 per cent increase for all KSI, an 11 per cent increase for vulnerable road user group KSI, a 30 per cent decrease for heavy goods vehicle (HGV) related KSI, and a 16 per cent decrease for KSI whilst using taxis, private hire vehicles,

coaches and buses. Changes to the Metropolitan Police reporting system is a factor in the increase.

- 3.5 Significant incidents in the quarter include a customer fatality at Canning Town London Underground Station, a customer injury at Victoria Cardinal place, and an ongoing issue of proposed enforcement action from the Environment Agency (EA) for non-compliant assets containing Polychlorinated Biphenyls (PCB).
- 3.6 Surface Transport made good progress in extending its Safety Performance Index (SPI) model to Buses from the first period of 2017/18 after several years of use within London Rail. The way the SPI measure is derived is similar to the Retail Price Index, in that it utilises baskets of measures comprising a multitude of indicators which provide a balanced approach to HSE performance measurement. In the final reporting period of 2016/17, the performances of London Rail business units were scored as; DLR 84, London Trams 81, London Overground 80, and Emirates Air Line 93. All areas exceeded the target of 80 set for each period.

List of appendices to this report:

Appendix 1: Health, Safety and Environmental Performance – Quarter Four 2016/17

List of Background Papers:

None

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UNDERGROUND

PUBLIC SUBWAY

HSE Quarterly Report

2016/17 Quarter 4 Update

In this report:

- Workforce safety and well being
- Significant incidents
- Customer safety
- Road safety
- Crime and antisocial behaviour
- Environmental performance
- HSE audit
- Resilience

HSE Quarterly Report – 2016/17 Quarter 4 Update

This quarterly health, safety and environment (HSE) report provides an overview of the HSE performance for London Underground & TfL Rail, Surface Transport (including London Rail), and Crossrail services for quarter four 2016/17. This report covers 11 December 2016 – 31 March 2017 and is the longest quarter of the reporting year featuring four periods of performance.

There were 21 customer fatalities on the TfL public transport network in the quarter. Twelve (12) fatalities await the outcome of Coroner inquests. Four (4) fatalities have been recorded by the Coroner as; open (1), narrative (1), and suicide (2). Five (5) fatalities are attributed to pre-existing medical conditions.

Slips, trips and falls continue to be the main cause of customer injury across the network, with incidents occurring on station escalators, stairs, at the platform train interface (PTI), and on buses. Programmes to mitigate against customer injury remain on target to deliver planned improvements.

The number of employee statutory reportable injuries is the same as quarter four 2015/16. Ninety eight per cent of these were due to the injured persons taking more than seven days absence, rather than the severity of the injury. Slips, trips and falls resulting in musculoskeletal injury remain the main cause of injury. We continue to work with our teams and our suppliers' teams on the importance of personal responsibility for HSE and we continue to reinforce safe behaviours through on

site briefings, revised risk assessments and lessons learned from investigation processes.

Provisional road safety killed or seriously injured (KSI) data is reported quarterly in arrears. When compared to quarter three 2015/16 performance results show; a 13 per cent increase for all KSI, a 11 per cent increase for vulnerable road user group KSI, a 30 per cent decrease for heavy goods vehicle (HGV) related KSI, and a 16 per cent decrease for KSI whilst using taxis, private hire vehicles, coaches and buses. Changes to the Metropolitan Police reporting system is a factor in the increase.

Significant incidents in the quarter include a customer fatality at Canning Town London Underground Station, a customer injury at Victoria Cardinal place, and an ongoing issue of proposed enforcement action from the Environment Agency (EA) for non-compliant assets containing Polychlorinated Biphenyls (PCB).

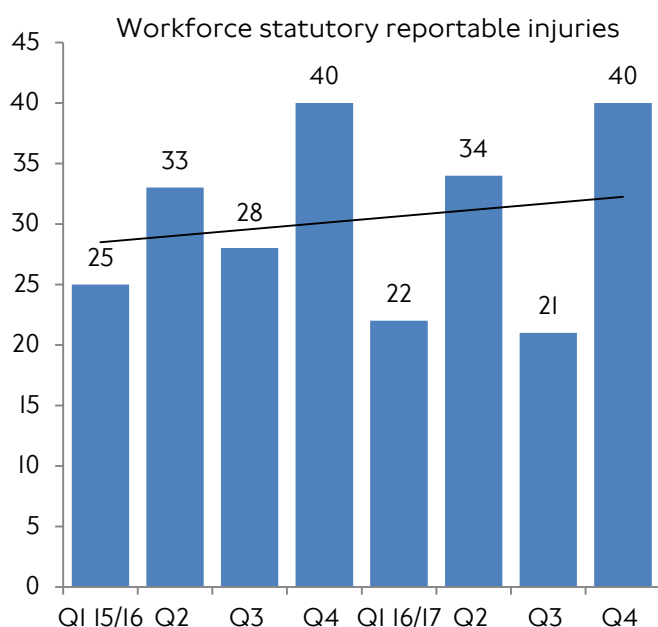
Surface Transport made good progress in extending its Safety Performance Index (SPI) model to Buses from the first period of 2017/18 after several years of use within London Rail. The way the SPI measure is derived is similar to the Retail Price Index, in that it utilises baskets of measures comprising a multitude of indicators which provide a balanced approach to HSE performance measurement. In the final reporting period of 2016/17, the performances of London Rail business units were scored as; DLR 84, London Trams 81, London Overground 80, and Emirates Air Line 93. All areas exceeded the target of 80 set for each period.

Workforce safety & wellbeing

This section of the report does not include supplier / concessionaire performance data from Crossrail.

Workforce statutory reportable injuries

There were no workforce or supplier fatalities in quarter four 2016/17 or year to date. The main causes of reportable injuries are slips, trips and falls resulting in musculoskeletal injury. These incidents predominantly occur in our operational areas of the business. One of the 40 injuries met the criteria for a statutory report due to the injury meeting criteria as a specified injury under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) Regulations. The remaining 39 were due to the injured persons taking more than seven days absence.

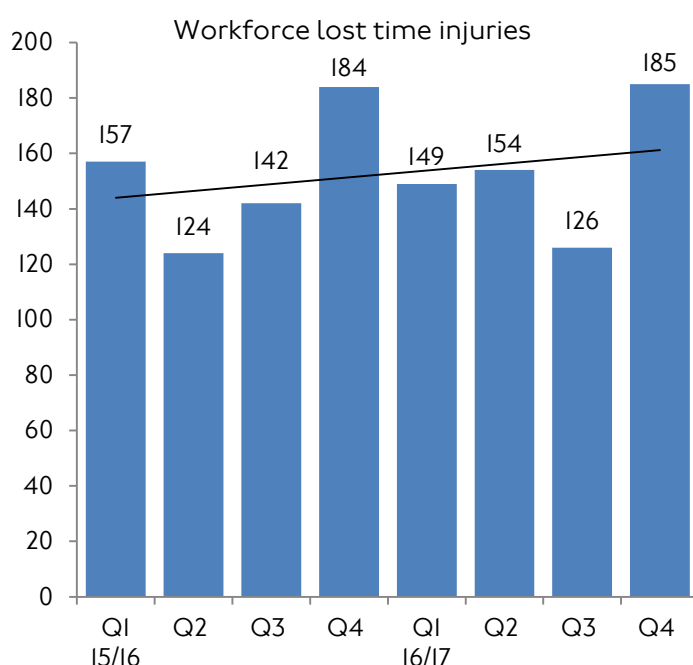


Above: Workforce statutory reportable injuries Q1 2015/16 – Q4 2016/17.

Workforce lost time injuries (LTI)

For London Underground (LU), 156 LTI occurred, caused by: trauma (30 per cent), workplace violence (28 per cent), and slips trips, falls (14 per cent).

For Surface Transport, 45 per cent of the 29 LTIs in the quarter resulted from workplace violence targeted at Revenue Protection Inspectors (RPIs). Of the remaining 16 LTIs, personal injury events to RPIs as a result of slips, trips, falls and bumps within buses accounted for 17 per cent.

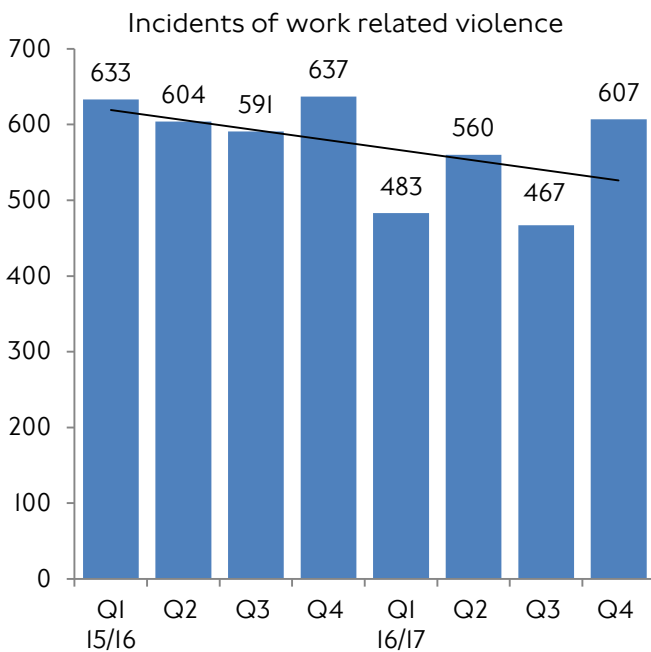


Above: Workforce lost time injuries (LTI) Q1 2015/16 – Q4 2016/17.

Work related violence

Across TfL, the customer facing operational workforce are most affected by work related violence. In quarter four, the 531 incidents involving LU workforce are broken down into verbal assaults (49 per cent), physical assault (24 per cent), and threats (27 per cent).

Seventy six incidents occurred within Surface Transport, of which 70 per cent involved RPIs. The incidents are broken down as verbal assaults (63 per cent) and physical assaults (37 per cent).



Above: Incidents of work related violence Q1 2015/16 – Q4 2016/17.

Workforce safety and wellbeing improvement programmes

The workforce safety improvement programme for London Underground is built to focus on three key areas;

1. High risk activities. Areas where we don't have many accidents, but the potential consequence is high. These activities include electricity at work, working at height, manual handling, and lifting operations.
2. Incidents that cause lost time injuries. For example psychological trauma and workplace violence.
3. Employee wellbeing.

Electricity at work

During 2014 and 2015, there were two significant electric shock incidents (at Stratford Market Depot and at Northfields depot). These two incidents, along with a number of other incidents, identified that our compliance with the Electricity at Work Regulations was not as robust as it should be. The number of electric shock incidents on LU are low, but the consequence could be fatal. As a result, LU established an Electricity at Work workstream to improve the systems which keep our workforce safe. Following a compliance check of all maintenance areas, new fuse bay covers for Signal Equipment Rooms (SERs) have been successfully trialled in two rooms at Liverpool Street and Chancery Lane. The covers will be applied across other SERs across the LU network where appropriate.

Manual Handling

Working alongside an external provider, a new tailored manual handling training course is now being delivered to Fleet, Track, Signals and Power teams within LU. Manual Handling is a causal factor in approximately 20 per cent of injuries to LU maintenance employees. It is forecast that the training will reduce these injuries by 10 per cent. The training focuses on practical techniques, relevant to our working environment, that reduces the risk of exposure to manual handling injuries. This will be rolled out further across the business in quarter one 2017/18 beyond our maintenance staff.

Safety Climate Survey

As part of plans to improve our HSE performance and engagement, LU will be conducting a safety climate survey in quarter one 2017/18. This will ask our operations and maintenance employees for their views on; safety culture in their teams, their manager's commitment to safety, and the use-ability of rules and procedures. Results from the survey will be available in the quarter three 2017/18 report.

Workplace Violence

We continue to work in partnership with the British Transport Police (BTP) to deliver Operations Spearhead - an early intervention tactic to prevent low level anti-social incidents escalating to staff assaults. To further support our workforce, a new 'Handling Workplace Violence and Aggression' training module has been rolled out to our operational frontline employees.

In the Surface Transport area of the business, a new two year improvement programme with seven work packages

was endorsed by the Health and Safety Steering Group in quarter four 2016/17.

The work packages manage and improve;

- Leadership, behaviour and competence
- Safety management system
- Risk reduction
- Learning lessons, good practice and innovation
- Performance and assurance
- Health and wellbeing
- Sustainability

Key deliverables and milestones will be finalised in quarter one of 2017/18.

Workplace Support Team

The Workplace Support Team (WST) continues to provide valuable support to staff on the bus network that have been assaulted. In quarter four, the Metropolitan Police Service's Roads and Transport Policing Command (RTPC), part-funded by TfL, investigated 193 attacks on frontline staff with the WST providing assistance through taking 78 witness statements. In addition, the WST used a number of forums and operational staff events to improve awareness of the support and services available to victims of workplace violence.

Employee Injury Working Group

As part of our strategy to improve the safety of employees, particularly those working in the frontline, Surface Transport's Employee Injury Working Group continues to provide a forum for

managers within operational areas to discuss local challenges and interventions. The initiative is helping to foster the sharing of lessons learned and providing opportunities for peer reviews. The group has identified three areas of risk for further monitoring, they include:

- Musculoskeletal injuries to Dial-a-Ride drivers caused by poor lifting techniques when assisting customers in wheelchair.
- Repetitive strain injuries (RSI) connected with Revenue Protection Inspector's (RPI) use of handheld devices required for their role.
- Attacks on RPIs in the course of their duties.

The risks are being mitigated through additional controls which will continue to be monitored by the group which will meet again in quarter one 2017/18.

A new health and safety e-learning package was designed to further strengthen the availability and accessibility of training to all employees as part of the competency framework in Surface Transport. This additional learning complements existing classroom based training which is based on risk and training needs analysis. In 2016/17, 707 employees participated in these classroom based courses.

In support of the Mayor of London's commitment to increase the number of Compliance Officers within Taxi and Private Hire by 250, Surface Transport stepped up work to deliver an intensive programme of safety training to new officers. The programme encompasses an accredited British Safety Council course and conflict avoidance training. To date, 188 Compliance Officers have

benefited from these training programmes.

Drug and alcohol testing

In quarter four 2016/17, the number of safety critical employees tested on each monitoring code in London Underground (LU) Operations is shown as; Unannounced (276), For Cause (II), Monitoring (24) and Post incident (21). There were two positive tests in quarter four, one drugs and one alcohol related.

The total number of safety critical employees for the 2016/17 financial year in LU Operations was 14,077. The minimum five per cent unannounced test target was 710 and LU tested 818 safety critical employees in the year. There were 11 positive drug test results and one positive alcohol test result throughout the 2016/17 year.

LU Capital Programmes Directorate (CPD) have 274 safety critical employees, with a minimum five per cent target of 14 for unannounced testing. Fourteen safety critical employees were tested, with no positive test results in the 2016/17 year.

In Surface Transport, at the end of quarter four 1,284 operational employees were within scope for drug and alcohol testing. There were 14 unannounced tests with one (I) positive result in quarter four. A total of 51 unannounced tests were carried out during 2016/17 marginally below the 5 per cent target required.

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 agency / contractors) for quarter four was 24,191. Average days absence per employee across TfL for quarter four is 3.60 days. Musculoskeletal injury and mental health continue to be the top causes of absence in the quarter.

Crossrail headcount FTE for quarter four was 2153. Average days absence per employee at Crossrail for quarter four is 2 days. Coughs / colds and musculoskeletal injury were the top causes of absence in the quarter.

UK average day's sickness absence is 4.3 days (Office of National Statistics, Sickness absence in the labour market: 2016).

Occupational health and wellbeing improvement programme

We operate a five-year Health and Wellbeing Improvement Programme, focussing on lifestyle health factors by engaging with employees to improve musculoskeletal, mental and general health.

In 2016/17, key achievements included a walking initiative aimed at increasing employees' physical activity levels. A total of 3,521 employees took part with the target of achieving 10,000 steps for 100 consecutive days. Employees demonstrated health improvements such as better sleep and feeling less stressed.

A new Wellbeing at Work index has been added to the annual employee survey report, which allows teams to review their results and plan action for change. Occupational Health is working with the

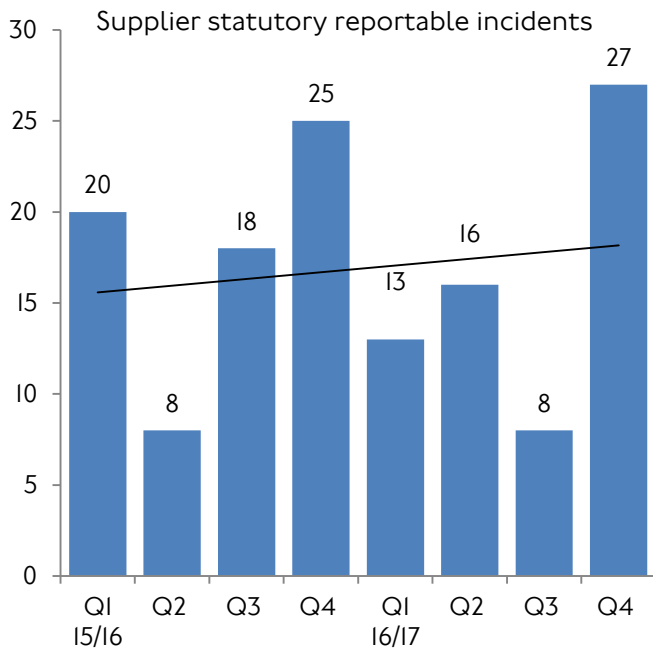
teams identified as having a low index score to improve their wellbeing.

In quarter one 2017/18 activity includes; Mental Health Awareness Week (8-12 May), the Time to Change Film will be deployed across the business and delivery of an online Healthy Eating and Hydration Programme.

Supplier workforce safety

This section of the report includes suppliers for London Underground and TfL Rail and the London Rail modes. Crossrail is featured later on in this report.

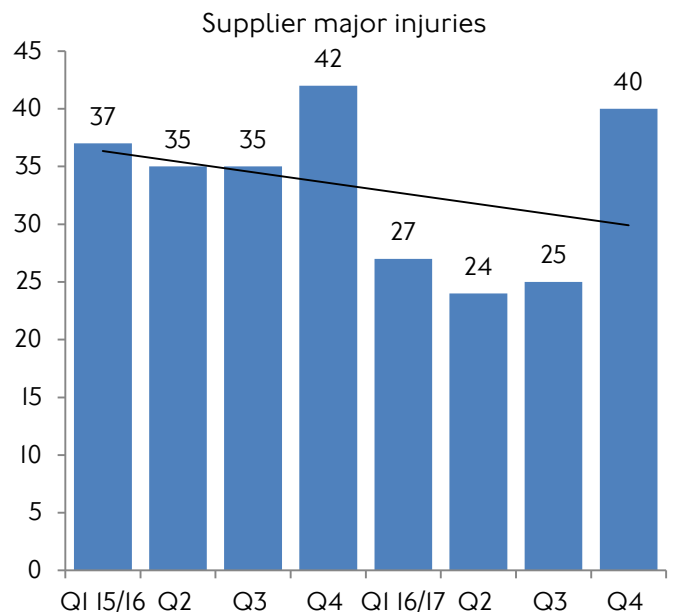
There were no supplier fatal incidents within quarter four 2016/17 or year to date. There were 27 RIDDOR reportable incidents to our supplier workforce in quarter four 2016/17. Across the supply chain, over seven day injuries continues to form a significant proportion of RIDDOR reportable incidents, predominantly caused by slips, trips and falls and manual handling resulting in musculoskeletal injury. For managing over seven day injuries, active engagement between responsible managers and injured persons has been promoted, ensuring recovery is fully supported facilitating improved return to work rates.



Above: Supplier statutory reportable incidents Q1 2015/16 – Q4 2016/17.

Supplier major injuries

Injuries to workers that result from road traffic collisions are not a statutory reportable incident under the RIDDOR regulations. Therefore, major injuries to suppliers are included in this section of the report as an addition to the supplier RIDDOR reportable incidents, and includes major injuries from Surface Transport road-based activities e.g Buses, dial-a-ride, London River Services, Taxi and Private Hire, Victoria Coach Station and Santander Cycles and road-based project and maintenance activities. During the quarter, major injuries to Surface Transport suppliers were caused by collisions (48 per cent), assaults (15 per cent) and slips/trips/falls and other personal injury events (33 per cent). In bus operations where 95 per cent of the injuries were recorded, the Bus Safety Programme is the chief mitigation for collisions, the highest cause of injuries in the quarter. For the full year, 116 major injuries were recorded, this represents a 22 per cent reduction on 2015/16.

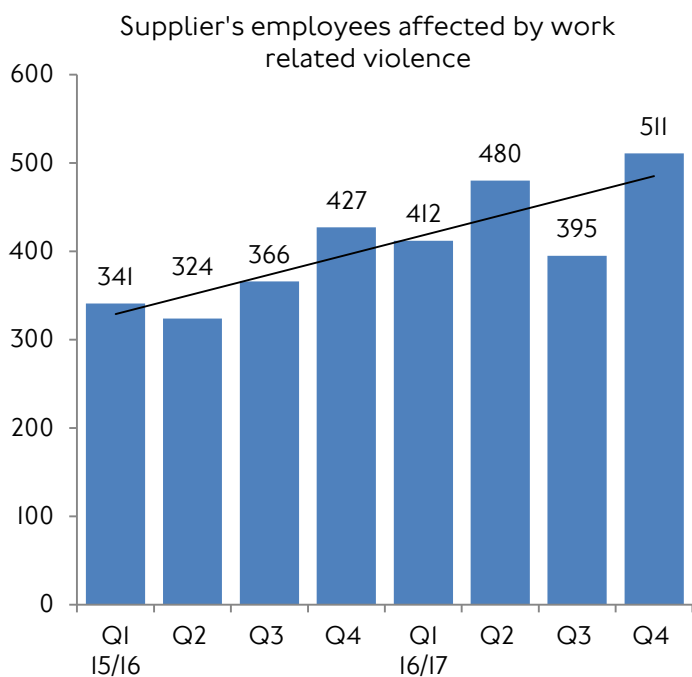


Above: Supplier major injuries Q1 2015/16 – Q4 2016/17.

Supplier's employees affected by work related violence

During the quarter, 34 per cent of incidents were physical with 40 of the attacks leading to injuries. Bus drivers accounted for 88 per cent of the incidents.

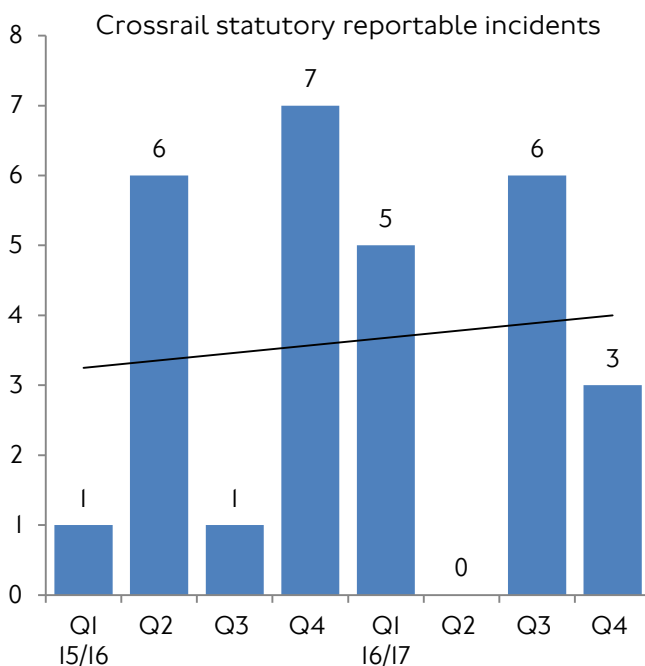
In quarter four, 162 bus drivers, 28 RPIs and three bus station staff reported attacks against them to the Police for follow up investigation. This means a total of 193 reported attacks to the Police were actively supported by the Workplace Support Team (WST) to ensure the perpetrators are found and prosecuted. The WST also engaged bus operators in proactive interventions at bus garages.



Above: Supplier's employees affected by work related violence Q1 2015/16 – Q4 2016/17.

Crossrail safety performance

There were three statutory reportable incidents in quarter four 2016/17. Injuries were caused by slips, trips, and falls and being hit by a falling object. All injuries resulted in musculoskeletal soft tissue injury or fractures. Two injuries met the criteria for submission of a statutory report due to the severity of the injury, and the remaining one due to the injured person taking more than seven days absence due to the injury.



Above: Crossrail statutory reportable incidents Q1 2015/16 – Q4 2016/17.

‘Stepping Up Week’ is a health and safety engagement initiative held twice per year across all contracts and sites on Crossrail. It forms part of Crossrail’s Target Zero strategy and has been successful in continuous improvement of health and safety. Stepping up Week 8 will begin at the start of quarter one and will run for 4 weeks to allow a greater level of engagement across the programme.

Additional safety improvement measures planned for delivery in quarter one 2017/18, include;

- roll out of a Fatigue Management Toolkit. The tool kit is based on the joint research that LU and Crossrail have undertaken and on best practice from other transport sectors.
- the next phase of the Crossrail Resilience exercise planning, will take place to test and develop our business continuity plans.

TfL significant incidents

On 22 January 2017 a customer was fatally injured after a fall down stairs in a non-public area at Canning Town London Underground station. An internal investigation revealed that the customer had opened an emergency exit gate and entered the non-public area of the station. On attempting to exit the area the customer was fatally injured after a fall down a set of stairs within the non-public area. The outcome of the Coroner investigation is due in September 2017 and we continue to support the British Transport Police and Office of Rail and Road with their investigations.

On 23 February, a member of the public was injured after being struck by architectural metal panelling that became detached from the roof of the Cardinal Place entrance at Victoria station. The site was made safe and additional checks were carried out on similar assets across TfL. An internal investigation is under way by London Underground (LU) and the principal contractor, Taylor Woodrow BAM Nuttall (TWBN). We continue to support the British Transport Police and Office of Rail and Road with their investigations.

On the 02 February, whilst helping a customer in a wheelchair, a Dial a Ride driver accidentally stood on the leg of a member of the public who sadly died a few days later. The inquest takes place on 29 June.

There is currently an ongoing issue of proposed enforcement action from the Environment Agency (EA) for non-

compliant assets containing Polychlorinated Biphenyls (PCB). The EA is currently investigating and it is likely that it will serve LU with a compliance notice to ensure that all PCBs are disposed. We have started removal of PCB assets on the register. Arrangements for annual reregistration (July) of PCB assets have been discussed and agreed with the EA. Derogations are being investigated for heritage stocks as precedents exist.

An inquest concerning the death of a cyclist took place on 16 February 2017. The incident involved a collision with a Co-Op delivery lorry in Denmark Hill on 28 May 2015. The Coroner issued a Prevention of Future Deaths (PFD) report to TfL and London Borough of Southwark. The PFD report identified the Coroner's concerns about the design of the Denmark Hill/Orpheus Road junction, with focus on protecting the safety of cyclists and other vulnerable road users. TfL responded to the Coroner confirming that Southwark had implemented short term changes to the junction, and also confirming the proposals for the Camberwell Green (TLRN) junction aimed at improving safety for both cyclists and pedestrians. The lorry driver involved in the incident was found not guilty of causing deaths by careless driving.

On 14 February 2017, a pre-inquest review hearing took place concerning the death of motorcyclist who lost control of his bike on a section of the blue surface of the Cycle Superhighway on Battersea Park Road on 01 March 2016. Although the inquest has not been heard, the Coroner issued a PFD report to TfL concerning the use of blue coloured surfacing on the Cycle Superhighway with reduced grip. The PFD report is based on preliminary evidence provided by the Police that the skid resistance value of the blue surfacing is lower than conventional

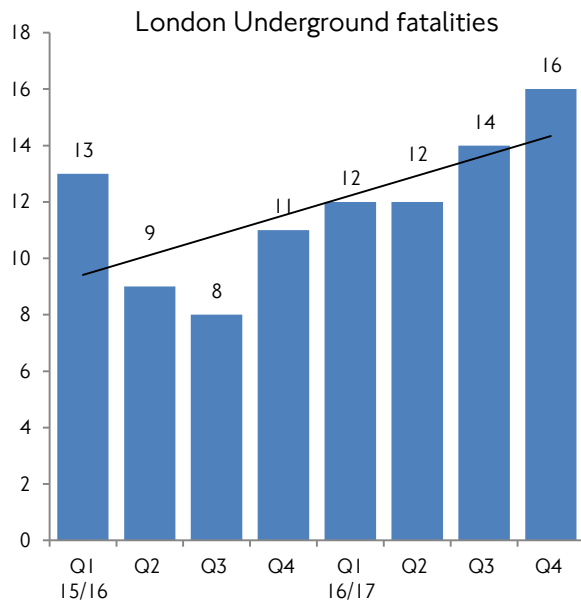
road surfacing. TfL responded to the Coroner on 14 April 2017 confirming that the skid resistance value for the blue surfacing is appropriate for use by all road users and not just cyclists, that following routine maintenance, the skid resistance of CS7 and CS8 was tested in August 2016, and where necessary, the resurfacing of areas requiring it have been scheduled for completion by June 2017.

Customer Safety

Customer safety: London Underground and TfL Rail

Sixteen customer fatalities occurred on the London Underground and TfL Rail network in quarter four. Ten (10) fatalities await the outcome of Coroner inquests. Four (4) fatalities have been recorded by the Coroner as; open (1), narrative (1), and suicide (2). Two (2) fatalities are attributed to pre-existing medical conditions. Cardiac arrests caused both medical related fatalities.

A fatality occurred at Canning Town Underground station, where a customer was fatally injured after a fall down stairs in a non-public area. This fatality is awaiting outcome of Coroner Inquest.

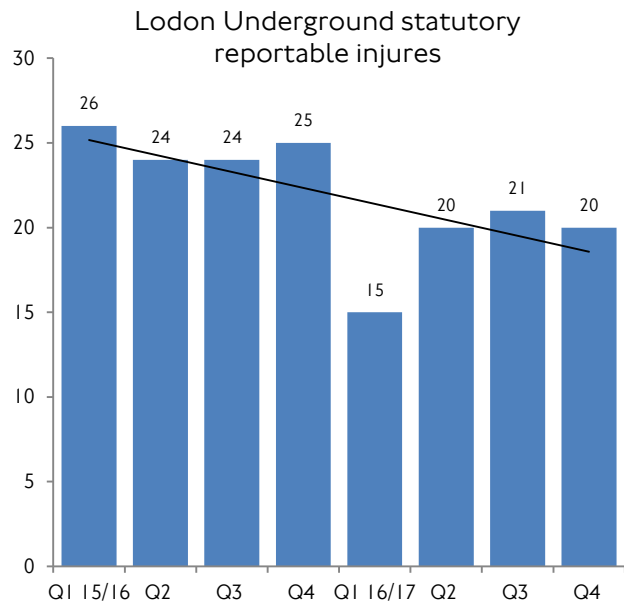


Above: London Underground customer fatalities Q1 2015/16 – Q4 2016/17.

Customer RIDDOR reportable injuries

Slip, trips, falls incidents remain our main cause of customer reportable incidents. On all occasions in quarter four, customer injuries required hospital treatment.

For the 2016/17 year, incidents occurred at the following locations; on escalators (48 per cent), on the platform and the platform train interface (27 per cent), and on stairs (24 per cent).



Above: London Underground statutory reportable injuries Q1 2015/16 – Q4 2016/17.

Customer safety improvement programmes: London Underground & TfL Rail

London Underground (LU) has a structured customer safety improvement programme which is based on mitigating key areas of customer risk.

Platform Train Interface (PTI)

The PTI project has a long term programme to improve the view of the Platform Train Interface for Train Operators. The review of all priority platforms (94 platforms) will be complete in May. The work to deliver improvements on these platforms will be completed in April 2021.

Activities delivered recently include:

- painting of the Platform End Barriers on platforms at Stratford, Mile End and Leytonstone.
- Changes to the location of some station equipment, e.g. Dot Matrix Indicators at Woodford station.
- Yellow and white lines at our top 20 stations (in terms of PTI risk) have been repainted, and a briefing to all station Area Managers has taken place, reminding them of how to ensure these lines remain in good condition.

Work to improve how LU manages the risk at the PTI associated with the S Stock (District, Circle and Hammersmith & City lines) is focusing on a small number of platforms, including identifying any 'further bolder' action which can be taken at Baker Street, where the greatest number of incidents occur.

Escalator safety

Over 40 per cent of customer accidents on LU happen on escalators. We have started the roll-out of six escalator safety actions at 10 stations where we have the greatest number of escalator incidents. This is as a result of 12 evidence-based trials carried out last year on more than 40 escalators. This encourages customers to hold on to the handrail, take care getting on and off the escalator, stand safely on the step and use lifts where appropriate

Managing congestion

Capacity improvements are planned for London Underground but these cannot be implemented quickly enough to match the rate of growth in travel demand. Between now and 2021, enhancements in the LU train service and the service offered by the Elizabeth line will reduce crowding significantly across the majority of the LU network.

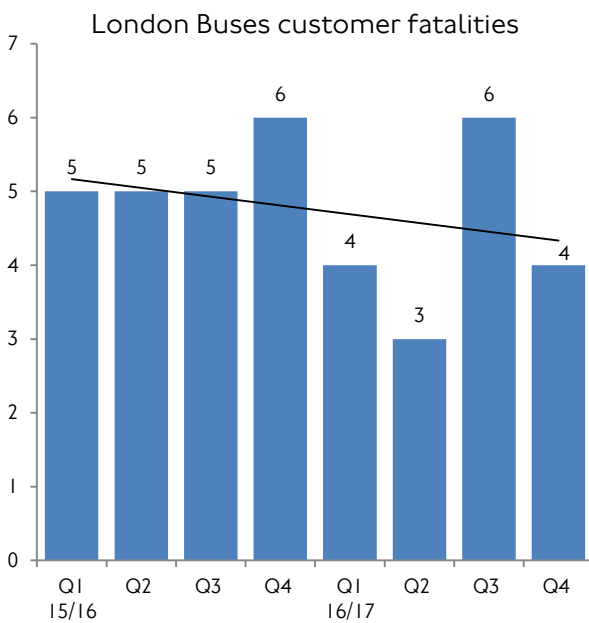
A Congestion Control Toolkit has been developed to improve how congestion can be improved. It will be trialled at 4 stations (Euston, Old Street, Clapham Common and Highbury & Islington) with feedback from the trial incorporated in the toolkit. The improved toolkit will be rolled out in Autumn 2017.

Customer safety: Surface Transport

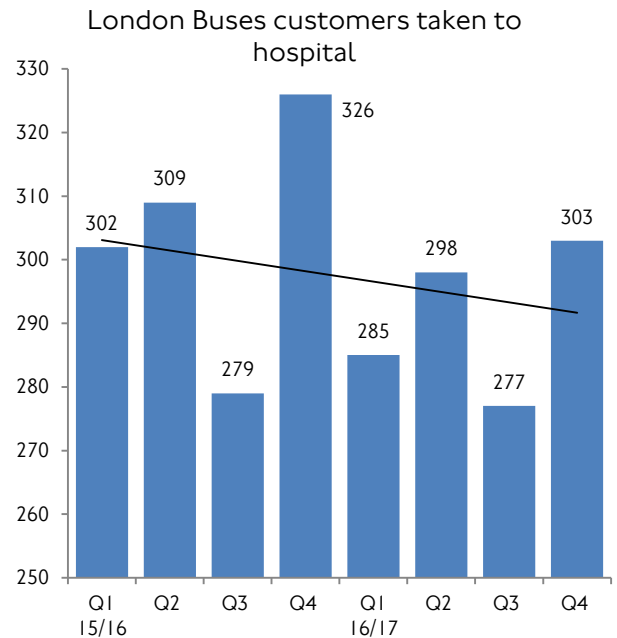
Five customer fatalities occurred on the Surface Transport network in quarter four. Two (2) fatalities await the outcome of Coroner inquests, and include a pedestrian fatally injured in a collision with a bus and a member of public involved in an incident with a Dial a Ride driver. Three (3) fatalities are attributed to pre-existing medical conditions.

Customer incidents resulting in being taken to hospital

Three hundred and three customers were taken to hospital for treatment or as a precaution. Fall related incidents accounted for 74 per cent of these injuries in 2016/17. This incident data is being analysed to inform and target better our safety improvement campaigns.



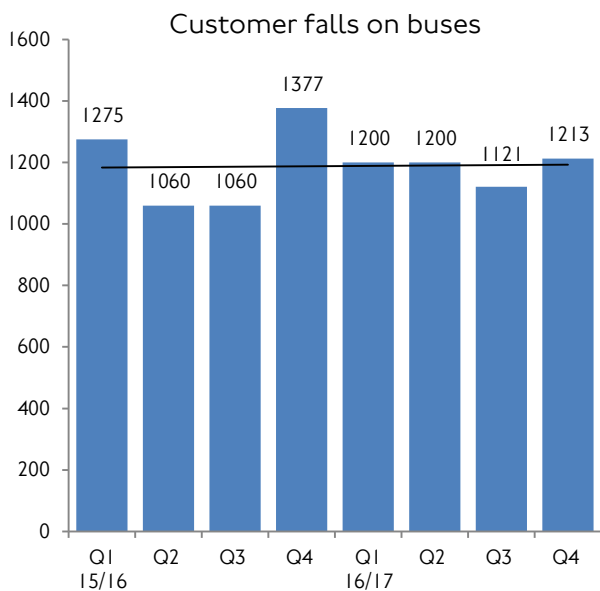
Above: London Buses customer fatalities Q1 2015/16 – Q4 2016/17.



Above: London Buses customers taken to hospital Q1 2015/16 – Q4 2016/17.

Customer falls on buses

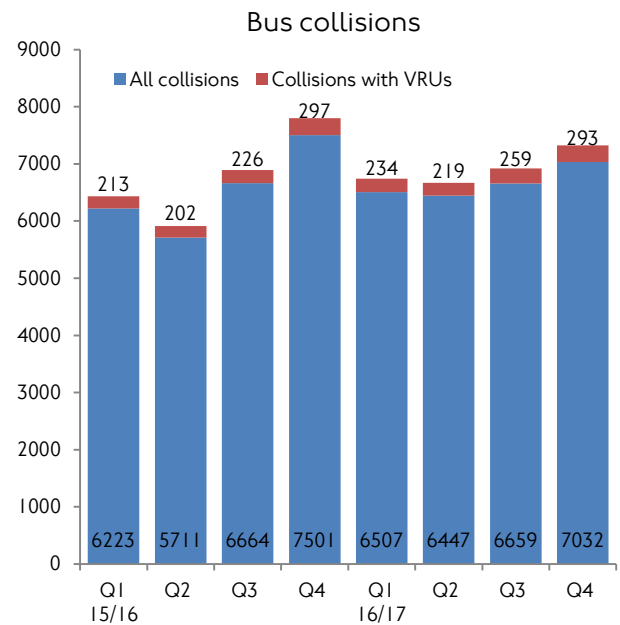
Fewer customers fell in quarter four compared with the same quarter of 2015/16 - 12 per cent less. A total of 4,734 passengers fell in 2016/17, down slightly from 4,772 in 2015/16. The total for the year is equivalent to 2.09 falls per million bus journeys.



Above: London Buses customer falls on buses Q1 2015/16 – Q4 2016/17.

Bus collisions

There were fewer bus collisions in quarter four compared with quarter four of 2015/16. Those involving vulnerable road users also saw a slight decline from 297 in quarter four of 2015/16 to 293 this quarter. One pedestrian was killed in these incidents, bringing the total deaths from bus collisions to seven this year compared with 13 in 2015/16.



Above: Bus collisions Q1 2015/16 – Q4 2016/17.

Customer safety improvement programmes: London Buses

Bus Safety Programme

Manufacturers Alexander Dennis and Wrightbus have been appointed delivery partners to help us develop a Bus Safety Standard for London – a revised specification for new vehicles entering the fleet from 2018. This is one of a range of road safety measures contributing towards the Mayor's Vision Zero approach where no fatality is treated as inevitable on the capital's highways. This appointment enables us to now issue an invitation to tender for a test house to work with TfL and our delivery partners to harness the best technologies that can avoid or reduce the severity of injury incidents. We expect to be able to announce the successful bidder in summer. Research used to provide the basis of equipment trials will also be published in summer, including analysis of police investigations into fatal bus collisions and the Intelligent Speed Assistance (ISA) trial report.

Following the setting of a customer injury reduction target for this financial year, the Bus Safety Programme team will be holding a workshop with bus operator safety managers in June to discuss measures that can be put in place to reduce customer injuries at a local level.

Funding approval has been given for a Safe Urban Driving-style training course for bus driver trainers and supervisors. The content will reinforce how to spot vulnerable road users, understand how they interact with other forms of highway traffic and how driving defensively can help to keep all road users safe. This will involve looking at common behavioural traits and providing information on what bus

drivers can do to mitigate the risks they are presented with on a daily basis.

The GLA Transport Committee's report into bus network safety and our Bus Safety Programme is expected in summer following the pre-election period.

Tackling Falls on Buses

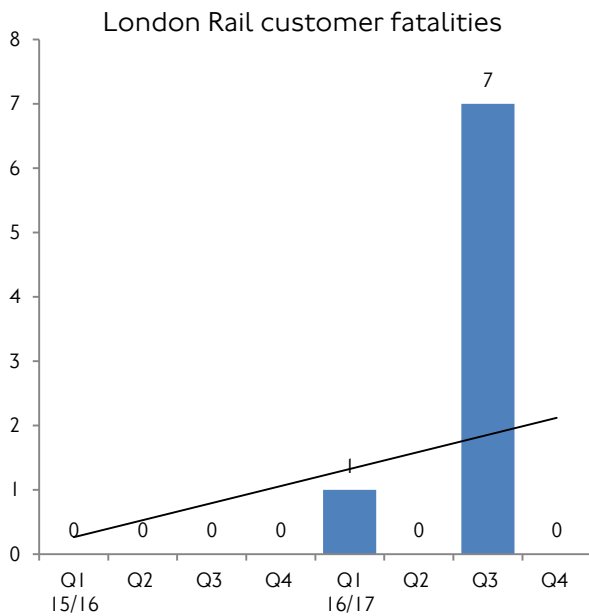
As part of the planning for a 2017/18 pan-modal safety campaign aimed at influencing customer behaviour to reduce falls, publicity is being designed that will be displayed on buses that encourages the public to take care when moving around the vehicle, particularly when using the stairs, as this is where a high proportion of injury events occur. It is intended to target bus routes that statistically present the greatest number of slip, trip and fall events.

Working collaboratively with our bus operator partners, Buses are planning a safety improvement workshop aimed at identifying further steps that can be taken to reduce incidences of falls on buses. The event is targeted at individuals within bus companies most able to identify causal factors and preventative actions. The event is planned to take place in quarter one and will be followed throughout the year by further topic based workshops.

Customer safety: London Rail

London Rail modes include; Docklands Light Railway (DLR), London Trams (LT), Emirates Airline (EAL) and London Overground (LO).

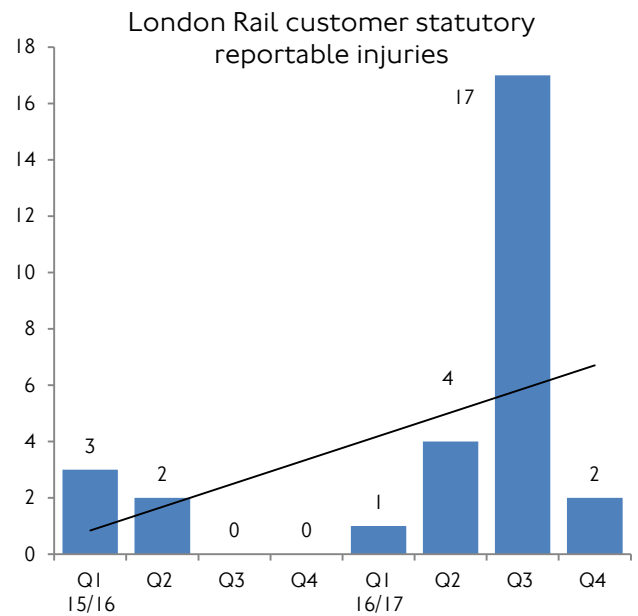
There were no customer fatalities in quarter four. A total of eight customers were killed in 2016/17, seven of which were as a result of the train derailment at the Sandilands Junction in quarter three. There was also a customer fatality in quarter one 2016/17, on the DLR where a male passenger fell onto the track at Star Lane station and was hit by a train.



Above: London Rail customer fatalities Q1 2015/16 – Q4 2016/17.

Customer RIDDOR reportable injuries

The two statutory reportable customer injuries occurred on the DLR network. They were due to slippery platform conditions at Greenwich DLR station, and a customer who accidentally drove a mobility scooter onto the track whilst exiting a lift. Both customers were taken to hospital. Seasonal preparedness plans have been amended for the management of platforms during icy conditions and Keolis Amey Docklands (KAD) are investigating announcements in lifts for mobility impaired persons.



Above: London Rail customer statutory reportable injuries Q1 2015/16 – Q4 2016/17.

Safety improvements: London Rail

Docklands Light Railway (DLR)

To further prevent customer injury caused by falls, DLR stakeholders are adopting best practise improvements from the London Underground escalator safety study, including the introduction of red combs being fitted during planned maintenance.

Work with the local community and users groups has seen an improvement in safety for mobility scooter users on the DLR network. Improvements include the installation of enhanced signage at stations where lift doors open directly - new signs advise mobility scooter users of how to exit lifts safely.

Passenger Engagement Roadshows are planned and being delivered across the network, involving staff from DLRL & KAD. These roadshows provide the opportunity for DLR to understand why passengers make decisions regarding the use of the railway in the way that they do. For example, due to the current position of customer visual information displays at Stratford and Woolwich Arsenal, customers appear to be more inclined to rush for services as they can see the information and countdown before services depart. The roadshows have also identified that there is low awareness amongst customers as to what they would do if they saw someone on the track. It became clear there was a lack of awareness of the help points on the DLR platforms. On the back of this, DLR has run announcement campaigns throughout the year making people aware of the help points and emergency stop buttons are available on every DLR platform.

London Overground (LO)

A programme of work has started to fit wrong side door enable protection to remaining London Overground routes. This is due for completion in quarter four 2017/18.

A training programme enabling staff to identify and assist distressed or vulnerable persons on the London Overground network is continuing to be delivered. The delivery of this training programme by Arrival Rail London resulted in over 50 successful interventions by staff in 2016, enabling professional help to be provided to the individual, and reducing disruption to other passengers on the London Overground network.

London Trams (LT)

A number of improvements to the London Trams network have been implemented following the tragic Sandilands incident in November 2016. These include additional signage and lower speed limits at key locations, and an enhanced programme of speed checking across the network. A number of additional safety measures, including options for automated speed detection and braking, are being evaluated to identify which deliver the most robust safety benefits and can be implemented successfully. We continue to work with the Rail Accident Investigation Branch, the Office of Rail and Road and the Police as their investigations continue.

London Trams is working with the London Borough of Croydon to demarcate areas of shared space (tramway and pedestrian) to clearly indicate the danger area, to reduce the numbers of incidents where pedestrians inadvertently step out in front of a tram. Publicity campaigns and school liaison presentations are part of an ongoing strategy to better inform those living

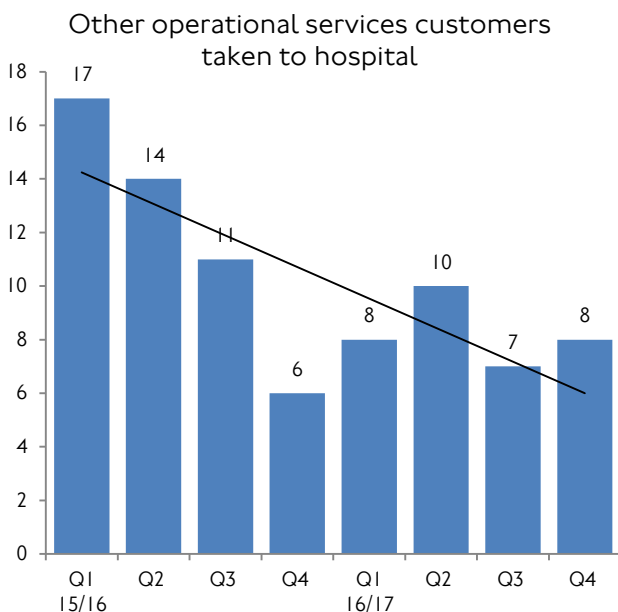
and working around the tram network of the hazards that exist. Simpler arrangements have been introduced for managing the interface between Network Rail and London Trams infrastructure on the Beckenham Junction branch. As part of the changes to the arrangements, improvement works can now only occur under a possession, which has resulted in safer working conditions for staff inspecting and maintaining the track in that location.

Customer safety: other operational services

Other operational services include; Dial-a-Ride (DaR), London River Services (LRS), Taxi and Private Hire (TPH), Victoria Coach Station (VCS), and Santander Cycles.

Customer incidents resulting in customers being taken to hospital

There have been no fatalities in the quarter or year to date. Four cycle hire users, three DaR customers and a VCS customer received major injuries in the quarter. On six occasions, the injuries were as a result of falls while using the bikes or boarding/alighting DaR buses and a coach within VCS. For the full year, 33 customer injuries required hospitalisation; this represents a 32 per cent reduction on 2015/16.



Above: Other operational services customers taken to hospital Q1 2015/16 – Q4 2016/17.

Taxi and Private Hire (TPH) roadworthiness and compliance checks at roadside

Performance in the quarter exceeds the baseline of 80 per cent compliance for both taxis and private hire vehicles inspected. In the quarter, 34,265 of the 111,896 taxis and private hire vehicles were inspected.



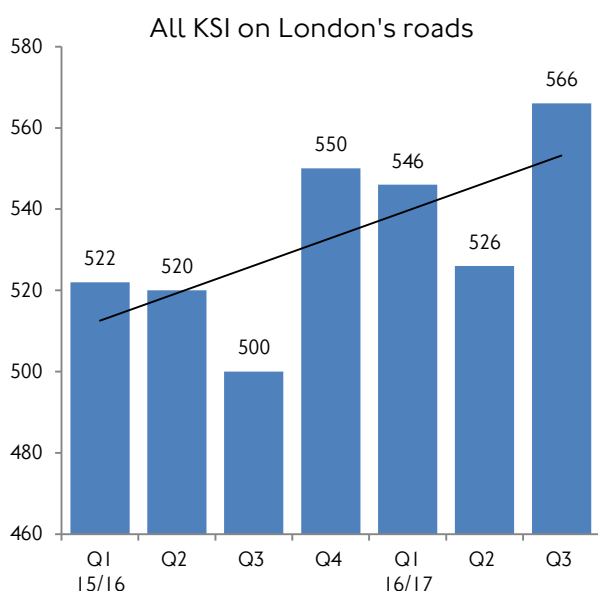
Above: Taxi and private hire roadworthiness and compliance checks at roadside Q1 2015/16 – Q4 2016/17.

Road Safety

All road safety data is provided one quarter in arrears and are provisional statistics due to our arrangement with the third party data supplier. Quarter three 2016/17 data is shown.

All killed or seriously injured (KSI) on London's Roads

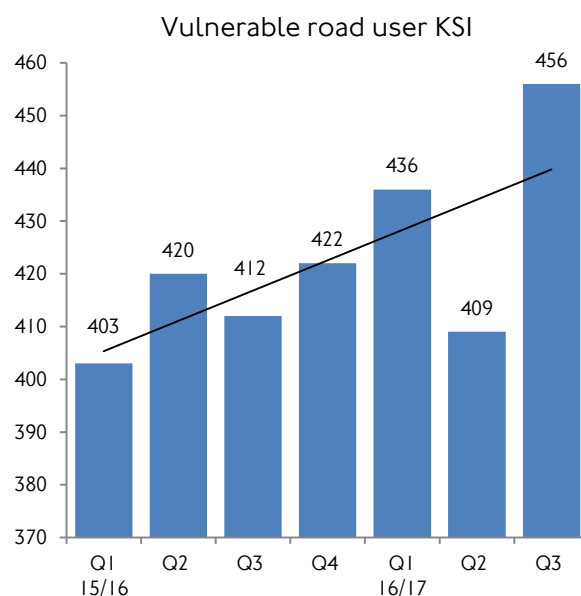
Provisional figures show KSIs on London's roads are up by 8 per cent in quarter three 2016, compared with the previous quarter. The Met Police introduced COPA and CRASH, a new method of assessing the severity of injury sustained in collisions, as recommended by the DfT. Under COPA and CRASH, officers record the type of injury suffered rather than their assumptions about the severity of the injury. This change in approach is a key factor in the rise in all of the KSI seen in the quarter.



Above: All killed or seriously injured (KSI) on London's roads Q1 2015/16 – Q3 2016/17.

Vulnerable road user (VRU) KSIs on London's Roads

Provisional figures show VRU KSIs are up 11 per cent in quarter three 2016, compared with the previous quarter.



Above: Vulnerable road user (VRU) KSIs on London's roads Q1 2015/16 – Q3 2016/17.

KSI whilst using Taxi, Private Hire Vehicle (PHV), Coach and Bus

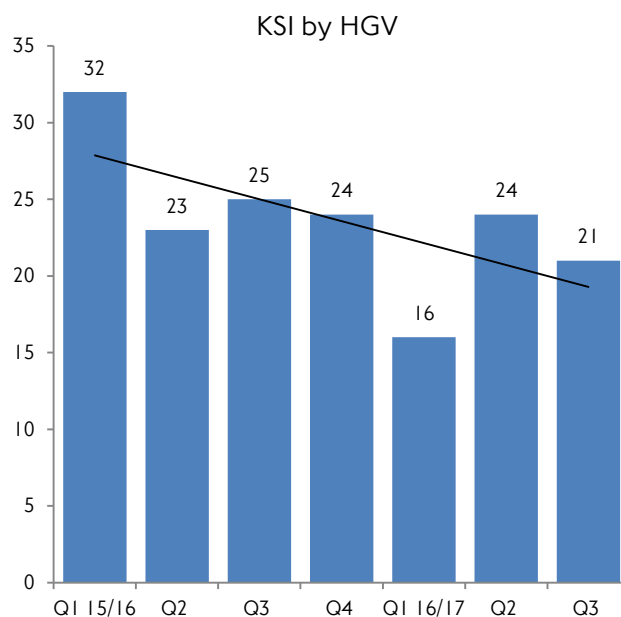
Provisional figures show fewer occupants of buses, coaches, taxis and private hire vehicles were killed or seriously injured in quarter three compared with the previous quarter two. This is lowest recorded in since the first quarter of 2015.



Above: KSI whilst using taxi, private hire vehicle, coach and bus Q1 2015/16 – Q3 2016/17.

KSI by HGV

Provisional figures show KSIs arising from collisions with HGVs fell to 21 (13 per cent decline) in quarter three 2016, compared with the previous quarter when it was 24. The quarter continues the improving trend.



Above: All killed or seriously injured (KSI) by HGV on London's roads Q1 2015/16 – Q3 2016/17.

Safety improvements: Road Safety

Road Safety Schemes

Works to install a new signalised pedestrian crossing on the A41 Finchley Road junction with Boundary Road (Westminster and Camden) was completed. The changes will benefit the high volume of pedestrians that use this busy road including many local school children. There are also benefits for cyclists through the improved facilities at the junction which is part of the Quietway. Monitoring of accident statistics will be undertaken.

The gyratory on A3 Clapham Road (Lambeth) was removed. This has created a pleasant environment for everyone including pedestrians and cyclists. The change will help reduce collisions with cyclists and remove potential barriers to cycling. Accident statistics will be monitored on the location.

Upgrades to existing facilities for pedestrians and cyclists on Earls Court Road junction with Braham Gardens (Royal Borough of Kensington and Chelsea) were completed. The change which includes re-alignment of cycle crossing and widening of pedestrian crossing area will provide greater safety and comfort for these user groups.

Works to introduce early release signals for cyclists and wider pedestrian crossing on A24 Balham High Road and other roads within the immediate area were completed. The location has seen a number of cyclist collisions due to conflicts with turning motor vehicles. The change follows road safety audit recommendations which sought to reduce cycle collisions and provide greater comfort for pedestrians crossing at these locations.

Safety improvement to Rose Hill roundabout (Sutton) was completed. The improvement will help reduce collisions at the roundabout by eliminating potentially dangerous manoeuvres.

A scheme to relieve congestion on A10 and improve northbound junction capacity was completed. The previous layout contributed to a high level of collisions at the junction which the new scheme has addressed. Initial indications that a 4 per cent journey time improvement per hour has been realised.

Adverse Road Safety Figures

TfL published the provisional road safety figures for Quarter 2 of 2016. While some of the results comparing this year with last are welcome – including a reduction in cyclist, pedestrian and motorcyclist fatalities – there are concerns about the increase in the number of pedestrians and car occupants killed or seriously injured during this period. TfL is closely monitoring the data to ensure an effective response.

Bridge Strike Mitigation

TfL has created a working group comprising external stakeholders to tackle the issue of bridge strikes by over height HGVs across London. The working group is working on a number of mitigations including the design of a training tool kit for HGV drivers, enforcement through the detection of unreported incidents and follow-up letters including reporting to the Traffic Commissioner. In addition, new over height detection signage aimed at tackling strikes saw the first installation in July 2016 on Tulse Hill, Lambeth, cut bridge strikes by a third at this location in the seven months following its installation. The system works by pre-

warning drivers of a low bridge using flashing advisory signs.

Construction Logistics and Community Safety (CLOCS) progress event

The sixth CLOCS conference and exhibition was held at London's ExCeL in March where TfL reaffirmed its continued commitment to the programme and support for the expansion of the scheme beyond London. Those adopting CLOCS outside the Capital provided an update, and organisations making use of procurement to embed work-related road risks shared their experiences. TfL provided a forward vision for CLOCS and updated on latest research.

Dangerous Lorries

TfL made further progress to reach the target of halving the number of people killed or seriously injured by 2020, compared to a baseline of 2005-09. The progress to date provides a solid foundation as TfL raises its level of ambition with the setting of a 'Vision Zero' approach, which will aim to eradicate death and serious injury from London's roads. As part of this target, TfL launched the Direct Vision Standard in January, which is a pioneering new tool that gives a zero to five-star rating to HGVs based on how much the driver can see from the cab. It follows research that shows drivers respond an average 0.7 seconds slower when checking blind spots and monitors, compared to looking directly through the windows. This means an HGV would travel an extra 1.5 metres before seeing a nearby road user. Using this standard, there are plans to ban the most dangerous HGVs from the roads by 2020. These HGVs, often the largest lorries which are not designed for urban environments, 'would be 'zero-star rated' by the Direct Vision Standard. By setting out the plans now, it is expected that many dangerous

lorries will be upgraded before the restriction comes into place.

Safety work at Westminster Bridge

Work to transform Westminster Bridge and the surrounding area into a safer, more pleasant place for pedestrian and cyclists commenced in March 2017. Westminster Bridge is to become the fourth bridge in central London to have segregated cycle lanes, with the south-side junction re-modelled to make it easier to cross for pedestrians.

The intended benefits include:

- Improved pedestrian access with three upgraded pedestrian crossings and new pedestrian countdown timers;
- Improved cycle safety with dedicated cycle routes separated from motor vehicles;
- Improved links into the wider cycling network such as the East-West Cycle Superhighway and the Central London Cycling Grid;
- Making the area more pleasant with new trees and benches, new footway material and a 20mph speed limit.

Safer Streetworks

TfL successfully prosecuted Vodafone for the ninth time in two years, as part of its commitment to ensuring road works cause as little disruption as possible to road users. Vodafone was ordered to pay significant fines for failing to serve the required streetworks notices at the start and end of their work in Archway Road on 22 May last year. TfL has issued 84 Fixed Penalty Notices to the telecommunications giant since 2011, 25 of those within the last year.

Company	Number of prosecutions	Percentage of total
BT Openreach	40	35%
Thames Water	13	12%
Infocus	11	10%
Virgin Media	10	9%
Fulcrum	9	8%
UK Power Networks / London Power Networks	9	8%
Vodafone	9	8%
National Grid Gas	5	4%
Cable & Wireless	3	2%
Abovenet	2	2%
McNicholas (for Virgin Media)	1	1%
O2	1	1%
Total	113	100%

Above: Total successful prosecutions undertaken by TfL, April 2006 to January 2017.

TfL crime and antisocial behaviour

Unwanted Sexual Behaviour

In March, TfL launched a new communications campaign - Report It to Stop it – to highlight the importance of reporting unwanted sexual behaviour. The campaign forms part of a programme of policing activity to eradicate unwanted sexual behaviour on London's transport network. The new campaign builds on the ground breaking 2015 'Report it to Stop it' film, which has been viewed more than 13 million times on YouTube alone.

The new campaign underlines that every report matters, is taken extremely seriously and provides valuable information to help catch offenders. The film also warns potential offenders that they could be caught at any time.

Operation Safer Travel for All

TfL and its policing partners prioritised actions to tackle hate crime on public transport, and a programme of activity is underway. While levels of recorded hate crime on public transport remain low, it is widely accepted as being significantly under reported across society. As part of our #westandtogether campaign, TfL staff and officers from the MPS, BTP and CoLP are engaging with customers and staff to promote the message that London's transport network is safe and welcoming for all. Engagement focuses on raising awareness of hate crime, encouraging people to report any crimes relating to someone's race, religion, gender, sexuality, age or disability and demonstrating our commitment to

taking action against offenders who commit this type of crime on our network.

Safeguarding

To improve awareness of safeguarding and promote a consistent approach across TfL, an e-learning training package is now available for all staff to access. For TfL, safeguarding means doing all we can to ensure children and adults at risk are protected from harm and abuse whilst using its services. The online learning course provides foundational awareness of safeguarding, including raising awareness of the different types of abuse, how to identify behaviour that may indicate a safeguarding risk, scenarios and situations they may see, and how they can respond to help keep children and adults at risk safe from harm or abuse.

Environmental Performance

Energy consumption within TfL managed sites

The total amount of CO₂ emissions associated with energy consumption at TfL managed sites was 9,532 tonnes at the end of quarter four 2016/17. This represents a seven per cent reduction compared with 10,329 tonnes at the end of the same period in 2015/16.

The reduction is due to the lower grid carbon intensity, balanced by our increase in services across TfL.

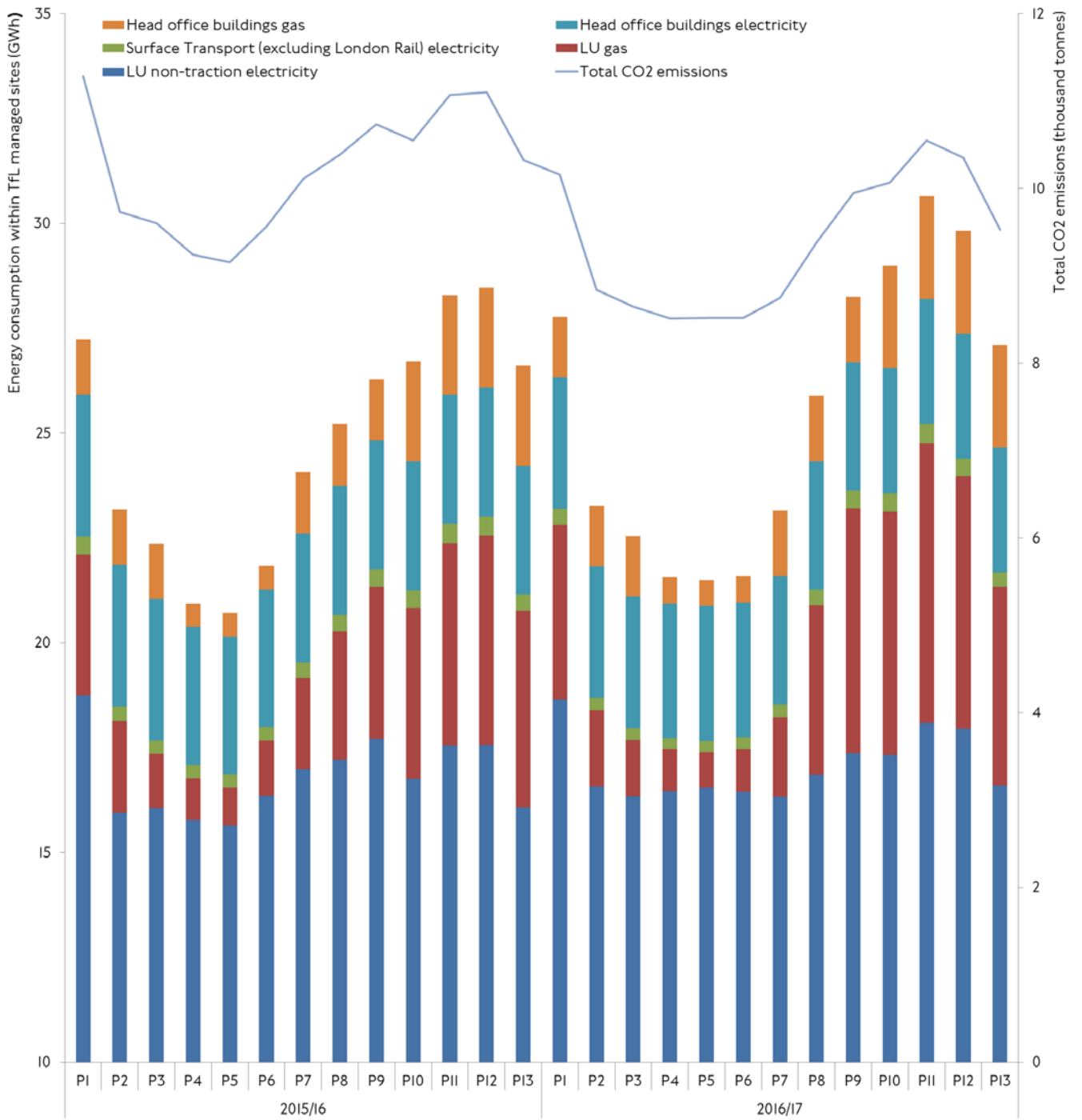
See graph on page 30: *energy consumption within TfL managed sites Q1 2015/16 – Q4 2016/17.*

Energy consumption on London Underground and London Overground

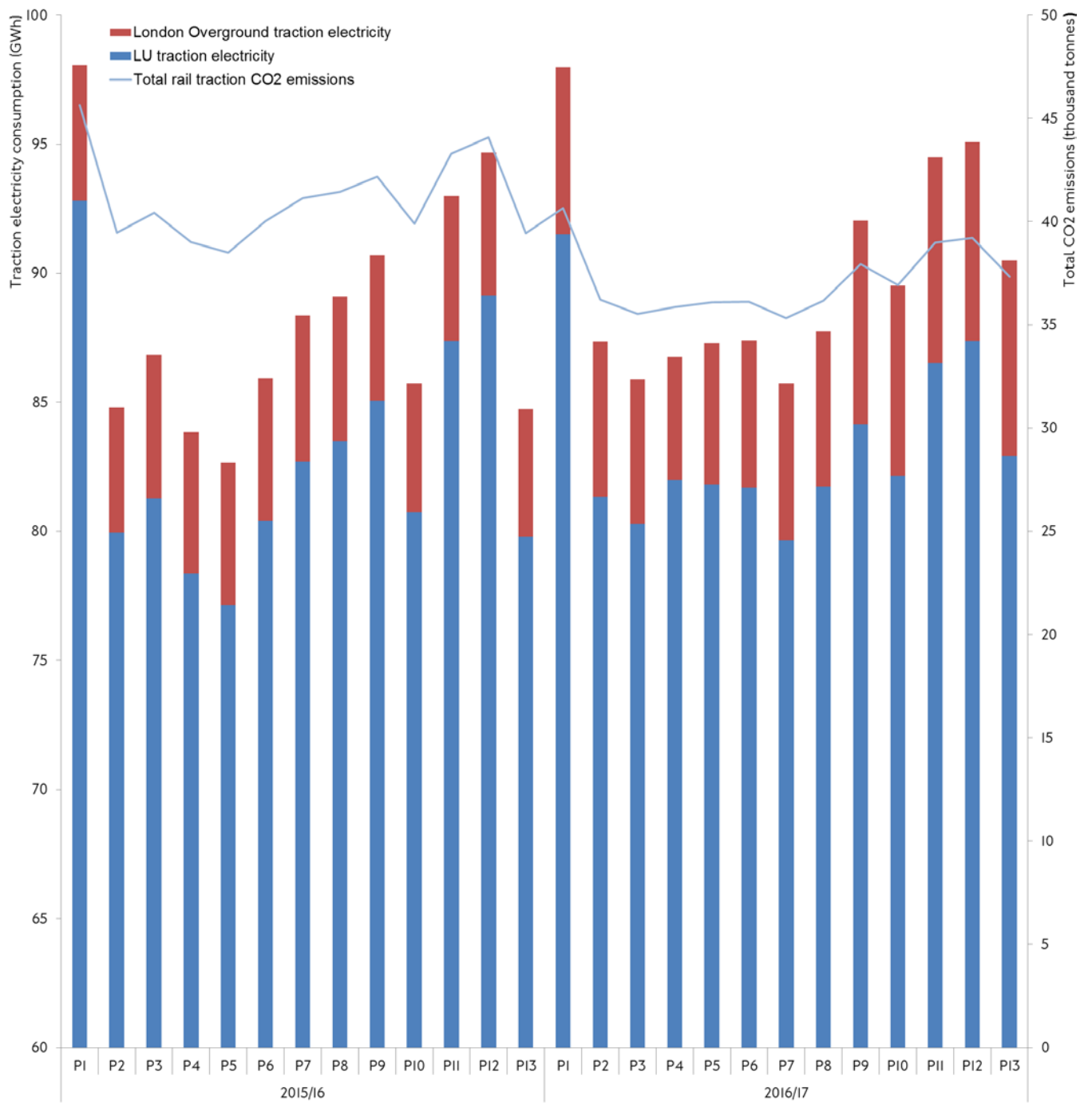
Traction electricity consumption for London Underground and London Overground services in 2016/17 remained broadly similar to the 2015/16 year, despite an approximate three per cent increase in overall operated kilometres.

The total amount of diesel consumed on the London Overground network at the end of quarter four 2016/17 was 17,000 litres, an 85 per cent reduction compared with 112,000 litres at the end of the same period in 2015/16. The reduction in diesel consumption is due to the Gospel Oak – Barking closure for electrification works.

See graph on page 31: *traction energy consumption on London Underground and London Overground Q1 2015/16 – Q4 2016/17*



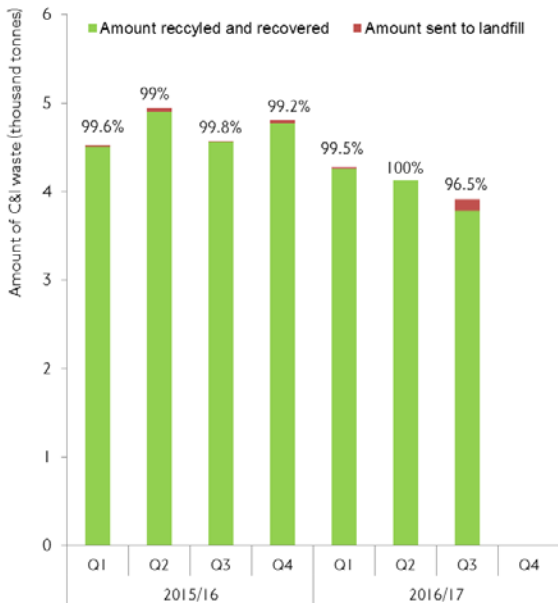
Above: energy consumption within TfL managed sites Q1 2015/16 – Q4 2016/17.



Above: traction energy consumption on London Underground and London Overground Q1 2015/16 – Q4 2016/17

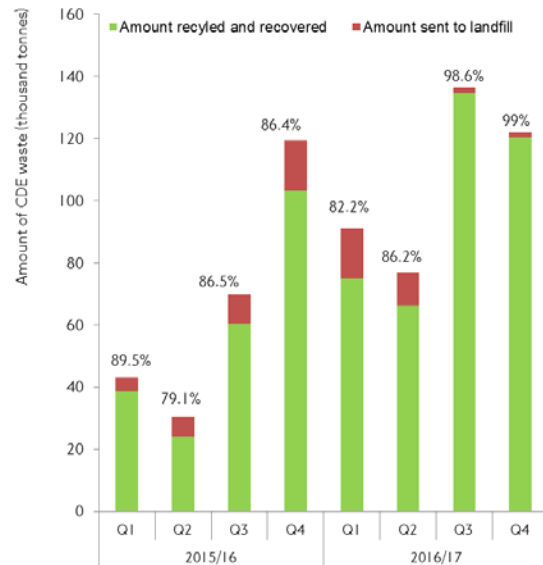
Waste management within London Underground

Commercial and industrial waste data is reported quarterly in arrears due the availability of data from our contractor. Quarter four 2016/17 result for London Underground is therefore expected in quarter one 2017/18.



Above: London Underground commercial and industrial waste Q1 2015/16 – Q3 2016/17.

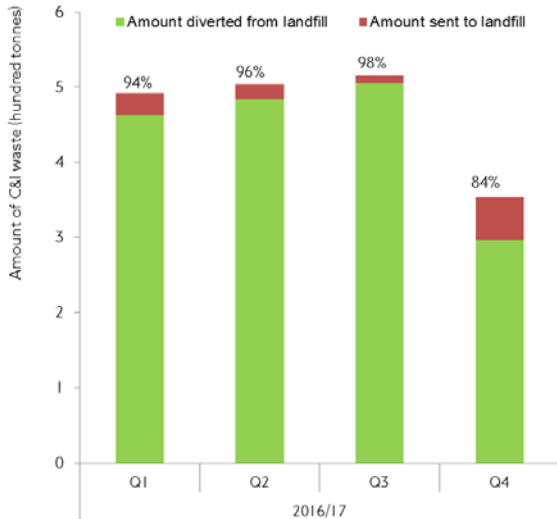
The improved rate of recycling and recovery of commercial, demolition and excavation waste throughout 2016/17 is due to improved opportunities to reuse waste.



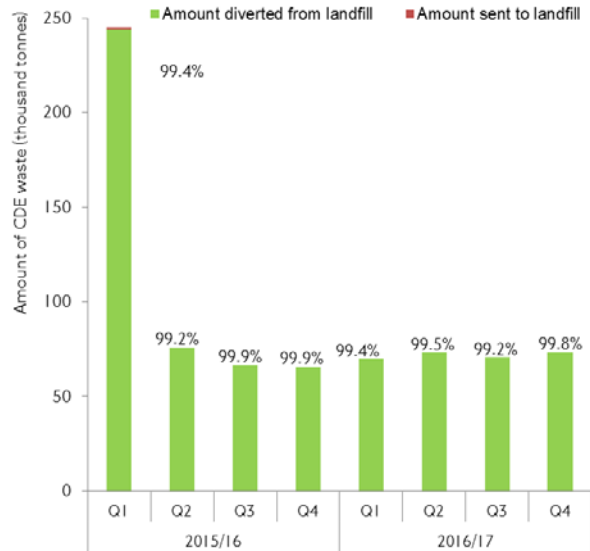
Above: London Underground construction, demolition and excavation waste Q1 2015/16 – Q4 2016/17.

Waste management within Surface Transport

Surface Transport commercial and industrial waste data for the 2016/17 year is shown. Historic data is not available.



Above: Surface Transport commercial and industrial waste Q1 – Q4 2016/17.

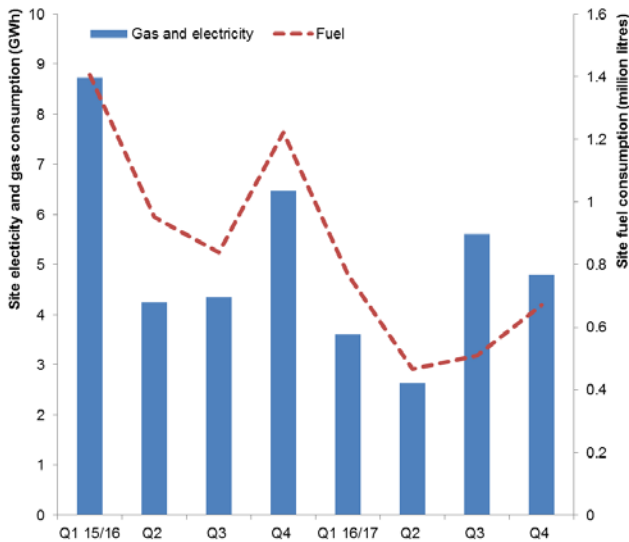


Above: Surface Transport construction, demolition and excavation waste Q1 2015/16 – Q4 2016/17.

Crossrail energy consumption

Across quarter three and four 2016/17, there was an increase in electricity use. The main contributor was Liverpool Street Station, due to the provision of temporary power and lighting to support system wide activities at the station.

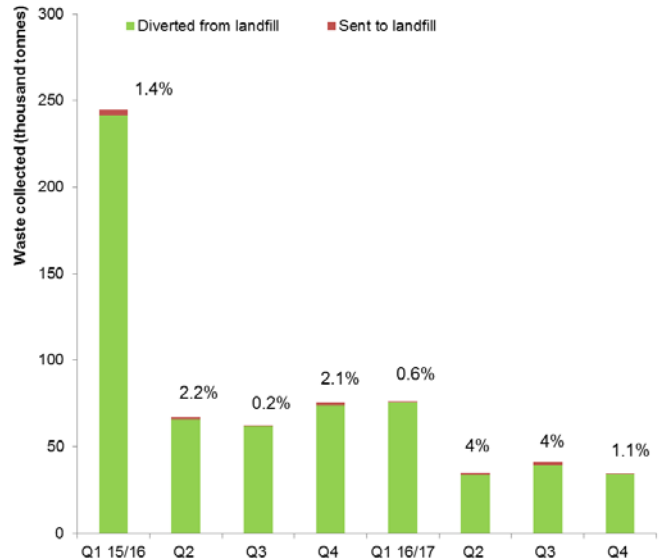
The increase in fuel usage in quarter four 2016/17 is due to the increased length of this reported period.



Above: Crossrail site energy consumption Q1 2015/16 – Q4 2016/17.

Crossrail waste management

In quarter four 2016/17, Crossrail diverted 98.9 per cent of generated construction, demolition and excavation waste from landfill.



Above: Crossrail construction, demolition and excavation Q1 2015/16 – Q4 2016/17.

Jubilee Marsh (the area at Wallasea Island that Crossrail was involved in creating through the placement of around 3 million tonnes of excavated material) is performing much better than the RSPB expected in hosting nesting and wintering populations of birds. Over one day in December 2016 the RSPB counted 29 species of bird in a total count of 7,839 individuals at Jubilee Marsh. Out of a total count for Wallasea of 36 species and 12,096 individuals, it shows how big a contribution Jubilee Marsh is making to the Wallasea Wild Coast project as a whole. Since the RSPB has already experienced measurable successes with the Allfleet's Marsh, created in 2006, well within their initial estimates of a 20 year full establishment timeline, the RSPB now have high hopes for the marsh created from Crossrail's excavated materials.

Environmental improvement initiatives

Ultra Low Emission Zone (ULEZ)

On April 4 the Mayor launched a consultation on introducing the ULEZ in central London in April 2019, 17 months earlier than currently planned. This will require all vehicles to meet emissions standards or pay a daily charge. The consultation will run until June 25 and the Mayor will decide whether or not to proceed with the changes to ULEZ later in the year. This will be followed by a consultation on proposals to expand the zone London wide for heavy vehicles in 2020 and up to the North and South Circulars for all vehicles in 2021.

New funding to improve air quality across London

The Mayor and TfL announced £1.4m funding for six innovative 'Neighbourhoods of the Future' that will combine innovative green technology and other initiatives to tackle London's air quality emergency directly at a local level. These 'Neighbourhoods of the Future' schemes will span nine London boroughs, and will promote the switch to Ultra Low Emission Vehicles, through innovative policies, initiatives and charging infrastructure. They include a zero-emission zone in Hammersmith town centre; training local mechanics in Harrow to develop expertise with electric and hybrid vehicles; delivering 'electric streets' in Hackney, Islington and Tower Hamlets to give priority to electric vehicles and provide innovative charging points; and an electric van and truck loan scheme in Croydon and Sutton to support businesses in their switch to Ultra Low Electric Vehicles (ULEVs). Experience from these innovative schemes will help inform the

development of other schemes in London, and elsewhere.

Low Emission Bus Zones (LEBZs)

The capital's LEBZ programme was launched in Putney High Street in March – the first of 12 LEBZs in London. It now has 145 of the cleanest conventional diesel buses on seven bus routes operating in this corridor. The next of the 12 LEBZs to launch will be the Brixton to Streatham corridor from Brixton Hill, via Stockwell Road, and Streatham High Road to Streatham Place in autumn. The zones are part of a major transformation the Mayor has asked us to deliver to reduce emissions from London's bus fleet, including the commitments to purchase only hybrid or zero-emission double-decker buses from 2018 and raise the entire fleet up to the Euro VI engine emission standard or better by 2020. Once all 12 zones are in place, thousands of school children whose playgrounds are located within 100 metres of these corridors will benefit. Harmful tailpipe emissions of oxides of nitrogen and particulate matter are reduced by up to 95 and 80 per cent respectively by this cleaner engine emission standard. To ensure vehicles continue to flow freely, the TfL Business Plan includes a £50 million of funding in bus priority schemes.

Cleaner Buses

The proportion of the bus fleet served by low-carbon emission diesel-electric buses is at 27 per cent. There are currently 2,550 hybrids in the fleet including around 950 New Routemasters. In addition, the bus fleet now has 1,900 of the latest ultra-low emission Euro VI engine vehicles, most of which are hybrids, which cut harmful emissions and air pollution.

The number of pure-electric buses in the fleet will rise to 100 next spring following contract agreements to convert routes 360 between Kensington and Elephant & Castle, the C1 from White City to Victoria and 70 from South Kensington to Acton. Earlier routes that have gone all electric were the 312, 507, 521 and 360. We currently have eight zero-emission hydrogen fuel-cell buses on route RVI between Covent Garden and Tower Gate which will rise to 10 in the final quarter of 2017. The hydrogen fleet will grow by at least 20 more fuel-cell vehicles from 2018 following our success at tapping into external funding. By 2020 all buses in central London will be zero emission fully electric or hydrogen

Sustainability Requirements for TfL

We published TfL requirements in our management system for use of an externally recognised BREEAM sustainability rating system in our new construction and retrofit of buildings.

These complement our use of the civil engineering sustainability rating system CEEQUAL. As a result of using CEEQUAL, we are seeing good performance, for example our work on the Bakerloo Line Link at Paddington was awarded 'Excellent' status at its interim assessment.

HSE and Technical audit

In quarter four 2016/17, sixteen audits were completed. Two were 'well controlled' and nine 'adequately controlled'. In these audits, the processes were observed to be effective and had been complied with locally. A summary of the audits is in the table below.

There were five 'requires improvement' audits.

One related to Occupational HSE management in LU Power Maintenance, the key themes identified were:

- Integration and alignment of training records and management system documentation into LU's systems since the transfer of the team into LU from UK Power Networks
- The implementation of pro-active monitoring tools to measure compliance with the HSE management system; and
- The implementation of elements of medical fitness and fatigue controls; ensuring periodic medicals take place and health questionnaires for night workers.

In the five Technical audits, the key themes identified were:

- Records not being produced or retained to demonstrate local compliance with procedures
- Quality reviews of documents or work activities not being sufficiently carried out.

Victoria Coach Station Security Audit

In September/October 2016 an internal audit was undertaken into the security arrangements at Victoria Coach Station. The audit focused on the control environment in relation to the following key risk areas:

- Governance and management
- Risk management
- Policies, plans and procedures
- Personnel training
- Physical security measures
- Physical access
- Security requirements for data management
- Incident Management

The audit found the overall security arrangements at Victoria Coach Station were deficient in providing effective physical security measures to protect the structure of the building and its contents.

A summary of the HSE and Technical audit programme for 2016/17 is below.

HSE and Technical audit programme for 2016/17

TfL Internal Audit											Requires Improvement		
LU Work Planned and Work Completed at the end of Period 1 2017/18											Adequately controlled		
Strategic risk	Audit Q4 15/16		Audit Q1 16/17		Audit Q2 16/17		Audit Q3 16/17		Audit Q4 16/17		Poorly control		
											Memorandum		
SR1: Safety Standards	15 788 LU Supplier Audit Alstom	15 738 Trams Line Maintenance Teams management of HSE	15 795 LU Working on Station Platforms	16 796 LU Operations Upminster Rolling Stock Depot HSE Management	16 776 LU Operations Hammersmith & City Line HSE Management	16 779 LU Operations Stonebridge Park Rolling Stock Depot HSE Management	16 787 LU Operations - Fit for the future Stations - transfer of Station HSE duties	16 770 LU Management of Occupational Noise Risk	16 775 LU Competence Requirements for Undertaking civil engineering safety critical work	16 794 LU CPD Working at Height	16 781 LU Operations Cockfosters Rolling Stock Depot HSE Management	Cancelled	
			16 782 LU Operations Signals SSL South HSE Management	16 793 Role of Principal Contractor Under CDM in L&E Projects	16 756 TFL Management of stress	16 777 LU Operations Northern Line HSE Management	16 760 ST Health and Safety competence management	16 765 LO Safety Verification Process	16 789 LU Operations Pumps Competence Management & Safety Critical Licencing	16 774 R&U HSE Transformation Project	16 778 LU Operations Central Line HSE Management		
			15 766 LU HSE Incident action Tracking	16 797 Health and Safety Assurance in Emirates Air Line	15 706 Compliance with revised CDM Regulations	16 783 LU Operations Transplant HSE Management	16 784 LU Operations Track Manufacturing Division HSE Management	16 764 DLR Asbestos Management	16 773 /72/71 R&U HSE Transformation Project				
				15 760 LU Control of Working at Height		16 769 R&U Management and prevention of nuisance noise and vibration			16 798 LU Works Planning Lockdown Procedures	16 785 LU Operations Power Maintenance HSE Management			
										16 807 Consultancy - ST H&S Management System Maturity			
SR2: Workforce Adaptability													
SR3: Governance Suitability					15 428 Payment Card Industry Data Security Standards (PCI DSS) Compliance				16 124 R&U Governance				

TfL Internal Audit

LU Work Planned and Work Completed at the end of Period 1 2017/18

Strategic risk	Audit Q4 15/16		Audit Q1 16/17		Audit Q2 16/17		Audit Q3 16/17		Audit Q4 16/17		
SR4: Foresight Strategy											
SR5: Technological or Market developments											
SR6: External Stakeholders Expectations											
SR7: Financial Sustainability							15 106 Cash management - Fit for Future				
SR8: Unexpected Loss of Income											
SR9: Delivery of commercial revenue Targets											
SR10: Ability to meet increasing demand											
SR11: Catastrophic event							16 726 DLR Adverse Weather Preparedness		16 412 L U Station Security Review	15 767 LU HSE Monitoring Regimes	15 741 Jubilee Line HSE Management
SR12: Significant technology failure or cyber attack			15 409 Security Assessments of LU Transport SCADA systems		15 405 Security of Power Assets in R & U				16 406 Engineering Network Control: Neasdon Depot Signalling	16 405 Engineering Operational Assets: Application Control Review	16 408 Supervisory Control and Data Acquisition (SCADA) Network Security
SR13: Deliver of key investment programmes	15 609 Fraud Risk in projects and contracts within the Station Works Improvement Programme (SWIP)	15 636 Management of manufacture and supply of signalling (BCV & SSL) contract	15 635 Value for money in small contracts		15 643 Review of Northern Line Extension project		16 522 Management of General requirements by RfL	16 315 Rolling stock approvals process by Rail for London (RfL)	16 705 Northern Line extension Principal contractor/Principal Designer	16 619 LU Investment Change Programme	16 514 Transition of the tunneling and Underground Construction Academy (TUCA)
							16 714 LU Project Requirements	14 701 Asset Registers and Asset Information	15 601 Change control in projects	16 521 Management of RCSIP By RFL	

TfL Internal Audit

LU Work Planned and Work Completed at the end of Period 1 2017/18

Strategic risk	Audit Q4 15/16		Audit Q1 16/17		Audit Q2 16/17		Audit Q3 16/17		Audit Q4 16/17		
SR14: Managing railway or strategic road network asset base	15 722 LU RS Fracture Maps	15 727a Track Alumino Thermic Welding - MIS	15 768 72 Tube Block - Structural Repair Project	16 706 Management of LU Land and Property and interface with third parties	16 703 Supplier Assurance - Keltbray Ltd	16 704 Supplier Assurance - Viking Precision Ltd	16 729 LU Operations - Management of the LANP	16 746 LU Operations - Fleet Management of Safety issues	16 713 LU Plant Approval Process for Construction Sites	16 731 LU Operations - Obsolescence of Assets	16 739 LU Operations - Management of Rail Grinding Programme
	15 727b Track Alumino Thermic Welding - JNP	15 790 Management of Track Voltage Recorders and Track Earth Detectors			15 753 Maintenance of Air Handling Units for Critical Rooms	16 702 LU Project Specific Works Information Documents	16 738 LU Operations - SSL Signal Maintenance	16 750 Wheel set Management	*TBA* LU Operations - Obsolescence of Assets	16 748 LU Operations - Fleet Calibration process	16 742 LU JNP Track Maintenance
	15 731 JNP Track Maintenance	15 727c Track Alumino Thermic Welding - TDU/TP			16 710 LU Track Clearances	16 732 LU REW – Overhaul of Signal Equipment and Management of the Signalling Equipment Emergency Stores	16 736 LU Operations - BCV Signal Maintenance	16 803 Supplier Audit: John Bradley and Son Ltd.	16 745 LU Operations - Fleet Central Line HOPL	16 768 LU Operations - Introduction of new signalling products and management of associated special conditions	17 708 Rotork Supplier Audit
	15 791 Management of Live Line Detectors	15 757 Points and Crossings (P&C) maintenance/inspections			15 728 Management of Current Rail Indicator Devices (CRIDs) and Permanent CRIDs	16 753 Project use of Pathway and Maintenance Teams' Readiness to deliver support for new Signalling assets	15 751 Lifting Operations	16 800 LU Power Compressor Contract	16 712 LU CPD -Load Application Process	16 740 LU BCV Track Maintenance	16 601 Supplier assurance within LU
	15 710 LU Design Change Control	15 713 LU Management of Temporary Works - Civils			16 717 Wabtech (Brecknell Wills) Supplier Audit	16 744 LU Operations - Piccadilly Line fleet Life Extension project	16 737 LU Operations - JNP Signal Maintenance	16 719 Supplier Audit: Old Town Engineering	16 804 Morsons Supplier Audit and Assurance	16 805 Cleshars Supplier Audit and Assurance	16 734 LU Operations Signal Maintenance Surveillance
						16 799 LU Operations Track Manual Metal Arc Welding	16 708 DAE Supplier Assurance	16 718 Supplier Audit: Sweetnam and Bradley			

TfL Internal Audit

LU Work Planned and Work Completed at the end of Period 1 2017/18

Strategic risk	Audit Q4 15/16		Audit Q1 16/17		Audit Q2 16/17		Audit Q3 16/17		Audit Q4 16/17		
SR15: Operational Reliability	15 768 72 Tube Stock Structural repair project	15 757 Points and Crossings (P&C) maintenance/inspections	15 795 LU Working on Station Platforms	16 796 LU Operations Upminster Rolling Stock Depot HSE Management	16 793 Role of Principal Contractor Under CDM in L&E Projects	16 755 Completion of Station Electrical Testing	16 757 TfL Management of Risk from Display Screen Equipment	16 733 LU Operations NR Maintenance of signals on the Wimbledon Branch	16 752 LU Operations Management of Off Track Drainage System	16 707 LU Access & protection assurance arrangements	16 788 LU Operations Fleet Competence Management
	15 792 LU Management of Asbestos				16 782 LU Operations Signals SSL South HSE Management		16 801 DK Rewinds Supplier Assurance		15 756 Consultancy - Signal Design Management		
SR16: Impacts on Environment and resilience to extreme weather							16 795 LU Environmental Audit of the Padding Bakerloo Line Tunnel Project	15 747 Management and Disposal of High Risk Waste			

Resilience

The Resilience function combines prevention activity, preparedness, emergency arrangements, continuity and safe operation through shocks and stresses and adaptation to longer-term changes, risks, threats and opportunities, by specifically:

- Reducing the impact to customers
- Ensuring reliability – using processes and capabilities to reduce the time to recover and return services to customer expectations and normality
- Reducing / minimising costs of failures or realisation of risks maturing
- Maintaining our reputation for delivery and management during incidents to prevent crisis of reputation developing and forming opportunities for reputational enhancement

Major Pre-Planned Events

The period saw the delivery of several London wide events including New Year's Eve marking of Midnight celebrations. Crowd control measures for these events were reviewed in detail with event organisers and stakeholders to ensure passenger flows and transport networks were adequate and safely managed in light of the enhanced security measures following the events in France and Germany.

The TfL Events Team continues to work closely with major event organisers to provide event resilience for command and control and to ensure the minimum impact on business as usual activities across London.

These events place a substantial additional demand upon the transport networks. The importance of minimising impact is recognised as is the essential requirement to joint planning and delivery of successful events, in consequence both reducing, and hopefully eliminating, adverse implications and providing the ability to jointly respond with a higher level of resilience providing longer term sustainability.

We have kept event organisers aware of the other activity being carried out on the transport networks to de-conflict activity and maintain network resilience by minimising multiple demands. In addition, our involvement in pre-event planning exercises we conduct spot-event reviews to identify areas for improvement.

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London Resilience Forum (LRF)

During this period the forum met on 10 October and agreed the updated London Resilience Partnership strategy, had a briefing on the merger of the GLAs London Resilience Team and the London Fire Brigade Emergency Planning Department to form the London Resilience Group within the London Fire Brigade and received an update on the programme of work being undertaken on behalf of the LRF.

The LRF met on 2 December to receive a briefing from Lord Harris in regards to his review of security within London on behalf of the Mayor

London Resilience Programme Board (LRPB)

The LRPB met on 16 November to discuss the Lord Harris review of security within London and agree the lead organisation where multiple organisations were identified as being stakeholders to deliver recommendations within the report.

Winter Preparations Briefing

The London Resilience Forum hosted a briefing from various member organisations of the London Resilience Partnership to the Mayors Chief of Staff and Deputy Mayors on their preparedness for the Winter season. Transport for London participated in this briefing and also represented the Transport sector within London.

Terrorism threat levels

The threat level indicates the likelihood of a terrorist attack in the UK.

International threats

The threat to the UK from international terrorism is **SEVERE**.

Northern Ireland-related threats

The threat to UK mainland from Northern Ireland-related terrorism is **SUBSTANTIAL**.

The threat to Northern Ireland from Northern Ireland-related terrorism is **SEVERE**.

Threat levels

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

The level is set by the Joint Terrorism Analysis Centre and the Security Service (MI5).

Threat levels don't have an expiry date. They can change at any time as different information becomes available to law enforcement and security organisations.

Significant resilience incidents

North Greenwich Bomb Alert

On 20 October a suspect improvised explosive device was found on a Jubilee line train at North Greenwich tube station. Both the tube station and the bus station above it were evacuated and a police major incident response was activated. An individual has since been arrested and convicted for this event. A number of lessons identified debriefs have been undertaken internally to TfL and with the police service.

Croydon Tram derailment

On 9 November 2016, a tram operated by derailed and overturned on a sharp bend approaching a junction. There were seven fatalities with 58 other people injured.

The tram was running from New Addington to Wimbledon via Croydon, and was on the approach to Sandilands tram stop when the incident happened. The Transport for London incident management response was led by Surface Transport with support from London Underground and professional services directorates. The Rail Accident Investigation Board (RAIB) continue to investigate the incident and have issued two interim reports. Surface Transport has undertaken lessons identification exercises and have participated in multi-agency debriefs. The Resilience Planning Team will review the TfL owned Trams emergency arrangements and plans during quarter one with the intent to refresh and implement any changes by end of quarter two.

Resilience Activities

During this period, we experienced a significant number of taxi protests with central London. Surface Transport

established incident management command structures to manage these protests and minimise impacts to customers.

The national Counter Terrorism week was 10-16 October and TfL held a number of staff briefings on counter terrorism by the Resilience Team and Metropolitan Police Service officers.

The pan TfL Resilience Steering Team (RST) which meets biannually and is chaired by Garret Emmerson met on 14 October and reviewed the evaluation report for Exercise Unified Response, which was the largest multi agency live exercise for a number of years and was held over four days in March 2016. The RST reviewed and agreed draft pan TfL tier one policies for Resilience & security and Business Recovery. The Chair with the agreement of the members present postponed RST activities until the outcome of the TfL transformation programme has run its course and the new company structure is in place.

TfL during this period held a one-day seminar on resilience and security matters with the Institute of Civil Protection and Emergency Management at Palestra for staff and members of the Institute. The seminar was a success and future events will be considered in the new financial year.

Recent Significant Incidents outside of Quarter 4

Westminster Bridge Attack

On 22 March 2017, a terrorist attack took place in the vicinity of the Palace of Westminster. The attacker drove a car into pedestrians on the pavement along the south side of Westminster Bridge and Bridge Street, injuring more than 50 people, four of them fatally. This form of attack is now known as a 'momentum attack'. After the car crashed into the Hostile Vehicle Mitigation (HVM) defences of the Palace grounds, the driver abandoned it and ran into New Palace Yard where he fatally stabbed PC Keith Palmer. He was then shot by an armed police officer. The impact to Transport for London was the immediate closure of Westminster Tube station to protect members of the public and staff with members of the public being evacuated by train and subsequently trains running through the station but being closed for entry or exit of passengers.

Road closures were enacted immediately and a police cordon was instigated. Surface Transport stood up its incident management structures and a full incident command structure was established with LU supporting Surface Transport. The Surface Transport Traffic Operations Centre (STTOC) diverted buses and re-sequenced traffic lights and broadcast messages on a number of communications channels from advising the media to using the TfL website, emailing customers and social media to ensure the road network continued to function and keep London moving. A number of London buses were used to move groups of people who had sheltered in locked down buildings such as school groups visiting tourist attractions in the area.

There were a number of commemorative and memorial events that TfL facilitated and supported including an evening vigil and the funeral service of PC Palmer which was held at Southwark Cathedral and had significant road closures and a security operation due to the presence of five thousand police officers and large numbers of members of the public.

London Bridge Attack

On Saturday 3 June at 10.08pm reports of a traffic accident on London Bridge were advised. This was a further momentum attack by three people using a small van. The three attackers left the scene of the road crash and entered the Borough Market area and attacked members of the public with knives, while wearing what appeared to be person borne improvised explosive device vests. Responding armed police officers interdicted and shot the attackers killing all three. The STTOC operators were able to use CCTV to observe the initial crash scene and contacted the Duty Silver Commander and advised that it appeared to them that another terrorist attack had happened. The Duty Silver initiated a level three incident as the emergency services announced a multi agency major incident. The Duty Silver requested building security to lock down all head office buildings with immediate effect. London Underground closed London Bridge station as did Network Rail and a number of bus drivers were advised by police to stay within London Bridge bus station. A number of buses were abandoned on site during the ensuing police pursuit operation. The police search operation and subsequent cordon closed off the Borough market area and London Bridge. London buses were used to transport witnesses and members of the public to

the rest centre established by the Corporation of London. The Metropolitan Police Service instigated the placement of barriers on all central London bridges crossing the Thames to protect pedestrians using the bridges. TfL has supported this deployment operation through contractor support and structural engineers advising on the deployment and traffic management strategies to keep London moving.

In all three events, lessons learnt exercises are currently ongoing to identify good practices that can be incorporated into TfL business processes.

Grenfell Tower Fire

Emergency services were called to the 24 storey residential Grenfell tower block shortly before 0100 hours on Wednesday 14 June with reports of a fire. The fire then engulfed the building. There are significant numbers of displaced people, casualties and the emergency services are warning of possible significant number of fatalities. Both London Underground and Surface Transport established major incident command structures which have now stood down. London Underground closed the Hammersmith and City line which passes close to the incident site due to falling debris and STTOC closed local roads and part of the A40 Westway due to the incident. London Buses provided buses to evacuate displaced persons to local authority rest centres and a number of buses were based at the emergency services resourcing centre to support the emergency services and local authority activities. LU operations have returned to normal operations and the A40 has reopened and buses have returned to line of route. There are a small number of road closures and TfL representatives continue to be involved with the multi agency Strategic Coordination Group (SCG), the Recovery Management Group which is a sub group of the SCG and the Tactical Coordination Group. This incident is currently ongoing.

