

Board

**Transport
for London**



Date: 4 November 2015

Item: TfL Health, Safety and Environment Report 2014/15

This paper will be considered in public

1 Summary

- 1.1 The purpose of this paper is to ask the Board to note the Health, Safety and Environment (HSE) Report for 2014/15.
- 1.2 Members of the Safety, Accessibility and Sustainability Panel and the Independent HSE Advisers to the Panel were invited to comment on an earlier draft. Their comments have been addressed where this has been possible. The Panel reviewed the report at its meeting on 13 October 2015.

2 Recommendation

- 2.1 **The Board is asked to note the TfL Health, Safety and Environment Report 2014/15.**

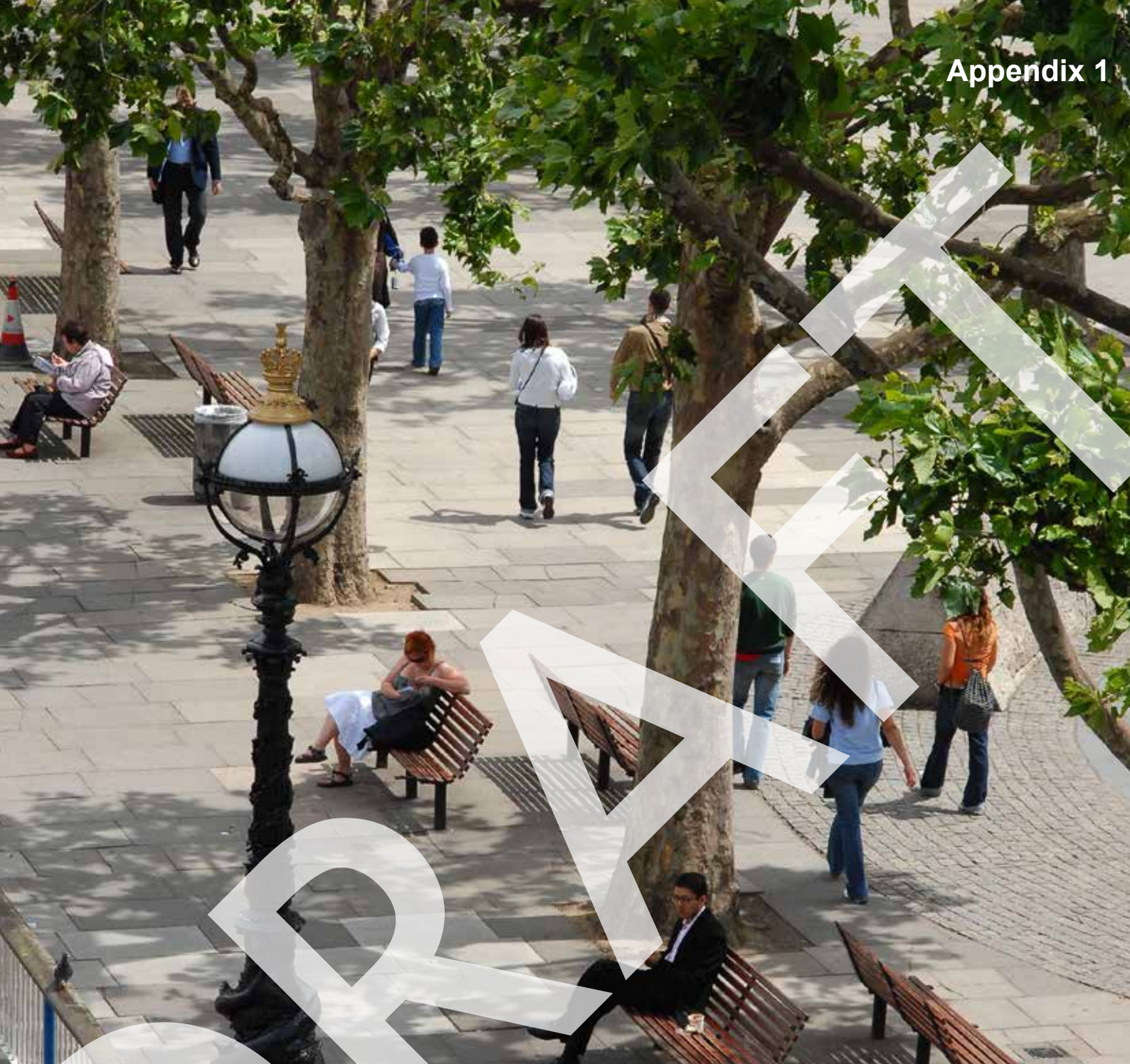
3 The Annual HSE Report

- 3.1 The Annual HSE Report has been published as a stand alone report for a number of years. This provides an effective focus on this important subject area, and is in line with best industry practice. The report provides details and comment, which for most of TfL covers the year 2014/15, but for road safety the details are for year 2014 as road safety data is collated nationally on the calendar year.
- 3.2 A number of key points in the report are:
 - (a) the number of those killed or seriously injured on our roads continues to decline;
 - (b) environmental emissions from oxides of Nitrogen (NOx) and particulate matter (PM10) have reduced;
 - (c) the target set to reduce normalised CO2 emissions by 20 per cent by 2017/18 was met during 2014/15, two years early; and
 - (d) the number of employee significant injuries was the lowest for five years and rates of injury to employees are reduced in Surface Transport, London Underground and London Rail.
- 3.3 TfL also saw four accidental fatalities to customers using our systems.

List of appendices to this report:

Appendix 1: HSE Report 2014/15

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Health, Safety and Environment Report

2014/15

MAYOR OF LONDON



**TRANSPORT
FOR LONDON**
EVERY JOURNEY MATTERS

About Transport for London

We are the integrated transport authority for London. Our purpose is to keep London working and growing and to make life in the Capital better. We reinvest all of our income to run and improve London's transport services.

Our operational responsibilities include London Underground, London Buses, Docklands Light Railway, London Overground, TfL Rail, London Trams, London River Services, London Dial-a-Ride, Victoria Coach Station, Santander Cycles and the Emirates Air Line.

On the roads, we regulate taxis and the private hire trade, run the Congestion Charging scheme, manage the city's 580km red route network, operate all of the Capital's 6,200 traffic signals and work to ensure a safe environment for all road users.

We are delivering one of the world's largest programmes of transport capital investment, which is building Crossrail, modernising Tube services and stations, improving the road network and making the roads safer, especially for more vulnerable road users, such as pedestrians and cyclists.

We are a pioneer in integrated ticketing and providing information to help people move around London. Oyster is the world's most popular smartcard, and contactless payment is making travel ever more convenient. Real-time travel information is provided by us directly and through third parties who use the data TfL makes openly and freely available to power apps and other services.

Improving and expanding transport in London is central to driving economic growth, jobs and housing across the country.

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Message from the Commissioner



This is the first HSE Annual Report since I was appointed as Transport Commissioner. The importance of health, safety and the environment in all we do is a key aspect of our work, and I think the report shows our commitment, as well as that of our suppliers and partners to continue to improve.

We have achieved record performance in many areas, while at the same time carrying out a huge programme of capital

investment to improve public transport and the road networks. We are investing £23bn to modernise London Underground, build Crossrail, introduce new trains and signalling and create safer roads for cyclists and all other users.

We continue to make improvement to cycling safety a priority. Considerable efforts are going into enhancing the cycle superhighways, road junctions and traffic signals, while initiatives

are under way to improve the interaction between cyclists and other road users.

The number of people killed or seriously injured on our roads continue to decline, with some of the lowest figures since the 2005-09 benchmark was set. We have the lowest number of fatalities for five years, but still of course seek further reductions, especially for incidents involving powered two-wheelers.

We know we face real challenges with environmental emissions in our city, but we have managed to reduce levels of particulate matter and nitrogen oxide this year. Our carbon dioxide emissions are levelling, and we now face challenges as we provide better cooled and faster transport. This area is receiving real focus in TfL to see how we can do better.


In Crossrail and all other aspects of our Capital Programme, we produce significant amounts of construction-related waste. In line with best industry practice, we are maintaining a high proportion of recycling and reuse.

Innovation has always been at the forefront of thinking in the history of London Transport, and this report makes clear that new thinking can enhance the health, safety and general wellbeing of our users, customers, employees and suppliers.

You will see in the report that there is a consistent focus on improving the way we behave as staff, suppliers and customers. We provide a safe transport system, and

will always seek to do so; but we also need those who use and work on the system to play their part.

So overall we again see progress in performance, but with the continual expansion of our services, we must never be complacent, and will continue to seek year-on-year improvement.

A handwritten signature in black ink, consisting of a stylized 'M' followed by a horizontal line that tapers to the right.

Mike Brown MVO
Commissioner for Transport

About this report

This report gives our stakeholders more background and provides additional data on the important area of health, safety and environment (HSE) than is possible in Transport for London's (TfL's) Annual Report.

Performance data and scope

It provides an update on HSE performance across the organisation, which comprises London Underground and London Rail, Surface Transport, Crossrail and the Specialist Services directorates. Generally, the report covers the financial year from 1 April 2014 to 31 March 2015. However, the road safety data for Greater London and the Transport for London Road Network (TLRN) covers the calendar year from January to December 2014.

The safety data includes customer, employee and supplier details. Health data relates to employee wellbeing and includes employee sickness absence, but does not cover contractor or customer health issues. Environment data covers London's public transport operations, including taxis and private hire vehicles, plus the activities we and our suppliers undertake.

Our continual effort to provide more accurate data means that there are some changes to the figures that we reported last year following further checks. Where possible, data is compared over five years and, where appropriate, comparisons have been made with previous years (a summary is in the Annex on page 60).

Legislative changes to the Reporting of Incidents, Diseases and Dangerous

Occurrences Regulations 2013 (RIDDOR) were implemented on 1 October 2013, altering what had to be reported to the Office of Rail and Road (ORR) and the Health and Safety Executive. This had some impact on the figures reported from the second half of 2013/14 onwards, which were explained in the 2013/14 report.

Further information

Outside the scope of this report:

- Information associated with privately owned vehicles, except for road safety
- Regulatory HSE legal compliance and enforcement data

For more information about our revised Business Plan, which was published in December 2014 and covers the period from 2014/15 to 2020/21, visit tfl.gov.uk

Overview of 2014/15

We continued to take decisive action to reduce the risks to vulnerable road users in London: cyclists, pedestrians and motorcyclists. The Industrial Heavy Goods Vehicle (HGV) Task Force, working with the Department for Transport (DfT), Metropolitan Police Service (MPS), City of London Police (CoLP) and the Driver and Vehicle Standards Agency (DVSA), has been enforcing vehicle compliance standards, driver training and compliance with the Fleet Operator Recognition Scheme (FORS) standards. We have also actively supported the Construction Logistics & Cyclist Safety (CLOCS) initiative.



During 2014, 127 people were killed on London's roads, the lowest number since 2010. Plans are now in place to help ensure even greater reductions as explained later in the report.

Platform train interface (PTI) incidents continued to increase across London Underground. Most were the result of people getting caught in train doors while boarding or alighting, while the second highest cause was people falling between the platform and train. The changing profile of the PTI following the introduction of new level-access rolling stock on the sub-surface lines has contributed to this. Additional mitigation measures such as reducing the gaps by moving the platform nosing stones, different methods of highlighting the PTI and enhanced customer announcements were developed and implemented. Customer awareness campaigns took place throughout the year to reduce instances of customers rushing and getting caught in the doors or falling in the gap between the platform and train.

London Underground and London Rail continued to make the railway more accessible with the introduction of further platform 'humps' to provide level access and more lifts. In addition, the continued roll out of the level access 'S Stock' trains on the Circle and District lines also increased accessibility. There has been a significant increase in accessible bus stops (where buses are able to deploy ramps) with 50 per cent more to the end of March

2015 compared with the numbers in 2008. Waste collected by us from stations, offices and depots reached the highest levels ever, mainly due to more collection bins. Record levels of waste from construction, demolition and excavation across the organisation were collected, with recycling and reuse figures reaching almost 99 per cent.

We have set a target for reducing normalised carbon dioxide (CO₂) by 20 per cent by 2017/18, as measured against a 2005/06 baseline. This year we exceeded the 2017/18 target by achieving a reduction of 22 per cent over the 2005/06 baseline.

Air pollutants arise largely from vehicle engines. We have set a target for two key measures – to reduce oxides of nitrogen (NO_x¹) emissions from our operations by 40 per cent by 2017/18 (against 2005/06 levels), and to reduce total PM₁₀² emissions by 50 per cent by 2017/18. There has been a reduction in NO_x levels of 11 per cent between 2013/14 and 2014/15, which is the fourth successive annual reduction. The overall reductions against the 2005/06 level is 27 per cent. Regarding PM₁₀ levels, we have achieved the lowest figures for five years and a reduction of 15 per cent on the previous year. The total PM₁₀ emission from TfL operations are 111 per cent of the 2017/18 target.

1) Nitric oxide (NO) and nitrogen dioxide (NO₂) are together referred to as oxides of nitrogen (NO_x). Combustion of fossil fuels is by far the dominant source of NO_x emissions.

2) Particulate matter up to 10 micrometers in size

Health, safety and environment (HSE) management in TfL

Our objective is to achieve excellence in all aspects of performance and this includes HSE management. An important part of this is benchmarking against national and international standards, and we have continued to review the maturity of our HSE management systems against international and national assessment models during the year.

In London Underground and London Rail we have continued to use the ORR³ Railway Management Maturity Model (RM3) to assess our structure and approaches. Each business develops annual HSE plans and objectives to aid the process of identifying hazards, and evaluating risks and risk precursors, and carries out monitoring and reviewing activities to test the control measures that are put in place. During 2014/15, London Rail began to develop a 10-year strategy, which includes HSE improvement. At this stage we are aiming to move up at least one level in the RM3 structure within the next three years.

The fourth annual Safety Management Maturity Model (SM3) assessments were completed in Surface Transport. The model, which is based on the ORR RM3 model, but amended to more appropriately reflect the nature of Surface Transport, was completed for all business areas. The assessment has helped to establish levels of management maturity for specific areas and highlighted opportunities for further improvements. This will inform continuous improvement across

the business, contributing to the creation of Safety Improvement Plans aimed at reducing safety risks posed by our activities.

At the start of 2014/15, the separate HSE management systems for London Underground, London Rail, Surface Transport and Specialist Services were integrated and made accessible to staff through a 'one-stop shop' on the TfL intranet. The content of the HSE management system is comprehensive and has been developed in a way that is accessible to the user. It includes guidance and instruction for all those with specific HSE responsibilities, including directors and senior managers. At the end of the year the system's environmental management aspect was further developed through the provision of clearer and more concise information. The management system is subject to review and improvement through controlled processes and suggestions for enhancements are regularly received from employees through the feedback mechanism on the HSE intranet pages.

A SharePoint site was introduced to make it easier for all Surface Transport staff to access health and safety information and tools they require to carry out their work safely. Most notably, the site provides an electronic accident/incident reporting facility that is making it easier to manage incidents and track investigations.

A new health and safety scorecard was implemented in Surface Transport to provide

3) Office of Rail and Road, www.orr.gov.uk

Working with our suppliers

During the year, a London Underground and London Rail Supplier Safety Forum was held. Called 'Together We're Safer', it enabled senior leaders from London Underground and London Rail, and their associated supply chains, to learn from each other. It showcased innovative ways to improve working practices in health and safety and allowed people to make valuable connections so they could continue sharing good practice in the future. A follow-up forum is scheduled for the 2015/16 planning year.

The London Underground supplier HSE website and handbook were launched. The site contains information to help suppliers work safely on the London Underground network and promotes the sharing of good practice.

Surface Transport and the London Underground Capital Programmes Directorate worked with other parts of TfL and four of the UK's leading utility companies to create a Joint Safety Charter at the Institution of Civil Engineers (ICE). The charter, which was endorsed by Peter Hansford, UK Government Chief Construction Advisor, and Professor David Balmforth, the new ICE President, has been developed to enhance the working relationships between us and the utility companies and improve standards of planning, management, competency, resource deployment and use of better data. The requirements of the charter are mandatory on all relevant Surface Transport schemes.

The introduction of a new safety code for streets and roadworks has strengthened our monitoring of works taking place on the TLRN, which includes the use of CCTV and on-site inspection. This will ensure that those carrying out works take into account the needs of children plus older and disabled people, with particular regard for visually impaired people. The new mandatory code requires the provision of a suitable barrier system that separates pedestrians from hazards and provides a safe route suitable for people using wheelchairs, mobility scooters, prams or pushchairs.

Monitoring and reporting of performance

Our businesses set HSE targets on key performance indicators (KPIs). These KPIs have been developed progressively and have changed over time to ensure they reflect a continually improving understanding of risks. This enables improved trend analysis and focuses management on any necessary remedial actions.

HSE performance is reported at business unit level and to the appropriate boards (Rail & Underground Board and Surface Transport Board) each quarter. Businesses also present information on HSE performance to the TfL Safety, Accessibility and Sustainability Panel (SA&SP) on a quarterly basis. The SA&SP reports to the TfL Board after each meeting. This process of planning, implementing, monitoring and reviewing risks is vital to our pursuit of world-class HSE performance.

Occupational health and wellbeing

Employee attendance

Figure 1 below shows average employee sickness absence in days per year for TfL and its subsidiaries. In general, absence increased slightly in 2014/15 compared with previous years. The overall average is 10 days of absence per employee across TfL, an increase from 9.5 days in 2013/14. As a comparator, the average absence rate for those in employment

in the NHS was 9.5 days⁴ and 7.6 days for the Civil Service⁵.

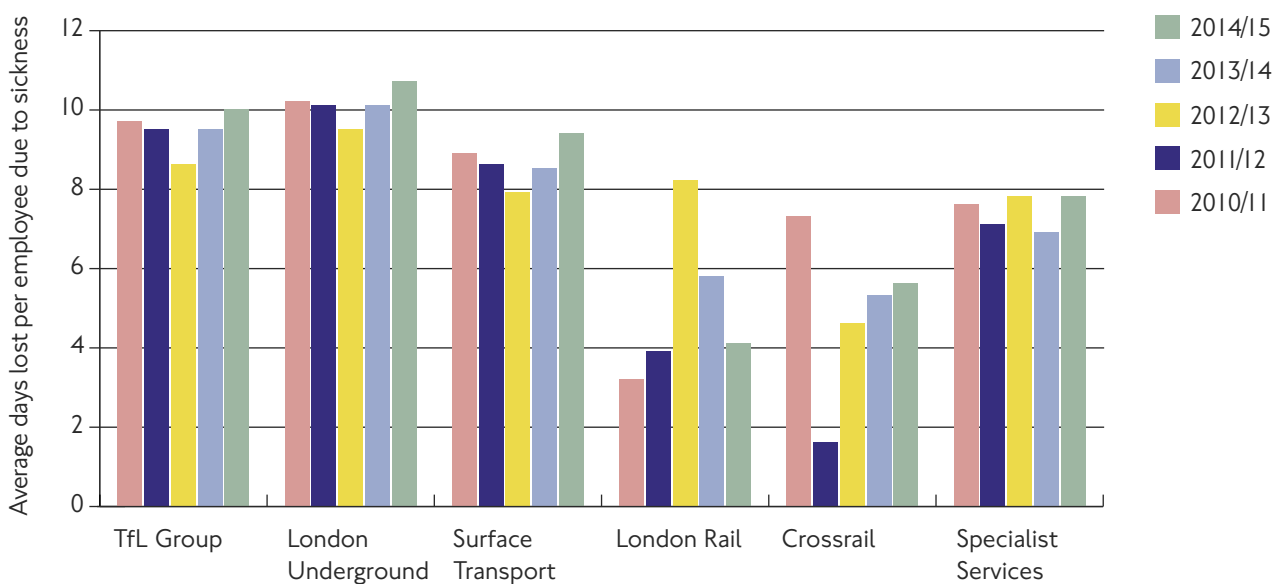


Figure 1: Average days sickness absence per year by TfL business (2010/11 – 2014/15)

4) Figures for 2012/13

5) Figures for 2013 calendar year

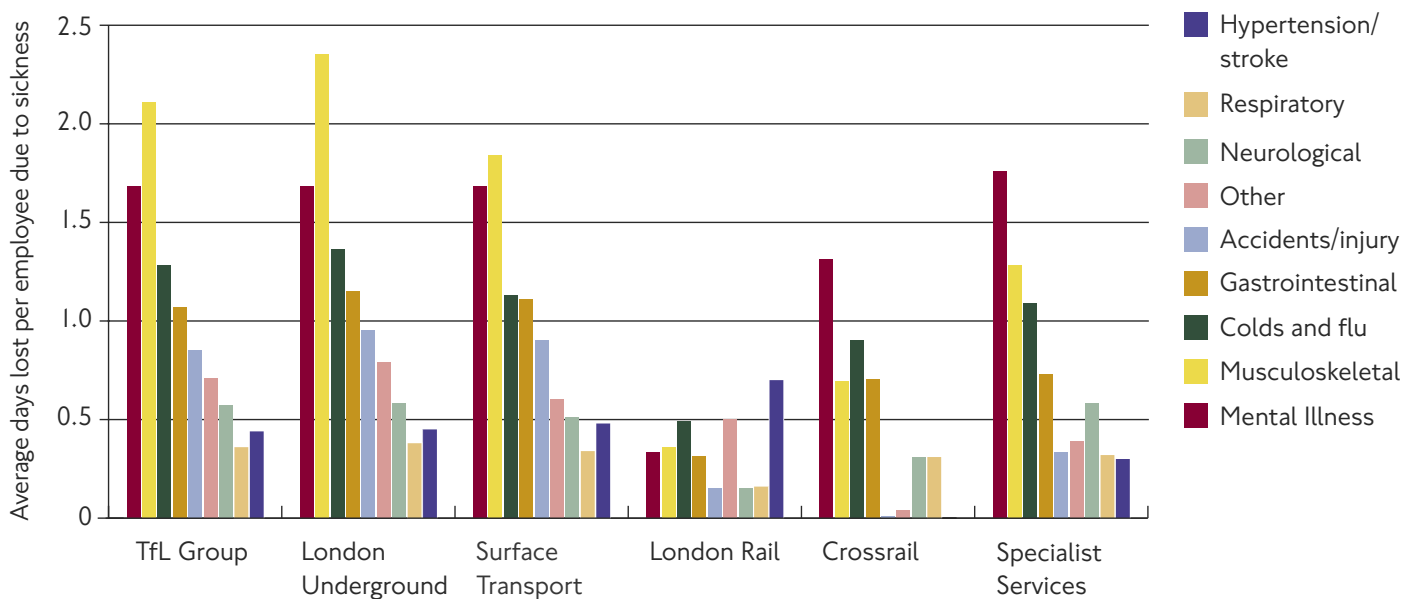


Figure 2: Average days lost to sickness absence per employee, by category and business area (2014/15)

Figure 2 above shows the reasons for absence as declared on self-certification and doctors' certificates. We focus on preventative strategies and health promotion is guided by these statistics. Musculoskeletal absence is the top cause in London Underground and Surface Transport. A programme to encourage employees to take part in more physical activity is described on page 14. Mental illness is the second most common reason, and the top cause for Specialist Services directorates. Our Health Improvement Plan includes a mental health component and training for managers is being redesigned and will focus on recognising and managing stress.

Employee health improvement activities

We have a Health Improvement Plan coordinated by our Occupational Health team, with input from many employee stakeholders. It focuses on lifestyle health factors, musculoskeletal health and mental health.

Health fairs

Forty-two health fairs were held for operational employees at different TfL sites and 1,622 people attended. They aim to encourage self-health management, with clinicians providing coaching on fitness, muscle and joint health, mental health, nutrition and medical conditions.

Feedback continued to be positive and a high proportion of employees who attended the fairs have made a commitment to change something about their lifestyle.

Nutrition

We are in the third year of a five-year strategy to reduce obesity across the organisation and help employees maintain a healthy weight. A 12-week weight management programme has been developed and a 12-week weight loss online programme has been run, with a total of 525 people taking part.

Of those who completed the online programme survey:

- Eighty-one per cent said they had lost weight and almost one in three (32 per cent) lost more than 8lbs (3.62kg) during the 12 weeks
- Ninety-nine per cent of respondents said they intended to continue looking after their weight

Throughout the year, continued support was provided via our I-Will website and employees had access to videos, podcasts, factsheets and training plans that focused on exercise and losing weight.

Physical activity

Step It Up

A series of events were promoted during the second year of our Step It Up programme, which aims to increase employees' physical activity levels. The initiative includes an initial fitness assessment and encourages employees to sign up to 150 minutes of exercise each week. In 2014/15, 665 employees accepted the challenge.

An early evaluation of those attending the follow-up reviews shows that 66.5 per cent

of the employees who were exercising for less than 150 minutes per week have now achieved the recommended level of exercise.

Global Corporate Challenge

We also made the Global Corporate Challenge available to some employees. This encourages participants to walk at least 10,000 steps a day for 100 consecutive days. A total of 378 employees signed up and pre and post-event surveys show that:

- Thirty-three per cent reported an increase in their productivity
- Eighty-three per cent declare they are now in good, very good or excellent health (51 per cent before the start of the challenge)
- Forty-nine per cent reported lower stress levels at either home or work
- Fifty-five per cent felt that taking part in the challenge had improved their energy levels

We will invite more employees to participate in the challenge in 2015/16.

Health topics of the month

Topics such as safe working in the sun and heat during the summer months are published on the TfL intranet for the benefit of all employees. This is a useful tool to promote health campaigns.

Condition Management Programme

This initiative is for employees who have been identified as having recurrent and significant absence owing to musculoskeletal disorders with chronic pain, and is still being assessed for its effectiveness. Two programmes were run in 2014/15 to provide a comparison. One group attended four weekly occupational health sessions in person, while the second group received a written educational pack covering four weeks and focusing on the same topics, but did not attend the sessions.

The findings are significant:

- The group that attended the sessions showed a 49 per cent improvement for physical health and 23 per cent for mental health
- The group that received the information in a written format also improved, but to a lesser extent – 19 per cent for physical health and eight per cent for mental health
- Both groups demonstrated overall improvements in all musculoskeletal related absence

The tests support the importance of workplace involvement in preventative management for recurrent and chronic pain. They also show that the programme with more personal input from clinical staff had a greater impact than the one which only provided the learning materials.

Flu vaccination campaign

This annual campaign ran between October and December and provided jabs on-site at many operational and head office locations. A total of 3,159 vaccinations were given.

Mental health

Mindfulness lunch events were promoted during the year to raise awareness of mental health issues.

A six-week mindfulness workshop pilot was completed and the preliminary evaluation showed:

- Motivation at work had increased by 61 per cent
- Stress had been reduced by 41 per cent
- Anxiety had decreased by 50 per cent

Mental Health First Aid

Our Occupational Health team's mental health specialists completed a Mental Health First Aid (MHFA) training pilot in collaboration with our staff network mental health group, Wellment. This programme will continue through 2015/16.

Thirty-eight members of staff are now qualified as Mental Health First Aiders (MHF Aiders) across five different Specialist Services sites.

The Occupational Health Counselling Service is providing supervisory support to the MHF Aiders.

In July:

- Ninety per cent of participants felt they had an increased knowledge of MHFA
- Eighty per cent felt they had increased confidence in delivering MHFA



The revised Occupational Health standards have increased staff availability

Medical guidance and standards

Over the past year, we have revised the Occupational Health medical (fitness) standards and guidance and changed the way managers and employees are advised on fitness for work issues. The approach centres on individual risk assessment and is underpinned by guidance based on medical evidence. This leads to fewer restrictions on the tasks individuals can undertake and therefore better staff availability for work.

The first major change based on these principles was the revision of the guidance for train operator staff taking antidepressant medication. At Year One following this change, 18 train operators who previously would have been unable to operate trains, resumed their solo

duties safely, providing London Underground with an increased availability of 495 train operator weeks. At Year Two, 37 train operators who previously would have been restricted in their duties were able to work. Overall, this has increased availability by 1,017 train operator weeks. The introduction of the wider suite of guidance is expected to have similar results.

Safety

Safety of our customers

Customer safety is of paramount importance and we continually seek to improve our operations so we can reduce customer accidents and injuries. Our definition of customers also covers members of the public using our business premises, including people using rights of way, tenants and off-duty employees.

We collate information and reporting on road traffic collisions (RTCs) and take action to improve road safety. More information is provided in the road safety section on page 33, along with matters related to performance on the TLRN in Greater London. Suicide or suspected suicide, trespass, crime-related fatalities or non work-related medical fatalities are excluded from this report.

Customer fatalities

Accidental fatalities are those arising from incidents while using our services, or where they occur on our premises.

- There was a customer fatality at Hampstead Heath, a London Overground station. A customer was rushing for a train, which was about to leave, and tripped down the stairs hitting his head on the central handrail. The customer suffered a head injury and died several days later
- A customer suffered a fatal accident at Old Street station after being struck by a train while trying to rescue his brother who had fallen on to the track
- A customer accessed the track and was struck on the approach to Latimer Road station. Following a police investigation, it was found that the customer had an excess blood alcohol level and the coroner concluded it was an accidental death
- A fatal accident occurred when an HGV collided with a user of the Barclays Cycle Hire scheme while turning from Bressenden Place into Victoria Street

	2010/11	2011/12	2012/13	2013/14	2014/15
London Underground	0	3	1	1	2
Surface Transport	0	5	0	2	1
London Rail	0	0	0	0	1
Total for TfL	0	8	1	3	4

Table 1: Five-year trend for customer accidental fatalities across the TfL (customer-facing businesses)

Significant customer injuries

These incidents were formerly classified as customer major incidents, however the regulatory definition has been revised and this metric has also changed in line with the regulatory measure. Slips, trips and falls continue to be the main causes of customer incidents. All significant customer injuries are investigated to identify root causes and mitigating measures to minimise the chances of them happening again. These significant injuries include most fractures, or injuries, leading to admittance to hospital.

The rate of London Underground and London Rail customer significant injuries has reduced this year and now stands at its lowest for the past five years, while passenger numbers have continued to rise.

In addition to the introduction of engineering interventions and operational controls, customer safety awareness campaigns continue to run across the London Underground and London Rail networks to influence customer behaviour. This includes warning against rushing for trains and encouraging people to take care when boarding and alighting trains or using escalators. TfL's investigations and findings into such incidents support the use of these campaigns to reduce injury. During the year, more detailed analysis was carried out to highlight particular locations where incidents were more frequent, so more direct information could be provided through posters, verbal announcements and staff interventions. In 2015/16 we will continue to develop further targeted plans.

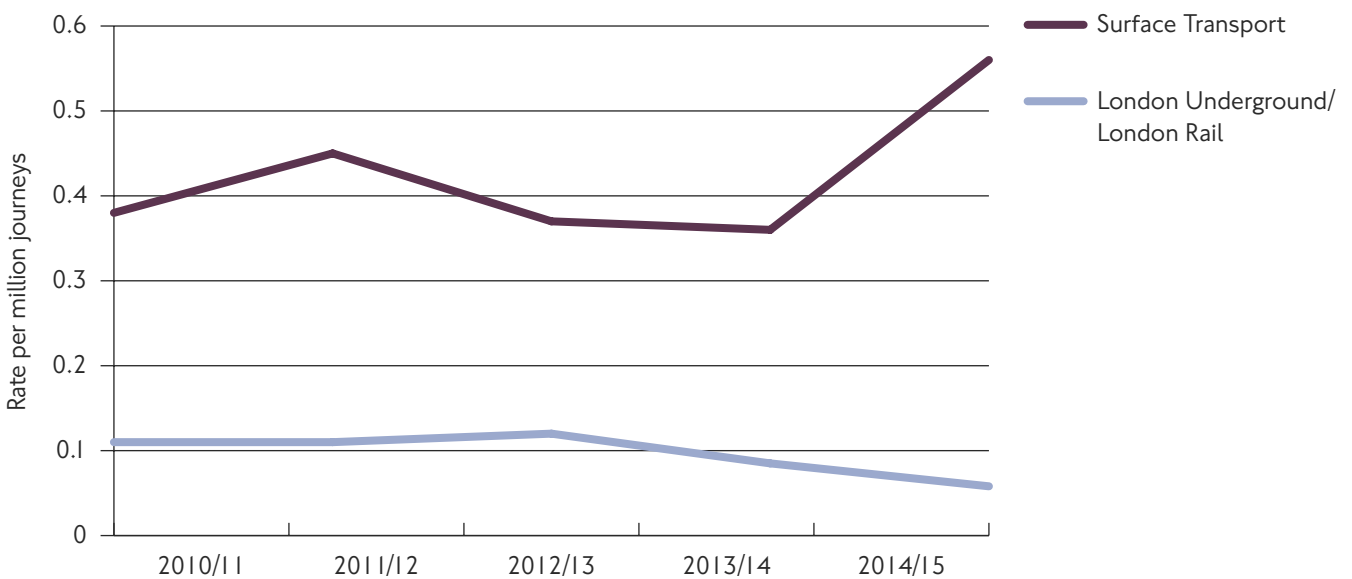


Figure 3: Customer significant injury rate (per million journeys).

In Figure 3, the significant injuries have been normalised per million customer journeys.

There has been a rise in the number of injuries on buses from slip, trip and fall incidents. They accounted for 69 per cent of the total major injuries in the year in Surface Transport. Bus driver quality monitoring checks, which assess driving standards covertly, are continuing with the results being fed back to operating companies directly.

Additional steps are being taken to reduce injuries on the bus network. This includes the introduction of a new training programme for all bus drivers, which is designed to improve their hazard perception skills, and the continuation of our campaign encouraging customers to make more use of hand rails.

Less serious customer injuries

Sometimes customer behaviour can be a contributory factor in incidents. Making changes that can impact these behaviours is an important element of our approach. For example, on London Underground we are carrying out trials looking at different ways of highlighting the boundaries of stairs and escalators and this will continue into 2015/16. Another example has been encouraging the use of the handrail on escalators.

A safety campaign aimed at reducing falls on buses began in August 2014 using roadside locations and information materials inside the vehicles. However, despite the network-wide campaign encouraging passengers to use handrails when moving inside buses, there was a six per cent rise in the number of slips, trips or falls at the end of 2014, compared with 2013. The campaign was refreshed and

continued into 2015 to complement initiatives by individual bus companies. Tramlink has similar issues to London Buses with customer falls on trams when the vehicles accelerate and brake, so the two transport systems continue to share approaches.

There has been an increase in the number of PTI incidents on the London Underground network over the past 12 to 18 months, although when we normalise the number of incidents against customer journeys, the trend in PTI incidents is stable. Most incidents continue to result from people being caught in train doors as they board or alight. Customer awareness campaigns and PA announcements were aimed at reducing instances of customers rushing to catch trains.

The number of falls between the train and platform largely increased owing to the changed PTI on the sub-surface railway. The introduction of new rolling stock (S stock) on this part of the network served to improve level access on to trains by removing the need to step up into carriages, but also increased the PTI gap at certain locations. Short-term mitigations, such as extra targeted platform staffing, continued to be put in place, with a longer-term programme of additional measures including different methods of highlighting the PTI to make the gap clearer, realigning platform nosing stones to reduce or eliminate the gap, and enhanced risk awareness campaigns. Falls down stairs remains the highest customer risk area across the London Overground network and the London Overground Rail Operations Ltd (LOROL) Safety Review Group is looking at all stations to determine whether anti-slip measures, stair redesign or additional handrails to the stairs might be effective.



'Mind the gap' Platform Train Interface at Baker Street station



'Report it to Stop it': A joint campaign with the MPS and BTP encourages passengers to report unwanted sexual behaviour

On London Overground, a number of infants have fallen out of buggies. When buggies are being moved on or off trains and the infants are not properly strapped in, they can fall. We developed a publicity campaign to highlight this issue on London Overground and this will be revisited in 2015/16.

Despite low levels of crime on the bus network, increases were seen in some crime types on certain modes compared with the previous year. Reported sexual offences rose by 35 per cent across the network, which was anticipated as part of our work with British Transport Police (BTP) and the MPS to tackle unwanted

sexual behaviour on public transport. Rises in reported sexual crimes have increased across the UK rail sector. Project Guardian was launched in April 2013 to encourage people to report sexual offences, reduce the risk of becoming a victim, challenge unwanted sexual behaviour and target offenders. The launch of a joint communications campaign to encourage passengers to report any unwanted sexual behaviour on the transport network, called 'Report it to Stop it', started in April 2015.



We are on track to ensure at least 95 per cent of bus stops on London's roads will be accessible by 2016

Accessibility

The Mobility Aid Recognition Scheme enables users of mobility scooter and similar aids to use buses. People who apply for the scheme receive a home visit and assessment of the suitability of their mobility aid and are given a Mobility Aid Card. This is shown to bus drivers to let them know that the aid is suitable for travel on a bus. A targeted promotion of the initiative is now under way to further increase the number of people who can benefit from it. For example, the Camden Age UK website provides details of the scheme.

Bus stop accessibility has doubled since 2008 following £8.4m of investment. The number of accessible bus stops in the Capital has risen by more than 50 per cent, and we are on track

to ensure that at least 95 per cent of bus stops on London's roads will be accessible by 2016. This has involved close cooperation with local authority partners, as a significant proportion of the city's 19,500 bus stops are not on the TLRN. Work on the Bus Stops Accessibility Programme will continue up to 2016/17, with every borough now having a programme to improve accessibility. In the City of London, every bus stop is fully accessible.

Passengers with mobility issues who use Dial-a-Ride to make trips to and from Uxbridge town centre can now use a new dedicated stop on George Street. We worked with officers from the London Borough of Hillingdon to identify a suitable location for Dial-a-Ride vehicles to drop off and pick up older and

disabled residents visiting the town centre for shopping, entertainment or to meet friends. The new stop is the third of its type in the Capital.

The 'All Aboard' video, an accessibility training resource for London's bus drivers, was rolled out further across the bus network as part of the driver Certificate of Professional Competence training programme. The initiative was developed in partnership with Transport for All and Age UK London and includes a workbook designed to give bus drivers a greater understanding of the needs of their older and disabled customers, based on the personal experience of participants.

The TfL Access All Areas event, held at the ExCeL exhibition centre in October, showcased some of the most advanced technology in the world being developed to help disabled and older people make more use of the TfL network. It featured full-scale London Underground station mock-ups, 'talking bollards' to help blind and visually impaired people, safe street-crossing devices, wheelchair design breakthroughs and a raft of other innovations.

Seven London Overground stations, plus one station on the Crossrail network, were converted to provide step-free access from street to platform. Nine stations on London Underground became step-free, from street to train, during 2014/15.



Dial-a-Ride offers a free door-to-door transport service for disabled or mobility impaired people

Employee safety

We take the safety of our employees very seriously. Safety risks are kept under continual review and control measures are put in place to ensure our people work in a safe environment. We set out the ways people should work, ensure there are competence frameworks in place and maintain compliance checks of the key risk controls.

Employee fatalities

There were no employee fatalities during 2014/15. This is the ninth consecutive year that no work-related employee fatalities have occurred.

Employee significant injuries

In 2014/15, the overall figure for employee significant injuries was the lowest for five years, see figure 4 below, and the rates are being

reduced in both Surface Transport and London Underground/London Rail. There is no single reason for this, but it reflects our continuing efforts through use of the HSE management system; the 'Go Look See' process following an incident and including employee training to identify and mitigate risks to our employees.

There were no employee significant injuries in either Crossrail or the Specialist Services directorates.

We continue to focus on providing safe workplaces, effective procedures and appropriate training. We also encourage success in this area, for example our annual Surface Safety Awards promote a positive safety culture across the organisation by recognising the work of our employees.

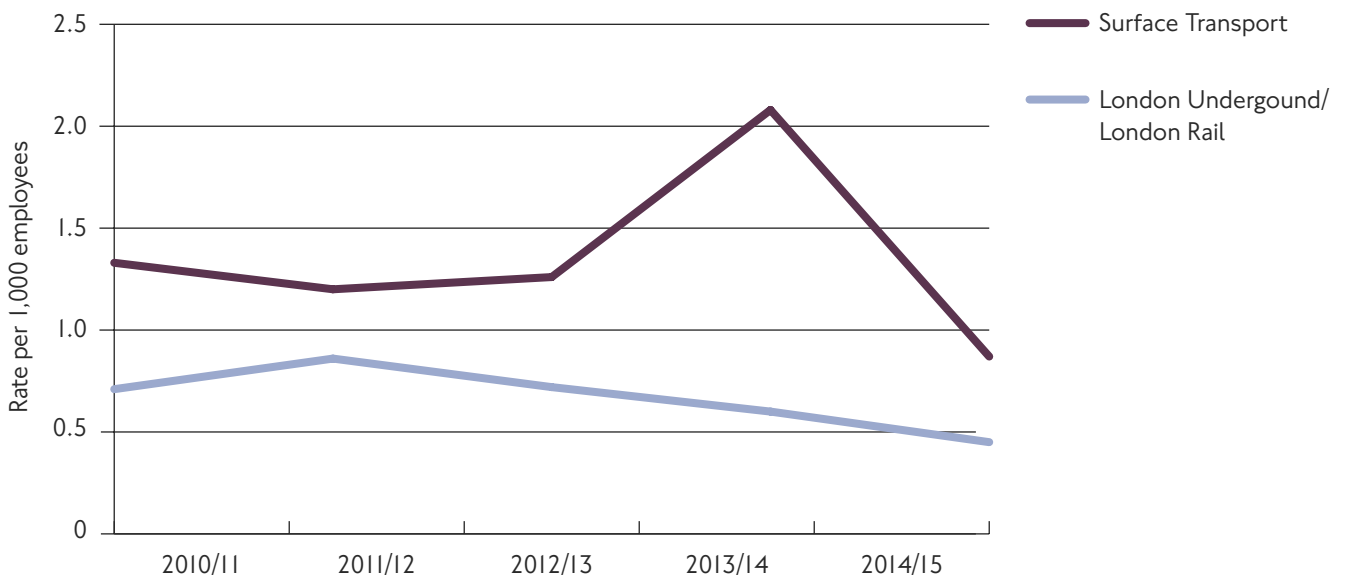


Figure 4: Employee significant injury rate (per 1,000 employees)

The awards are given to:

- Those making a difference through their roles as volunteer safety champions or safety representatives
- An individual or group that has made a valuable contribution to the health and safety of Surface customers and staff
- Staff members – or a team – who have gone that ‘extra mile’ or made an extraordinary contribution to the health, safety and wellbeing of customers or staff

The fourth awards ceremony took place in the spring.

In London Underground, the Operational Safety Awards also took place in June 2014. These recognised the operational areas with the best and most improved safety performances measured in the Safety League Tables. In addition, teams or individuals who made a significant contribution to safety, health and environment improvements throughout the year, received awards under the following categories:

- Safe Worker of the Year Award: for someone who has positively influenced safety performance in their area
- Customer Safety Award: for the team or individual making a significant contribution to improving customer safety
- Health and Wellbeing Award: for the team or individual making a significant contribution to improving health and wellbeing in their area

- Safety Award for Suppliers: for the team or individual making a significant contribution to improving safety
- Innovation Award: for the team or individual taking a new approach making an improvement in safety management or performance
- Environment Initiative of the Year Award: for the team or individual taking a new approach which has resulted in an improvement in environment or performance
- Collaboration Award: for the team where trades unions health and safety representatives and managers worked together to resolve safety issues

Key to our approach is the emphasis on encouraging our employees and suppliers to continue to adopt safe behaviours, and a number of programmes have been developed for the different work activities across TfL. One of these has been the series of presentations from Ken Woodward, the visually impaired safety campaigner, held across the London Underground and London Rail businesses for employees and contractors. The events were very well received.

Additionally, across London Underground Operations the ‘Go Look See’ programme continues. As part of this initiative, senior managers go to the site of an incident, discuss causes with the person who was injured and the local manager and agree important actions to prevent it from happening again. Safety Hours have also continued in London Underground Operations – this involves time being taken each week to brief employees on relevant issues facing them at work.

Work-related violence and aggression

Our definition of work-related violence and aggression towards an employee on duty includes ‘any incident where, in circumstances related to their work, a member of staff is physically assaulted, threatened or abused, thereby affecting their health, safety or welfare’. The majority of incidents that occur involve verbal aggression rather than physical violence.

We take threats and incidents of workplace violence and aggression towards employees and suppliers very seriously. Our suppliers do too. We believe tackling the issue is crucial to maintaining good morale, which we believe helps maintain reliable, consistent, high-quality services. Trends and multiple employee episodes of workplace violence

and aggression are analysed and appropriate controls are implemented. Necessary measures are included in safety improvement programmes across the organisation.

There has been an increase in work-related violence and aggression toward members of London Underground staff in the year, and there has been a general increase over the past five years. The trends in London Underground, London Rail and Surface Transport are similar, see figure 5. There is better reporting of work-related violence, which we fully support. One of the main causes of work-related violence is incidents related to ‘revenue issues’. The number of these incidents is falling, while those linked to alcohol are not increasing.

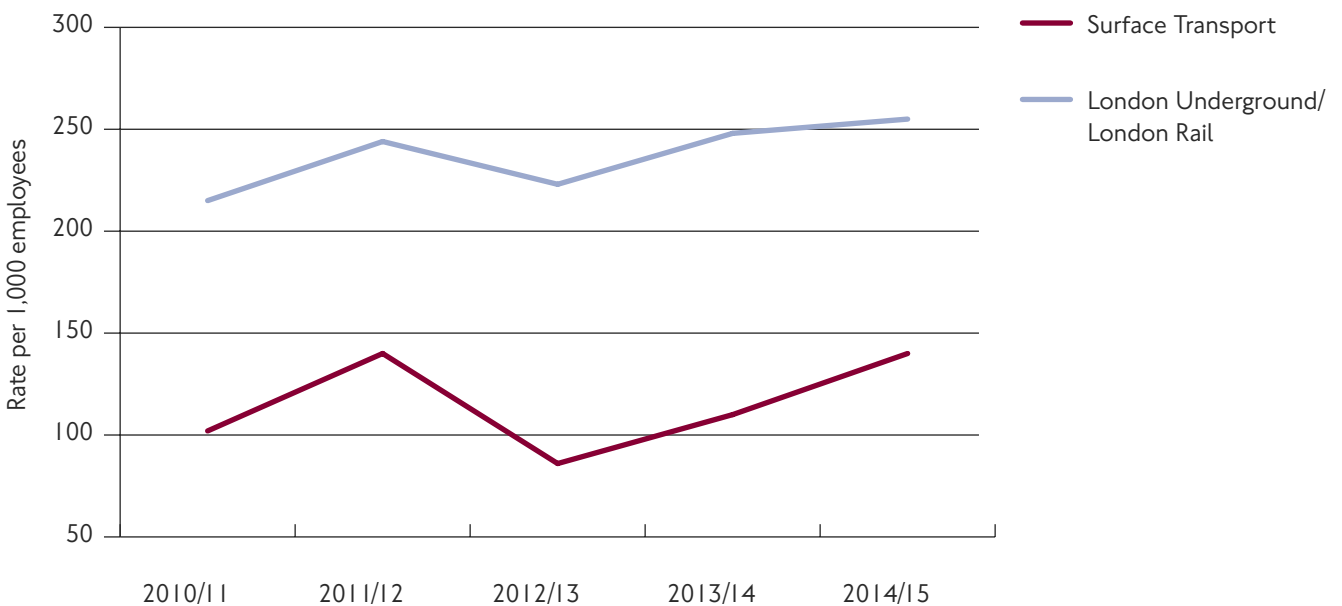


Figure 5: Employee workplace violence and aggression (rate per 1,000 employees)

The main cause of the overall increase has been aggression relating to:

- Begging and moving on vagrants
- Introducing temporary closures to all or part of a station to control congestion
- Dealing with customer on customer disputes
- Dealing with issues arising from carriage of bicycles on the network
- Hooliganism and vandalism

Incidents where alcohol is a contributory factor remained stable.

In Surface Transport, a review identified the need to refresh the materials for the Personal Safety in the Workplace training course. Consequently, external training providers were asked to develop a bespoke course for operational staff in the areas of conflict avoidance and de-escalation techniques.

There is to be a trial of body-worn video cameras by London Underground Operational staff, designed to help reduce workplace violence against them. The cameras are being trialled by members of the Revenue Control Team.

Dedicated Workplace Violence Units operate in London Underground and Surface Transport to assist with training and analysis of the best ways to manage assaults on staff. Our working partnerships with our suppliers, the British BTP and MPS continued to focus on targeting known hotspots and supporting investigations and court



Current campaign to reduce workplace violence

proceedings where possible. Targeted conflict avoidance and incident training for customer-facing employees continued to be provided. Wherever there is sufficient evidence, legal proceedings are pursued against those who assault our staff, and there is a high level of success.

Supplier safety

Our suppliers are central to the work we do. In London Rail and Surface Transport, the main customer-facing service is provided by private sector suppliers. Across TfL, our suppliers are responsible for much of the construction and heavy maintenance work, such as modernising the London Underground and London Rail

	2010/11	2011/12	2012/13	2013/14	2014/15
London Underground	5	8	11	12	11
London Rail	4	5	2	4	1
Surface Transport	116	107	75	79	97
Crossrail	0	3	17	23	11
Specialist Services	0	0	0	0	0
TfL total	125	123	105	118	120

Table 2: Supplier significant injuries over the past five years

services, undertaking heavy maintenance and building our Cycle Superhighways. London Underground and Surface Transport are undertaking one of the largest capital programmes in Europe. The numbers and suppliers involved fluctuates on large projects, so data comparisons are difficult. It also means that HSE management by suppliers needs a very clear focus.

Supplier fatalities

There were no supplier fatalities in TfL in 2014/15.

Supplier significant injuries

There was a slight overall decrease in significant injuries across our suppliers as a whole during 2014/15. Performance in London Underground is stable, and both London Rail and Crossrail saw an improvement. In Surface Transport, injuries increased from 79 in 2013/14 to 97 during 2014/15. A total of 50 of the 97 incidents resulted from road traffic collisions in which bus drivers were injured and required hospital attendance. The rate of injuries was 0.27 per 1,000 drivers. A range of new initiatives are being introduced to reduce these accidents on the bus network,

including the trial of a new intelligent speed adaptation system on vehicles. This is technology that limits vehicles to the speed limit of the road it is travelling on. A new driver training programme was also introduced to further

London Underground's Capital Programmes Directorate has particularly targeted smaller contractors to encourage good HSE performance. These contractors often tend to have less developed HSE management systems, and we are focusing on improving hazard perception and identification through further training and coaching. Overall improvements in the safety culture are being pursued through increased staff and supplier engagement. The incident trends showed improvement, so this approach will continue into 2015/16.

London Overground's Behavioural Safety Strategy continues to be embedded throughout our supply chain. New Cross Gate Depot has adopted a weekly safety award that has resulted in improved behaviours and awareness. Other suppliers across London Overground have subsequently adopted similar initiatives.

Case study: driving innovation

In London Underground's Capital Programme Directorate, we have adopted a technique that breaks up concrete in a way that is almost silent and significantly reduces the amount of dust produced. It involves drilling holes then using high pressure to expand the concrete and break it. This is done in preference to the traditional method of using percussion hammers or similar equipment and water suppression of the resulting dust.

Not only does this have significant occupational health and safety benefits in reducing exposure to vibration and noise from the use of tools and equipment, it also has the potential for productivity gains of up to 60 per cent. This has made

a big difference to the track replacement programme in deep Tube sections.

The photograph below shows concrete being broken using the new method.



The safety support functions within our organisation are continuing their work to further develop business tools that support good HSE management standards. Improvements have been made to our contractor incident reporting processes and a safety training needs analysis tool introduced to ensure effective monitoring arrangements are established for all areas. Making sure our contractors and supply chain continue to achieve high standards of safety management will be a main focus as our investment programme accelerates.

Crossrail has a detailed and integrated programme which, twice a year, includes Stepping Up Week, during which Crossrail and its contractors reflect on performance and drive forward targeted improvements. These events have included guest speakers who share their experiences of how accidents have impacted their lives, mock rescue events, and efforts to increase near miss observations. In addition, Crossrail has introduced the Gateway Assessment scheme, which is similar to the Beacon Site approach in London Underground (see page 30).

Case study: Beacon Site

The Beacon Site Programme, which has been running since 2005, has this year been rolled out across the London Underground Capital Programmes Directorate supply chain, continuing to drive real improvement. The programme is about highlighting and rewarding success. It aims to help site teams achieve best practice levels of compliance and safety performance.

Meeting the Beacon Site standard drives innovation, enhances training and encourages team members to learn from each other. Site teams awarded Beacon status are acknowledged as models of best practice.

Pictured below: Head of Station Upgrades presents the Beacon Site Award to a Lifts and Escalators refurbishment team.



The Front Line Leadership Programme is an integral element of the improvement programme. It recruits and coaches supervisors to promote and develop the behaviours required to lead health and safety and instil the right culture and attitudes in those they are leading. As a result accident rates have reduced.

In early 2014/15, Crossrail reviewed its basic site rules and developed a new approach – the impact of which will be shared in next year’s report. Its five new behaviour-based ‘Golden Rules’ are intended to apply to all work situations and all employees. However, there are nine high-risk activities that tie into the changes and occur as the project moves from the tunnelling phases to fitting out and the creation of a railway. The rules have been published in the six main non-English languages found on the project.

In 2013/14, there was one fatal accident on the Crossrail project that has led to a fundamental reworking of the approach to employee exclusion zones in tunnelling, ensuring that people cannot be put at risk when certain works take place. The new approaches have been shared widely across the tunnelling industry to encourage best practice.

Important safety requirements and considerations are built into contractor selection processes, with emphasis on developing a consistent set of standards across the whole supply chain. Improvements to our incident reporting and information handling systems in 2014/15 will enable the capturing and use of greater and more detailed

Case study: the safety tram

Following some incidents and close calls where members of the public had either come into contact with trams or nearly been hit, it was decided to develop a different approach and put a highly-visible vinyl covering on a tram. The 'safety tram' has been operating

around the network as normal. Awareness has been monitored and has been good, but changes in behaviour will take longer to assess. The photograph below shows the 'safety tram'.



safety performance indicators. Risk-based monitoring of construction activity on-site and those discharging the new role of Principal Designer under the Construction Design and Management (CDM) Regulations, will increase in line with the acceleration of the investment

programme. In addition, supplier engagement events will create a positive environment for the sharing of good practice between suppliers to enhance the overall performance of the supply chain.

	2010/11	2011/12	2012/13	2013/14	2014/15
London Underground	22	22	20	14	15
London Rail	339	411	347	330	284
Surface Transport	1,288	1,702	1,598	1,588	1,470
Crossrail	0	0	0	0	0
Specialist Services	0	0	0	0	0
TfL total	1,650	2,140	1,969	1,938	1,769

Table 3: Supplier assaults over the past five years

Supplier work-related violence and aggression

Most examples of work-related violence and aggression involving suppliers in London Rail and Surface Transport are towards employees involved in frontline customer service. Most events impacting our suppliers continue to be connected to revenue protection and, in particular, occur while fares are being checked. In 2014/15, London Rail saw the number of episodes of workplace violence and aggression fall to its lowest level for five years, and this was the third consecutive year of improvement. In Surface Transport, the number of supplier assaults was the lowest for four years. The amount of incidents against those carrying out construction and maintenance across TfL remains low. Training of frontline staff in conflict avoidance, and strong management support for employees, enables them to deal with such issues effectively.

Road safety

Road safety

This section provides a summary of personal injury RTCs and casualties in Greater London during 2014, compared with 2013 and the average for 2005-2009. This is the baseline against which we measure progress towards the Mayor of London's new road safety target of a 50 per cent reduction in the number of people killed or seriously injured (KSI) by 2020. Data presented is for personal injury RTCs occurring on the public highway, and reported to the police, in accordance with the national reporting system. It should be noted that large percentage changes in small numbers may not necessarily be statistically significant.

A total of 25,992 RTCs involving personal injury were reported to the MPS and the CoLP.

These collisions resulted in 30,785 casualties. Of these, 127 people were fatally injured, 2,040 were seriously injured and 28,618 were slightly injured.

Casualty trends in Greater London

In 2014, the number of fatalities fell by four per cent (132 to 127), to the second lowest level since modern records began, see figure 6. KSI casualties dropped by seven per cent in 2014 (2,324 to 2,167) compared with 2013, to the lowest number since records began. Within this, the amount of serious injuries also fell by seven per cent (2,192 to 2,040), also to the lowest recorded level. Slight injuries rose by 15 per cent (24,875 to 28,618) and overall casualties in 2014 increased by 13 per cent, compared with 2013.

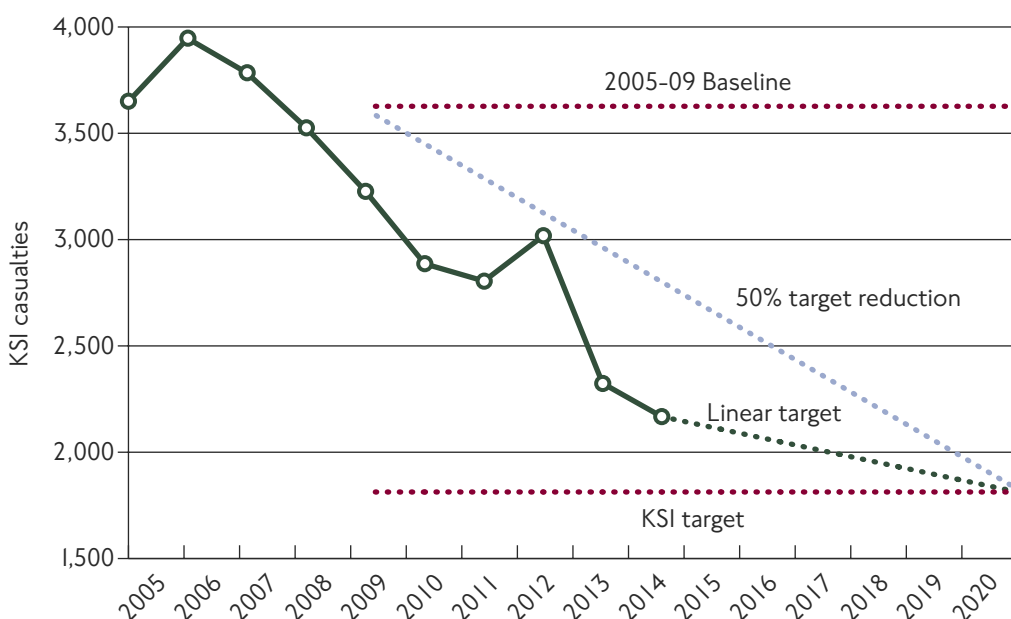


Figure 6: Trend in KSI casualties between 2005 and 2014 and against the target



Pedestrian KSIs fell by seven per cent during 2014/15

Comparing the number of KSI casualties in 2014 against the 2005-09 baseline, the total was down by 40 per cent in Greater London, meaning that the Capital has now met the Mayor's previous target of a 40 per cent drop in casualties six years early. The figure below shows the KSI casualty reduction in London between 2005 and 2015, plus progress towards the Capital's new road safety target of a 50 per cent drop in KSIs by 2020 from the baseline.

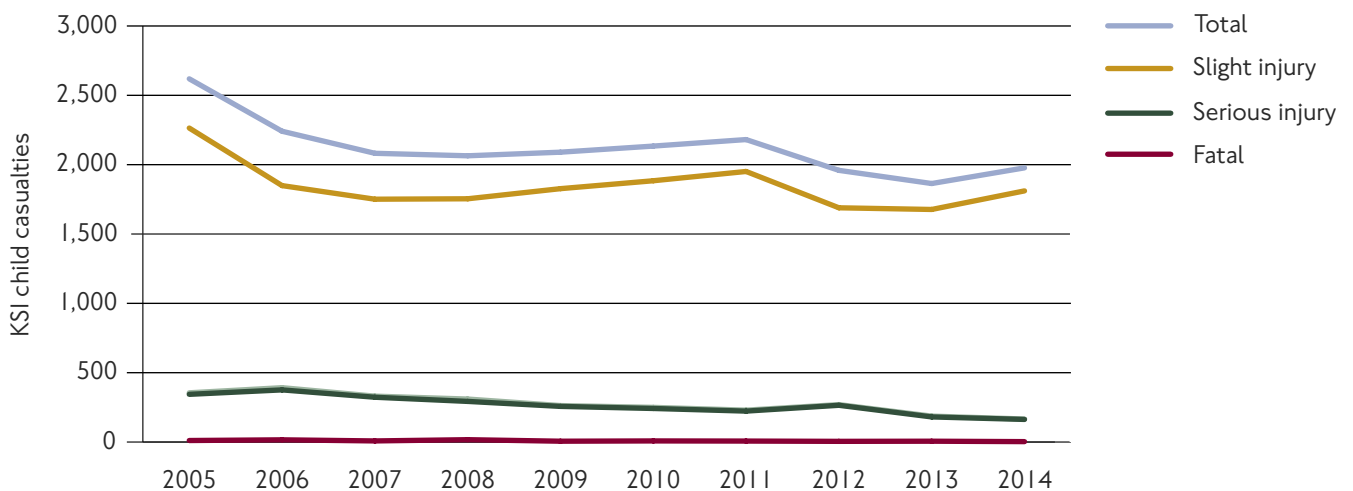
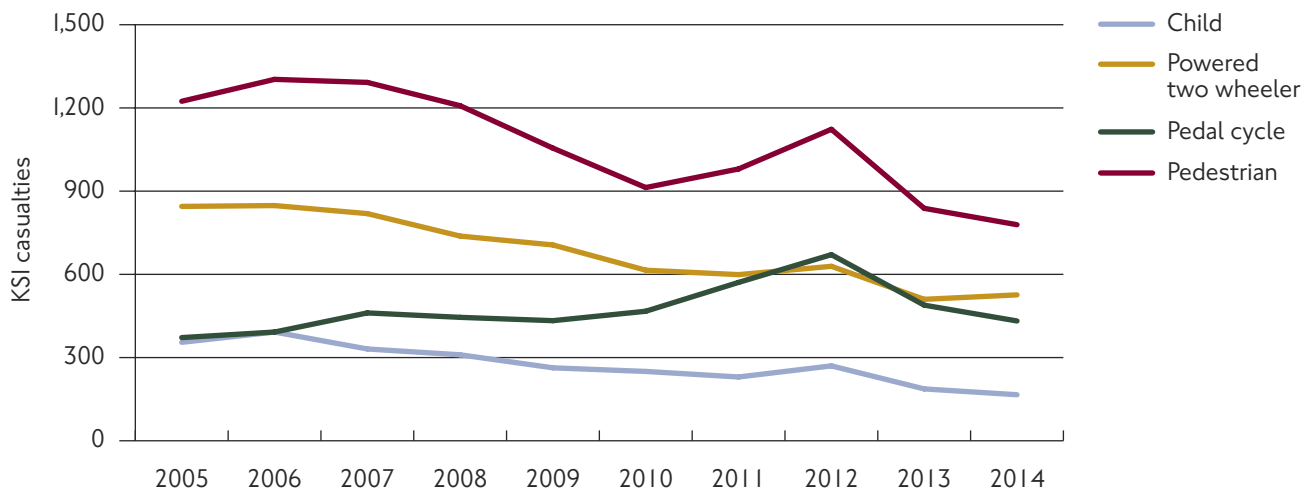
In 2014, pedestrians accounted for 19 per cent of all casualties, 35 per cent of all serious injuries and 50 per cent of all fatalities. Pedestrian fatalities fell from 65 in 2013 to 64 in 2014 and KSI casualties went from 838 to 779 (seven per cent) to the lowest level on record. Slight injuries rose from 4,343 to 4,834 (11 per cent) and all casualties increased from 5,181 to 5,613 (eight per cent).

During the year, cyclists accounted for 17 per cent of all casualties, 21 per cent of all serious injuries and 10 per cent of all fatalities. The total dropped from 14 in 2013 to 13 in 2014

and KSI casualties also fell from 489 to 432 (12 per cent). Slight injuries increased from 4,134 to 4,714 (14 per cent) and all casualties rose from 4,623 to 5,146 (11 per cent). Cycling is a particular focus, and more details on improvements can be found later in this report.

In 2014, motorcyclists accounted for 17 per cent of all casualties, 24 per cent of all serious injuries and 21 per cent of all fatalities. The total number of motorcyclist fatalities increased from 22 in 2013 to 27 in 2014 and KSI casualties rose from 510 to 526 (three per cent), with 2013 representing the lowest level on record. Slight injuries increased from 3,992 to 4,707 (18 per cent) and all casualties went up from 4,502 to 5,233 (16 per cent).

Figures 7 and 8, page 35, show the trend in KSI casualties by vulnerable road users (pedestrians, pedal cyclists, motorcyclists) and child KSI casualties in London between 2005 and 2014. Child KSI casualties form part of the total number of KSIs.



Figures 7 and 8: Trend in vulnerable road user and child KSI casualties between 2005 and 2014

Safe Streets for London

In July 2013, the Mayor and TfL published Safe Streets for London, an ambitious plan to make the Capital's roads and streets safer for all who use them. With the aim of working together towards roads that are free from death and serious injury, it contained 56 actions designed to transform road safety in the Capital, and reduce KSI casualties by 40 per cent by the end of the decade.

Over the past year, against a backdrop of a significant reduction in the number of KSI casualties occurring in the Capital, we have successfully raised the overall awareness of our road safety ambition. This has been achieved by forging stronger partnerships with stakeholders and sharing data and knowledge more effectively than ever before.



Cyclist using Cycle Superhighway 8 on Grosvenor Road

In March 2014, we published ‘Safe London Streets – Our Six Road Safety Commitments’. These commitments outlined how TfL would:

1. Lead the way in achieving the 40 per cent reduction in the number of KSIs on the Capital’s roads by 2020 – with a longer-term ambition of freeing London’s roads from death and serious injury
2. Prioritise safety of the most vulnerable groups – pedestrians, cyclists and motorcyclists – which make up around 80 per cent of serious and fatal collisions
3. Provide substantial funding for road safety, invested in the most effective and innovative schemes
4. Increase efforts with the police, boroughs and enforcement agencies in tackling illegal, dangerous and careless road user behaviour that puts people at risk
5. Campaign for changes in national and EU law to make roads, vehicles and drivers safer
6. Work in partnership with boroughs and London’s road safety stakeholders to spread best practice and share data and information

We are placing vulnerable road user safety at the core of our agenda and have begun delivering the actions in the following plans:

- The Motorcycle Safety Action Plan, published in March 2014
- The Pedestrian Safety Action Plan, published in July 2014
- London’s second Cycle Safety Action Plan, published in October 2014

We have also brought together a Road Safety Steering Group, whose members include a wide range of road safety partners and stakeholders, to work together and scrutinise, support and

campaign. This will ensure that any new road safety initiatives are well targeted.

A new 'Share the Road' campaign was launched to encourage greater empathy between road users and significantly change behaviour. It was conducted in two parts – the first took place during the summer and was predominately a television and social media campaign, while the second phase also included cinema showings. Three social media channels generated considerable interest with Facebook registering 2.8 million views, Twitter hitting one million views and BuzzFeed recording a further 82,000.

Six complementary campaigns were launched to improve the safety of the most vulnerable groups:

- Motorcyclists – from September to November, we targeted motorcyclists via cinema and radio adverts, video on demand and social media
- Cycle safety tips – from September (bus shelter posters only) and October to November, this campaign involved outdoor posters, bus rears, press and digital adverts plus information on our the website
- Teen pedestrians – from September to November, 11 to 14-year-olds were targeted via outdoor posters, bus panel posters and YouTube
- Older pedestrians – leaflets and information in GP surgeries across the Capital helped to reach people aged over 65 between June and November

- Motorists – from September to October, we targeted all London motorists via radio and outdoor posters at hotspot junctions
- Young car drivers – this campaign, which ran from September to November, was aimed at 17 to 25-year-old car drivers and included cinema adverts, video on demand and behind-the-scenes films on YouTube

We have funded training on MAST, a web-based road safety analysis tool, for representatives of the London boroughs, Fire Brigade, MPS and CoLP, plus our own employees. Four training sessions took place in March and were attended by 65 road safety professionals, including officers from 28 boroughs.

We are doubling investment in the road network from £2bn to £4bn over the next 10 years. All our new schemes will comply with stringent safety standards and will take account of improved pedestrian and cycling design guidance, which has been recently published. The investment set out in the Mayor's Cycling Vision will boost cycling provision in the Capital, with improvements through the Better Junctions programme and funding for specific road safety initiatives on the red routes.

In July, we hosted a joint road safety conference with the London Road Safety Council called Safer Streets: Our Shared Journey. The conference focused on delivering in partnership and was well attended by borough officers and key road safety stakeholders. The event also marked the publication date of the Pedestrian Safety



Vehicle fitted with class V mirror giving close visibility along the side of the vehicle

Action Plan, which was made available for public comment. We received more than 100 comments on the draft and these were reflected in the final version.

In June 2014, we published a draft of our revised Cycle Safety Action Plan, which built on the success of the original document published in 2010. Following feedback, we published the final document in November. The plan sets out new actions to improve cycle safety across London, not only through better infrastructure, but also through education, training and enforcement. Thanks to our collaboration with London Councils and Heathrow Airport, it also covers roads managed by these authorities.

Recent work to collect and verify speed limit information across London has enabled a digital speed limit map to be published on our website. This means the full speed limit dataset is now available to developers and mapping providers. GPS device manufacturers are being encouraged to take full advantage of this resource, which will help improve road safety. This is part of our approach to data provision, to ensure easier access to the latest information on collisions and casualties.

Safer goods vehicles

From 1 September 2015, we will be introducing the Safer Lorry Scheme. This will mean every vehicle in London weighing more than 3.5 tonnes (with a small number of exemptions) must be fitted with side guards and class V and VI mirrors⁶.

The scheme will be enforced by the MPS, CoLP and the DVSA through their role in the Industrial HGV Task Force. 'Safer HGV Zone' signs are being installed at the Low Emission Zone boundary, and we are ensuring all lorry drivers and owners who may operate in London are informed and have sufficient time to make appropriate modifications to vehicles.

We continued to develop the Fleet Operators Recognition Scheme (FORS) in partnership with the Chartered Institute of Logistics and Transport. More than 210,000 vehicles from 2,400 companies are FORS accredited and we have worked with a range of industry stakeholders to develop the scheme. The five-year concession with the company AECOM will see the scheme expanded across the UK, allowing more fleet operators and their clients to benefit from a consistent fleet operating standard.

The Fleet Operator Recognition Scheme Governance Standards Advisory Group (GSAG) has now been established. GSAG has a comprehensive mix of representatives from local and national transport authorities, trade associations, enforcement bodies and selected

industry representatives. The role of GSAG is to ensure the FORS standard is embedded across the UK as the national standard for quality fleet operations and that it remains relevant to the industry. It also protects the integrity and reputation of the scheme.

The TfL-funded CLOCS programme's biannual progress event took place in February 2015 and attracted more than 600 delegates. It showcased the latest safety designs in heavy goods vehicles from leading manufacturers. These re-designed vehicles incorporate improved driver direct vision and reduce blind spots, making vulnerable road users easier to see.

A guide to vehicle safety equipment and a Construction Client Compliance Toolkit were launched at the event. Both are designed to help companies meet the CLOCS standard, which aims to ensure that construction companies follow effective practice in the management of their operations, vehicles, drivers and construction sites in relation to work-related road risks. With London experiencing 23 per cent of the country's construction output and construction vehicles being over represented in cyclist fatalities, the new safer vehicles will be trialled by logistics operators and vehicle manufacturers in the Capital to encourage more widespread adoption.

The London Boroughs Consolidation Centre (LBCC) was set up in January 2014 with EU funding as a shared resource for the boroughs of Camden, Enfield and Waltham Forest. The

6) Class V mirrors show close proximity images along the side of vehicles. Class VI mirrors show images along the front of a vehicle.

facility channels suppliers' deliveries into one central point. The goods are then sorted on to fewer vehicles for the final 'leg' (last mile) of the journey to council sites, on a just-in-time basis.

We provided financial assistance to the London Borough of Islington so it could join the LBCC. This resulted in financial savings from procuring in bulk with other councils and cutting the number of deliveries to council buildings. It has also reduced congestion, emissions and the risk of council delivery vehicles being involved in collisions. The LBCC now serves more than 400 council buildings.

Road improvement programmes

Quietways will be a high quality network of radial and orbital cycle routes throughout London. Linking key destinations, they will follow backstreet routes, through parks and along waterways. The Quietways will help overcome barriers to cycling and are aimed at less confident cyclists who want to use low-traffic routes. They form part of the Mayor's Vision for Cycling and will be clearly signed for easy use.

Seven pilot routes are planned to be delivered by the end of 2016:

- Quietway 1 – Waterloo to Greenwich (Lambeth, Southwark, Lewisham, Greenwich)
- Quietway 2 – Bloomsbury to Walthamstow (first phase to Mare Street) (Camden, Islington, Hackney, Waltham Forest)
- Quietway 3 – Regent's Park to Gladstone Park (Dollis Hill, Westminster, Brent, Camden)
- Quietway 4 – Clapham Common to Wimbledon (Lambeth, Wandsworth, Merton)
- Quietway 5 – Waterloo to Croydon (Lambeth, Wandsworth, Croydon)
- Quietway 6 – Aldgate to Hainault (first phase, Victoria Park to Barkingside) (Tower Hamlets, Newham, Redbridge, Hackney, and the London Legacy Development Corporation)
- Quietway 7 – Elephant & Castle to Crystal Palace (City, Southwark, Lambeth)

Construction has now begun on Quietways 1 and 2, which are due to open in 2015 and are being delivered in partnership with the boroughs. Building on the continuing pilots of 20mph limits at the Waterloo IMAX roundabout, and on two main routes through the City of London, we have announced similar trials at eight new locations. These routes, across seven boroughs, will help to understand the most effective way of introducing limits and addressing compliance issues. The chosen sites were assessed using data such as numbers of pedestrians and cyclists, collision history, network characteristics and borough aspirations.

In addition, work started on additional or upgrades to Cycle Superhighways. These routes provide dedicated cycle routes and innovative junctions giving more time and space to cyclists.

The year saw the successful delivery of projects, as part of the TLRN Regional Improvement Programme, including:

- New 20mph limits in the City of London and on the A10 and A201 corridors
- Safety-focused schemes at:
 - A205 Honor Oak Road
 - A4/A312 Waggoners Roundabout
 - A205 Dulwich Common junction with Alleyn Park
 - A4 Bath Road junction with Henleys Roundabout
- Safety and feasibility studies for priority locations identified through the 2012 Road Safety Priority location lists, which cover the worst performing vulnerable road user collision spots in London. This includes 26 projects estimated to be under £1m

Bus innovations

We prepared a trial of Intelligent Speed Adaptation (ISA) on London buses. The technology, which restricts vehicles to the speed limit, has been fitted to buses on routes 19 and 486. This will enable us to better understand the benefits of using ISA in London, with a view to potentially expanding its use across the bus fleet during 2015/16.

In August 2014 we also began a trial of optical and radar technology on buses. The technology alerts drivers when pedestrians and cyclists are moving close to their vehicles, helping to reduce collisions. The Transport Research Laboratory will undertake data analysis for the trial and produce a report on overall performance of the systems.

Signal innovations

Following a successful initial technology pilot of Pedestrian Split Cycle Offset Optimisation Technique (SCOOT) in 2014/15, trials at a further three locations are proposed for 2015/16. This technology measures traffic flows and the number of pedestrians wishing to cross a road and alters signal frequencies accordingly. It enables the 'green man' period to be extended during busier times.

We are finalising the report evaluating the trial of pedestrian and cyclist detection technology on London buses that took place in late 2014, and are considering the next steps in understanding the role of the technology in improving pedestrian and cyclist safety.

Following a successful cycle detection trial at traffic signals in 2014/15, further trials at up to eight locations are planned during 2015/16. If successful, we will be able to put in place the technology to identify the volume of cyclists in segregated lanes/cycle tracks, and ultimately adjust traffic signal timings to provide more 'green time' when there are lots of cyclists at key junctions. Trials will be taking place along Cable Street on the CS3 Cycle Superhighway route.

The cycle detection trials are testing two types of new technology – one radar-based and the other thermal-based – to measure their effectiveness with a view to introducing them across London. This work, which builds on the pedestrian SCOOT trials, underlines our position as world leaders in developing innovative traffic signals.

Enforcement of safety and security

The Industrial HGV Task Force continues its work to combat the threat of non-compliant and dangerous commercial vehicles, by undertaking targeted roadside enforcement activities. Made up of officers from the MPS Roads and Transport Policing Command (RTPC), the CoLP and the DVSA, it targets the most non-compliant vehicles, drivers and operators. It began operations in October 2013, and by May 2015 had stopped and checked 5,181 vehicles resulting in a 'satisfactory' stop rate (no offences detected) of 25 per cent. However, owing to the team's activities targeting only vehicles suspected to be non-compliant, this figure must not be seen as being representative of the wider London freight population. The task force issued 2,579 roadworthiness prohibitions, 332 driver hours prohibitions, 1,309 fixed penalty notices and seized 67 vehicles over this period.

As part of Operation Safeway, the RTPC mobilised hundreds of officers each day over a six-week period starting on 16 February 2015. Officers were deployed to priority junctions and routes in the morning and afternoon rush hour periods with the aim of reducing risk to cyclists and other vulnerable road users by enforcing the rules of the road. Results for the first six weeks showed that officers issued 5,556 fixed penalty notices and 618 summonses to road users and made 163 arrests.

Work is progressing well on bringing in 80 new TfL Roads and Transport Enforcement Officers (RTEOs) to focus on road reliability and safety issues. The additional officers, who should be in post by May 2016, will significantly enhance our ability to deal with issues affecting the road and transport network. The RTEOs will be able to enforce parking contraventions on the TLRN and will have powers under the Home Office's Community Safety Accreditation Scheme to stop and direct traffic.

We continue to combat taxi touting, unlawful plying for hire and other illegal cab activity, all of which pose a serious risk to the travelling public and undermines the legitimate, law abiding taxi and private hire trades. In response to the issues raised through the London Assembly's Future Proof report, we have put additional measures in place and substantially increased the levels of visible enforcement to deter and disrupt illegal minicab activity in hotspot locations in central London.



Improvements at Holborn Circus have improved the safety of this junction

Environment

This section of the report presents our performance during 2014/15 in managing our key environmental issues. Our top targets and indicators are for carbon emissions, air pollutant emissions, noise and waste management. We are reporting on progress achieved during the reporting year against the targets we have set for these areas. We have also included some case studies highlighting examples of good practice.

Reducing carbon emissions

Overview of carbon and energy reporting issues

We have direct control over the energy used by our main public transport services, the maintenance and operation of the TLRN, London's traffic lights, and our head offices. It is by reducing emissions here that we can make a difference.

We regularly review whether our CO₂ performance is on track to reach our targets. This makes an important contribution to Mayoral commitments on reducing London's impact on the climate. Our CO₂ emissions come from fuel used to run our buses and other vehicles, electricity to power our trains and trams, and gas to heat our buildings. Performance for energy use, shown as normalised and total carbon emissions, is set out in figure 9 on page 45.

We measure and report on the energy used by all the public transport services that we directly operate or employ supply partners to deliver.

We also report on the emissions from the taxi and private hire vehicles we license.

For electricity, we calculate the total CO₂ emissions generated by multiplying the amount of energy we use by the Government's annual emissions factor. This measures how much CO₂ was emitted during the energy generation process, for example by power stations. It depends directly on the grid mix, eg the amount and type of fuel (coal or renewable energy) that was used to generate the national grid electricity in that year.

Figure 9 shows that there was a 10 per cent rise in the carbon intensity of the grid mix in 2014/15. This means that our electricity-based CO₂ emissions results are indicating a similar level of increase. To show the underlying trend of the change in energy use, rather than the change affected by the energy source, over which we largely have no control, we are for the first time also reporting our total energy consumption figures as kilowatt hours.

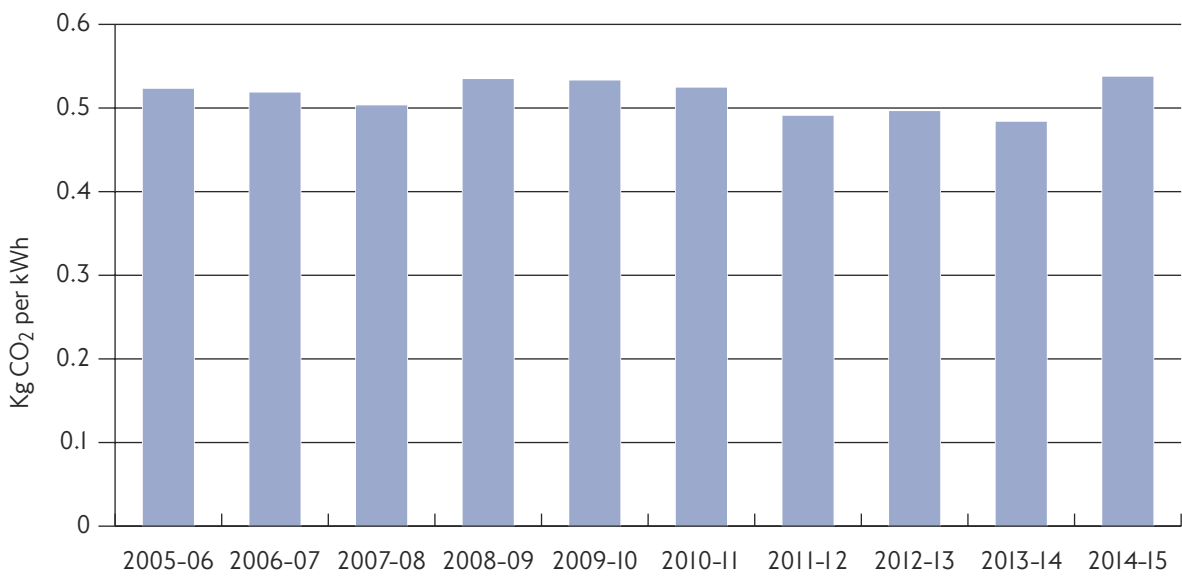


Figure 9: Rate of Kg CO₂ emissions per kilowatt hour grid electricity generated

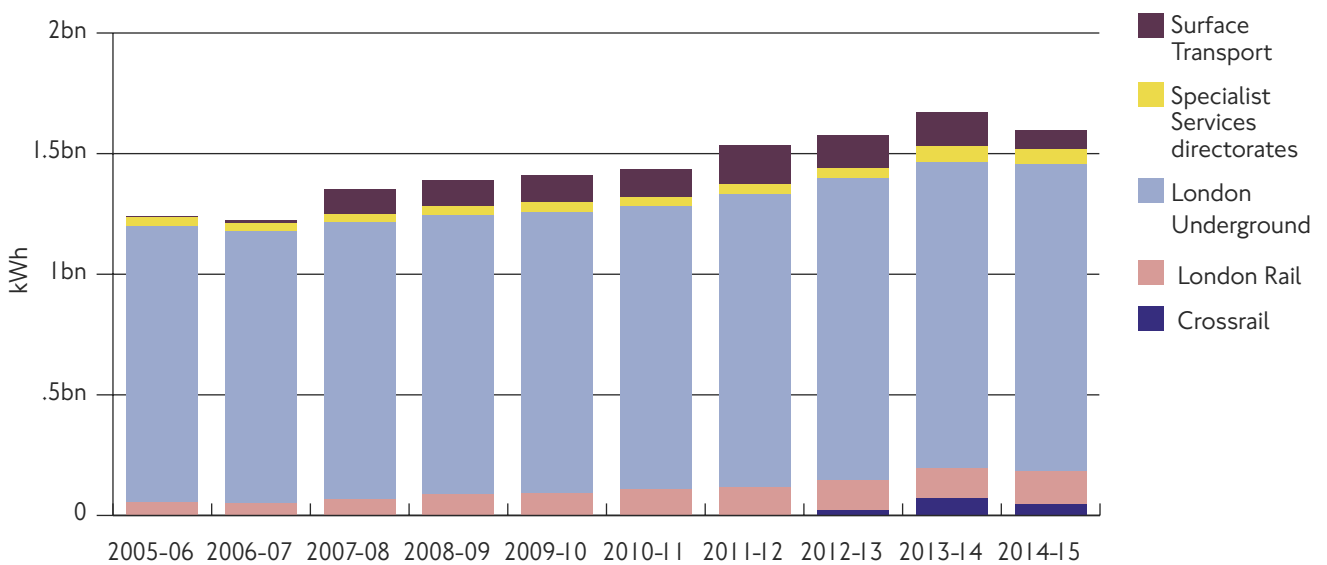


Figure 10: Electricity used in TfL business areas (kWh)

Overview of normalised CO₂ emissions reduction

We report on the amount of CO₂ per passenger kilometre operated during the year, to review our efficiency against the backdrop of our growing transport service.

In 2014/15, we continued with our programme to invest in London’s public transport system, helping to provide much-needed capacity and connectivity for our growing city. We had more than 50 major road projects under way and ran more services, with additional features such as air cooling and CCTV. We carried more passengers than ever (up to 1.26 billion on the Underground alone). We aim to be as energy-efficient as possible and reduce the corresponding CO₂ increase, ideally keeping it on a level basis while we grow.

Normalised emissions are those associated with our main public transport services – London Underground, London Rail and London Buses. At present, emissions from taxis and private hire vehicles cannot be normalised with enough accuracy to be included in the target.

We have a target to reduce CO₂ grams per passenger kilometre by 20 per cent by 2017/18, measured against a 2005/06 baseline. We aim to achieve this with the help of a more carbon-efficient grid system and more efficient vehicle engines.

The level of normalised CO₂ emissions per passenger kilometre for each transport mode is shown in Figure 11. It should be noted, however, that these do not contribute to our CO₂ total in equal proportions. Most of our CO₂ emissions (90 per cent) originate from London Underground and London Buses.

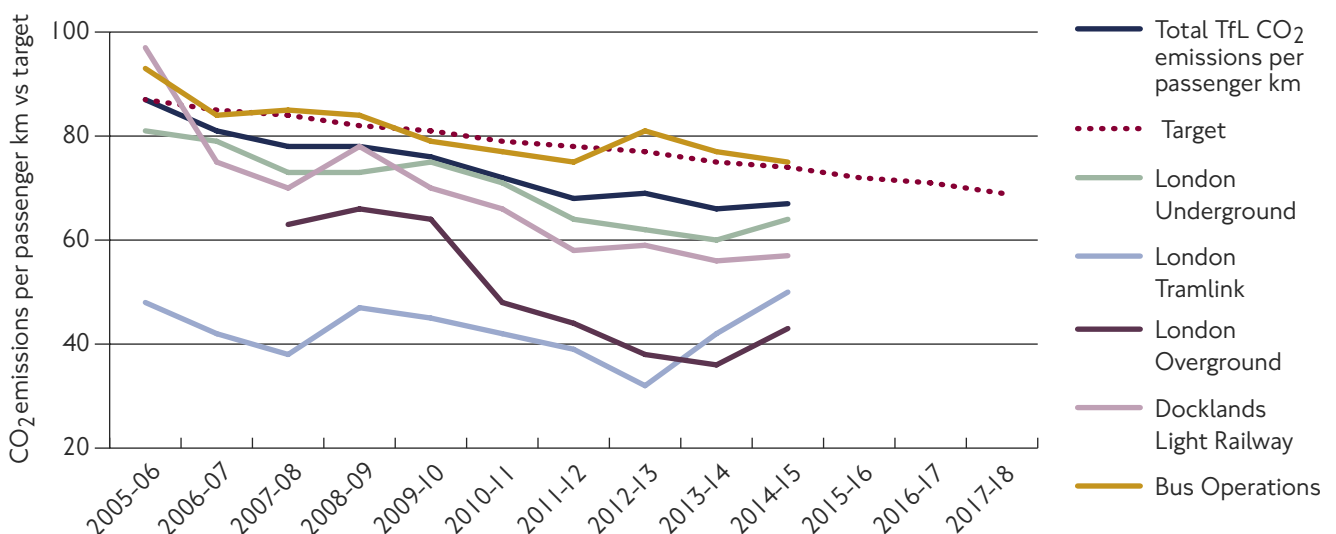


Figure 11: Normalised emissions of CO₂ by public transport mode



New S stock trains use regenerative braking which recycles 20 per cent of the energy produced

Normalised CO₂ explained for each mode of transport

London Underground

We are delivering world-class service frequencies and are on track to meet the Mayor's challenge set in 2011 of a 30 per cent improvement in reliability by the end of 2015. During the year we delivered a 20 per cent increase in peak capacity on the Northern line – in addition to improvements achieved on the Victoria, Jubilee and sub-surface lines – through measures such as new trains and signalling. There was also significant construction activity, for example at stations that will receive the new Crossrail service. This all adds up to an increase in electricity use, so we work on energy-efficient measures, including specifications for new trains, traction current, storage and reuse, plus lighting to bring this rise back to a level trend.

In 2014/15, total CO₂ emissions reported by London Underground were 693,800 tonnes, up 11 per cent from 623,022 tonnes the previous year. However, as the energy used was broadly similar at 1,291 million kWh, it only represented a 0.2 per cent rise from 1,289 million a year ago. The increase in emissions is in line with, and owing to, the change in the national grid generation carbon intensity.

London Underground's passenger kilometres travelled rose to its highest ever levels last year, up to 10.8 billion (from 10.4 billion in 2013/14). The normalised emissions were 64 grams of CO₂ per passenger kilometre, compared with 60 grams of CO₂ per passenger kilometre last year. This is primarily owing to the increase in the emissions factor for grid electricity.



An improved battery design was introduced on new deliveries of the New Routemaster

Buses

In 2014/15, normalised CO₂ emissions associated with the bus network were 75 grams per passenger kilometre, a decrease of nearly two per cent compared with 76.5 grams per passenger kilometre in 2013/14.

We now have 1,250 hybrid buses, which make up 15 per cent of our fleet. Issues have been reported regarding the battery performance on earlier New Routemaster vehicles. An improved battery design was introduced on new deliveries and any older ones that failed were repaired or replaced. This has been done by the manufacturers within the warranty period. Even if batteries were not working, the buses were performing at Euro V standard – still among the cleanest fleets in the world.

DLR

There were 33,907 tonnes of CO₂ emissions reported by the DLR in 2014/15, from 62,999,651 kWh energy use. The CO₂ emissions rose by 13 per cent from an energy use increase of nearly two per cent. The normalised CO₂ emissions for the DLR were 57 grams per passenger kilometre, the same as last year's rate.

London Overground

Construction work on platforms and at depots to introduce longer trains and increase capacity was completed during the year. Total CO₂ emissions in 2014/15 were 31,314 tonnes, a rise of five per cent from 29,838 the previous year. Energy use was 61,878,919 kWh, up 10 per cent from just under 54 million.

At the same time passenger kilometres rose by two per cent, from more than 840 million to more than 861 million. This meant that normalised CO₂ emissions associated with the London Overground were 43 grams per passenger kilometre, up from 36 grams per passenger kilometre in 2013/14. This was due to the change in the carbon mix of the electricity market in the UK during the year.

Tramlink

Tramlink used 14,615,868 kWh of electricity in 2014/15, which was four per cent up from 14,043,183 the previous year. This was the result of introducing new trams, which have an extra power draw from air cooling units. CO₂ emissions were 7,856 tonnes, up 15 per

cent from 6,804 tonnes the previous year, owing largely to the higher carbon intensity of the national grid electricity. The normalised emissions were 49g per passenger kilometre, which was an increase from 42g per passenger kilometre the previous year.

Overview of total CO₂ emissions

The total amount of CO₂ emissions associated with all of our activities in 2014/15 was almost 2.2 million tonnes, a two per cent rise compared with 2.13 million tonnes in 2013/14. Figure 12 shows how the total amount is apportioned to our different business areas.

London’s buses and London Underground account for nearly 90 per cent of all carbon emissions associated with our activities (excluding those from taxis and private hire). In

2014/15, we recorded 1,322,966 tonnes of CO₂ emissions from these sources, a rise compared with 1,226,716 in 2013/14. This was primarily as a result of higher CO₂ levels from electricity consumption on rail services.

Taxi and private hire vehicle emissions have been separated from those associated with our other operations in Figure 14, as they are from vehicles owned and run by third parties. We exercise influence over taxi and private hire vehicles emissions through licensing arrangements, which state limits on Euro standards and vehicle age.

In 2014/15, total CO₂ emissions from taxis and private hire vehicles was 597,086 tonnes, compared with 573,684 in 2013/14, this was mainly owing to the growth in the number of private hire vehicles.

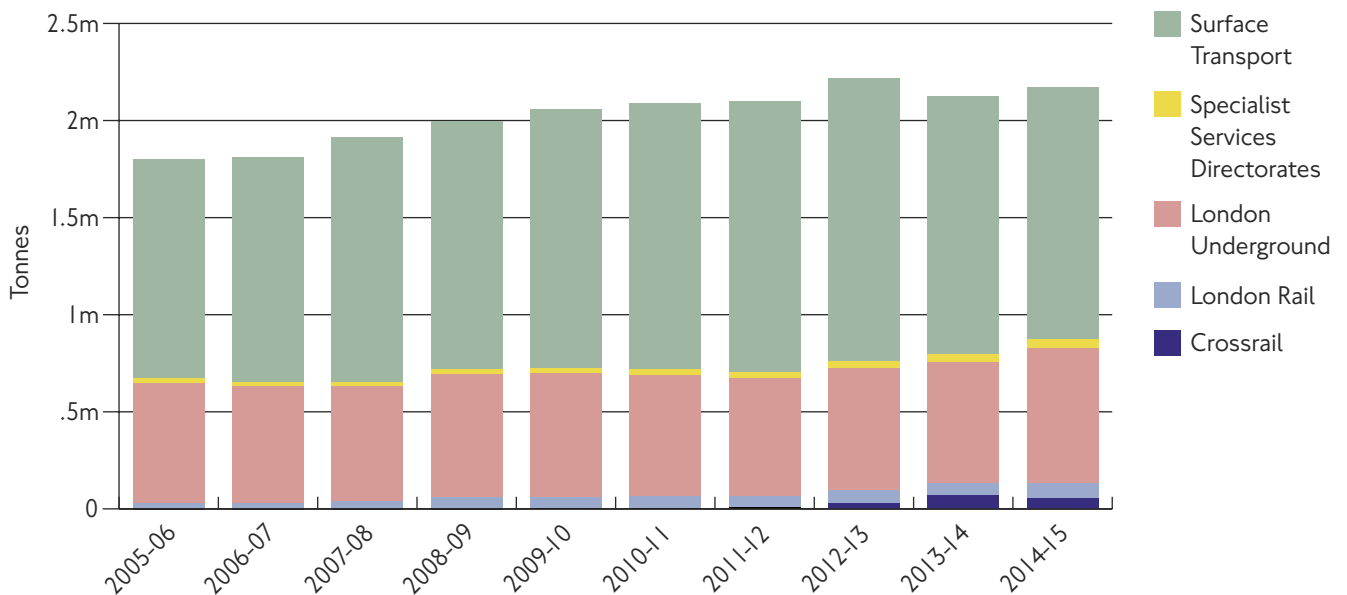


Figure 12: Total CO₂ emissions for TfL business units

Electricity use from Crossrail works reduced from 68,373 tonnes of carbon in 2013/14 to 55,006 tonnes this year. Crossrail's tunnelling contracts accounted for 70 per cent of its electricity use in 2013/14. The drop is in proportion to the decrease in tunnelling activity. All eight tunnel boring machines were in operation during 2013/14, with nearly 24.9km of tunnelling completed. Three machines completed their drives during 2013/14, with five remaining operational into 2014/15 completing 9.6km of tunnelling.

Specialist services directorates

Head offices

Energy efficiency in our buildings has improved by three per cent since last year and is now 23 per cent better than the 2005-06 baseline defined in the Mayor's Climate Change Mitigation and Energy Strategy. An increase in the carbon content of grid-delivered electricity, however, increased head office overall reported carbon emissions by one per cent for the year, but actual performance remains 17 per cent better than typical practice as defined by the Real Estate Environmental Benchmark (REEB) – the largest benchmark of current commercial office buildings.

Other sites

We also started to record energy use at London Transport Museum, which in 2014/15 produced 1,296 tonnes of CO₂ arising from 2,500,015 kWh usage.

This year, for the first time, we have been able to collect information from our data centres and record stores. This new data will form a baseline for managing further energy efficiency improvements and will be included in the 2015/16 report.

Improving air quality

We monitor the total amount of NO_x and PM₁₀ from our operations. These air pollutants arise largely from vehicle engines. Construction site dust and the wear of brake pads on vehicles also contribute to London's air quality, but as they are difficult to measure they are not reported in the scope of our KPIs. However, we do ensure controls are in place for construction and vehicle contracts to keep this to a minimum.

We control the emissions associated with our main public transport services but have less control over the size of the taxi and private hire fleets. To reflect this, taxi and private hire NO_x and PM₁₀ emissions have been separated from those associated with our public transport services in Figures 14 and 16.

NO_x

We have set a target to reduce NO_x emissions by 40 per cent from our operations by 2017/18 against 2005/06 levels. They continue to fall, with emissions in 2014/15 at 6,287 tonnes, down from 7,347 tonnes in 2013/14.

Total NO_x emissions were lower than last year and the 2005/06 baseline total, and are nearing the trend line required to achieve the 2017/18 target (figure 13).

Buses accounted for 72 per cent of our recorded NO_x emissions in 2014/15 (figure 14). Total emissions from the bus fleet fell by a further 15 per cent compared with last year, owing to the continued roll-out of the programme to retrofit selective catalytic reduction (SCR) technology to Euro III vehicles. We have continued with our retrofit

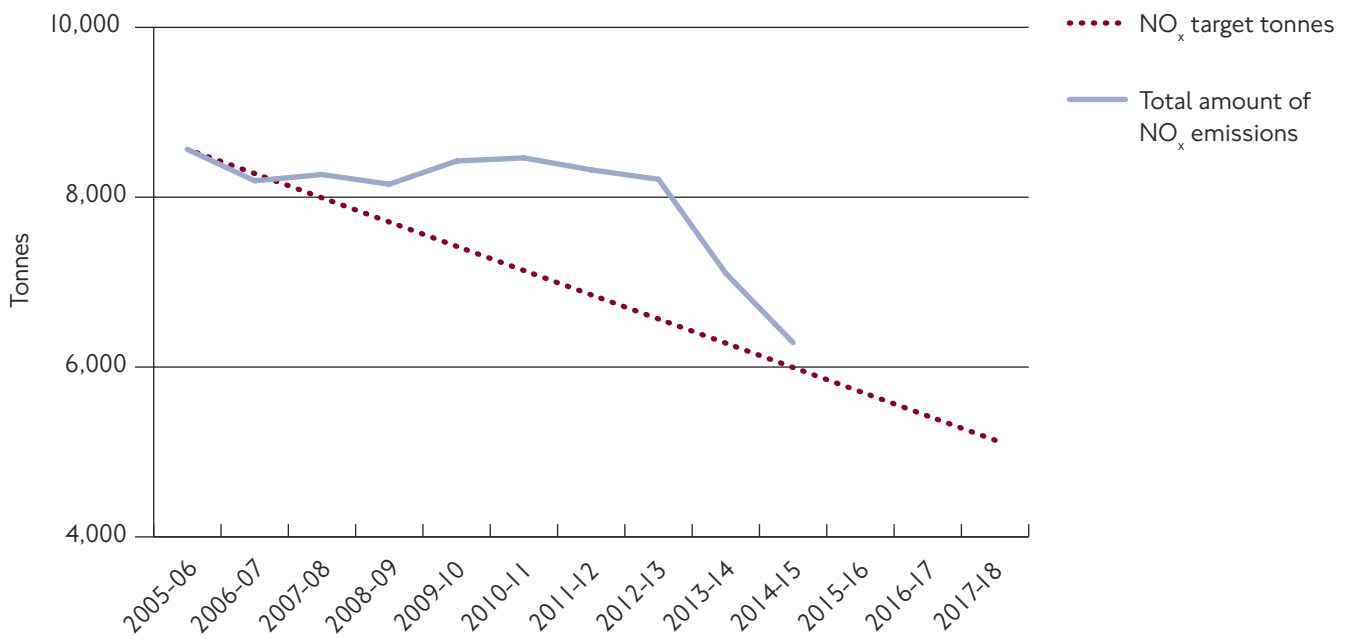


Figure 13: NO_x target of a 40 per cent reduction in total emissions from TfL operations – emissions from public transport services, taxis and private hire vehicles

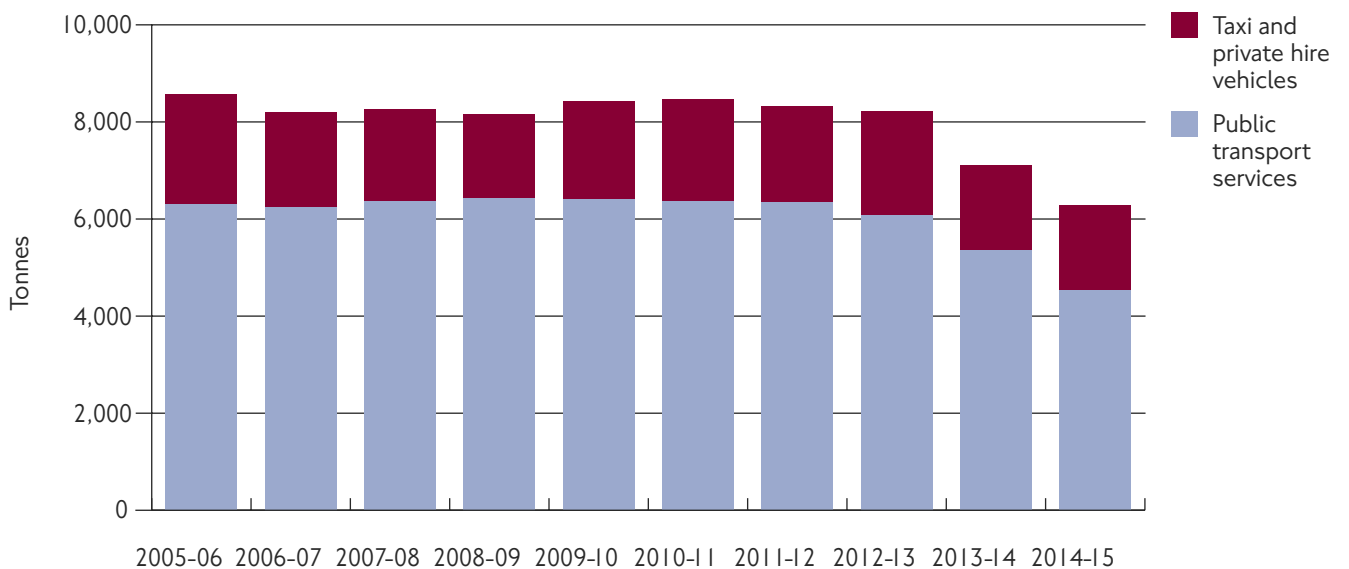


Figure 14: Total NO_x emissions from TfL operations

programme, installing a further 400 buses with SCR in 2014/15 (more than a thousand were completed previously). This removes around 90 per cent of NO_x. Priority has been given to bus routes serving areas with high nitrogen dioxide concentrations. Combined with the roll-out of hybrid buses (including the New Routemaster) and the early introduction of new Euro VI vehicles, the retrofit programme has led to significant improvements in emissions to air from buses.

The remaining NO_x emissions are principally associated with the taxi and private hire fleet and are split evenly between the two sources. Together, they emitted 1,745 tonnes of NO_x in 2014/15, which is an improvement on the 2013/14 figure of 1,994 tonnes. This was mainly owing to the newer mix of vehicles in the private hire fleet.

PM₁₀

We have set a target for TfL to halve total PM₁₀⁷ emissions from our operations by 2017/18, against 2005/06 levels. This applies to our public transport services and to the taxi and private hire vehicle fleet.

Over the reporting year, we recorded 98 tonnes of PM₁₀ emissions from all our operations. This is a further reduction from the 117 tonnes reported last year (figure 15). Taxis and private hire vehicles accounted for 86 per cent of our total PM₁₀ emissions (figure 16).

Particulate emissions from buses dropped from 20 tonnes in 2013/14 to 19.15 tonnes in 2014/15, owing to the continuing introduction of Euro VI buses⁸, which have diesel particulate filters as a standard fitting. These filters reduce particulate emissions by 90 per cent.

Emissions from private hire vehicles fell from 32 tonnes in 2013/14 to 14 tonnes in 2014/15. While the number of vehicles increased, more of them were Euro V so had diesel particulate filters as standard fitting. Emissions from taxis remained the same as last year at 55 tonnes.

The remaining PM₁₀ emissions from our public transport services were mainly associated with river services. This includes the Woolwich Ferry and Thames Clippers, plus other scheduled boat services that we do not operate.

7) particulate matter up to 10 micrometers in size

8) Euro VI is a European engine standard. Euro 0 is the lowest standard and Euro 6 the best

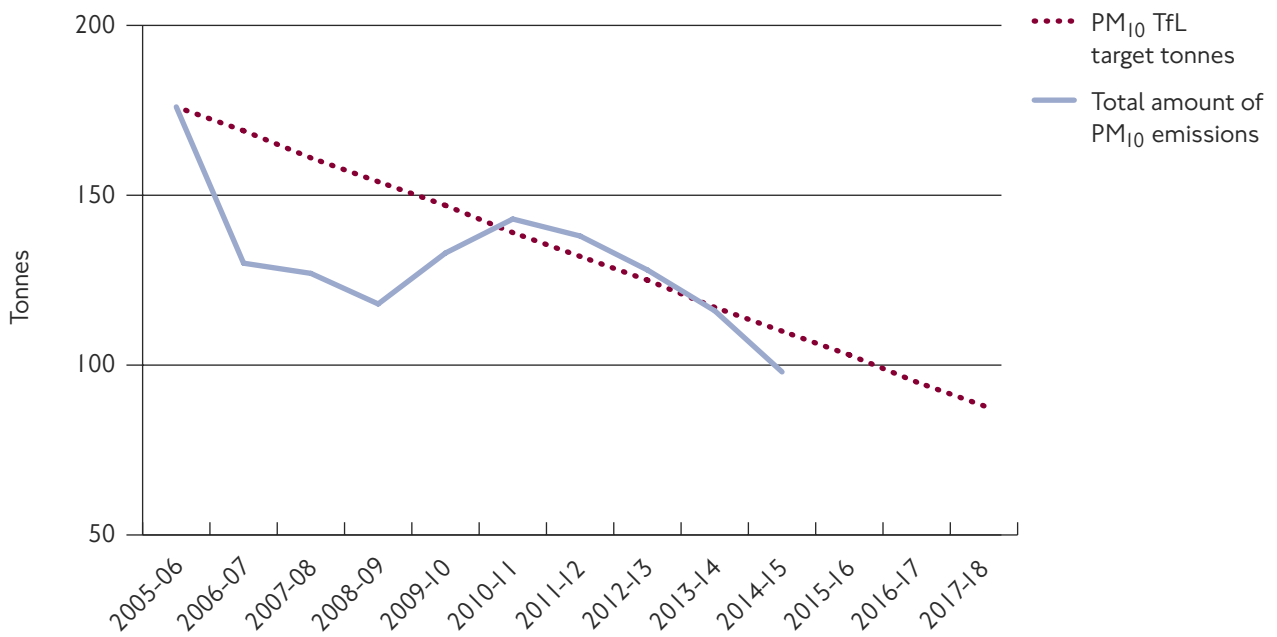


Figure 15: PM₁₀ emissions from TfL operations

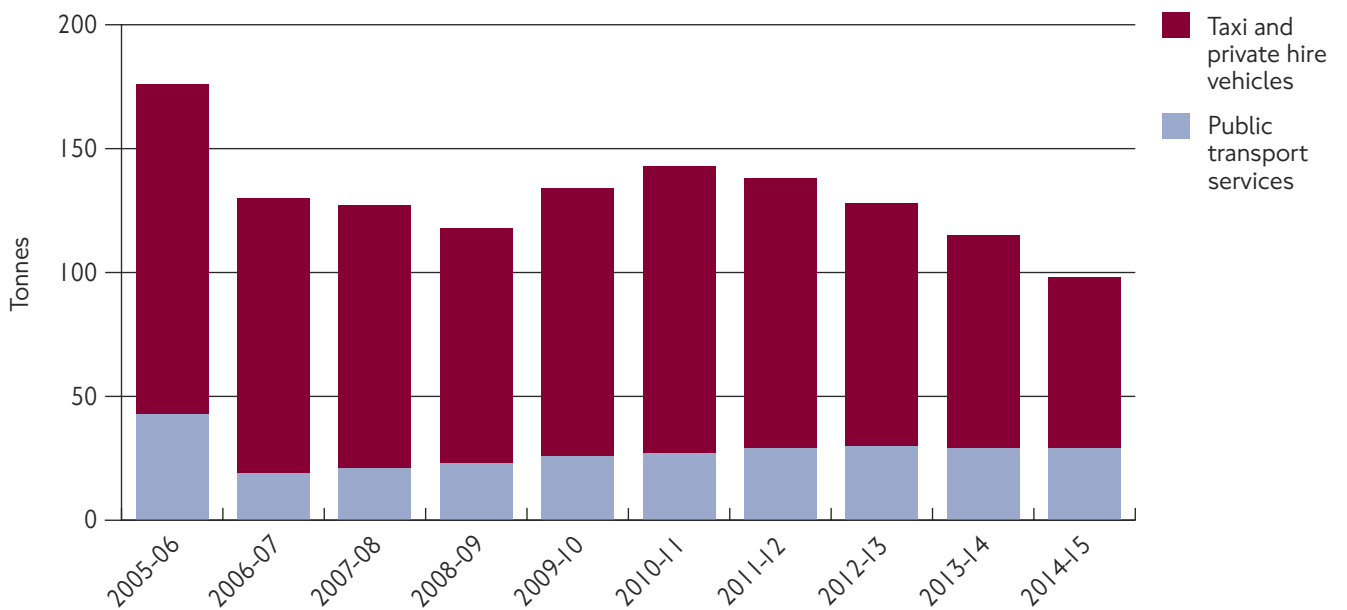


Figure 16: PM₁₀ emissions by transport type

Managing noise

We continued to carry out significant construction works throughout 2014/15 as part of our investment programme. These included Crossrail, major London Underground projects and enhancements to the rail and road networks, as well as our regular maintenance. The number of noise complaints reported to us rose by 20 per cent to 1,217 in 2014/15 from 1,001 in 2013/14.

A total of 691 complaints were received by Crossrail in 2014/15. This is broadly in line with the 682 made in 2013/14 and reflects a continued level of construction activity on our stations and infrastructure during the year. Crossrail is working with its contractors to ensure that best practicable means are being used to reduce noise impacts.

The number of complaints associated with asset noise, construction, contractor noise and PA announcements on the London Underground network rose to 449. This was up from 258 in 2013/14, reflecting the programme of construction work, a review of data quality and improvements to the logging and monitoring of noise complaints.

Section 61 of the Control of Pollution Act 1974 allows developers and contractors to apply to Local Authorities for permission for noise generating activities construction. The Section 61 process is increasingly used for agreeing the times and mitigation methods of noise-generating works with the local boroughs. As part of this process, we have enhanced the liaison arrangements with local borough Environmental Health Officers, to increase

Case study: Tottenham Court Rd

The Tottenham Court Road station upgrade has notched up an impressive record – 368 days without a noise or vibration-related complaint. This achievement has been highly commended by the London Borough of Camden and Westminster City Council.

As part of the project, complex construction works are being carried out in the heart of central London surrounded by businesses, residents and other stakeholders, including St Patrick's Church and the Dominion Theatre.

The photo below shows an acoustic barrier in use during a concrete pour.



understanding on both sides. Through our suppliers, best practicable means are being applied to work sites for noise mitigation, including acoustic barriers, researching and choosing quieter equipment, and ensuring

such equipment is maintained. Our stakeholder communications have been doubled to increase the levels of community liaison before and during noise-generating works.

The number of noise complaints associated with London Overground in 2014/15 was 77, an increase from the 35 received in 2013/14. This was owing to construction work relating to the expansion of platforms, depots and other infrastructure to prepare for running five-car trains.

Resource consumption and waste recycling

Our operations give rise to different types of waste, including from construction and demolition, from our offices and the litter left by passengers on public transport. We have a duty to manage this so we use resources responsibly. We have also taken great strides in this area in

recent years, collecting more and more waste and increasing our focus on reducing and reusing waste at source.

Commercial and industrial (C&I) waste

In 2014/15, we collected 74,708 tonnes of waste across all our stations, maintenance depots and buildings (figure 17) and recycled 30 per cent of it. The previous year, we collected 46,575 tonnes of waste and recycled 75 per cent.

The reason for this change is two-fold. Firstly, we have collected nearly double the amount of C&I waste. This is because we have been introducing more bins on the London Underground network to reduce litter and improve reliability. A total of 251 bins were installed in 2012/13 and a further 142 last year, bringing the overall number to 1,158.

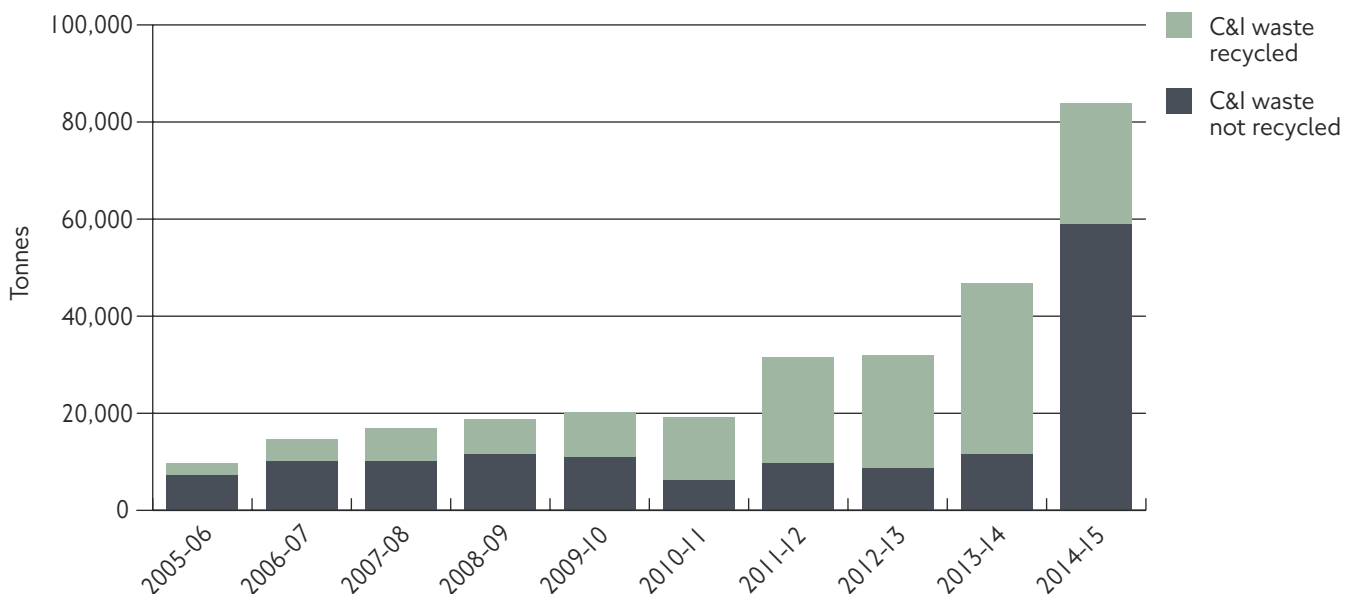


Figure 17: Commercial and industrial waste generated and recycled

Secondly, new legislation introduced in January 2015, together with a recycling facility code of practice, means facilities will no longer accept mixed recycling contaminated with food waste, so much less waste from around the transport network can be recycled.

Of the total C&I waste we collected, 30 per cent was recycled and another 52 per cent was used to provide energy, so 82 per cent of our waste was recycled or recovered. This is on track to achieve our corporate target of 99 per cent waste diverted from landfill by 2031.

Pictured below is a typical example of paper collection – this one also contains food packaging, metal, polystyrene and liquid waste. Recycling facilities could have accepted it last year but not since the January legislation change.



Case study: highways maintenance

The London Highways Alliance Contract has been developed as a joint initiative between us and the boroughs, to deliver a reliable, reputable and cost-effective highways service across the Capital. This has achieved a number of environmental improvements through contract specification and contractor engagement. For instance:

- Ninety-nine per cent of all waste is recycled
- Nearly half of all materials come from green or recycled sources
- All cars and vans meet the latest European standards
- All drivers have fuel-efficiency training
- Telematic systems have been installed on vehicles to monitor drivers' behaviour
- Solar panels, LED lighting, water harvesting, cycle parking facilities and electric vehicle charging points have been installed at depots
- Eco-efficient welfare cabins and cold lay products have been deployed on site



Construction, demolition and excavation waste

Over the past year we have completed significant works as part of our investment programme. The amount of construction, demolition and excavation waste (CD&E) fluctuates in line with these programmes, but we aim to keep the proportion reused and recycled high and constant. This year, 98 per cent of CD&E waste was reused, which is the same percentage as last year.

In 2014/15 we produced less CD&E waste – 2.75 million tonnes – than in 2013/14 when we generated just over three million tonnes. This was mainly owing to an 18 per cent reduction in construction waste from Crossrail activities, where excavation was largely complete by the end of 2014/15. The major tunnelling drives were finished in June 2015 and most of the main station structures have been excavated. Crossrail reused 98 per cent of the excavated material including more than three million tonnes used to

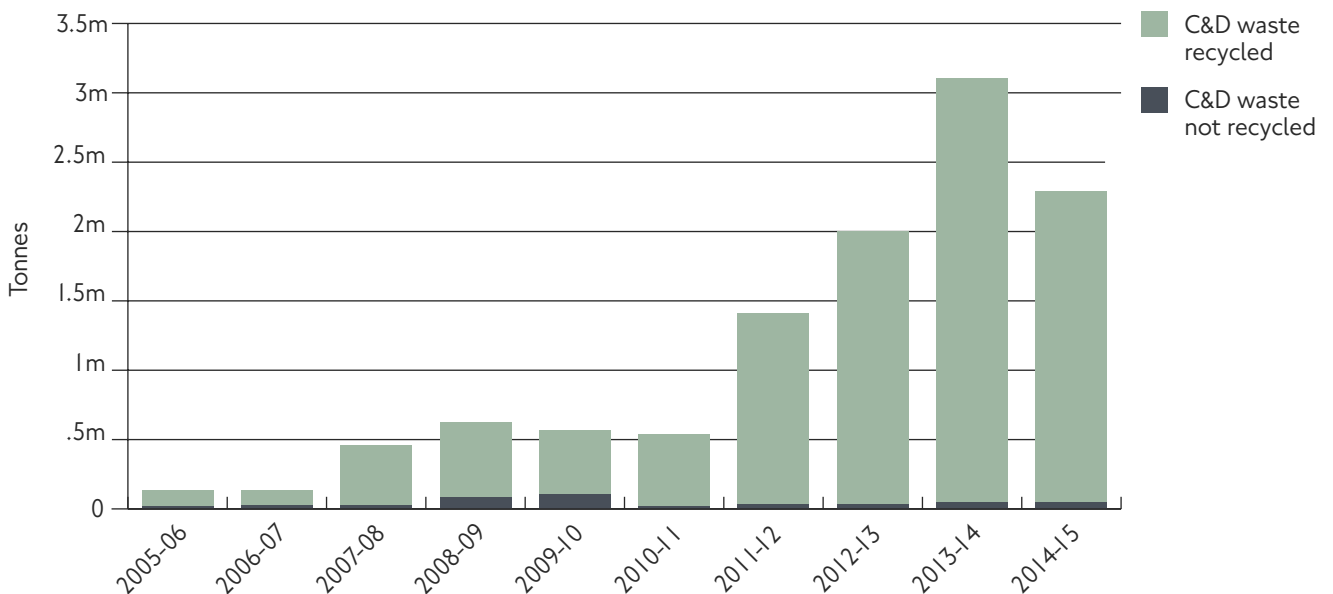


Figure 18: Construction, demolition and excavation waste generated and reused

create a 1,500 acre wildlife habitat at Wallasea Island in Essex. The remaining material has been used variously to restore landfill sites and create nature reserves.

The Bond Street station upgrade is the first non-Crossrail site to send excavated London clay to the Wallasea Island Wild Coast project. More than 17,000 tonnes of clay is being used to create marshes and lagoons for perennial birds and wildlife, in addition to raising the existing land to reduce the effect of the rising sea level.

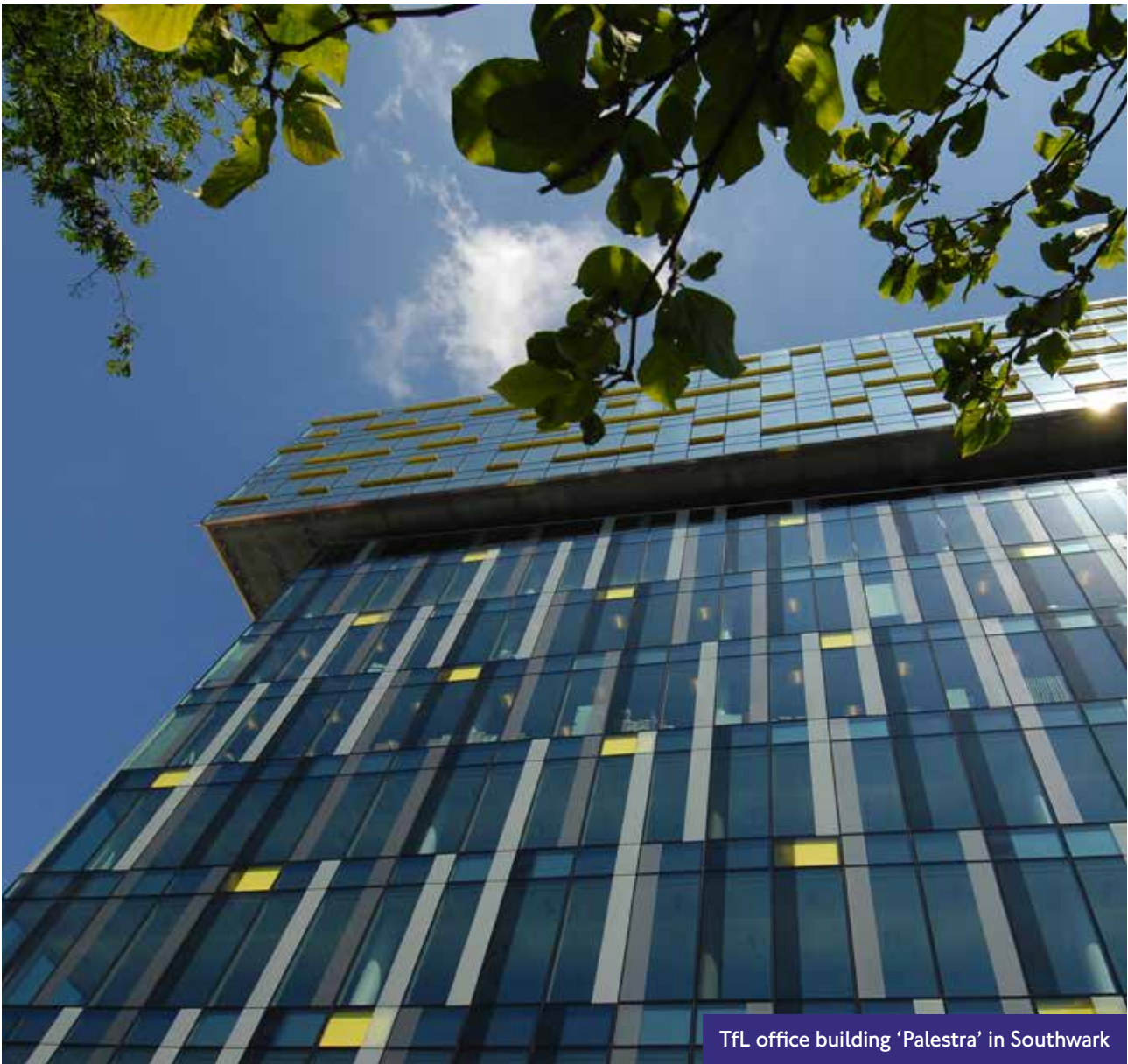
The volume of waste generated from the maintenance of the TLRN was 309,085 tonnes, which was down from 412,138 tonnes in 2013/14, in line with construction and maintenance programmes. More than 99 per cent of it continues to be reused or recycled.

Case study: sustainability in action

The Head Office Property Care Programme is our annual asset maintenance and renewal initiative. Projects are prioritised for energy and lifecycle costs, as well as business continuity and safety. All works are specified to meet energy and water technology list criteria as a minimum to ensure efficiency is maximised and capital allowances can be claimed back from the government.

Over the past two years the programme has seen the following energy efficiency projects completed:

- The conversion of oil fired boilers to a gas fired system in Templar House, improving fuel efficiency
- The installation of a Climacheck performance analyser at four sites to assist in chiller performance analysis and refurbishment planning
- The re-installation of external pipe and ductwork at nine sites
- Lighting controls upgrade for the final two floors at Palestra
- Building management system upgrades and connection to a main off-site server at five sites



TfL office building 'Palestra' in Southwark

Automatic monitoring and targeting (aM&T)

Our Infrastructure and Sustainability team manages an extensive network of supply and sub-meters in our head offices. It is one of the most extensive in the country and is seen by many as a model to emulate.

We have a network of more than 1,200 half-hourly meters that automatically provide data direct into our computer software each night for automatic comparison against manual readings and invoice data. With this data we monitor energy, water and carbon efficiencies, and absolute consumption throughout the year. This provides building-by-building performance figures, and monitors progress towards targets, as well as various trend graphs to analyse performance across and between years.

Water consumption at head office buildings

Water efficiency stayed at 6m³ per person, a 37 per cent improvement on the 2005/05 baseline and 15 per cent better than the TEEB commercial office good practice benchmarks.

Rainwater harvesting for toilet flushing at two of our buildings avoided the use of 6,614,000 litres of drinking water. In addition, investment in water-saving devices helped maintain efficiency levels as total water consumption in head office buildings increased by nine per cent this year – mainly influenced by more visitors and occupancy, plus several external water leaks.

Most head office water is used for drinking and toilet flushing, with a few sites also using water for catering, cooling and operational vehicle washing.

Annexe – summary of TfL’s HSE key performance indicators

Safety – London Underground

Customer injuries			
Year	Fatal	Significant	Customer journeys (millions)
2010/11	0	130	1,107
2011/12	3	135	1,170
2012/13	1	156	1,129
2013/14	3	127	1,265
2014/15	2	84	1,305

Employee on-duty injuries (injuries sustained as a result of physical assault are included)			
Year	Fatal	Significant	Employee numbers
2010/11	0	13	18,088
2011/12	0	15	17,258
2012/13	0	10	16,382
2013/14	0	13	21,557
2014/15	0	10	21,882

Supplier injuries		
Year	Fatal	Significant
2010/11	0	7
2011/12	0	2
2012/13	0	10
2013/14	0	12
2014/15	0	11

Employee assaults (Customer-facing employees)		
Year	Actual	Employee numbers
2010/11	2,363	10,760
2011/12	2,451	9,875
2012/13	2,273	10,042
2013/14	2,689	10,668
2014/15	2,820	10,747

Supplier assaults	
Year	Actual
2010/11	22
2011/12	22
2012/13	20
2013/14	14
2014/15	15

Safety – Surface Transport

Customer injuries			
Year	Fatal	Significant	Customer journeys (millions)
2010/11	0	861	2,283
2011/12	5	1,064	2,350
2012/13	0	862	2,335
2013/14	2	855	2,392
2014/15	1	1,341	2,381

Employee on-duty injuries			
Year	Fatal	Significant	Employee numbers
2010/11	0	4	3,008
2011/12	0	4	3,345
2012/13	0	4	3,168
2013/14	0	7	3,364
2014/15	0	3	3,447

Supplier injuries			
Year	Fatal	Significant	
2010/11	0	116	
2011/12	1	107	
2012/13	0	75	
2013/14	1	79	
2014/15	0	97	

Employee assaults (Customer-facing employees)		
Year	Actual	Employee numbers
2010/11	129	1,266
2011/12	153	1,093
2012/13	92	1,066
2013/14	117	1,059
2014/15	146	1,045

Supplier assaults	
Year	Actual
2010/11	1,288
2011/12	1,702
2012/13	1,598
2013/14	1,588
2014/15	1,470

Safety – London Rail

Customer accidental fatalities			
Year	Fatal	Significant	Customer journeys (millions)
2010/11	0	8	167.3
2011/12	0	11	214.1
2012/13	0	10	254.7
2013/14	0	4	269.5
2014/15	1	7	282.6

Employee on-duty injuries			
Year	Fatal	Significant	Employee numbers
2010/11	0	0	216
2011/12	0	0	159
2012/13	0	2	160
2013/14	0	1	167
2014/15	0	0	321

Supplier injuries		
Year	Fatal	Significant
2010/11	0	4
2011/12	0	5
2012/13	0	2
2013/14	1	9
2014/15	0	1

Employee assaults (Customer-facing employees)		
Year	Actual	Employee numbers
2010/11	0	216
2011/12	0	159
2012/13	5	160
2013/14	0	167
2014/15	2	321

Supplier assaults	
Year	Actual
2010/11	339
2011/12	411
2012/13	347
2013/14	330
2014/15	284

Safety – Crossrail

Employee injuries			
Year	Fatal	Significant	Employee numbers
2010/11	0	0	290
2011/12	0	0	371
2012/13	0	0	433
2013/14	0	0	593
2014/15	0	0	622

Supplier injuries		
Year	Fatal	Significant
2010/11	0	1
2011/12	0	4
2012/13	0	17
2013/14	1	23
2014/15	0	11

Safety – Specialist Support directorates

Employee injuries			
Year	Fatal	Significant	Employee numbers
2010/11	0	0	2,461
2011/12	0	0	2,574
2012/13	0	0	2,701
2013/14	0	0	2,695
2014/15	0	0	3,115

Supplier injuries		
Year	Fatal	Significant
2010/11	0	0
2011/12	0	0
2012/13	0	0
2013/14	0	0
2014/15	0	0
2014/15	0	0

Health

Average sickness absence per FTE by TfL business (2009/10-2012/13)						
Year	TfL Group	London Underground	Surface Transport	London Rail	Crossrail	Corporate directorates
2010/11	9.7	10.2	8.9	3.2	7.3	7.6
2011/12	9.5	10.1	8.6	3.9	1.6	7.1
2012/13	8.6	9.5	7.9	8.2	4.6	7.8
2013/14	9.5	10.1	8.5	5.8	5.2	6.9
2014/15	10.0	10.7	9.4	4.1	5.5	7.8

Average days lost owing to sickness absence by category and business area in 2014/15									
	Mental illness	Musculoskeletal	Colds and flu	Gastrointestinal	Accidents/injury	Other	Neurological	Respiratory	Hypertension, stroke
TfL Group	1.68	2.11	1.28	1.07	0.85	0.71	0.57	0.36	0.44
London Underground	1.68	2.35	1.36	1.15	0.95	0.79	0.58	0.38	0.45
Surface Transport	1.68	1.84	1.13	1.11	0.90	0.60	0.51	0.34	0.48
London Rail	0.33	0.36	0.49	0.31	0.15	0.50	0.15	0.16	0.70
Crossrail	1.31	0.69	0.90	0.70	0.01	0.04	0.31	0.31	0.00
Corporate Directorates	1.76	1.28	1.09	0.73	0.33	0.39	0.58	0.32	0.30

Road Safety

Monitoring casualties in London - all roads.

Casualties in the year 2014 compared with the 2005-09 average and 2013						
Casualty severity	User group	Casualty numbers			Percentage change in 2014 over:	
		2005-2009 average	2013	2014	2013	2005-2009 average
Fatal	Pedestrians	96.0	65	64	-2%	-33%
	Pedal cyclists	16.6	14	13	-7%	-22%
	Powered two-wheeler	43.4	22	27	23%	-38%
	Car occupants	49.4	25	19	-24%	-62%
	Bus or coach occupants	2.4	1	0	-100%	-100%
	Other vehicle occupants	3.2	5	4	-20%	25%
	Total	211.0	132	127	-4%	-40%
	Children (under 16yrs)	11.6	6	3	-50%	-74%
Fatal and serious	Pedestrians	1,216.4	838	779	-7%	-36%
	Pedal cyclists	420.6	489	432	-12%	3%
	Powered two-wheeler	791.2	510	526	3%	-34%
	Car occupants	949.0	335	316	-6%	-67%
	Bus or coach occupants	139.6	90	71	-21%	-49%
	Other vehicle occupants	109.8	62	43	-31%	-61%
	Total	3,626.6	2,324	2,167	-7%	-40%
	Child pedestrians	231.8	153	139	-9%	-40%
	Child pedal cyclists	32.8	17	13	-24%	-60%
	Child car passengers	42.2	7	6	-14%	-86%
	Child bus or coach passengers	11.6	4	5	25%	-57%
	Other child casualties	11.8	6	3	-50%	-75%
	Children (under 16yrs)	330.2	187	166	-11%	-50%
	Slight	Pedestrians	4,214.0	4,343	4,834	11%
Pedal cyclists		2,718.2	4,134	4,714	14%	73%
Powered two-wheeler		3,806.4	3,992	4,707	18%	24%
Car occupants		12,426.8	9,850	11,487	17%	-8%
Bus or coach occupants		1,429.8	1,381	1,508	9%	5%
Other vehicle occupants		1,004.8	1,175	1,368	16%	36%
Total		25,600.0	24,875	28,618	15%	12%
Children (under 16yrs)		1,889.0	1,677	1,811	8%	-4%
All severities	Pedestrians	5,430.4	5,181	5,613	8%	3%
	Pedal cyclists	3,138.8	4,623	5,146	11%	64%
	Powered two-wheeler	4,597.6	4,502	5,233	16%	14%
	Car occupants	13,375.8	10,185	11,803	16%	-12%
	Bus or coach occupants	1,569.4	1,471	1,579	7%	1%
	Other vehicle occupants	1,114.6	1,237	1,411	14%	27%
	Total	29,226.6	27,199	30,785	13%	5%
	Children (under 16yrs)	2,219.2	1,864	1,977	6%	-11%

Environment

	2010/11	2011/12	2012/13	2013/14	2014/15
CO ₂ emissions (tonnes) – TfL public transport services	1,431,914	1,437,240	1,539,429	1,554,037	1,607,627
CO ₂ emissions (tonnes) – taxis and private hire	654,823	665,557	677,789	573,684	597,086
Total CO₂ emissions (tonnes)	2,086,737	2,102,797	2,217,218	2,127,721	2,204,713
TfL's public transport operations (average gCO ₂ /passenger km)	72	68	69	66	67
London Underground (gCO ₂ /passenger km)	71	64	62	60	64
Bus Operations (gCO ₂ /passenger km)	77	75	81	77	75
DLR (gCO ₂ /passenger km)	66	58	59	56	57
London Tramlink (gCO ₂ /passenger km)	42	39	32	42	50
London Overground (gCO ₂ /passenger km)	48	44	38	36	43
Energy efficiency in head office buildings*	251	232	263	252	245
Total NO _x emissions (tonnes)	8,463	8,322	8,211	7,103	6,287
Total PM ₁₀ emissions (tonnes)	143.41	138.00	127.58	115.51	98.39
Number of noise complaints received	951	907	845	1,001	1,271
Percentage of buses in fleet at least 2 dB(A) quieter than the required legal limit	37	54	61	64	70
C&I waste (tonnes)	19,205	31,745	32,023	46,720	84,221
C&I waste recycled (%)	68	70	73	75	30
CD&E waste (tonnes)	537,237	1,407,365	2,004,299	3,103,680	2,289,785
Proportion of CD&E waste recycled (%)	96	98	98	98	98
Water efficiency in head office buildings (m ³ per person)	7.77	6.64	7.83	5.91	5.99

*Kilowatt hours electrical equivalent per m² (floor area)

Data accuracy

HSE data for previous years has been reviewed and updated where appropriate. This has been owing to new information (for example, injuries previously recorded as minor being recorded as major where appropriate) or changes to external guidelines, such as the Department for Environment, Food and Rural Affairs guidelines on reporting carbon emissions.

There have also been some differences in RIDDOR during the year from 1 October 2013, which means some definitions are different. We have used the definition appertaining at the time of the incident.

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