

Tram and bus safety

Background

This investigation will look at safety on London transport network, specifically focusing on:

1. Safety on the Croydon tram network and how learning is being implemented following the Croydon tram derailment in 2016.
2. Safety on board London buses and collisions involving buses.

This investigation will provide the committee with the opportunity to scrutinise TfL's implementation of learning since the Croydon tram derailment. This session will also provide an important opportunity for the committee to follow up on recommendations it made in 2017 to TfL and the Mayor in relation to bus safety.

The role of TfL

Trams

Since 2008, TfL has managed London's only tram network which operates services from Croydon to Wimbledon, Beckenham Junction, Elmers End and New Addington. The tram network is made up of 28km of track, 34 trams in the fleet and 39 stops. Just over 29 million passengers used the service in 2017/18.

TfL is responsible for setting the specifications for tram frequency and performance and is responsible for fares and revenue. TfL is responsible for carrying out maintenance and planning and funding improvements and extensions to the network.

Tram Operations Limited (TOL), a subsidiary of First Group, operates trams day-to-day. TOL's contract will expire in 2030.¹

Buses

TfL manages a bus fleet of around 9,300 vehicles. These vehicles operate across 675 routes. More than six million bus journeys are made every weekday.

TfL's subsidiary company, London Bus Services Ltd, is responsible for planning routes, monitoring service quality and specifying service levels. London Bus Services Ltd is also responsible for around 50 bus stations and more than 19,000 bus stops. Most bus services are run by private operators who are awarded contracts which are managed by London Bus Services Ltd.²

Mayoral priorities and TfL delivery

Safety on the transport network

Safety is a key priority for TfL across the Transport network. The Safety, Sustainability and HR panel considers issues relating to safety and sustainability for TfL's services. TfL publishes a quarterly health, safety and environment report. TfL also reports on several safety targets

¹ TfL, London trams

² TfL, London buses

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on its scorecard under the outcome “London’s transport system will be safe and secure” (see **figure 1**).

Tram safety

On 9 November 2016, a tram derailed near the Sandilands tram stop in Croydon and tragically seven people lost their lives and 62 people were injured.

The Rail Collision Investigation Branch (RAIB) conducted an independent investigation into the incident and published a report in December 2017 with a further addendum published in October 2018.³ Other organisations involved in investigating the derailment included the British Transport Police (BTP), the Office of Rail and Road (ORR) and the tram operator, Trams Operations Limited which is a subsidiary of FirstGroup. TfL also commissioned an independent investigation by SNC Lavalin.⁴

The scope of the RAIB investigation included looking at the sequence of events before, during and following the derailment. The investigation considered the way the tram was being driven, the design and condition of the infrastructure, and the tram’s behaviour during the derailment. Finally, the investigation also looked at any previous over-speeding incidents at Sandilands and any underlying management factors.

Since the incident and conclusion of the investigations, TfL has worked to introduce a range of safety measures, including:

- Adding additional speed restrictions and signage near Sandilands and at three other locations on the network.
- Reducing the maximum speed trams on the London tram network can travel at – from 80kph to 70kph.
- Fitting of an in-cab driver protection device to all trams to protect against driver fatigue and distraction.
- Reviewing procedures for the emergency evacuation of trams.⁵

³ Note that the RAIB’s investigation is independent of any investigation by the tramway industry, the BTP of the ORR.

⁴ TfL, Croydon tram derailment.

⁵ TfL, Croydon tram derailment.

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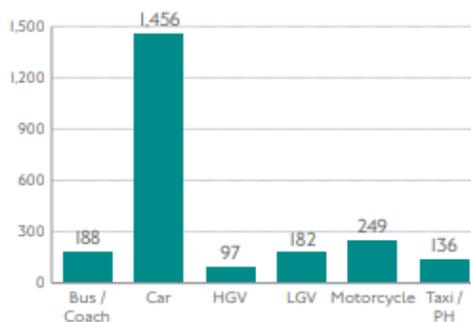
Long-term objectives	2018/19 scorecard	Period II		Year-to-date	
Outcome	Measure	Actual	Target	Actual	Target
Healthy Streets and healthy people (18%)					
London's transport system will be safe and secure	Reduction in people killed or seriously injured on the roads from 2005-09 baseline (%) ¹	Qtrly	n/a	39.8% ■	45.4%
	Reduction in people killed or seriously injured on roads from 2005-09 baseline (incidents involving buses) (%) ¹	Qtrly	n/a	57.4% ■	55.4%
	Injuries on the public transport network	884 ■	905	9,769 ■	9,975

Figure 1: Section of the TfL scorecard focusing on safety outcomes.

Bus safety

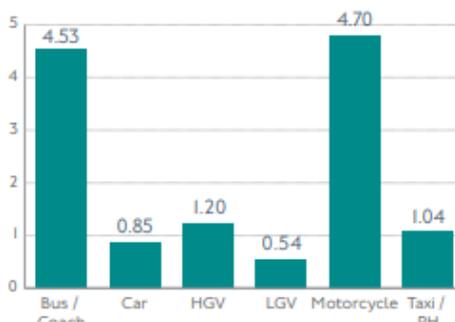
The Mayor's Vision Zero Action Plan recognises that buses and coaches are disproportionately involved in road traffic collisions given their share of traffic. Over the past decade, the number of people killed or seriously injured from a collision involving a bus or coach has decreased by 55 per cent. Despite this, between 2014 and 2016 36 people were killed and 480 people were seriously injured in collisions involving buses and coaches.⁶

Figure 15: Collisions resulting in death/serious injury for pedestrians by vehicle



The number of collisions resulting in death or serious injury for pedestrians is higher for cars than any other type of vehicle.

Figure 16: Risk of motor vehicles being involved in fatal or serious injury collisions for people walking

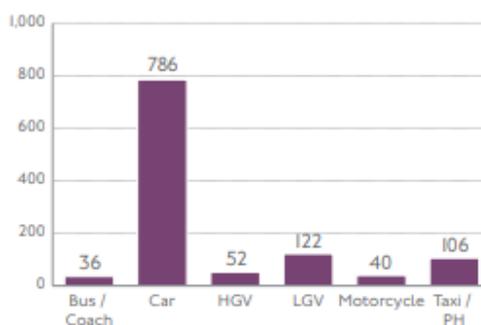


For example, buses and coaches are 4.53 times more likely to be involved in a collision resulting in fatality or serious injury to a pedestrian relative to their share of traffic.

⁶ Mayor of London, Vision Zero Action Plan, July 2018

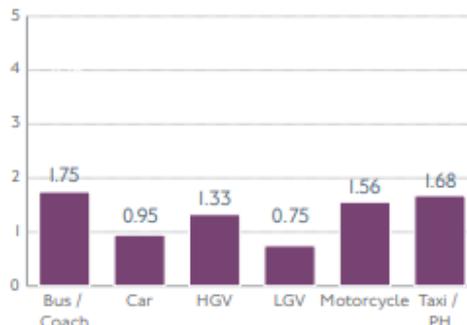
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Figure 18: Collisions resulting in death/serious injury for cyclists by vehicle



The number of collisions resulting in death or serious injury for cyclists is higher for cars than any other type of vehicle.

Figure 19: Risk of motor vehicles being involved in fatal or serious injury collisions for people cycling



For example, buses and coaches are 1.75 times more likely to be involved in a collision resulting in fatality or serious injury to a cyclist relative to their share of traffic.

Figure 2: graphs showing collisions resulting in death or serious injury for pedestrians and cyclists 2014-16

The Mayor’s Transport Strategy makes a number of commitments around bus safety, many of which are expanded upon within the Vision Zero Action Plan (see **appendices 1 and 2**). A key policy in the MTS relates to the implementation of Vision Zero in London:

Policy 3: *The Mayor, through TfL and the boroughs, and working with stakeholders, will adopt Vision Zero for road danger in London. The Mayor’s aim is for no one to be killed in or by a London bus by 2030, and for all deaths and serious injuries from road collisions to be eliminated from London’s streets by 2041.*

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Figure 3: summary of the key road safety targets set out in the Vision Zero Action Plan⁷

More recent bus safety data shows that injuries on board and involving buses continues to be a problem. There has been some progress with reducing injuries on buses – there were 1,098 injuries in Q3 of 2018/19, which was a fourteen per cent improvement compared to the same quarter last. The top four causes of injury were slips, trips and falls; struck by/against object; trapped fingers/limbs; and collisions. There has been a concerning rise in the number of people killed or seriously injured on/by buses. In Q3 2018/19, the number of people killed or seriously injured, reported by, or to, the police rose by 10 per cent compared to the same quarter last year.⁸

⁷ Mayor of London, Vision Zero Action Plan, July 2018

⁸ TfL, Customer service and operational performance report, quarter 3 (16 September 2018 – 8 December 2018)

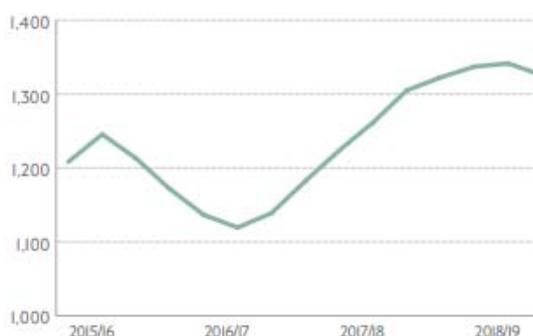
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Customer injuries Past five quarters

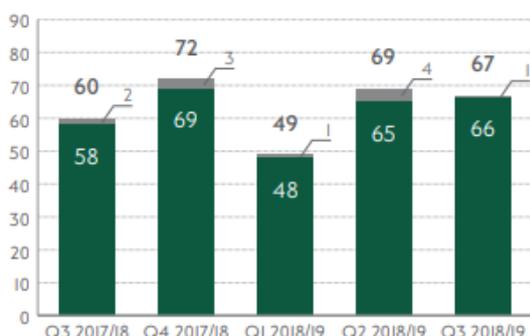


■ Minor ■ Major

Moving annual average



People killed or seriously injured* Past five quarters



■ Seriously injured ■ Killed

Annual totals*

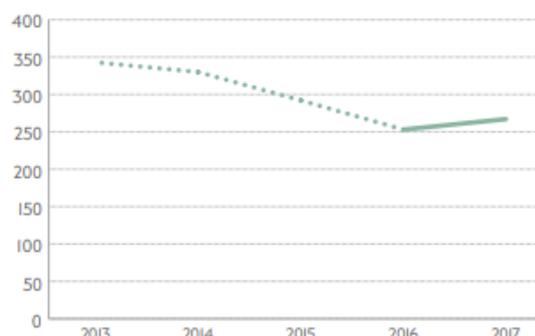


Figure 4: customer injuries and people killed or seriously injured by buses⁹

⁹ TfL, Customer service and operational performance report, quarter 3 (16 September 2018 – 8 December 2018)

*note that for the KSI annual totals, figures from the end of 2016 have been reported using a new system (COPA). The dotted line in the graph (2013-16) shows back-estimated figures following analysis undertaken with the Transport Research Laboratory to indicate how incidents would have been reported under this system.

Tram and bus safety

TfL launched its bus safety programme in 2016. This programme now has ten main activities:

1. Carry out in-depth bus collision data analysis
2. Promote a culture of transparency and publish data wherever possible
3. Improve safety monitoring and assurance processes among operators, and increase emphasis on safety in contract and performance management
4. Improve bus vehicle design and develop the first Bus safety Standard.
5. Launch the Sarah Hope Line for victims.
6. Develop a new bus driver training course.
7. Reduce passenger injuries due to slips, trips and falls.
8. Investigate and manage fatigue risk among bus drivers.
9. Launch the Bus Safety Innovation Fund
10. Work in partnership, including with the MPS and the national Confidential Incident Reporting Analysis System for Transport (CIRAS)¹⁰

The bus safety standard

TfL is working with bus operators and manufactures to deliver a bus-safety standard. This involves:

- Mandating the fitting of speed-limiting technology to all buses in TfL's fleet, starting with new buses entering the fleet from 2018.
- Trialling technologies such as Autonomous Emergency Braking.
- Requiring the design in new bus interiors to reduce the frequency and impact of passenger slips, trips and falls.
- Improving direct and indirect vision for drivers.
- Redesigning the front of buses to reduce the impact of collisions.
- Investigating the use of features to alert pedestrians and road users to the presence of buses.¹¹

¹⁰ Mayor of London, Vision Zero Action Plan, July 2018

¹¹ Mayor of London, Vision Zero Action Plan, July 2018

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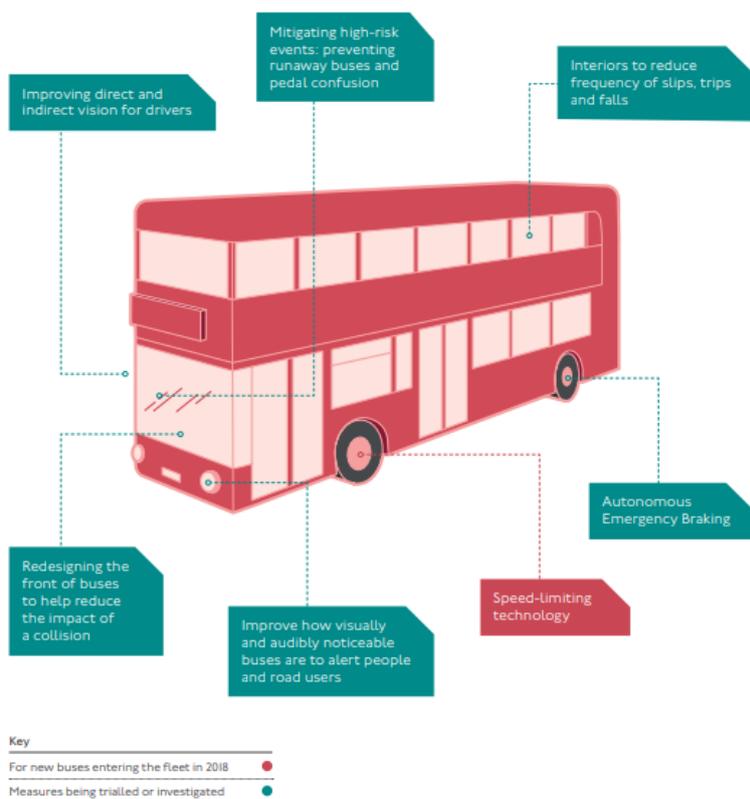


Figure 5: diagram outlining the key changes being made to London’s buses as set out in the Vision Zero Action Plan¹²

Previous work of the London Assembly

Tram safety

The committee has not done any recent work looking at London’s tram network or tram safety.

Bus safety

In July 2017, the Transport Committee published its report on bus safety, ‘Driven to distraction – tackling safety on London’s buses’. The investigation considered recent trends in road traffic collisions involving buses and incidents on board buses. The Committee received a large number of written submissions and held meetings with TfL, road safety experts, bus drivers and operators.

TfL accepted several of the recommendations set out in the report. For example, the committee recommended that TfL should introduce a direct link between senior staff bonus payments and bus safety performance. TfL responded that senior staff bonuses were linked

¹² Mayor of London, Vision Zero Action Plan, July 2018

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to its new scorecard which includes a target for reduction in Killed or Seriously Injured (KSI) casualties.

Since the publication of the report, TfL has updated the committee on its progress implementing the recommendations. **Appendix three** outlines the recommendations from the committee's 2017 report and the progress TfL has made against these recommendations to date.

The investigation

Proposed terms of reference

The terms of reference have not yet been agreed with members, but the following is suggested:

1. To challenge TfL on the progress it has made on bus safety since the committee's report in 2017.
2. To investigate the progress TfL has made on tram safety following the Croydon tram overturning in 2016.
3. To identify wider learning for safety across the transport network and developments in safety technology

Key questions for the investigation

Below are some suggested questions for this investigation.

Tram safety

- What have been the key challenges in implementing the recommendations from the Croydon tram derailment investigation?
- What engagement has TfL undertaken with tram drivers following the introduction of new technology such as the driver detection device?
- How is TfL continuing to share information with the community and tram users following the Croydon tram derailment?
- How is Tram Operations Limited (TOL) working with drivers to manage risks around fatigue?
- What feedback have you had on your new customer complaints process?
- UK trams was undertaking research to explore what appropriate automatic responses would be if a low level of driver attentiveness is detected. What progress has been made on this?
- How has TfL shared learning from the Croydon tram derailment with other tram providers in the UK?

Bus safety

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- What progress has been made on the bus safety standard?
- What plans are there to retrofit buses in line with the bus safety standard?
- When TfL will publish the independent report on bus driver fatigue?
- What progress has been made in providing toilet facilities for bus drivers?
- What wider learning could be taken from how collisions are investigated on other parts of the Transport network?
- In what ways is Vision Zero a different approach to road safety? How is this informing TfL's work on bus safety?

Methodology

Desk research

Desk research will include

- Reviewing a range of documents including: The Mayor's Transport Strategy; the Vision Zero Action Plan; TfL's scorecard; TfL's board papers
- Data analysis of recent collision data for incidents on and/or involving buses
- Analysis of international best practice

Committee meetings

Members have agreed to use the meeting on 15 May to discuss bus and tram safety. It is proposed that this meeting is split into two panels.

Tram safety panel

Guests for this panel could include:

- Mark Davis/Jonathan Fox, TfL
- Mark Phillips, Chief Executive of the Rail and Safety Standards Board
- Tram Operations Limited
- British Transport Police (BTP)

Bus safety panel

Guests for this panel could include:

- Claire Mann, Director of Bus Operations, TfL
- Stuart Reid, TfL (Vision Zero)
- A bus operator
- Representatives from walking and cycling groups
- A road safety charity

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Additional ideas

- Call for evidence
- Round table with tram drivers
- Update briefing from TfL
- Site visit – Members could visit a bus depot to look at new safety features/programmes
- Site visit – Members could visit a tram depot

Suggested output

Tram safety: A short letter or report to the Mayor and TfL addressing any issues arising from the meeting.

Bus safety: a short update output, which highlights the recommendations the committee made in 2017, which of these TfL implemented, and where the committee thinks further progress is needed from TfL. This would be aimed primarily at TfL and transport safety stakeholders.

Webpage: The committee could also have an investigation page on 'Transport safety' which it keeps updated with recent meetings, outputs and correspondence on transport safety.

Communications strategy

Area	Activity
Media	Operational Notes for meetings
	Press release and quote for output
Social Media/Video/Graphics	3-5 posts - over two days
	Some graphics and web
	Static image for video and social
Public Affairs	Send report to key stakeholders to keep them informed
	Offer to meet to discuss

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Appendix 1: Policies and proposals relating to bus and tram safety in the Mayor's Transport Strategy

Policy 3	The Mayor, through TfL and the boroughs, and working with stakeholders, will adopt Vision Zero for road danger in London. The Mayor's aim is for no one to be killed in or by a London bus by 2030, and for all deaths and serious injuries from road collisions to be eliminated from London's streets by 2041.
Proposal 10	The Mayor, through TfL and the boroughs, will collaboratively set out a programme to achieve the Vision Zero aim of reducing the number of people killed or seriously injured on London's streets to zero
Policy 13	The Mayor, through TfL and the boroughs, and working with stakeholders, will seek to make the public transport network easier and more pleasant to use, enabling customers to enjoy comfortable, confident, safe and secure, informed and stress-free travel.
Proposal 52	The Mayor, through TfL and the boroughs, and working with other transport operators, will improve customer service across the transport system with a focus on: a) Improved staff training, including the training of bus drivers.
Proposal 54	The Mayor, through TfL and the boroughs, will improve bus accessibility by: a) Continuing to provide improved accessibility training to all bus drivers and working with operators to ensure they are meeting their requirements for the level of service that their drivers provide. b) Reviewing existing bus design, including opportunities for increasing wheelchair space and internal layout to ease movement and improve safety. c) Ensuring that new buses provide better accessibility for all users, including more on-board space for wheelchair users, improved boarding ramps, induction loops and consistent signage and messages regarding priority seating. d) Continuing to upgrade existing bus stops, including hail and ride route sections, so that they meet the wheelchair accessible standard, and ensuring that all new and amended bus stops will be wheelchair accessible as a minimum. e) Delivering a higher level of bus stop accessibility at key locations, such as major transport interchanges and key health and education hubs
Proposal 70	The Mayor, through TfL, will upgrade the tram system to improve its reliability and to increase its capacity by 85 per cent to/from Croydon by 2030.

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Appendix 2: Actions relating to bus safety in the Vision Zero Action Plan

Action 5	Introduce a world-leading Bus Safety Standard for the city's entire bus fleet, incorporated into all new London buses and bus operator contracts from the end of 2018.
Action 12	Enhance and drive excellence in collision investigation and learning by: <ul style="list-style-type: none"> a. The MPS providing enhanced scene management and evidence gathering training and equipment to MPS Roads and Transport Policing Command first responders b. TfL working with the police and other delivery partners such as bus operators, to embed a new framework for improved, systematic information sharing and post-collision learning
Action 13	TfL, the police and other partners will work to improve justice and care for the victims of traffic collisions by: <ul style="list-style-type: none"> a. Publishing through TfL media channels the criminal justice outcomes of fatal and life-changing or life-threatening collisions that proceed to prosecution b. Promoting the use of driving ban by magistrates for repeat offenders and those accumulating 12 penalty points on their license c. Signposting victims of collisions to the most appropriate restorative justice and post-collision support services d. Exploring options for extending the Victims' Commissioner for London's brief to include victims of road crimes, and victims of road collisions where no crime has been charged
Action 14	TfL, boroughs and the police will monitor and record a range of indicators to measure the impact of London's road danger reduction programme, and publish the results annually on the TfL website.
Action 15	TfL will work with its key partners, including vehicle manufacturers and the Government, to capitalise on opportunities for innovation, including the use of data and new and emerging vehicle technology.
Action 16	TfL will establish a stakeholder advisory panel to oversee implementation of this plan.

Bus and tram safety

Appendix three: Recommendations from the committee's 2017 bus safety report and responses from TfL

	Recommendation	Progress	Summary – original response to committee	Subsequent updates from TfL (March 2018)
1	TfL should set safety targets for bus operators and integrate these into Quality Incentive Contracts (QICs).		<p>TfL has developed two new measures for operators to improve safety: Bus Operator Safety Performance Index (SPI) and Bus Operator Health, Safety and Environment Assessment Tool.</p> <p>However, TfL will not put safety incentives in QICs as it believes this would encourage under-reporting of incidents by operators.</p> <p>The draft MTS also proposes new bus safety targets for TfL, as set out above.</p>	<p>TfL reiterated the point that “putting financial incentives into contracts can encourage under-reporting of incidents”</p> <p>TfL outlined that the SPI and Safety Maturity Measure provides them with the opportunity to include a safety specific metric in the route tender evaluation process.</p>
2	TfL should introduce a direct link between senior staff bonus payments and bus safety performance.		<p>TfL has developed a new scorecard to determine senior staff bonuses, which includes a target for reduction in Killed or Seriously Injured (KSI) casualties.</p>	-
3	TfL should improve bus collision data by amalgamating STATS19 and IRIS datasets and more accurate reporting of long-term trends.		<p>STATS19 and IRIS will not be amalgamated but TfL is seeking to introduce more consistency, including through the roll-out of the Metropolitan Police Service's new Case Overview and Preparation Application (COPA) system, with handheld devices for offices to record details of incidents.</p> <p>TfL has also reviewed using hospital episode data, but found that this would depend on further work by the Department for Transport and the NHS.</p>	-

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			TfL has commissioned new in-depth research into bus incidents to identify trends and inform the bus safety programme.	
4	TfL should commission an independent investigation into bus drivers' working conditions, with a focus on the causes of fatigue.		TfL will not commission a review on this topic. TfL maintains that its new safety measures will encourage operators to address any risks. TfL will also seek to share existing evidence on combating fatigue with bus operators.	"To better understand the extent and impact of driver fatigue, we will be commissioning some independent research which will involve London's bus drivers. In addition, we are already working with two operators to trial fatigue detection systems and we will ensure that lessons learnt from the investigations into the Croydon tram tragedy are shared and applied across TfL"
5	TfL should work with operators to reduce the number of distractions bus drivers face, covering vehicle maintenance, toilet provision, radio contact, and bus lane and bus stop infrastructure. ¹³		TfL will continue to work with operators to ensure drivers have the optimum environment for the delivery of a safe service. TfL has committed to ensuring that every bus route has a toilet by autumn 2017, and that every bus route has a toilet open all hours by the end of 2018.	
6	TfL should take responsibility for bus driver safety training, as it has for customer service training.		TfL will not take responsibility for safety training. TfL is working with operators to develop safety training materials for bus drivers and driving instructors.	"We are taking direct responsibility for defining, procuring and managing the bus driver safety course as we did with Hello London. Hello London was delivered to bus drivers by an independent training company on private premises and the new bus driver safety course will be delivered by

¹³ David Kurten AM of UKIP noted an objection to this recommendation.

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				<p>bus operator training staff on bus company premise. Our input into both courses is the same.”</p> <p>An independent provider will develop the safety training programme.</p> <p>“Embedding the process within the bus operators’ own training systems will encourage operators to take ownership of the safety messages delivered through the course, and the impact on their drivers’ behaviour.”</p> <p>TfL has also committed to developing a proposal to provide security training for bus drivers.</p>
7	TfL should commit to a publication date for the Bus Safety Standard (BSS) and undertake a cost/benefit analysis for retrofitting the BSS to the entire bus fleet.		<p>TfL will publish a roadmap for the BSS in winter 2017 and it will be written into the London Bus vehicle specification by the end of 2018.</p> <p>TfL has commissioned a series of work packages to test the feasibility and benefits of measures in the BSS. There will be a cost/benefit analysis to determine whether each measure is suitable for retrofit.</p>	
8	TfL should conduct a review of bus maintenance practices and work to understand the scale of the bus engineer shortage.		<p>TfL will not conduct a specific review on these issues.</p> <p>There are regular Bus Operator Engineering Forums where maintenance issues are discussed.</p>	

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9	TfL should clarify that the Confidential Incident Reporting and Analysis Service (CIRAS) can be used as a first-line reporting tool, and communicate information about CIRAS to all drivers.		<p>TfL disagrees that CIRAS should be used as a first-line reporting tool.</p> <p>However, TfL will review whether promotion of CIRAS has been embedded in driver training and induction through its Safety Maturity measure.</p>	<p>CIRAS' states in its mission statement that "we are not a whistle blowing service"</p> <p>"CIRAS is always available as an alternative reporting route if needed."</p> <p>"Our bus operators do also provide a confidential reporting system internally which includes the ability to report Health and Safety concerns".</p>
10	TfL should carry out a review of how bus incidents are investigated in London, including consideration of making investigations independent, ensuring consistency and distributing good practice.		<p>TfL agrees that incident investigations should be conducted by an independent body, as they are in other transport sectors.</p> <p>TfL argues that it does take steps to ensure consistency and good practice, and is keeping these steps under review.</p>	
11	TfL should publish an update on the Bus Safety Standard in January 2018.		TfL will publish an update in January 2018.	