Safety and Security Panel

Date: **19 May 2025**

Item: **Bus Safety Overview**

This paper will be considered in public

1 Summary

1.1 This paper provides the Panel with an overview of trends and performance relating to bus safety and the measures we have in progress or planned to support in meeting our 2030 TfL Safety Strategy and Mayor's Transport Strategy (MTS) Vision Zero targets.

2 Recommendation

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

3 Background and Context

3.1 Improving safety on our bus network is a vital priority for improving safety more widely on London's roads. It is a key element of our Vision Zero target to eliminate death and serious injury on London's transport network by 2041. As well as a policy imperative, we also have additional obligations and opportunities as the primary contractor of bus services in London. To deliver safety benefits as soon as possible, we have several targets for 2030, with bus safety contributing to:

(a) MTS: no-one killed on or by a bus (tracked via police STATS19 data for the public highway, on calendar years to align with Department for Transport requirements), and a 70 per cent reduction in number of people killed or seriously injured on the road network (from 2010-14 baseline). STATS19 data definitions excludes medicals, intentional acts of harm, assaults between members of the public and incidents that occurred on private land; and

(b) TfL Strategy: halving customers killed or seriously injured (from 2022/23 baseline) and no colleagues to be killed or seriously injured (tracked using bus operator and TfL Safety, Health and Environment (SHE) incident reporting in financial years to align with TfL scorecard and internal metrics).

3.2 The use of multiple data sources ensures we capture all type of incidents involving buses including those with other users of the road network, our customers and colleagues on both the public highway and our own or private land.

3.3 Progress has been made in reducing the number of people killed and seriously injured in collisions involving buses, however, we know we need to do more. We will also continue to ensure that we are responding to persistent and new challenges. Sadly, in the 2024 calendar year there were 13 tragic fatalities involving buses, the highest for over 10 years. In the last five years, four people were killed

walking in, or in close proximity to, bus stations. In 2025, we received a Notice of Contravention (NoC) from the Health and Safety Executive (HSE) relating to driver monitoring and communication at Walthamstow bus station, having previously received NoCs for Walthamstow (March 2024) and for Victoria bus station (December 2022).

3.4 Our 2023 Bus Safety Strategy sets out the extent of the challenge and approach to tackle bus safety around the Safe System pillars of Safe Speeds, Safe Streets, Safe Behaviours, Safe Vehicle and Post-collision Support and Investigation.

3.5 This strategy is designed to adapt and respond to emerging issues. Considering each potential contributory factor aims to ensure that, should one part of the system 'fail', another part may act to prevent the incident or reduce severity. A continual cycle of incident review will support in strengthening the programme and ensuring we focus on the right areas. Our analysis is enhanced through working with stakeholders internally and across the bus industry, technical and academic experts and through partnerships with the Bus Centre of Excellence's Bus Knowledge Sharing and Incident Network and International Bus Benchmarking Group.

3.6 Buses do not operate in isolation and wider activities supporting bus safety are delivered via our Vision Zero and Bus Action Plans, Colleague Safety Strategy and operational, contract management and assurance activities.

3.7 This paper sets out a review of bus safety performance and existing measures, identifying areas of focus to support meeting our 2030 targets.

4 Bus Safety Performance

Summary

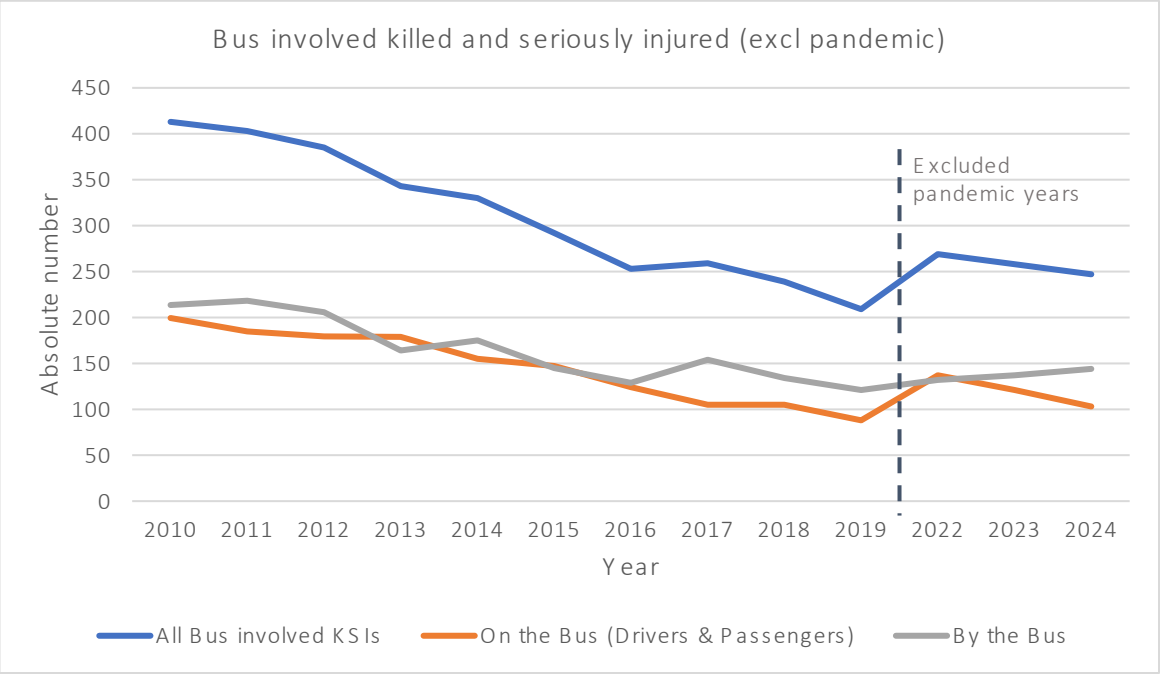
4.1 Performance relates to TfL buses (excluding private coaches, charter buses and Dial-a-Ride).

4.2 Our Bus Safety Programme has been running since 2016 and has made considerable progress in reducing bus involved injuries. By 2022, we achieved a 65 per cent reduction in the number of people killed, and 54 per cent reduction in the number of people killed or seriously injured, by a bus from the 2005-09 baseline (updated from 2023 to 2010-14 average). Buses continue to be the safest form of transport per million passenger journeys, and least likely to be involved in a collision killing or seriously injuring other road users, but we cannot be complacent.

Target: 70 per cent reduction in people killed or seriously injured on London's streets by 2030 (all modes) from 2010-14 baseline (Police reported, STATS19)

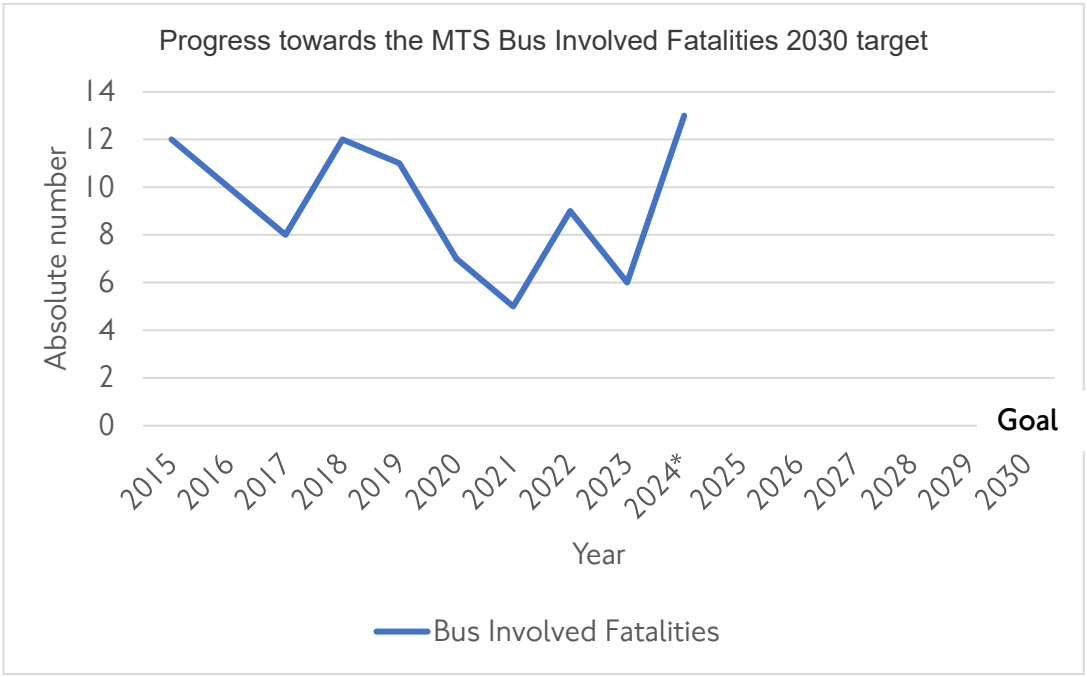
4.3 Provisional data from 2024 shows a 34 per cent reduction in the number of people killed and seriously injured in collision involving a bus (compared to 24 per cent fewer people killed or seriously injured by any mode) from the new baseline 2010-14 used since 2023. Despite a downward trend pre-coronavirus pandemic, the number of people killed and seriously injured post-pandemic are back to 2016/17 levels. There was an increase in those injured on board buses post-pandemic,

which may have settled, but there appears to be a slight upward trend in people being injured in collisions involving people outside of the bus.



Target: No-one killed on or by a bus by 2030 (Police reported, STATS19)

4.4 In 2024 a total of 13 people died in incidents involving a bus, the highest number recorded for over 10 years. There were 11 people killed in collisions involving a bus, and two people died in incidents related to falls on a bus.



*2024 data is provisional

4.5 Small numbers of low probability events mean it is not possible to determine definitively whether this represents a worsening in bus safety or statistical

variability. Buses remain the safest way to travel on the roads, carrying more people than any other transport mode. We must and continue to thoroughly investigate every fatality to learn and prevent future incidents.

4.6 The categories of road users most likely to be seriously injured in incidents involving a bus remain broadly consistent over time, with the majority being those involved in collisions outside the bus. The highest is pedestrians (32 per cent) followed by pedal cyclists (12 per cent), motorcyclists (six per cent) and car occupants (five per cent). Those on the bus account for four per cent, and other one per cent.

4.7 Representation differs for fatalities, where pedestrians make up 63 per cent, pedal cyclists five per cent, motorcyclists nine per cent and car occupants four per cent. Bus occupants make up 18 per cent and bus drivers one per cent of fatalities.

4.8 Serious injuries and fatalities do not always arise from causes directly related to the bus operation. Fatality figures include, for example, car occupant deaths where a vehicle hits a stationary bus.

Target: Halving customers killed or seriously injured by 2030 (from 2022/23 baseline) (Operator and TfL SHE Reported)

4.9 Of the 223 customers killed or seriously injured across all TfL modes in the baseline year 2022/23, 93 were travelling on a bus, three of whom were fatally injured. In 2023/24, 56 of the 204 customers across all TfL modes were seriously injured travelling on a bus and one person killed. Provisional figures for 2024/25 suggest there were 78 bus serious injuries and one bus customer fatality of the 212 customers killed or seriously injured on all modes. This is an increase in the number of bus customers seriously injured in 2023/24 but represents a 15 per cent reduction from the target baseline year.

Target: Zero colleagues (including contractors) killed or seriously injured by 2030 (Operator and TfL SHE Reported)

4.10 Provisional figures for 2024/25 suggest that four bus colleagues were seriously injured, with no fatalities. This is an improvement on the seven recorded for 2023/24 and five in 2022/23. All these serious injuries were to bus operator employees.

Towards a detailed understanding and evidence-led programme

4.11 While summary incident reporting is useful to review overall numbers and possible trends or areas of focus, it is limited in detailing the context or multiple, complex contributory factors and causes of incidents. We can gain further insight through investigations and analysis of the most serious incidents. We consider the circumstances and wide range of contributory factors in each fatality separately asking, ‘What may have prevented this incident?’ and ‘What could have reduced the severity of injury?’. This informs the development of counter measures and mitigations. We completed the first round of this research in 2018 and are due to commence an update using 2019-2024 data, this year (2025).

4.12 In periods between research, we review the most serious incidents as they occur. Bus operators are required to carry out investigations of collisions, identifying root causes and corrective actions. Our Notification and Investigation of Major Incidents process was developed to ensure incidents are reported and investigated to a high standard, including all relevant information that may prevent a similar incident happening again. Where a fatality occurs on TfL or private land (for example a bus station) we carry out our own investigation, including experts from TfL and the operator.

4.13 This evidence-based approach has been and continues to be the foundation of our Bus Safety Strategy and wider supporting Vision Zero activities.

5 Bus Safety Programmes and Activities

Our Approach: A Safe System

5.1 As described above, our Bus Safety activity is structured around five Safe System Pillars detailed in our 2023 Bus Safety Strategy. This section summarises the activity under these pillars. Interventions include aspects across multiple system pillars, ensuring they work together. For example, improving driving standards includes work to limit speeds and ensure compliance, assessing routes and risks on streets, supporting behaviour through training, and looking after driver health and wellbeing or providing optimum vehicle cab design to enable safe driving.

Strengthening each of the Safe System Pillars

Safe Speeds

5.2 Reducing speeds reduces severity of injury, in both bus involved and other road user collisions. Over 5,300 vehicles (approximately 60 per cent of our bus fleet) are fitted with Intelligent Speed Assistance (ISA), which uses GPS and speed limit data to ensure buses remain within the signed speed limit. New vehicles entering the fleet have ISA fitted as standard and we continue to retrofit older vehicles. Bus ISA is based on the London Digital Speed Limit Map, setting out the speed limits across all public roads in London, approximately half of which are now 20mph.

5.3 We monitor use of speed and speed limit compliance. Our Speed Compliance Tool tracks excess speed incidents and allows for network-wide analysis, our Driver Quality Monitoring scheme assesses individual drivers, and most bus operators have telematics systems which record speeding and other events such as harsh braking and acceleration. Safe speed is an ongoing focus of operators' communications with drivers, with many using data from the above sources to target their messaging and engagement appropriately.

Safe Streets and Safe Bus Stations

5.4 Buses operate in complex street environments, with known issues and potential for unpredictable conditions or events. Route risk assessments are conducted by the bus operators and kept under review for every London bus route, and the information collected is used by the operators in driver training. Assessments are complemented by the operators' use of telematics data, which can be used to highlight 'hotspots' based on a richer dataset than collision or incident data alone.

5.5 Bus involved collision data and operational considerations are used to inform wider street improvement schemes, such as Safer Junctions programmes or the positioning of bus stops around cycle lanes or pedestrian crossings.

Bus Stations

5.6 We are using behavioural science reviews to identify desire lines, common behaviours and near misses to inform bus station layout improvements. Improvements at Victoria bus station were delivered in December 2023, and since the tragic fatality there in January 2024 we have delivered further changes, including measures to encourage and require bus drivers to treat Terminus Place as effectively part of Victoria bus station, driving at slower speed and being particularly alert for pedestrians. In 2024/25 we completed bus station layout improvements at Walthamstow, and Phase 1 improvements at Harrow and Edgware bus stations. A prioritised programme for 2025/26 has been developed with a target of completing a further seven bus station layout improvements.

5.7 Following the tragic death of a pedestrian at Walthamstow bus station on 15 December 2023, the HSE in March 2024 served a NoC on TfL. The HSE identified a failure to provide safe crossings for vehicles and pedestrians. In response TfL delivered temporary and then permanent signalised pedestrian crossings at the north and west of the bus station, which were completed in December 2024. In March 2025 the HSE issued another NoC having observed examples of drivers not allowing pedestrians priority, and other issues, at Walthamstow bus station following completion of the physical works. It is clearly disappointing that there were contraventions, and we are committed to redoubling all efforts, alongside the bus operating companies, to ensure such issues do not continue so that our safety ambitions can be realised.

5.8 Our response to the March 2025 NoC focuses on two related elements: monitoring and communication/enforcement. We are implementing a new programme of monitoring. This will allow us to gather valuable data and assess any potential safety concerns or trends. We are initially piloting this process at Walthamstow, with plans to expand it across further sites.

5.9 For communication and enforcement, the Director of Buses has written to all bus operators instructing them to communicate the requirements for safe driving at all bus stations and to outline the measures they are taking to communicate and enforce these requirements. These issues will remain discussion points for review at appropriate governance meetings with all operators. To support this communication campaign, we have just finished filming a collaborative video with all our operators outlining driving requirements and role model safety behaviours expected at bus stations, and this will be available shortly to be shared with all drivers. If issues are identified through our programme of monitoring that require further communication with drivers, we will ensure this happens.

Safe Behaviours

Drivers/Colleague

5.10 Driving standards and driver alertness, health and wellbeing are critical to ensuring safe driving standards and responses to road conditions.

5.11 Following one of the 13 fatalities in 2024, the bus driver failed a drug and alcohol test. In autumn 2024, we carried out detailed assurance activity with all operators, assessing policies for drug and alcohol testing. The analysis of drug and alcohol testing practices across operators revealed all were compliant with policies and procedures, but there were some inconsistencies in training, data reporting and post-incident protocols. Some operators demonstrated strong adherence to best practices, but others required improvements in policy review cycles, staff training, and testing data management. This includes commitment from operators to test above the 10 per cent of drivers as per the bus operator framework agreement.

5.12 Recommendations include standardising policies to ensure uniform review cycles and training requirements, harmonising testing protocols and reporting, enforcing mandatory record keeping, new employee pre-employment testing and separate monitoring during probationary periods. We are working with the operators on the implementation of recommendations.

5.13 We are committed to understanding and managing the potential for driver fatigue. All London bus operators have comprehensive Fatigue Risk Management Plans in place. Last year, these were reviewed by an expert consultant and subsequently revised to ensure they met required standards. Approximately 400 buses have been fitted with fatigue detection technology, as fitted to most new cars, as part of a trial. Managers at bus operating companies have been trained to support drivers receiving an alert, signposting them to support from occupational health or employee assistance programmes. Data is being independently analysed showing the routes, times of day and operators most vulnerable to fatigue, allowing for analysis against rosters and targeting measures.

5.14 Loughborough University is working with us to consider whether the current system for driver medicals sufficiently safeguards the health and wellbeing of drivers. The research has been completed, with a report expected later this year.

5.15 A key area of work for the future Bus Safety Standard 2027 is the focus on holistic and ergonomic re-design of the driver's cab. This aims to support wellbeing and improve inclusivity, attraction, and driver retention by being aware of the risks for different groups and considering gender, disability, pregnancy, and other elements.

5.16 We continue to invest in improving bus driver welfare facilities. Good facilities are essential in improving safety and wellbeing as well as driver retention. Since 2017, new toilet facilities have been provided on 72 bus routes and a further 58 bus driver welfare facilities, such as toilets and mess rooms, have been renewed and upgraded. We have also formalised bus driver access to facilities at London Underground locations. This year we are on track to provide three additional driver toilets on the bus network and renewals of 17 driver welfare facilities.

Customers

5.17 We have strengthened our bus customer injury workstream, focusing on slips, trips and falls in response to these incident types resulting in serious and fatal injuries. Our customer injury Bus Safety Innovation Challenge will see sensor-initiated safety messaging being trialled on two bus routes this year (summer), as well as trialling a seat counter display indicating the availability of seating on the upper deck (winter). The trial of the original Routemaster 'Ding Ding' sound to indicate the bus is about to depart will shortly be rolled out on two bus routes, with the aim of nudging customers to hold on or find a seat before the bus departs. The trial of 'hold the handrail' posters in the stairwell is to be evaluated to determine whether the messaging is effective in changing customer behaviour. All trials mentioned above will be evaluated using CCTV analysis comparing a baseline with trial period, to see if the desired behaviour change has taken place.

5.18 Recent behavioural science research into slips, trips and falls included a behavioural audit reviewing available literature, in-depth review of CCTV from incidents on our buses, observational work, and bus driver and other stakeholder interviews. Recommendations from this work are focussed on using effective communications to nudge customers to carry out safe behaviours on buses.

5.19 Research at the world-leading testing facility University College London Person-Environment-Activity Research Laboratory (UCL PEARL) is carrying out stakeholder engagement with stakeholders including disabled bus customers and bus drivers on new lighting positions on buses. This will influence future lighting design on London buses.

Road users

5.20 As stated above, we need to consider all parts of the Safe System, including all the users of the network. Our wider Vision Zero work seeks to support road users in understanding risks and support safe behaviours and interactions on the roads.

5.21 Some fatal incidents have involved private vehicles hitting stationary buses, some of which were driving inappropriately for the conditions. We have road danger reduction marketing campaigns focusing on promoting safer road behaviours, improving awareness, and encouraging responsibility among all road users. We have two key campaigns in development, due to launch later this year:

(a) 'Riders Campaign' targeting drivers to get them to proactively look out for riders (motorcyclists and cyclists) and show the threats posed from failing to look; and

(b) 'Highway Code: Need to Know' targeting all London road users to help them to understand that not following the rules puts at-risk road users in danger.

5.22 We support improving road user behaviours through provision of free cycle and motorcycle training. Our training helps riders build knowledge and confidence. From 2024 we have engaged with Meal and Grocery Delivery companies to develop the Meal and Grocery delivery charter, to improve safety in this sector.

5.23 We also work closely with young people via schools and the London Transport Museum to provide the tools for safe and responsible travel on public transport, including how to cross the road safely when alighting from the bus, understanding bus stop bypasses, and staying safe on the bus, alongside other personal safety messages. Follow up sessions in Years 7 and 8 can also be booked if there have been reported problems with safety or anti-social behaviour in or around the bus.

Safe Vehicles

5.24 Our largest programme of work relates to the Bus Safety Standard (BSS), our specification for safety features to be included on all new buses. The first phase set out specifications for 2019, followed by 2021 and 2024.The BSS is reviewed on a three-yearly cycle corresponding with the bus manufacturers' development cycles.

5.25 Currently, 1,960 new buses (March 2025 figures) are in the London bus fleet that meet the BSS out of a total of 8,800 buses. This includes the first batches of vehicles which meet most of the 2024 BSS requirements, including optimised front-end design to reduce severity of injuries in collisions and enhanced interiors to protect passengers. Advanced Emergency Braking (AEB), a key technology in avoiding collisions, is currently being tested in 'shadow mode' to ensure it will operate correctly when 'live' by one bus manufacturer and planned by three others in 2025.

5.26 Our vehicle specification also includes technologies allowing us to better understand the causes of, and factors in, collisions. For example, footwell cameras provide a valuable source of information about driver actions prior to incidents. Footage is used to inform work to prevent and mitigate the impacts of pedal application error (where a driver mistakenly presses the wrong pedal), such as feasibility of accelerator suppression and continued roll out of brake toggling (where the accelerator can only be depressed once the brake has been pumped twice). This data is supplemented by further psychological research, driver training and assessment of options for vehicle design that may help to reduce the risk.

5.27 Phase 2 of the BSS is in development which will set out requirements for new buses in 2027, 2030 and 2033, based on the evidence from investigations, research and engagement with bus manufacturers, their tier one suppliers, bus operators, bus drivers, Unite and other stakeholders.

5.28 This iterative approach aims to ensure buses are as safe as possible now, while also working to continually improve standards as technology becomes available and respond to issues that we see on the network affecting safety. For example, responding to new road user modes (e.g. e-scooters), available monitoring technology or responding to changing demographics of those injured.

Post-collision support and investigation

5.29 We have outlined the importance of investigations above. Where required, we also drill down further ensuring any proposed measures will be effective at solving the problem without unintended consequences (e.g., research into braking and acceleration to ensure that AEB aiming to avoid a bus hitting a pedestrian does not result in unnecessary harsh braking that may seriously injure or kill a passenger).

5.30 Supporting victims of incidents post collision and their next of kin is an essential element of our response to incidents. Victims of collisions and their families are directed to support services Brake and RoadPeace – funded by TfL and the Mayor's Office for Policing and Crime to provide specialist support for victims of road collisions – and the Sarah Hope Line.

5.31 We are committed to improving how we engage directly with those affected by fatalities or life-changing injuries, and our new approach has seen the Director of Buses writing, through Family Liaison Officers, to families following recent incidents. This includes offering condolences, signposting to support and the opportunity to speak with the Director. These changes help support our culture of openness and transparency, improving our ability to learn from incidents and address any issues identified, reducing the likelihood of future incidents.

Ensuring quality of operations

5.32 The safe day to day running of our bus operation is paramount to meeting required safety standards. Bus operators must comply with all health and safety legislation or be subject to statutory investigation by the regulator where there is any non-compliance. We are highly proactive in our approach to monitoring and assessing compliance among our operators. Regular monitoring of engineering and driving standards supports consistent high standards, with instances of poor performance addressed and tracked with operators.

5.33 Operators are also subject to regular assurance visits which consider a number of issues including their compliance with legal requirements such as driver hours limits, their health and safety structure, employee processes and communications, meeting medical and fatigue risk management standards, and tracking and closing of actions. We work to support an open and collaborative culture with operators around serious incidents, aiming to create an environment where we learn from each other's experiences.

6 Summary and Next Steps

6.1 We have a clearly defined, evidence-led Bus Safety Programme to deliver our strategy, which builds on a day-to-day commitment to run a safe service. We have made lots of progress focusing within the bus operation, with the work on the vehicle through the BSS, engaging with drivers and in relationships with operators, and more recently working to improve bus station safety. We need to continue strengthening our bus operations measures, but now also widen our focus to Vision Zero to align work beyond bus operations. This includes continuing to reduce speeds and improve speed compliance, educating and messaging to other road users about risks in the road system and around buses specifically, diving deeper into how we better protect those waiting at and/or travelling from and to bus stops, shelters, and stations, through infrastructure improvements and behavioural campaigns.

6.2 Looking ahead to 2025/26, we expect to deliver:

(a) trials and evaluations of solutions from our Bus Safety Innovation Challenge to reduce customer slips, trips and falls as mentioned in section 5.17, which will inform priorities for wider roll out;

(b) all zero-emission buses coming into service meet the 2024 BSS (except for active AEB as we ensure this is working effectively in 'shadow' mode before switching to 'live');

(c) introducing ISA to more buses in the fleet to build on the nearly 60 per cent of buses currently fitted with the technology;

(d) continuing at pace the rollout of a new design to the front end of buses to reduce the impact of a collision with vulnerable road users, included in new buses entering the fleet; and

(e) continuing to work to make bus stations safer and delivering our prioritised programme for 2025/26 with a target of completing a further seven bus station layout improvements.

List of appendices to this report:

None

List of Background Papers:

None

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