

The Direct Vision Standard (DVS) and Safety Permit

One year on report

June 2022

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Executive summary

Historically Heavy Goods Vehicles (HGVs) have been disproportionately involved in more fatal collisions with Vulnerable Road Users (VRUs) than other motor vehicles. Between 2015 and 2017, a HGV was involved in 63 per cent of those killed while cycling and 25 per cent of those killed while walking. To tackle this issue and meet the Mayor's Vision Zero aim to eliminate all deaths and serious injuries from London's roads by 2041, Transport for London (TfL) launched the world's first Direct Vision Standard (DVS) in October 2019, with enforcement commencing on 1st March 2021. DVS seeks to improve drivers' direct vision through the cab windows of HGVs and prevent collisions caused by limited visibility.

To access and operate in most of Greater London HGVs must apply to obtain a Safety Permit, based upon a star rating from 0* (lowest) to 5* (highest). These ratings correspond to how much the driver can see directly from the cab windows. This indicates the level of risk to vulnerable road users, such as people walking, cycling or using powered two wheelers, near the vehicle.

If a HGV is rated 1-5*, a permit can be obtained upon application without the need to provide any additional evidence. However, if a vehicle is rated 0*, the operator needs to make the vehicle safer by fitting it with safe system improvements and must provide such evidence upon applying for a HGV Safety Permit.

This report sets out the impacts of the first year of the scheme's operation.

The key findings presented in this report are:

- In the first year a total of 191,769 permits had been issued. The majority of these, 112,259, were to 0* and 4,768 to 5*
- Average daily compliance rates are very high, with more than 94 per cent of HGVs in London now operating with a Safety Permit and hauliers reporting that they are building DVS requirements into future purchasing decisions.
- The number of fatal collisions involving an HGV where vision was cited as a contributory factor has fallen compared to previous years (six in 2021, compared to eight in 2020 and nine in 2019). The overall number of serious injuries involving HGVs has also fallen from 48 in 2017 to 17 in 2021.
- 0* rated vehicles accounted for four of the six fatal collisions in 2021 where vision was cited as a contributory factor, demonstrating the value of direct vision over other Safe System equipment. This will be an area of focus for Phase 2 of the scheme.

The DVS and HGV safety permit is a world leading scheme and has introduced new safety requirements for operators to meet in London that are not yet required elsewhere in the world. As such, it will be important to monitor the scheme over a longer period to fully evaluate its impacts.

1 Introduction

1.1 Scope

This report seeks to:

- Summarise the first-year impacts of DVS and the Safety Permit Scheme.
- Outline progress being made to define a Progressive Safe System (PSS) which will be required for any HGV over 12 tonnes entering London rated as 0-2* from October 2024.

1.2 Overview of current scheme

From 1st March 2021 all owners of HGVs over 12 tonnes (Gross Vehicle Weight¹) have been required to obtain a Safety Permit, based upon the star rating from 0* (lowest) to 5* (highest) to drive in London. These ratings correspond to the amount of visibility the driver has directly from the cab windows.

If a vehicle is rated 0* the operator must provide evidence that a Safe System has been fitted when applying for a permit to enter and operate in most of Greater London as seen in figure 1 below.

The DVS refers to the star rating attributed to each vehicle by the manufacturer and is the standard used by TfL to improve safety in vehicles. All owners of lorries over 12 tonnes entering or operating in Greater London need to hold a valid HGV safety permit to avoid receiving a Penalty Charge Notice (PCN).

Figure 1 below shows a map of the DVS operational area. The red lines on the map represent the London Borough boundaries with the blue lines showing the DVS enforcement area.

¹ 12 tonnes Gross Vehicle Weight is the definition of tonnage applied to all HGVs described in this report

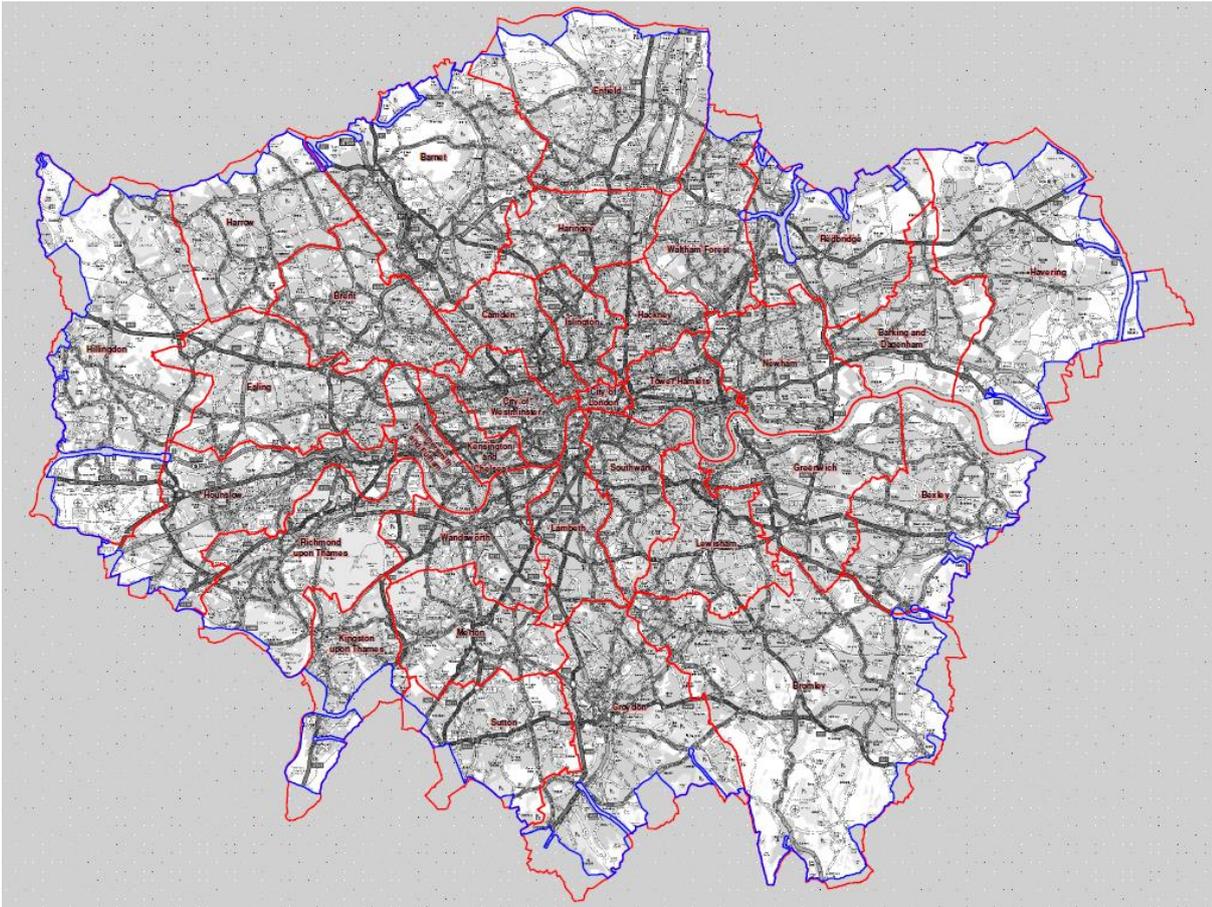


Figure 1 Operational DVS area.

The current Safe System requirements are shown in Figure 2 and listed below.



Figure 2 0* star rated HGVs - Safe System requirements

The Safe System requirements are:

1. Class V mirror must be fitted to the nearside of the vehicle
2. Class VI mirror must be fitted to the front of the vehicle
3. Side under-run protection must be fitted to both sides of the vehicle (except where this is impractical or proves to be impossible)
4. External pictorial stickers and markings must be displayed on vehicles to warn vulnerable road users of the hazards around the vehicle
5. A sensor system that alerts the driver to the presence of a vulnerable road user must be fitted to the nearside of the vehicle
6. Audible vehicle manoeuvring warning must be fitted to warn vulnerable road users when a vehicle is turning left
7. A fully operational camera monitoring system must be fitted to the nearside

From October 2024 all HGVs over 12 tonnes must be rated 3* or above to enter and operate in Greater London. Those vehicles which remain at 0-2*, must provide evidence upon application that the Safe System requirements in place at that time (known as Progressive Safe System or PSS) have been fitted to the vehicle to obtain a permit.

1.3 Data limitations

Although this report covers the first full year of DVS enforcement, ongoing monitoring will enable us to identify trends and longer-term impacts.

This is particularly important given that 2020 and 2021 were subject to some pandemic restrictions which had a significant effect on HGV activity and general traffic levels. By the final quarter of 2020 HGV traffic levels were 23 per cent lower than pre-pandemic levels while the number of cycle trips had increased by 6.4 per cent and walking trips had increased by five per cent over the same period. This may have changed the risk composition between motorised vehicles and people walking and cycling².

² All transport figures related to Travel in London report <https://tfl.gov.uk/corporate/publications-and-reports/travel-in-london-reports>

2 The DVS and HGV Safety Permit

2.1 Policy context: Direct vision and road danger reduction

The Mayor's Transport Strategy (MTS) Policy 3 states that the Mayor, through TfL and the boroughs, and working with stakeholders, will adopt Vision Zero for road danger in London. The Mayor's Vision Zero 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 9 (c) of the MTS states that the Mayor, through TfL, the boroughs and policing and enforcement partners, will work to ensure that vehicles driven on London's streets adhere to the highest safety standards, starting with a new Direct Vision Standard for HGVs.

In 2018, TfL published London's first Vision Zero action plan setting out a systemic approach under five pillars of action: safe speeds, safe streets, safe vehicles, safe behaviours and post-collision response. DVS is a key component of the safe vehicles pillar due to the strong link between direct vision and fatal collisions. The plan includes an action (6a) to launch the world's first Direct Vision Standard for HGVs in 2019 and to tighten the standards by 2024. TfL's 2019 Freight and Servicing Action Plan reinforces these commitments and sets out that the DVS standard will be increased to 3* from 2024.

Our systemic approach is designed to reduce risk to all road users by addressing the sources of road danger. Consequently, it is designed to mitigate the danger of using motorised vehicles in a crowded city and has a focus on the most risky vehicle types. In adopting this approach, the Vision Zero action pre-empted the latest version of the Highway Code, which sets out a hierarchy of responsibility whereby users of those vehicles with the greatest potential for harm bear the greatest responsibility for safe use.

2.2 Developing DVS and the Safe System

DVS is designed to minimise the risk to people walking, cycling or using powered two wheelers caused by limited driver vision. To meet this goal TfL worked with manufacturers, operators, suppliers, trade associations and the wider freight industry to develop standards for in cab design and increase the level of direct vision.

To allow operators time to change their fleets, but operate in a safe way, a Safe System was developed. This is applied to the lowest star rated vehicles and consists of items which are retrofitted to vehicles, e.g. blind spot mirrors or cameras to increase indirect vision.

Several phases of consultation took place between TfL and stakeholders during 2017 to 2019 to develop the DVS and the HGV Safe System.

The consultation process is outlined below:

- Phase 1 - (January to April 2017) – TfL set out the case for HGV driver direct vision and consulted on the outline proposals to introduce a DVS for HGVs in London and the principles of the Standard itself.
- Phase 2a – Policy consultation (16 November 2017 to 24 January 2018) – TfL outlined how it set the proposed DVS star rating boundaries and the process by which different options for implementation were assessed and used to develop the preferred HGV Safety Permit Scheme.
- Phase 2b – Further scheme proposals (8 January 2019 to 18 February 2019) – TfL consulted on further HGV Safety Permit Scheme proposals including the Permit application process, Safe System requirements and enforcement of the Scheme.
- Phase 2c - consultation: Safe System (25th April to 23rd May 2019) – TfL provided clearer guidance on the requirements for the Safe System mitigating measures.

Throughout this consultation process, TfL considered all responses and produced consultation reports for each phase along with a full Integrated Impact Assessment (IIA). The consultation process showed that 67 per cent of the total respondents either strongly agreed or agreed with the proposed Safe System mitigating measures (including cameras and mirrors).

Following the Phase 2a consultation a Safe System Advisory Group (SSAG) was set up with representatives from pedestrian and cycling groups, industry trade associations, vehicle manufacturers and government organisations to help expand and inform the detail of these proposals. The existing Safe System was subsequently developed following the results of the consultation exercises and the recommendations of the SSAG.

TfL also made a commitment to further raise safety standards from October 2024. This included keeping the existing Safe System under review, what is now referred to as the Progressive Safe System or, PSS. As such, TfL has recently commissioned a review of the

existing Safe System, undertaken by Loughborough University, to consider the latest technology and safety equipment which could be applied from 2024. This will ensure that the PSS uses the most advanced safety equipment and will inform a further consultation on the requirements for the second phase of the DVS development, due to take place in winter 2022.

TfL has also recently supported and communicated the changes made by the Department for Transport (DfT) to the Highway Code (HWC). The changes that have been made place more responsibility on those driving, who have the greatest potential to cause harm to others, and prioritise vulnerable road users. These changes complement the DVS scheme, combining behaviour change with improved vehicle safety standards.

To support the HWC campaign, TfL worked collaboratively with the DfT on the development of their campaign and TfL also financially supported it within London. The campaign, included social media, radio and digital content.

3 Enforcing DVS: First year overview

3.1 Scheme overview

As of 28 February 2022, 191,769 permits had been issued for HGVs entering and operating in Greater London, with 91 per cent of all permits issued for 0-2* rated vehicles. A breakdown of all permits issued is illustrated at Figure 3 below:

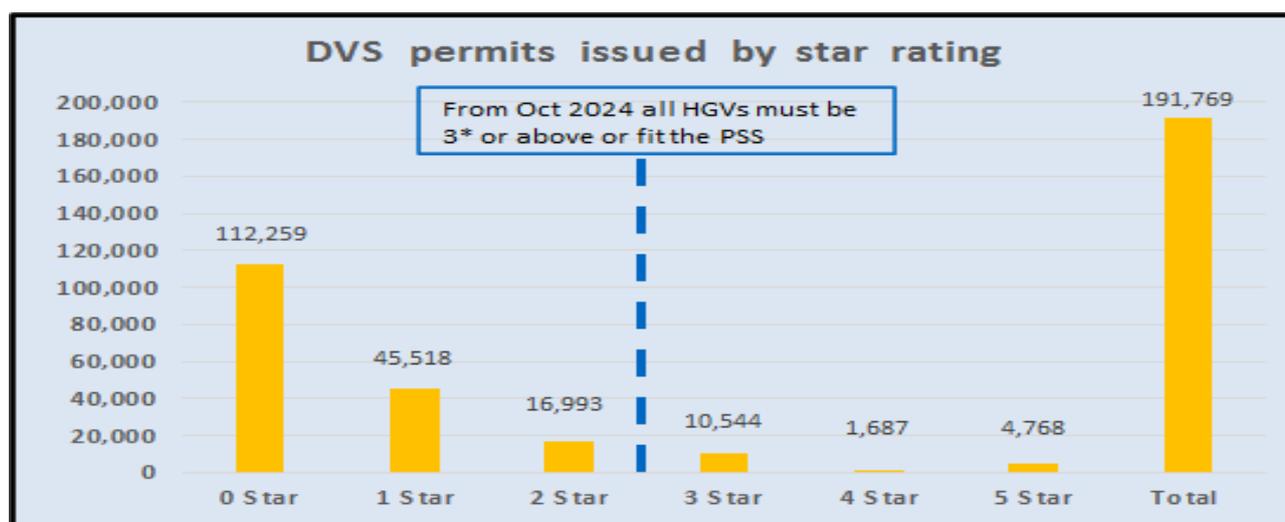


Figure 3 DVS permits issues by star rating

Although the majority of permits were issued to 0 – 2* rated vehicles this reflects the current situation within most operators’ fleets. For example, the average lifespan of a HGV is around seven years and can cost anywhere between £40,000 and £120,000 to replace, Therefore, operators generally wait until a vehicle is at the end of its lifecycle before renewing. To obtain a 0* permit an operator must apply to TfL showing evidence that the HGV over 12 tonnes has been fitted with a Safe System.

DVS was launched in 2019 and the effects of the policy on the composition of fleets will take time to filter through. However, feedback from the freight industry is that DVS standards are already being factored into purchasing decisions. Without DVS it is unlikely that manufacturers will have produced HGVs to the 5* standard nor will it be possible to further reduce collisions where vision is a contributing factor. DVS is already playing an important role in driving improvements to vehicle design and we expect greater numbers of higher star rated vehicles to enter service over the coming years.

Focus on 5* HGV operators



Companies such as Tideway, F.M Conway and Tarmac have already invested in 5* rated vehicles to improve safety standards on London's roads.

These operators are constructing some of the capitals largest infrastructure projects making thousands of HGV road trips each year. It is very encouraging to see these vehicles operating to the highest direct vision standards

and act as a showcase for best practice within the freight industry.

Steve Hails, Director of Health, Safety and Wellbeing, at Tideway said: *"Ensuring the safety of not only those working on site, but also those potentially impacted by our operations, including vulnerable road users, is one of Tideway's core values. Our goal is to transport most of our material by river, significantly reducing the amount of HGVs on the road during construction. Where this isn't possible, we've pledged to use the safest vehicles available when working on the project".*

Peter Parle, senior transport manager at FM Conway, said: *'Safety is at the heart of our business and the DVS five-star rated Mercedes and Dennis tipper grabs that we use give us high performance at the same time as the safest cab view for our drivers and for the cyclists and pedestrians they share the streets with.'*



3.2 Enforcing DVS

The DVS is enforced under a London Councils Traffic Regulation Order (TRO). The relevant statutory procedure is set out in the Local Authorities (Traffic Orders) (Procedure) (England and Wales) Regulations 1996 (SI 1996/ 2489 as amended). Enforcement is undertaken in several ways:

- Automatic Number Plate Recognition (ANPR) system – checking the Vehicle Registration Mark (VRM) of each HGV entering and operating in Greater London against the DVS permit database
- TfL Compliance, Policing, Operations and Security (CPOS) – Work-Related Road Risk (WRRR) compliance officers conducting checks on vehicles entering TfL sites
- Met Police Commercial Vehicle Unit (CVU) – conducting roadside checks on HGVs entering and operating in Greater London

The DVS was due to begin enforcement from October 2020. Due to the disruption caused by the pandemic to supply chains and additional demands placed on the freight industry, TfL moved the proposed enforcement date from October 2020 to 1 March 2021 to help ease the pressure.

In addition, a further 90-day grace period, running from 1st March to 29th May, exempting vehicles from enforcement activity was offered to those operators which had ordered safety equipment to be fitted to their vehicle and registered those vehicles with TfL before 1st March 2021.

Average daily compliance rates during the first year of enforcement were at 94.2 per cent. This represents a very high level of compliance and demonstrates that the haulage industry has proactively responded to the scheme, ensuring vehicles in London comply with the requirement to have a Safety Permit.

During the first month of operational enforcement, March 2021, TfL did not issue any PCNs. Instead warning letters were issued to operators which were non-compliant. These measures offered operators time to adapt to requirements and avoid PCNs.

From April 2021 to March 2022 71,310 PCNs were issued. The highest numbers of PCNs were issued in the first few months of implementation and peaked in July 2021. Since then, the amount of PCNs issued has been lower and by the end of the first year was in decline. Any revenue generated from PCN's is automatically reinvested into transport projects in London which meet MTS goals, including those schemes which meet Vision Zero objectives such as DVS.

Figure 4 below shows PCNs issued by month during the first year of enforcement.

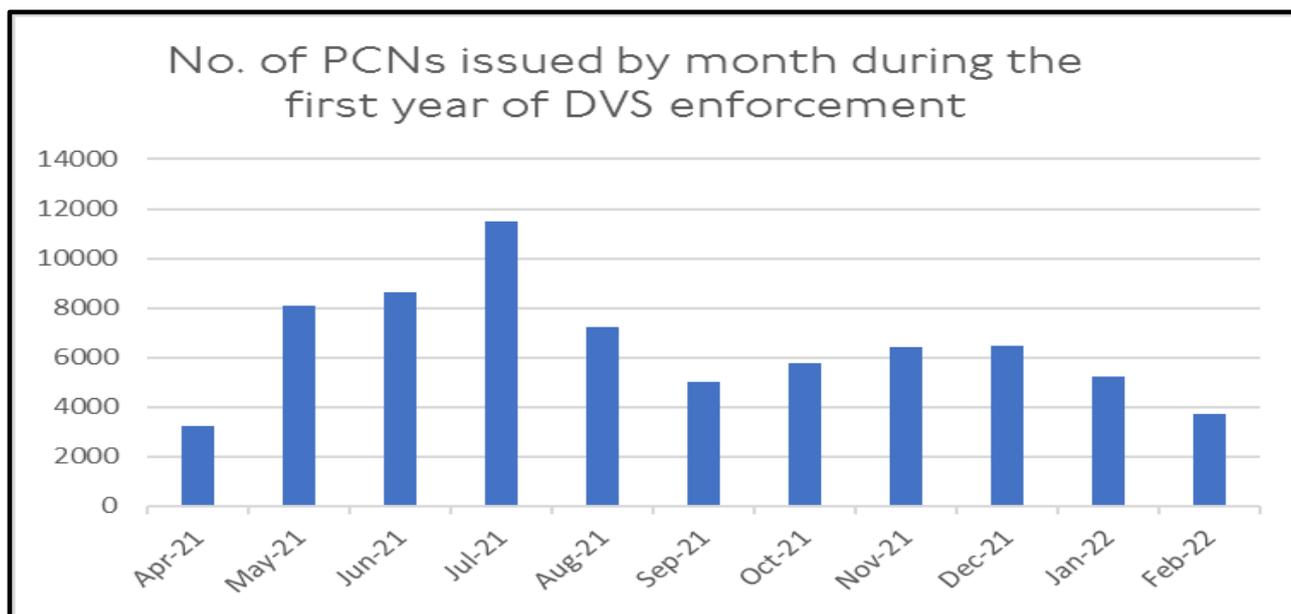


Figure 4 PCNs issued by month during the first year of enforcement

Although enforcement is undertaken principally by ANPR cameras, it is supplemented by on-street enforcement activity undertaken by the Compliance Policing and On-Street Services (CPOS) Road and Vehicles team, which includes dedicated WRRR officers.

The focus of this activity is on checking whether 0* rated vehicles have a permit and that Safe System equipment is properly fitted. In its first year, there were 2,421 vehicle spot checks with the following results:

- 1,751 0* rated vehicles were found to have a permit and safety equipment which met permit requirements (73 per cent)
- 670 were reported as either not having a permit or not having safety equipment which met permit requirements (27 per cent)

There were several reasons why vehicles were found not to have met the requirements of the scheme. These are a combination of defective and non-existent equipment and are shown below in figure 5.

We will continue to work with the freight industry to ensure that the requirements of the safe system are well understood to increase the number of vehicles found to be meeting permit requirements during on-street inspections.

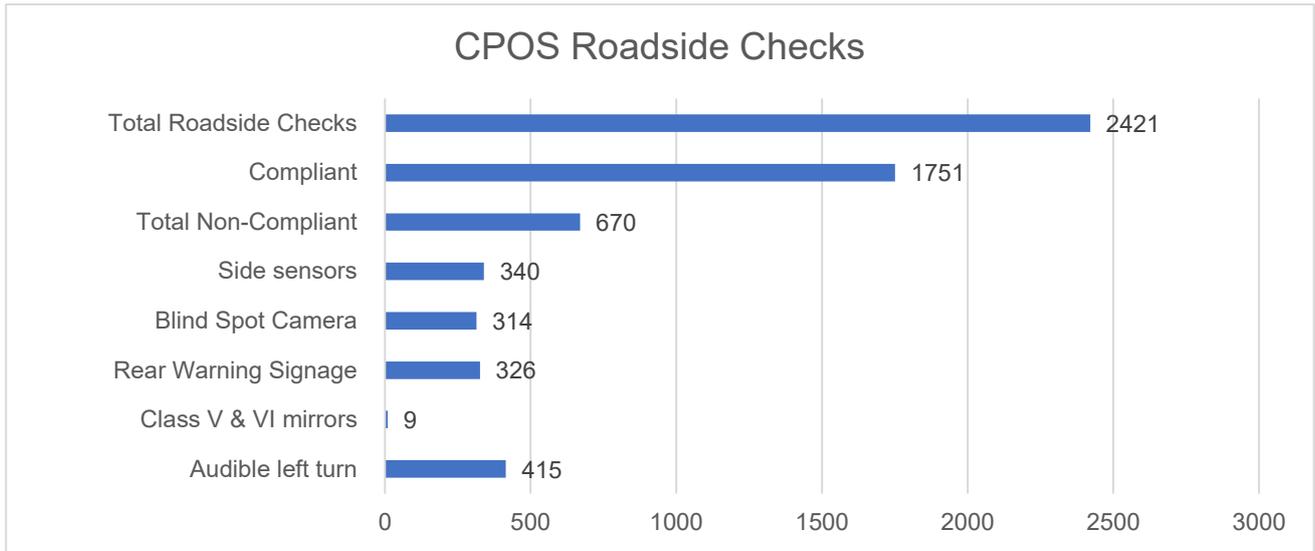


Figure 5 CPOS roadside checks and non-compliance

4 Analysis of collision data

4.1 Trends of collisions involving HGVs

The figures outlined in this section are provided by the Metropolitan Police from their collisions database which uses data collected between March and September to give an average for any given year.

Since 2017 the number of vulnerable road user collisions involving HGVs have been reducing as shown in figure 6. However, there continues to remain a disproportionately high number of serious and fatal HGV collisions involving people walking and cycling, of which poor vision plays a significant part.

The overall trend is starting to flatline which may indicate that while current policy interventions have been successful, enhanced efforts are needed to reach the Vision Zero target. Phase 2 of DVS and the Safety Permit scheme will be key to ensuring that the trend continues.

By the time enforcement of the scheme began on 1st March 2021 over 90,000 permits had already been issued to HGVs, with 30,000 already fitting a Safe System to improve vision. A total of 3,000 HGVs already met the highest 5* rating, bringing the benefits of DVS to London's streets in 2020 and early 2021 ahead of enforcement.

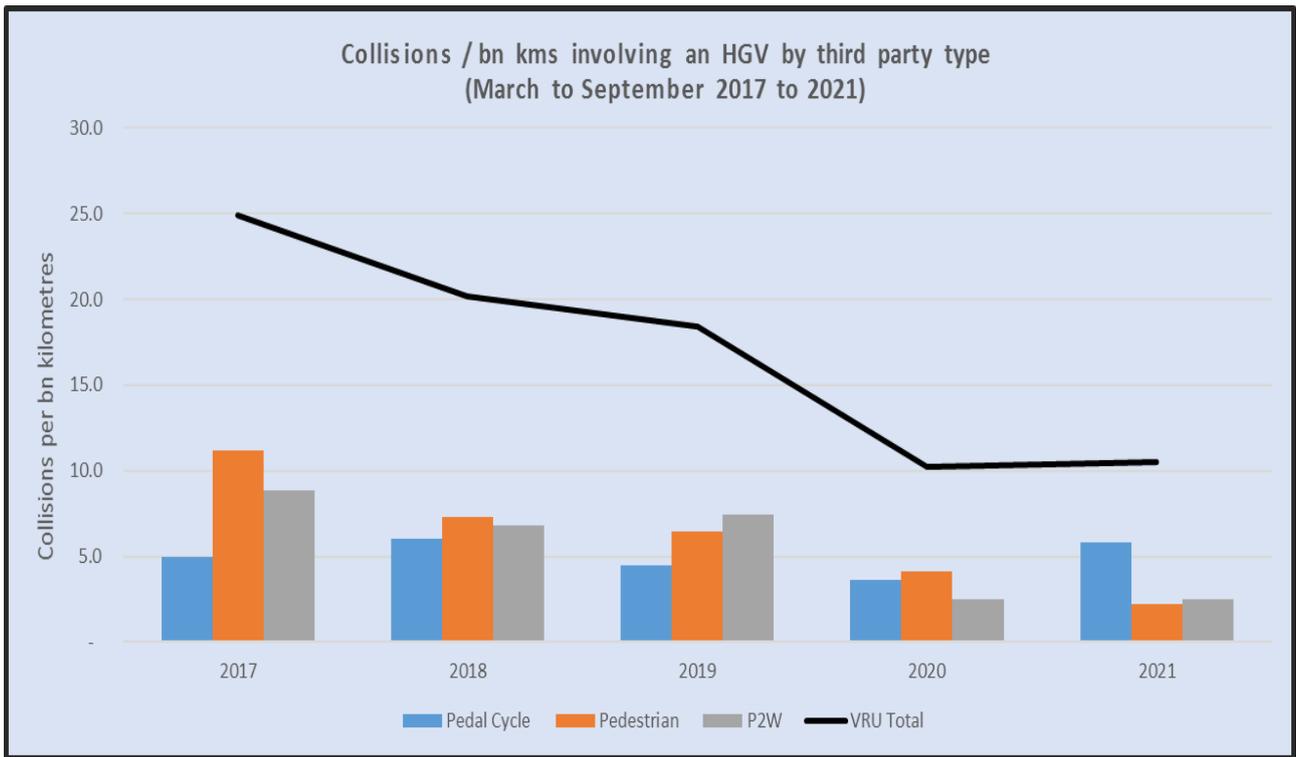


Figure 6 Reductions in walking/cycling collisions 2017 - 2021

Collision severity involving HGVs has also been falling, as shown in figure 7 below. This indicates that interventions undertaken by TfL and the freight industry in recent years may already be making a positive impact. This is supported by evidence showing significant reductions in serious injuries between 2019 and 2020 compared to preceding years.

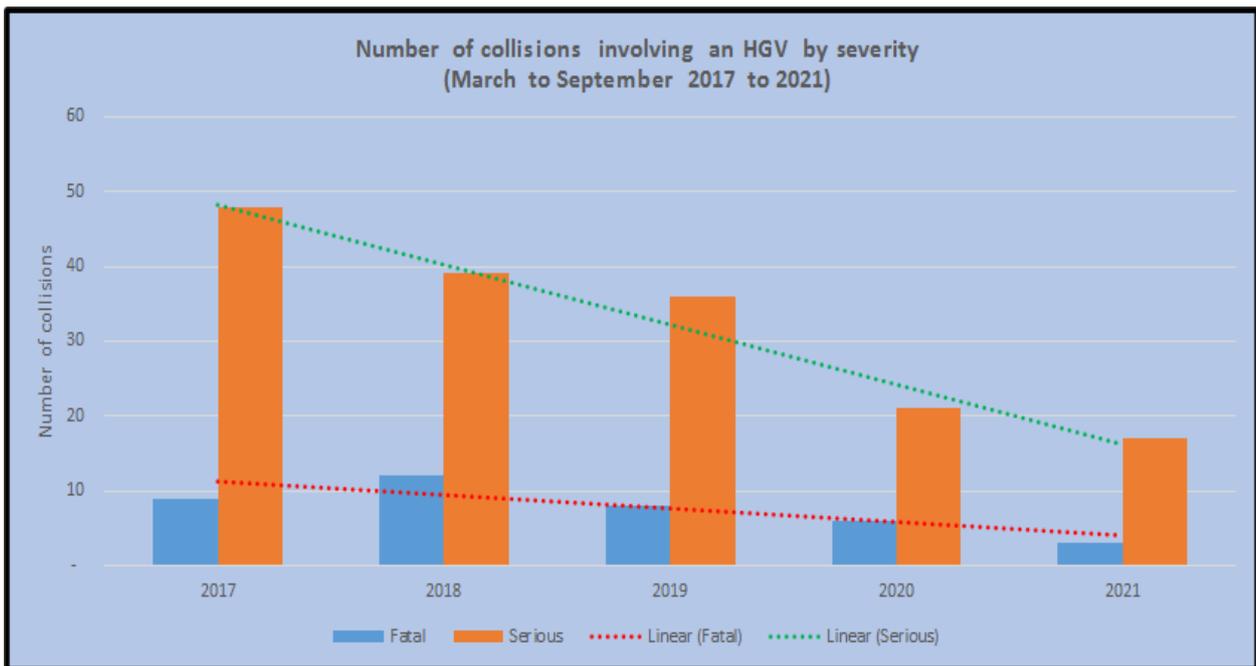


Figure 7 Number of collisions involving HGVs by severity 2017-2021

This trend is forecast to continue, as can be seen in figure 8, assuming DVS enhancements and other measures set out in the MTS Vision Zero Action Plan are delivered as planned.

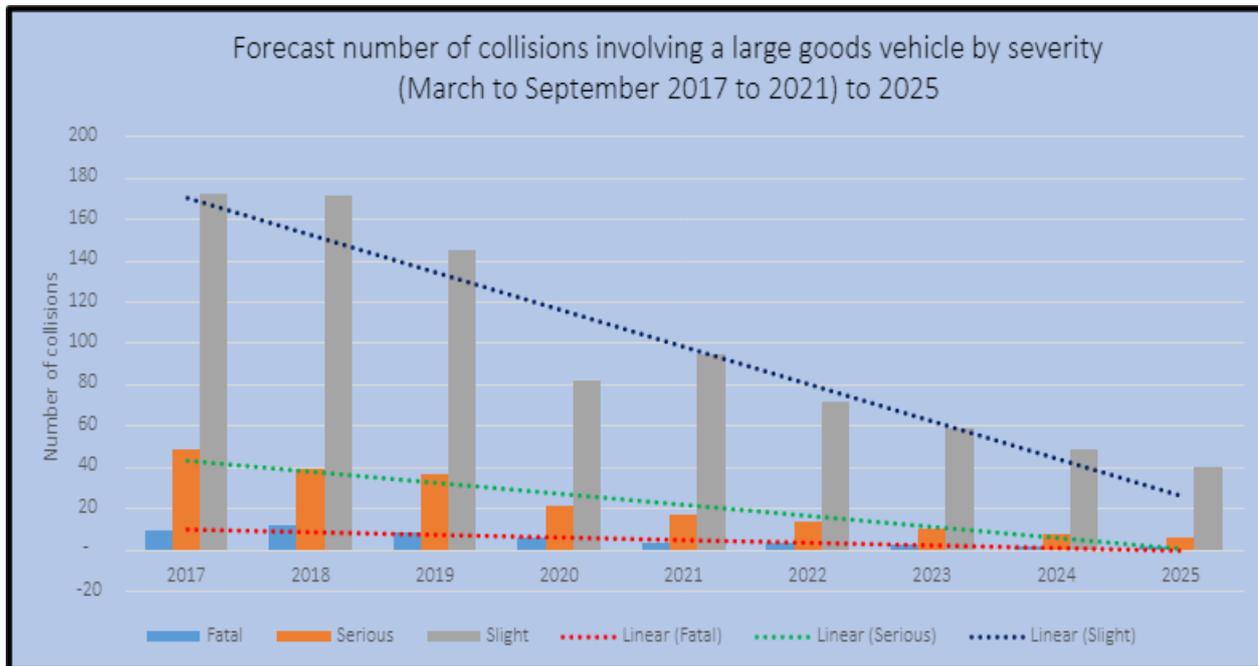


Figure 8 Forecast collision reduction 2025

4.2 Collisions since the start of DVS enforcement

During 2021, the first year of DVS enforcement, there were a total of 11 fatal collisions involving HGVs and people walking or cycling. Of these, six fatal collisions occurred where vision was cited as a contributing factor. This compared to eight in 2020 and nine in 2019 where vision was cited as a contributing factor.

A breakdown of those vehicles involved in the six fatal collisions during the first operational year of DVS by star rating is shown below in figure 9.

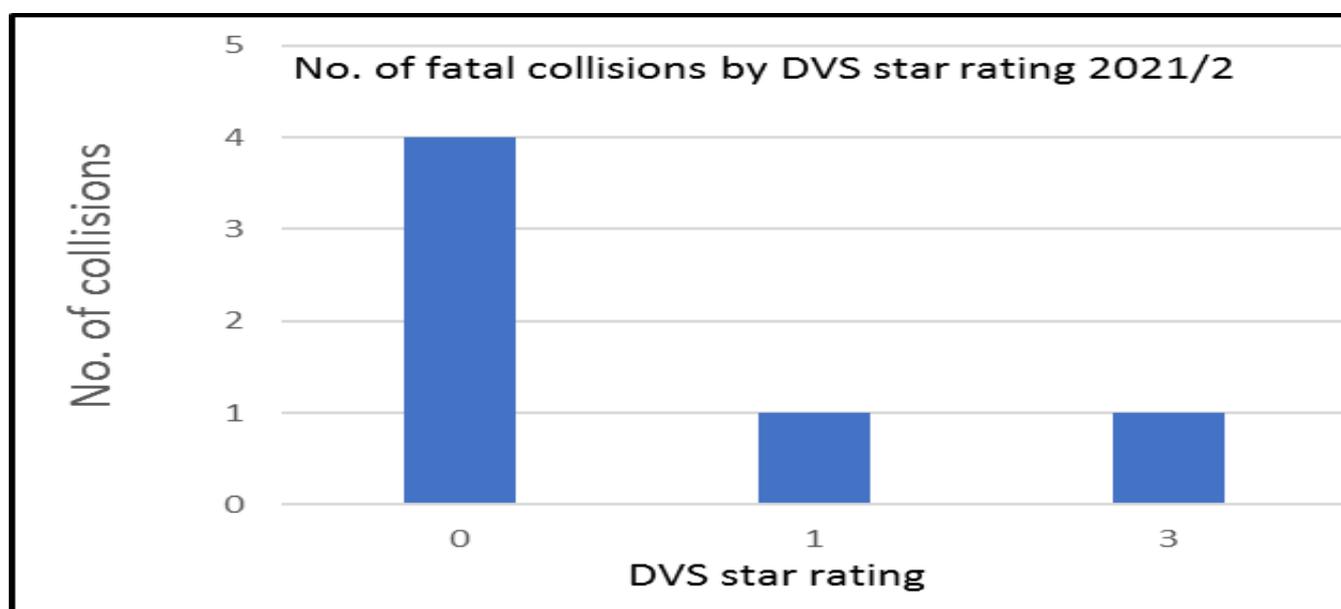


Figure 9 Number of fatal collisions by DVS star rating where vision was a contributing factor: 2021 to 2022

As four of the six fatal collisions involved were 0* rated vehicles, further investigation is needed to understand whether Safe System requirements are adequately compensating for poor direct vision from HGV driver cabs. Compared to 2020 there has been a slight reduction in HGV collisions with pedestrians and cyclists where vision was cited as the main contributing factor. A combined total of 14 fatal collisions occurred between 2020 and 2021 where vision was a factor, which is tragic and unacceptable. It also comes at an economic cost which the DfT³ puts at £29.68 million.

³ <https://www.gov.uk/government/statistical-data-sets/reported-road-accidents-vehicles-and-casualties-tables-for-great-britain#accident-and-casualty-costs-ras60>

5 The next phase of development for DVS

5.1 Commitment to Phase 2

Enhancing the Safety Permit Scheme requirements is key to meeting the Vision Zero objectives described in the MTS, given the established links between fatal collisions and direct vision.

The timeline for DVS implementation as outlined in the MTS is:

- October 2019: Scheme launched
- October 2020: Planned scheme enforcement (delayed to March 2021 due to Covid-19 pandemic)
- October 2024: Phase 2 – Requirements are tightened requiring 3* DVS or a Progressive Safe System fitted to 0-2* rated vehicles.

5.2 The Progressive Safe System (PSS)

During the first phase of DVS implementation TfL worked closely with the freight industry, vehicle manufacturers and cycling and pedestrian groups to develop an effective Safe System. As technology has improved and new systems have emerged since 2018, TfL commissioned a review into the existing Safe System which began in January 2022 and is being undertaken by Loughborough University.

This review will consider existing and future technology, both factory fitted or retrofit and will build on the existing requirements, taking into account the first year impacts outlined in this report. This work is expected to be completed by August 2022 and will enable TfL to define the PSS proposals for introduction in October 2024. This will build on and improve the existing safe system to further improve indirect vision for the lowest star rated vehicles, enabled by developments in technology and equipment.

The proposed PSS will be aligned to other scheme requirements and existing regulations where possible. i.e. the current Safe System for 0* rated HGVs is aligned with the FORS Silver requirements⁴. When applying for a DVS permit it will be recommended that all drivers continue to complete specific training on the safety of vulnerable road users. This

⁴ Silver accreditation is awarded to operators who maintain their Bronze accreditation and can demonstrate that all driver licence and endorsements are verified through a service that directly accesses the Driver and Vehicle Licencing Agency (DVLA) data. All their vehicles over 3.5 tonnes are equipped with a left turn audible warning system and are fitted with blind spot minimisation devices

is a mandated requirement for HGV drivers of FORS Silver operators which must be undertaken every five years.

Once the PSS is fully defined, TfL will undertake a public consultation to ensure stakeholders have the opportunity to feedback on any proposals.

In October 2024, those HGVs that are rated 0*-2* will be required to re-apply for a permit to enter or operate in most of Greater London. Existing permit holders who have vehicles rated 3* or above will not need to reapply as their permit is valid for 10 years from the date it was granted.

Based on current permit levels, we estimate that c. 170,000 permits will need to be issued to operators whose HGVs fall into these categories.

5.3 TfL leading the way at UK and EU level

The DVS is a world first and its impacts will be felt across the UK and EU. The work TfL has undertaken with manufacturers has already seen the EU incorporate direct vision into safety standards. EU regulation 2019/2144, which comes into effect in 2022, requires all 27 members states to consider direct vision from HGV cab windows as a tool to reduce fatalities. The European Commission expects that this, along with other safety measures being introduced, will save an estimated 25,000⁵ lives by 2038.

In addition, the United Nations Economic Commission for Europe (UNECE) has cited DVS as a best practice example for how countries across Europe can reduce road deaths. It also uses the experience of London as a show case. As DVS influences design and regulation beyond London, the expected benefits will also extend far beyond the original scheme.

⁵ https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1793

6 Conclusion

Although early results should be treated with some caution due to data limitations and the impact of the pandemic, the first year of enforcement of the DVS and the HGV safety permit has seen a reduction in fatal collisions where vision is cited as a contributing factor. The scheme has an average daily compliance rate of 94.2 per cent which reflects action taken by the freight industry to adopt the standards of the scheme. At the end of the first year of enforcement a total of 191,769 permits had been issued with 112,259 0* rated vehicles fitting a Safe System to improve indirect vision.

We have also identified, through spot checks, some issues with Safe System requirements not being fully met. We expect those issues to reduce as operators continue to adapt to the scheme. The majority of issues are easily rectified e.g. blind spot mirrors situated in the incorrect positions or audio warnings not activated.

TfL and the Mayor have committed to this scheme and its future phase in the Mayor's Transport Strategy (MTS) and the Freight and Servicing Action Plan. Operators are already purchasing DVS compliant vehicles at 3* or above in anticipation of the tightened standards from October 2024. This means that more vehicles with better direct vision are coming onto the market than ever before.

Some operators have already invested in 5* rated vehicles to ensure the highest direct vision standards within their supply chain and other operators are actively seeking to align with future standards now. The existence of the standard, and its proposed tightening in 2024, is having a tangible effect on the type of vehicles used within the freight industry and, as many operators work across the country, these benefits will be seen UK and EU wide.

DVS has already been integrated with EU regulations and will enhance future vehicle standards internationally. Starting in 2022 the EU has mandated all 27 nations to improve the direct vision from HGV cab windows.

It is expected that tightening DVS will further reduce fatal collisions involving HGVs and people who walk and cycle. The number of fatal collisions involving an HGV where vision was cited as a contributing factor reduced between 2019 and 2021 (down from nine to six). This decline has been observed since the launch of DVS, but further development and greater monitoring over several years will be essential to meet Vision Zero targets.