

Written evidence submitted by Transport for London (SDV0049)

1. Introduction
 - 1.1. We welcome the opportunity, as the Mayor of London's integrated transport authority, to contribute evidence to this inquiry. Our purpose is to deliver the [Mayor's Transport Strategy](#) (MTS) and to keep London moving, working and growing and to make life in London better.
 - 1.2. We run the day-to-day operation of the Capital's public transport network and manage London's main roads. Our public transport responsibilities include London Underground, London Buses, Docklands Light Rail, London Overground, the Elizabeth line, London Trams, London River Services, Victoria Coach Station, Santander Cycles and the London Cable Car. We are the licensing authority and regulator for all taxi and private hire services in London; 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.
 - 1.3. The Healthy Streets Approach is key to the MTS and puts human health and experience at the centre of planning the city, streets and the public realm to create appealing spaces to walk, cycle and spend time in. This approach will help reduce car dependency, increase active travel, reduce road danger, improve air quality, in turn reducing health inequalities.
 - 1.4. In 2019 we published our Connected and Autonomous Vehicle (CAV) Guidance and Statement, outlining our priorities of ensuring we are operationally ready for CAV trials in London as well as considering our future policies. This is available on our [website](#).
 - Connected and Autonomous Vehicles: guidance for London trials sets out our expectations of responsible trialling organisations and is used as a platform for building positive relationships with industry to help build our understanding of CAV technology, and associated impacts and opportunities

- Connected and Autonomous Vehicle Statement sets out how we need to consider future policies, to ensure that if these vehicles are ever deployed on London's streets in greater numbers, they are used in a way that complements the aims of Vision Zero and the MTS
- 1.5. New mobility services, such as automated vehicles (AVs), have the potential to significantly change the way people and goods move around cities, and there is now a growing body of research on the potential impacts of AVs. Many proposed benefits centre on safety or productivity improvements, however there is also growing evidence which highlights the risks that AVs may lead to more congestion and undermine efforts to promote active travel and public transport if not well managed¹.
 - 1.6. Policy 23 of the MTS provides the framework through which TfL considers new transport services and business models. Intended to ensure city goals are met, policy 23 commits TfL to "explore, influence and manage new transport services in London so that they support the Healthy Streets Approach". The seven guiding principles set out in policy 23 commit the Mayor and TfL to evaluating new transport services based on how they: support mode shift away from car travel, complement public transport, open travel to all, clean London's air, create a safe attractive environment on our streets, use space efficiently and share data.
 - 1.7. There is significant commonality between the MTS focus of increasing the share of trips made by sustainable modes of walking, cycling and public transport and central Government policy as articulated through the various modal action plans, for example Gear Change, Bus Back Better and the Transport Decarbonisation Plan. We are therefore keen to work with Government to ensure that local, regional and national policy goals are achieved.
 - 1.8. We acknowledge the inherent difficulty in legislation keeping pace with technology and are pleased to see the Law Commission of England and Wales and the Scottish Law Commission publish their joint report on automated vehicles in January 2022.

- 1.9. We understand that further work is required on future legislation and are actively engaging with Centre for Connected and Automated Vehicles (CCAV). We are particularly keen to see a greater focus on the policy and operational risks and opportunities of AVs and to ensure that these are addressed by the legislation where appropriate.
2. Potential impacts of AVs
 - 2.1. As we set out in our [CAV statement](#) we recognise the potential benefits of AVs, including their potential to improve road safety, increase access to mobility and drive investment in the UK economy.
 - 2.2. These benefits are far from certain however, with limited data currently available to assess the reality of many claims. If left unmanaged, AVs could instead present significant risks to both our MTS objectives in London, but also central Government objectives. For example, AVs may significantly increase congestion if they continually drive around empty to avoid parking charges, may emit harmful fine particulate matter (PM2.5) from tyre and brake wear if additional hardware makes vehicles heavier, and could even undermine efforts to improve public health if they encourage modal shift away from active, sustainable or space efficient travel (including public transport) towards personalised, motorised transport. A fully autonomous transport network may also fail to accommodate those with specific additional needs where this adds cost, leading to increased societal divides and an inequitable access to specific modes.
 - 2.3. AVs may also create new safety risks, for instance related to terrorism, possible inability to cope with severe weather events (for example flash flooding), inability to detect other road users under certain conditions, or if some features are reliant on connectivity levels which cannot be reliably delivered. This may be particularly acute with regards to pedestrian and cyclist safety. In London, people walking, cycling and riding motorcycles account for around

80 per cent of people killed or seriously injured². AV development must therefore consider how to safely interact with vulnerable road users from the outset, to ensure AVs are able to contribute towards our Vision Zero ambition of eliminating all deaths and serious injuries from London's streets by 2041. If these risks are not adequately addressed, the new risks presented by AVs may undermine claimed safety improvements and potentially increase collisions resulting in death or serious injury.

- 2.4. From a policy perspective both the opportunities and risks need to be properly understood and evaluated and there needs to be a disaggregation of the benefits that can be specifically linked to self-driving vehicles versus more general improvements in technology, including improved vehicle connectivity. It may be that many of the safety improvements associated with driverless technology could instead be delivered by other means, for example driver assist or improved connectivity features such as Intelligent Speed Assistance, more real-time traffic management enabled by improved data collection and sharing, reducing speed limits, and encouraging mode shift to walking, cycling and public transport. The benefits of these could potentially be realised much sooner and applied more widely, consistently and equitably than autonomy. To underpin this, a realistic assessment needs to be made of the situations where a self-driving vehicle may not perform as well as a human or where they may fail in new ways, as has already been seen in trials across the world³.
- 2.5. Ultimately, whether or not the potential benefits or risks associated with the introduction of AVs are realised will depend on the way in which they are developed and introduced into the transport network. Irrespective of this uncertainty, we believe transport authorities must retain the ability to shape these new transport services to their city's needs and its specific geographical, economic, and governance context. This role will likely evolve over time, and we would encourage strong collaboration across all levels of local, regional and national government, along with industry, academia

and other relevant parties, to ensure this market develops in a way aligned to the local, and in our case London, and the UK's wider policy objectives.

3. Building the evidence base

3.1. To support thinking and decision making in this area we are keen to see a much greater focus on building a robust evidence base and looking in detail at possible scenarios. Particular areas of focus should be safety, congestion and potential mode shift from more active and sustainable modes of transport towards motorised transport. These scenarios should also consider how vehicle designs and business models may evolve.

3.2. We would also like to see further research and interrogation of the widely claimed safety benefits. Driving environments differ greatly, for example road layouts, speed limits, segregation of vulnerable road users and it should not be assumed that the potential for a reduction in collisions is the same across all road types and locations. A motorway clearly presents different challenges to a built-up urban environment and even these will vary significantly, particularly between countries. While these challenges appear to be recognised from a technology perspective, we are keen to see more focus on understanding how safety would be improved for all road users, especially vulnerable road users such as pedestrians or cyclists, not just for vehicle occupants.

3.3. We recognise that in order to gather much of this evidence, more comprehensive real-world trials are likely to take place in the coming years. These may build on previous trials, with information of previous and current trials in London available [here](#). In London, we will continue to push for safety to be the absolute priority and would expect all trials to comply with our "Guidance for London trials" as referenced in paragraph 1.4, in addition to CCAV's own code of practice and any legal duties.

3.4. The UK has marketed itself as a permissive place in which to

undertake trialling activity. However, as trials become more extensive and the technology more developed, we would encourage a review of the trials guidance to ensure that the safety of all road users, not just vehicle occupants, is central and that trialling organisations are adhering to the highest standards, which will evolve over time. We suggest as a minimum that trials should be registered in a trials database, and some level of national safety assurance undertaken to ensure public safety is protected while trials occur on public roads. This may go beyond the existing requirements, where responsibility for ensuring that AV trials are safe and compliant with legal requirements rests almost entirely with the trialling organisations.

- 3.5. We would expect the specialist regulator to determine what level of pre- deployment assurance would be appropriate for trials to operate safely, looking both at the vehicle and the processes and safeguards around operation. In our opinion, safety standards must however be set at the highest level and the associated approval and authorisation processes must be robust and transparent. The focus must be on public safety not on getting a minimum viable product out on the road.
- 3.6. Furthermore, we are aware that a number of trials in other countries have involved using AVs to provide a taxi or private hire type service, with some even moving beyond trials to become licensed services⁴. We believe there are a number of areas that require further consideration as trials or commercial services evolve in the UK. These areas include ensuring all aspects of the service are safe and accessible, taking into account the unique aspects of an AV provided passenger service.

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Endnotes

¹ <https://www.sciencedirect.com/science/article/pii/S1369847822001425?via%3Dihub>

<https://news.umich.edu/u-m-study-induced-driving-miles-could-overwhelm-potential-energy-saving-benefits-of-self-driving-cars/> <https://link.springer.com/article/10.1007/s11116-018-9937-9>

² <https://content.tfl.gov.uk/travel-in-london-report-14.pdf>

³ <https://www.washingtonpost.com/outlook/2022/02/04/self-driving-cars-why/>

<https://fortune.com/2022/04/11/cruise-self-driving-taxi-san-francisco-police-traffic-stop/>

⁴ <https://cybernews.com/news/no-human-at-wheel-baidu-secures-fully-driverless-robotaxi-license-in-china/> <https://www.bloomberg.com/news/articles/2022-06-23/gm-s-cruise-charging-fares-for-driverless-rides-in-san-francisco#xj4y7vzkg>