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Future Directions Paper

How Victoria will continue to support the development of automated vehicles

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VICTORIA State Government

Minister's Foreword

The development and introduction of automated vehicles has a huge potential to make our journeys safer, more efficient and environmentally friendly, while also offering improved mobility to many people currently unable to operate a motor vehicle.

In particular, by radically reducing human error from driving (which is a factor in up to 94 per cent of crashes), this technology will be crucial in helping us realise our vision of zero deaths and injuries on Victorian roads.

Victoria has long been a leader in road safety, both nationally and internationally. We were the first jurisdiction in the world to make the wearing of seatbelts compulsory, while in Australia, Victoria was the first state to legislate random breath testing and introduce speed cameras.

With automated vehicle technology expected to bring significant road safety benefits, we now have a chance to help shape the future of transport and mobility in Australia and build on the great work Victoria has already done in the area of road safety.

There are a number of legislative challenges we need to address. These include how we can safely test automated vehicles, issues around driver liability and what constitutes 'being in control' of a vehicle, as well as working out how this emerging technology can be best integrated into our existing transport system.

In May 2016, the National Transport Commission (NTC) published a discussion paper, *Regulatory options for automated vehicles*. One of the purposes of this paper was to identify regulatory barriers to on-road testing of automated vehicles, with a view to seek approval of national Transport Ministers for any proposed actions that came out of its review.

At the Transport and Infrastructure Council meeting held in Perth on 4 November 2016, State and Territory Roads Ministers agreed to review the ability of their laws to support on-road testing and development of automated vehicles at all levels of automation.

The Victorian Government welcomes this challenge and is supportive of automotive and technology companies testing their products on our roads. Enabling on-road testing will help us better understand the potential future benefits of this technology, while informing future considerations such as regulation, infrastructure requirements and overall mobility benefits to the community.

Regulating in such an unknown environment however, is extremely difficult. Therefore before we can move forward with testing of highly automated vehicles, it is vital that Victoria has a robust policy framework in place that balances the need for technological innovation with practical safety concerns. To achieve this, we need to work closely with industry stakeholders and, in particular, hear from innovators in automated vehicle technology.

The Future Directions Paper seeks feedback on the Victorian Government's proposed plans to develop a well balanced regulatory environment for on-road testing of automated vehicles that aims to ensure we continue to support and enable on-road testing in Victoria.

I encourage you to take the time to read through this paper and provide us with your feedback on our proposed plans as well as any comments you might have on how we can best support the development of automated vehicle technology and help Victoria stay at the forefront of road safety.

Purpose

The purpose of this Future Directions Paper is to provide a comprehensive overview of the current regulatory environment in Victoria, how it relates to automated vehicles, and our plans to make changes to the regulatory framework that will support the testing and development of highly automated vehicle technology.

This paper sets out to achieve the following objectives:

- Encourage discussion with industry and government stakeholders on how trials of automated vehicles should be regulated in Victoria
- Provide an analysis of the current regulatory arrangements for automated vehicles, and what would need to change to accommodate testing of highly automated vehicles
- Provide an outline of how VicRoads could apply safety assurance measures through nationally agreed guidelines for on-road trials, and for the longer-term regulatory reform of automated vehicles
- Outline how Victoria will work to support longer-term removal of barriers to automated vehicle on a national scale.

The Victorian Government is committed to encouraging the development of automated vehicles in Victoria and to providing more opportunities for innovative business models, by removing barriers to trialling, testing and developing automated vehicles on Victorian roads.

Through this consultation, we are seeking comment on our proposed plans and arrangements. Your feedback will be crucial to ensuring that we can develop the legal framework that meets the needs of both industry and the community.

How to have your say

VicRoads welcomes feedback on our proposed plans as well as any general ideas or concerns on the topic of automated vehicles and how to trial this technology on Victorian roads. At the end of this paper, there are a number of key questions and issues we would like you to consider when providing feedback.

The consultation runs from now until 3 February 2017 and you can submit your feedback by visiting the engageVicRoads website **engage.vicroads.vic.gov.au**

Scope of this review

Australian Governments have been reviewing Australia's legal landscape with a view to removing barriers that currently prevent automated driving. This work is important to ensure Australia is in a position to share in the benefits of this technology once it is mature enough for widespread commercial deployment.

Before highly automated vehicles are commercially available in Australia, automotive and technology companies will be looking to test their vehicles on Victorian roads. Removing regulatory barriers to on-road trials has been a key focus of the NTC.

As agreed by national Transport Ministers at the Transport and Infrastructure Council meeting on 4 November 2016, this national program for the removal of barriers to automated driving contains an action specific to the supporting legislative framework:

That state and territory road agencies undertake a review of exemption powers to ensure they have sufficient powers to undertake and manage on-road trials of automated vehicles, including in relation to road rules, vehicle standards, driver licensing; and to review how cross-border trials could be managed.

In conjunction with this review, a second action calls for Austroads[1] and the NTC to develop national guidelines for the testing of automated vehicles to be published by May 2017.

These two actions are closely linked, but will be developed through separate reviews. National guidelines should result in participants being required to meet similar trial conditions and requirements, regardless of the jurisdiction in which any testing is undertaken.

It will be proposed that these guidelines form part of the conditions of any testing of highly automated vehicles where an exemption is required. However, the ability to impose conditions (and therefore guidelines) will be dependent on Victoria's legal framework for enabling testing of automated vehicles.

This paper is aimed at seeking feedback on policy and regulatory arrangements for the use of automated vehicles for trial, test and development purposes.

Proposed in scope of this review	Proposed out of scope of this review

• Exemption powers to support testing
• Arrangements for testing of conditionally automated vehicles
• The future legal framework to support trials in Victoria
	• Trial conditions: e.g. what VicRoads will consider before approving a trial, including:
	  • eligibility
	  • safety
	  • data and information sharing
	  • insurance.
	• Removing barriers to the market deployment of automated vehicles. This could include:
	  • redefining concepts of 'control' and 'proper control'
	  • future vehicle standards for automated vehicles
	  • redefining what is meant by 'drive' within road transport legislation.

[1] Austroads is the association of Australasian road transport and traffic agencies.

What are automated vehicles?

The levels of automation referred to throughout this paper are based on the SAE International Standard J3016[2] as described in the NTC's Discussion Paper, *National guidelines for automated vehicle trials*.

For the avoidance of doubt, unless otherwise stated, any reference to highly automated vehicles in this paper also includes a fully automated vehicle, and any vehicle that is operating at a level of automation where the automated driving system is responsible for performing the dynamic driving task (steering, acceleration, braking *and* monitoring the driving environment outside the vehicle) for a sustained period.

Partially automated means that the automated driving system may take control of steering, acceleration and braking in defined circumstances but that the human driver must continue to monitor the driving environment and the driving task, and intervene if required. An example of this is Auto Parking Assist.

Conditionally automated means that the system drives the vehicle for sustained periods of time. The human driver does not have to monitor the driving environment or the automated driving system, but must be receptive to any system failures and intervene if requested and be the fall-back for the dynamic driving task. An example of this is Automated Highway Driving.

Highly automated means that the system drives the vehicle for sustained periods of time in some situations, or all of the time in defined places, and no human driver is required to monitor the driving environment and the driving task, or to intervene, when the system is driving the vehicle. Examples are valet parking functions, passenger cars that can drive themselves on a freeway, without any expectation that the human driver will respond to a request to intervene, and driverless shuttles that can operate at all times, but only in a limited area..

Fully automated means that all aspects of the driving task and monitoring of the driving environment and the dynamic driving task are to be undertaken by the automated driving system. The vehicle can operate in automated driving mode on all roads at all times.

[2] http://standards.sae.org/j3016_201609/

The importance of on-road testing

The introduction of automated vehicles will have profound impacts on the safety and efficiency of the road network, and open up many new opportunities for innovative business models to provide a range of transport and mobility options for the community.

Before we can experience the benefits, on-road trials will be critical to the safe development of these technologies. It is therefore crucial to ensure we have a regulatory framework that fosters innovation while also providing the safety assurances the community expects.

Support on-road tests for a range of technologies and applications

We need to be able to trial a wide range of automated vehicle applications and use cases (how the system operates in a specific scenario) that will benefit the community, including:

- automated low-speed traffic jam applications that reduce driver workload in low-speed, stop-start traffic,
- higher speed automated highway pilot systems that will improve vehicle efficiency and reduce high speed run off road crashes,
- low speed urban environment vehicles such as passenger shuttles to support thriving communities with efficient, accessible and sustainable transport choices, and
- vehicle platooning systems[3] to improve freight efficiency and reduce environmental impacts.

Minimise safety risks and optimise safety benefits

On-road testing involves a range of unknowns associated with vehicles that have not been released to the vehicle market, and which will be unfamiliar to other road users. However, to determine if these vehicles can safely interface with our infrastructure, other road users, fauna and systems, on-road testing will be required.

Experience from overseas demonstrates that on-road testing is not without risks.

Chief amongst these risks are the human responses to new technology. In particular, it is difficult to predict what road safety risks automated vehicles may present as part of a mixed fleet (interacting with non-automated vehicles).

In May 2015, the head of Google's self-driving car project reported that, "Over the 6 years since we started the project, we've been involved in 11 minor accidents (light damage, no injuries) during those 1.7 million miles of automated and manual driving with our safety drivers behind the wheel, and not once was the self-driving car the cause of the accident."[4]

Of the 11 crashes between 2012 and September 2015, 76 per cent occurred while the vehicle was stopped or slow (≤ 5 mph) in traffic and all of them involved another motor vehicle and occurred on local roads in urban areas.[5]

By helping remove human error from driving, automated vehicles are expected to significantly reduce crashes and road trauma; however they will not remove all crash risk. Humans may still make errors in implementing and operating the technology.

While the safety case for automated vehicles appears strong, there are still some uncertainties around how soon they will become a normal feature of our transport system and there remain various unknowns in terms of how human factors will affect the operation of this technology.

As the primary purpose of driver and vehicle regulation is to preserve safety, the key decisions around removing regulatory barriers should be based on safety considerations.

Given the potential safety benefits they present, VicRoads considers that on-road trials of automated vehicles are essential to guide their safe development for use in Australia, and for enhancing public acceptance.

Questions:

- *Do you agree that on-road testing of automated vehicles is necessary for the long-term safe deployment of automated vehicles?*
- *What do you consider to be the key risks associated with on-road testing?*

[3] Vehicle platooning is where vehicles travel close together by accelerating or braking simultaneously and enables closer distances between vehicles by reducing human reaction times.

[4] Urmson, C., 'The View from the Front Seat of the Google Self-Driving Car' on Backchannel, (11 May 2015) <https://backchannel.com/the-view-from-the-front-seat-of-the-google-self-driving-car-46fc9f3e6088#.ilmh9kbvb>

[5] Schoettle, B. & Sivak, M, A Preliminary Analysis of Real-World Crashes Involving Self-Driving Vehicles. Michigan: University of Michigan Transportation Research Institute, 2015

Victoria's Future Plan

In delivering a future plan for testing, developing and trialling automated vehicles, and to achieve our objectives outlined in this paper, VicRoads aims to support the ongoing testing of automated vehicles with drivers under our existing regulatory framework (with support from trial guidelines).

Furthermore, we also plan to make some changes to our regulatory environment to:

- support trials of automated vehicles operating at any level of automation – including where a driver is not present in the vehicle
- require operators who wish to test or develop vehicles without a driver to be subject to an approval process from VicRoads, through which trial conditions such as national guidelines would be imposed
- ensure we can effectively enforce these trial conditions by withdrawing our support for the trial, or through the creation of new offences
- ensure the appropriate, ongoing application of the Road Safety Act 1986 and the regulations and rules made under that Act so that police can prosecute trial operators that do not comply with trial guidance or for breaches of Victoria's Acts or regulations

Victoria's existing regulatory framework

What can be supported currently?

Victoria's current regulatory environment supports on-road trials of automated vehicles where a human driver is responsible for 'driving' the vehicle. This means any vehicle that is being operated in a partially automated mode (see definition on page 5) even if it is capable of operating at a higher level of automation. It is important to note the difference between a vehicle's operating level as opposed to its capability level. This difference is the key to determining whether a vehicle can be supported by the existing regulatory framework.

As identified in the NTC's discussion paper, *Regulatory options for automated vehicles*, a vehicle with partially and conditionally automated driving functions where a human is in the driver's seat monitoring the system and environment and capable of overriding an automated driving system at any time (i.e. operating in a partially automated mode despite being capable of conditional automation), could be interpreted to fit within the existing regulatory framework. VicRoads' review of the current framework supports this conclusion.

To support on-road trials, VicRoads has adopted a Code of Practice based on the UK Code published in the UK Department for Transport document, *The Pathway to Driverless Cars: A code of practice for testing*. The UK Code has been modified to align it with Victorian conditions and laws.

The Code is intended to help manufacturers and those testing automated vehicle technologies by providing clear guidelines and recommendations for measures that should be taken to maintain safety during the testing phase.

There are benefits to this approach.

- A Code of Practice is more flexible than legislation.
- Provided the test vehicle is registered and compliant with Australian Design Rules (ADRs) and vehicle standards, there is no need to seek further permission from VicRoads.
- A Code of Practice promotes and encourages industry growth and technology development.

This approach was successfully used to help develop the Bosch Highly Automated Driving vehicle that was demonstrated at Albert Park Lake as part of the Intelligent Transport Systems (ITS) World Congress 2016. Through this process, Bosch Australia worked with VicRoads to work through a safety management plan, including pre-release testing of the vehicle, driver training programs and engagement with Victoria Police.

It should also be noted that any automated vehicle (whether a conventional passenger car or a driverless shuttle) can be tested on a closed road, and where necessary, an exemption from Road Rules, regulations and sections of the Road Safety Act 1986 can be granted under section 99B of the Act. This power was used for the demonstration of the Easymile – EZ10 driverless shuttle at the Albert Park Lake as part of the 2016 ITS World Congress.

Limitations and risks to the current approach

There are, however, limitations to this approach. The Code is only a guide and there is no penalty for non-compliance with the Code of Practice.

Further, most provisions of the Road Safety Act 1986 and regulations made under it (including the Road Rules) rely on a human driver having control of the vehicle. Therefore, a vehicle being operated at a level of automation that does not require a human driver to perform the dynamic driving task (steering, acceleration, braking and monitoring the driving environment outside the vehicle), or one without a human driver in the vehicle, requires modifications to the legal framework.

On this basis, the current regulatory arrangement does not support on-road trials of vehicles operating in a highly automated mode in open-road environments where there is no human driver performing the dynamic driving task.

The main road safety risk to the current approach is that there is no requirement for VicRoads or other interested parties to be notified of an intention to trial an automated vehicle on a road (unless a road closure is required, the vehicle is unregistered or does not comply with ADRs). Although the Code of Practice recommends that testing organisations engage with VicRoads and emergency services, as stated above, it is only a recommendation.

Without legislative change, the Code of Practice is only a guide to good practice. However, this doesn't affect, limit or remove the tester's responsibilities to comply with any other laws, including Occupational Health and Safety laws.

Another limitation under the current framework is that VicRoads does not have the ability to restrict the use of a compliant and registered vehicle (i.e. a registered passenger car that meets Australian Design Rules).

Question:

- *Should VicRoads seek to capture testing, trialling and development of automated vehicles operated in a conditionally automated mode in any regulatory changes, thereby imposing trial guidelines and providing VicRoads with power to remove its support for a trial?*

Review of current regulatory environment

Supporting local industry is a key priority of the Victorian Government. Therefore we have reviewed the Road Safety Act 1986 with a view to establishing whether existing provisions would sufficiently enable local and international automotive and technology companies to trial and develop highly automated vehicles on our roads.

In line with findings by the NTC, it is assumed that within Victoria's Road Rules, regulations and relevant sections of the Road Safety Act 1986, a human driver is the entity responsible for control of the vehicle. VicRoads agrees that regulatory requirements relating to a 'driver' or a 'person' could not be read to include an automated driving system.

What powers are needed to enable automated vehicle trials?

Minimising risks to road users is a primary concern and VicRoads will require that Victorian Road Rules and the regulations made under the Road Safety Act 1986 apply unless it is impractical for them to do so, or it is necessary to expand the definition of driver to include an automated driving system. For example:

- If the driver will be over three metres from the closest part of the vehicle, the driver must switch off the engine before leaving the vehicle. This rule is likely to be a barrier for valet parking functions if the driver is further than this distance from the vehicle.
- Mobile phone rules are only relevant for a human driver. If the human is not driving the vehicle, mobile phone laws may not need to apply.
- A driver must stop and render assistance if involved in a crash, and a driver must report in person to a police station if a person is injured and no police are in attendance at the crash. This rule clearly refers to a human driver. An automated vehicle system will not be able to comply.

In addition to obligations on the driver, vehicles must comply with Victoria's Vehicle Standards set out in the Road Safety (Vehicles) Regulations 2009 which require compliance with ADRs and in-service vehicle standards. These are unlikely to be relevant to some automated vehicles such as a driverless shuttle. For example:

- ADR 10 – Steering column: a driverless shuttle may not require steering controls "actuated by the driver".
- ADR 14 – Rear view mirrors: a driverless shuttle may not require rear view mirrors because there is no requirement for a driver to use them, or there is no human driver at all.
- ADR 18 – Instrumentation: a driverless shuttle with a "vehicle speed sensor" may not require a speedometer to display speed to a driver.
- ADR 21 – Instrument panel: a driverless shuttle may not require an instrument panel to provide driving-related information to the occupants of the vehicle.
- ADR 35 – Commercial Vehicle Brake System: a driverless shuttle may not need an "optical warning system" to signal braking to the driver, if the driver is a system. In the same way, the brake may not need to be located within reach of the driver if the driver is the system.

How can this be achieved using existing powers?

To enable trials where an automated driving system is the entity responsible for control of the vehicle (highly automated vehicles), VicRoads would need the power to:

- Vary requirements to ensure that obligations that currently apply to a human driver also apply to an automated driving system entity[6]
- Exempt requirements that would be impractical for an automated driving system or that would create uncertainty regarding who or what is responsible during use of certain automated functions (e.g. a driver must remain within three metres of a motor vehicle while it is parking. A driver cannot be both inside (vehicle system) and outside (human) a vehicle at the same time).

[6] An automated driving system entity is the legal entity responsible for the operation of the automated vehicle system.

The review identified three powers that could achieve these outcomes.

Section 95(3A) of the Road Safety Act 1986

Regulations may be made that provide that the Road Safety Act 1986, or specified provisions of that Act, do not apply to vehicles of a class identified in the regulations.

Section 96A of the Road Safety Act 1986

The Minister may, by notice published in the Government Gazette, declare that the operation of the regulations[7] made under the Road Safety Act 1986 or of specified parts of those regulations or rules, are suspended for a specified period or varied in a specified manner. The declaration may apply throughout the whole of the State or to a specified area.

Regulation 30 of the Road Safety (Vehicles) Regulations 2009

This regulation allows conditions to be imposed on the use of vehicles that do not comply with Victoria's Vehicle Standards including the Australian Design Rules.

Benefits of using existing powers

These powers would allow VicRoads to enable on-road trials of more highly automated vehicle applications where there is an acceptable road safety risk on a case-by-case basis.

Testing organisations would be able to test their automated vehicle applications in open-road situations appropriate to the level of automation under these existing powers.

An application process will enable VicRoads to monitor the safe operation and testing of highly automated vehicles on Victorian roads. Therefore, the Victorian community can be confident that only appropriately supervised and controlled trials and testing programs of highly automated vehicles are being undertaken on Victorian roads.

Under this arrangement, the following additional applications could be trialled on Victorian roads and road related areas under this arrangement:

a) Self-parking systems where the driver is outside the vehicle
b) Heavy vehicle platooning where vehicles would be expected to follow within reduced headways[8]
c) Low-speed driverless shuttles in more open, but still low risk areas such as university campuses, shopping centre car parks and shared zones.

[7] Note that this includes a reference to the rules contained in the Road Safety Road Rules 2009 (see section 3(5) of the Road Safety Act 1986.

Limitations to existing powers

Section 95(3A) of the Road Safety Act 1986

This section only stipulates that regulations may provide that the Act, or parts of the Act, do not apply. There is currently no power to vary the Act so that it continues to apply to an automated driving system in the same way that it currently applies to a human driver. A specific amendment to the Act would be required to achieve that.

For example, section 59 addresses the duties and obligations of a driver or person in charge of a motor vehicle, including obeying a request by a police officer to stop the vehicle. If there is no human driver or person in charge of the vehicle, this provision would not apply to an automated vehicle. However, in the interests of safety, it would be beneficial for the reference to 'driver or person in charge' to include an automated driving system; a power which does not currently exist.

Regulations made under this section would not allow for the imposition of permit conditions or affect the operation of any Acts other than the Road Safety Act 1986.

Section 96A of the Road Safety Act 1986

This section was initially inserted to enable the Minister to vary and suspend the operation of the regulations, including Road Rules, in the event of an emergency such as a natural disaster and was not envisaged to apply to enable testing of highly automated vehicles.

An order made under this section also does not affect the operation of regulations made under an Act other than the Road Safety Act 1986.

Other limitations

There are also provisions relating to the driving of motor vehicles that fall outside the Road Safety Act 1986 that may also require variation to support trialling of highly automated vehicles in order to maintain their original intent. For example;

- The Sentencing Act 1991 and the Crimes Act 1958 refer to serious motor vehicle offences arising out of the driving of a motor vehicle, such as manslaughter, negligently causing serious injury, culpable driving causing death and dangerous driving causing death or serious injury.
- The Transport (Compliance & Miscellaneous) Act 1983 and the Bus Safety Act 2009 make reference to drivers and operators of certain vehicles for fare, hire or reward, such as a commercial passenger vehicle or a bus used to provide a commercial bus service.
- The Transport Accident Act 1986 deals with incidents directly caused by the driving of a motor vehicle while the Workplace Injury Rehabilitation and Compensation Act 2013 covers injuries resulting from an accident involving a motor vehicle.

As road safety laws in Victoria rely on the presence of a human driver, there is a risk that in the event of a serious incident, the usual protections that are in place for all other road users may be limited. For example, if there is no human in the vehicle capable of being interpreted as the driver, it will be difficult to ensure that a legal entity is held accountable for any 'driving' offences.

Trials of automated vehicles used in a public transport arrangement (such as the trial of the driverless shuttle in Western Australia) may require clarification of offence provisions that apply to 'drivers' and operators under public transport law.

Although there is a general mutual recognition of conditions of registration and exemptions from registration, the current regulatory provisions do not recognise exemptions from, or variations to, other laws granted in other jurisdictions to enable trials of highly automated vehicles more broadly. This would require a new exemption to be provided by VicRoads prior to a trial commencing, potentially adding red tape to applications for cross-border trials in Australia.

Questions:

- *Given the above limitations and risks, do you believe you would be able to effectively conduct trials of highly automated vehicles using existing powers?*
- *Given the broad range of laws and departments that are involved, how would you feel about making single or multiple applications for approval?*
- *Are there any other potential barriers to trials of automated vehicles?*

New legislative powers for automated vehicle trials

In 2015, the South Australian Government introduced the Motor Vehicles (Trials of Automotive Technologies) Amendment Bill 2015[9], to enable South Australia to authorise a trial of automotive technology.

Among the main features of this amendment that are not within the current powers of Victorian law, include the power for the Minister to:

- for a purpose related to an authorised trial, exempt a person or class of persons, or a vehicle or class of vehicles, from the operation of a provision or provisions of the Motor Vehicles Act 1959 (SA) or any other Act, law or standard
- by notice in the Gazette, publish or adopt guidelines for the purposes of trials of automotive technology.

The South Australian legislation also sets penalties for a person who contravenes or fails to comply with a condition of an exemption (maximum penalty $2,500).

The broader powers in the South Australian amendment address several of the key limitations identified in Victoria's current regulatory arrangements, with the exception of the ability to mutually recognise trial exemptions provided by other jurisdictions.

On the surface, adding a new exemption power in line with South Australia's model appears to be the simplest approach for addressing the current limitations within Victoria's laws.

Questions:

- *Do you agree that the South Australian model for automated vehicle trial exemptions provides a sound basis for Victorian law?*
- *What other limitations or risks do you see with this approach?*
- *If a new legislative power was to be adopted in Victoria regarding automated vehicles, should trial guidelines be enforced by VicRoads withdrawing permission (approvals, permits, notices authorising the trial) for the trial, or are penalties required such as those the South Australian model?*

National consistency

In November 2016, the Transport and Infrastructure Council met and agreed to the publication of nationally consistent trial guidelines by May 2017. The intention of the national guidelines is to ensure that trials:

- Give appropriate boundaries to ensure safety for other road users
- Minimise inconsistencies between jurisdictions
- Clarify industry expectations, simplifying the application process and providing certainty for both the industry and the community.

Trial guidelines are expected to govern a range of areas of safety assurance measures during trials, testing and development, including:

- Maturity of the vehicles released to the road (pre-trial testing of vehicles)
- Driver training for test drivers or operators
- Safety management plans and risk assessments
- Data recording

What is important within any Victorian framework is that conditions, including trial guidelines, could be applied to a trial to ensure it is conducted safely. A key consideration for Victoria is the arrangements that should be put in place to ensure that penalties exist for non-compliance with trial conditions.

This could range from simply withdrawing approval for the trial through to new penalties for test operators.

[7] Note that this includes a reference to the rules contained in the Road Safety Road Rules 2009 (see section 3(5) of the Road Safety Act 1986).

[8] Reduced headways refers to following distances that are shorter than the required minimum distance under rule 127 of the Road Safety Road Rules 2009.

[9] https://legislation.sa.gov.au/LZ/C/A/MOTOR%20VEHICLES%20ACT%201959/CURRENT/1959.53.UN.PDF

How can you help us?

In order to best support industry innovation while ensuring the safety of all road users, we would like to hear your views on automated vehicles – both in general and specifically regarding regulations surrounding on-road trials. Your responses will help shape the future of on-road trials of automated vehicles in Victoria.

A summary of questions listed within this discussion paper that you might like to consider when making a submission is provided below.

You can submit your feedback by visiting the engageVicRoads website **engage.vicroads.vic.gov.au**

Summary of questions

The importance of on-road testing	Do you agree that on-road testing of automated vehicles is necessary for the long-term safe deployment of automated vehicles? What do you consider to be the key risks associated with on-road testing?
Victoria's existing regulatory framework	Should VicRoads seek to capture testing, trialling and development of automated vehicles operated in a conditionally automated mode in any regulatory changes, thereby imposing trial guidelines and providing VicRoads with power to remove its support for a trial?
Existing powers under the Road Safety Act 1986	Do you believe you would be able to effectively conduct trials of highly automated vehicles using existing powers? Given the broad range of laws and departments that are involved, how would you feel about making single or multiple applications for approval? Are there any other potential barriers to trials of automated vehicles?
New legislative powers	Do you agree that the South Australian model for automated vehicle trial exemptions provides a sound basis for Victorian law? What other limitations or risks do you see with this approach? If a new legislative power was adopted in Victoria, should trial guidelines be enforced by VicRoads withdrawing permission (approvals, permits, notices authorised the trial) for the trial, or are penalties such as those in the South Australian model required?

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