Queensland
Government

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Department of
Transport and Main Roads

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Dr Gillian Miles
Chief Executive Officer and Commissioner
National Transport Commission
Level 3, 600 Bourke Street
MELBOURNE VIC 3000

Dear Dr Miles

Thank you for the opportunity to respond to the National Transport Commission's (NTC) In-Service Safety for Automated Vehicles (AV) Consultation Regulatory Impact Statement (RIS).

I would also like to thank the NTC for its continued role in leading the development of a national regulatory framework to support the safe deployment of AVs. This RIS represents a significant body of work and I trust it will facilitate productive discussions about future regulatory directions for AVs and the achievable first steps.

Queensland is committed to working with the NTC and all Australian Governments to achieve a nationally consistent approach to assuring the safety of AVs as they are deployed to the Australian market and subsequently used in-service. It is critical that we have a practicable and workable regulatory system in place to support the deployment of AVs to ensure that predicted benefits, such as improved road safety and mobility, are realised as soon as possible.

Enclosed is the Queensland Government's response to the RIS. A copy of this letter and the submission are also being emailed at automatedvehicles@ntc.gov.au.

If you have any questions relating to the content of the RIS response, or require additional information, please contact Mr Nick Mackay, Manager (Automated Vehicle Regulation), from the Department of Transport and Main Roads by telephone on (07) 3066 2840 or email at nicholas.l.mackay@tmr.qld.gov.au.

Yours sincerely

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QUEENSLAND GOVERNMENT RESPONSE TO THE NATIONAL TRANSPORT COMMISSION CONSULTATION REGULATORY IMPACT STATEMENT ON THE IN-SERVICE SAFETY FOR AUTOMATED VEHICLES

INTRODUCTION

Queensland appreciates the opportunity to comment on the National Transport Commission 's (NTC) consultation Regulatory Impact Statement (RIS) on *In-service safety of Automated Vehicles* (AVs). The RIS examines the need for specific regulation to assure the in-service safety of AVs, including which parties in the AV supply chain are not adequately regulated and what additional safety duties could address this. Legislative implementation , regulatory governance and funding models are also proposed.

The deployment of AVs will require innovative regulatory responses to assure the safety of the Australian road network, whilst not presenting barriers to technology deployment. The timing of regulatory reforms to support the deployment of AVs in Australia is critical as delays may lead to Australia being insufficiently prepared. An end to end regulatory framework must be implemented in a timely manner to avoid the possibility of AVs being deployed without appropriate regulatory safeguards. To this end, Australian governments must work collaboratively to deliver a holistic and effective national regulatory framework that meets community expectations by delivering safety, while supporting innovation and competition.

Queensland reiterates its previous support for the concept of a national Safety Assurance System (SAS) for AVs, which was proposed to be a holistic and seamless approach to regulating the safety of AVs in Australia. The decision to regulate first-supply using existing mechanisms under the *Road Vehicle Standards Act 2018 (Commonwealth)* (RVSA) , need not limit the implementation of a SAS but rather should be seen as one complementary element. The SAS was founded on several agreed safety criteria that were collectively designed to assure the safety of AVs. It is understood that these safety criteria will be implemented as part of the regulation of first-supply through a Statement of Compliance (SoC) for Automated Driving Systems (ADSs). Queensland is of the view that these safety criteria are a critical starting point for in-service safety and should be applied throughout the in-service use of AVs.

The consideration of AV regulation must be cognisant of Australia's limited position in the international market. For an Australian regulatory model to be sustainable, it must be nationally consistent and support the timely adoption of international standards. For Australia to exercise any influence on the global AV market it must speak with one consistent voice.

KEY ISSUES

A summary of Queensland's position in relation to the key issues addressed in the RIS is provided below.

Parties and duties

Queensland supports the application of a general safety duty on Automated Driving System Entities (ADSEs) , with director due diligence obligations on ADSE Executive Officers. This is a future-focused approach and places an overriding positive safety obligation on ADSEs , who will have the most direct influence over the safety of ADSs. A general safety duty supports an advancing safety standard and provides flexibility for ADSEs in meeting this standard.

In the first instance, a general safety duty on ADSEs will largely avoid the need to place safety obligations on other parties. To satisfy their duty, ADSEs would be responsible for developing

and maintaining systems that ensure ADSs can only be engaged when functioning safely. If another party, such as a repairer or registered owner, does something that negatively impacts the safety of an ADS, the ADSE must be able to detect this and disable the ADS. As the AV market matures, there may be a need to consider expanding a general safety duty onto other parties to create a chain of responsibility. For example, if typical ADS functionality cannot support an ADSEs obligations, there may be a need for broader obligations on other parties to assure safety. However, in the first case there are too many unknowns to support this as a regulatory solution.

In addition to a general safety duty, there is a need for prescriptive obligations to be placed on certain parties. For example, fall-back ready users should be licenced and be required to remain vigilant and fit to drive. There will also be a need for prescriptive obligations on ADSEs where predictability and consistency of ADS road behaviour is required. For example, ensuring ADSs comply with road rules.

Governance arrangements

ADSEs will likely be large corporate entities deploying vehicles to, and operating in, a national market. As such, there will be significant challenges in enforcing a general safety duty on ADSEs at a State and Territory level. Safety issues within the ADSEs control are potential systemic fleet-wide issues that should be addressed nationally in the interest of ADSEs fulfilling their safety duty.

Queensland supports the concept of a holistic national AV regulator as the desired end state. AVs will disrupt the regulatory status quo to such an extent that vehicle safety, both at first-supply and in-service, will need to be regulated nationally in the futu re. This approach seems best suited to regulate a large fleet of AVs where complex liability issues associated with human drivers and ADSs will be limited and the reliance on on-road enforcement is reduced.

However, the case has not been made for the short-term establishment of such a regulator. As such, interim arrangements are required to ensure the appropriate distribution of regulatory responsibilities in a mixed fleet environment, while delivering a single point of accountability for ADS safety and ADSE compliance. To achieve this, Queensland supports the leveraging of the Commonwealth Government's ability to regulate corporations to oversee ADS safety and ADSE compliance holistically through first-supply and in-service. This would include the enforcement of a general safety duty on ADSEs. States and Territories will need complimentary powers to undertake initial investigations of potential ADS failures and thus support the Commonwealth in this role. Systemic ADS issues could be referred to the Commonwealth Government for investigation, compliance management and ADSE enforcement.

Prescriptive obligations that are to be placed on human road users (for example, fall-back ready users) can be managed under amended state and territory laws (for example, road rules). This will provide consistency with current practice and ensure human road user behaviour is regulated locally.

Appendix A provides illustrative examples of the Proposed approach to AV in-service safety

This approach to the national framework does, however, signal an emerging risk of fragmented national policy development for AVs. Firstly, there is an apparent disconnect between the approach to regulating first-supply to the Australian market, as led by the Commonwealth Department of Infrastructure, Transport, Cities and Regional Development (DITCRD), and the development of the proposed in-service safety regulatory scheme, which is the subject of this

RIS. There is also a risk of fragmented policy outcomes between the various reform packages led by the NTC. For example, it is critical that in-service safety regulation closely aligns with reforms to Motor Accident Injury Insurance (MAIi) schemes, Connected and AV data access and privacy requirements and the development of comp liance and enforcement mechanisms. The regulation of AVs across these areas must be intrinsically linked to ensure that there are no gaps, duplications or inconsistencies that result in unsafe or inefficient outcomes.

As proposed *above*, in the near-term, regulatory responsibilitiesfor the in-service safety of A Vs will likely be split between the Commonwealth (ADSE and vehicle safety elements), and States and Territories (human road user and on-road elements). To avoid a fragmented national approach to AV safety, the formalisation of a national governance arrangement should be considered that provides for a more agile decision-making process with clearer accountability of all parties. An Inter-Governmental Agreement , or other similar coordination tool, may be useful to formalise the roles and responsibilities of all Austra lian governments and serve as a clear commitment progressing nationally consistent AV reforms with priority. Such an agreement could establish a decision-making body with representatives from all Australian governments and a mandate to resolve implementation issues and deliver the desired national framework. This body could initially develop policy and legislation, with key milestone decisions advanced for decision to Australian Transport Ministers at the Transport and Infrastructure Council. Post AV deployment , this body could foreseeably *evolve* into a national point of accoun tability for managing critical incidents and maintaining legislation and policy. An eventual transition to a national regulatory body is also foreseeable once the market matures.

Appendix B provides an illustrative example of a governance framework for the national regulatory framework.

Legislative implementation

Legislative implementation should logically follow desired policy outcomes and governance arrangements. The proposed role of the Commonwealth Government in overseeing the in-service general safety duty on ADSEs could be achieved via a range of Commonwea lth legislative mechanisms. Where there is a need for consistency of state and territory laws, to support in-service safety, model or applied laws could be appropriate. For instance, obligations on fall-back ready users could be implemented in this way.

Funding model

There is a need for greater clarity of regulatory responsibilities and the scale and scope of the regulatory task before funding models can be agreed. As a general principle, cost recovery is preferred, and the cost of regulatory activities should be met by the parties being regulated. To fund an ADSE regulator, options should be explored that enable cost recovery from ADSEs, as opposed to consumer pays models, such as vehicle registration.

PREFERRED APPROACH

Queensland remains committed to achieving a functional national regulatory framework that assures the safety of AVs. In terms of the options presented in the RIS to deliver this framework, Queensland is of the view that a hybrid approach that builds on Option 3 would be most effective and practical in the short-term.

In the interests of achieving national consistency and supporting the regulation of ADSEs at a national level, a single point of accountability for ADSE regulation in the Commonwealth Government is supported. This is necessary to ensure ADSEs are regulated consistently

across Australia and risks under their control are mitigated uniformly across the national fleet. The Commonwealth Government is well placed to holistically manage ADSEs through first-supply and in-service, including the application of a general safety duty on ADSEs with director due diligence obligations.

The Commonwealth Government can legislate ADSEs and their directors as well as remote drivers under existing constitutional heads of power to regulate corporations and communications. This could be supported by prescriptive duties on human road users, for example fall-back ready users, in state and territory legislation.

States and territories will likely retain on-road enforcement responsibilities and will need powers to investigate potential ADS incidents to compliment the role of the Commonwealth. In addition, states and territories will also require powers to swiftly address safety issues that present on their road networks. For example, amended defective vehicle powers may be appropriate.

Detailed policy analysis is required as part of the next phase of AV reforms to clearly identify the roles and responsibilities of Commonwealth, state and territory regulators. This work should ensure each regulator has appropriate powers and effective communication protocols are established between regulators.

RESPONSE TO RIS CONSULTATION QUESTIONS

1. **To what extent has the consultation RIS fully and accurately described the problem to be addressed, including the in-service safety risks? Please provide detailed reasoning for your answer.**

Queensland considers the RIS has mostly described the problem to be addressed. Some additional factors for consideration are outlined below.

Scope

Areas considered out of scope will still need to be considered to ensure regulatory frameworks are holistic. This includes:

- Enforcement and compliance must be considered in detail. Making a determination about the future regulatory framework for AVs without a clear view of the implementation model carries significant risk. Further work will be required, and decisions may need to be revisited, once the detailed work examining enforcement and compliance options has been completed. New compliance and enforcement models should be explored that shift away from on-road human-based enforcement and focus instead on proactive audit and investigation of ADSEs and other regulated parties.
- While specific changes to the Heavy Vehicle National Law (HVNL) are out of scope of the NTC's in-service safety for AVs reforms, broader impacts on the heavy vehicle industry and road freight task should still be considered. Inconsistent regulatory approaches to in-service safety across Australia will constrain national road freight movement in the future.
- Changes to policy and regulation at a State and Territory level will require consideration to inform a decision on in-service regulatory options. Costs associated with government implementation and industry compliance will need to be considered and may be significant, depending on implementation approach.

Need to regulate

The RIS (at section 3.3.2) could further explain why market forces are considered insufficient to mitigate risks. For example, without specific regulation vehicle manufacturers could avoid liability by using multiple corporate structures (including international structures) or by attributing liability to the many other parties involved in the AV supply and use chain. Aggrieved parties would need to pursue civil remedies themselves to seek redress at significant cost. The complexities and delays inherent in legal systems would offer shelter to manufacturers, particularly if confidential settlements are reached. Traditional civil remedies would not be timely to effect ongoing supply and the risks to other AV users and the public. In addition, reliance on market forces alone assumes longevity of the ADSE. An ADSE may discontinue supply or cease to have a corporate presence in Australia while the AVs are still in-service. This is discussed further in response to Question 5.

Economic impacts

The development of a regulatory framework for AVs will also need to consider broader economic impacts. For example, the introduction of obligations in the interest of public safety may drive the establishment of market monopolies, whereby large companies create market entry barriers for start-ups, small and medium enterprises. Queensland therefore supports the development of technology neutral regulatory frameworks that enable small and medium enterprises to participate in the market.

The introduction of AVs will inevitably lead to market disruption, however the impact on existing industries must be considered in the design of the regulatory framework. For example, any form of AV regulation will likely impact the aftermarket industry, repairers, mechanics and third-party inspection schemes. For this reason, Queensland recommends caution before imposing regulatory obligations on these parties in advance of AV market development. Furthermore, the impact of regulating AVs needs to be understood through post implementation evaluation, and regulatory frameworks may need to be adjusted to support local supply chains and create local jobs.

Emergency services

It is acknowledged that interaction with enforcement and emergency services is included in the safety criteria that will be applied at first-supply. However, ongoing in-service obligations will be required to ensure AVs appropriately interact with emergency services. ADSEs will need to ensure that their ADSs can respond to specific directions (for example, to pull over) as well as respond appropriately to the approach of an emergency services vehicle while safely negotiating traffic and congestion.

***MAIi** schemes*

It is noted that **MAIi** is considered separately to the RIS. However, the externalities described in the problem statement under Section 3.3.2, do not adequately describe the cost of an accident for an injured person. Specifically, ongoing care and rehabilitation costs for a seriously injured person are not addressed despite this representing a significant cost to MAIi and national injury insurance schemes.

2. **Have we correctly identified the parties with an influence on the in-service safety of automated vehicles and accurately described their role? If you identify additional parties, please explain what their role is.**

Queensland supports the list of identified parties . For completeness, one additional party is suggested below. Analysis of the role and influence of specific parties is included in response to Question 3.

Insurers

Comprehensive motor insurers , commercial insurers , **MAIi** insurers, public liability insurers and workers compensation insurers are not identified at any level of influence. However, insurers may have substantial influence over many of the parties identified. For example, through insurance types such as liability insurance for repairers , Compulsory Third Party (CTP) insurance for owners, and product liability insurance for manufacturers. Insurers can influence the parties responsible for in-service safety through the pricing of risk as part of insurance premiums. Those parties seen as the lower-risks would be more likely to see a reduction in premium while there would be a relative increase in premiums for higher-risk parties.

3. **Have we accurately assessed each party's influence on the in-service safety of automated vehicles? If not, please provide details.**

The approach to regulating fir st-supplyhas the potential to significantly impact the level of influence that various parties have on in-service safety and associated need for additional in-service regulation . Without a clear view of how the agreed safety criteria will be implemented at first-supply and if, or how far, they will reach into the in-service regulation of AVs, it is challenging to accurately assess the role and influence of many parties. For example:

- *Education and training* - If an ADSE is responsiblefor providing adequate education and training to users of AVs, the influence of many of the identified parties may be diminished. This includes dealers, second-hand dealers, fleet managers, commercial operators and registered operators.
- *Installation of system upgrades* - If an ADSE is responsible for the ongoing installation of safety critical software updates, there may not be a need to consider associated regulatory obligations on other parties. Reliance on registered owners should be avoided as they may not interact with the vehicle on a regular basis and evidence shows that some registered owners are apathetic in ensuring safety critical repairs are conducted in a timely fashion. Experience with safety recalls shows that a substantial portion of registered operators ignore requests to repair vehicles, even when these repairs are mandatory and are offered free of charge (for example, the ongoing Takata airbags mandatory safety recall). Queensland considers that, at a minimum, the ADS should be disabled by the ADSE if safety critical updates are not installed. This requirement should be considered in the context of foreseeable connectivity issues and how this should be discharged where AVs are 'out of range'.
- *Operational Design Domain (ODD)* - The assessment and type-approval of an ODD at first-supply needs to be managed on an ongoing basis to cater for system upgrades. This must avoid the need for road managers to make secondary road access decisions. Queensland considers that' it is a poor outcome if State and Territory road managers make such secondary access decisions that result in fragmented access for AVs

nationally. Note, that heavy vehicle access decisions need to remain under the control of road managers under the HVNL.

- *Minimal risk condition* - The influence of several identified parties varies significantly based on the application of the minimal risk condition safety criterion. The simplest regulatory solution would be to place an ongoing positive obligation on an ADSE to have appropriate processes and systems in place to detect faults in the ADS. Where a fault is detected, the ADS should be disabled, or altered in a way the supports safe operation, until repaired. An overriding obligation on the ADSE could reduce the need:
    - for specific regulatory obligations to be placed on repairers or modifiers, substantially reducing the scale of the regulatory task;
    - to conduct periodic ADS safety inspections similar to how existing roadworthy inspections are currently performed on the mechanical aspects of vehicles; and
    - to place specific requirements on human users, such as registered owners, to install safety critical software updates.

  Broader safety and network efficiency outcomes may need to be considered when assessing an ADSEs processes for meeting the minimum risk condition. For example, it is a poor outcome if the vehicle stops in a lane of traffic on a high-speed road. Doing so will cause traffic congestion and poor safety outcomes. Satisfying the minimum risk condition should require an ADSE to demonstrate how an ADS will stop safely in a way which does not negatively impact the safety or convenience of others.
- *Interaction with enforcement and other emergency services* - It is important for national safety standards to ensure AVs can:
    - interact with and move out of the path of emergency services vehicles;
    - adhere to the directions of emergency service workers which may include the ability to differentiate between an imperative to stop and pull over and the imperative to move out of the path of emergency vehicles; and
    - be secured and disabled by emergency service workers in the event of a crash to minimise risk to emergency workers, public safety and nearby infrastructure.

  Consideration must also be given for how interaction with other authorised persons will be facilitated. For example, an ADS will be required to respond appropriately to requests or directions from school crossing supervisors and traffic controllers.

  Depending on the maturity of AV technologies , obligations on human users, such as the fall-back ready user, may need to be considered to support safe interactions with enforcement officers, emergency services and other authorised persons.

If the scope of regulation at first-supply does not extend to cover the parties and scenarios described above, the application of in-service safety duties should be considered instead. Queensland also provides the following commentary to support the analysis of the influence of various parties on the in-service safety of AVs.

ADSEs

Further consideration of ADSE business models may be required, both at first-supply and in-service, to ensure regulatory frameworks are flexible and can accommodate all likely deployment scenarios. It is possible that corporate partnerships will emerge, where several

entities will collectively perform the role of the ADSE. For example, vehicle manufacturers and the ADS software providers may enter into a joint venture to design, manufacture and deploy AVs. In these instances, it may not be possible or preferable to pinpoint a single legal entity to take on the role of ADSE. Consideration should be given to how this role could be shared, it desired by industry, and what additional issues or risks this would present.

Fall-back ready users

Queensland supports the assessment made in the RIS of tall-back ready users of level 3 (conditional automation) vehicles. As per previous Ministerial decision, obligations will be required to ensure these users are appropriately licenced, tit to drive, comply with relevant alcohol and drug prohibitions, are sufficiently vigilant to respond to take-back requests and take-back control within a reasonable amount of time to ensure the continued sate operation of the vehicle. Amended obligations will also be required to ensure that other driver obligations are extended to tall-back ready users, including seatbelt requirements (both to be restrained themselves and ensure child occupants are restrained), responding to emergency vehicles and requests from authorised officers as well as stopping and remaining at the scene of an accident and providing appropriate assistance.

There will also be operational considerations associated with tall-back ready users. For example, how alcohol ignition interlock requirements will apply.

Consideration is required tor potential obligationson human 'drivers in waiting' tor higher-levels of automation. As a general principle, it a person intends on performing the driving task at any point in a journey they must be tit to drive, appropriat ely licenced and comply with relevant drug and alcohol prohibitions. Regulatory obligations should support this.

Remote drivers

The concept of a remote driver must be carefully considered given this is a new party with different safety risks. Requirements such as licensing, training and fitness to drive will not be able to be enforced at the roadside and will require a different enforcement model.

Remote drivers should, at a minimum, meet the requirements of a driver tor the class of vehicle that they are monitoring. However, further work is required to understand the risks associated with remote drivers and how best to control these risks. A remote driver may need to be subject to more stringent safety requirements, such as total alcohol prohibitions, specific training requirements and limitations on the number of vehicles they can concurrently monitor. Regulatory controls placed on air traffic-controllers may be a useful basis tor comparison tor more specific requirements. For example, air traffic-controllers are subject to specific licensing regimes, training requirements and drug and alcohol testing. The duty of care between the remote driver and the passengers of the AV and other road users should also be considered, given the existence of such a duty under common law is not currently established.

Consideration is also required as to whether a remote driver would be limited to a person who is under an ADSE's control, or whether they could be any person, including the owner of an AV or a third-party entity. It should be noted that the remote driving service may be ottered by a separate legal and commercial entity to the ADSE. Queensland is aware of the existence of such emerging busine ss models locally.

Where remote operation of an ADS is part of an ADSEs deployment model, the ADSE will need to demonstrate how this will be managed safely. This may be achieved via an extension of the Human Machine Interface (HMI) safety criterion at first-supply. An ADSE would need to

demonstrate: how remote drivers will be engaged, trained, be fit to operate and maintain sufficient vigilance and situational awareness; how the vehicle will pass control over to a remote driver; how the remote driver will effectively control the vehicle; and how connectivity issues will be managed between the vehicle and remote driver's location. To mitigate risks associated with remote drivers, ADSEs may elect to only allow a person under their direct control to undertake the task.

There is a need to consider a national approach to regulating remote drivers as it is likely that some deployments will involve a remote driver monitoring from a different jurisdiction to where the AV is operating. To the extent to which first-supply arrangements cannot extend to in-service regulation of remote drivers, national law should be considered. As part of this, a prohibition on overseas operation should be considered in the first instance. There is also an opportunity to monitor international deployment models with respect to remote drivers.

Modifiers

The RIS assumes that modifier s will alwaysbe a repairer, registeredowner or ADSE. However, Queensland considers that modifiers need to be considered independently of other parties. Based on existing experience, modifiers are not always one of these parties and there is insufficient evidence to assume that a future market for AV modifications will be different. Consideration is also required about types of modifiers and whetherall modifiers have a similar level of influence and risk profile. The RIS focusses on physical modifications, however software modifications will impact the safety of ADSs in the future. Software modifications will include those conducted by the ADSE but may also be conducted by third-parties (for example, the installationof 'apps' or plug-ins).

Currently in Queensland, certain vehicle modifications (not related to an ADS) must be inspectedand cleared by an accredited person before the vehicle can be used on a road. This is supported by existing state-based legislative frameworks.[1] Some vehicle modifications require approval, others must be done in accordance with a code of practice that does not cover AVs. Development of codes of practice for AV modification is not thought to be practical due to the highly complex nature of ADSs and limited access to manufacturer's proprietary technology.

Consideration is required as to the safety assurance approach for modifications that impact the safety of an ADS. As discussed above, if the ADSE will have an ongoing positive obligation to ensure the safety of an ADS and prevent the ADS from being used when unsafe to so, specific regulatory requirementsfor modifications may not be required. Under this approach the ADSE could be responsible to authorising and approving modifications (both physical and software). Modifications are discussed in more detail in response to Question 5.

Repairers

The nature of the market for AV repairs is unknown. Currently, independent repairers are often technically unable or unwilling to make repairs to Advanced Driver Assist Systems. These repairs are typically undertaken by the vehicle's manufacturer.A similar model may emerge once AVs are deployed, whereby the market will evolve and ADSEs will limit the ability for the ADS, including software and hardware to be repaired by unapproved third-parties. Given the level of uncertainty, it is almost impossible to assess the level of influence a repairer, who is

[1] *Transport Operations (Road Use Management-Accreditation and Other Provisions) Regulation 2015* (Old)

not operating under the control of an ADSE, will have on ADS safety in the future. The need for additional regulation of repairers is discussed in response to Question 6.

Vehicle inspectors

It should be noted that vehicle inspectors are independent third parties who are distinct from transport compliance officers (often referred to as inspectors). Like modifiers and repairers, the role and influence of vehicle inspectors is unknown. Depending on the approach taken at first-supply and in-service duties placed on an ADSE, periodic vehicle inspections of ADSs may or may not be required to assure safety. In the longer-term, a positive and ongoing obligation on an ADSE to assure safety of the ADS will likely render traditional vehicle inspection processes unnecessary. In the near-term, if the ADS is to be included as part of periodic inspections, such as roadworthy inspections , regulatory frameworks that govern the role of the vehicle inspector will need to be reviewed and amended. Requirements for programmed inspections on ADSs must be based on evidence to support safety and consider the cost to government and industry.

Road managers

Governments will not be able to tailor infrastructure to AV technologies unless there is clear standardisation of infrastructure requirements. For example, line markings, digital maps and signage requirements. In addition, even if there is standardisation of technologies , it will take a long time for the total road network to be updated. Given this, regulatory frameworks must be technology and infrastructure agnostic. ADSEs will need to ensure that ADSs will operate safely on existing infrastructure and should not depend on governments to make specific infrastructure improvements for bespoke AV technologies. Existing road manager duties are thought to be sufficient to ensure the safety of transportinfrastructure for AVs.[2]

4. Have we accurately broadly described the regulation that already applies to relevant parties that would help ensure the in-service safety of automated vehicles?

Broadly, the RIS describes many of the regulatory frameworks that currently govern the use of vehicles on roads and how they would apply to the various parties in the AV supply and use chain. The following commentsare provided to support further analysis.

Approach to regulating first-supply

There is a need for greater exploration of the assumptions made around the first-supply approach. For example, will first-supply regulation under the RVSA apply a point in time safety standard or an advancing safety standard? The traditional model is to take a point in time approach to the standards that govern the physical components of a vehicle due to the cost and impracticalities of replacing physical components. However , a different approach is required for the software elements of an ADS that will likely be updated at minimal cost and inconvenience to vehicle owners.

Community expectations for the safety of AVs will almost certainly change over time and the regulatory approach must be sufficiently flexible to meet these expectations. This aligns with the current approach to regulating the safety of human drivers. Expectations of safety change over time and drivers must adapt their driving behaviours to account for various changes to rules and requirements (for example, road rule changes, reductions in alcohollimits and fitness

[2] Section 37 of the *Civil Liabilities Act 2003* (Old) limits a road authority's liability in circumstances where the condition of a road caused damages, unless the road authority is specifically aware of the risk and fails to take appropriate actions.

to drive requirements). This advancing safety standard for human drivers applies to all drivers and not just those licenced after a point in time. So far as possible, the safety standards that apply to ADSs should be applied in the same manner.

Vehicle recalls

One way of achieving an advancing safety standard for ADSs is to reconsider the concept of vehicle recalls. Traditionally, vehicle recalls have required the vehicle to be physically presented to a repairer for the safety issue being rectified. However, an ADS safety issue could be identified and addressed much more efficiently. For example, the ADS could be immediately disengaged until the safety issue is resolved and a recall may be able to be actioned by a software update without the need for the vehicle to be physically brought in for repairs . Thi s approach would also lend more weight to a mandatory safety recall of an ADS, where the safety issue could be resolved without the need for the vehicle's owner acting or consenting to the repairs. The use of vehicle recalls in this way would allow for ADS safety issues to be addressed on a scale and pace not possible for traditional vehicles. The role of vehicle recalls under the RVSA should be considered as part of the des ign of any new or amended legislative frameworks to assure the in-service safety of AVs.

This would support a transition to a more vehicle-centric approach to compliance, instead of trad itiona l roadside enforcement. Non-compliances could be managed at a fleet level and an ADSE regulator could proactively work with ADSEs to ensure safety issues are addressed.

Existing state and territory legislation

Queensland's analysis shows that regulatory frameworks governing drivers (such as licensing and fitness to drive) and vehicles (such as registrat ion, inspections, modifications and standards) will almost certainly require amendment in the future to clarify application to AVs and ensure the policy intent is preserved. As stated throughout this submission, the nature of these amendments will depend on other regulatory approaches, including at first-supply and in-service duties. Amendments may be needed to incorporate AVs or alternatively exclude AVs. In either case, a level of nation al consiste ncy is likely desirable.

Public passenger regulation

The RIS assumes that AVs providing public passenger services will likely be covered under point-to-point legislation (known as personalised transport in Queensland). However, without amendment this is unlikely to be true. For example, the existing legislation governing booked - hire services in Queensland assumes a human driver is always provided with the vehicle.[3]

It is likely that AVs will cause a blurring between what is considered a public passenger transport service and what is considered a private transport service. For example, a student 's journey to school in an AV owned or leased by the student's parents may be considered a public passenger service under existing legislation. This is not the desired intent. Consideration will need to be given to how AV passenger transport services will be regulated. Existing passenger transport regulation (encompassing both personalised forms of transport and mass transit) will need to be reviewed to consider the distinction between public and private transport. The need for such a review to be conducted in a nationally consistent manner has not yet been established.

[3] See section 71 of the *Transport Operations (Passenger Transport) Act 1994* (O ld)

Registration and CTP insurance

The RIS identifies the existing regulatory requirements that apply to compliant vehicles. It should be noted that jurisdictions have varying approaches to the registration of non-compliant vehicles. In Queensland, this is known as the conditional registration scheme and enables limited access to the road network for non-compliant vehicles. This type of registration allows additional conditions to be placed on the use of these vehicles. For example, time of operation or a need to obtain local road access permits. It is anticipated that there will be a demand for automated non-complying vehicles to enable efficiencies in a range of industries (such as farming equipment that may still have a legitimate need to access the road network). Consideration should be given as to how the broader AV regulatory framework might be applied to these non-compliant vehicles that do not receive import approval under the RVSA and so will not be subject to first-supply arrangements.

In addition to vehicle registration, all jurisdictions within Australia require registered vehicles to have CTP insurance to drive on a road. It is an offence to drive an unregistered and uninsured vehicle on a road. The pricing of insurance for in-service safety may place incentives on vehicle owners, manufactures, repairers and ADSEs to improve or maintain the in-service safety of AVs. Further, there is the potential for a court to award exemplary, punitive or aggravated damages against the insured party may act as an additional incentive to ensure parties with direct influence over the in-service safety of AVs improve or maintain in-service safety. Exemplary, punitive and aggravated damages are typically not covered by MAIi schemes. For example, if a vehicle owner (the insured) knowingly does something that negatively impacts the safety of an AV, and then drives the car and causes an accident, the vehicle owner may be personally liable to pay damages. The interaction between in-service safety regulation, insurance schemes and common law rights required careful consideration.

Dangerous goods

To the extent that AVs will be used to transport dangerous goods, there may be relevant obligations under current legislation[4] Hazards associated with the transport of dangerous goods will require a national approach as is currently overseen by the Commonwealth Government in the development and distribution of model regulations and codes of practice (for example, the Australian Code for the Transport of Dangerous Goods by Road and Rail).

5. Do you think there are any new risks posed by second-hand ADS components, after-market modifications or the transfer of ownership of automated vehicles, which may not be adequately addressed by existing regulation designed for conventional vehicles?

Queensland is of the view that there are several new safety risks posed by using second-hand ADS components, after-market modifications and the transfer of ownership of AVs. These safety risks are not adequately managed by existing regulatory frameworks and will require consideration. These risks are discussed in detail below.

AV users are not appropriately educated or trained

There are several possible approaches to ensuring users of AVs are appropriately educated and trained. The applicationof fir st-supply regulation and the role of various parties in the AV

[4] See for example the *Explosives Act 1999* (Old)

supply and use chain (for example, ADSEs, manufacturers, dealers, second-hand dealers, registered owners, driver trainers and registration and licensing authorities) will be important.

Changes to driver licensing frameworks and vehicle registration transfer processes could be consideredto support ongoing education and training of AV users. However, Queensland does not consider this the most effective mechanism. Without significant standardisat ion of technology, it will be challenging to design appropriate educational materials. It is also unlikely that all AV users will interact directly with registration and licensing frameworks.

Regulatory models would be significantly simplified if overarching obligations to ensure education and training are provided were placed on the ADSE and the relationship with these other parties left to the ADSE to manage (for example, via contract) without the need for specific regulation.

ADS parts from a written-off AV are used to repair other AVs

Queensland currently operates a two-tiered written-off vehicle scheme. Vehicles are classified as a statutory write-off, that is irreparable, or a repairable write-off, where damage to vehicles can be repaired and inspected before re-use. Written-off vehicle processes may need to be reconsidered for AVs. For example, to what extent could ADS parts from a written-off vehicle be used in the repairs or modifications of other AVs? In addition, are new or amended inspections required for an AV that has been classified as a repairable write-off and repaired?

As an interim measure, written-off vehicle inspection requirements could be amended to require a statement from the ADSE to reaffirm the safety of the ADS following repairs. This aligns 'quality of repair' processes that are either in-place or being considered in most jurisdictions. Longer-term, ADSEs may be best placed to manage this without direct oversight from vehicle inspections.

After-market modifications negatively impact the safety of an ADS

The concept of what constitutes a modification must be considered. Broadly, Queensland considers that there are four categories of modifications for AVs which may impact the safety of an ADS.

1. The fitment of an ADS to make a vehicle automated, where previously it was not. This may involve the fitment of both new hardware and software components ('self-driving kits'), or only require new software components ('software upgrades').
2. A modification to an existing ADS. For example, either to increase the level of automation, or to improve the safety, reliability, or efficiency of the ADS.
3. A traditional modification to the physical aspects of an ADS-equipped vehicle. For example, modifying the engine capacity or the vehicle's mass or dimensions.
4. A temporary modification to a vehicle that could impact an ADS. For example, attaching one or more trailers, or the carriage of a protruding load.

The safety of the ADS will need to be assured in each modification category. Options to achieve this are discussed in the table below.

Category	Proposed regulatory tools
1. ADS fitment	• First-supply arrangements should be leveraged to ensure that ADSs made available for after-market fitment are safe. This should apply to both 'self-driving kits' and 'software upgrades'.

	• Failure to capture both types of automated upgrades in first-supply arrangements would create a loophole, whereby vehicles upgraded to level 3 while in-service are not subject to the same safety assurance process as vehicles supplied to the market as level 3 vehicles. For example, the identification of a responsible ADSE and self-certification against the SoC. • If this loophole is not closed, the market could adapt to avoid real or perceived regulatory burden. Vehicles may be supplied to the market at level 2 and subsequently be upgraded to level 3 or 4 via software upgrade only. • Consideration is also required as to transitional arrangements for vehicles that are in-service at the time of implementation of first-supply arrangements. Vehic les subsequent ly upgraded to level 3 or higher should also be captured in the first-supply arrangements.
2. ADS modification	• Any modifications that impact the ADS should be subject to approval by the ADSE as they are best placed to understand if the modification can be done safely. For example, this could include a third-party software plug-in. • Where a modification impacts the original type-approval of the vehicle DITCRD may need to be notified.
3. Traditional modification	• Application of minimal risk condition safety criterion, either at first-supply or in-service, should require an ADS to be safely disabled if a defect is detected that impacts the safe operation of the ADS. This would include a defect caused by an improper modification. • As an interim measure, existing modification inspection requirements may need to be amended to require a statement from the ADSE that the vehicle modifications have not adversely impacted the safety of the ADS.
4. T e mporary modification	• Application of minimal risk condition safety criterion, either at first-supply or in-service, should require an ADS to be safely disabled if a defect is detected that impacts the safe operation of the ADS. This could include a defect caused by a temporary modification in some circumstances. • A prescriptive obligation may be required on 'persons' to not alter the configuration or load of an ADS equipped vehicle in a way that will negatively impact the safety of the ADS. This could apply to a driver, fall back-ready user, registered owner, vehicle loader, or commercial operator.

An AOSE stops supporting an ADS

It is likely that once vehicles reach a certain age, ADSEs may stop supporting the ADS. It is acknowledged that first-supply arrangements will require an ADSE to nominate support periods. In-service regulation will need to consider how safety will be assured beyond this. ADSEs may need to demonstrate how they will manage an ADSs end of life once no longer supported, either requiring an ADS to be disabled or vehicle recycled, destroyed or exported.

It is possible that support arrangements may be extended via a purchase arrangement between the ADSE and consumer, regulatory frameworks will need to support this.

An ADSE withdraws from the market leaving a fleet of ADSs without a responsible entity

There will be an ongoing risk that an ADSE could withdraw from the Australian market. For example, due to lack of commercial viability or insolvency. Careful consideration is required as to how the safety of ADSs under an ADSE's control would be managed if they withdrew from the Australian market. This risk is lessened in a fleet deployment model as without individual ownership consumers are less likely to be negatively impacted. There may also be a more compelling financial incentive for alternative ADSEs to take over responsibility of a fleet of vehicles if there are ongoing service fees.

It will be necessary to explore how the transition from one ADSE to another during the in-service life of an AV will be managed. The process for managing the transition of Intelligent Access Program Service Providers, as managed by Transport Certification Australia may be a useful example. Agreements between Intelligent Access Program Service Providers and Transport Certification Australia stipulate the requirements to manage this process.

In addition, the regulatory response if a new ADSE could not be identified needs to be understood. The outcome that large fleets of AVs could be rendered unsafe and unusable, or unusable in automated mode, is not desirable.

It is important that financial requirements imposed at first-supply are suitable to mitigate the risk of ADSE withdrawal. There may be consideration given to the payment of a bond , surety deposit or industry self-insurance fund to protect consumers in the event of ADSE withdrawal. This approach has been used in some industries where the cost of market failure to government or consumers is very high, for example, construction[5] and mining[6].

Where an ADSE is not the vehicle manufacture, the vehicle manufacturer will likely have a role to play in managing the withdrawal of an ADSE from the market. This is similar to existing vehicle recall processes where the manufacture manages the process, even if the fault is with a specific component.

6. Do you think the parties with an influence on in-service safety are sufficiently covered by Australia's current legal frameworks?

Most of the relevant existing regulatory frameworks governing the use of vehicles on roads are primarily designed to enable rights of recovery or punitive action in the event of a breach . Assuring the safety of AVs will require a more proactive and flexible regulatory approach. The adequacy of existing regulation on the various parties is discussed further below.

ADSEs and ADSE Executive Officers

Queensland considers that existing regulatory frameworks do not adequately address the risks that should be managed by ADSEs throughout the in-service life of ADSs. Existing regulatory frameworks do not provide sufficient oversight of the role and responsibilities. Queensland is of the view that additional regulatory obligations are required to assure the safety of ADSs under the direct control of ADSEs. Associated due diligence obligations on ADSE directors (or Executive Officers) appear relevant to ensure ADSEs comply with any duties imposed.

[5] Home Warranty Scheme regulated by the Queensland Building and Construction Commission.
[6] Mining Rehabilitation Fund regulated by the Western Australian Department of Mines, Industry Regulation and Safety.

Repairers

Queensland is of the view that regulatory frameworks, both existing and in-development, sufficiently cover the risks posed by vehicle repairers , in the first instance. This view is based on:

- The application of the minimal risk condition safety criterion, either at first-supply or in-service, should require an ADS to be safely disabled if a defect is detected that impacts the safe operation of the ADS. This would include a defect caused by improper repairs.
- The Commonwealth Government's proposed mandatory scheme for the sharing of motor vehicle service and repair information[7] will also provide some safety assurances for ADS repairs. Under this scheme, it is proposed that access to Safety, Security and Environmental (SSE) information will be able to be restricted by manufacturers. SSE information will only need to be released where a third-party repairer can demonstrate that they are sufficiently qualified, trained, skilled or experienced to use the SSE information to appropriately undertake the required repairs. It is assumed that information relating to the ADS will be considered SSE information and therefore ADS repairs will either be undertaken by the manufacturer or by an approved third-party.

More generally, the Australian Consumer Law contains generic provisions that may apply in particular circumstances. This includes consumer guarantees which require services, including the repair of vehicles, to be rendered with due care and skill[8] and be fit for any specified purpose[9].

Other parties

The extent to which existing regulatory frameworks are suitable to regulate other parties in the AV supply and use chain is unclear. The RIS makes significant assumptions about the role, reach and suitability of existing jurisdictional regulatory frameworks without sufficient analysis. The need to conduct such analysis will depend on the duties that are placed on ADSEs and any residual gap in the management of AV in-service safety risks. As outlined in this response, Queensland's preferred approach is to have an overarching safety obligation placed on ADSE 's in the first instance, which should reduce the need for regulation of other parties in the first-instance.

If there is an expectation that existing regulatory frameworks will be required to support obligations on other parties to assure in-service safety, Queensland's view is that amendments will be required. This includes the regulation of registered owners, drivers, remote drivers, fall-back ready users, modifiers, vehicle inspectors, commercial operators, passengers, other road users, dealers and second-hand dealers.

If these other parties are to be regulated using existing jurisdictional regulatory frameworks, the risk of inconsistent approaches being developed is high. For example, regulating roadworthiness of an ADS equipped vehicle at a jurisdictional level without a layer of national consistency will contradict the overall aim of the AV reforms. Inconsistent approaches to vehicle standards and inspections may create challenges for ADSEs, even with a consistent and harmonised approach at first-supply and consistent high-level safety duties.

[7] https://treasury.gov.au/sites/default/files/2019-03/c2019-t358022-consultation-paper-2.pdf
[8] See section 60 of the Australian Consumer Law (Commonwealth)
[9] See section 61 of the Australian Consumer Law (Commonwealth)

Data access and privacy requirements

It is acknowledged that Connected and AV data access and privacy requirements are the subject of a separate work program led by the NTC. However, a short discussion about data is relevant to the question regarding the suitability of existing legislative frameworks. AVs will generate a high-volume and vast array of data. This will include data relating to the ADS performance and safety and personal information. For example, sensitive information about a person's location and biometric information collected by audio-visual devices.

To assure the in-service safety of AVs, regulatory and enforcement entities will require access to relevant AV data, particularly data relating to safety and performance. First-supply arrangements relating to data recording and sharing will not necessarily provide a lawful authority for the ongoing collection and disclosure of data. A clear legislative framework is required to provide for the ongoing collection and disclosure of data and to ensure adequate privacy protections are in place. The framework should provide for the lawful, and limited, collection, use and disclosure of AV data. This should place clear obligations on ADSEs to provide information to regulatory and enforcement entities for specified purposes, and appropriately restrict collection, use and disclosure of personal and non-personal information by all entities.

Any legislative framework for the collection, use and disclosure of AV data should also include a statutory right for a person to apply to the ADSE or other relevant entity for access to their data, including to dispute criminal or civil liability.

7. Do you think that a general safety duty to ensure the safe operation of the ADS 'so far as reasonably practicable' is appropriate to address the safety risks?

Queensland considers that a general safety duty to ensure the safe operation of the ADS is an appropriate starting point to address in-service safety risks. It would be very difficult to maintain a comprehensive set of prescriptive obligations sufficient to assure all aspects of safety across the in-service life of an ADS. A general safety duty provides a flexible regulatory approach and minimises the need for reactive regulation as new safety risks are identified.

The threshold 'so far as reasonably practicable' allows for an advancing safety standard as technology improves and community expectations change. There is value in defining the key elements of reasonably practicable in a similar way to the HVNL. This will support judicial interpretation and ensure there are appropriate limits placed on a general safety duty, including an ability to weigh the costs of action with the risks of damage.

It is worth noting that all major Australian transport reforms have implemented general safety duties and, as such, this approach has significant precedent. This includes general safety duties governing the operation of heavy vehicles, personalised transport vehicles (booked hire and taxis), rail safety and domestic commercial marine vessels.

Considerable work is required to develop the detail that will support associated communication, compliance and enforcement of a general safety duty. General safety duties are best used when a regulator can provide clear guidance on the scope of the duty and how to comply. The agreed safety criteria should form the basis of how a general safety duty could be discharged. These safety criteria will require considerable refinement to assure public safety outcomes. For example, this detail could include standards that support a safe HMI or clear guidance on expectations for an ADSE to be able to identify ADS faults and disengage. Some of this detail will be supported by the development of emerging international standards. The development

of this detail may allay some of the concerns that industry have previously raised with a general safety duty approach.

While a general safety duty approach is supported, this does not preclude the need to also apply some prescriptive obligations on parties where predictability and consistency are desired.

8. If a general safety duty were introduced, which parties should it apply to?

Queensland considers that a general safety duty should be applied to ADSEs with associated due diligence obligations on their directors. ADSEs will have the most direct control of the ADS and are best placed to efficiently ensure its safety. This approach ensures that an ongoing positive obligation is placed on these parties to assure the safety of ADSs during in-service.

There will be a need to review this position in the future as the AV market matures and the safety risks associated with other parties in the supply and use chain are better understood. A chain of responsibility may eventually be more appropriate, with a general safety duty imposed on a broader range of parties so far as they can manage safety risks.

ADSE

The ADSE should be responsible for any failing of the ADS and related computer hardware, software, sensors, cameras or other supporting devices. In circumstances where the ADSE is not the manufacturer of the vehicle, ADS, or components, the ADSE may need to progress civil action against other parties in the supply chain to establish contributory negligence and regain the cost of any damages associated with compensation claims, including reputational damages. However, this single point of responsibility is thought appropriate in the first instance where so much is unknown about the technology and market.

The scope of the ADSE's responsibility must be clearly defined. For example, would an ADSE be responsible for mechanical aspects of the vehicle not specific to the ADS (such as defective brake pads or tyres) or not required for automated driving (such as mirrors or windscreen wipers)? This needs consideration for two reasons:

- The cost of regulatory compliance will vary significantly if an ADSE (not the vehicle's manufacturer or registered owner) is held responsible for the entire vehicle, including aspects unrelated to the ADS.
- Enforcement of safety breaches will need to be undertaken by the responsible regulatory body. The interaction between existing in-service regulators (State and Territory governments and the National Heavy Vehicle Regulator) for non-ADS components and an ADSE regulator will need to be clearly understood and defined.

Careful consideration is required as to how ADSE obligations and liabilities will be effectively enforced. It is common corporate practice to minimise the liability and asset exposure of a single legal entity by establishing separate unrelated legal entities with discrete responsibilities (for example, franchising operations). As discussed in response to Question 5, appropriate financial requirements will be critical. In addition, as discussed in response to Question 3, it may be necessary to consider business models where multiple entities fulfil the role of ADSE.

ADSE Executive Officers

Queensland agrees that the imposition of duties on ADSE directors is required as they have direct control over an ADSE's approach to safety and will make decisions that impact the safety

of ADSs. The imposition of personal criminal liability of directors must be consistent with the nationally-consistent principles and guidelines for corporate offences.

Repairers

The extension of a general safety duty to repairers is not justified at this time, and as such the associated increase in the regulatory task cannot be supported.

9. If a general safety duty were introduced, should it apply on public and private land {such as residential driveways)?

Queensland is of the view that the application of a general safety duty should apply to compliant vehicles (that is, those imported under the RVSA) at all times, on both public and private land. This is necessary to support safe and practical outcomes given ADSEs are unlikely to design and implement systems that have a different safety threshold depending on area of operation.

Caution should be exercised in extending an in-service AV general safety duty to non-compliant vehicles (that is, those that are not imported under the RVSA) that are designed and used specifically for off-road or private land use. For example, the existing operation of AVs at off-road mine sites is currently not regulated by transport legislation. In these cases, Queensland considers that safety is sufficiently assured by alternative regulatory frameworks such as existing workplace health and safety regulation. As noted in response to Question 4, consideration is required as to how AV safety requirements could be applied and enforced for non-compliant vehicles that have a legitimate need to access the road network (for example, farming machinery). These vehicles are not subject to RVSA import requirements and are typically registered under State and Territory-based conditional registration schemes. It is preferable that the principles being applied to assure the in-service safety of compliant AVs are also applied to these non-compliant vehicle types.

10. Should people injured by breaches of the duty have a cause of action or should the ability to enforce a general safety duty be limited to a regulator?

Queensland seeks to ensure that the proposed regime is workable at a practical level and adequately protects those who suffer damage or loss arising from the use of an AV. For this reason, Queensland supports, in-principle, a cause of action for people injured by breaches of a general safety duty. A cause of action will formalise the access to compensation for injured persons that litigation in negligence would otherwise provide.

However, the operation of a cause of action must be carefully considered. A regulator should have sufficient powers and resources to be the primary mechanism to assure ADSE compliance. This is necessary for two key reasons:

- many individuals are unlikely to have sufficient financial ability to successfully pursue litigation against large multinational corporations ; and
- a regulator is best placed to deal with systemic general safety duty breaches that have fleet of network implications.

As the RIS identifies, a cause of action would allow a secondary avenue for the enforcement of general safety duty breaches. This is thought to be a good outcome as it would allow for judicial decision making to provide guidance on safety standards required under a general safety duty, and this would further support an advancing safety standard over time. Consideration will need to be given to the jurisdiction or forum in which that cause of action

can be pursued. In addition, given power imbalances between parties and the specialty subject matter, consideration might be given to the need for a specialist conciliatory body empowered to resolve disputes between injured parties and regulated entities[10]. A conciliatory body can be independent of the regulator.

The interaction between MAIi schemes and a cause of action must be clearly understood. While insurance schemes are not intended to remove an injured person's common law rights, it is important that policy makers look holistically across regulatory frameworks to ensure they do not create an environment that is unnecessarily burdensome on ADSEs.

Queensland supports placing responsibilities and obligations on ADSEs, but these must be measured to ensure barriers do not emerge to commercial deployment of AVs. This risk can be mitigated in several ways, including:

- As introduced above, a conciliatory body may be empowered to conciliate disputes. This can often be less costly due to the processes and expertise of the body. To reduce the risk of increased regulatory compliance, it is possible to provide that the conciliatory body cannot accept a complaint if the complainant has initiated other legal proceedings.
- The new cause of action could not be an originating cause of action and must instead 'piggy-back' on another cause (for example, negligence, or breach of contract)[11].

11. Do you think there should be specific driving rules for ADSs like the Australian Road Rules, or would it be sufficient to simply require them to 'drive safely'?

To ensure community acceptance of AVs and assure the safety of all road users in a mixed fleet environment, ADSs should drive in a consistent and predictable manner. While an ADS may be capable of driving safely without prescriptive rules, other road users, including human drivers, motorcyclists, cyclists and pedestrians, will need to be able to understand and predict the behaviour of AVs. Predictability and consistency is fundamental to safety and efficiency of the road network.

Given predictability and consistency are sought, Queensland is of the view that prescriptive rules are required to assure the safety of ADSs performing the dynamic driving task. It should be noted that in the context of road rules, prescriptive rules still of involve a degree of discretion (for example, numerous road rules involve concepts such as 'sufficient' or 'safe'). This supports safe road use, subject to a range of factors, including environmental, road design, vehicle characteristics. While Queensland supports prescriptive road rules for ADSs, a level of flexibility will still be required to achieve safe outcomes.

It is likely that predictability and consistency will be required for the foreseeable future even as the number of AVs in the vehicle fleet grows. This is because other vulnerable road users like pedestrians and cyclists will still need to be able to understand and predict the behaviour of AVs. An exception this this may be if use cases emerge where AVs are operated on dedicated infrastructure, without interaction with other roads users. However, the national framework needs to support various deployment models.

12. What approach to regulating the dynamic driving task for ADSs do you prefer? Please provide reasons.

[10] For example, the Queensland Human Rights Commission and the Australian Financial Complaints Authority.

[11] Such an approach is used for the cause of action provided in the *Human Rights Act 2019* (Qld)

Queensland considers that codifying road rules to be machine readable (Approach 1) may be a desired goal, but this could be challenging to implement in the first instance for the reasons discussed below. Further consideration is required as to how substantive compliance with existing State and Territory road rules (Approach 2) could be achieved via a national legislative instrument, for example, using a purpose-built national law or existing RVSA tools (Approach 4). Queensland does not consider it appropriate to amend the Australian Road Rules (ARRs) model law, designed to regulate humans, to incorporate ADSs. The merits of each approach are discussed further below.

Approach 1 - National AV driving code

Codifying rules to be machine readable aligns with modern public policy development that aims to support the increasing automation of decision making and compliance.[12] However, this approach works best when working with prescriptive, deterministic rules that do not involve judgement or discretion. As noted in response to Question 11, while road rules are referred to as prescriptive , they often involve a level of discretion to support safe outcomes.[13]

The difficulty of codifying road rules that involve discretion should not be underestimated. As an example, the existing road rule for overtaking provides that *a driver must not overtake a vehicle unless they have a clear view of any approaching traffic and they can safely overtake the vehicle.*[14] By comparison, a codified version of this rule for an ADS would be significantly more detailed and prescriptive. The rule would need to consider many variables such as speed (of the AV, vehicle to be overtaken and any oncoming vehicles), vehicle dimensions (of AV and vehicle to be overtaken) sufficient overtaking distances, sensor sight distances, road factors and weather conditions. Based on these variables, safe conditions for overtaking would vary significantly.

Creating a duplicate set of road rules for AVs may also result in differences or inconsistencies with human driver road rules over time. The process of amending a road rule would also be more complex given the need to progress changes to jurisdictional legislation for human drivers and a national AV driving code.

Approach 2- Substantive compliance with State and Territory road rules

This approach seems to have the most merit to initially manage an ADS to achieve consistency with human drivers. An analysis of which road rules impact the dynamic driving task would be required to identify which road rules an ADS needs to substantively comply with. The ADS would need to be exempted from non-dynamic driving task obligations and these may be subsequently assigned to another party such as a fall-back ready user.

This approach does not necessarily need to be considered as distinct from Approach 4 and could be achieved without amendments to the ARRs. For example, a national legislative instrument could require ADSEs to ensure their ADSs comply with relevant jurisdictional road rules and point to State and Territory legislation. The compliance mechanisms for ADS breaches of road rules would be contained in the national law, allowing for compliance and enforcement activities that are appropriate for ADSEs. For example, this could involve a shift away from individual penalties for specific road rule breaches to instead requiring a safety

[12] For example, Digital.NSWRules as Code project
[13] For example, section 126 of the *Transport Operations (Road Use Management - Road Rules) Regulation 2009* (Old), which requires drivers to keep a safe following distance.
[14] Section 140 of the *Transport Operations (Road Use Management - Road Rules) Regulation 2009* (Old)

management approach recognising that road rule breaches are likely symptomatic of fleet-wide safety issues.

This approach would also ensure consistency in the rules that are applied to ADSs and human drivers and is not dependent on pure harmonisation of road rules, which has proven historically challenging to achieve.

It is acknowledged that this approach may be burdensome for ADSEs to comply with given they would need to monitor changes to jurisdictional legislation and adapt their ADSs accordingly. However, processes could be put in place to support this. For example, to assist ADSEs, jurisdictions could be required to publish, and keep up to date, derogations from the ARRs model law in a central and publicly available repository. This requirement may also act as a disincentive for jurisdictions to progress inconsistent amendments.

Approach 3 - Regulate via the ARRs

Queensland does not support the amendment of the ARRs to incorporate dynamic driving obligations on ADS drivers. The ARRs, as implemented in each jurisdiction, are intended to regulate the behaviour of human road users. Enforcement options reflect this and are intended to incentivise compliance and safe behaviour through fines and driver licensing sanctions. A different but complimentary approach is required for ADS drivers, who's actions will be controlled by ADSEs.

There may be some cases where amendments to the ARRs are appropriate. For example, prescriptive obligations on fall -back ready users could be included in the ARRs. This could include, responding to requests to take back control or being sufficiently prepared to take back control. This would ensure the rules governing human road users are contained in the same instrument.

Approach 4 - Rules made under the RVSA

This regulation of the dynamic driving task for ADSs at a national level is appropriate to align with the broader regulation of ADSEs. Given compliance with road traffic laws is a safety criterion included in the SoC and regulated under the RVSA, this approach is, at least in part, being progressed already. Queensland supports the principle that ADSE compliance and therefore ADS road rule compliance should be regulated nationally. Options should be explored to understand how this could best be achieved, including using RVSA tools or a purpose-built national law.

As noted above, this approach could work in conjunction with Approach 2, requiring substantive compliance with jurisdictional-based road rules. If an ADS demonstrates non-compliance with road rules, grounds could exist to take enforcement action. Such an approach could support compliance at a fleet level to ensure safety issues are identified and addressed. This would also avoid the need to adapt human-based driver frameworks for ADSs. Driver licensing, the accrual of demerit points, suspensions and disqualifications serve to ensure the safe driving behaviours of human drivers. These functions need not be adapted for ADSs, as they are poorly suited for driving in-service safety outcomes for AVs. Instead, vehicle standards compliance mechanisms could be used to manage the safety of ADSs under the control of ADSEs and penalise breaches in a manner proportionate to the risk. This could involve vehicle recalls, warnings, improvement notices, enforceable undertakings, prohibition orders, fines and imprisonment, or the variation, suspension or revocation of the type-approval of the ADS.

In the future, this approach could also be used to give effect to a national AV driving code, clearly linking dynamic driving task obligations with appropriate compliance and enforcement options for ADSEs.

13. What functions and powers does the regulator need to effectively manage in-service safety? Would these differ depending on whether the regulator is enforcing a general safety duty, or only prescriptive duties?

Queensland generally agrees with the functions required to regulate the in-service safety of AVs identified in the RIS. Functions could potentially include:

- to minimise the in-servicesafety risks of AVs;
- to provide advice, education, training and guidance to ADSEs and related entities in relation to their rights, responsibilities and obligations;
- to promote public awareness of AV issues;
- to proactively and regularly monitor compliance;
- to make applications in court for injunctions, declarations or other orders for ensuring compliance;
- to institute proceedings for offences;
- to reduce the incidence of AV related accidents;
- to undertake research into the incidence and prevention of AV related accidents; and
- maintain public confidence in the use of AVs.

Existing regulators are likely to be able to perform the bulk of the regulatory task in the first instance.

The regulatory functions required are unlikely to change depending on whether a general safety duty or prescriptive duties are applied. However, the specific resources required may differ. For example, it enforcing a general safety duty, a greater resource requirement may be needed tor proactive audit and investigation functions as well as education and information sharing to support industry.

There has been significant scrutiny of the functions and powers of regulators in recent Roya I Commissions[15] and Inquiries [6]. The findings of those inquiries should be borne in mind when deciding on the powers of an in-service regulator. Experience has shown that it is pointless to create a regulator that lacks the power or culture to enforce compliance or that is insufficiently funded to do so. As such a regulator's powers will necessarily need to be broad. To sufficiently support the functions of monitoring and enforcement, the regulator should be empowered to do anything to perform its functions. This should include specific investigatory, audit and coercive powers.

[15] The Royal Commission into *Misconduct in the Banking, Superannuation and Financial Services Industry* heavily criticised ineffective regulators. It was concluded that regulators that had been reluctant to take enforcement action needed to change their culture.
[16] The New South Wales Independent Commission Against Corruption into *Election Funding, Expenditure and Disclosure* conducted an analysis of international best practice regulatory principles. This work highlighted the need for escalating interventions, an enforcement culture and powers to investigate, audit and enforce.

As the RIS identifies, the potential for crossover or duplication of powers between existing and new regulators is high. Future work focussing on compliance and enforcement powers must be careful to form a holistic view of the existing regulatory landscape to ensure new regulatory powers are appropriate and supplementary. Clarification of roles of enforcement and compliance bodies will be key in understanding regulatory responsibilities moving forward.

To support the administration of a general safety duty on ADSEs, mandatory no-fault reporting requirements should be considered. This would require ADSEs to report safety issues to the regulator in a timely manner. However, ADSEs could have confidence that they would not be subject to punitive regulatory action in the first instance. A regulator could work with an ADSE to ensure the safety issue is remedied and improved safety management practices are put in place to prevent the same or similar issues occurring in the future. If the ADSE failed to take appropriate action to remedy the safety issue or put in place improved controls, the regulator would have cause to take more significant action, including imposing penalties. This approach works well in several industries, for example commercial aviation and rail safety.

14. Have we accurately described the scope of the regulatory task? Please provide data and evidence where possible to support your answer.

It is not possible to accurately describe the scope of the regulatory task at this time. This is due to several factors, briefly summarised below.

- The scope of regulation at first-supply remains unknown, in particular the reach to cover some in-service safety risks.
- Insufficient analysis has been conducted on the approach to regulating in-service safety. For example, the impact of a general safety duties approach on the need to subsequently reform existing regulatory frameworks.
- Compliance and enforcement options have not been considered.
- There is no clear and definitive view as to the likely deployment timeframes or the nature of the AV industry in Australia.

Queensland has conducted a scoping activity to capture the scope of current in-service safety regulation and the possible impacts of AVs. A summary of outcomes of this scoping activity is included at **Appendix C.** The scope of current in-service safety regulatory functions is very broad, covering the regulation of drivers , vehicles, compliance activities, accreditation schemes, passenger transport, heavy vehicles, safety, road management and administration. This analysis has revealed that there are many issues to be resolved before the scope and scale of the regulatory task for AV in-service safety can be accurately estimated. In many cases, it is likely that alternative regulatory tools for AVs can be used to achieve the same safety outcomes as non-automated vehicles. For example, driver licensing may be ineffective in ensuring appropriate education and training is provided to AV users and existing vehicle inspection regimes may not be required to assure the safety of the ADS. Queensland aims to continue this analysis and invite other States and Territories to contribute. The completion of this analysis will help to build a common understanding of which regulatory functions should be performed by the Commonwealth and which will be retained by States and Territories.

It is possible that one or more of the uptake scenarios provided in the RIS will eventuate. As AVs are progressively deployed their perceived value will likely increase while their costs will likely decrease. This is expected to result in the progression of uptake from scenarios 3 or 4 (limited or minimal adoption) to scenarios 1 or 2 (high private and/or commercial update). There

may be a case for government intervention to influence uptake scenarios. For example, modelling work conducted in Queensland suggests that the benefits of AVs are predominately realised in a commercial fleet sharing model. Such government market intervention is not considered directly within the scope of the NTC's current mandate. However, it is noted that safety assurance regulation may influence market deployment models. For instance, an ongoing positive obligation on an ADSE to assure the safety of their ADSs may lead to a more fleet sharing deployment model for AVs, where ADSEs can manage risks more directly, as opposed to private ownership and use.

15. Have we accurately captured the benefits of the regulator:

a. **being a government body or an independent body?**

b. **being a national body or State and Territory-level bodies?**

c. **being an existing body or a new body?**

Broadly, the RIS has captured the benefits of each variable that supports an analysis of appropriate regulatory governance arrangements. Queensland offers the following comments in relation to each set of variables.

National vs State and Territory

Queensland is of the view that the governance arrangements should support national consistency and the least amount of fragmentation of regulatory responsibilities.

There will likely be significant challenges in enforcing a general safety duty on ADSEs at a state and territory level when ADSEs will likely be large corporate entities deploying vehicles to, and operating in, a national market. Safety issues within the ADSEs control will most likely be systemic fleet-wide issues that should be addressed nationally. Governance arrangements are needed that deliver a single point of accountability for ADS safety and ADSE compliance. As such, Queensland supports the leveraging of the Commonwealth Government's ability to regulate corporations to oversee ADS safety and ADSE compliance holistically through first-supply and in-service.

It is acknowledged that in the absence of a single national regulator overseeing all in-service safety regulation, there will be a need for states and territories to complement the regulatory functions of the Commonwealth. As such, there is a need for formal national governance arrangements to establish clear roles and responsibilities for all parties.

Queensland is of the view that a new governance body to coordinate the development and implementation of the national AV regulatory framework is needed to ensure Australian governments work collaboratively and deliver workable regulatory solutions in advance in initial AV deployments. This approach could provide for a more agile decision-making process and place accountability more clearly on all Australian governments to deliver outcomes. As noted in the introduction, an Inter-Governmental Agreement , or similar coordination tool, could support this. An illustrative example of a governance arrangement for the national framework is provided at **Appendix B.** This body would also be able to perform an oversight function for the framework during near-term deployment of AV technology. This could include establishing

close working relationships with industry[17] to ensure regulatory frameworks are achieving the desired outcomes. The establishment of an industry reference group may be appropriate.

As the AV market matures, and there is a greater understanding of the AV in-service safety regulatory task, there may be a case for a national regulator to be established, to oversee all the associated regulatory functions.

Existing vs new body

Queensland is of the view that the regulatory oversight arrangements should consider how best to utilise existing resources to minimise upfront costs. For this, and other reasons articulated in this response, Queensland is of the view that the Commonwealth Government, as an existing, national, government entity is well placed to implement a general safety duty obligation on ADSEs, complemented by the states and territories managing other elements of in-service safety.

Government vs independent

Queensland does not have a fixed view in relation to if the end-state regulator should be a government or an independent body. Options will likely exist for existing regulators to be considered that are either government or independent. A further analysis is required as to appropriate regulatory entities, if the outcomes of the consultation RIS support Queensland's view in relation to the need for national regulation utilising existing regulatory resources. Critical to this analysis will be the ability for the regulatory body to exercise required functions and powers and ensuring appropriate communication and referral protocols can be established for states and territories.

16. What are your initial views on how the regulator should be funded?

Considering current and foreseeable funding constraints on all Australian governments, the desired goal should be that the costs of funding the regulatory task, including the administration of one or more regulators, should be fully recovered. Without a clear view on the scale or cost of regulatory activities, it is premature to decide on a specific funding model. In addition to clarifying the scale and cost of the regulatory task, further work should clearly identify where there are expected to be cost savings, to industry and governments, that could offset funding contributions. Given the size of the AV industry and fleet will be small for some time, it is possible that funding will initially need to be supplemented by government contributions. However, once the industry has matured, the goal should be to move to a full cost recovery model.

At a transactional level, the funding approach should not rely on jurisdictional-based registration systems to collect revenue by default. This is thought to be an inefficient model as it relies on contributions from consumers only and, in the case of a national regulator, requires jurisdictions to act as an intermediary agency. Alternative collection methods may be available such as ADSEs paying an annual operation or accreditation fee and a fee for all ADSs operated under their supervision. This could be a similar approach to the way Transport Certification Australia is funded where funding is partly provided by fees paid by technology providers, such as Intelligent Access Program Service Providers. Implications for road use charging must be carefully considered when designing future funding models. The funding of an AV in-service

[17] In addition to established manufacturers and ADSEs, industry groups could include academia as well as emerging technology research entities (for example, the Defence Cooperative Research Centre for Trusted Autonomous Systems).

regulator or regulators should not adversely impact broader heavy vehicle road use charging or market reform programs.

However funded, it will be important that regulatory bodies have sufficient funding to enable effective monitoring and enforcement powers.

17. Have we adequately and accurately captured the key legislative implementation models for in-service safety of automated vehicles?

The available legislative implementationmodels are currently presented in a way which confuses approach and responsibility. It is recommended that the legislative implementation models be presented in a manner that more easily identifies the responsible level of government. For example, the various options could be discussed as follows.

State and Territorv-based legislation

- Ad hoc - State and Territories make necessary amendments to their own legislation, perhaps supported by agreed principles or approaches. Derogations and inconsistencies are almost certain.
- Model law - Subsequently requiring legislative implementation in each State and Territory. Derogations at time of implementation or subsequent amendments are likely.
- Applied law - Once implemented, derogations are less likely, although possible. Most significant issue is that not all State and Territories may implement the applied law (as is the case for theHNVL).

Commonwealth legislation

- Commonwealth law - With separate State and Territory legislation to cover issues outside of Commonwealth jurisdiction. State and Territory legislation could be ad hoc, model law or applied law.
- Commonwealth applied law - As part of application of the applied law, State and Territories would extend the coverage of the national law to cover any gaps in Commonwealth jurisdiction.
- Complete Commonwealth law - Requiring a referral of State and Territories powers to cover issues outside of Commonwealth jurisdiction.

Specific commentary about the merits of these various approaches is provided in response to Questions 18 to 21.

18. Do you think there are any transitional or constitutional issues that could arise when Australia establishes a national law for automated vehicles? If so, please explain what the issues are and if they differ depending on the legislative implementation model used.

Constitutional issues

The RIS adequately considers the potential constitutional issues at a high level. Based on available informat ion, Queensland considers that the Commonwealth Government can legislate ADSEs and their directors as well as remote drivers under existing constitutional heads of power to regulate corporations and communications without encroaching on existing state and territory functions.

Specific constitutional issues will need to be considered further detail when there is more certainty as to the potential scope and application of the national law.

National legislative schemes introduced in Queensland raise the fundamental legislative principle that schemes should have sufficient respect to the institution of parliament. All national law options raise this issue and to address this clear justification for the benefits of national uniformity will be required.

Transitional issues

Queensland considers that each model will give rise to its own transitional issues, both legislatively and practically, that will largely depend on the content and application of a national law. Queensland's initial view is that the proposed governance and legislative model proposed throughout this response is likely to have the least transitional issues in the first instance. This is because it takes advantage of existing regulatory resources at Commonwealth, state and territory level.

The final legislative implementationmodel will require a detailed review of existing state and territory legislative frameworks to manage the interaction with a national law. The transition of parties who were previously unregulated or were regulated under different circumstances will also need to be considered. This is thought to be less of an issue in relation to AVs, given the lack of an existing industry.

A key difference between legislative implementation models is the amount of time it takes to adopt and maintaineach model. For example, a Commonwealth law would only need to pass through one Parliament, while state or Commonwealth applied law or model law needs to be pass through all Australian Parliaments, at least initially. Any amendmentsto model legislation are usually adopted by jurisdictions over a period of 12 months or more (depending on if subordinate or primary legislation changes are required), whereas amendments to an applied law can apply automatically if states have applied the law as in force from time to time.

Other transitional considerations include:

- Providing a regulator sufficient time to upskill and develop operational policies and procedures.
- Establishing communication protocol between regulators.
- Having appropriate data sharing capabilities.
- Engaging with law enforcement regarding new offences and resources.
- Workforce impacts both within and outside ofgovernment.
- Determining penalties for offences to apply consistently, and how the offences will be treated in courts (each jurisdiction has different rules about what automatically constitutes a summary offence).
- Understanding how much control each jurisdiction holds if po wer is transferred to a regulator.
- Post-implementation review and evaluation.

19. Have we accurately described how each option could work as well as the advantages and disadvantages of each option?

Queensland considers that the options provided are described sufficiently. Discussion about the merits of the options is provided in response to Question 20.

20. Which option most effectively addresses the problem statement? Please consider your answer in conjunction with the PwC cost-benefit analysis.

Of the options provided, Queensland is of the view that a hybrid model that builds on Option 3 will most effectively addresses the problem statement. Queensland supports a single national regulator enforcing a general safety duty on ADSEs , with due diligence obligations on their directors, established under Commonwealth legislation. Further analysis is required to understand the exact legislative approach, including how best to manage elements outside of the Commonwealth's jurisdiction and how to preserve State and Territory powers to support effective regulation and enforcement of a mixed fleet. The merits of each option are discussed further below.

Option 1 - Current approach

Queensland considers that this option does not achieve the fundamental goal national consistency. Without coordination, jurisdictions will develop policy and regulation to support the deployment of AVs in an incremental and disparate way. Regulat ory frameworks may be inconsistent, overlapping or leave gaps. Industry compliance will be challenging and barriers to AV deployment will arise.

Option 2- State and Territory regulators, model law, prescriptive or general safety duties

Although existing State and Territory in-service safety regulators are well established and have significant resources at their disposal, this option will result in the regulation of the ADSE, a body operating in a national market, at a jurisdictional level. This is not supported as it will be inefficient in assuring the safety of the national AV fleet. Multiple ADSE regulators will also result in inconsistent approaches, even if supported by model law. This is because operational decisions and jurisdictional risk appetites will lead to differences in compliance and enforcement approaches.

Model law is also considered an ineffective and inefficient way of achieving national consistency of overall safety obligations on ADSEs. Model law will likely result in jurisdictional variances at legislative implementation. In addition, both initial implementation and subsequent amendment can take substantial periods of time to implement as changes are required to progress through all jurisdictional Parliaments and will be scheduled alongside other priorities. Implementation delays will exacerbate national inconsistencies.

Option 3 - Single national regulator, Commonwealth applied law, general safety duties

This option is likely to achieve the most national consistency. Queensland supports the regulation of ADSEs at a national level. This is necessary to ensure ADSEs are regulated consistently across Australia and risks under their control are mitigated uniformly across the national fleet. As such, the Commonwealth's existing ability to regulate corporations should be investigated to regulate ADSEs holistically through first-supply and in-service, including the application of a general safety duty on ADSEs.

Further analysis is required to determine the best legislative implementation approach. Using existing constitutional heads of power to regulate corporations and communications would

eliminate the risk of national inconsistenciesemerging in relation to the regulation of the ADSE and would enable to efficient implementation and maintenance through a single parliament. This could be supported by prescriptive duties on human users, for example fall-back ready users, in jurisdictional legislation. It may be easiest to amend the ARRs to achieve this.

States and territories will need to retain some powers to investigate potential ADS issues before referring issues to a national regulator. In addition, States and territories may also require some direct powers to address critical safety issuesthat are presented on their road networks. This should be limited to dealing with specific safety risks relating to one or more vehicles. Issues impacting the broader fleet should be addressed nationally.

Option 4 - Single national regulator, State and Territory applied law, general safety duties

As with Option 3, the national regulation of ADSEs is supported. However, some practical issues make Option 4 less suitable than Option 3.

- State and Territory applied law introduces the potential for inconsistencies and derogations to emerge on implementation. Critically this option allows for some jurisdictions to refuse to implement the national law (for example, the HNVL). Even where all jurisdictions implementapplied laws, experience from other transport reforms (for example, Rail Safety) has shown that implementation can take many years as States and Territories progressively sign up. In the context of regulating ADSs supplied to a national market, this implementation delay would almost certainly introduce barriers to deployment.
- It is not clear if State and Territory applied law will be appropriate to regulate ADSEs operating in a national market. State and Territory applied law, even when administered by a single national regulator, still requires enforcement and prosecution at a jurisdictional-level. This is not thought appropriate for ADSEs.

21. Is there another option or combination of options which could more effectively address the problem statement? In particular, please consider whether there is a preferable combination of the elements of each option (governance arrangements, duties, legislative implementation).

Refer to the 'Key issues ' section at the introduction of this response for Queensland's view as to the best combination of each aspect of the overall regulatory model.

RESPONSE TO COST BENEFIT ANALYSIS (CBA)

Queensland acknowledges the inherent difficulty of conducting a CBA on the merits of regulating the in-service safety of AVs, including consideration of specific options, when limited data is available. Without specific data, the analysis must necessarily be assumption driven. While Queensland agrees that the assumptions made throughout the CBA are reasonable, the results of the CBA must be considered indicative only.

The outcomes of the CBA support Queensland's view that specific regulation of in-service safety for AVs is required and that a general safety duty on ADSEs with due diligence obligations on directors is appropriate. To further distinguish between the impacts of Options 3 and 4, Queensland's commentary in-response to Question 20 above should be considered. Specifically, possible implementation delays associated with State and Territory-based applied law will likely lead to delayed benefits.

Commentary made throughout the CBA indicates that further detail about the regulatory proposal is required to support a quantitative analysis of costs and impacts. Queensland supports this and urges the NTC and all Australian Governments to work together to start to flesh out regulatory proposals with sufficient detail to inform meaningful impact analysis.

When further policy detail is agreed, the revised CBA should consider the broader impacts to industry and the community. This should include:

- Impacts on local industries - will safety obligations imposed on ADSEs create market monopolies that prevent start-ups, small and medium sized local enterprises entering and competing in the market? For example, the impact on aftermarket industries such as repairers, modifiers and vehicle inspectors should be considered.
- Regional impacts - will the costs and benefits will be equitably distributed across both urban and regional areas, including rural and remote areas?
- Impact on service delivery - for example, will there be any additional costs associated with policing and emergency response?

Additional data sources

Queensland has commissioned several projects with publicly available reports that may support PwC's further analysis. These include:

- The Department of Transport and Main Roads commissioned KPMG to complete a strategic options assessment to estimate the expected economic and financial impact of emerging mobility technologies in South East Queensland, including AVs[18] . The study focusses on how delivery models for AVs will impact net benefits and provides valuable information about overall benefits.
- CSIRO's Data 61, in partnership with the Department of Innovation, Tourism, Industry Development and the Commonwealth Games, has examined the risks and opportunities for Queensland associated with a future digitally enabled economy19. This work considered the impact to jobs of digital transformation and automation, including regional impacts.

[18] https://www.tmr.qld.gov.au/Community-and-environment/Planning-for-the-future/Emerging-technologies-and-trends

[19] https://www.data61.csiro.au/en/Our-Work/Future-Cities/Planning-sustainable-infrastructure/Q-Foresight

APPENDIX A- ILLUSTRATION OF PROPOSED APPROACH TO AV IN-SERVICE SAFETY

The following examples are provided to illustrate how an interim AV in-service regulatory model could work in practice. It should be noted that detailed compliance and enforcement mechanisms will require substantially more analysis and policy development.

Across the examples, fictional entities are referred to as follows:

- **Universal Motors** - Manufacturer that is responsible for the design and construction of motor vehicles. This includes sourcing and installing relevant vehicle components, such as an ADS. Universal Motors self-selects as the ADSE as part of importation requirements. The ADSE is the entity that is responsible for assuring the safety of the ADS.
- **Commonwealth Regulator** - Entity regulating the ADSE under Commonwealth law.
- **State Regulator** - Existing state-based transport and/or road agencies.
- **Police Officer** - Existing state-based enforcement officer.

Assumptions

- Universal Motors is the ADSE and must self-certify against 11 agreed safety criteria and 3 general obligations as part of type-approval of the vehicle at first-supply. DITCRD has oversight of first-supply under the RVSA.
- Under Commonwealth law, Universal Motors is required to comply with a general safety duty to ensure the ongoing safety of the ADS whilst in-service. Universal Motors directors also have due diligence obligations to ensure that the company effectively exercises its safety duty.
- Compliance with a general safety duty requires Universal Motors to have appropriate safety management practices in place to detect and minimise the on-road ADS risks. The Commonwealth Regulator has powers to audit and investigate Universal Motors to ensure their safety management practices are holistic, best-practice, up-to-date and being exercised.
- Commonwealth law mandates a minimum data set that Universal Motors must make available for enforcement and insurance purposes to determine liability in the event of an incident (for example, a crash or breach of road rules). Legislative requirements include when, to who and in what form data must be made available. First-supply criteria include requirements on ADSEs to demonstrate how they will make relevant data available to police officers at roadside.
- The Commonwealth Regulator has obligations to keep records of reported safety incidents to manage the national AV fleet. The Commonwealth Regulator investigates major or recurring issues and works proactively with ADSEs (such as Universal Motors) to resolve issues and update safety management practices to prevent further issues. This includes, issuing improvement notices and enforceable undertakings. Where ADSEs are unwilling to adapt practices, or there is evidence of gross negligence, the Commonwealth Regulator can take punitive action against ADSEs and their directors. This can range from fines to the deregistration of an ADSE or criminal proceedings against directors.
- The State Regulator has powers to investigate incidents that occur on roads within their jurisdiction. This includes incidents involving AVs. To support this, the State Regulator has appropriate access to relevant data to determine fault and liability.

- An Inter-Governmental Agreement, or similar coordination tool, supports collaborative governance between the Commonwealth Regulator and State Regulators. This agreement formalises roles and responsibilities. For example, the agreement could empower the Commonwealth Regulator to investigate issues at the request of State regulators.
- State-based CTP schemes cover injuries caused by crashes involving AVs. Injured parties can access appropriate rehabilitation and compensation in a timely manner. Insurers have recovery rights to recover costs from at-fault parties, this includes ADSEs (Universal Motors).

Scenario 1: ADS breaches road rules

A police officer observes a level 3 Universal Motors AV travelling at a speed faster than the signed speed limit and intercepts the vehicle using lights and sirens. Under state-based road rules the fall-back ready user has obligations to respond to police direction and overrides the ADS and stops the vehicle safely.

Information available to the police officer indicates that the ADS was in-control of the vehicle at the time of the breach of road rules. Under amended state-based law, the police officer has the power to issue a defect notice for a vehicle if an ADS is suspected of being faulty. The defect notice prohibits the vehicle's ADS being engaged until the issue is investigated and resolved. A copy of the defect notice is sent to the registered operator, Universal Motors and Commonwealth Regulator.

Universal Motors investigates the issue and identifies that the ADS has a fault that means it is unable to accurately detect speed signs in certain environmental conditions (for example, due to glare). Universal Motors reports the issue to the Commonwealth Regulator under no-fault reporting obligations. Universal Motors voluntarily disables impacted ADSs fleet-wide and advises the Commonwealth Regulator. Universal Motors develops and issues a software update to the fleet that eliminates the risk of recurrence. Once the software update is installed, ADSs can be reenabled. To satisfy Universal Motors' safety duty, the software update could, for example, either improve the vehicle's ability to 'see' signs in glary conditions or alternatively update the vehicles ODD to prevent the ADS being engaged in glary conditions.

Scenario 2: Fall-back readv user at-fault in crash involving an ADS

A level 3 Universal Motors AV is involved in a crash that is investigated by the State Regulator. This includes data supplied by Universal Motors. The investigation reveals that the fall-back ready user was asked to take-back control of the vehicle in a manner consistent with the vehicle's type-approval at first-supply. Vehicle data shows the fall-back ready user did not respond to the ADSs requests to take back control, causing the crash. The State Regulator takes action against the fall-back ready user who has breached state-based road rules that requires fall-back ready users to take back control of AVs in a timely manner when requested. Penalties could include a fine and potentially driver licence demerit points.

The State Regulator reports the issue to the Commonwealth Regulator for central recording to enable broader trends to be monitored. If trends indicate that Universal Motors is involved in a significant number of incidents, the Commonwealth Regulator may investigate further to examine the appropriateness of safety management controls, including the safety standard being applied to take-over requests. Safety standards can be updated by the Commonwealth Regulator as required. For example, following a series of crashes where fall-back ready users were unable to respond to take-back requests appropriately, the adequacy of a vehicle's Human Machine Interface can be considered, and updates may be required.

Scenario 3: ADS at fault in crash

A level 3 Universal Motors AV is involved in a crash that is investigated by the State Regulator. This includes data supplied by Universal Motors. The investigation reveals that the ADS was engaged at the time of the crash and had not indicated any issues or faults to the fall-back ready user in advance. The State Regul ator refers the issue to the Commonwealth Regulator who investigates the crash further.

The Commonwealth Regulator works with Universal Motors to diagnose and resolve the safety issue . If the safety issue is suspected to impact the broader fleet, Universal Motors may volunta rily decide to disable impacted ADSs across its fleet. Or alternatively, the Commonwealth Regula tor may mandate this. Similar to Scenario 1, Universal Motors investigates and resolves the issue and advises the Commonwealth Regulator.

Scenario 4: ADS equipped vehicle requires a vehicle inspection at registration transfer

A registered owner of a level 3 Universal Motors AV has decided to sell their vehicle to another person and transfer the vehicle registration. Under state-based law, a safety certificate inspection is required to be completed by the State Regulator or an accredited third-party inspection station.

As an interim measure, inspection requirements are updated to require a statement from Universal Motors as to the continued safety of the ADS. This is in addition to the existing inspection of the mechanical components of the vehicle.

In the future , there may be no need for AVs to be physically inspected at time of registration trans fer. Instead, the general safety duty requires Universal Motors to maintain systems that ensure the vehicle, including the ADS, is always safe. This could be achieved by on-board vehicle diagnostics allowing issues to be proactively addressed before a fault leads to a safety critical event. The Commonwealth Regulator could be informed of major issues under no-fault reporting requirements.

Scenario S:· Safety critical ADS software updates are not installed

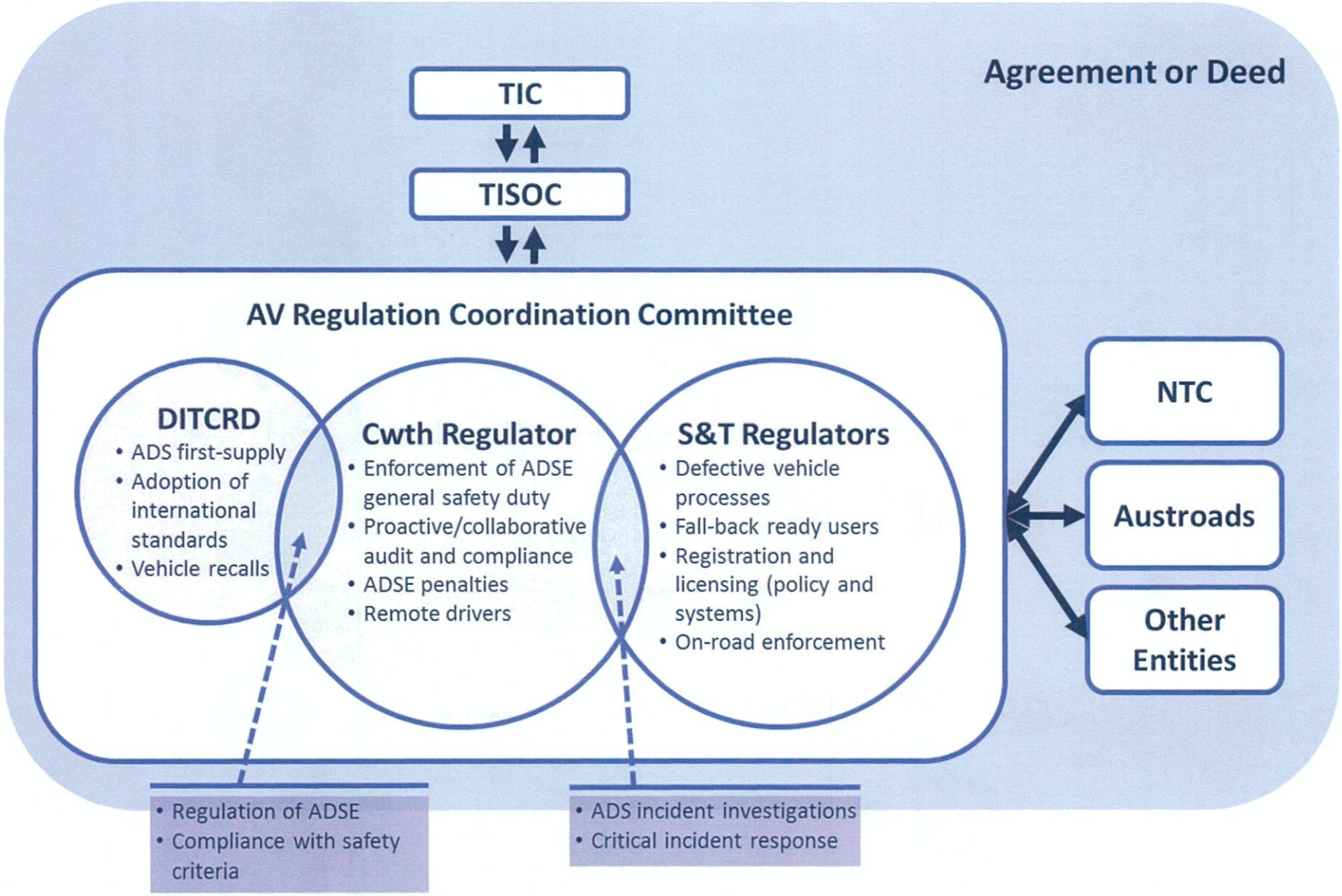
A fau lt detected in one of the scenarios requires a safety critical ADS software update to be installed. Under a mixture of first-supp ly arrangements and a general safety duty, the ADSE must ensure that the ADS cannot be engaged until the software update has been installed.

If the vehicl e is subsequently detected in use on a road, Universal Motors has breached its general safety duty. If detected by a State Regulator the issue is referred to the Commonwealth Regulator who can work proactively with Universal Motors to remedy the breach and/or take punitive action against Universal Motors.

Scenario 6: Community complaints about ADS safety

Vehicle owners or other road users who witness or are concerned by potential safety issues associated with Universal Motors' AVs can report issues directly to Universal Motors and the Commonwealth Regulator. The Commonwealth Regulator has powers to investigate issues at its discretion. Issues that are reported to a State Regulator and clearly relate to the safety of an ADS can be referred to the Commonwealth Regulator.

APPENDIX B – POSSIBLE GOVERNANCE ARRANGEMENT FOR NATIONAL AV FRAMEWORK



APPENDIX C – SUMMARY OF QUEENSLAND'S IN-SERVICE SAFETY REGULATORY SCOPING TASK