Response to in-service safety for Autonomous Vehicles

CONSULTATION REGULATORY IMPACT STATEMENT

Submission by the
Department of Planning, Transport and Infrastructure to the
National Transport Commission

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Government of South Australia
Department of Planning,
Transport and Infrastructure

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Introduction

The South Australian Department of Planning, Transport and Infrastructure (DPTI) welcomes the opportunity to make a submission on the National Transport Commission (NTC) consultation Regulatory Impact Statement (RIS) on *In-service safety for automated vehicles (AV)*. DPTI appreciates that much work has gone into preparing the RIS through research and consultation with industry, academia and governments and provides the following response.

The consultation RIS for *In-Service Safety for Automated Vehicles (AV)* seeks feedback on the role and regulation of different parties involved in the safe operation of AVs on Australian roads. It considers safety duties that should apply to these parties and the institutional and regulatory arrangements to support them.

Existing regulation and legal frameworks leave gaps where the safe operation of AVs is not adequately covered. The NTC proposes that AV in-service safety risks could be adequately addressed through a mix of regulatory approaches. The regulatory framework could incorporate a general safety duty, together with some prescriptive rules or performance-based regulation.

South Australia was supportive of the concept of a national Safety Assurance System (SAS) for AVs and the agreed safety criteria. The Commonwealth Government has outlined first supply implementation under the *Road Vehicle Standards Act 2018* (RVSA) and the *Australian Design Rules* (ADRs). The critical part is the shift between fulfilment of the SAS criteria at first supply and how those principles could be applied throughout the in-service use of AVs.

Given that Australia is reliant on an overseas market for the supply of vehicles, AV regulation must be aligned to current international efforts and United Nations activities, with Australia giving priority to adopting international standards.

South Australia recognises the benefits AVs will provide in improving mobility, safety, liveability and the overarching economic benefits from innovative technology. South Australia has established an across government AV Reform Working Group to coordinate reforms to achieve the benefits of AV technologies. South Australia was the first state to enact legislation to allow for on road trials of AV technologies. To date the Minister has authorised 12 on road trials and demonstration of AVs, providing valuable learnings in regulating access to our road network.

Summary

South Australia agrees to a harmonised national approach to AV regulation.

It is challenging to commit to a specific option given the uncertainties around the deployment and a future AV market and, in particular, when there is not a clear view on the approach and scope of first supply regulation. The NTC consultation RIS and the cost benefit analysis are based on numerous assumptions and do not clearly indicate that a new national regulator would be viable. The regulatory task, powers and reach of first supply and in-service between a regulator and state and territory jurisdictions is not clear. In addition, there should not necessarily be a binary choice between a prescriptive safety duty and a principle-based approach.

The risk is a fragmented regulatory system that is slow to change and that gaps or duplication will emerge. There is also concern that, without a common understanding across jurisdictions, AV reform will result in similar outcomes as the heavy vehicle regulatory reforms. It is noted that those reforms have been somewhat hampered by difficulties in the data management task – a key part of the new transport ecosystem.

It may be possible to explore interim arrangements using existing governance arrangements to ensure that there is harmonised national alignment. A significant amount of the regulation is more appropriately dealt with at a state level but will require national consistency and a body/national law to hold the Automated

Driving System Entity (ADSE) responsible and accountable for safe operations, as well as having mechanisms for enforcement.

Modelling regulatory scenarios and the roles of a national regulator and jurisdictions would help to build these interim arrangements to develop an understanding of a clear pathway that sets out the regulatory task, powers and responsibilities for first supply and in-service between a regulator and state and territory jurisdictions. The national regulatory framework will need to be flexible to support the various deployment models of AVs.

Key Issues

- South Australia strongly encourages the use, where possible, of existing regulatory frameworks for managing liability and responsibilities. There is no scenario for which the law does not have a framework for categorising duties and responsibilities of parties.

- Landing on specific duties and responsibilities should be an iterative process. The outcome, if based on a desirable policy of strict liability, will be acceptable to both industry, consumers and government because of the collaborative approach.

- The parties with influence are involved at different stages of the lifecycle of an AV. An approach could be to look to the regulatory functions being performed within the lifecycle of an AV. Jurisdictions such as Queensland have started this process which is very useful and should be further developed as a tool to determine who undertakes the various regulatory tasks.

- Insurers will be significant influencers and a crucial party for first supply, in-service safety and throughout the life of an AV. The UK *Autonomous and Electric Vehicles Act 2018* provides a no fault insurance model that can establish a chain of liability and relevant recovery rights by making insurers liable for damage resulting from an accident caused by an AV when driving itself. The UK model anticipates where insurance is going in terms of risk and user based insurance. Insurers could leverage premiums and other mechanisms to drive the behaviour of ADSEs.

- SA believes that ADSEs should be *prima facie* strictly liable for injury, death and damage anywhere where the Autonomous Driving System (ADS) is in use.

- The general safety duty should apply throughout the chain of responsibility. The general safety duty should be higher than ensuring safety so far as is reasonably practicable. The element of cost should not be a factor in taking steps to minimise the risk of injury and death.

- The post-incident tool for remediation is insurance. Different parties with influence will require different cover. ADSEs will require product liability insurance for design failure. Traditional in-service parties performing service and repair may require professional indemnity insurance. Gaps may exist in terms of insurance for end-of-lifecycle risk (say, of re-birth).

- Collaboration between industry, government and academia will be necessary in the short and medium term. A problem that arises is how to share data and information in a meaningful way so as to contribute to safety outcomes. Access to data and the collection of information from any incident involving an AV should be collected and shared nationally.

- Singapore's Technical Reference (TR) 68 provides a flexible learning approach. It sets out a provisional standard that aims to use the experience gained to update the TR so that it can ultimately be adopted as a Standard. Furthermore, the approach outlined in *Safety first for automated driving*, which promotes safety by design backed by a framework for verification and validation could be replicated at the regulatory level, so that future responsibilities are more easily transferred. Regulatory responsibilities will need to be modular – capable of being clearly defined, and with measurable outputs where possible.

DPTI response to RIS questions

Question 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.

South Australia considers the RIS has described most of the problem to be addressed. Some additional factors and considerations include:

- Enforcement and compliance of the chosen regulatory framework in detail. The practical aspects of implementation and ongoing delivery of the regulatory framework are essential for successful delivery. The responsibility and accountability of enforcement and compliance needs to be considered in further detail, and how interaction will occur nationally when the issue of compliance effects a vehicle or ADSE.

- Consideration of established frameworks, such as the National Rail Safety Framework discussed below, could assist in establishing a framework.

Question 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.

A critical party of influence not identified is insurers. Insurers will be significant influencers and a crucial party for first supply, in-service safety and throughout the life of an AV. The UK *Automated and Electric Vehicles Act 2018* provides a no fault insurance model that can establish a chain of liability and relevant recovery rights by making insurers liable for damage resulting from an accident caused by an AV when driving itself.

The UK model anticipates where the insurance industry is going, in that it will be risk, uses and data driven. Insurers will use this data and information to determine premiums and also use other mechanisms to influence the behaviour of ADSEs.

Question 3

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

The parties' influence are assessed at a high level. There are some unknowns and others not assessed.

The general safety duty should apply throughout the chain of responsibility, and accompanied where absolutely necessary by some prescriptive duties. Other existing legal frameworks such as Work Health and Safety, Corporations Law, aspects of the National Heavy Vehicle Law, common carrier and strict liability should be considered.

Current understanding of a fall-back ready user and where the liability lies is not clear. The driving task expected of a 'human driver' in a level 3 vehicle is not well defined and in reality may lead to significant safety issues. South Australia's preference is to follow some car manufacturers that are choosing to skip level 3 altogether.

Furthermore, the concept of a remote driver must be considered further. Regulatory controls placed on air traffic controllers could be a useful basis for determining specific requirements, noting that land-based transport poses greater risks. Learnings from trials have indicated that safety operators of shuttles can only undertake a four hour shift to ensure safety and meet occupational health and safety measures.

Assessing the role of parties with influence can be taken a step further, with consideration given to the relevant functions that are carried out during the life-cycle of an AV. The rail industry uses a lifecycle approach to safety management (see AS 4292): design, construction and implementation, commissioning, operations, monitoring and maintenance, modification, decommissioning and disposal.

Question 4

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

The RIS broadly describes the various regulatory frameworks that could be applied at a high level. Further analysis could be undertaken in the areas of insurance and Australian Consumer Law as vehicle ownership and use moves to a subscription service model.

Safety management in rail operations should be considered more closely as a model for regulation. Rail safety is the shared responsibility of a number of parties with influence (RSNL section 50). Indicative breaches of rail safety find their expression in *notifiable occurrences* (National Regulation 57). Key lifecycle events could be notifiable occurrences.

Question 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?

There are several new risks posed if owners/operators use second-hand components, modify/amend vehicles or the ADS, or if there is a transfer in ownership of the vehicle or the ADSE, or the ADSE itself becomes defunct.

After-market modifications pose a significant risk to the safety of the vehicle, and potentially the verification of the safety of an ADS. Each type of modification or ownership issue poses a different risk, and will require a regulatory, compliance and enforcement framework.

Question 6

Do you think the parties with influence on in-service safety are sufficiently covered by Australia' currently legal frameworks?

No, as there are gaps that have been identified in legal frameworks and hence the rationale for a new legislative framework for AVs.

Driving instructors are not included. Driving instructors will be providing education, advice and training in proper use of the vehicle. Other parties such as car hire companies, car sharing/pooling and ridesharing are generally regulated under jurisdictions' legislation, however there may be gaps in terms of their obligations should it be an AV.

Question 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?

The general safety duty should apply throughout the chain of responsibility and further work needs to be undertaken so as to develop the compliance and enforcement of a general safety duty. This may also include the need to apply some prescriptive obligations on parties.

The general safety duty should be higher than ensuring safety 'so far as is reasonably practicable', as consumer expectations would be that they are supplied with a proper functioning and safe system. It is also unclear as to what the meaning of 'so far as reasonably practicable' will be, although reasonableness is a commonly used concept in the common law. The concept is applied to foresee what a human would see as reasonable, such as in the common law concept of negligence. With the vast array of data and information held and available to ADSEs and the ADS, this should impact upon the concept of reasonableness. It is unclear however to what in this context will be seen as reasonable.

Insurers and other parties would be utilising data where possible to assess the performance and safety of every ADSE/ADS and vehicle make/model. Obligations would be placed back on the ADSE, more so when there is no human driver involved.

It is not clear how 'so far as reasonably practicable' would apply when any small change to an ADS may impact on a whole fleet.

An ADSE may be thought of as a *common carrier*, as found in legal frameworks dealing with pipelines, shipping, telecommunications and mass transit. A common carrier owes the highest duty of care to its passengers. ADSEs will share many characteristics with common carriers: they will engage in transportation services, their services will be widely available to the public, and the passenger's safety is not entirely within the control of the passenger. This construction has academic support – see LeValley, D., *Autonomous Vehicle Liability—Application of Common Carrier Liability* in Seattle University Law Review at vol 36 p5ff.

Question 8

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

The general safety duty should apply to the ADSE with parties such as executive officers being liable in accordance with industry norms already applicable in other regulatory frameworks.

Question 9

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

The general safety duty should apply whenever the ADS is engaged.

Question 10

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

The introduction of an insurance scheme similar to the UK *Automated and Electric Vehicles Act 2018* would remove the need for an injured person to take action against an ADSE. An injured individual would likely face significant difficulties taking action against an ADSE or ADS which may be a large corporate entity.

Regulators should have the ability to enforce the general safety duty in the application of any scheme, through the application of penalties. Enforcement will depend on a legislative model with the capacity to effectively prosecute a corporate agent (being responsible for the AV) within a jurisdiction where the offence occurs and with that, appropriate insurance to ensure the ability to deal with any financial or other penalty.

Question 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'?

AVs should behave as human drivers do. Consider avoiding obstructions, and Australian Road Rule (ARR) 139(2), crossing a continuous line.

South Australia would not want to see an outcome-type rule like: 'ensure that the AV gets from A to B safely'. SAS criteria #7 (on-road behavioural competency) will mandate that AVs must behave like any other user, which effectively commits us to imposing ARR-like requirements.

The term 'drive' should not be used to establish a duty with regard to road rules, as it implies an action by a human. Consideration should be given to other terms such as operate.

Question 12

What approach to regulating the dynamic driving tasks for ADSs most efficiently achieves safe outcomes? Please provide reasons.

Further work needs to be undertaken to determine if compliance with State and Territory road rules or whether a purpose built national law/legislative instrument or the existing *Road Vehicle Standards Act* 2018 will efficiently achieve safe outcomes.

Question 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?

South Australia agrees with the functions outlined in the RIS. Agreement around which areas require national consistency needs to be further discussed. A regulator will need to have the ability to penalise those in the chain who are not complying.

A clear delineation between Commonwealth and State and Territory responsibilities is necessary to ensure a consistent regulatory approach to enforcement. Specific powers and functions will vary depending on responsibility. For instance, enforcement requires clarification of authorities and technology to lawfully compel the provision of digital information from the AV at both the roadside and after the fact of any event, inclusive of the current ADS 'update' relevant to a properly working vehicle. In addition, there will need to be a legislative ability to deal with mass coding failures (i.e. those with safety implications) in a rapid and authoritative way to for example, close down a group of AVs lawfully and remotely and refer any relevant issues to the regulator and other jurisdictions. The legislative capacity should also extend to minor errors.

Functions and powers would differ depending on the application of a general safety duty or prescriptive rules only. The difference would occur in compliance, enforcement and administrative powers for the regulator. Compliance and enforcement functions in a prescriptive model will have clarity, but limited flexibility.

Question 14

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

It is difficult to fully define the scope of the regulatory task at this time as the scope of first supply is not completely known and insufficient analysis of the in service task throughout the lifecycle has not been undertaken. Further analysis of the regulatory task needs to be undertaken. Jurisdictions such as Queensland have started this process which is very useful and should be further developed as a tool to

determine who undertakes regulatory tasks. There are different ways of considering the regulatory task. Attachment A shows an approach through a lifecycle of an AV which highlights the many gaps understanding the task and responsibilities.

Question 15

Have we accurately captured the benefits of the regulator being:

a. A government body or an independent body?
b. A national body, or state and territory level bodies?
c. An existing body or a new body?

The benefits of the regulator are captured in the RIS. It is anticipated that there will be few ADSEs as AVs are rolled out into the market, and they are likely to be international firms.

The benefit of a regulator that has oversight arrangements will be dependent on the utilisation of existing regulatory frameworks and resources. Clear assessment of jurisdictions' current functions to determine the necessary function of a regulator still needs to be determined.

Question 16

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

Funding of a regulator should be fully recovered. Further analysis is required as to appropriate regulatory entities and the costs involved. The costs should not be borne by consumers.

Question 17

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

The RIS does not currently present available legislative implementation models and their application clearly, making it difficult to understand and easily identify the responsible level of government.

Model law does not exclude separate regulators being based in the same state.

Question 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.

The constitutional issues are addressed at a high level within the RIS. Specific constitutional issues will need to be further considered when there is certainty around potential regulatory functions for national law. Parliamentary Counsel's Committee should be engaged early.

Transitional issues will arise, but will differ depending on the approach taken. Each legislative model provides concerns for transition, including the timing with regard to passing legislation through all Parliaments across Australia in a model law approach. Consideration also needs to be given to transitional issues with regard to skills, policies and capabilities of both government and industry in the application of any new regulatory framework.

Question 19

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

The RIS describes each of the options sufficiently.

Question 20

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

A harmonised national approval to AV regulation will provide the most effective way to address the problem.

There are a number of assumptions made within the RIS and the cost benefit analysis (CBA) that do not clearly indicate that a new national regulatory would be viable. Further comment on the CBA is provided below.

Question 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).

Other options have been identified in this response.

Comments on the Cost-Benefit Analysis (CBA)

South Australian recognises the difficulties in the availability of meaningful data on the robustness of the findings from the CBA and in turn the need to make assumptions without clear evidence to justify. South Australia comments are on the basis of the qualification in the conclusions outlined in Chapter 5.

South Australia supports the view that regulation of AVs, and to a harmonised national approach.

Given the low levels of confidence in the net present values (NPVs) generated in the CBA analysis South Australia is of the opinion that the final CBA should include details about the further work required as AVs increase on the road network brining more operational data forward.

Table 2 in the analysis required further qualification, as the estimated benefits for the introduction of AVs is drawn from the 5 studies and there is no detail provided to why these particular studies were chosen, how the studies were carried out, and any assumptions/issues with the statistics and data used. There is also no consistency in the Benefit Category within the table, on the estimated values calculated and from which the average benefit estimate is derived. Given the reliance on the estimates within the table, a qualification should be given in regards to the accuracy of data and on its interpretation for the CBA analysis.

Note that as Table 2 also includes estimates accident avoidance, there is a level of double counting in the options analysis in Chapter 4. As this also includes the safety benefits developed in Tables 3 and 4.

The economy wide effects that Table 2 shows are generally evaluated via economy wide General Equilibrium models that have the capability to assess sectoral impacts, which has not been done here. Properly evaluating winners and losers and would give a more informed picture of the impacts of any regulatory regime introduced. This modelling however, will require real data that does not yet exist. Hence, this cannot currently be achieved, but should be considered as data becomes available. This could establish a Government commitment to ongoing assessment of the effectiveness of in service safety regimes for AV's shared use of the road network.

The CBA needs to incorporate clear qualifiers where assumptions, or validity issues exist around the data. An example is the estimates used to determine cost to industry for new in service regulation of AVs (page 27 where the estimate is from one vehicle manufacturer).

Attachment A: Lifecycle of an AV

Event	Industry	User	Regulator	Regulatory tool
Design	OEM / ADSE			
1st supply			Commonwealth	SoC
Software (ADS) update	ADSE			Potentially reporting?
Update failure – defect?				
ODD breach				Potentially reporting?
Road law breach	ADSE		SAPOL?	Improvement notice
Driver takeover				
System takeover				
Remote monitoring				
Remote ops step-in				
Remote ops failure				
Periodic inspection	ADSE		DPTI	
ADS real-time reporting				
Sensor calibration				
Modifications				
Environment (ODD) change				
Annual registration				
Consumer complaint				
Community complaint				
Transfer of registration	Owner		DPTI	
User re-training				
Safety critical event				
Near crash				
Crash (human fault)				Insurance
Crash (ADS fault)				Insurance
Insurance claim				
Repair				
Write-off				
Re-registration (rebirth)				
ADS no longer supported				
ADSE exits market				
Disposal				