



National Transport Commission
Level 3/600 Bourke Street
MELBOURNE VIC 3000

Att: Automated Vehicle Team

2 August 2017

Dear Automated Vehicle Team

Submission on regulatory options to assure automated vehicle safety in Australia

Thank you for the opportunity to make this submission.

Executive summary

We consider mandatory self-certification to be the optimum model for assuring the safety of SAE Level 3, 4 and 5 vehicles in Australia. However, we suggest that satisfactory self-certification, as determined by government, should be precondition to the vehicle being supplied in Australia. Doing so would ensure that any concerns or issues raised by government in relation to the statement of compliance and supporting documentation (including the extent of testing completed) are addressed to government's satisfaction before the vehicle can be supplied in Australia.

We also believe that the above model should be supported by a primary safety duty that is imposed on the supplier, and that this duty should continue beyond the point of first sale.

Finally, we consider that the supplier should be required to demonstrate, before it can supply the vehicle in Australia, that it has the financial capacity or product liability insurance arrangements to meet reasonable potential liabilities arising out of any defects in the vehicle's automated driving system (ADS). It will be important that those who suffer injury or property damage as a result of a failure by the supplier to discharge its primary safety duty (or its duty of care in tort) are able to actually recover their loss from the supplier.

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1. Should government have a role in assessing the safety of automated vehicles or can industry and the existing regulatory framework manage this? What do you think the role of government should be in the safety assurance of automated vehicles?

Motor vehicles pose a significant risk to human safety. Australians expect government to have a role in ensuring that motor vehicles comply with relevant safety standards before they can be offered for sale in Australia, and that they remain safe while they are used on public roads. The community expectation in relation to automated vehicles will be no less. Indeed, there is a case for greater regulatory intervention than currently applies given:

- the current safety assurance provided by the fact that a conventional motor vehicle can only be driven on a public road by someone that has demonstrated their competence to do so won't apply in the case of vehicles that don't require a licensed human driver to watch the road and be ready to intervene if necessary (i.e SAE Levels 3, 4 and 5);
- vehicle technical integrity will become increasingly safety-critical, once the vehicle performs the entire dynamic driving task;
- the significant risks to human safety that driverless vehicle pose; and
- the possibility that some manufacturers may be tempted to offer such vehicles for sale before all foreseeable risks have been suitably minimised.

We consider the role of government in the safety assurance of automated vehicles should be similar to its current role in respect of the safety of conventional vehicles. In particular:

- a person should only be entitled to sell/supply a vehicle containing a SAE Level 3, 4 or 5 ADS in Australia if they have demonstrated to government's satisfaction that the safety risks that the use of the ADS will pose have been appropriately addressed during the design, manufacture and testing process. Perhaps the test should be similar to those found in the Rail Safety National Law and in Work Health and Safety Legislation, i.e. the supplier must ensure, so far as is reasonably practicable, that the ADS is safe if it is used for a purpose for which it was supplied;
- similarly, a person should only be entitled to supply software updates or other modifications to an ADS if they have demonstrated to the satisfaction of government that they have ensured, so far as is reasonably practicable that the ADS (as updated, or modified) is safe if it is used for the purpose for which it is supplied;
- like conventional motor vehicles, an automated vehicle should be registered by a road agency before it can be used on public roads. Mutual recognition of registration should continue as per current arrangements;
- while the vehicle is being used on public roads, it should continue to comply with the Australian Light Vehicle Standards Rules (ALVSRs) or the Heavy Vehicle (Vehicle Standards) National Regulation, as applicable. We're not convinced that it is necessary to update these



documents to incorporate requirements regarding modifications to the ADS. Rather, we suggest that the issue of modifications can be addressed by:

- o imposing a continuing primary safety duty on the supplier to ensure, so far as is reasonably practicable, that the use of the ADS as intended continues to be safe – doing this will motivate the supplier to provide software updates or other modifications if it becomes apparent that there is a safety-related defect in the ADS; and
- o requiring the supplier/manufacturer to demonstrate to the satisfaction of government that the use of the modified ADS as intended will, so far as is reasonably practicable, be safe, before the modification can be supplied in Australia.

The second requirement could place some pressure on government to promptly approve the modification. A supplier should not be in breach of its primary duty if it has done everything reasonably practicable to make the modification available to vehicle owners.

2. Should governments be aiming for a safety outcome that is as safe as, or significantly safer than, conventional vehicles and drivers? If so, what metrics or approach should be used?

We believe governments should be aiming for a safety outcome that is significantly safer than conventional vehicles and drivers. Doing so will assist in gaining community acceptance of the inevitability that, from time to time, the technology will fail causing death.

3. Should the onus be placed on the automated driving system entity to demonstrate the methods they have adopted to identify and mitigate safety risks?

Yes, for the following reasons:

- It is technology neutral and will facilitate private sector innovation;
- It will provide a structured and systematic approach to ensuring a vehicle is safe;
- It aligns with what a prudent and competent manufacturer will want to do in any event, to discharge its duty of care in tort;
- It avoids the need for government to work out the tests that should be conducted, or to wait for other governments to do so;
- Those closest to the development of the particular technology are likely to be much better equipped than a government regulator to work out the testing that should be done in relation to the technology;



- It will enable risk management processes and tests to quickly evolve as industry standards and best practice emerge;
- It will enable manufacturers to complete many tests at their preferred location. Manufacturers will be able to minimize the testing they need to do in Australia to that which is necessary to demonstrate that safety risks arising from differences in road rules and Australian road infrastructure etc have been appropriately addressed; and
- It is consistent with primary responsibility for managing the safety risk remaining with the manufacturer, rather than the regulator.

The disadvantages of industry evaluating and validating safety that the NTC has identified can be managed. In particular:

- Government should have the final say on whether the testing that the manufacturer has done to demonstrate the safety of the vehicle is sufficient. This will address the uncertainty that could arise for government and consumers if the manufacturer was the final arbiter of the extent of testing required. It will also address the risk of unsafe vehicles being allowed on the roads by unscrupulous or incompetent manufacturers.
- Allowing the manufacturer to suggest the level of testing required to discharge their duty of care in tort (and any primary safety duty imposed by legislation) is likely to optimize the costs and time involved. Manufacturers will be commercially motivated to do the testing required to discharge their legal duties, in the most efficient manner possible.

4. Are the proposed assessment criteria sufficient to decide on the best safety assurance option? If not, what other assessment criteria should be used for the design of the safety assurance system?

Some of the criteria that the NTC has developed are more important than others, and should be given more weight in the design of the safety assurance system. The assessment of the safety assurance system options requires a more nuanced approach than counting the number of green, yellow and red traffic lights. We would rank the NTC's suggested criteria in the following order of importance:

- Safety;
- Timeliness
- Innovation, flexibility and responsiveness;
- Regulatory efficiency;
- International and domestic consistency – a system that is flexible (e.g allows the manufacturer to suggest the testing needed to ensure the vehicle is safe) will help with harmonization internationally and domestically



- Accountability and probity
- Safe operational design domain – not convinced a separate criterion is required. The potential civil liability of manufacturers arising from the use of an automated vehicle other than as intended by the manufacturer will motivate manufacturers to clearly define the ODD and the corresponding SAE level to which it applies;
- Other policy objectives – ‘nice to have’, but not essential. There are other mechanisms by which other policy objectives can be achieved.

We believe the ability of the vehicle to comply with local road rules is highly relevant to its safety. Other road users will be expecting some level of assurance that SAE Level 3, 4 and 5 vehicles can be expected to comply with local road traffic laws. But this seems to be covered by the first criterion.

5. Should governments adopt a transitional approach to the development of a safety assurance system? If so, how would this work?

Option 4 (Accreditation) could be the optimal safety assurance system in the longer term, if and when ownership of automated vehicles becomes concentrated in a relatively small number of fleet owners.

6. Is continuing the current to regulating vehicle safety the best option for safety assurance of automated vehicle functions? If so, why?

No, it's not the best option, but it isn't as bad as the NTC discussion paper suggests.

Tort, product liability and consumer protection laws provide a powerful incentive for manufacturers to:

- satisfy their duty of care on tort to occupants of the vehicle and other road users;
- ensure that the vehicle is safe, free from defects and fit for purpose.

However, the latter duty is only owed to the purchaser of the vehicle, and the former is only owed to those whom the manufacturer ought to have foreseen may suffer loss if the manufacturer fails to take reasonable care. Accordingly, we suggest that a primary safety duty should also be imposed on the supplier that would enable the government to take action in the event the duty is breached.

Section 6.5 of the discussion paper suggests that the proposed driver reforms will enable other road users, insurers and enforcement agencies to take action against the automated driving system entity in the event of a vehicle crash or breach of the road traffic laws, if option 1 is adopted. We're not convinced this is correct. Our understanding of the NTC's proposed driver reforms is that the ADS entity will become responsible for compliance with road rules (and, perhaps, other laws) that are presently imposed on the driver. We don't see how this would enable other road users and insurers to take action against the ADS entity. Indeed, even if a primary safety duty is imposed on the ADS entity,



it doesn't necessarily follow that this will give other road users and insurers a right to take action against the ADS entity in the event the duty is breached.

The discussion paper suggests that option 1 only partially meets three criteria, and doesn't meet another three criteria. We believe the NTC's preliminary assessment of option 1 has been too harsh. In particular:

- the NTC hasn't explained why option 1 would not facilitate an easy or simple importation process, or why the lack of explicit regulation could create uncertainty. The current importation process seems to work fine, and our existing tort laws make it quite clear that manufacturers of automated vehicles owe legal obligations to ensure that safety risks have been eliminated or minimised to the extent reasonably practicable;
- the NTC hasn't explained why option 1 creates a high risk that different levels of safety would emerge across business models and enterprises. In any event, it is not clear why this would not support international consistency;
- the manufacturer can be expected to communicate the vehicle's operational design domain given the consumer law obligation to ensure the vehicle is fit for purpose. If the vehicle is only capable of operating at a particular level of automated in limited domains, the manufacturer will be motivated to communicate this to purchasers to avoid claims that the vehicle is not fit for purpose;
- under option 1, why wouldn't the vehicle owner be the legal entity responsible for the ADS? and
- the manufacturer's duty of care in tort will require the manufacturer to take all reasonable steps to guard against the risk of cyber-security attacks that might cause harm to the vehicle occupants. The ability of the safety assurance system to support other policy objectives such as traffic management and environmental outcomes is not an important criterion. There are other ways by which these objectives can be achieved.

7. Is self-certification the best approach to regulating automated vehicle safety? If so, should this approach be voluntary or mandatory? Should self-certification be supported by a primary safety duty to ensure automated vehicle safety?

Yes, self-certification is the best approach. The approach should be mandatory, to ensure that government has the final say on whether the manufacturer has demonstrated that the vehicle (or any significant modification including software update to it) is safe and therefore suitable to be registered under state and territory laws. If the approach is mandatory, then this option would fully (rather than partially) satisfy the NTC's first evaluation criterion.

As noted by the NTC, making self-certification mandatory would also provide government with the information on automation vehicle functionality that it needs to assure the community that the safety risks associated with automated vehicle technology are being appropriately managed.



We suggest satisfactory self-certification should be precondition to the issue of an identification plate for the vehicle under the Motor Vehicle Standards Act. Doing so would ensure that any concerns or issues raised by government in relation to the statement of compliance and supporting documentation (including the extent of testing completed) were addressed to government's satisfaction before the vehicle can be supplied in Australia.

The supporting documentation provided by the supplier should include a detailed Safety Assessment, similar to what the NHTSA is requesting in the USA.

As mentioned above, self-certification should be supported by a primary safety duty on the supplier that would enable the government to take action in the event the duty is breached. A disadvantage of self-certification mentioned in the discussion paper is that it could duplicate the effect of the consumer guarantees under the Australian Consumer Law. We consider the duty would be more likely to duplicate the duty of care owed in tort (rather than consumer guarantees), but a primary safety duty imposed by legislation could enable persons other than those to whom the supplier owes a duty of care in tort, or purchasers, to take action in the event the duty is breached.

Another advantage of self-certification that is not mentioned in the discussion paper is that it will support international harmonization. Self-certification would allow testing and associated safety evidence generated by the manufacturer in other countries to support the supplier's application in Australia, especially as the Safety Assessment required in Australia is aligned with that required in the USA and other countries.

8. Is pre-market approval the best approach to regulating automated vehicle safety? If so, what regulatory option would be the most effective to support pre-market approval?

No, not as defined by the NTC. Most importantly, this option, as defined by the NTC, will only support known technologies and therefore stifle innovation. It would also impose unnecessary burdens on government and hinder international harmonization.

However, as mentioned above, we believe self-certification should not only be mandatory, but it should also be a pre-condition to the supply of the vehicle in Australia. Put another way, pre-market approval should be required, but the approval should be based on the supplier satisfying government that the testing that has been completed is sufficient to discharge the supplier's primary safety duty. This approach would give government and consumers a high level of certainty that automated vehicles are safe, without the significant downsides of the pre-market approval option, as defined by the NTC. The potential downside of government becoming liable for safety faults could be addressed via section 37 of the Motor Vehicle Standards Act 1989.

We also suggest that approval to supply the vehicle in Australia should be conditional upon the supplier demonstrating that it has the financial capacity or product liability insurance arrangements to meet reasonable potential liabilities arising out of any defects in the vehicle's automated driving system. Another alternative would be to impose this obligation on vehicle owners as a precondition to registration, similar to current CTP insurance requirements. However, we believe insurance cover for



liabilities arising out of ADS defects should be funded ADS manufacturers, rather than the vehicle owners.

9. Is accreditation the best approach to regulating automated vehicle safety?

No, not at this point. Until such time as vehicle ownership is concentrated in a small number of fleet owners, there will be too many vehicle owners/operators in need of accreditation for this option to work.

However, steps 1 – 6 of this option, as described on page 73 for the discussion paper, provide a good starting point for the steps involved in the model advocated by this submission. The accreditation agency would, however, be replaced with the government body that assesses whether the supplier's self-certification statement of compliance and supporting documentation is satisfactory.

10. Based on the option for safety assurance of automated vehicle functions, what institutional arrangements would support this option?

We suggest the following institutional arrangements, to support the safety assurance system proposed by this submission:

- the Vehicle Safety Standards Branch within the Commonwealth Department of Infrastructure and Regional Development could, when it assesses whether the vehicle complies with all required ADRs, also assess whether the supplier has ensured, so far as it reasonably practicable, that the use of the ADS as intended is safe. The VSSB could also assess whether suppliers wishing to provide software updates or other modifications (including in order to discharge the continuing primary safety duty or duty of care) have demonstrated that the safety risks that the use of the ADS (as updated, or modified) will pose have been eliminated or minimized, so far as is reasonably practicable; and
- like existing motor vehicles, automated vehicles should be registered (or exempted) by a state or territory road agency before they can be used on public roads. Mutual recognition of registration should continue as per current arrangements;

The above arrangements would align nicely with existing arrangements and the division of powers between states/territories and the Commonwealth. They would also avoid the need for the creation of a new agency, allow safety assessments to be conducted by a single government agency, and thereby minimise the prospect of inconsistent requirements being imposed by each state and territory road authority. They would also preserve for each state and territory the final say that it presently enjoys over vehicles that can be used on public roads within its jurisdiction – something that states and territories will be reluctant to give up.



11. How should governments manage access to the road network by automated vehicles? Do you agree with a national approach that does not require additional approval by a registration authority or road manager?

We expect states and territories will want to register automated vehicles in the same way that they register conventional vehicles. We don't see any major problems with this approach. We expect states and territories will generally be comfortable with the safety of automated vehicles being assessed by the VSSB, but they will want the final decision on registration to rest with the state or territory road agency.

12. How should governments ensure compliance with the safety assurance system?

A primary safety duty should be imposed on a person that supplies to the market a Level 3, 4 or 5 ADS, or a vehicle that has a SAE Level 3, 4 or 5 ADS.

The duty should require the supplier to:

- a) ensure, so far as is reasonably practicable, that the ADS is safe if it is used for a purpose for which it was supplied; and
- b) ensure, so far as is reasonably practicable, that such testing and examination of the ADS as may be necessary for compliance with the above duty is carried out; and
- c) take such action as is necessary to ensure, so far as is reasonably practicable, that there will be available in connection with the use of the thing adequate information about-
 - i. the use for which the ADS supplied; and
 - ii. the results of any testing or examination referred to in paragraph (b); and
 - iii. any conditions necessary to ensure, so far as is reasonably practicable, that the ADS is safe if it is used for a purpose for which it was supplied.

The purpose for which an ADS is supplied would be defined, in part, by reference to the operational design domain of the ADS.

The above duty should be a continuing duty, which extends beyond the point of first sale. Doing so will motivate the supplier to ensure that software updates are provided if deficiencies in the ADS become apparent.

We are not sure that it is necessary to also impose a primary safety duty on the designer or manufacturer of the ADS, as the designer or manufacturer will generally be a foreign corporation. It would be better from a loss recovery perspective if the person or company having the duty was resident or registered in Australia, with assets in Australia. The supplier can put appropriate contractual arrangements in place with the manufacturer, to give the supplier recourse to the manufacturer in the



event the supplier becomes liable as a result of the conduct of the manufacturer. Likewise, the manufacturer can do the same with the designer or ADS component providers.

If it is not legally possible for the Minister to promulgate a standard under the Motor Vehicle Standards Act that requires the supplier to demonstrate that it has satisfied its primary duty as at the point of first supply of the ADS, then we suggest that the Act should be amended to require the Minister to be so satisfied before he or she approves identification plates being placed on vehicles with the ADS.

As mentioned above, we also think it is important from an enforcement perspective that a supplier of a SAE Level 3, 4 or 5 ADS to the Australian market demonstrates that it has the financial capacity or product liability insurance arrangements to meet reasonable potential liabilities arising out of any defects in the vehicle's automated driving system. It will be important that those who suffer injury or property damage as a result of a failure by the supplier to discharge its duty of care are able to actually recover their loss from the supplier.

Legal entity responsible for the ADS

The discussion paper contains numerous references to the need to ensure that a legal entity is responsible for the ADS. There needs to be greater precision around this concept. What does "responsibility for the ADS" entail? It could mean a number of things, such as:

- owing a duty of care to users of the vehicle and other road users to ensure, so far as is reasonably practicable, that the ADS is safe if used as intended, at the point of first sale;
- owing a duty of care to users of the vehicle and other road users to ensure, so far as is reasonably practicable, that the ADS remains as safe if used as intended, following the point of first sale. This could involve:
 - providing software updates if deficiencies in earlier versions of the software become apparent;
 - accepting such updates as soon as practicable after they become available;
 - ensuring the vehicle is appropriately maintained;
 - using the vehicle appropriately, e.g only using the ADS within its Operational Design Domain; and
- being liable for any traffic rule infringements committed when the ADS is performing the entire dynamic driving task.

As will be seen from the above examples, there could be a number of persons or legal entities "responsible for the ADS". Indeed, there may be a number of persons/legal entities responsible for different aspects of the ADS at any point in time.



We hope you find this submission helpful. We would welcome the opportunity to discuss the views expressed in this submission.

We are happy for this submission to be published in the NTC's website.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Owen Hayford', with a small flourish at the end.

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