



# ATA SUBMISSION CHANGING DRIVING LAWS TO SUPPORT AUTOMATED VEHICLES

## AUSTRALIAN TRUCKING ASSOCIATION SUBMISSION 1 DECEMBER 2017

### 1. About the Australian Trucking Association

The Australian Trucking Association (ATA) is the peak body representing trucking operators. Its members include state and sector associations, some of Australia's major logistics companies and businesses with leading expertise in truck technology. Through its members, the ATA represents many thousands of trucking businesses, ranging from owner drivers to large fleets.

### 2. Introduction and summary

Automated heavy vehicles have the potential to greatly reduce road crashes and increase productivity. However, the introduction of these vehicles is complex and multi-layered. This is breaking technology that is yet to be fully trialled, there is no hard data to inform decisions and still many unknowns with regard to legislation, laws and timelines.

The ultimate outcome of the introduction of automated vehicles should be a safer road system. As recommended by the ATA in our submission - *Clarifying control of automated vehicles (2017)*<sup>1</sup>:

*Recommendation 1: The introduction of automated driving systems and clarification of the control of vehicles needs to be focused on achieving a safe road system, and not on the introduction of a particular form of technology.*

Government should aim for a safety outcome that is significantly safer than conventional vehicles and drivers. A robust safety assurance system along with legislation and laws to support the use and ongoing compliance of automated vehicles, Automated Driving System Entities (ADSEs) and their users is essential.

What has not been considered in the NTC *Changing driver laws to support automated vehicles discussion paper* is Work Health and Safety (WHS) legislation<sup>2</sup> and how this may apply to the safety assurance and ongoing compliance of automated vehicles. WHS already applies to a heavy vehicle because it is 'plant' in a work context, as are fleet vehicles or private vehicles used for work purposes.

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<sup>1</sup> [ATA submission - clarifying control of automated vehicles 2017](#)

<sup>2</sup> [Work Health and Safety Act 2011](#) (Cwth) and as applied through state legislation; [Occupational Health and Safety Act 2004](#) (Vic); [Occupational Health and Safety Act 1984](#) (WA)

WHS laws generally apply to any person who controls or influences health and safety in relation to the performance of work. Automated vehicles would be plant in the workplace and WHS laws would apply to the manufacturer, importer and supplier. The party responsible for the ADS would be a relevant person conducting a business or undertaking (PCBU) in so far as the vehicle is used for any work or a worker interacts with it in some way.

Any new laws made to specifically address the liability of an ADSE must therefore be consistent with the existing WHS laws. A primary duty, with harmonised penalties and due diligence obligations on officers could be included in the future Road Vehicle Standards Act. This duty and associated provisions, and the necessary matching state legislation would extend the existing WHS regime to cover private use of automated vehicles.

### **3. Answers to NTC questions**

#### **1. Do you agree that reform to existing driving laws is required to:**

**(i) allow an ADS to perform the dynamic driving task when it is engaged?**

**(ii) ensure a legal entity (ADSE) is responsible for the actions of the vehicle when the ADS is engaged?**

As current laws assume a driver is human, these laws will need amendment in order to recognise

- The ADS as legally permitted to perform the dynamic driving task, and
- Levels of automation and definitions of the 'driver' at each level of automation (conditional, high and full automation) including duties and obligations.

With a safety assurance system in place ensuring that ADSEs meet their safety obligations (including appropriate management of new approvals and in-service compliance) the ADSE should be legally responsible for the dynamic driving task when ADS is engaged.

However, high automation is qualitatively different to partial and conditional automation where the system performs only part of the dynamic driving task or requires that a human driver must be ready to respond to the vehicle system failures and to intervene if requested as the fall back driver. At this level of automation (SAE levels 1 to 4a) the human driver must remain alert and ready to take control if necessary.

As the ATA recommended in *Clarifying control of automated vehicles (2017)*:

*Recommendation 3:*

*For vehicles with conditional ADSs (SAE level 3), the human driver cannot be designated as in control of the vehicle until:*

- *Safety risks with the possible loss of driving skills and awareness by human drivers is addressed.*
- *It is demonstrated that a human driver can safely resume control of the vehicle.*
- *The automated driving system is recognised in legislation and a safety assurance system is implemented.*

The ADS will also need to be recognised in HVNL and other state and territory heavy vehicle laws. An ADS cannot be held responsible for duties outside of the dynamic driving task or duties that it is not capable of being programmed to do. Definitions around the dynamic driving task and capacity of an ADS will need to be very clear.

The varying levels of automation and current uncertainty regarding the safety, reliability and future application of ADSs may require that laws are regularly reviewed and reformed as the up-take of automated vehicles and levels of automation increase.

**2. Do you agree that if the ADS is engaged, legislation should provide that the ADS is in control of the vehicle at conditional, high and full levels of automation? If not, do you think a human in the vehicle should be considered in control of the vehicle, and at what levels?**

The ATA supports option 3: that the ADS is in control of a vehicle with conditional, high or full automation when it is engaged.

As per question one, laws will require amendment in order to recognise the varying levels of automation or ADSs and the ADSE as legally responsible for the dynamic driving task when ADS is engaged.

For vehicles with conditional automation driving systems (SAE level 3 and below), the human driver will be required to sustain their awareness as they perform part of the dynamic driving task or in-case they are requested by the ADS to intervene as the fallback driver.

The NTC enforcement guidelines for automated vehicles confirm that currently the human driver is responsible for complying with road traffic laws when a vehicle has conditional automation engaged at a point in time (NTC, November 2017, p. 1).

Although enforcement (traffic laws) that maintain a legal obligation on the human driver could be effective in encouraging drivers to remain alert and capable of taking over control of a vehicle if required, it is critical that the ADSE remain accountable for the effectiveness of any ADS fallback driver transition system.

With a safety assurance system implemented assuring safe operation on Australian roads, the ADS should be deemed as in control of a vehicle with high or full ADS (SAE levels 4b and 5). As these vehicles do not require human driver intervention or monitoring, the ADS assumes 'proper control' of the vehicle with the ADSE legally responsible for the driving task. However, an ADS cannot be responsible for tasks outside of the dynamic driving task. This is of particular relevance to heavy vehicle industry compliance obligations such as load restraint the transport of dangerous goods and animal welfare.

**3. Do you agree that the proper control offence should not apply to the ADS, provided there are appropriate ways to hold the ADSE to account for the proper operation of its ADS?**

Assuming that a safety assurance system will require that the ADSE be responsible for meeting safety obligations, the ADSE would be accountable for the proper operation of the ADS.

As said by a prominent Australian trucking business *'the device manufacturer (and no other body) must be solely responsible for the safe operation of the ADS'*.

The ADSE is responsible for the design and programming and therefore the safe operation of an ADS that they own and/or manufacture. ADSEs should be considered the same as current manufacturers and suppliers and should be liable in relation to product or technical failures. Additionally the ADSE should be responsible for clearly defining circumstances that require a fallback driver as part of its safety assurance responsibilities so that all parties are aware of their obligations and skilled enough to respond and control a vehicle.

Chain of Responsibility laws will need to recognise the fallback driver, the ADS and the ADSE in the chain.

**4. Do you agree that if a safety assurance system is approved that requires an ADSE to identify itself, the identified ADSE should be responsible for the actions of the vehicle while the ADS is engaged? If the ADSE is not identified through the safety assurance system, how should the responsible entity be identified in legislation?**

The ATA agrees with Option 5: the entity responsible for the ADS is the ADSE identified through the safety assurance system.

Consideration will need to be given to the various driving 'combinations' at lower levels of automation. Some automated functions are under the control of the driver and some the vehicle. At lower levels of automation the driver can decide what level of automation to engage in what environment.

The ADS itself does not control level of automation; the ADS controls the driving functions. Reference to 'proper control' will need to consider the level of automation and whether the driving function is under the control of the vehicle or driver, or both.

The ATA agrees that an ADSE can only be responsible for the dynamic driving task and cannot be responsible for obligations that are not appropriate for the ADS to undertake such as various heavy vehicle compliance requirements including documentation or paying tolls.

To ensure there are no gaps in the system, when the ADSE is not responsible the obligation should be on the operator or human controller (as per the Chain of Responsibility).

**5. Do you agree that when the ADS is engaged:**

**(i) an ADSE should be responsible for compliance with dynamic driving task obligations?**

**(ii) obligations that are part of the dynamic driving task that the ADS cannot perform should be modified where appropriate, or the ADS exempted from the obligation?**

**(iii) an ADSE should not be responsible for existing driver duties and obligations that are not part of the dynamic driving task?**

Making the ADSE legally responsible for compliance with the dynamic driving task will work to increase or assure the obligation on the ADSE to manufacture and program ADSs that are safe for use on our roads and compliant with Australian Road Rules.

The ATA endorses the use of approach 1, expanding the definition of ‘driver’ in legislation that deals with the dynamic driving task to include the ADS when it is engaged and make the ADSE responsible for the actions of the ADS.

The new definition of ‘driver’ along with supporting definitions for ‘automated driving system, ‘dynamic driving task’ and ‘operational design domain’ must be clear and easily understood.

National consistency is essential in what is already a complex heavy vehicle legislative environment. Heavy vehicle drivers and operators are already under constant scrutiny and it is imperative that definitions relating to automation can be easily understood by operators obligated to comply (i.e. those in the chain of responsibility) and by enforcement agencies and officers.

**6. How should legislation recognise an ADS and an ADSE? In assessing the options in section 5.6, please consider the following factors:**

**(i) legislative efficiency**

**(ii) timeliness**

**(iii) impact on compliance and enforcement**

**(iv) impacts on other schemes such as compulsory third-party insurance Are there other options that you prefer? Please provide details of how it would work.**

**7. Do you agree that driver obligations need to be assessed to ensure there are no obligations that cannot be fulfilled if an ADS is in control? If gaps are identified, should other appropriate entities—such as fallback-ready users, other vehicle occupants, registered operators and operators—be made responsible for the obligation?**

In the case of heavy vehicles specifically, Chain of Responsibility laws will cover all entities involved in the freight task which will include vehicle occupants (human drivers/controllers) and operators.

The heavy vehicle industry already has standards and laws in place with regard to vehicle maintenance and safety compliance. Heavy vehicle owners and operators will need to continue to be responsible for ensuring vehicle roadworthiness (both mechanical and software) and driver/operator fitness for duty.

**8. Do you agree that obligations on a fallback-ready user of a vehicle with conditional automation, who will be required to take over driving if requested by the ADS should include:**

**(i) sufficient vigilance to acknowledge warnings and regain control of the vehicle without undue delay, when required? Changing driving laws to support automated vehicles October 2017 4**

Yes, fallback users should be legally responsible for maintaining their readiness and the skills drive.

**(ii) holding the appropriate licence for the vehicle type?**

Yes, fallback users must hold a licence that deems them competent to safely control the vehicle they are responsible for driving in a fallback situation.

**(iii) complying with drug, alcohol and fatigue driver obligations? Do you agree that the fallback-ready user should be allowed to perform secondary activities?**

Fallback drivers should be viewed no differently to a current 'human' driver considered to be in 'proper control' of a vehicle. In the early stages of automated vehicle introduction fallback drivers should not be allowed to perform secondary activities. This may be re-visited when suitable trialling, data and research is available to demonstrate that performing secondary duties will not pose a safety risk.

As stated by the ATA in our submission regarding clarifying control of automated vehicles, it is problematic to determine a human driver as being in proper control of a vehicle with conditional automation. If the human driver is not expected to monitor either the driving environment of the automated driving system when it is engaged for a sustained period of time, then it is difficult to see how the human driver will be receptive to system failures.

The ability of a human driver to intervene in a system failure is also complicated. If a system failure, or unsafe situation, arises whilst the vehicle is under automatic driving control, it may be impossible or unsafe for the driver to suddenly intervene, assuming they became aware of the situation with time to respond. For example, if a vehicle begins to run wide on a bend, sudden interaction by the driver could lead to loss of control or even a roll-over event.

There are also no guarantees that a human driver will be in a position to intervene. With no obligation to monitor the system or driving environment, and with the limited reaction time for many road crashes, the ability of a driver to become aware of a situation in time cannot be relied upon.

This is a critical point if the objective is to improve the safety of the road system, as opposed to introduce a new technology. Where automated technologies can reduce the risk caused by human drivers, such as with emergency braking or lane departure warnings, they should be encouraged. But automated driving systems should not be pursued if they increase fatigue related crashes. The ability of the human driver to remain unfatigued, when not engaged with the driving task, has not been demonstrated.

There is already increasing concern in the community and industry about rising distraction for drivers and its ability to contribute to road crashes. It is extremely unlikely that human drivers would not face increased risks of distraction with a vehicle engaged in a conditional automated driving task, again limiting the ability of the human driver to assume proper control of the vehicle. For professional drivers, the prospect of reduced job interest and increased boredom whilst a vehicle is engaged in a conditional automation driving task also raises serious questions about distraction and possible increased risks of fatigue.

The ATA is also concerned about the potential loss of driving skills. The less a skill is utilised the more likely it is to disappear. There is a need to consider how to maintain driving skills, where human drivers remain ultimately in control of a vehicle, if conditional automation driving systems are likely to reduce the utilisation and practice of these skills. There are already significant concerns in the community, and amongst driving trainers and industry, about the loss of quality driving skills.

**9. Do you think it is necessary to impose readiness-to-drive obligations on humans who will take over driving when a vehicle with high automation that includes manual controls reaches the limit of its operational design domain?**

Yes, maintaining enforceable obligations on the human driver could be effective in encouraging them to remain skilled, alert and capable of taking over control of a vehicle if required.

However, as previously stated the ADSE should be responsible for clearly defining circumstances that require a fallback driver as part of its safety assurance responsibilities and it is critical that the ADSE remain accountable for the effectiveness of any ADS fallback driver transition system.

**10. Do you agree that no readiness-to-drive obligations should be placed on passengers in dedicated automated vehicles (designed to be 'driverless')?**

**11. Should exemptions from the drink- and drug-driving offences concerning starting a vehicle and being in charge of a vehicle be provided to a person who is starting, or who is a passenger in, a dedicated automated vehicle?**

**12. Should exemptions from the drink- and drug- driving offences concerning starting a vehicle and being in charge of a vehicle be provided to a person who is starting a vehicle with high or full automation that includes manual controls?**

There has not been sufficient trialling, nor is there sufficient proof to assume that fully automated vehicles will not pose a safety risk if there is not a fallback or designated person capable of responding in an emergency or breakdown situation.

Therefore no exemptions to drink and drug driving laws should be made if the expectation is that a designated passenger - or the person who has started a vehicle may be required to perform any non-dynamic driving tasks.

Removing drink and drug driving offences could have far reaching social implications and should not just be viewed as related to the dynamic driving task. Impairment by alcohol or drugs may induce offensive and disorderly conduct such as physical assault, verbal abuse or interference with the vehicle or vehicle systems causing a threat to the safe operation of an ADS, other people on board and to other vehicles on the road. The role of drugs and alcohol in dangerous 'passenger' conduct should be seriously considered. A system that brings the vehicle to a stop if there is such conduct does not solve the issue. The intoxicated passengers may then end up, for example, on the side of a road where they are of further danger to themselves, other road users and vehicles.

Although fully automated vehicles are considered equivalent to using a taxi service, the difference is that a taxi has a human driver that can make a judgement about a person's level of intoxication and demeanour and hence make a decision regarding the safety risks associated with transporting that person. A fully automated vehicle cannot make this judgement.

The Australian Government has spent years and invested substantial funding into making drink and drug driving socially unacceptable. It is widely agreed that driving under the influence not only endangers the driver themselves but the wider community. Changes to drink driving laws could lead to more frequent and heavier drinking which has both health and social impacts. Social consequences include financial burden due to excessive spending on alcohol, convictions for alcohol-related offences, impacts on work performance, loss of friends or family as a result of anti-social behaviour and alcohol related disease or injury (e.g. falls).

In a fully automated heavy vehicle there may be a requirement for an 'on board operator' to be designated to respond in an emergency or breakdown (including software failure) situation. This person will need to be alert and capable of performing necessary non-dynamic driving tasks. If a fully automated heavy vehicle brings itself to a stop and is not clear of the road for example, the operator may be required to assure the safety of the freight, themselves and other road users by using portable warning triangles. Livestock carriers will remain responsible for the humane transport of their stock, prevention of stress to animals, provision of water if necessary or the safe loading and unloading of animals.

The transition period, when the Australian vehicle fleet is moving from low levels of automation to full automation, will be a particularly risky phase. Given that the average vehicle age in Australia is 10 years, there will be a mixed fleet on our roads for many years.

Automation promises to make our roads safer by removing the 'human' element of driving risk. However in a mixed traffic environment (of no or low automation to full automation) this human element remains.

A prime example is the fully automated shuttle bus in Las Vegas (November 2017) that was hit by a reversing truck. The shuttle did what it was supposed to do to avoid a crash and came to a halt – however the human driver in the truck did not see the shuttle bus and collided with it. The shuttle did not have the ability to move back. Another crash occurred in Arizona (March 2017) between an automated vehicle (with two engineers seated in the front) and a non-automated vehicle. Initial police reports suggest<sup>3</sup> the collision was caused by a person who failed to give way to the self-driving car, rather than a malfunction of the automated vehicle's ADS. A witness' account of this accident raised an interesting point: would a human driver, seeing another person struggling to make a left turn through bumper-to-bumper traffic, have approached the situation differently?<sup>4</sup> This again demonstrates the challenges of a mixed traffic environment.

An emergency, crash or breakdown situation in a mixed traffic environment will still require that a 'passenger' in a fully automated vehicle may need to respond to a situation on the road. In other words they need to remain alert and capable of performing non-dynamic driving tasks such as calling for emergency assistance, helping at the scene of a crash or to take direction from a police officer.

The ATA's position is that we do not yet understand how fully automated vehicles will operate on our roads and how human drivers will interact with these vehicles in various situations. Therefore the ATA considers that it is too early to be making decisions about changing laws regarding *fully* automated vehicles. The ATA recommends that the government take a stepped approach to law reform.

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<sup>3</sup><https://www.theguardian.com/technology/2017>

<sup>4</sup> <https://www.businessinsider.com.au>



As per our recommendation in *Clarifying control of automated vehicles* the role of the Australian Transport Safety Bureau should be extended to provide independent, no-blame, safety investigations for road accidents involving automated vehicles. This will work to increase our understanding of the risks and limitations of these vehicles as their presence on Australian roads and level of automation increases.

### **13. How do you think road traffic penalties should apply to ADSEs?**

As discussed earlier, traffic laws that maintain a legal obligation on the human driver could be effective in encouraging drivers to remain alert and capable of taking over control of a vehicle with conditional automation SAE level 3 or below. However, human drivers and road transport businesses should not be held responsible for traffic infringements that were caused unavoidably by the automated driving system.

Although the ADSE at higher levels of automation should remain accountable for the effectiveness of any ADS (when engaged), small fines on ADSEs could well be absorbed as a business cost rather than being seen as a signal to management that a potentially critical safety issue must be addressed.

Instead, infringements should be seen and investigated as evidence that the vehicle software, hardware or related road infrastructure needs improvement. The ADSE would no doubt conduct its own investigation, but the ATA considers that an independent, no-blame, safety investigator would be best placed to make safety recommendations on these incidents.

Repeated infringements, safety incidents or a lack of responsiveness on the part of an ADSE should lead to a systemic investigation of whether it has breached its broader safety duties.

### **14. Do you think obligations and penalties on ADSEs in the safety assurance system should complement, or be an alternative to, road traffic offences?**

The NTC discussion paper says that unless there were executive officer liability, imprisonment would not be an applicable penalty for a corporate ADSE given a corporation lacks a physical presence and cannot be sentenced to a term of imprisonment.

However what the discussion paper does not consider (as discussed in the introduction to this submission) WHS laws can be applied to an ADSE if the automated vehicle is being used for work purposes. WHS laws would apply to the manufacturer, importer and supplier and the vehicle. The party responsible for the ADS would be a relevant PCBU if the vehicle is used for any work or a worker interacts with it in some way. This is of particular relevance for heavy vehicles which are 'work' vehicles.

The ATA considers that the planned Road Vehicle Safety Act (Cwth) should be amended in due course to impose a primary safety duty with harmonised penalties on ADSEs. Officers of ADSEs would have due diligence obligations matching the obligations under WHS legislation. State legislation would be required to manage in-service vehicle compliance.

