# Submission to the National Transport Commission:

## *A national in-service safety law for automated vehicles*

### Introduction

The NTC is consulting on the national approach to the in-service safety of automated vehicles. The NTC is seeking stakeholder feedback on a number of questions outlined in their discussion paper.

https://www.ntc.gov.au/sites/default/files/assets/files/NTC-Discussion-Paper-national-in-service-safety-law-for-AVs.pdf

The discussion paper recognises:

- *Automated vehicles operating on our roads will create challenges for agencies responsible for enforcing the road rules.*
- *Automated vehicles will be required to interact with roadside enforcement in a safe and predictable manner. Developing nationally consistent roadside enforcement protocols will assist.*

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Submissions made to NTC from Policing or Transport agencies might not adequately cover all the operational implications for police posed by in-service safety of automated vehicles.

For the sake of brevity, this submission responds only to Question 18. Different challenges are identified, and concepts within the NTC discussion paper are respectfully challenged.

This is done in the interests of road safety, noting the looming commencement of the **National Road Safety Strategy 2021-2030** and the recent proclamation by the United Nations General Assembly that 2021-2030 is the **Second Decade of Action for Road Safety.**

Nothing raised in this submission seeks to detract from the potential for autonomous vehicles to ultimately reduce death and serious injury on our roads, and the commitment to the safe introduction of AV's from organisations such as the NTC and Austroads.

**NTC Question 18:**

**Are there any other roadside enforcement issues relating to automated vehicle in-service safety that the NTC should consider?**

Chapter 8 in the discussion paper considers law enforcement interaction with Automated Vehicles (AV's). Most of this considers legal aspects, the establishment of a new regulator, and crash investigation.

> *Not all existing powers may be adequate to address the roadside enforcement safety risks of automated vehicles. For example, agencies may require the power to intercept an automated vehicle and disable the ADS, or fleets of ADSs.* Page 84 NTC Discussion Paper

***Traffic stops are complex***

Just as is the case now, police will require Level 3, 4 and 5 AV's and their controllers/occupants to do certain things. This includes:

- Pull over to allow emergency vehicles to pass
- Pull over and stop for police, not just for traffic issues but for criminal matters (see case study)
- Slow down, stop or change lanes (e.g. due to the presence of a stationary emergency vehicle or lane closure), or alter course (e.g. take an emergency detour)

Ideally, police will require a mechanism to direct AV's, regardless of who is in control, to comply with such directions, be they given by hand, or by the activation of blue/red flashing warning lights. This requirement is not just "traffic" matters but for criminal offences, drug and contraband interdiction as well as terrorist attacks where a vehicle is used, either as a weapon or to make good an escape.

***Case Study 1: Arrest of offender wanted for murder following high-speed pursuit.***

The offender in this matter was arrested for a murder committed some 300km away. The arrest followed a high-speed pursuit which ended when the offender hit an embankment *(Image right, Braidwood Times 25 April 2016).*


In these cases, police can deploy tyre deflation devices (road spikes), but this presents danger to police and members of the public and offices have been killed deploying road spikes. There is an opportunity to improve the work health safety of police officers, members of the public and indeed offenders through a mechanism that will allow police to safety bring an AV to a stop.

Police have a range of powers to stop, search and detain motor vehicles and their occupants. In the late 2000's, Australian police received training from Royal Canadian Mounted Police in techniques to detect and seize drugs and other contraband being transported on highways in light and heavy vehicles.

https://www.smh.com.au/national/nsw/police-catch-program-urges-highway-patrol-officers-to-look-beyond-road-crimes-to-detect-illegal-activity-20131214-2ze3k.html

During the 2010's NSW Police Force alone intercepted some $120 million dollars in drugs, cash, firearms/prohibited weapons, illegal tobacco and other stolen property disrupting organised criminal networks that were previously using public roads with impunity.

Human trafficking has emerged as a concern in western countries and police will be relying on the same methodology to locate and free people including children and young women being held against their will.

The situation cannot be allowed to develop, where AV's become the modus operandi for organised criminal enterprises such as outlaw motorcycle gangs. *They will be watching this space if they aren't already.*

Police will also have to allocate extensive resources towards revising operational safety procedures and training as a consequence of the in-service use of high-level AV's.

***Case Study 2: Stopping a Tesla on autopilot***


About 3:40am in late 2018, California Highway Patrol observed a Tesla Model S southbound on US-101 in the Redwood area travelling at 70 MPH. The driver was asleep at the wheel. Police activated lights and sirens in an attempt to stop the vehicle (via a conventional traffic stop) but the vehicle continued.

Police then positioned their vehicle in front of the Tesla and began to reduce their speed, in the hope that the Tesla's driver assist features would slowly bring it to a stop, which it eventually did, albeit in a running lane of the freeway (which presented continuing danger). After some time, Police were able to wake the driver and he was eventually charged with driving under the influence.

Intercepting a vehicle in this manner is not something these police would have trained for and police agencies would need to develop methods to deal with AV's in-service

Rand Corporation, a public policy research organisation, has identified specific areas of risk and concern to law enforcement. In 2019, Rand facilitated a workshop in Washington DC where operational police officers identified priority areas in regard to their interaction with AV's.

> *"Many seemingly simple interactions, such as traffic stops, are actually quite complex, and Law Enforcement will need a way to securely communicate with AV's. The consensus was law enforcement should begin proactive preparations to address longer-term challenges before being forced into reactive changes."*
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> https://www.rand.org/pubs/research_reports/RRA108-4.html

Based on the Rand workshop, AV's appear to present a wider range of issues for police than what the NTC discussion paper has touched on. There has been acknowledgment of the requirement to stop vehicles in some circumstances.

> *For example, Australian Road Rule 304 requires a person to obey any reasonable direction for the safe and efficient management of traffic from a police officer or authorised person. In vehicles with conditional automation, the fallback-ready user could be required to comply with such a direction. In a dedicated automated vehicle with no licensed occupant, an ADS design solution may be required.*
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As the *person or business undertaking* responsible for developing and accessing options to assure the safe operation of AV's while they are in-service, the NTC could demonstrate due diligence by holding a similar series of workshops in Australia, and consult with affected workers within police and emergency services. There are entities with a background in road policing that could assist in this task.

## The *fallback-ready driver* and the safe systems

Through Automated Driving Systems, the role of the driver is changing to one of passive monitoring.

The notion of the fallback-ready driver is flawed. The loss of 1,200 lives on Australian roads annually shows our drivers cannot cope under regular conditions, let alone if/when technical support systems hand control in an emergency to a driver with diminished situational awareness.

Speaking at the 2019 Lifesavers Conference in Louisville, Kentucky, USA, MIT's Bryan Reimer said:

> *You can't look at distraction without looking at automation. It's a myth with more automation, you need less human expertise.*
>
> Bryan Reimer, PhD Associate Director, The New England University Transportation Center, MIT

The 2018 killing of a cyclist, hit by an Uber “self-driving car” in Tempe Arizona, is slowly progressing through US Courts. The fallback-ready driver awaits trial for negligent homicide. Prosecutors allege at the time of the crash:

- The fallback-ready driver was streaming an episode of *The Voice*
- Video shows the fallback-ready driver looking down and away from the road
- The ADAS vehicle was exceeding the speed limit

NTSB vice chairman Bruce Landsberg wrote in a report: "On this trip, the safety driver spent 34% of the time looking at her cell phone while streaming a TV show” (Source: BBC News).

In a recent study, the Insurance Institute for Highway Safety (USA) reported findings on how experience with automation affects *driver disengagement*, where drivers do things like remove both hands from the wheel and divert their attention away from the road environment.

> *Crash investigators have identified driver disengagement as a major factor in every probe of fatal crashes involving partial automation we’ve seen.*
>
> https://www.iihs.org/news/detail/drivers-let-their-focus-slip-as-they-get-used-to-partial-automation

It is noted the IIHS study looked at vehicles with Level 2 automation. But if driver disengagement is a problem for Level 2, it is reasonable to expect in the absence of peer-reviewed research, driver disengagement will continue to be an issue for level 3 systems where “the automated driving system drives the vehicle for sustained periods of time” (Page 3 National enforcement guidelines for automated vehicles). https://www.ntc.gov.au/sites/default/files/assets/files/AV_enforcement_guidelines.pdf

More work and leadership are needed on the concept of the fallback-ready driver.

Safe Systems thinking accepts that people make mistakes and crashes will occur, but those crashes should not result in death or serious injury. Safe Systems also places responsibility on system designers to build safety into the network to reduce and eliminate fatal and serious crashes.

Police crash investigators should not have to deal with foreseeable consequences of fallback-ready drivers not being fallback-ready.

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**9 December 2020**

## Author Bio

Michael Timms retired from New South Wales Police Force in January 2020 following a 33-year career. Mr Timms has over three decades experience in Highway Patrol and road policing and was a member of the Command Leadership Group, Traffic and Highway Patrol Command.

He holds a Bachelor of Professional Studies (Policing) UNE, majoring in road safety studies and completed the Monash University Road Safety Leadership Program in 2016.

He has written and presented papers at road safety conferences in Australia and overseas. A member of the Australasian College of Road Safety for over ten years, he is the current Treasurer and Committee member of the college's NSW Chapter.