A national in-service safety law for automated vehicles October 2020







Report outline

Title	A national in-service safety law for automated vehicles
Type of report	Discussion paper
Purpose	For public consultation
Abstract	This discussion paper follows infrastructure and transport ministers' endorsement of a national regulatory approach to the in-service safety of automated vehicles. Ministers agreed to new national law that will establish a general safety duty on entities responsible for automated driving systems, due diligence obligations on their executive officers and a new national regulator for the in-service safety of automated vehicles. This discussion paper further develops the content of the national law, including proposals for the operation of the duties on regulated parties, the management of market exit of regulated parties and modifications to automated vehicles, the regulator's compliance and enforcement approach and its interaction with other agencies including information exchange. It also explains how the national law will work under two different legislative implementation options.
Submission details	The NTC will accept submissions until 11 December 2020 online at www.ntc.gov.au or by email to automatedvehicles@ntc.gov.au .
Attribution	This work should be attributed as follows, Source: National Transport Commission 2020, <i>A national approach to in-service safety for</i> <i>automated vehicles: Discussion paper</i> , NTC, Melbourne. If you have adapted, modified or transformed this work in anyway, please use the following, Source: based on National Transport
	automated vehicles: Discussion paper, NTC, Melbourne.
Key words	automated vehicle, automated driving system, automated driving system entity, in-service, first supply, safety assurance, general safety duty, in-service regulator, modifications, compliance and enforcement, national law
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What to submit

The NTC is seeking your views on the consultation questions in this discussion paper and any other relevant views you have on the national approach to the in-service safety of automated vehicles. The NTC would like to hear in particular from Commonwealth and state and territory road transport and enforcement agencies, regulators and agencies with a connection to in-service safety, vehicle manufacturers, automated technology providers, road managers, transport industry bodies and any other entities with an interest in the regulatory framework for automated vehicles in Australia.

When to submit

The NTC is seeking submissions on this discussion paper by 11 December 2020.

How to submit

Any individual or organisation can make a submission to the NTC.

Making a submission

Visit <u>www.ntc.gov.au</u> and select 'Have your say' on the homepage.

Send an emailed submission to <u>automatedvehicles@ntc.gov.au</u>. You can also use this email address to suggest other preferred ways to submit.

Where possible, you should provide evidence, such as data and documents, to support the views in your submission.

Publishing your submission

Unless you clearly ask us not to, the NTC publishes online all the submissions received. Submissions that contain defamatory or offensive content will not be published.

The Freedom of Information Act 1982 (Cwlth) applies to the NTC.

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This discussion paper seeks feedback on the content of a national law for the in-service safety of automated vehicles in Australia. It builds on previous decisions of infrastructure and transport ministers on the key elements of a national approach. The discussion paper details the role of regulated parties and a new in-service regulator, the compliance and enforcement framework that overlays this relationship and the implementation of the national law.

The discussion paper forms part of the National Transport Commission's (NTC) roadmap of reform to develop a nationally consistent regulatory framework to support the safe commercial deployment of automated vehicles in Australia.

The NTC is seeking feedback on proposals for the content of the national law to inform recommendations to infrastructure and transport ministers on the in-service regulatory framework for automated vehicles in Australia.

Context – flexible and safety-focused regulation for automated vehicles

Automated vehicles are equipped with an automated driving system (ADS) that enables them to perform the driving task without human input. These vehicles have the potential to provide significant improvements to Australian society across road safety, mobility, accessibility, productivity, traffic flow, fuel efficiency and reduced carbon emissions. However, these vehicles may introduce new types of safety risks. And inconsistent regulatory approaches could delay their benefits.

Since 2016, the NTC has led reforms to develop a flexible and safety-focused regulatory framework to enable this technology when it is ready for deployment. Infrastructure and transport ministers have already agreed to the safety assurance framework for new automated vehicles entering the Australian market. However, we need to ensure automated vehicles continue to operate safely throughout their operational life on the road – that is, when they are 'in service'.

In June 2020, ministers agreed a regulatory approach to the in-service safety of automated vehicles in Australia. A new national in-service Automated Vehicle Safety Law (AVSL) will establish a general safety duty on the entities responsible for ADSs and place due diligence obligations on their executive officers. The AVSL will also establish an in-service regulator to oversee the safe operation of vehicles on the road and ensure compliance by regulated parties with their duties. These decisions aim to ensure automated vehicles have an appropriate safety framework that makes an entity accountable for in-service operation and maintenance, just as conventional vehicles have in-service safety frameworks centred on human drivers and vehicle owners. The AVSL will complement existing state and territory regulation of these human parties because these regimes do not cover ADSs.

Existing legislation does not provide for a general safety duty or a compliance and enforcement framework for the in-service safety of automated vehicles. There is also no framework for the relationships and information flows between an in-service regulator and other regulators and agencies. This discussion paper outlines further detail about these elements to build the content of the AVSL.

Our proposals aim to create a modern, fit-for-purpose regulator with powers to manage a flexible regulatory framework focused on safe outcomes. A risk-based approach to compliance and enforcement will see the new regulator work closely with regulated parties to resolve safety issues and achieve compliance with the new law. A safe industry benefits everyone.

Consultation

This purpose of this discussion paper is to consult on the content of the new AVSL. Chapter 3 proposes the content of a general safety duty on the entity responsible for an ADS, the Automated Driving System Entity (ADSE). The chapter outlines the limits of the duty and proposes prescriptive duties that aim to provide clarity about how to comply with the general safety duty, without limiting its scope. It also discusses how the ADSE's obligations under the first-supply framework interact with its duties under the in-service framework. Finally, it provides detail about the operation of a due diligence obligation on an ADSE's executive officers and clarify the limits of this obligation.

The corporate entities involved in the automated vehicle market will change over time. Chapter 4 considers the existing frameworks that apply to the market exit and entry of corporations and propose a process for accrediting a new ADSE where the original ADSE transfers its responsibility for an ADS. Chapter 5 considers different types of modifications that could be made to an automated vehicle and propose options to manage significant modifications that are not captured by other safety frameworks.

Chapters 6 and 7 propose the functions and powers the in-service regulator will need to carry out its role. The NTC previously consulted on these at a high level in 2019 and we are now seeking feedback on the detail of these functions and powers as well as proposals for additional functions and powers considered since our last consultation.

The following functions are proposed for the regulator: monitoring, education and guidance, enforcement, engagement with states and territories, research, creating standards and customer service. Additional functions could include reporting, crash investigation, accreditation and regulatory approvals. The regulator will initially perform limited core functions, with others to be phased in as the automated vehicle market grows and the scope of the regulatory task increases.

The NTC is proposing a risk-based regulatory approach that gives the regulator enforcement powers ranging from improvement notices to criminal prosecution. This regulator should take proactive action to monitor parties and focus on assisting them to achieve safety outcomes.

Chapter 8 considers the issues that roadside enforcement agencies will face when interacting with automated vehicles and enforcing the law against ADSEs and human drivers of automated vehicles. It also considers the specific issue of how to treat road traffic law breaches by an automated vehicle and propose that this be considered a potential breach of the ADSE's general safety duty.

Chapter 9 sets out the other regulators and agencies that the in-service regulator will need to interact with. It identifies where there may be overlaps or a close interface in these agencies' roles and suggests ways for agencies to interact. Chapter 10 shows the types of information the in-service regulator will require to effectively perform its role and explain the information flows and exchange arrangements that will be needed. It also proposes the information access powers the regulator will require and discuss the limits of these powers.

Chapter 11 provides an overview of how the national approach for in-service safety will differ depending on the legislative implementation approach chosen for the AVSL. This assessment and the feedback received will inform an updated regulation impact statement on the in-service safety of automated vehicles that will be prepared in 2021. This will assist state and territory ministers to decide the appropriate legislative implementation approach.

Ministers have agreed that the national approach for in-service safety will be implemented through either complementary Commonwealth and state and territory law, or state and territory applied law. Each legislative implementation approach can achieve the key objectives of in-service safety for automated vehicles. Each has practical impacts on the implementation and operation of in-service safety.

A state and territory applied law will potentially allow broader coverage of parties and operational in-service issues. It would also allow greater control by state governments of ongoing amendments to the law.

A Commonwealth complementary law approach will better ensure national consistency and avoid any potential cross-border issues. It would allow better integration with the first-supply process. A Commonwealth law can also potentially be implemented and update more quickly.

Recommendations and next steps

Chapter 12 brings together the policy proposals in the preceding chapters to present the recommended content of the AVSL and outline next steps for this program of work.

The NTC is seeking stakeholder feedback to a range of questions (outlined below). This feedback will allow us to refine the national approach to ensure it is fit for purpose when implemented.

The public consultation period runs from 16 October 2020 to 11 December 2020. The NTC will hold consultation sessions during this period and welcomes written submissions.

Following public consultation further targeted consultation will be undertaken with governments. The NTC will make recommendations on the content of the AVSL to the Infrastructure and Transport Ministers Meeting in the first half of 2021.

List of questions

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- businesses that supply and install aftermarket ADSs
- individuals installing aftermarket ADS kits.

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-	Crash invest undertake no	igations (for enforcement, with a specialist agency like the ATSB to p-blame investigations)	
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-	a roadside e the time of th	nforcement agency forms a reasonable belief that the ADS was engaged a ne breach	at
tha	at the inciden handled thro	t should be treated as a potential breach of the general safety duty and not ough the infringement system for human drivers?	t
Qı	estion 21: enforcement vehicle at the regulator and	Do you agree that when a breach of a road traffic law occurs and a roadsi agency forms a reasonable belief that the remote driver was in control of t e time of the breach, that the incident should be referred to the in-service d not handled through the infringement system for human drivers?	de he 89

Question 22: Do you agree that when a breach of road traffic laws occurs and: 89

- it is unclear to a roadside enforcement agency which entity is in control of the vehicle at the time of a road traffic law breach, or
- a road safety camera detects a road traffic law breach

th	at the infringement notice be issued in the first instance to the human driver or registered
	owner/operator with a process to nominate the ADS or remote driver as the driver if
	required?

Are there other approaches that should be considered?

Question 23: and agencies	Are the interactions between the in-service regulator and other regulators s accurately described?	95
Question 24: with?	Are there other agencies that the in-service regulator will need to interact	95
Question 25: service regul	Are there other information types, purposes or parties relevant to the in- lator's access to information?	03
Question 26: party to beer	Have the key information flows that the in-service regulator needs to be a i identified? Are there others that you suggest?	04
Question 27: service regul regulator will	Do the proposed information access powers meet the objectives of the in- lator? Are there other statutory powers for information access that the require to support its compliance and enforcement functions?	09
Question 28: of personal in legislation?	Do you agree that a specific power authorising collection, use and disclose nformation is required in the national law and in state and territory	ure 12
Question 29: disclosure of	What privacy protections may be needed around the collection, use and ADS-derived personal information?	12
Question 30: implementati	Do you agree with the differences outlined between the legislative ion approaches? Which approach will best achieve the reform outcomes? 1	24

Key points

- Australia's infrastructure and transport ministers have agreed to the key elements of a national approach to the in-service safety of automated vehicles.
- The aim of this work is to further develop the content of the national law for inservice safety, focusing on proposals for an overall compliance and enforcement framework.

1.1 Reform objectives

1.1.1 Reform mandate

Automated vehicles have the potential to provide a significant range of benefits to Australian society, including improvements in road safety, improved access and mobility options, more efficient traffic flow and potential reductions in congestion. However, they also have the potential to introduce new risks to the road network. In 2016, infrastructure and transport ministers asked the National Transport Commission (NTC) to develop regulations for automated vehicles so that Australia can be an early beneficiary of the potential benefits this technology.

Since then, these ministers have agreed to a series of reforms, including a safety assurance approach for the first supply of automated vehicles to the market. This framework will be governed by the *Road Vehicle Standards Act 2018* (Cwlth) (RVSA), implemented by the Commonwealth.

In June 2020, transport ministers endorsed key features of a national regulatory approach to the in-service safety of automated vehicles. Features include a national in-service Automated Vehicle Safety Law (AVSL) to establish:

- a general safety duty on the entity that is responsible for an automated driving system (ADS) over its lifecycle
- due diligence obligations on executive officers of this entity (the Automated Driving System Entity or ADSE) to support the ADSE's compliance with its general safety duty
- a national regulator for in-service safety to regulate ADSEs, their executive officers and remote drivers (teleoperators) of automated vehicles.

Ministers agreed that the NTC, in conjunction with state, territory and Commonwealth governments further develop this regulatory framework for in-service safety, focusing on the compliance and enforcement tools required to support the framework. Ministers also directed further work to assess the legislative implementation method for the AVSL and to develop options for regulating in-service modifications that change the level of automation of a vehicle.

1.1.2 What is the problem?

In 2019, the NTC consulted on the overarching regulatory framework for the in-service safety of automated vehicles. The NTC's policy proposals aimed to address the following problem:

In our current regulatory environment, when automated vehicles become ready for deployment:

- they may introduce new in-service safety risks that the market will not eliminate or mitigate
- nationally inconsistent approaches to in-service safety and multiple regulators without clearly defined roles could be a regulatory barrier to market entry.

These risks need to be addressed to support the uptake and safe operation of automated vehicles on Australian roads and to unlock their broader benefits.¹

Ministers have now decided on the key elements of a regulatory framework to address this problem. However, existing legislation does not provide for a general safety duty on an ADSE or compliance and enforcement powers for the in-service safety of automated vehicles. There is also no framework for the relationships and data flows between an inservice safety regulator and other regulators.

Therefore, compliance and enforcement for the in-service safety of automated vehicles may be ineffective and/or inefficient for the following reasons:

- There are no agreed regulatory powers or tools to enforce a general safety duty or encourage compliance.
- The requirements of the general safety duty may be unclear to ADSEs.
- The relationships and data flows between various regulators (first supply, inservice, National Heavy Vehicle Regulator (NHVR), police and other traffic enforcement agencies) may be unclear.
- Existing arrangements for vehicle modifications may not adequately manage the safety risks of automated vehicles.

1.1.3 Project objectives

The overarching policy objective of this work is to support the in-service safety of automated vehicles through appropriate regulatory powers and tools that incentivise compliance and allow effective enforcement.

The specific objectives of this consultation are to:

- identify the in-service obligations required to achieve intended safety outcomes
- identify the compliance and enforcement powers needed to support new in-service obligations
- develop an overall compliance and enforcement approach that prioritises safety risk management
- identify the in-service regulator's functions and powers, including those necessary for a minimum scalable regulator
- identify how the in-service regulator will interact with other regulators and agencies, including managing cross-border issues and data flows and clarifying the role of on-road enforcement
- identify data use and access powers and privacy protections to support the compliance and enforcement approach
- further consider the legislative implementation approach for the AVSL.

¹ 'In-service safety for automated vehicles: Consultation RIS,' July 2019, p 26.

1.2 Background

The in-service safety reform is part of the NTC's broader national reform program that aims to develop end-to-end regulation to support the safe, commercial deployment and operation of automated vehicles at all levels of automation. The NTC is collaborating closely with the Commonwealth, state and territory governments and Austroads to ensure an integrated regulatory system. Figure 1 shows the key initiatives undertaken by the NTC, the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) and Austroads to prepare Australia for automated vehicles.

Stage Initiative		Owner	Status
	UN harmonization of vehicle standards	Commonwealth	Ongoing
Import and manufacture	Safety criteria for first supply of automated vehicles	Commonwealth	Ongoing
ABC 456	Framework for registration and licensing of automated vehicles	Austroads	Ongoing
Registration and licensing	Integrating advanced driver assistance systems in driver education	Austroads	Complete
	In-service safety for automated vehicles	NTC	Ongoing
	Operation of automated heavy vehicles in remote and regional areas	Austroads	Complete
On the road	National enforcement guidelines for automated vehicles	NTC	Complete
on the rout	Government access to vehicle generated data	NTC	Ongoing
	Review of motor accident injury insurance and automated vehicles	NTC	Ongoing
Â	Infrastructure for automated vehicles: freeways and highways, traffic signs, line markings	Austroads	Complete
Infrastructure	Road authority data for connected and automated vehicles	Austroads	Ongoing

Figure 1.	End-to-end regulatory process for	r automated vehicles
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1.2.1 Previous decisions on automated vehicle regulation

This discussion paper builds on previous policy decisions made by the Infrastructure and Transport Council (the Council).

A national law and control of the driving task

In May 2018, the Council agreed to a uniform approach to driving laws for automated vehicles under a purpose-built law. It also agreed that when an ADS is engaged, the ADSE is responsible for complying with dynamic driving task obligations rather than the human user.²

Safety assurance for automated vehicles

In November 2018, the Council agreed to a safety assurance approach for the first supply of ADSs to the Australian market.³ ADSEs must self-certify to show how their ADS meets a set of safety criteria and obligations to gain entry into the market. These are set out in Appendix A. The safety criteria and obligations will be incorporated into the existing type-approval framework for the first supply of vehicles under the RVSA, which is administered by DITRDC. DITRDC is currently incorporating the safety criteria and obligations into the Australian Design Rules and associated rules and conditions.

Following the Council's decisions on first supply, the NTC began developing the safety assurance approach for the in-service safety of automated vehicles. The June 2020 *In-service safety for automated vehicles: Decision Regulation Impact Statement* (the decision RIS)⁴ recommended a new national law that imposes a general safety duty on the ADSE, associated due diligence obligations on their executive officers and the establishment of a national regulator to regulate the ADSE, ADSE executive officers and remote drivers. Ministers agreed to these recommendations and directed the NTC to undertake further work to develop the compliance and enforcement approach, and also to assess the legislative implementation approach for the new national law. Ministers also agreed to recommendations for complementary state and territory law to provide for:

- rules for the human user of an automated vehicle who can take back control from an ADS (the fallback-ready user)
- access to public roads, subject to the conditions of their supply to the market
- deeming the ADSE the driver of a vehicle when its ADS is engaged.

This discussion paper further develops the detail of the national in-service safety framework. The further work to develop complementary state and territory law will be led by state and territory governments, with support, from the NTC to ensure national consistency where required.

Government access to automated vehicle data

In August 2019, the Council endorsed design principles for managing government access to, and addressing new privacy challenges of, cooperative intelligent transport systems (C-ITS) and automated vehicle data. The design principles recognise that government access to C-ITS and automated vehicle data will improve government decision making and deliver

² The Changing driving laws to support automated vehicles: Policy paper (May 2018) is available at https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Policy%20Paper%20-%20Changing%20driving%20laws%20to%20support%20automated%20vehicles.pdf.

³ The Safety assurance for automated driving systems: Decision Regulations Impact Statement (November 2018) is available at https://www.ntc.gov.au/sites/default/files/assets/files/NTC-decision-regulation-impact-statement-safety-assurance-for-automated-driving-systems.pdf.

⁴ The *In-service safety for automated vehicles: Decision Regulation Impact Statement* (June 2020) is available at <u>https://www.ntc.gov.au/sites/default/files/assets/files/NTC-Decision-RIS-In-service-safety-for-AVs.pdf</u>.

benefits to the public while acknowledging that this access needs to be balanced with sufficient privacy protections for C-ITS and automated vehicle users.

Ministers agreed the design principles would guide further work by the NTC and Austroads.⁵ The NTC's in-service safety work will develop policy positions consistent with the design principles for government uses of automated vehicle data.

1.3 Project approach

1.3.1 Scope

The following areas are within the scope of this project:

Content of the AVSL

- Content of a general safety duty, offences for breaches of the duty and potential prescriptive duties (chapter 3)
- Managing the transfer of ADSE responsibilities in service (chapter 4)
- In-service modifications to an ADS (chapter 5)
- The in-service regulator's functions and how these may be scaled-up (chapter 6)
- The in-service regulator's compliance and enforcement powers (chapter 7)
- A model for roadside enforcement (chapter 8)
- The relationship between the in-service regulator and other regulators and agencies (chapter 9)
- Information access and use (powers and privacy protections) to support in-service safety compliance and enforcement (chapter 10)

Legislative implementation

 Compliance and enforcement considerations for legislative implementation, including cross-border enforcement issues (chapter 11)

Ministers will be asked to decide whether the AVSL is to be implemented using Commonwealth law or state and territory applied law in 2021. The policy issues addressed in this discussion paper will inform this decision.

The following areas are outside the scope of this project:

- government access to automated vehicle data for other purposes, including network management and investment
- access to data (powers and privacy protections) by motor accident injury insurers to assess liability
- enforcement of current road transport laws applying to a human driver (beyond determining if an ADS was in control)
- compliance and enforcement for non-transport laws
- rules for access to public roads, subject to the conditions of their supply to the market.

⁵ The Regulating government access to C-ITS and automated vehicle data: Policy paper (August 2019) is available at https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Policy%20Paper%20-%20Regulating%20government%20access%20to%20C-ITS%20and%20automated%20vehicle%20data.pdf.

1.3.2 Consultation

From May 2020 the NTC undertook targeted consultation with Commonwealth and state and territory road transport agencies, law enforcement agencies and Austroads to test and refine the scope of this project, and to discuss policy approaches to the issues considered in this paper. The feedback from these meetings has helped inform this paper.

On release of this discussion paper the NTC is consulting more broadly with government stakeholders, industry, other regulators and the wider public. Feedback will be analysed to develop a final policy paper and recommendations. These will be delivered to the Council in May 2021. The June 2020 decision RIS will also be updated as required to reflect the outcomes of the work assessing the legislative implementation approach for the AVSL. This will be presented to ministers at the same time. **Error! Reference source not found.**shows the overall timeline.



Figure 2. Project timeline

1.4.1 Safety assurance for automated vehicles at first supply

An ADSE must continue to operate in compliance with the safety criteria and obligations it self-certified against while its ADS (or ADSs) is in service.⁶

The first-supply regulator (DITRDC) can manage many in-service safety risks by using compliance and enforcement mechanisms under the RVSA to address noncompliance with the safety criteria. However, some criteria will have to be managed while in service. The roles of the first-supply regulator and in-service regulator will need to be clearly demarcated to avoid duplication of risk management and treatment. The final drafting of the safety criteria (as incorporated into instruments under the RVSA) could influence the in-service compliance obligations that may need to be imposed under the AVSL. The NTC will further consider the policy proposals in this paper as these instruments are finalised by DITRDC.

This discussion paper will map out the compliance model and enforcement tools that the first-supply regulator has at its disposal. It will also ascertain whether compliance with the ongoing elements of the safety criteria are to be monitored and enforced under the RVSA or the new AVSL.

1.4.2 Prescriptive rules for in-service matters not related to the general safety duty

This discussion paper considers the content of the general safety duty and prescriptive duties to support it. Ministers have also agreed there are other areas where more prescriptive rules could be warranted, and that the AVSL should provide a head of power for such regulation should it become necessary. These rules would operate in conjunction with the general safety duty. Examples of where prescriptive rules may be required include:

- regulating the dynamic driving task when performed by ADSs, just as the Australian Road Rules prescribe how the driving task should be performed by human drivers. This will ensure ADS behaviour is predictable for other road users.
- regulating teleoperation / remote driving. Some automated vehicles may allow for a remote driver (a driver who is not operation the vehicle manual controls). The remote driver's fitness to drive requirements and the likely use cases for teleoperation are not yet known with enough certainty to support a comprehensive regulatory framework. Some requirements would be the same as those for conventional vehicle drivers – for example, blood alcohol content and fatigue obligations. In future, a specific teleoperation licencing framework could be warranted. Once the precise competencies and internationally agreed regulatory requirements are known they will be implemented through the AVSL.
- the obligations of fallback-ready users.⁷ Like drivers of conventional vehicles, fallback-ready users will have relatively prescriptive rules for responding to the transition demand and being fit to drive.

Given the infancy and novelty of the industry, it is impossible to predict all areas that may require prescriptive rules; however, it is likely that other areas will emerge. It is important that the AVSL provides sufficient authority for such rules to be made in a timely way. These prescriptive rules will be agreed in conjunction with state and territory governments.

⁶ The safety assurance frameworks at first supply and in service will regulate ADSs; however, this paper refers to 'ADSs' and 'automated vehicles' interchangeably. For example, ministers have agreed an 'Automated Vehicle Safety Law', though it would be more accurate to describe this is as an 'Automated Driving System Safety Law'.

⁷ Ministers agreed in their June 2020 decision that fallback-ready users will not be regulated under the AVSL but in complementary, model law in the Australian Road Rules.

1.4.3 Motor accident injury insurance and automated vehicles

The NTC consulted on the national approach to motor accident injury insurance (MAII) for automated vehicles in 2019. The Council has agreed that all jurisdictions' MAII schemes (compulsory third party and national injury insurance schemes) should provide access for injuries and deaths caused when ADSs are engaged. The Board of Treasurers (state and territory treasurers) is currently considering this approach. Access to data (powers and privacy protections) by motor accident injury insurers to assess liability will be considered at a later stage of the in-service safety work after state and territory jurisdictions have considered whether existing regulation supports their access to data to assess liability for crashes.

1.4.4 Vehicle generated data

The NTC has consulted on a framework for government access to and use of data generated by vehicles, including automated vehicles. This data has the potential to help road transport agencies create public value by enhancing network operations, investment, maintenance, planning and improving road safety. Government access to automated vehicle data for these purposes is being considered as part of separate NTC work on government access to vehicle generated data.⁸ This discussion paper is only examining the use of data for the purpose of compliance and enforcement for automated vehicle safety.

1.4.5 Austroads – licensing and registration

Austroads' 'Data requirements to support the registration of automated and electric vehicles' working group (SRL6254) is considering the registration system data points required to meet the needs of road regulators and service providers (such as motor accident injury insurers). An in-service safety regulator will require access to registration system data on automated vehicles.

1.4.6 Heavy Vehicle National Law review

The NTC is reviewing the Heavy Vehicle National Law (HVNL) and has been consulting on reforms throughout 2020. The review is considering the entirety of the law and its regulations, except for the NHVR's functions.

The HVNL review aims to develop performance and outcome-focused regulation. This will support the use of new technology in heavy vehicles, including increased levels of automation.⁹ This discussion paper considers compliance and enforcement matters for both light and heavy vehicles to ensure consistency. There may be a future need to amend the HVNL, but specific changes to that law are not considered in this project.

1.5 Key concepts

Automated driving technology has created many new terms and concepts that are not always used consistently. Some of the key concepts used in this discussion paper are defined in Table 1. More definitions are available in the glossary.

⁸ For more information on the project see <u>https://www.ntc.gov.au/transport-reform/ntc-projects/government-access-vehicle-generated-data</u>.

⁹ For more information on the review see <u>https://hvnlreview.ntc.gov.au/</u>.

Table 1. Key concepts

Automated driving system (ADS) means the hardware and software collectively capable of performing the entire dynamic driving task on a sustained basis without human input. It is a type of system used in vehicles with SAE levels 3, 4 or 5 of automation (see definitions of SAE levels below).¹⁰

Automated driving system entity (ADSE) means the self-nominated party that will certify that the ADS can safely perform the driving task in place of a human driver. The ADSE will self-nominate at first supply when applying to DITRDC for type approval of the ADS (or when taking responsibility for an ADS in service, as discussed in chapters 4 and 5).

Automated vehicle means a vehicle that has an ADS, which can perform the entire dynamic driving task on a sustained basis without human input. It is distinct from vehicles with automated features to assist a driver but still require a human driver to perform part of the dynamic driving task (for example, automated lane-keep assist) and to maintain overall responsibility for control of the vehicle.

Dynamic driving task means all the operational and tactical functions required to operate a vehicle in on-road traffic. This includes steering, acceleration and deceleration, object and event detection and response, manoeuvre planning and enhancing conspicuousness through lighting, signalling and so on. The dynamic driving task excludes strategic functions such as trip planning.

Fallback-ready user means a human in a vehicle with SAE level 3 automation who can operate the vehicle, and who is receptive to requests from the ADS to intervene and to evident dynamic driving task performance-relevant system failures. The fallback-ready user is expected to respond by taking control of the vehicle.

In-service safety means the safety of automated vehicles once they are on the road or 'in service'.

Operational design domain (ODD) means the specific conditions under which an ADS or feature is designed to function (for example, location, weather conditions, driving modes).

Remote driver (or teleoperator) means a human who can operate an automated vehicle but who is not seated in a position to manually operate vehicle controls such as brakes and steering.¹¹ A remote driver may operate the vehicle from outside or inside the vehicle.

SAE level 3 means the ADS undertakes the entire dynamic driving task in situations within its ODD. The human driver does not have to monitor the driving environment or the ADS but must be receptive to ADS requests to intervene and any system failures. SAE level 3 is also referred to as 'conditional automation'.

SAE level 4 means the ADS undertakes the entire dynamic driving task in situations within its ODD. When the ADS is driving the vehicle, a human driver is not required to monitor the driving environment or the driving task, nor are they required to intervene,

¹⁰ SAE levels refer to the levels of vehicle automation as defined in the SAE J3016 standard, *Taxonomy and definitions for terms related to driving automation systems for on-road motor vehicles*, published by the Society of Automotive Engineers International (SAE).

¹¹ SAE International, *Taxonomy and definitions for terms related to driving automation systems for on-road motor vehicles*, 2018, p. 16.

because the ADS can bring the vehicle to a safe stop unassisted. SAE level 4 is also referred to as 'high automation'.

SAE level 5 means the ADS undertakes all aspects of the dynamic driving task and monitoring of the driving environment. The ADS can operate on all roads at all times. No human driver is required. SAE level 5 is also referred to as 'full automation'.

2 Context for compliance and enforcement framework for in-service safety

Key points

- Ministers have agreed on a range of policy decisions for automated vehicle safety reform including developing a single national AVSL.
- The AVSL will regulate, among other things, the ADSE, ADSE executive offices and teleoperators under a national regulator administering a general safety duty.
- A range of parties and their activities will need to be regulated to ensure the safe design and operation of automated vehicles at all stages of the automated vehicle's life.
- Ministers have not yet decided the implementation approach for the AVSL. This discussion paper explores the key differences in the operation of the inservice framework under the different legislative implementation approaches.

2.1 Purpose of this chapter

The purpose of this chapter is to describe the context for the compliance and enforcement framework for the in-service safety of automated vehicles. It includes relevant findings from previous consultation on:

- regulated parties over the life of an automated vehicle, the relevant regulatory framework and the relevant regulator
- the role and scope of the in-service regulator
- the legislative implementation approach.

2.2 Scope of in-service regulation

2.2.1 Parties regulated by the in-service regulator

In 2019, the NTC consulted on the broad range of existing and new parties with a potential influence on the in-service safety of automated vehicles and assessed how they should be regulated. Consultation on this problem identified that the following new parties required additional regulation to ensure in-service safety:

- ADSEs
- ADSE executive officers
- remote drivers
- fallback-ready users.

In June 2020, ministers decided that the first three parties would be regulated by a national in-service regulator under an AVSL. Under this law, ADSEs will be subject to a general safety duty to ensure the safe operation of automated vehicles so far as reasonably practicable, as well as specific prescriptive duties. Executive officers of the ADSE will have

due diligence obligations corresponding with the ADSE's general safety duty. The AVSL will also provide a head of power to allow for the regulation of remote drivers.

2.2.2 Multiple regulators will regulate a range of parties over the life of an automated vehicle

Ministers have agreed that fallback-ready users will be regulated by state and territory road transport and enforcement agencies, who regulate human drivers today. Fallback-ready users will have duties to ensure they are fit to drive. They must:

- remain sufficiently vigilant to respond to ADS requests, mechanical failure and emergency vehicles and to regain control of the vehicle without undue delay when required
- be appropriately licensed
- comply with drug, alcohol and fatigue driver obligations.

It is anticipated that these duties will be implemented through model provisions in the Australian Road Rules, developed by the NTC in conjunction with states and territories. States and territories will then implement these provisions into their road traffic laws.

The NTC's 2019 consultation showed that many existing parties with an influence on inservice safety were already appropriately regulated and did not require additional regulation. In particular, the NTC considered the AVSL should not regulate repairers and modifiers, at least in the first version.¹² Substantive regulation of repairers should remain the responsibility of state and territory governments.

It is important to understand that a range of parties and their activities will be regulated to ensure the safe design and operation of automated vehicles at all stages of the automated vehicle's life. Other regulators beside the in-service regulator will have a role in regulating these parties and activities. Figure 3 shows some of the key activities relevant to in-service safety, the level of government that regulates them, and where the AVSL fits into this framework. A more detailed overview of all activities, regulatory frameworks, regulators and regulated parties involved in the in-service safety of automated vehicles can be found in appendix C of the decision RIS.

This phase of the in-service safety work aims to ensure the responsibilities of the various regulators and agencies are clear. This includes demarcation of roles, and consideration of how the agencies interact with each other and share information (discussed further in chapters 9 and 10).

¹² It is likely that a general safety duty on an ADSE would oblige it to take certain steps to ensure the ADS does not operate if improper repair work has occurred. This would mitigate risks associated with repairs.





2.2.3 Role and scope of the in-service regulator

The in-service regulator's key function will be to ensure regulated parties assure the safety of an ADS over its lifecycle. It will have a range of functions and powers to ensure that safety risks are comprehensively addressed. It will use these tools to take a proactive and risk-based approach to compliance and enforcement to ensure that safety risks are managed efficiently.

The role and scope of the in-service regulator is explored in more detail throughout the discussion paper. The paper considers the duties the regulator will enforce, its functions and powers, and how it will interact and exchange data with other agencies.

2.3 Additional work will determine the best legislative implementation approach

In June 2020, ministers agreed that the AVSL will be implemented using either Commonwealth law¹³ or state and territory applied law. Either implementation approach will include complementary amendments to state and territory laws.

The decision RIS found both these implementation approaches could enable efficient administration of these duties within a single national market. Both would include a general safety duty on ADSEs and a single national regulator and could form the basis of the endstate regulatory framework. PwC's cost-benefit analysis for the decision RIS supported this proposition, as did most stakeholder submissions (notably those of Australian governments).

The decision RIS, supported by PwC's cost-benefit analysis, found Commonwealth law (option 3 of the decision RIS) preferable to state and territory applied law (option 4 of the decision RIS). Commonwealth law is more likely to achieve national consistency, is more efficient to maintain, better aligns with the regulation of automated vehicles at first supply and allows for national enforcement through a single federal court system. PwC's cost-benefit analysis assessed Commonwealth law as having the highest net benefit. This was based on its assessment of the likelihood that the options would either delay or bring forward take-up of automated vehicles, which in turn would delay or bring forward realisation of the anticipated benefits of automated vehicles.

The obligations of regulated parties should be the same regardless of whether Commonwealth law or state and territory applied law is chosen; for example, the detail of the general safety duty would not change. However, compliance and enforcement arrangements will differ. Chapter 11 shows the differences in the operation of the in-service framework between the two legislative implementation approaches. This information and further stakeholder feedback will help inform ministers' decisions on the legislative implementation approach for the national law in 2021.

¹³ Chapter 11 explains this approach will be called the complementary law approach going forward.

Key points

- The central feature of the automated vehicle safety framework is the ADSE's general safety duty. Compliance with the general safety duty will require ADSEs to take reasonable steps to manage the safety risks that are within their control.
- The general safety duty will be supported by prescriptive duties where necessary.
- The regulator may issue guidance for complying with the general safety duty.
- A due diligence obligation associated with the general safety duty will be placed on the ADSE's executive officers.

3.1 Purpose of this chapter

The purpose of this chapter is to:

- describe the substantive obligations arising for ADSEs under the general safety duty, including potential prescriptive duties to support the duty
- describe guidance materials that could be issued by the regulator to support compliance with the general safety duty
- discuss how the general safety duty would align with first-supply safety criteria
- discuss the expectations of executive officers under their due diligence obligations.

3.2 Context

Automated vehicles have the potential to greatly improve road safety by reducing human error. However, they also have the potential to introduce new safety risks if there is overreliance on this complex technology or an expectation that the market will manage the risks. Some of this risk will be mitigated by the safety assurance process at first supply, but this safety assurance will not extend to manage the full lifecycle of an automated vehicle.¹⁴

In June 2020, Australia's infrastructure transport ministers agreed that ADSEs should be subject to a general safety duty that would place an overarching and positive obligation on the ADSE to ensure the safe operation of the ADS. Ministers also agreed that ADSE executive officers should exercise due diligence in relation to the ADSE's compliance with the safety duty. These decisions were informed by the NTC's decision RIS, which assessed the application of existing frameworks to these parties.

It is appropriate for an ADSE's safety obligations to extend beyond the first supply of vehicles. Unlike most conventional vehicles, automated vehicles will continue to evolve over time through system upgrades, which can significantly affect the operation of the vehicle. An

¹⁴ This is discussed further in chapter 2 of the decision RIS, which can be viewed at <u>https://www.ntc.gov.au/sites/default/files/assets/files/NTC-Decision-RIS-In-service-safety-for-AVs.pdf</u>.

ADS will need to be updated to take into account new safety risks that may have emerged, changes to infrastructure or to road rules, and changes in cybersecurity threats. When the ADS is engaged, it is the system rather than the human driver that is in control of the driving task rather than a human driver. These features distinguish an automated vehicle from a conventional vehicle, and the imposition of in-service duties on the entity responsible for an ADS recognises this.

3.3 Principles-based regulation

The principles-based general safety duty approach agreed by ministers has proven effective in managing safety in transport industries including domestic commercial marine vessels,¹⁵ rail,¹⁶ commercial passenger vehicles¹⁷ and heavy vehicles.¹⁸

The focus of principles-based regulation is whether a party has achieved the regulation's purpose (i.e. safety), as opposed to whether prescriptive rules or performance-based outcomes or objectives have been met.

The approach:

- captures a wide range of risks that more prescriptive standards may not, including new and emerging risks
- places the onus of identifying and mitigating risks onto the regulated party, who most likely has the most expertise and is best placed to identify and solve problems
- enables parties to decide the most cost-effective means of compliance, allowing parties to tailor compliance to suit their specific circumstances
- focuses on the purpose of the regulation rather than technical compliance with detailed rules
- provides flexibility to cover different parties, business models and circumstances in which automated vehicles will operate
- engages senior management in ensuring safety risks are addressed through safety management systems
- enables innovation and allows parties to adapt to changing circumstances (such as advances in technology)
- by placing the onus of identifying and mitigating risks onto the regulated party instead of the regulator, allows the regulator to target specific risk areas and can make it a relatively inexpensive form of regulation to administer, with lower costs for regulated parties.

In the case of a general safety duty for automated vehicles, the duty will place an overarching and positive obligation on ADSEs to ensure the safe operation of the ADS.

It is common for certain principles to underpin a general safety duty. Principles may include that the duty cannot be transferred to another person, a person can have more than one duty and that more than one person can concurrently have the same duty under the act.¹⁹

¹⁵ Marine Safety (Domestic Commercial Vessel) National Law Act 2012 (Cwlth).

¹⁶ Rail Safety National Law Act 2012 (SA) Sch ('Rail Safety National Law') ss. 52–54.

¹⁷ Such as Point to Point Transport (Taxis and Hire Vehicles) Act 2016 (NSW) Pt 2.

¹⁸ Heavy Vehicle National Laws 26C.

¹⁹ See, for example, ss 13–17 of the model *Work Health and Safety Act 2011*.

3.4 Ensuring safety so far as reasonably practicable

If the general safety duty is not qualified in some way, the duty holder would be guilty of an offence every time the outcome – elimination of risk to health or safety – was not achieved, regardless of the efforts of the duty holder (Stewart-Crompton, et al., 2008). It is therefore proposed that the general safety duty oblige ADSEs to ensure safety 'so far as reasonably practicable'. This standard is often used for comparable general safety duties in Australia.

A 2008 national review into work health and safety (WHS) laws concluded:

The standard of 'reasonably practicable' is a high one, requiring the duty holder to consider all of the circumstances and take measures that are commensurate to the likelihood and seriousness of the harm which may result from the relevant activities, and relieved only by consideration of what is not possible or what is clearly unreasonable in the circumstances. A duty holder must clearly understand that this standard must be met.

(Stewart-Crompton, et al., 2008, p. 40)

What is reasonably practicable varies between industries and over time as technologies and practices evolve (Hopkins, 2012).

Legislation could provide a list of factors that could inform an assessment of what is reasonably practicable. For example, it could refer to industry standards or community expectations of safety. The law could also include as a factor, the evidence provided by the ADSE as part of its statement of compliance application (recognising that a general safety duty is not designed to freeze a safety standard to what was acceptable at a previous point in time).

3.5 Complying with a general safety duty

To satisfy a general safety duty, an ADSE would need to have systems in place to enable it to identify and respond to reasonably foreseeable safety risks and use these systems to address these risks. It would also need ways of ensuring accountability (such as through reporting structures or external audits) to monitor compliance. Evidence of many of these systems will have been demonstrated in the ADSE's statement of compliance at first supply.

These systems, for example, could include:

- having policies in place that ensure systemic software errors are quickly identified and addressed, and regular reviews of policies to ensure compliance
- designing an ADS so the ADSE can detect if it is unable to function safely or whether it has been interfered with (such as through hacking or modification) and then prevent it from engaging
- having effective communications strategies to alert consumers to safety issues (for example, through a smartphone app, email or advertising campaign)
- encouraging employees to escalate safety concerns, and generally promoting a safety culture (including disciplining employees who fail in their duty to prioritise safety)
- making prompt disclosures to the regulator and other relevant authorities when the safety of their ADS is no longer assured.

Translating the general safety duty into actions ultimately requires good judgement and diligence from ADSEs. Different ADSEs may respond to the same risks in different and no less legitimate or compliant ways. The ADS is the ADSE's product, and the ADSE is best placed to identify the steps necessary to ensure its safety.

3.5.1 Prescriptive duties under the general safety duty in legislation

General safety duties are expressed in general terms. This allows for flexible implementation by regulated parties. However, this must be balanced with sufficient certainty for regulated parties and enforcement agencies.

Some minimum prescriptive requirements to support a general safety duty could provide further clarity to the ADSEs without limiting the scope of the general safety duty. Such requirements to support general duties can be found in the primary legislation for other frameworks. For example, in WHS law the purpose of these requirements is to outline the key things a person must do to satisfy the primary duty of care without limiting the scope of the primary duty of care (Safe Work Australia, 2020). This can include requiring the duty holder to develop safe systems and to perform work safely.²⁰ For example, the designer of a structure used at a workplace must ensure so far as is reasonably practicable that the structure is designed without risks to the health and safety of any person.²¹ Further legislative requirements for this duty require the designer to carry out, or arrange the carrying out of, any calculations, analyses, testing or examination necessary for the structure to be designed without risks to health and safety.²²

The AVSL could similarly include certain prescriptive duties to support the general duty, either in the law itself or under subordinate legislation.²³ The aim would be to provide further guidance to the ADSE on how to carry out its obligations under the general safety duty without undermining the principles-based regulatory approach. Such requirements would not limit the scope of the general safety duty in any way. Table 2 illustrates some of the potential prescriptive duties for an ADSE under a general safety duty.

Potential prescriptive duty	Reasons for inclusion
The ADSE must ensure, so far as is reasonably practicable, that systems are developed, used and maintained to carry out the general safety duty	This clarifies that an ADSE must use a systematic approach to manage its general safety duty. Developing safe systems is a common requirement under general safety duties.
The ADSE must ensure, so far as is reasonably practicable, that system upgrades to the ADS are installed safely and do not result in the operation of an unsafe ADS	This clarifies for an ADSE that any upgrades are done in a safe manner.
The ADSE must notify the in- service regulator and users of any	This clarifies that the ADSE needs to inform the regulator and ADS users of any safety issues. This can assist in the safe operation of an ADS by keeping its users informed of any safety issues. It will

Table 2.	Potential prescriptive	duties under the	general safety d	uty in the AVSL
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²⁰ Rail Safety National Law Act 2012 (SA) s 52 (2).

²¹ Model Work Health and Safety Bill 2019 (Cwlth) s 22 (1)–(2).

²² Ibid. (3).

²³ For example, the *Rail Safety National Law (South Australia) Act 2012* enables the Governor of South Australia, acting on the advice of the South Australian Executive Council, to make national regulations for a range of specified matters. These include rules for accreditation of rail transport operations and the records and documents that regulated parties must keep.

systemic safety issues affecting the ADS	allow for the in-service regulator to actively scrutinise the performance of the ADSE.
The ADSE must ensure, so far as is reasonably practicable, that the ADS software is without risks to the health and safety of users	This clarifies to the ADSE that it must continue to audit and monitor the ADS software for any errors that may pose a safety risk to users. It also supports the need for an ADSE to have safe systems in place.
The ADSE must record and store data relevant to compliance with the general safety duty	Data will be crucial for ensuring the safe operation of the ADSE. The in-service regulator will also need data in determining compliance with the general safety duty. It is likely that key data required could be clarified in national regulations or guidance.
The ADSE must, so far as is reasonably practicable, provide education and training to relevant parties such as users of its ADSs	The safe use of an ADS requires the user to operate the ADS safely. This clarifies the need for an ADSE to provide the relevant education and training to its users.
The ADSE, so far as is reasonably practicable, must prevent the operation of an ADS when the ADSE is aware the ADS is unsafe	This clarifies that the ADSE has an obligation to prevent the use of an ADS when it is aware that it may operate in an unsafe manner. For example, if an ADS has been hacked or tampered with, and the ADSE is aware that this has happened, the ADSE must, if possible, shut down the ADS.
The ADSE must ensure, so far as is reasonably practicable, that the ADS can comply with relevant road traffic laws	This clarifies that the ADSE has an ongoing obligation to ensure the ADS can comply with road traffic laws.
The ADSE must ensure, so far as is reasonably practicable, that the ADS cannot operate outside its approved ODD	This clarifies that the ADSE has an ongoing obligation to ensure the ADS can only operate within the ODD, approved either at first supply or subsequently by the in-service regulator (discussed further in chapter 5).

The general safety duty with supporting prescriptive duties should adequately address the various safety risks in the operation of an ADS. Given the infancy and novelty of the industry, it is impossible to predict all areas where prescriptive duties may be beneficial. Such duties may be included over time in supporting regulations, subject to standard processes for assessing regulation impact. There may also be a need for other prescriptive duties outside those supporting the general safety duty. These types of duties are further discussed in chapter 7.

Question 1: What prescriptive duties under the general safety duty should be included in the AVSL to manage in-service safety risks?

3.5.2 Legislative and non-legislative guidance

General safety duties are often supplemented by explanatory guidance, regulations, codes of practice and other policy statements that assist regulated parties to comply with their

duties (Baldwin, et al., 2012). These can either have legislative power or be non-legislative in nature.

Examples of guidance material with legislative power include industry codes of practice that can be registered under the HVNL. The codes of practice establish standards and procedures for parties in the chain of responsibility to identify, analyse, evaluate and mitigate risks associated with meeting obligations under the HVNL.²⁴ They can be used in court proceedings as evidence of what is known about hazards, risk assessments or risk controls associated with transport activities and may be relied on to determine what is reasonably practicable in the circumstances.²⁵ The NHVR may make guidelines about the preparation and content of a code of practice.

The in-service regulator for automated vehicles, in collaboration with industry, could develop industry codes of practice to establish standards and procedures for the ADSE to identify, analyse, evaluate and mitigate risks associated with meeting its obligations under the general safety duty. The in-service regulator would need a legislative power to develop and draft guidelines for industry codes of practice.

Non-legislative guidance material could also be provided to duty holders. For example, the Office of the National Rail Safety Regulator publishes guidance for rail operators to facilitate compliance with the Rail Safety National Law. These materials cover key aspects of that law such as guidelines for safety management systems (Office of the National Rail Safety Regulator, 2019a), the regulator's own enforcement policy (Office of the National Rail Safety Regulator, 2018) and information on reportable incidents (Office of the National Rail Safety Regulator, 2018).

The in-service regulator for automated vehicles could develop guidance for ADSEs – for example, on how to create a safety management plan to address cybersecurity risks. An ADSE may choose to access and use the guidance as a framework for its own cybersecurity plan but would not be legally obliged to. The purpose of any such guidance would not be to create new obligations for the ADSE beyond the general safety duty but instead to provide further information to assist the ADSE to meet its duties. Legislative powers are not required for the in-service regulator to develop and publish guidance materials.

In addition to guidance, over time a body of jurisprudence (case law) will develop in which courts will provide additional guidance on what is expected under the general safety duty in its application to particular facts.

Question 2: What matters relating to compliance with a general safety duty are better suited to guidance than being prescribed in the AVSL? Should this guidance have legislative force?

3.5.3 Addressing risks presented by third parties

Parties could interfere with the vehicle or the ADS in a manner that creates an in-service safety risk, interfering with an ADSE's ability to discharge its safety duties. These actions could include:

- the vehicle owner attempting to hack an ADS so that it operates on a wider ODD
- a driver altering the human-machine interface so that the user is less inconvenienced by transition demands (for example, a range of tips are widely

²⁴ Heavy Vehicle National Law 2012 (Qld) s 705.

²⁵ Ibid. s 632A.

available online to reduce Tesla's Autopilot alerts, essentially supporting misuse of the product)

malicious hacking by third parties.²⁶

Parties may also negligently use the ADS in a manner that creates an in-service safety risk such as failing to maintain the vehicle or update the software as required.

At first supply, the ADSE will need to demonstrate safe system design including that its design and verification processes covers safety-critical issues such as unsafe maintenance, repairs, physical modifications and other system failure. ADSEs need to account for cybersecurity risks posed by malicious hacking and the human–machine interface when seeking approval under the first-supply framework.

The only party obliged to take positive steps under the general safety duty is the ADSE. However, the duty will require the ADSE taking positive steps to mitigate or address risks arising from third parties. The ADSE must consider the potential risks to an ADS's safe operation, including risks from foreseeable misuse or malicious interference. This obligation does not make the ADSE responsible for all actions of third parties. For example:

- An ADSE could take reasonable steps to communicate with vehicle owners and users the message they should not attempt to tamper with the ADS software.
- An ADSE could take reasonable steps to communicate to owners to update and maintain their vehicles. It could also take reasonable steps to prevent the vehicle from being used if not maintained correctly or not running the most recent software.
- An ADS could be designed with protections to prevent unapproved modification or hacking attempts, and to detect such interferences and render itself inoperative where they do occur.

If an offence of interfering with the safe operation of an ADS were implemented, it could sit within state and territory law.

Question 3: Are existing and proposed regulatory frameworks (state and territory laws, first -supply requirements and general safety duty obligations) sufficient to address third-party interference with an ADS? If not, should interference with the safe operation of an ADS be a specific offence, and how should this offence be enforced?

3.6 Interaction with the first-supply framework

An ADSE must provide evidence against a set of safety criteria before it can receive type approval to supply an ADS to the Australian market for the first time, essentially making the 'safety case' for its ADS. The safety case is submitted to the first-supply regulator (DITRDC) in the form of a 'statement of compliance' under ADR 90/01.

The criteria against which the safety case must be made include:

- 1. Safe system design and validation processes
- 2. Operational design domain
- 3. Human-machine interface

²⁶ Examples of malicious hacking can be found at

https://keenlab.tencent.com/en/whitepapers/Experimental_Security_Research_of_Tesla_Autopilot.pdf.

- 4. Compliance with relevant road traffic laws
- 5. Interaction with enforcement and other emergency services
- 6. Minimal risk condition
- 7. On-road behavioural competency
- 8. Installation of system upgrades
- 9. Verifying for the Australian road environment
- 10. Cybersecurity
- 11. Education and training

The ADSE must also meet three obligations:

- 1. Data recording and sharing
- 2. Corporate presence in Australia
- 3. Minimum financial requirements

The full requirements of the safety criteria and obligations are at Appendix A.

Although future-focused (the ADSE is saying how it will behave in relation to the ADS, and how the ADS will perform in the future), the statement of compliance is inherently a statement made at a particular point in time. It is static, in contrast to the dynamic general safety duty under which specific actions expected will shift as technology improves, road infrastructure changes, and more is learned about ADS safety.

Despite its static nature, the statement of compliance provided at first supply will assist both the regulator and ADSE to understand the obligations under the general safety duty. For example, if the ADSE's statement of compliance included evidence of how it would manage software updates, that would likely become a baseline in interpreting the general safety duty's application to software updates. However, if in the time since the statement of compliance the ADSE develops an improved method for updating software, or industry standards significantly improve, the ADSE may be obliged to use the safer approach over the method it had previously attested to, perhaps years earlier in its safety case.

As a practical matter, enforcement of the general safety duty requires the regulator to identify the reasonably practicable action that it alleges an ADSE did not do.²⁷ If the ADSE has said previously in its safety case that it can meet a certain standard of safety, or do a particular thing, it becomes very difficult for it to argue that doing so was beyond what was required under the general safety duty.

Although enforcement of the general safety duty would have regard to the statement of compliance, it is important that the statement of compliance is not seen as the default standard under the duty, and that the regulatory framework does not support this interpretation. The framework will encourage and enable ADSEs to continue to develop innovative and more efficient solutions to ensure ADS safety once they are in service.

3.7 Particularising breaches of a general duty

The general safety duty is expressed in general terms in the legislation, noting that prescriptive duties, guidance materials and case law may shine further light on specifics of the duty. However, at the point of enforcement, the particular act or omission the regulator alleges was a breach of the duty must be expressed in more specific terms.

In particular, when a general, principles-based duty like a general safety duty is applied in a court, the alleged breaches the duty need to be particularised – that is, the prosecution needs to say exactly what the defendant should or should not have done under the duty.

²⁷ Kirk v Industrial Relations Commission (2010) 239 CLR 531.

This is because the common law requires that a defendant be told not only of the legal nature of the offence with which they are charged but also of the particular act, matter or thing alleged as the foundation of the charge.²⁸ For example, it would not be sufficient for the regulator to simply charge an ADSE with 'breaching the general safety duty'; it would need to say it 'failed to alert users to an apparent error with the software update ADS 2.0, after 1 July 2030 when the ADSE identified the issue'.

The statement would need to state the particular measures the ADSE could have taken to comply with the general duty but did not take, or the particular actions the ADSE took that the regulator alleges were unsafe. Where appropriate, this could be done by reference to the statement of compliance the ADSE previously provided when it first sought to supply the ADS to the market.

3.8 On a cause of action

Some regulatory frameworks that involve a public regulator enforcing standards also provide a cause of action for injured persons where a standard is breached. For example, breaches of the Corporations Act²⁹ can be enforced by both shareholders and the regulator, the Australian Securities and Investments Commission (ASIC). Similarly, the Australian Consumer Law is publicly enforced by the Australian Competition and Consumer Commission (ACCC) but also provides remedies³⁰ for injured persons to pursue, without requiring the ACCC's involvement.

If the general safety duty provided a cause of action, those injured by an ADSE's lack of care could pursue the ADSE for breach of the general safety duty. If a group of people suffered loss or injury due to the same breach of the safety duty, the action could be brought by one person on behalf of the larger group via a class action. This could potentially provide a more direct avenue for injured parties to access compensation compared with litigation in negligence.

Allowing injured people to litigate safety duty breaches (essentially private enforcement of a public duty) would mean the duties owed by regulated parties to the public could be upheld without first requiring a regulator to take action, which could increase the likelihood of compliance by ADSEs.

The Corporations Act and Australian Consumer Law are good examples of a private cause of action working well; however, it is not the approach taken in WHS law, or transport safety regulatory frameworks (such as rail, domestic commercial vessels or point-to-point transport) and the NTC is not aware of any commentary that suggests those laws are deficient in this respect.

The Australian Consumer Law is continuously reviewed and amended³¹ to remain current. The Board of Treasurers is also considering a national approach that requires Australia's motor accident injury insurance schemes to provide cover for injuries and deaths that result from automated vehicle crashes.³² If this reform is implemented it would create a compensation pathway for injured people.

²⁸ *Kirk* at 26; *Johnson v Miller* (1937) 59 CLR 467 at 489 per Dixon J; [1937] HCA 77.

²⁹ Corporations Act 2001 (Cwlth) ss 180–181.

³⁰ Australian Consumer Law s 138.

³¹ Specifically amending the definition of 'consumer' by raising the threshold of the costs of goods acquired from \$40,000 to \$100,000 as proposed by the *Australian Consumer Law Review Final Report* (March 2017), which can be viewed at https://consumerlaw.gov.au/sites/consumer/files/2017/04/ACL_Review_Final_Report.pdf.

³² The national approach was endorsed by infrastructure and transport ministers in August 2019.

Once a general safety duty is imposed under the AVSL, the standards expected of ADSEs under that duty will most likely flow through to a calculation of what amounts to reasonable care under negligence.

The NTC considers it is premature to recommend a statutory cause of action until, and if it is shown that, negligence, state and territory motor accident injury insurance schemes and the Australian Consumer Law are insufficient. A cause of action could be considered at the first review of the AVSL, by which time the efficacy of negligence, the Australian Consumer Law and motor accident injury insurance schemes will be better known.

3.9 Executive officers and their role in influencing compliance

For regulation to be effective it needs to incentivise those people in a position to influence safety. As ADSEs are corporations, their actions and omissions, including those involving compliance with regulatory requirements, will be influenced by senior officers.

As outlined in the decision RIS, the NTC considers the term 'executive officer' denotes an individual with decision-making authority. They are senior officers that are in a position to influence safety. Existing safety frameworks in transport and other sectors have slightly varying definitions of 'executive officers' or 'officers', but the common feature is that they must make, or participate in making, decisions about the management of the corporation. They do not need to be directors of the corporation.³³

Large pecuniary penalties incurred by the ADSE for breaching the general safety duty would penalise an ADSE's shareholders rather than the people most responsible for the breach. For this reason, it is common in Australia for some form of executive officer liability to feature in regulatory frameworks where the corporation's breach of the law puts people at risk of injury or death. Comparable regulatory frameworks operating in transport such as heavy vehicles, WHS, point-to-point transport and rail and vehicle standards have addressed this issue, usually through a specific requirement for executive officers to exercise due diligence in relation to the corporation's safety obligations.

The recent findings of the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry, while not considering transport regulation, did concern the regulation of large corporations. It found:

There can be no doubt that the primary responsibility for misconduct ... lies with the entities concerned and those who managed and controlled those entities: their boards and senior management ... Because it is the entities, their boards and senior executives who bear primary responsibility for what has happened, close attention must be given to their culture, their governance and their remuneration practices.

(Hayne, 2019, p. 4)

To adequately ensure ADSE compliance with the general safety duty, and accountability in event of a breach, Australia's transport ministers decided at the June 2020 Transport and Infrastructure Council that executive officers should be subject to a due diligence obligation to ensure ADSE meets its general safety duty.

³³ For example, s 5 of the RVSA defines an executive officer of a body corporate as 'a person (whether or not a director of the body) who is concerned in, or takes part in, the management of the body'.

3.10 Due diligence obligation arising from the general safety duty

The due diligence obligations will be developed by reference to the underlying general safety duty. A due diligence obligation would apply only to executive officers who are in a position to influence the ADSE's offending, and only to the extent of their own personal influence. What is expected of a particular executive officer necessarily depends on that person's role in the ADSE's compliance with the safety duty. The executive must do what a reasonable person in that person's position would have done.

Some legislation determines whether an executive officer failed to exercise due diligence with a court having regard to, for example:

- what the officer knew, or ought reasonably to have known, about the commission of the offence by the body corporate
- whether or not the officer was in a position to influence the body corporate in relation to the commission of the offence by the body corporate
- what steps the officer took, or could reasonably have taken, to prevent the commission of the offence by the body corporate
- any other relevant matter.³⁴

A director of an ADSE does not need to be an expert in automated vehicles or what makes them safe (such as software design, or selecting materials for components); however, they can take care to, for example:

- recruit a CEO who has a strong record of safety or compliance
- outline their high expectations of safety
- ensure regular audits are performed by a suitably qualified, independent third party.

A director should ask the right questions of senior management and be curious about the contents of audit reports. An executive with organisational responsibility for communications with or disclosures to the regulator would ensure they are made promptly and in good faith (for example, without withholding relevant information and accurate to the best of their knowledge). An executive responsible for research and development of software would ensure adequate testing is performed before a software update is rolled out, and that if any in-service safety issues are identified they are promptly escalated within the ADSE or to the appropriate organisation.

3.11 The limits of a due diligence obligation

3.11.1 Distinguishing due diligence from other forms of liability

A duty of due diligence does not automatically make individuals liable for the corporation's breaches of the general safety duty, nor does it hold ADSE executive officers responsible for ensuring ADSE compliance with aspects of the general safety duty that the particular executive has no influence over.

3.11.2 Relying on information provided by others, where reasonable

It is expected that many ADSEs in the Australian market will be the local arm or entity of a global corporation or parent company. They will be companies that have permission to

³⁴ See, for example, *Work Injury Rehabilitation and Compensation Act 2013* (Vic) s 601(3).
supply a particular vehicle or vehicle component to the Australian market. It is in the ADSE's interest to comprehensively appraise the product before they attest to its safety under the RVSA and accept liability under other Australian laws (such as negligence, or the Australian Consumer Law).

In some cases, these ADSEs will not have been involved in the design or manufacture of the ADS hardware or software. It may be likely that in these circumstances Australian executive officers will have little or no ability to influence the design or manufacture of an ADS. Given this, a defence of 'reasonable reliance' on what the related entity like the manufacturer has performed for, or provided to, the ADSE could be warranted. A defence of 'reasonable reliance' recognises that executive officers may not possess the technical knowledge themselves and will rely on this information from others within the organisation. For example, a local director could rely on information from the parent company, relating to the safety of the ADS if the director believes on reasonable grounds the information to be reliable and competent. Such a defence is only explicitly found within the Corporations Act.³⁵ A director can rely on information or expert advice:

- prepared by an employee of the corporation whom the director believes on reasonable grounds to be reliable and competent in relation to the matters concerned
- a professional adviser or expert that the director believes on reasonable grounds to be within the person's professional or expert competence
- another director or committee of directors of the corporation.

The reliance will need to be made in good faith. Other factors to determine reasonableness of the reliance is director's knowledge of the corporation, the complexity of the structure and operations of the corporation.³⁶

In WHS law, officers may meet due diligence requirements in some respects by proper reliance on information from others (SafeWork NSW, 2020). If an officer seeks to rely on others, the officer must be able to demonstrate the reasonableness of that reliance, which may be demonstrated through receiving credible information and advice from appropriate people (SafeWork NSW, 2020). The defence of reasonable reliance for executive officers does not appear in transportation safety laws.

If included, such a defence would not abdicate due diligence duties. The ADSE executive officer must still act reasonably, in good faith and without negligence before relying upon information provided by another party.

Question 4: Should the law provide a specific defence for Australian ADSE executive officers who rely on information provided by others, like a parent company, when discharging their due diligence duty?

3.12 Complying with a due diligence obligation

In order to put systems in place to ensure compliance with a due diligence obligation, the ADSE should be able to identify who within its organisation is responsible for functions relevant to the ADSE's safety duty. These people and their responsibilities should be

³⁵ See s 189.

³⁶ Ibid.

identifiable by reference to organisational charts, position descriptions and other corporate documents.

Exercising due diligence to ensure the ADSE complies with the general safety may include executive officers taking reasonable steps to:³⁷

- acquire knowledge and keep up to date about automated vehicle safety matters
- ensure the ADSE has the right resources and processes in place, and uses those resources and processes to eliminate or minimise automated vehicle safety risks
- ensure the ADSE has the right processes to receive and respond to reports of safety related incidents, hazards or issues, and processes to comply with the general safety duty
- verify that the processes and resources set out above are being used.

What steps are reasonable for an officer to take will depend on the circumstances, including the role and influence of the officer and the nature and structure of the ADSE. Performance of these actions should be no greater a burden than what good governance already requires (Hayne, 2019). It is expected that companies that already have rigorous and mature safety systems in place should not have to change their processes in order to meet these obligations.

The imposition of due diligence obligations clarify what is expected of the relevant senior executives and provides important standards against which the regulator may examine the conduct of the affairs of the ADSE by both its board and by its senior management, where they affect public safety. Perhaps most importantly, it would allocate incentives in a way that aligns with the public interest.

Failure to comply with due diligence requirements may result in a criminal sanction. Sanctions are discussed further in chapter 7 and set out in Appendix B.

3.13 Penalties associated with ADSE duties

Penalties for breaching a general safety duty can be imposed on the duty holder. Penalties are generally included in compliance and enforcement frameworks to deter potential breaches and to ensure liability for any breaches.

Both the HVNL and WHS law provide for three categories of penalties for breaches or noncompliance with duties. These categories are based on the seriousness of the offence. The first category includes reckless conduct as part of the breach and has the largest penalty to reflect the seriousness of the breach. Reckless conduct does not need to be established in the other categories.

Chapter 1, Part 1A.3 of the HVNL creates three offences for failing to comply with the primary safety duty:

 Category 1 offences – a person commits a category 1 offence if the person has a primary safety duty and the person without a reasonable excuse engages in conduct related to the duty that exposes an individual to a risk of death or serious injury or illness and the person is reckless as to the risk. The maximum penalties for a breach are \$300,000 or five years imprisonment or both for an individual and \$3000,000 for a corporation.

³⁷ The examples in the bullet points are common due diligence obligations set out in other regulatory frameworks, see, for example, s 55(3) of the *Rail Safety National Law (South Australia) Act 2012* and s 27(5) of the *Model Work Health and Safety Act 2011*.

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- Category 2 offences a person commits a category 2 offence if the person has a primary safety duty, the person contravenes the duty and the person's contravention exposes an individual or class of individual to a risk of death of serious injury or illness. The maximum penalties for a breach are \$150,000 or five years imprisonment or both for an individual and \$1,500,000 for a corporation.
- Category 3 offences a person commits a category 3 offence if the person has a primary safety duty and the person contravenes the duty. The maximum penalties for a breach are \$50,000 for an individual and \$500,000 for a corporation.

Including categories of penalties in the AVSL, as in other frameworks, can provide for prosecution of breaches of the general safety duty in proportion to the degree of the breach. Different categories of offences can reflect the culpability and level of risk.

Key points

- ADSEs and the markets in which they operate will inevitably change over time.
- During the life of the ADS, some ADSEs may want or need to transfer their responsibilities for the ADS to another entity.
- The law should accommodate the transfer of an ADSE's responsibilities and manage any public safety risks.

4.1 Purpose of this chapter

The purpose of this chapter is to:

- consider whether an ADSE should be able to transfer its responsibilities to another entity and, if so, in what circumstances
- consider what legal and regulatory mechanisms would be required to enable a transfer of responsibilities.

4.2 Reasons for considering ADSE transferability

Previous NTC consultations indicated that an ADS would only be able to have one ADSE over its life. However, stakeholders have raised questions about how an ADSE may transfer its responsibilities for an ADS to another entity if it became necessary.

The first-supply framework will impose obligations on ADSEs to demonstrate their corporate presence in Australia, minimum financial requirements and their data recording and sharing capability. These obligations are intended to provide some assurance that an ADSE can support an ADS over its life and can be held liable in the case of an incident.

However, in a dynamic and competitive market it is common for corporations to experience changes such as market exit, significant changes in corporate structure or changes to ownership of the ADSE, insolvency and the transfer of assets and liabilities between corporations. Transferring assets, liabilities, rights and responsibilities is common in many legal frameworks and supports flexible markets.

The AVSL will need to allocate liabilities so responsibility for the various duties under the law is clear and enforceable at all times (and cannot be avoided by corporate restructure). At the same time, to remain flexible the law should be able to accommodate foreseeable corporate practices such as those noted above.

It is important that there is always an entity responsible for an ADS to ensure that safety risks can be managed and that consumers are protected. In circumstances where an ADSE is no longer able or no longer wants to fulfill its obligations with respect to an ADS, it may be preferable for it to transfer its responsibilities to a new entity that is willing to take on this role.

While it would need to occur in a transparent and accountable way, allowing the transfer of responsibility for an ADS that is already in service could act to lower the barrier to entry by giving ADSEs a clear signal that there is a process to transfer their operations should they no longer want to, or are unable to, operate an ADS. It could also facilitate the entry of new types of potential ADSEs (i.e. fleet operators that are not manufacturers) by allowing

companies to enter the market by assuming responsibility for ADSs already in service. It may also result in the continued operation of an ADS that would otherwise need to cease operation due to not having a responsible ADSE, providing more consumer certainty for products.

An ADSE may want or need to transfer its operations to another entity for various reasons. For example:

- An ADSE may be acquired by another company or the ADSE merges with another company therefore transferring all its responsibilities.
- An ADSE may enter external administration or receivership and cease operation entirely.
- An ADSE may want to specifically sell the intellectual property related to one ADS.

The scenarios below illustrate some of the risks related to the sale of an ADS and the market exit of an ADSE.

Potential scenarios

- **A.** An ADSE that supplies ADSs to the Australian market goes into liquidation while its ADSs remain in service. Thousands of vehicles equipped with these ADSs are now operating while unsupported by an ADSE.
- B. An ADSE that operates a large heavy vehicle fleet is struggling financially and anticipates it may soon be unable to support its fleet of automated heavy vehicles. The fleet owner negotiates sale of its business to another company, who also agrees to take on all its responsibilities including responsibility for the fleet of automated heavy vehicles. The new company may not have demonstrated the same ability to implement robust safety management practices that support the safe operation of the fleet.

4.3 Existing legal frameworks that are relevant to an ADSE transferring its responsibilities for an ADS

There are existing frameworks that may cover some circumstances of transferring corporate legal responsibilities. ASIC and ACCC have regulatory responsibility for different elements of mergers, acquisitions, liquidations and voluntary administration. Proposals to acquire Australian businesses by foreign entities may also be subject to review by the Foreign Investment Review Board to ensure they are not contrary to the national interest (Foreign Investment Review Board, 2020).

The regulatory process for mergers and acquisitions is covered under Chapter 6 of the Corporations Act. Chapter 5 also covers 'schemes of arrangements,' which enable similar outcomes to takeovers and are a common means of effecting mergers or acquisitions. The Act seeks to ensure that acquisitions take place in an efficient, competitive and informed market.³⁸

³⁸ Corporations Act 2001 (Cwlth) s 602.

A new entity would be able to acquire or merge with the ADSE if it can undertake the necessary steps in Chapter 5 or 6 of the Corporations Act and is regulated by ASIC.³⁹ The ACCC may 'authorise' a merger when it is satisfied that the acquisition will not have the effect of substantially lessening competition in any market.⁴⁰ A merger does not depend on an authorisation from the ACCC and parties are not legally required to notify it of a merger; however, the ACCC can investigate the merger and seek an injunction in the Federal Court (Australian Competition and Consumer Commission, 2017).

It should be noted that Chapter 6 of the Corporations Act only applies to companies with wide ownership.⁴¹ This means an ADSE that may be a subsidiary of a holding company that is subject to Chapter 6 may not itself be regulated by the above process.

Successfully meeting the requirements under the Corporations Act and *Competition and Consumer Act 2010* (Cwlth) for acquisitions could mean that the ADSE is controlled by a new entity. New owners may change the board or directorship, but in this case, the operation of the ADSE and existing practices for meeting its safety duties would continue. It would not result in the ADS being transferred to a new entity. It would also mean that the ADSE would still continue compliance with the first-supply criteria as the type approval holder.

The Corporations Act has a positive duty on directors to prevent insolvent trading by a company.⁴² Consequences for insolvent trading include civil and criminal penalties (Australian Securities and Investment Commission, 2020a). A voluntary administrator will be appointed to take control of the company and hold all its powers, including the power to sell or close the company's business or sell individual assets (Australian Securities and Investment Commission, 2020b). If the company is subsequently liquidated, the voluntary administrator will become the liquidator and sell the assets of the company to pay the debts of creditors.⁴³ This could include the selling the ADS to another entity. In some circumstances, creditors may include any ADS owners.

Contract law regulates the sale and transfer of assets, shares and responsibilities between corporate entities. Contract law will also cover the sale and change of ownership of companies in situations not covered by the Corporations Act.⁴⁴ An ADSE selling its ADS and related intellectual property to a new entity would result in the ownership and control of the ADS by the new entity. Unless the sale is to a foreign entity or affects market competition, it is unlikely to fall under the remit of the mentioned regulators. It is likely that any contract of sale of the ADS would explicitly note any legal obligations related to the ADS such as compliance with a general safety duty. This would not necessarily require the new entity to meet the first-supply safety criteria again for ADSs that are already in service.

Finally, the NTC understands that at first supply of vehicles under the RVSA, managing a change of type approval holder is an administrative issue not requiring a reassessment of the new type approval holder against the first-supply framework.

³⁹ The process for mergers and acquisitions is a complex process with many steps and can be undertaken several different ways under the Corporations Act. An overview of the most common process, an off-market bid can be found in s 632 of the *Corporations Act 2001* (Cwlth). Further detailed steps for an off-market bid are provided in s 633 of the Corporations Act.

⁴⁰ Competition and Consumer Act 2010 (Cwlth) s 50.

⁴¹ Chapter 6 of the Corporations Act applies to Australian public companies that are listed or have more than 50 members, and to listed managed investment schemes.

⁴² Corporations Act 2001 (Cwlth) s 588G.

⁴³ The voluntary administrator could also sell the ADS to another entity during the voluntary administration process under a deed of company arrangement.

⁴⁴ For example, Chapter 6 of the Corporations Act applies to Australian public companies that are listed or have more than 50 members. It also applies to listed managed investment schemes. An ADSE that is a subsidiary of a holding company subject to Chapter 6, may not itself be subject Chapter 6.

4.4 Proposed approach for an ADSE selling the ADS to a new entity taking responsibility for in-service ADSs

4.4.1 Proposed approach

The NTC considers that a new entity should be allowed to take on the responsibilities of an ADSE for an ADS.

The Corporations Act and the Competition and Consumer Act already allow the mechanics of mergers, acquisitions and change in control of ownership of a corporation. This legislation provides for the continued operation of an ADSE. The RVSA allows a change of type approval holder. However, if a new entity purchases the ADS from an existing ADSE, it may not be subject to any regulatory approvals. This applies if the ADSE will continue to operate (for example, if it continues to operate other ADSs it owns) or if it exits the market entirely.

The NTC considers that the importance of having ongoing responsibility for ADSs that affect the safety of road users, and the need for consumers to be protected, warrants a clear process under the AVSL for approving a new ADSE as fit and proper to take responsibility for an in-service ADS.

The NTC suggests that the transfer of responsibilities for an ADS from an ADSE to a new entity while in service could be regulated in one of the following ways.

Option 1: The in-service regulator accredits new entities against the three first-supply obligations

Where a new entity takes on a previous ADSE's responsibilities, the in-service regulator would need to accredit the new entity as an ADSE before it can be responsible for ADSs already in service.

There will be a first-supply process to ensure the new entity becomes the type approval holder. The NTC understands that this process does not consider the new entity's ability to continue to meet the conditions of the type approval but focuses on its ability to show conformity of production for new vehicles/components of the same type entering the market.

The in-service regulator would accredit the new entity as ADSE for the ADSs while in service if it was satisfied that it could meet the following obligations an ADSE would be expected to meet at first supply. These obligations are intended to provide some assurance that an ADSE is fit and proper and can support an ADS over its life. They are also intended to assist relevant parties to appropriately assign criminal and civil liability for incidents. The obligations are:

- Corporate presence an entity must provide evidence of its corporate presence in Australia
- Minimum financial requirements an entity must provide evidence of its current financial position, its grounds for claiming it will have a strong financial position in the future and the level of insurance held
- Data recording and sharing an entity must outline the ADS data it will record and how it will provide the data to relevant parties⁴⁵

It must be noted that DITCRD is still to incorporate these obligations into mechanisms under the RVSA, and as such there is not yet clarity about the exact content of these obligations. These obligations under first supply and under in-service accreditation should align as much as possible with the final wording of these obligations under the first-supply framework.

⁴⁵ A full description of data sharing obligations can be found in appendix A.

Once accredited as the new ADSE, the entity would become subject to all relevant duties in the AVSL including the general safety duty. The in-service regulator should work with the new entity as it enters the market to ensure it can comply with its duties. This will most likely involve an audit of the new ADSE's safety management systems, but any issues with these would be dealt with through accountability against in-service duties rather than affecting the new ADSE's accreditation.

In circumstances where a notification requirement has been triggered (for instance due to a merger or acquisition), it could be an offence for the original ADSE to allow the ADS to engage until supported by an entity that has been accredited by the in-service regulator. This is discussed further in section 4.4.3.

Option 2: The in-service regulator accredits new entities against the first-supply statement of compliance

This option would operate in the same way as the previous option, but the in-service regulator would only accredit the new entity against all criteria of the first-supply statement of compliance.

As with option 1, in circumstances where a notification requirement has been triggered it could be an offence for the original ADSE to allow the ADS to engage until supported the ADS is supported by an entity that has been accredited by the in-service regulator.

Option 3: The risks of transferring responsibilities to new entities are managed through the general safety duty

Where an ADSE exits the market and a new entity takes on its responsibilities, the in-service regulator would work with the new entity as it enters the market to ensure it is able to comply with its duties, including the general safety duty. This could involve an audit of the new ADSE's safety management systems.

4.4.2 Preferred option

The NTC considers it preferable that the transfer of ADSE responsibility is managed through an accreditation of the new entity by the in-service regulator, with the accreditation requiring assessment of the new entity against the three first-supply obligations (option 1). The proposed obligations will ensure relevant parties can appropriately assign criminal and civil liability for events such as road traffic law breaches and crashes. It is important that any new ADSE taking responsibility for an ADS or ADSs should at least be in a position to be held accountable for their actions going forward. Options 1 and 2 provide an assurance that would not be met under option 3 that the new entity will meet minimum financial requirements, the requisite corporate presence and data requirements. The other elements of safety assurance as required under option 2 would be covered in option 1 by duties under the AVSL including the general safety duty. The NTC considers it important to make the process of accreditation as straightforward as possible to ensure that an ADSE remains responsible for the ADS at all points during the transfer, to allow consumers to continue operating their automated vehicles with confidence.

The NTC is aware that a situation where an ADSE wants or needs to transfer its responsibilities for an ADS to another entity may not occur until some time after the inservice framework has commenced. It could be argued that the regulator may not require this function at commencement. However, if it is considered appropriate for the regulator to have an accreditation function, The NTC considers it important that the AVSL includes this at the outset for the regulator to use it as the need arises. As discussed above, the existence of a clear process may act to reduce barriers to entry.

4.4.3 Other relevant considerations

Trigger for notification

The above options would need to be supported by an obligation on either the original ADSE or the new entity to notify the regulator of a proposal for ADSE transfer so it can continue to properly regulate in-service safety of automated vehicles.

The AVSL may require that the ADSE notifies the in-service regulator of completed transfers or processes found in other relevant legislation. For example, once an existing ADSE and another corporation merge and satisfy all the requirements of the Corporations Act, the merged entity must then notify the regulator. Similarly, if the ADSE enters voluntary administration, receivership, liquidation or other similar processes as defined in the Corporations Act then the ADSE must notify the regulator. Corporations must notify ASIC if a company has stopped trading (such as when winding up a solvent company) and could be required to do the same for the in-service regulator. Requiring ADSEs to notify the regulator will avoid requiring the regulator to actively monitor the market itself.

Preventing an ADS from operating where there is no new entity to take on the responsibilities of an ADSE

The safety assurance framework for ADSs is premised on there always being an ADSE that is responsible for an ADS. The type approval framework approves the ADSE's statements in respect of an ADS at first supply, and the general safety duty holds the ADSE responsible in service.

Where no new entity is willing to take on the responsibilities of an ADSE exiting the market, or where there is a gap between an ADSE exiting the market and a new entity being accredited, there is a risk that an ADS could operate on roads without an ADSE to support it. If this situation were allowed, it could result in serious risks for road users because the ADS will operate without any duty holder ensuring its safe operation.

In these circumstances DITRDC may issue a recall of the ADS under the RVSA. This could be dealt with by:

- the original ADSE ensuring its ADSs cannot engage where there is no responsible ADSE (it could be re-engaged once a new ADSE was found and accredited; this could be enforced under the first-supply type approval framework or the in-service framework)
- a recall of the ADS by the first-supply regulator (a 'recall' could be a disengagement of the ADS as above).

In these circumstances, consumers may seek compensation under Australian Consumer Law.

This proposal is aimed at protecting the safety of road users; however, it also has a major impact on consumers. Preventing an ADS from engaging either temporarily or permanently would be a significant measure and would result in consumers not being able to use the functionality of automated vehicles they had purchased. This would particularly be a burden for automated vehicles that could not be operated manually. It would place the onus on consumers to seek compensation for the ADSE's market exit, which could be a complex undertaking. The NTC is seeking your views on whether this proposal is appropriate.

Question 5: Please provide your views on the transfer of responsibilities for an inservice ADS from an ADSE to a new entity.

Should an ADSE be able to transfer responsibility for an in-service ADS to a new entity?

- If so, what powers should the in-service safety regulator have for approving the transfer?
- **Question 6:** If there is no new entity to take responsibility for an ADS when an ADSE exits the market, are recall (including disengagement) under the RVSA and recourse under the Australian Consumer Law appropriate measures? Is there any role for the in-service regulator?

5 In-service modifications and after-market installations

Key points

- ADSEs may seek to alter their ADS's functionality while in service for example, software updates that expand the ADS's level of automation or ODD.
- Vehicle manufacturers may install ADSs into their conventional vehicles.
- Business models may emerge that enable ADSs to be installed by commercial operators.
- Advancements in technology may enable individuals to install kits that confer automation on conventional vehicles.
- These activities substantially alter a vehicle from the state when it was first approved under vehicle safety frameworks and so could bypass protections provided by those frameworks.
- Governments will need to consider how to manage the safety risks of modifications and enable safe modifications.
- Government stakeholders have indicated that the options should ensure that modifications meet a comparable standard of safety to that which is expected for ADSs under the first-supply framework.

5.1 Purpose of this chapter

The purpose of this chapter is to:

- discuss how to ensure safety for in-service modifications that change the level of automation, change the ODD of a previously approved ADS, or confer automation on a conventional vehicle
- consider the regulatory framework to support safety if modifications are made, including any legal duties.

5.2 Reasons for considering modifications

Automated vehicles, just like conventional vehicles, could be modified. Simple changes may not affect a vehicle's safety; more complex modifications could significantly change the vehicle's operation and create safety risks. Modifications could:

- increase the level of automation or the ODD of an already-approved automated vehicle (for example, changing an SAE level 3 vehicle into an SAE level 4 vehicle)
- change a conventional vehicle (SAE levels 0–2) to an automated vehicle through aftermarket installation or activation of an ADS.

In-service modifications that increase the automation level or expand the ODD of an ADS, or modifications that enable automation, have the potential to provide Australians with greater benefits. Enhanced or enabled automation may:

improve road safety

- improve mobility options for people with a disability, the elderly and young people
- enable people to gain the benefits of automated vehicles without the cost of purchasing a new vehicle.⁴⁶

Modifications that enhance or confer automation may be undertaken by a range of parties – ADSEs, vehicle manufacturers, commercial ADS installers or individuals.

As with all ADSs, in-service modifications may also introduce safety risks that the market will not eliminate or mitigate and that existing regulatory mechanisms may not adequately manage.

It is anticipated that ADSEs will seek to enhance their ADS's functionality when the ADS is in service. These changes may alter the functionality (and so the safety risk) of the ADS from when it received approval at first supply.

Business models may evolve that focus on aftermarket supply and installation of ADSs into vehicles that are already in service. Regulation could accommodate a changing market (Grush & Niles, 2018, p. 74), enabling the safe in-service supply and installation of ADSs by parties other than ADSEs. Regulation that enables a legal entry point into the market could support innovation by lowering the barriers to market entry. This may allow more types of ADSs in the market, possibly at a lower cost and provide consumers with greater choice. The NTC considers that regulation should enable market entry provided the installation of ADSs meet acceptable safety standards.

There is also a possibility that, as technology evolves, individuals seek to confer automation on conventional vehicles by installing aftermarket ADS kits. This effectively creates an automated vehicle without going through a safety assurance pathway (like the first-supply process for ADSEs). Individuals who install ADS kits may pose greater risks to road users than ADSEs, vehicle manufacturers or commercial ADS installers. Individuals may have limited knowledge of the ADS design and inadequate capability to identify and address safety risks. The NTC considers that, at this stage, the potential benefits to an individual of installing an aftermarket ADS are outweighed by the safety risks to road users more generally.

5.2.1 Previous consultation and types of modifications

In June 2020, infrastructure and transport ministers agreed that existing state and territory regulation for parties such as repairers (whose actions may affect the components of an automated vehicle) could, with some amendments where necessary, accommodate the new risks presented by automated vehicles. Transport ministers considered that it was not necessary to propose additional regulation under the AVSL to regulate those parties at this stage.

Stakeholders in the NTC's previous in-service safety consultation considered that the safety risks associated with physical or hardware modifications were better managed under existing frameworks that regulate registered owners of vehicles at state and territory level. The discussion in this chapter does not cover modifications to the vehicle of this nature.

Ministers have agreed that an ADSE will be required to demonstrate how it will ensure safety-critical system upgrades are installed and manage the risks of those upgrades under the first-supply approval framework. It is considered that any safety risks arising from ADS upgrades performed by the ADSE that are within the scope of the 'installation of system

⁴⁶ For a detailed list of potential benefits, see the NTC's *In-service safety for automated vehicles: Consultation Regulation Impact Statement* at

https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Consultation%20RIS%20-%20In-service%20safety%20for%20automated%20vehicles.pdf.

upgrades' first-supply criterion are sufficiently covered by the first-supply assessment and the in-service general safety duty. For this reason, upgrades within the scope of the 'installation of system upgrades' safety criterion are not considered in this discussion.

Stakeholders considered that the regulatory oversight of modifications such as software updates that could significantly modify vehicle performance be examined further. This includes modifications that significantly alter the features of an ADS from when it received first-supply approval.

Infrastructure and transport ministers agreed that the NTC develop regulatory options for inservice modifications that:

- enable automation, and
- potentially alter the safety risks of automated vehicles previously approved at first supply, like changes to automation level and ODD.

Government stakeholders have indicated that the options should ensure that modifications meet a comparable standard of safety to that which is expected for ADSs under the first-supply framework.

In this paper, options to regulate in-service modifications by an ADSE to an ADS that affect its level of automation or ODD are considered. These types of modifications may significantly change the functionality of an ADS and its safety risk from when its safety was assessed at first supply.

Options that enable safe in-service modifications by parties who are not ADSEs are also considered. The options have the potential to influence the market that emerges for the supply and installation of ADSs to vehicles that are in service. Some of the options provide a legal pathway into the ADS market through the AVSL, with those parties being subject to the general safety duty.

5.2.2 The ADSE's role in mitigating some modification risks of other parties

Infrastructure and transport ministers have agreed that the ADSE will be responsible for the safe performance of its ADS. The ADSE will be required to demonstrate its safety case against the safety criteria when it applies to supply the ADS to the Australian market. It will also have to comply with a general safety duty when the ADS is in service. These measures will mitigate many risks that would otherwise be posed by modifications. For example:

First-supply requirements:

- To obtain approval under the first-supply framework:
 - ADSEs must declare their protections against third party interference. The 'safe system design and validation' safety criterion requires that the ADSE demonstrate that its design and verification processes cover safety-critical issues. These issues could include unsafe maintenance, repairs, physical modifications and other system failure. For example, the ADSE could design the ADS to disengage (temporarily or permanently) or reduce its ODD, or for back-up systems to take over where safety-critical issues arise or the system otherwise fails. This means the only ADSs legally sold in Australia will have met minimum standards of protection from interference, including unsafe modifications by other parties.
 - ADSEs must declare how they will manage system upgrade risks. This includes ensuring safety-critical system upgrades to the ADS are installed and do not result in the operation of an unsafe ADS.

In-service duties:

- To comply with its general safety duty, an ADSE will have to take reasonable steps to:
 - ensure that any modifications made by ADSE are safe
 - recognise any modifications performed by others that make the ADS unsafe and have systems in place to prevent the ADS functioning if the modifications are unsafe.
- ADSEs will be obliged under the general safety duty to take reasonable steps to address emerging and foreseeable risks to safety, including risks arising from third parties attempting to modify the ADS. ADSE steps could include:
 - installing software and operating system patches to improve the ADS's resistance to hacking and having systems that detect when hacking has been attempted
 - disengaging the ADS when interference is attempted or occurs
 - educating users about the safe use of ADSs.

5.3 First-supply approval and subsequent modifications to the ADS by the ADSE

The first-supply approval process will enable an ADSE to change the functioning of their ADSs in-service and obliges the ADSE to manage associated safety risks when it does so. Previous consultations have indicated that an ADSE will be required to submit a statement of compliance for approval before an ADS or significant modification to an ADS can be introduced into the market.⁴⁷

An ADSE will need to assess whether a modification it intends to make to an approved ADS will vary the functionality of the ADS from what was previously declared and approved. For example, a vehicle may have received approval through the first-supply process as an SAE level 4 automated vehicle with an approved ODD of fair weather and specific freeways. An in-service software update could expand the capabilities of the ADS so that it can operate in rain and on additional roads. This a broader ODD than what was initially approved.

It is understood that under the first-supply process an ADSE could declare an expanded ODD when seeking a new type approval from the first-supply regulator with the intention of rolling the ODD out over time. For example, the ADSE seeks approval for ADS for all weather conditions but initially only allows their ADS to be used in fair weather (and gradually expands into other weather conditions over time). In this case an expansion of ODD while the vehicle is in service is not a modification because safety risks were assessed at first supply against the expanded ODD.

It is understood that if the ADSE seeks to expand the ODD or change the level of automation of the ADS beyond what it declared at first supply, then for new vehicles of that type approval class that are *yet to be supplied to the Australian market*, the ADSE will need to seek approval from the first-supply regulator for a variation to its existing type approval or will need to lodge a new type approval.

⁴⁷ See the Safety assurance for automated driving systems: Decision Regulation Impact Statement (November 2018) pp.13 and 49, and the In-service safety for automated vehicles: Decision Regulation Impact Statement (June 2020) p.149.

If the ADSE seeks to expand the ODD or change the level of automation of ADSs in vehicles of a type approval class that are *already in service*, it is understood that there is no first-supply mechanism requiring the ADSE to vary its existing type approval or submit a new type approval. There may be a safety gap for modifications to automated vehicles that are already in service.

5.3.1 Options to regulate in-service modifications by the ADSE

The NTC suggests that modifications made to ADSs that are already in service could be regulated in one of the following ways.

Option 1: The in-service regulator has a regulatory approval function for in-service modifications

Under this option, where an ADSE seeks to expand the ODD or change the level of automation of the ADS beyond what it declared at first supply, for automated vehicles that are in service, it will need to seek approval from the in-service regulator.

If an ADSE has sought and received a variation of type approval or new type approval from the first-supply regulator for that modification, the safety risks of those modifications will have been assessed by the first-supply regulator. The inservice regulator can take into account the decision of the first-supply regulator and grant an approval for those modifications to be rolled out to ADSs operating under the original type approval that are already in service.

or

If the ADSE proposes to roll out a modification to ADSs that are in-service only, and is not seeking to supply a new ADS to the market (with similar functionality to the proposed modification) it will not have sought and received a variation of the type approval or a new type approval from the first-supply regulator. The inservice regulator would assess the safety risk posed by the proposed modification and approve or not approve the modification. In doing so, the regulator would perform a similar function to that performed by the first-supply regulator for a modified ADS at its point of entry into the Australian market.

The trigger for approval of the in-service modifications by the in-service regulator could be:

- the proposed modification alters the ODD or automation level of the ADS beyond what was declared at first supply when that ADS entered the market, and
- if the ADSE wanted to supply the modified ADS to the Australian market it could not do so under the existing type approval and a new type approval or a variation to the type approval would be required under the RVSA.

If the in-service regulator should play an approval role, the regulator will need to assess the modification against the same or similar criteria used at first supply (or any previous in-service modification approval).⁴⁸

The in-service approval function would need to be supported by a provision in the AVSL that prohibits an ADSE from installing or activating in-service modifications to the ADS that change its performance or functionality beyond what was declared at first supply without approval from the in-service regulator.

The in-service regulator will need to liaise with the first-supply regulator to obtain details of previous decisions made under the first-supply framework. This would ensure the in-service

⁴⁸ If the in-service regulator does not consider the modification significant enough to require a regulatory approval, it may notify the ADSE of this decision rather than going through the approval process.

regulator has accurate information on which to base any decisions it has to make as part of its approvals functions.

Option 2: The risks of in-service modifications to an ADS are managed through the general safety duty

Under this option, the ADSE will be subject to its general safety duty to ensure the ADS operates safely when it is in service, including management of safety risks arising from modifications. It will be up to the ADSE to ensure that modifications are safe.

The complementary operation of the regulatory frameworks – the first-supply safety case and the general safety duty – may be sufficient to manage the risks presented by modifications performed by approved ADSEs.

The AVSL will enable proactive and reactive action by the in-service regulator to ensure ADSE compliance with the general safety duty. To carry out its compliance function effectively, the regulator may, at a minimum, need to be aware of the modifications that are carried out by the ADSE. To support this, the AVSL may need to require an ADSE to keep a log of all modifications. Under this option, the in-service regulator would not have an explicit role to approve the modifications to the ADS but would have the ability to seek information from the ADSE to satisfy itself that the modifications are safe as part of its broader compliance and enforcement function.

Proposed approach

The NTC considers that it is preferable for the in-service regulator to have a function to approve modifications that may be carried out to ADSs that are in service. The approvals function will be triggered only in circumstances where the modifications that are proposed by the ADSE would be significant enough to require a variation to its type approval or a new type approval if those modified ADS were to have entered the Australian market for the first time. In previous consultations stakeholders have expressed support for an approach that requires an ADSE to seek approval before a significant modification to an ADS can be introduced into the market. That the in-service regulator has the role of approving in-service modifications is consistent with previous stakeholder feedback that modifications should be assessed against the first-supply criteria (or similar) and addresses concerns that there be appropriate oversight (and arm's-length assessment) of in-service safety risks.

This approach will enable the rollout of modifications that the first-supply arrangements provide a level of safety assurance for, with minimal additional regulatory requirements on the ADSE. Used in conjunction with the general safety duty it will provide a higher level of inservice safety assurance.

In-service modifications by the ADSE

Scenario A

ABC Pty Ltd holds a type approval for an SAE level 3 vehicle supplied to the market. When it seeks type approval for the vehicles to enter the Australian market, ABC Pty Ltd declared (and was assessed against) a broad ODD that would allow the ADS to be engaged on any road with a speed limit above 80 km/h. The vehicles that it initially supplies to the Australian market have an ODD limited to high-speed urban motorways (ADS version 1.0).

During the in-service life of its ADS, ABC Pty Ltd wants to issue an over-the-air software update that installs version 2.0 – modifying the ADS's ODD to any road with a speed limit above 80 km/h with both centre and edge-line markings. There is no requirement for ABC to seek approval from the in-service regulator before it modifies

the in-service ADS. ABC can roll out ADS version 2.0 and would be subject to the general safety duty.

Scenario B

ABC Pty Ltd holds a type-approval for an SAE level 3 vehicle supplied to the market. When it seeks type approval for the vehicles to enter the Australian market, ABC Pty Ltd declared (and was assessed against) a limited ODD that would allow the ADS to only be engaged on high-speed motorways (ADS version 1.0).

ABC Pty Ltd intends that from this point onwards all its ADS in the Australian market are ADS version 2.0. The ODD for ADS version 2.0 is any road with a speed limit above 80 km/h with both centre and edge-line markings. It has sought and been granted a variation of type approval or a new type approval for vehicles fitted with ADS version 2.0 *that it intends to supply* to the market from the first-supply regulator.

ABC will need to seek approval from the in-service regulator before it rolls out a software update to upgrade the ADS version 1.0 *that are in service* to ADS version 2.0. The in-service regulator will take into account the decision of the first-supply regulator and grant an approval for those modifications.

Scenario C

ABC Pty Ltd holds a type-approval for an SAE level 3 vehicle supplied to the market. When it seeks type approval for the vehicles to enter the Australian market, ABC Pty Ltd declared (and was assessed against) a limited ODD that would allow the ADS to only be engaged on high-speed motorways (ADS version 1.0).

ABC Pty Ltd wants to roll out a software upgrade that will upgrade its in-service ADSs to ADS version 2.0. The ODD for ADS version 2.0 is any road with a speed limit above 80 km/h with both centre and edge-line markings. ABC will need to seek approval from the in-service regulator before it rolls out a software update to upgrade the ADS that are in service to ADS version 2.0. The in-service regulator will assess the modified ADS against the statement of compliance safety criteria and may approve or not approve the modification.

Question 7: What should the role of the in-service regulator be for modifications made by an ADSE to an in-service ADS that changes its ODD or the level of automation?

5.4 Modifications to vehicles by parties other than ADSEs

The NTC considers that modifications could also be performed by parties who are not ADSEs:

- vehicle manufacturers modifying vehicles to become automated vehicles while in service
- businesses that design, supply or install aftermarket ADSs
- individuals installing aftermarket ADS kits.

Modifications to vehicles in these circumstances may confer ADS capabilities, effectively introducing an ADS to the market without facing the scrutiny of the first-supply framework. As a result, they may introduce new safety risks.

The NTC previously consulted on the adequacy of regulation that governs parties that are likely have a role in the in-service safety of automated vehicles. An extensive range of regulatory frameworks were examined – including roadworthy regimes, the Australian Consumer Law and WHS laws. The NTC concluded that current regulation was inadequate to address the in-service safety risks of ADSs and this was supported by a majority of stakeholders.⁴⁹

5.4.1 Vehicle manufacturers modifying their vehicles to become automated vehicles while in service

The NTC considers that there could be circumstances where a vehicle manufacturer that has type approval for its conventional vehicles may seek to modify vehicles that are already in service. For example, if a vehicle manufacturer first supplied a vehicle to the market as an SAE level 2 vehicle, they will not have been required to submit a statement of compliance under the first-supply framework and the manufacturer is not an ADSE. If the manufacturer introduced a software update that adds or activates an ADS, it would have provided an automated vehicle to the market and bypassed the statement of compliance process. A poorly designed and operated ADS could create significant road safety risks, including the risk of death and serious injury.

It is understood that the RVSA does not require a type approval holder of a conventional vehicle to seek subsequent approval for an ADS from the first-supply regulator. The objective of the RVSA is to regulate the first supply of road vehicles to the market. In a circumstance where a vehicle manufacturer sought to introduce a software update to install or activate an ADS, then the RVSA's current provisions may not have legal reach into matters that relate to the in-service operation of vehicles.

5.4.2 Commercial ADS designers, suppliers and installers

The NTC considers that businesses may evolve that design, supply or install ADSs into conventional vehicles (essentially modifying the vehicle by conferring automation capabilities). For example, a company may develop an ADS to install in their own fleet of rideshare type vehicles, or to supply and install ADSs into conventional vehicles owned by other parties.

The RVSA has approval pathways for vehicle components; however, it is understood that they may not be suitable for approving ADSs (if ADSs were considered 'road vehicle components' within the RVSA). There may be no mechanism under the RVSA for an applicant to obtain type approval to supply to the market, an ADS as a separate vehicle component. It is understood that the RVSA vehicle component type approval provisions are not intended to be an approval pathway for a vehicle component unless it forms part of a demonstration that a whole vehicle complies with the ADRs. It appears that current RVSA provisions may not accommodate business models of this nature.

The NTC considers that it is unlikely that these businesses would be subject to the firstsupply safety assurance process proposed for ADSEs, and it may be unclear whether there is a party that takes responsibility for the safety of the ADS throughout the design life of the ADS. As with the previous example, a poorly designed and operated ADS could create significant road safety risks, including the risk of death and serious injury.

⁴⁹ See the NTC's *In-service safety for automated vehicles: Decision Regulation Impact Statement:* (June 2020) available from <u>https://www.ntc.gov.au/sites/default/files/assets/files/NTC-Decision-RIS-In-service-safety-for-AVs.pdf</u>.

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5.4.3 Options to regulate in-service modifications by vehicle manufacturers and ADS businesses

The NTC has developed three options to manage in-service modifications by vehicle manufacturers and commercial ADS installers. Ministers have previously agreed that a general safety duty should apply to ADSs that are in service. The options are consistent with the intent of that decision and require the relevant parties to be regulated within the general safety duty framework. Government stakeholders have agreed that any options developed should ensure that modifications meet a comparable standard of safety to that expected for new vehicles under the first-supply framework.

The NTC is seeking your views on what appropriate process could ensure in-service modifications satisfy a comparable standard of safety to that of the first-supply framework. The NTC suggests that the safety risks of a vehicle manufacturer or a business designing, supplying or installing aftermarket ADSs to vehicles in service could be addressed by the following options.

Option 1: Approval of the ADS through the first-supply regulator

This option would prohibit the supply and installation of an ADS to the market unless approved by the first-supply regulator. This provision could sit within the AVSL and/or RVSA (through an amendment to the RVSA or its rules).

Should an ADS business or vehicle manufacturer seek to supply and install an ADS, they would be required to obtain approval through the first-supply process – effectively becoming an ADSE. The ADS business or vehicle manufacturer would be subject to the type approval obligations under the first-supply process and the general safety duty and other obligations in the AVSL once the ADS is in service.

The prohibition against supply and installation of an ADS unless approved could alternatively incentivise the ADS business or vehicle manufacturer to enter into a commercial arrangement with another party who is willing to be the ADSE for the ADS and go through the first-supply process. This will ensure the ADS and its supporting entity goes through the first-supply safety assurance process before ADSs are installed in conventional vehicles and would be consistent with arrangements that have been settled for other ADSs entering the market for the first time.

Option 2: Approval of the ADS by the in-service regulator

This option would prohibit the in-service supply and installation of an ADS to conventional vehicles by an ADS businesses or vehicle manufacturer unless approved by the in-service regulator under the AVSL. The in-service regulator would assess and approve the ADS against the first-supply safety criteria and assess the business or manufacturer against the first-supply obligations. The regulator would effectively perform a similar role that the first-supply regulator performs in assessing ADSs at the point of importation or first supply to the Australian market. Once approved by the in-service regulator, the AVSL will operate to require the ADS business or vehicle manufacturer to comply with the general safety duty and other relevant AVSL obligations. The business or vehicle manufacturer will also be considered an accredited ADSE.

This option may accommodate new businesses (like ADS corporate installers) who are not structured to manage the requirements of the type approval framework (that the first-supply process will be based on). This option may provide an efficient approval pathway for parties such as vehicle manufacturers whose conventional vehicles have already met the type approval requirements.

The RVSA's power to recall an ADS that is unsafe or noncompliant with an ADR may not extend to an ADS approved in this way. In chapter 6 it is suggested that the in-service regulator will not have a recall power.

Regulating parties that support ADSs operating in service in these circumstances may give the in-service regulator better insight and oversight of the diversity of parties entering the market. The in-service regulator's role will be to ensure that regulated parties have systems in place to ensure safety, and to work with them to resolve safety issues as they arise.

Option 3: Accreditation of the vehicle manufacturer or commercial ADS installer by the in-service regulator against the three first-supply obligations

This option would prohibit the in-service supply and installation of an ADS to conventional vehicles by an ADS businesses or vehicle manufacturer unless they were approved by the in-service regulator under the AVSL.

The in-service regulator would accredit the vehicle manufacturer or commercial ADS installer as the ADSE for the ADS if it satisfied of the three first-supply obligations described in section 4.4.1: corporate presence, minimum financial requirements and data recording and sharing.⁵⁰ These obligations are intended to provide some assurance that an ADSE is fit and proper and can support an ADS over its life. They are also intended to assist relevant parties to appropriately assign criminal and civil liability for incidents.

DITCRD is still to incorporate these obligations into mechanisms under the RVSA, and there is not yet clarity about the exact content of these obligations. These obligations under first supply and under in-service accreditation should align as much as possible with the final wording of these obligations under the first-supply framework.

Once accredited as the new ADSE, the manufacturer or corporate installer would become subject to all relevant duties in the AVSL including the general safety duty. The in-service regulator should work with the new entity as it enters the market to ensure it can comply with its duties.

This option is consistent with the accreditation option proposed in chapter 4 for a new entity taking responsibility for an in-service ADS. However, it should be noted that, in that case, the ADS would have already been assessed against the 11 safety criteria at first supply.

5.4.4 Regulating the installation and use of aftermarket ADS kits by individuals

Modifications to conventional vehicles using easy-to-install kits, supported by open source software (such as Comma AI's openpilot⁵¹), are already available to purchase. These kits can give conventional vehicles greater automation. It is not an offence to purchase these types of kits. Technology may evolve to enable development of ADSs that can be installed into conventional vehicles by individuals. This would effectively create an automated vehicle without going through the first-supply safety assurance pathway (that requires an ADSEs to take responsibility for the safety of the ADS throughout the design life of the ADS).

Stakeholders have expressed concern that individuals who install ADS kits may pose greater risks to road users than ADSEs, vehicle manufacturers or commercial ADS installers. For example, it is expected that ADSEs will have demonstrated expertise in ADS safe design and risk management, and they will be required to satisfy obligations on data recording and sharing and minimum financial requirements.

Installation of an ADS into a conventional vehicle by someone who has limited knowledge of the ADS design or understanding of how it interfaces with the vehicle's components and systems could cause the ADS and/or the vehicle to function in unintended ways. It is unlikely

⁵⁰ A full description of the obligations can be found in Appendix A.

⁵¹ For example, see <u>https://comma.ai/</u>.

⁵¹ See <u>https://www.forbes.com/sites/samabuelsamid/2020/07/01/bmw-now-has-full-ota-update-capability-many-features-now-in-app-purchases/#193347f03128;</u> see also Tesla's introduction of smart summon in Australia.

that individuals will have the knowledge to identify and adequately address safety risks that emerge when the ADS is operating in service – for example, managing cybersecurity risks or failure of the ADS to function properly by regularly updating software. This could risk death or serious injury on our roads.

Given the potential safety risks, the NTC considers that it should be an offence for parties other than the ADSE, those authorised by the ADSE or those authorised by the first-supply regulator or in-service regulator to install an ADS.

The offences would most likely need to be within both the AVSL and state and territory legislation. The act of engaging or using or permitting the use of an unauthorised ADS (and an unauthorised modified ADS) could be an offence that sits within state and territory legislation because it would be regulating the actions of the driver or registered owner of an automated vehicle.

Question 8: How should in-service modifications made by parties other than an ADSE to vehicles to make them automated vehicles be managed? Consider:

- vehicle manufacturers modifying vehicles to become automated vehicles while in service
- businesses that supply and install aftermarket ADSs
- individuals installing aftermarket ADS kits.
- **Question 9:** Are there any gaps in the regulation and proposed regulation of inservice modifications that the NTC has not identified? Are there other options that should be considered?

Key points

- The in-service safety regulator will need to perform a range of functions to effectively regulate in-service safety.
- Uncertainty around the size, nature and growth of the automated vehicle market supports establishing a regulator that can scale up over time.
- The functions proposed for the regulator are monitoring, education and guidance; enforcement; engagement with states and territories; research; creating standards and customer service. Additional functions could include reporting, crash investigation, accreditation and regulatory approvals. The regulator will initially perform limited core functions with others to be phased in as the automated vehicle market grows and the scope of the regulatory task increases.

6.1 Purpose of this chapter

The purpose of this chapter is to:

- describe the core functions of the in-service regulator, drawing on previous consultation
- identify the functions that will be required when the regulator is first set up and those that can be phased in over time
- consider how certain functions may be delivered initially, including through servicelevel agreements with other agencies or the procurement of services when required.

6.2 Context

In 2019, the NTC consulted on governance arrangements for the in-service safety of automated vehicles, including the functions and powers that a regulator would need.⁵² Based on stakeholder feedback and analysis, a broad range of functions and powers were considered necessary for the in-service regulator to effectively regulate the in-service safety risks of automated vehicles.⁵³

The nature and projected growth of the automated vehicle market in Australia is uncertain. Areas of uncertainty include deployment timeframes, business models, the pace of technological change and the rate of automated vehicle uptake by consumers. COVID-19 has resulted in decreased resourcing for research and development for automated vehicles, and hence is likely to affect deployment timeframes further. It is, however, reasonable to assume that initially the commercial deployment of automated vehicles in Australia will be limited.

If the market comprises a small number of ADSEs initially, the size of the regulatory task to be performed by the in-service regulator will be smaller and it would be efficient to have a

⁵² See the NTC's *In-service safety for automated vehicles: Consultation Regulation Impact Statement:* (July 2019) available from <u>https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Consultation%20RIS%20-%20In-service%20safety%20for%20automated%20vehicles.pdf</u>.

⁵³ See the NTC's *In-service safety for automated vehicles: Decision Regulation Impact Statement:* (June 2020) available from <u>https://www.ntc.gov.au/sites/default/files/assets/files/NTC-Decision-RIS-In-service-safety-for-AVs.pdf</u>.

smaller regulator. The size of the regulator will need to be scalable as the regulatory task grows and evolves.

Government stakeholders have agreed that the design of the in-service regulator should be guided by the following principles:

- 1. The regulator ensures in-service automated vehicle safety risks are comprehensively addressed by the relevant duty holder.
- 2. The regulator ensures a nationally consistent approach to in-service safety in cooperation with Commonwealth, state and territory governments.
- 3. There are clearly defined roles and responsibilities for the Commonwealth, states/territories, industry and users to facilitate market entry, consumer confidence and safety.
- 4. The regulator can accommodate international standards as they develop.
- 5. There is minimal overlap and duplication with existing regimes.
- 6. The size of the regulator is efficient and scalable.
- 7. The regulator can recover some or all of the efficient costs of its regulatory activities.54

6.3 Functions

The in-service regulator will need to ensure that in-service automated vehicle safety risks are comprehensively addressed by relevant duty holders. Its key function will be to ensure regulated parties assure the safety of automated vehicles over their full lifecycles. The functions discussed in this chapter will need to be supported by a range of obligations on ADSEs and other entities. For example, the obligations on an ADSE could include the obligation to report safety breaches, to document its safety management system so that it can be audited and to provide information requested by the in-service regulator. The obligations could extend to other parties; for example, if a third party carries out an in-service modification of an ADS, the in-service regulator should be able to obtain information from that third party to investigate a potential contravention of the AVSL. The obligations that may be imposed on ADSEs and regulated parties to support the performance of functions by the in-service regulator are discussed throughout this paper. Appendix B summarises the offence provisions that give effect to the obligations on regulated parties.

In the decision RIS the NTC proposed a list of functions that the in-service regulator would need to undertake based on analysis and stakeholder feedback. When the AVSL is drafted, these functions may be specified individually or outlined as high-level objectives. Some functions could be mandatory, while others could be permitted but left to the discretion of the regulator.

The functions identified in the decision RIS are outlined below.

6.3.1 Monitoring

Where a general safety duty applies, the obligation is on the ADSE to identify, manage, mitigate and, where possible, eliminate safety risks. A key function that the regulator performs is to ensure the regulated party has systems in place to address safety risks.

⁵⁴ Principles agreed by the Automated Vehicles Senior Advisory Group in November 2018. This group consists of senior officials from Commonwealth, state and territory governments and is chaired by the NTC.

The in-service regulator would need to undertake proactive monitoring to ensure ADSEs have proper systems in place so they can comply with the general safety duty over the life of the ADS. Monitoring is also likely needed to ensure ADSEs continue to comply with the ongoing, in-service aspects of the first-supply safety criteria.⁵⁵ Monitoring would include the audit of ADSEs safety management systems to determine whether ADSEs have policies and procedures in place that will enable identification, assessment and mitigate in-service safety risks – for example, if the processes and policies in place are sufficient to monitor and oversee the safety impacts of any in-service modifications. Monitoring could include audits of the systems and processes that ADSEs have in place to assess compliance. Broader monitoring activity (for example, in relation to the enforcement of road traffic laws or reports on safety incidents provided by ADSEs) may be required to detect emerging compliance or safety risks.

The monitoring function will support the regulator's performance of its education and guidance function (described below) and will support targeted compliance and enforcement action.

The monitoring function would need to be supported by duties imposed on regulated parties (for example, to maintain certain information) and appropriate powers (for example, the power to request and compel information). The compliance and enforcement powers that the in-service regulator will require to effectively perform its monitoring function are discussed in chapter 7. Appendix B summarises the offence provisions that give effect to the duties on regulated parties to support the monitoring functions.

6.3.2 Education and guidance

Automated vehicle technology is new, and the in-service safety duties to be imposed on regulated parties are unfamiliar. A key function of the regulator will be to disseminate information that assists regulated parties to comply with their duties and obligations.

A general safety duty requires the development of a shared understanding between the regulator and regulated parties about compliance expectations. It will be the role of the inservice regulator to help ADSEs understand their responsibilities and obligations, and to help them mitigate and avoid safety risks.

The regulator will need to provide guidance to parties that play a role in in-service safety regarding safe systems and behaviours and to guide best practice methods to achieve safety. The regulator may do this by responding to requests for advice, producing guidance material and organising and coordinating events such as conferences and forums on automated vehicle safety. Guidance that the regulator could provide was also discussed in section 3.5.2 of this paper.

This function would be undertaken in cooperation with other regulators and agencies at the Commonwealth, state and territory levels.

6.3.3 Enforcement

A key function of the in-service regulator is to enforce compliance with the AVSL and any regulations made under that law. This will include the exercise of a range of investigation and enforcement powers. The performance of this function will include the conduct and defence of court proceedings by the in-service regulator related to its decisions or exercise of its functions, for example:

⁵⁵ First-supply safety criteria with ongoing elements that need to be managed in service include the criteria relating to the ODD, compliance with relevant road traffic laws, installation of system upgrades, education and training and data recording and sharing.

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- applications in court to use enforcement powers such as injunctions or directions to act
- proceedings against regulated parties for breaches of duties
- defending proceedings.

The enforcement function will need to be supported by appropriate enforcement powers. These are discussed in chapter 7.

The in-service regulator will also need to interact with other regulators and law enforcement agencies at the Commonwealth, state/territory and local government levels to support smooth functioning of the regulatory framework for in-service safety.

The in-service regulator will need to develop memorandums of understanding (MoUs) with a number of agencies to address effective operational liaison and timely information sharing, cooperation in investigations that are of mutual interest and cooperative compliance and enforcement action, including agreement on 'who takes the lead on what' in areas of overlap. As is standard practice in legislation establishing a regulator,⁵⁶ the AVSL should provide that the functions of the in-service regulator include 'doing anything incidental to or conducive to the performance of any of its functions' and the power 'to do all things necessary or convenient to be done for or in connection with the performance of its functions'. The law would also include a specific power that allows the in-service regulator to collect, access, use and disclose information in the performance of its functions. These provisions together will enable the in-service regulator to enter into MoUs with other agencies.

6.3.4 Engagement with states and territories

The in-service regulator will need to work collaboratively with states and territories to:

- achieve a nationally consistent approach to in-service safety
- ensure clarity of roles
- understand jurisdiction-specific issues
- develop educational and guidance material
- identify emerging issues that affect the effectiveness of the in-service safety regime.

This would be achieved through regular and effective dialogue with states and territories. The AVSL will need to allow information exchange between the in-service regulator and jurisdictions to support this function.

6.3.5 Research

Some safety regulators have a research role. For example, one of the Office of the National Rail Safety Regulator's functions is 'to conduct research, collect and publish information relating to rail safety'.⁵⁷

Research conducted by the in-service regulator would inform its own actions and contribute to the development of knowledge and insights that increase automated vehicle safety in Australia.

The research function could include monitoring trends in automated vehicle safety and use, conducting research into the causes and incidence of automated vehicle crashes, analysing

⁵⁶ See, for example, paragraph 658(1)(c) of the *National Heavy Vehicle Law* (Queensland) 2012 that provides that that the NHVR may 'do anything necessary or convenient to be done in the exercise of its functions'.

⁵⁷ Subsection 13(c), Schedule to the Rail Safety National Law, *Rail Safety National Law Act (South Australia)* 2012.

the information that it receives from ADSEs regarding notifiable safety events or safety systems, and monitoring overseas regulatory developments.

6.3.6 Creating standards

Several government regulators create the standards that they enforce. For example, under the RVSA, DITRDC, through its responsible minister, can make road vehicle standards. One of the functions of the Civil Aviation and Safety Authority (CASA) is conducting safety regulation by means that include 'developing and promulgating appropriate, clear and concise aviation safety standards'.⁵⁸

The in-service regulator may need the ability to create standards for the purpose of clarifying requirements for regulated parties. For instance, one of the standards made by CASA is the *Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019*, which sets out standards for the conduct of training in the operation of remotely piloted aircraft, including the aeronautical knowledge and practical competency units that the training should cover. It also sets out certain record-keeping requirements for operators of remotely piloted aircraft. Standards are legislative instruments and are registered on the Federal Register of Legislation.

While the in-service regulator may not perform this function immediately on commencement, it would be prudent for the AVSL to recognise this as a function to be performed by the regulator.

6.3.7 Customer service

The regulator will need to perform any necessary customer-facing administrative services. An in-service regulator might house these functions itself or may share responsibility and resources for these functions with other entities.

6.3.8 Other functions

Since the decision RIS was released, the NTC has identified further functions that may need to be considered for the in-service safety regulator.

Reporting

The in-service regulator should report to its responsible minister(s) on the operation of the AVSL including, for example, the extent to which the object of the law is being achieved and the extent and nature of noncompliance with the law. Given the novelty of automated vehicle technology and the uncertainty around the level and nature of the risks posed by the technology, the reporting could contribute to greater public confidence in the technology. The reporting would also inform further decisions on scaling up the regulator as the market evolves.

Reporting functions are a standard function for a number of regulators. For example, the NHVR must report to responsible ministers on the operation of the HVNL, including the extent to which the objects of the law are being achieved, the extent and nature of noncompliance with the law, the outcomes of activities for monitoring and investigating compliance with the law and the effect of modifications of the law in participating jurisdictions on achieving the objects of the law.⁵⁹

Crash investigation

It is mainly the police who investigate road crashes. The focus of a police investigation is on establishing culpability. State and territory coroners' courts are responsible for investigating

⁵⁸ *Civil Aviation Act* 1988 (Cwlth) s 9(1)(c).

⁵⁹ Heavy Vehicle National Law 2012 (Qld) s 659 (2)(i).

deaths resulting from an accident or injury.⁶⁰ Coronial inquests focus on establishing the causes of death. Recommendations from the coroners' courts are not binding, but organisations that receive a recommendation may be compelled to respond to the recommendation.⁶¹

The aviation, marine and rail transport sectors also have a specialist body, the Australian Transport Safety Bureau (ATSB) to independently investigate contributing factors and other safety factors associated with accidents and incidents. The ATSB is a 'no-blame' investigator focusing on identifying systemic safety issues and advocating for and influencing safety action to prevent accidents in the future.⁶² The ATSB also analyses data on safety issues obtained from operators and regulators through mandatory notification schemes and voluntary confidential reporting. This analysis can lead to further investigations and targeted safety education.

International examples of road crash investigation bodies include the National Transportation Safety Board (NTSB) in the United States that investigates 'significant crashes likely to impact the public's confidence in highway transportation safety, generate high public interest, or highlight national safety issues' (National Transportation Safety Board, 2020).

Example of the type of findings made by the NTSB

In March 2018, an automated test vehicle struck and killed a pedestrian walking across a road in Tempe, Arizona. The vehicle was operated by the Advanced Technologies Group of Uber Technologies (Uber), which had modified the vehicle with a proprietary ADS.

In 2019, the NTSB released investigation findings into the crash. It found that the ADS never accurately classified the pedestrian or predicted her path (National Transportation Safety Board, 2019b). The system design precluded activation of emergency braking. The NTSB also found that the vehicle operator had been visually distracted by her mobile phone in the time leading up to the crash. It found that her 'prolonged visual distraction, a typical effect of automated complacency, led to her failure to detect the pedestrian in time to avoid the collision'.

The NTSB made further findings about Uber's safety management. It found that Uber did not adequately manage the anticipated safety risk of its ADS's functional limitations and had inadequate oversight of its vehicle operators. It found that Uber 'did not adequately recognise the risk of automation complacency and develop effective countermeasures to control the risk of vehicle operator disengagement, which contributed to the crash' and that though it 'had the means to retroactively monitor the behaviour of vehicle operators and their adherence to operational procedures, it rarely did so' (National Transportation Safety Board, 2019a, p. 58).

The police and coronial inquests may not have the technical expertise to investigate the causes of serious crashes involving automated vehicles, particularly in the early stages of deployment. Further, their investigation methodology may not extend to examining systemic safety issues that go beyond the proximal causes. Additionally, a fragmentation of the

⁶⁰ See for instance, the *Coroners Act 2008* (Vic). 'Reportable deaths' that may be investigated by the coroner are defined at s 4 of that Act and include deaths that resulted, directly or indirectly, from an accident or injury (even if there is a prolonged interval between the incident and death).

⁶¹ For instance, s 72 of the *Coroners Act 2008* (Vic) allows a coroner to make recommendations to a minister, statutory authority or entity as part of their finding following an investigation. Anyone who receives a recommendation from a coroner must respond, in writing, within three months stating what action, if any, has or will be taken.

⁶² The ATSB conducts its investigations in accordance with the *Transport Safety Investigation Act 2003*.

investigation function across state and territory agencies may hinder the identification of emerging trends, common risks or underlying causes of crashes and could therefore be less effective in addressing the systemic safety risks likely to be posed by ADSs.

The in-service regulator will need to quickly become a locus of expertise in automated vehicle safety in order to effectively perform its compliance and enforcement functions. The regulator will need to undertake investigations for these purposes in addition to audit and surveillance. The compliance and investigation function would be undertaken in cooperation with state and territory police in their existing role.

This type of crash investigation function does not replace systemic no-fault investigation, which in other modes where complex systems are involved are undertaken by an independent investigator. The safety issues that independent systemic investigators target are characteristic of the transport system as a whole or significant parts of that system. For automated vehicles this includes the design and manufacture of vehicles, network design and regulatory oversight. An independent agency may be better placed to undertake this systemic investigation, including any failures of regulatory oversight.

This independent systemic investigation function could be undertaken by an existing specialist agency such as the ATSB with cooperation between the ATSB, the regulator and police. In its final report on National Transport Regulatory Reform, the Productivity Commission proposed that the ATSB expand its remit to investigate accidents involving self-driving technologies, regardless of the mode of transport. It considered this would 'enable systemic issues to be involved at the earliest possible stage' (Productivity Commission, 2020, p. 290).

There are benefits in having a multimodal investigator perform the serious accident and systemic safety issues research function in relation to automated vehicles. Systemic issues like the failure of automated systems detect obstacles cut across modes of transport and learnings should be shared across sectors. Consistent with its role in other modes, the ATSB would not investigate every crash or serious incident. Trends in incidents and safety intelligence will inform decision making to target investigations where there is the greatest prospect of finding systemic safety issues. The in-service regulator and state and territory police and coroners' courts would continue to perform their investigative roles in parallel with the specialist crash investigation agency for automated vehicles.

Accreditation

Chapter 4 describes the NTC's preferred approach to managing the transfer of ADSE responsibilities for an in-service ADS. The NTC is keen to hear stakeholder views on this approach, and whether accreditation should be used for any other purposes within the inservice framework.

If the in-service regulator were to have an accreditation function to manage the transfer of an ADSE's responsibilities for an ADS, the in-service regulator would need to accredit the new entity and recognise it as an ADSE. Under the NTC's preferred option, the in-service regulator would assess the new entity against the three obligations an ADSE must meet at first supply – corporate presence in Australia, minimum financial requirements and the ability to comply with the data sharing and recording criterion.

Once accredited as the new ADSE, the entity would become subject to all relevant duties in the AVSL including the general safety duty. The in-service regulator would then work with the new entity once it enters the market to ensure it is able to comply with its duties. Any compliance issues that arise will be dealt with under the compliance and enforcement provisions of the AVSL.

The in-service regulator may not be called upon to perform accreditation immediately on commencement of the AVSL, but if it is appropriate for the in-service regulator to 'accredit' new entities, then the function should be included in the national law at the outset.

Accreditation as discussed in chapter 5 could occur as a result of an entity that is not an ADSE gaining regulatory approval for a modification. This is also discussed further in the next section on regulatory approvals.

Regulatory approvals

Chapter 5 sets out the NTC's preferred approach to in-service modifications made by ADSEs to their ADSs. The NTC is keen to hear stakeholder views on this approach.

If the in-service regulator were to have a regulatory approvals function for in-service modifications, it would apply to modifications that vary the functionality of the ADS to the extent that a new type approval or variation to a type approval would have been required for the modified ADSs to enter the Australian market.

If in fact an ADSE has sought a variation of type approval or new type approval for modified ADSs to enter the Australian market and the first-supply regulator has granted that approval under the RVSA, the safety risks of the modifications will have been assessed by DITRDC. The in-service regulator would take that into account and grant an approval for those changes to be rolled out in service. If there has been no variation of the type approval or a new type approval (modifications are to be made to vehicles in-service only) then the inservice regulator would assess the safety risk posed by the modification and approve or not approve the modification. This assessment would be based on the same criteria used at first supply (or any previous in-service modification approval).

The in-service approval function would need to be supported by a provision in the AVSL that prohibits the ADSE from carrying out in-service modifications to the ADS that change its performance or functionality beyond what was declared at first supply without approval from the in-service regulator. The AVSL could provide that where the first-supply regulator has considered and granted a variation of the type approval for a modification, the in-service regulator 'must' approve the modification. This would avoid duplication and dual, inconsistent processes.

Chapter 5 also discusses potential options for managing in-service modifications by parties other than ADSEs. The NTC suggests that for vehicle manufacturers who modify their vehicles to become automated vehicles in-service, and ADS businesses that supply and install ADSs, one option would be for the in-service regulator to have a regulatory approval function to approve the ADS against the first supply criteria. Approval by the in-service regulator in these circumstances would also include accreditation of these entities against the first supply corporate obligations (i.e. corporate presence in Australia, minimum financial requirements and data recording and sharing).

Question 10: Do you agree that the additional functions the NTC has identified may need to be undertaken by the regulator to ensure in-service safety?

- Reporting
- Crash investigations (for enforcement, with a specialist agency like the ATSB to undertake no-blame investigations)
- Accreditation
- Regulatory approvals

Question 11: Accreditation provides an alternate pathway for an entity to enter the market. Are there other purposes for which accreditation should be used in the inservice framework?

6.4 A scalable regulator

As noted in the principles in section 6.2, the size of the regulator should be efficient and scalable. In the decision RIS the NTC noted that the scope of the regulatory task to be performed by the in-service regulator will most likely be limited initially. Stakeholder feedback highlighted that a scalable regulatory function would be an effective way to manage the regulatory task in time for initial commercial deployment while ensuring the regulator's mandate responds to changes in the market over time.

Preliminary targeted consultation to this paper suggests that while a phased approach to implementing regulatory functions is preferred, the in-service regulator would still need to ensure minimum safety standards for ADSs are met by ADSEs. The in-service regulator would also need the ability to respond appropriately to safety breaches.

Following commencement of the AVSL, it is anticipated that the focus of the in-service regulator would be on working collaboratively with regulated entities to identify and resolve safety issues as they arise. The AVSL would provide the in-service regulator with the ability to take punitive action against regulated entities if required, but it is anticipated that in the period immediately following the commencement of the AVSL, the in-service regulator's focus would be on achieving safer outcomes in collaboration with ADSEs.

6.4.1 Functions that the regulator is likely to undertake immediately

The NTC expects that the in-service regulator will perform some functions immediately following commencement of the AVSL – for example, monitoring, enforcement, education and guidance, research, engagement with states and territories and serious crash investigation (in cooperation with state and territory police, if the regulator were to have this function).

While the in-service regulator will work collaboratively with regulated entities to achieve safety outcomes on commencement of the AVSL, it will have the ability to take punitive enforcement action if necessary. This may be required for instance if there is deliberate and persistent noncompliance by a regulated entity and the risk posed by the behaviour is considered serious enough to warrant punitive action. The enforcement powers (discussed in chapter 7) would provide the in-service regulator with a range of enforcement tools ranging in severity and that prosecution or the imposition of penalties may not necessarily be the first enforcement option.

The AVSL may need to provide the in-service regulator with the ability to delegate functions and to enter into agreements with other agencies for the performance of critical functions in the early stages after commencement of the AVSL. This could allow the national law to be enforced and administered while the in-service regulator develops its capacity and systems. The Productivity Commission has noted that service-level agreements with state and territory regulators can be useful in a transition to a national regime but that long-term reliance on third parties can delay national regulators reaching maturity (Productivity Commission, 2020, p. 8).

During its start-up phase, the in-service regulator will develop a strategy and timetable for phasing in other elements of its functions. This will include a consideration of resource implications of the timetable.

Question 12: Do you agree with the functions the regulator is likely to perform in the initial phase following commencement of the AVSL?

6.4.2 Functions of the regulator that are likely to be introduced over time

As the regulatory task to be performed by the in-service regulator increases, either through an increase in functions or in the size of the community to be regulated, the regulator will scale up its monitoring, enforcement, education and guidance and research activities.

Other functions that the in-service regulator will begin to perform over time include developing standards and rules, reporting, accrediting ADSEs and regulatory approvals for modifications (if the regulator had these last two functions).

6.5 Setting up a new regulator

Preliminary consultation with agencies involved in setting up a regulator indicates that many operational and legal matters must be worked through before the regulator can begin performing even a limited range of functions. This would include, for example:

- mapping and formulating business requirements for specifying IT systems
- developing IT systems and establishing databases with the necessary interfaces with other databases
- developing service-level agreements for corporate support functions
- processes to hire staff with the right mix of skills and capabilities to support the functions to be performed by the regulator
- legislative and operational processes to appoint the head of the regulator (for example, managing the recruitment process for the role of the head, obtaining relevant ministerial approval to the appointment and managing the proclamation process and gazettal for appointment).

This is not an exhaustive list. Establishing the in-service regulator will require a dedicated project team or a project office to manage these issues in the period before commencement. The project team could be housed within an existing regulator or agency. The structure of the project and funding arrangements for the team will need to be considered further once the functions and powers of the in-service regulator have been determined. It is proposed that the project team be set up ahead of the commencement of AVSL so that the physical, operational and legal infrastructure for the new regulator is in place from the date of commencement.

Preliminary targeted consultation has suggested that if the development of regulations and operational policies that form part of the in-service safety framework are to proceed in parallel with the setting up of the in-service regulator, accountable officials for the in-service regulator may need to be appointed ahead of the commencement of the regulatory scheme.

7 Compliance and enforcement powers of the in-service regulator

Key points

- The in-service regulator will need a full suite of compliance and enforcement powers to ensure compliance with the AVSL.
- The Regulatory Powers (Standard Provisions) Act 2014 (Cwlth) provides a baseline for the compliance and enforcement powers that are required by the in-service regulator.
- Additional powers may be required to supplement the baseline powers to complete the full suite of proposed powers.

7.1 Purpose of this chapter

The purpose of this chapter is to:

- describe the compliance and enforcement powers required by the in-service safety regulator drawing on a baseline from those proposed in the *Regulatory Powers (Standard Provisions) Act 2014* (Cwlth) (Regulatory Powers Act)
- identify additional powers required to supplement these powers.

7.2 Context

This chapter considers the powers that are necessary to support the compliance and enforcement functions of the in-service regulator.

To carry out its compliance and enforcement functions, the in-service regulator will need:

- monitoring and investigation powers to evaluate the conduct of the parties regulated by the AVSL, and to be able to gather information and evidence about any contraventions
- powers to take enforcement action once a potential breach has been identified for example, issuing infringement notices or applying for civil penalty orders or injunctions.

The in-service regulator will need to adopt a strategic and graduated risk-based compliance and enforcement strategy. A risk-based approach will allow the regulator to focus its resources where the risks are greatest and to tailor its enforcement responses to the level of risk posed by noncompliance.

The overall objective of the in-service compliance framework is to prioritise human safety while enabling the safe operation of automated vehicles and not creating unnecessary barriers to deployment. The general safety duty is the central feature of the AVSL. It enables a flexible approach to ensuring safety for each ADS. A large part of the regulator's role when a general safety duty applies is to make certain that regulated parties have systems in place to ensure safety and to work with them to resolve safety issues as they arise. The NTC considers that some prescriptive requirements may be required to support this collaborative approach – for example, reporting of 'safety incidents' by the ADSE. The tools proposed here allow for a range of non-punitive, collaborative action by the regulator to achieve safety outcomes without imposing unnecessary compliance burdens on ADSEs.

A risk-based approach to compliance and enforcement will need to ensure the regulatory response is commensurate with the seriousness of the breach and the level of harm. The inservice regulator will need the powers to take credible action and apply proportionate and appropriate sanctions for effective deterrence where necessary.

7.3 Powers

The in-service regulator will need a range of monitoring and investigation powers to effectively perform its compliance and enforcement functions. In 2019, the NTC consulted on governance arrangements for the in-service safety of automated vehicles, including the powers that a regulator would need to perform its functions.⁶³ Based on analysis and stakeholder feedback, in the decision RIS the NTC proposed a range of powers that the inservice regulator would need to effectively regulate the in-service safety risks of automated vehicles. These are discussed in greater detail below. Some powers that were not included in the 2019 consultation and that may warrant consideration are also discussed.

7.3.1 Monitoring and investigation powers

The general safety duty requires ADSEs to anticipate risks to the in-service safety of automated vehicles and to prevent those risks from occurring so far as reasonably practicable. To comply with the general safety duty, it is expected that ADSEs would have a documented safety management system and policies and work procedures to manage safety risks. Some of these policies and procedures would have been developed by the ADSE to demonstrate compliance against the safety criteria at first supply. They would need to be updated as new safety risks are detected and gaps in the safety management system are identified. The ADSE would also need to manage safety issues as they arise.

In contrast to other approaches, where a general safety duty applies, an important part of the regulator's role is to ensure that regulated parties have proper systems in place for safeguarding safety and to identify and to work with them to resolve safety issues as they arise. An example is given below.

Scenario - Use of audit and information gathering powers

A flaw in an ADSE's original design validation process has resulted in its automated vehicles requiring a longer braking time (the time it takes to come to a halt after the brakes are applied) than anticipated. This issue only arose once the vehicles had been in service for a few years.

The ADSE should have a process in place to track this kind of issue, to assess the severity of the problem and the safety risk it poses. Depending on the safety risk, the ADSE may need to 'fix' the issue through a software update and inform the vehicle users affected by the issue.

The regulator will need powers to make sure it can proactively or reactively audit the policies and procedures that form the ADSE's safety management system to ensure that that the system can identify and manage this type of safety risk. It will also need the power to require information from the ADSE about the issue to examine the ADSE's compliance with its general safety duty.

⁶³ The *In-service safety for automated vehicles:* Consultation Regulation Impact Statement (July 2019) can be found at <u>https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Consultation%20RIS%20-%20In-service%20safety%20for%20automated%20vehicles.pdf</u>.

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The monitoring and investigation powers that the in-service regulator may require include the following.

Audit powers: The in-service regulator would need the power to audit the ADSE's safety management system to determine whether the ADSE's policies and procedures will enable it to identify, assess and mitigate in-service safety risks – for example, if the processes and policies in place are sufficient to monitor and oversee the safety impacts of any in-service modifications. Audit powers are also needed to ensure ADSEs implement the safety management systems that they disclosed to meet the safety criteria at first supply. The ADSE's safety management system will need to be set up to enable audit by the in-service regulator. For example, policies and procedures that form part of the safety management system will need to be documented, and records will need to be maintained of safety risks that are identified and how they are treated. The in-service regulator will need the power to audit ADSEs on a periodically as well as on an ad-hoc basis if required in response to a specific event.

The auditing powers may need to be supported by corresponding prescriptive requirements on the ADSE – for example, a requirement to report 'safety incidents' or to maintain documented safety management systems.

Inspection powers: The in-service regulator would need the power to access records and relevant data to assess an ADSE's compliance with the general safety duty, a remote driver's compliance with obligations imposed under the AVSL or to investigate any other suspected contravention of that law. This may include:

- powers to make enquiries with and interview relevant persons (the relevant persons could be any person with information relevant to a contravention of the AVSL)
- powers to require the production of data and information for example, the ADSE's log of safety incidents or event data in relation to an accident involving an automated vehicle (this power to require information from the ADSE would be supported by corresponding prescriptive requirements imposed on the ADSE – for example, to maintain a log of safety incidents)
- powers to direct that the ADSE secure electronic records and data that may be evidence in an investigation.

Entry and seizure powers: The in-service regulator would need the ability to enter premises and seize documents and other evidence. These powers may include:

- rights of entry (for example, to enter business premises to access records relevant to assessing compliance with the general safety duty or to investigate a contravention)
- the ability to access relevant documents and to examine, copy and remove them from premises
- powers to seize or embargo evidence relevant to an investigation.

Information access, collection and sharing powers: The in-service regulator will need the power to access, collect, use and disclose information that it receives from a range of sources including from/to ADSEs,⁶⁴ other regulators (for example, the first-supply regulator), registration and licensing authorities, law enforcement agencies and road management agencies:

⁶⁴ This requirement comes from the 'data sharing and recording' safety criteria, which ADSEs must self-certify against at first supply.

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- to ensure the general safe operation of the ADS
- for the purpose of enforcing road traffic laws.

Chapter 10 considers the information exchange arrangements that will need to be put in place with relevant agencies.

7.3.2 Enforcement powers

The in-service regulator will need a full suite of enforcement powers so it can tailor its enforcement response to the nature and seriousness of the breach and take effective enforcement action where required. Enforcement action may be taken by administrative action or civil or criminal action.

Improvement notices: The in-service regulator may seek to require a person to take action to stop a contravention from occurring or to remedy matters that give rise to the contravention. Improvement notices are a less formal compliance option. For example, an improvement notice may be used in early instances of less serious noncompliance, but a formal warning may be used where there has been recurring noncompliance. This approach places the recipient on notice that formal action will follow if noncompliance recurs.

Directions to act: The in-service regulator may need the power to issue directions to act – for example, to direct an ADSE to issue updates or send out advisory information to registered owners of vehicles.

Infringement notices: An infringement notice is a notice that sets out the particulars of the alleged contravention and a penalty for that contravention. An infringement notice can be given by an 'authorised person'⁶⁵ if the officer believes on reasonable grounds that the contravention has occurred. If the regulated entity pays the infringement fine, the breaches alleged in the notice will be resolved and the regulator is prevented from seeking civil penalty orders or criminal prosecution. As discussed in chapter 8, the use of infringement notices for breaches of road rules by human drivers is part of a compliance tool kit that focuses on influencing human behaviour. As such, it may be ineffective in influencing ADS compliance with road traffic laws. However, infringement notices may still be used as part of a strategic and graduated compliance response to lower risk breaches of the AVSL by ADSEs. The use of infringement notices in these circumstances would allow for more coercive enforcement responses if noncompliance continues. The infringement penalties will need to be set at a sufficiently high level to serve as an effective compliance incentive for a corporation.

Formal warnings: In certain instances, the in-service regulator may want to issue a formal warning to place an ADSE on notice that it has identified issues of concern and warning them that stronger enforcement action may be taken if the noncompliance is not rectified or it recurs. This would give the ADSE an opportunity to rectify the issues of concern that are identified in the formal warning.

Enforceable undertakings: Enforceable undertakings are binding agreements that can be enforced by a court. Enforceable undertakings can enable a tailored and flexible resolution to issues of concern that are developed in consultation with regulated entities. They can provide a cost-effective and timely outcome compared with litigation. For instance, the inservice regulator may accept an enforceable undertaking from an ADSE that they will take specified action within a certain period – for example, to 'ensure future software updates be verified by a qualified third party prior to use in-service'. If the ADSE does not comply with the enforceable undertaking, the in-service regulator can apply for a court order to enforce

⁶⁵ For example, in the RVSA, s 55(2), an authorised person includes the Secretary, or a Senior Executive Service (SES) (or acting SES) employee of the relevant department (DITRDC).

compliance. The court may impose a financial penalty for breach of the enforceable undertaking. The in-service regulator could also prosecute the original contravention.

Information about an enforceable undertaking under the RVSA must be published on DITRDC's website. The publication must include notice of the decision to accept an undertaking given in relation to the breach and the name of the person who gave the undertaking.⁶⁶ This requirement could be applied to enforceable undertakings under the AVSL to ensure greater transparency and deterrence.

Injunctions: An injunction is a court order that a person stops doing a particular thing or compelling the performance of a thing a person is already obliged to do under the law.

The provisions that can be enforced by way of an injunction would need to be specified in legislation. The general safety duty or the prescriptive obligations in the AVSL may be specified as provisions in respect of which a court could grant an injunction if the ADSE has engaged, or is engaging, or proposes to engage, in conduct that would contravene those provisions.

The regulator would have standing to apply to the court seeking an injunction. The AVSL could also provide other parties, such as road managers, with standing to seek relief in the court without relying on the regulator to take action.

The standard of proof for an injunction is the balance of probabilities; however, injunctions are highly discretionary. An injunction is more likely to be granted for a breach that poses a safety risk and could be mitigated through an injunction (that an injunction would not be futile). An injunction is less likely to be granted for a minor technical breach that does not pose an urgent risk to safety.

An injunction would most likely be used in instances where less coercive compliance strategies may have failed or where the safety risk posed by noncompliance is very high. For instance, the in-service regulator may have issued a direction to act requiring an ADSE to reduce its ODD or modify its operation and the ADSE fails to comply. Any injunction granted would be most likely sought and granted in very specific terms – for example, 'cease operating ADS version 2.0 in vehicles with LIDAR sensors produced before April 2025'.

Recall powers: In the consultation RIS the NTC consulted on whether the in-service regulator should have a recall power and received some feedback that it should. The decision RIS noted that the RVSA provides a broad recall power which the NTC understands could be used to recall automated vehicles for some in-service safety breaches. This will depend on appropriate information flows from the in-service regulator to the first-supply regulator about a relevant breach.

It is expected that the in-service regulator will liaise with the first-supply regulator to manage emerging safety risks. If a breach of the general safety duty by an ADSE is considered to pose a serious safety risk, the in-service regulator would work closely with the first-supply regulator to provide information about the breach and an assessment of the safety risk posed by the breach. This would facilitate a decision by the first-supply regulator as to whether a vehicle recall should be initiated.

Some of the proposals in this paper (in chapters 4 and 5) may have the effect of enabling ADS market entry through approval by the in-service regulator under the AVSL. The RVSA recall provisions will not extend to those ADSs when they are in service. In relation to those ADSs, the in-service regulator would only have recourse to the compliance and enforcement tools discussed in this chapter.

⁶⁶ RVSA, s 57(3).
Power to suspend the operation of an ADS until a safety issue is resolved by the

ADSE: In preliminary targeted consultation, stakeholders have suggested that the in-service regulator may need the power to suspend the operation of an ADS in a vehicle until a safety risk is resolved by the ADSE. Due to the systemic risks posed by ADSs, the exercise of this power could potentially extend to an entire fleet of automated vehicles.

The in-service regulator may, for example, exercise this power to direct an ADSE to suspend operations until it satisfies the in-service regulator that it has robust policies and procedures in place to identify and mitigate or eliminate safety risks as they arise. It is unlikely that the in-service regulator would use this power unless there was a serious and imminent risk to safety and the ADSE had been unwilling to work collaboratively with the in-service regulator to resolve safety issues.

The NTC notes that the exercise of this power could have significant consequences for the ADSE's business operations as well as for users and registered owners of affected automated vehicles.

Similar powers can be found in other legislation. For example, s 576A of the HVNL⁶⁷ provides that an authorised officer may give a person with control over an activity involving a heavy vehicle, a direction prohibiting the carrying out of the activity, or the carrying on of the activity in a specified way, until certain matters are remedied. The authorised officer can only give the direction if they reasonably believe the relevant activity presents an immediate or imminent serious risk to the health or safety of a person. Arguably, the exercise of the power under s 576A of the HVNL is less intrusive and would have a less significant impact than a power that could be exercised in relation to an entire fleet of automated vehicles.

Section 30DC of the *Civil Aviation Act 1988* gives CASA the ability to suspend a civil aviation authorisation where it has reasonable grounds to believe that the holder of the authorisation has engaged, is engaged, or is likely to engage in conduct that poses a serious and imminent risk to air safety. However, the suspension ends at the end of the fifth business day after the holder was notified of the suspension, unless CASA makes an application to the Federal Court before that time (s 30DE). If the Federal Court is similarly satisfied that there are reasonable grounds to believe that the holder of the authorisation has or will engage in conduct that poses a serious and imminent risk to air safety, it can make an order that prohibits the holder from doing anything authorised by the authorisation but that, without the authorisation, would be unlawful (subsection 30DE(2)). The provisions in the Civil Aviation Act strike a balance between giving the regulator the power to intervene if there is a serious and imminent safety risk while protecting the rights of the authorisation holder by requiring scrutiny by the Federal Court within a reasonably short period.

As discussed above, the recall powers available to the first-supply regulator under the RVSA enable it to direct an ADSE (as the type approval holder) to take remedial action in relation to the safety risks posed by unsafe ADS. If the in-service regulator were to be given a power to suspend operation of an ADS, it would likely need to consider whether action was best taken under this power or the first-supply recall power.

If it is necessary for the in-service regulator to have the ability to suspend the operation of an ADS until a safety issue is resolved by the ADSE, accountability mechanisms similar to that provided in the Civil Aviation Act may be required. The AVSL may need to provide that the power is available where there is an immediate or imminent serious threat to safety and that any prohibition order made by the in-service regulator lapses within a short period unless the relevant court makes an order in similar terms.

The NTC is not proposing that the in-service regulator have the power to permanently suspend an ADSE. The effect would be that the ADSE would need to disengage the ADS

⁶⁷ Heavy Vehicle National Law (Qld) 2012.

that it supports and prevent them from operating. This could have significant consumer impacts for users of automated vehicles, both for private vehicle owners and more broadly – for example, if the ADSE plays a critical role in a public transport system. In cases where an ADSE is negligent in performing its general safety duty or deliberately noncompliant, the inservice regulator can exercise a range of compliance and enforcement options against the ADSE including the ultimate sanction of criminal prosecution of the ADSE and/or its executive officers.

Question 13: Are the proposed compliance and enforcement powers proportionate to meet the objective of safely operating automated vehicles in Australia?

- **Question 14:** Do you consider that the in-service regulator should have any of the following powers?
 - Recall powers
 - Power to suspend the operation of an ADS until a safety issue is resolved by the ADSE
 - Power to permanently suspend an ADSE from operating its ADS. In what circumstances would such a suspension be warranted?

7.4 Prescriptive requirements and sanctions

Prescriptive requirements that the AVSL may impose on ADSEs are discussed throughout this paper. Broadly these include requirements that:

- support ADSE compliance with the general safety duty (possible requirements are described in section 3.5.1)
- support the transfer of an ADSE's responsibility for an ADS to a new entity and safe in-service modifications (these are discussed in chapters 4 and 5)
- support roadside enforcement officers in performance of their functions for example, the requirement that an ADSE must provide the in-service regulator (and potentially the roadside enforcement agencies) with an enforcement interaction protocol
- give effect to certain first-supply criteria in-service for example, the data recording and sharing requirement.

There may also be prescriptive requirements that could support compliance and enforcement under the AVSL – for example, the requirements to support the in-service regulator's auditing powers as discussed in this chapter. These may not necessarily fall under the general safety duty, as is the case for the prescriptive duties in section 3.5.1.

Appendix B summarises the prescriptive requirements that are proposed and identifies whether a breach of the requirement is a civil penalty offence or a criminal offence.

Question 15: Do you consider that additional prescriptive requirements may be needed to support a risk-based approach to compliance and enforcement under the AVSL? Please provide examples.

Question 16: Please share your views on the illustrative penalties set out in appendix B.

Civil penalty provisions: Civil penalty provisions punish the offender by imposing a penalty without the stigma of a criminal conviction.

Civil procedure rules apply to civil penalty proceedings.⁶⁸ The common law privilege against self-incrimination and the privilege against exposure to a penalty extend to natural person defendants. While the standard of proof is lower than the criminal burden of 'beyond reasonable doubt', the regulator would still need to satisfy the court that breach of the law has occurred.⁶⁹

In Appendix B a number of offences are identified as civil penalty offences. Together with the compliance and enforcement tools described in this chapter, they provide the in-service regulator with a range of enforcement options that can escalate in severity. Given the difference between the criminal and civil standards of proof, it will be easier to establish liability for civil as opposed to criminal penalties. The increased likelihood of the imposition of civil penalties enhances their utility as a compliance tool.

Criminal prosecution

The NTC considers that criminal sanctions are appropriate for certain more serious breaches of the AVSL. These include the following:

- A breach of the general safety duty by the ADSE. Breaches of safety duties in WHS legislation and the HVNL are criminal offences. This reflects a broad community interest in ensuring that those who have a duty of care but do not observe that duty should be liable to a criminal sanction for placing another person's safety at risk. The in-service regulator will be able to use a range of enforcement tools such as formal warnings or enforceable undertakings to ensure ADSE compliance with the general safety duty, but it would also be able to apply the ultimate sanction of criminal prosecution where appropriate. The threat of criminal consequences should provide a significant deterrent against a breach of the general safety duty.
- Falsification by an ADSE of information that it provides to the in-service regulator. The NTC considers that falsification of information would indicate a deliberate intention to prevent or hinder the in-service regulator in the performance of its functions. The threat of criminal prosecution would provide a significant deterrent to this kind of behaviour.
- A breach of the prohibition on operation of an ADS where there is no responsible ADSE. A key objective of the in-service regulatory framework is to ensure there is a legal entity responsible for the ADS while it is in operation. A breach of this requirement has the potential to undermine the entire framework. The threat of criminal prosecution should provide a significant deterrence against a breach.

Where an ADSE breaches the general safety duty and the in-service regulator finds that the senior executives of the ADSE did not meet their due diligence obligations in relation to that breach, criminal sanctions may apply against the responsible senior executives.

An example of how the in-service regulator may use a range of enforcement powers is below.

⁶⁸ See, for example, Corporations Act s 1317L; Rich v ASIC (2004) 220 CLR 129, 143-4 [27].

⁶⁹ Briginshaw v Briginshaw (1938) 60 CLR 336, 362.

Scenario - Risk-based approach to compliance and enforcement

An automated vehicle is seen on a traffic safety camera failing to give way to another vehicle that had right of way. Fortunately, there was no collision.

The road authority notifies the in-service regulator, including providing footage of the incident. The in-service regulator contacts the ADSE advising of the incident and seeking an explanation, as well as relevant data in the ADSE's possession.

Depending on the ADSE's response, the regulator has several options:

- If the regulator is satisfied with the explanation and the ADSE's response, and the risk to safety has been addressed, no further action is required.
- If the regulator considers that there is a potential ongoing safety issue that has not been fully addressed by the ADSE, its compliance and enforcement response will be based on assessment of a number of factors including, for example:
 - whether there is an active risk to human safety
 - the level of the risk (which could range from a low risk to a significant and immediate threat to human safety)
 - whether the incident (or the ADSE's response to it) indicates systemic issues that may pose ongoing compliance challenges
 - whether the ADSE has been the subject of prior compliance or enforcement action and the outcome of that action
 - the deterrent effect of compliance action
 - action taken by the ADSE's executive officers in relation to the breach.

If the regulator considers the safety risk posed by that instance of noncompliance is moderate, it might choose to accept an enforceable undertaking from the ADSE. The undertaking will be on the public record. Generally, in an enforceable undertaking the ADSE would agree to remedy the harm caused, accept responsibility for its actions and undertake to establish or improve its processes for complying with the AVSL.

If the regulator considers that the safety risk posed by the noncompliance is immediate and significant, it could proceed to a more coercive intervention – for example, by seeking an injunction to require certain action by the ADSE or by suspending the operation of the ADS until a safety issue is resolved.

If the ADSE has been subject to previous compliance and enforcement action and the regulator considers that the breach indicates systemic issues that pose ongoing compliance challenges and a high risk to human safety, the regulator could initiate a criminal prosecution against the ADSE for a breach of the general safety duty.

7.5 Regulatory Powers Act as a baseline

The enforcement framework for the national law would differ depending on whether it is implemented using complementary (Commonwealth and state/territory) law, or state and territory applied law.

The Regulatory Powers Act provides for a standard suite of provisions in relation to monitoring and investigation powers, and enforcement powers. The standard provisions of the Regulatory Powers Act are considered to represent best practice in relation to regulatory

powers, providing a baseline of regulatory powers for civil regulatory regimes.⁷⁰ Many of the powers identified in this chapter as being required by the in-service regulator are included in the Regulatory Powers Act.

The Regulatory Powers Act only has effect where Commonwealth Acts are drafted or amended to trigger its provisions.⁷¹ The regulatory powers provisions are contained within the Act and the 'triggering' Act references the Regulatory Powers Act and expressly identifies which provisions of the triggering Act the Regulatory Powers Act will apply to.⁷²

It is not necessary to trigger all of the Regulatory Powers Act. An Act can trigger one or several or all of the parts of the Regulatory Powers Act. There is also scope to modify the operation of the Regulatory Powers Act to suit a particular regime, such as to exclude the application of particular provisions or to provide for additional powers.⁷³

An Act might also use the Regulatory Powers Act as a baseline and provide for additional powers. For example, s 50 of the RVSA applies Pt 2 of the Regulatory Powers Act to certain provisions and information under the RVSA. Section 51 of the RVSA provides two additional powers to the monitoring powers available under Pt 2 of the Regulatory Powers Act – the power to sample anything on the premises entered under Pt 2 of the Regulatory Powers Act (paragraph 51(2)(a) of the RVSA) and the power to remove and test samples (paragraph 51(2)(b) of the RVSA). Subsection 54(3) of the RVSA modifies the operation of the Regulatory Powers Act to provide a maximum pecuniary penalty for certain civil penalty provisions despite the operation of s 85(3) of the Regulatory Powers Act.

If Commonwealth law is used to establish the national regulator (as would be the case under the complementary law approach), the legislation could be drafted to trigger necessary parts of the Regulatory Powers Act (with any modification and additions as required).

If a state and territory applied law approach is used to establish the national regulator, the monitoring, investigation and enforcement powers included in the AVSL could be based on the standard suite of monitoring, investigation and enforcement powers from the Regulatory Powers Act, but the national law would need to be drafted to include those provisions (or similar provisions).

7.6 Powers not within the Regulatory Powers Act

The Regulatory Powers Act includes baseline monitoring,⁷⁴ investigation⁷⁵ and enforcement⁷⁶ powers. These are summarised in Appendix C. It does not include the full suite of powers that identified as required by the in-service regulator in section 7.3. The additional powers that may need to be included in the AVSL over and above the baseline powers in the Regulatory Powers Act include:

powers to support the monitoring functions of the in-service regulator

⁷⁰ The federal Attorney-General's website advises 'New or amending Acts that require monitoring, investigation or enforcement powers of the kind available under the Regulatory Powers Act should be drafted to trigger the relevant provisions of that Act, unless there are compelling policy reasons to the contrary'. See *The Regulatory Powers Act – fact sheet* (August 2018) available at https://www.ag.gov.au/sites/default/files/2020-03/regulatory-powers-act-factsheet.pdf.

⁷² Attorney-General's Department, *Triggering the Regulatory Powers Act – fact sheet* (August 2018) available at <u>https://www.ag.gov.au/sites/default/files/2020-03/triggering-regulatory-powers-act-factsheet.pdf</u>.

⁷³ Ibid.

⁷⁴ Regulatory Powers Act, Pt 2

⁷⁵ Ibid., Pt 3

⁷⁶ Ibid., Pt 4

- auditing powers (including a framework to manage the integrity, confidentiality and privacy of the information that is collected through auditing)
- investigation powers to support the monitoring and enforcement functions of the in-service regulator
 - powers to request information in relation to 'reportable contraventions' or 'safety incidents' (the AVSL will need to define these terms to provide certainty to ADSEs and make noncompliance an offence)
 - powers to conduct operational checks that examine and test systems and sample products in addition to gathering evidence, data and information
- powers to support the enforcement functions of the in-service regulator
 - powers to issue improvement notices and directions to act
 - powers to suspend the operation of an ADS until a safety issue is resolved by the ADSE
- powers to support the serious accident investigation function of the in-service regulator (if this is a function of the in-service regulator). (As discussed in section 1.4.2, Pt 3 of the Regulatory Powers Act provides for the investigation powers that may be exercised when an authorised person enters premises within which he/she suspects on reasonable grounds that there may be material related to the contravention of an offence provision or a civil penalty provision)
- information access, collection, use and sharing (disclosure) powers to support the compliance and enforcement functions (as well as other functions of the in-service regulator), including the ability to compel an ADSE to provide information/data and in a certain form or with sufficient explanation as to aid interpretation.

Question 17: Has the NTC identified the additional powers that may be required by the in-service regulator in addition to the baseline powers provided in the *Regulatory Powers (Standard Provisions) Act 2014* (Cwlth)?

Key points

- 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.
- The purpose of existing infringement processes that relate to human drivers should be reconsidered in the context of the risk-based automated vehicle regulation framework being developed.
- Breaches of road rules when an ADS is engaged could also be taken as evidence of:
 - a breach of the general safety duty by the ADSE under the AVSL
 - a breach of first-supply obligations on the ADSE to comply with its statement of compliance.

8.1 Purpose of this chapter

The purpose of this chapter is to:

- identify issues roadside enforcement agencies⁷⁷ may have when they interact with automated vehicles
- discuss operational issues of road traffic law⁷⁸ breaches and the role of infringement notices
- propose that road traffic law breaches by an engaged ADS can be treated as evidence of a breach of the general safety duty and are managed by the in-service safety regulator. The first supply regulator may also consider taking enforcement action in response to road traffic law breaches.

8.2 Role of roadside enforcement

Roadside enforcement agencies play a key role in addressing road safety issues through monitoring and enforcing compliance by human drivers and other road users with road traffic laws. This role involves a range of activities like detecting impaired drivers, responding to crashes, directing traffic, moving stalled vehicles and enforcing parking restrictions. Roadside enforcement agencies are discussed further in chapter 9.

⁷⁷ In this paper the term 'roadside enforcement agencies' describes state and territory transport and law enforcement agencies, the NHVR and local government authorised officers.

⁷⁸ This chapter's analysis focuses on road traffic laws that regulate the dynamic driving task and does not extend to include non-dynamic road rules such as a driver's obligation under Australian Road Rule 293 to remove from the road debris that has fallen from their vehicle.

When a vehicle's ADS is engaged, the ADSE will be legally in control of the vehicle.⁷⁹ It is likely that the role of roadside enforcement agencies will change under the risk-based regulatory framework being developed for automated vehicles. The framework will have less reliance on prescriptive rules than other transport regulation such as dangerous goods regulation. Roadside enforcement agencies will have an important observational and enforcement role as the 'eyes and ears' that identify, report and/or action observable ADS safety issues. For example, an automated vehicle travelling through a red light, speeding or otherwise operating erratically or unsafely.

The other key entities responsible for ADS in-service safety – the in-service regulator and the first-supply regulator – will not have a roadside law enforcement role.

The first-supply regulator will be responsible for assessing and granting approval to bring an ADS to market where the ADSE has been able to demonstrate it has appropriate processes for managing the safety risks that the safety criteria cover (as well as meeting all other standards relevant to the vehicle) and other first-supply obligations. The first-supply regulator's role will not include monitoring an ADS's compliance with road traffic laws, nor how an automated vehicle interacts with roadside enforcement and emergency services on the road and at the roadside.

The in-service regulator's functions and enforcement powers will focus on ensuring compliance with the AVSL. The regulator will most likely focus on monitoring and investigating an ADSE's compliance with its general safety duty to prevent in-service safety risks from eventuating so far as reasonably practicable. This enforcement activity is unlikely to involve active roadside enforcement of ADSs in operation.

Roadside enforcement agencies will have a less significant role in examining 'unobservable' safety risks – for example, instances when an ADS disengages abruptly but the human driver or fallback-ready user is able to take back control, or gradual reduction in gaps maintained between an automated vehicle and other vehicles. This compliance and enforcement function will be managed by the in-service regulator and possibly the first-supply regulator.

Roadside enforcement will need to interact with other regulators and agencies that have a role in ensuring the in-service safety of automated vehicles. These roles need to be complementary, with clear delineation of responsibilities (discussed further in chapter 9). Regulator interactions are discussed further in this chapter in the context of road traffic law breaches in section 8.5.

8.3 Key issues for effective roadside enforcement involving automated vehicles

The on-road operation of automated vehicles may cause a number of unique challenges for roadside enforcement. Some challenges may be addressed by the safety case that the ADSE makes at first supply, some may be managed by the ADSE's general safety duty and other laws that will apply to fallback-ready users. Existing roadside enforcement powers may suit many challenges; however, additional powers and changes to policies and procedures that govern roadside enforcement may be required.

Key issues for effective roadside enforcement of automated vehicles are outlined below.

⁷⁹ Agreed by the transport and infrastructure ministers in May 2018.

8.3.1 Identifying and communicating with automated vehicles

Roadside enforcement agencies are likely to require clarity on:

- how automated vehicles will recognise and respond to or interact with emergency vehicles and directions of roadside enforcement officers
- how to interact with remote drivers for example, to move around a spilled substance on the road or move a stalled automated vehicle to the side of the road
- their ability to remedy or neutralise an unsafe situation by accessing a vehicle, disabling the ADS and taking control of the vehicle.

The importance of automated vehicles being able to communicate with roadside enforcement agencies is evidenced in the obligation placed on ADSEs at first supply to demonstrate:

... how it will ensure safe interaction with emergency services (including but not limited to police, fire and ambulance services) more broadly when the ADS is engaged.⁸⁰

The NTC notes that DITRDC is currently developing the detail of this obligation.

It may be appropriate to require the ADSE to provide evidence in support of this criteria to roadside enforcement agencies and the in-service regulator. An enforcement interaction protocol, provided to relevant enforcement agencies and regulators, could address this requirement. The law enforcement interaction protocol will need to be reviewed and updated periodically by the ADSE. The ADSE could also contribute to resources used by first responders, like ANCAP's rescue application.⁸¹

Transport ministers agreed in June 2020 that the AVSL will enable regulation for remote driving (where individuals located outside of the vehicle control the driving task). Roadside enforcement will require clarity on how to interact with an automated vehicle that is being operated by a remote driver.

Ongoing engagement by roadside enforcement agencies with industry should enhance understanding of the features and limits of automated technology. Agencies maintaining their awareness of overseas and international regulatory developments will also assist. Key industry and regulatory developments are summarised in Appendix D.

A review to ensure that roadside enforcement officers have appropriate powers will also be important. This is discussed in section 8.4.

8.3.2 Role of fallback-ready users or occupants of an automated vehicle

There may be circumstances where roadside enforcement action is required against fallback-ready users and occupants of an automated vehicle. Roadside enforcement agencies will require clarity on the obligations that these parties have.

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.

⁸⁰ The first supply safety criteria and obligations can be found in Appendix A.

⁸¹ More information on the rescue application can be found at <u>https://www.ancap.com.au/apps</u>.

Infrastructure and transport ministers agreed in June 2020 that state and territory laws should provide rules for the fallback-ready user. Further work will be required to identify duties (new and existing) that can be placed on a fallback-ready user.

8.3.3 Identifying who is in control of an automated vehicle – human or ADS

Roadside enforcement will need to assess who or what is in control of an automated vehicle at a given point in time – for example, when a speed camera detected offence occurs, when an officer observes a breach of a road traffic law, or when investigating the circumstances of a crash. Who or what is in control of a vehicle generally determines who is responsible for the actions of the vehicle, including breaches of road traffic laws.

The NTC's automated vehicle reforms have been based on two assumptions relating to control:

- There must always be a legal entity responsible for a vehicle operating on a public road or public access area where road traffic laws apply.
- There can only be one legal entity responsible at one time, but responsibility could shift between parties.

Infrastructure and transport ministers agreed in May 2018 that when the ADS is engaged, the ADSE is legally in control of the vehicle and so is responsible for complying with dynamic driving task obligations.

At this stage, industry and international developments indicate that there will not be physical signals or indications on vehicles that identify when an ADS is engaged. It will be crucial for roadside enforcement to have access to data to determine the party who was in control of the vehicle to determine whether enforcement action should be taken and, if so, against the most appropriate party. Data access is discussed in section 8.3.5.

8.3.4 How to manage breaches of road traffic laws when the ADS is engaged

This is discussed in detail in section 8.5.

8.3.5 Access to automated vehicle generated data

Roadside enforcement agencies will require vehicle generated data on the following:

- For roadside enforcement who was in control at a point in time (the ADS or human) and potentially the level of automation engaged, and any transition requests to the driver or fallback-ready user and information on factors that caused or contributed to the breach.
- For crash investigations event data recorder information on the vehicle's location, speed, brake activation and acceleration; and information on the circumstances that may have caused or contributed to an incident.

Agencies could require the data above, at the time of an observed incident, at the time of assessing responsibility for an incident and when they are conducting a post-crash investigation.

The ADSE, when it seeks to bring an ADS to market, will have to demonstrate how it will record information about the driving performance of the vehicle.⁸² The information recorded will relate to the general safe operation of the ADS (including data relating to crashes) and enforcing road traffic laws. Recorded data must be provided by the ADSE to relevant parties (including police and road agencies) as necessary and in compliance with requirements to

⁸² Criteria A.2.1 in Appendix A.

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manage information under privacy laws. The data provided must be standardised, readable and accessible to ensure its usability and relevance. The ADSE may also be able to adequately demonstrate it can facilitate real-time access by roadside enforcement agencies at the roadside.

The first-supply statement of compliance does not prescribe how the ADS will record and share data with roadside enforcement agencies; however, over time this will be influenced by industry and international developments such as the Data Storage Systems for Automated Driving Systems (DSSAD). DSSAD is a proposal to define the data that vehicles with an ADS are required to record and will complement the role that event data recorders play in crash investigation. The proposal is being considered at the WP.29 international forum. Further detail on DSSAD is in chapter 10.

The NTC proposes that the ADSE has an in-service data recording and sharing obligation that gives effect to the first-supply criteria. The proposed obligation ensures that the requirements placed on the ADSE at first supply continue while the ADS is in service.

Methods of real-time recording of event data are being developed; however, the processes that will enable access to real-time data (for example, via an intercept) remains unclear. If roadside enforcement agencies are unable to access real-time data at the roadside, this may impact on their enforcement approach to automated vehicles. This could include making decisions on whether to issue an infringement notice for a road traffic law breach against the driver (or registered owner) or the ADSE, or to not issue an infringement to any party and instead report the matter to the in-service regulator.

A similar nomination process as exists for camera-detected offence notices may be needed, with infringements issued to the human driver or the registered owner/operator in the first instance. However, processes will be needed to ensure individuals can easily nominate that the ADS was engaged and for the in-service regulator to access information from the ADSE to determine the validity of these claims. Where it is determined the ADS was engaged, the infringement notice issued to the human user would be revoked. These processes would need to be reviewed to minimise the burden on the fallback-ready user (for example, as data access processes improve for roadside enforcement officers). Whether infringement notices are an effective tool against ADSEs is discussed in section 8.5.

Government agencies historically have had difficulties accessing data from manufacturers:

- when the data is located overseas
- due to technical challenges accessing the electronic interface, or
- due to refusals to allow access to data for crash investigations.

Roadside enforcement agencies are likely to have improved access to data through the implementation of the ADSEs' first-supply data obligations, including the requirement that data is stored in Australia, the explicit extension of first-supply data obligations to the inservice operation of the ADS and development of the DSSAD.

The authorising framework governing access by roadside enforcement agencies to information concerning automated vehicle incidents will need to be developed. For example, a roadside enforcement officer that needs to make an assessment about the entity in control of a vehicle (a human or the ADS) will need a legal basis to obtain that information. Roadside enforcement agencies will require clear authority to access information under state and territory laws (and the HVNL) as well as the AVSL. Agencies will also need a clear legal basis to disclose information to the in-service regulator for further investigation. These arrangements will need to acknowledge and consider regulated privacy protections for personal information. This is discussed further in chapter 10.

8.3.6 Development of nationally consistent roadside enforcement

Automated technology is nascent technology, and many operational aspects of the technology are still under development. Stakeholders consulted to inform this paper suggested that Australia's roadside enforcement agencies should develop a nationally consistent approach to enforcement through collaborative development of policy, operating procedures and training for police, first responders and other officials about:

- interacting with automated vehicles
- determining road traffic law breaches
- responding to and investigating automated vehicle crashes.

There have been similar proposals in overseas jurisdictions.83

Government stakeholders considered that without national consistency, an unnecessary burden on ADSEs, human drivers and fallback-ready users could be created. There would also be risks that automated vehicle safety issues are not detected and managed consistently across jurisdictions.

Question 18: Are there other roadside enforcement issues relating to automated vehicle in-service safety that the NTC should consider?

Question 19: How should ADSEs advise on their ADS's interaction with roadside enforcement agencies? Should the AVSL require the ADSE to provide a law enforcement interaction protocol to the in-service regulator and/or roadside enforcement agencies?

8.4 Appropriate powers to address roadside safety risks of automated vehicles

Roadside enforcement officers exercise powers under a range of instruments; for example, Queensland Police has enforcement powers under primary Acts such as the *Police Powers and Responsibilities Act 2000* and also transport Acts and regulations like the *Transport Operations (Road Use Management) Act 1995.* Some current roadside enforcement officers' powers may be sufficient to manage the safety risks of automated vehicles. Some examples are:

- power to stop a vehicle⁸⁴
- power to require a vehicle be moved⁸⁵
- power to suspend/cancel vehicle registration (singular vehicle)
- power to prohibit use of an unsafe or defective vehicle⁸⁶

⁸³ The Governors Highway Safety Association in the United States has advocated for a coordinated approach to traffic safety issues of automated vehicles. GHSA's white paper *Automated Vehicle Safety Expert Panel: Engaging Drivers and Law Enforcement* (August 2019) is available at https://www.ghsa.org/sites/default/files/2019-08/AV%20Safety%20White%20Paper FINAL.pdf.

⁸⁴ Transport Operations (Road Use Management) Act 1995 (Qld) ss 31 and 32.

⁸⁵ Police Powers and Responsibilities Act 2000 (Qld) s 61.

⁸⁶ Transport Operations (Road Use Management) Act 1995 (Qld) s 66.

- power to require a fleet or class of heavy vehicles to be presented for inspection where there is a reasonable belief that the vehicle(s) are defective (without the need for an authorised officer to physically sight each vehicle)⁸⁷
- power to conduct a crash investigation.⁸⁸

However, 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.

An audit of existing state and territory roadside enforcement powers will be required to assess their adequacy to regulate roadside safety risks of automated vehicles. This task will require identifying a range of scenarios to assess the application of provisions. A legislative analysis will identify gaps or provisions that require clarification to ensure they apply to automated vehicles. This task will inform further work by jurisdictions on whether additional powers are required to manage the roadside safety risks of automated vehicles within state and territory laws.

8.5 Road traffic law breaches and links to the general safety duty and statement of compliance

Breaches of road traffic laws (for example, not stopping at a stop sign) when an ADS is engaged could be taken as evidence of a contravention of different regulatory regimes. A breach could be:

- a breach of the road traffic and road safety laws applying in a state or territory
- a breach of the first-supply statement of compliance under the RVSA
- a breach of the general safety duty in the AVSL.

Each regime has a unique compliance and enforcement framework attached.

The NTC is seeking stakeholder feedback on how and when a road traffic law breach should be taken as evidence of a breach of the general safety duty in the AVSL. A road traffic law breach may not only be addressed through the general safety duty.

An important issue for roadside enforcement agencies and the in-service regulator will be how instances of observable breaches of road traffic laws will trigger an investigation into a potential breach of the ADSE's general safety duty under the AVSL. Road traffic law breaches could also indicate issues for the first-supply regulator to investigate.

An enforcement approach that accommodates road traffic law breaches as a trigger mechanism for a general safety duty investigation recognises that individual breaches of road traffic laws could be symptomatic of systemic technical failure, rather than human error or one-off ADS errors.

8.5.1 Road traffic law breaches and the penalties applying to an ADS

The model Australian Road Rules (ARRs) provide 'rules across Australia for all road users and specify behaviour for all road users that supports the safe and efficient use of roads in Australia.'⁸⁹ The ARRs provide dynamic driving task obligations on human drivers. However,

⁸⁷ Heavy Vehicle National Law 2012 (Qld) s 522.

⁸⁸ Police Powers and Responsibilities Act 2000 (Qld) s 56.

⁸⁹ Australian Road Rules 2019 r 3.

many road traffic laws that incorporate the ARR obligations could apply to an ADS because the ADS will be performing the dynamic driving task – for example:

- driving to the speed limit⁹⁰
- the requirement to give way⁹¹
- obeying traffic lights⁹²

State and territory laws have offences for breaches of road traffic laws.⁹³ Current offence and penalty provisions focus on ensuring that human drivers have sufficient motivation to drive safely. Incentives to comply with road traffic laws are based on individual penalties given to the human driver, with penalties including fines, demerit point losses, licence suspensions, vehicle impounding and imprisonment.

This individual penalty approach for a specific offence is unlikely to incentivise ADS compliance with road traffic laws. Also, existing penalties are not relevant to an ADSE, the entity legally responsible for the ADS when it is engaged. For example, demerit points on a driver's licence are applicable to a 'natural person', and sanctions to suspend a driver's licence will not apply to an ADSE because it is a corporation. Other penalties, such as vehicle impounding, would penalise the registered operator rather than the ADSE.

An appropriate roadside enforcement approach for ADS breaches of road traffic laws should be developed. This could involve establishing policies and procedures to determine which incidents should be recorded in enforcement agency systems without triggering the individual penalties that usually attach to the offence and apply to a human driver. These may include incidents where control of the vehicle (human or ADS or remote driver) is unclear during an observed safety incident, or where road safety cameras (speed, point-topoint, red light) detect a road traffic breach. The NTC is seeking feedback on whether these incidents should be managed:

- through issuing infringement notices to the human driver or registered owner/operator in the first instance, with existing processes to nominate another party responsible (the ADSE or remote driver), or
- by reporting to the in-service regulator and/or the first-supply regulator to investigate whether the incident is evidence of a systemic safety issue that is more appropriately considered under those regulator's frameworks. An interaction of this nature would require a collaborative relationship between relevant regulators and agencies. Agency relationships are discussed in chapter 9.

8.5.2 Breach of road traffic laws as a possible breach of the first-supply obligations

Compliance with road traffic laws is included in the first-supply safety criterion that requires the ADSE to demonstrate as part of its safety case. The criterion provides for circumstances when the ADS may breach road traffic laws in its response to foreseeable and unusual conditions such as object and crash detection and avoidance. The criterion provides:

The applicant must also demonstrate how the ADS will respond in a safe way where strict compliance with relevant road traffic laws is not possible.⁹⁴

⁹⁰ Australian Road Rules 2019 r 20.

⁹¹ Ibid., Pt 7.

⁹² Ibid., Pt 6.

⁹³ For previous discussions on the Australian Road Rules, see the *Changing driving laws: Discussion paper* (October 2017), p. 73, and the *In-service safety for automated vehicles: Consultation Regulation Impact Statement* (July 2019).

⁹⁴ The criterion is listed in Appendix A

However, the first-supply regulator will not be able to monitor an ADS's compliance with road traffic laws. If the first-supply regulator is notified of breaches, it is possible they would amount to a breach of the ADS's first supply obligations. However, this is only likely to be the case if the incidents are indicative of a systemic issue. In that case, the first-supply regulator could use the compliance and enforcement tools available to it under the RVSA.

8.5.3 Road traffic law breach as a potential breach of the general safety duty

A breach of a road traffic law by an automated vehicle may indicate a breach by the ADSE of the general safety duty it has under the AVSL. The general safety duty is discussed in greater detail in chapter 3, but at its core, it obliges the ADSE to ensure the safe operation of an ADS so far as reasonably practicable.

The NTC proposes that investigating a breach of a road traffic law as a potential breach of the general safety duty is an appropriate response, given the risk that an individual breach is indicative of a systemic issue across that type of ADS.

A breach of a road traffic law will not, in all circumstances, constitute a breach of the general safety duty:

- A number of factors may have contributed to the road traffic law breach, and those factors may be outside the control of the ADSE to the extent that it was not reasonably practicable for the ADSE to ensure the ADS's safety.
- An ADS may breach a road traffic law in order to operate safely for example, crossing double yellow lines to avoid an object.

The NTC proposes that when a breach of a road traffic law occurs in circumstances where:

- the ADS is engaged, or
- a roadside enforcement agency forms a reasonable belief that the ADS was engaged at the time of the breach, that it should be taken as evidence of a breach of the general safety duty in the AVSL.

Responsibility for investigating general safety duty compliance will rest with the in-service regulator rather than roadside enforcement agencies. The declarations made by the ADSE in its safety case to the first-supply regulator would be a relevant factor of the in-service regulator's investigations.

Where the road traffic law breach is assessed as being caused by factors within the control of the ADSE, the in-service regulator may choose to take action from the range of its compliance and enforcement powers (discussed in chapter 7).

Mechanisms that would ensure the appropriate agency investigates possible system safety issues include:

- statutory requirements on agencies to share information, and interagency information-sharing agreements
- placing obligations on the ADSE to report ADS-engaged road rule breaches to the in-service safety regulator.

ADS road traffic law breach as a possible breach of the general safety duty

An automated vehicle (SAE level 3 or 4) with human occupants drives through a red light.

(These scenarios do not contemplate roadside access to data in real time about whether the ADS is engaged given protocols for enabling access are to be developed.)

Scenario A

The offence is detected by a road safety camera.

An infringement notice would be issued to the vehicle's registered owner, who is recorded in the jurisdiction's registration system (which may be the ADSE or an individual or another entity like a fleet operator). The registered owner can apply to nominate the ADS as the entity in control of the vehicle at the time of the incident. The jurisdiction's infringements agency would advise the ADSE that it has been nominated. If the ADSE accepts responsibility for the infringement, then it advises the infringements agency. The agency would advise the in-service regulator. The ADSE would also be required to advise the in-service regulator of the road traffic law breach. The in-service regulator could investigate the incident as a potential breach of the ADSE's obligations under the AVSL. This may include actions such as auditing the safety management practices of the ADSE. If inadequacies were detected (in the safety management systems), then the in-service regulator could decide, for example, to seek a civil penalty order against the ADSE for breach of the general safety duty.

If the ADSE refutes the 'driver in control' nomination, the ADSE could be required to produce evidence of the ADS's status at the time of the incident. If the ADSE provides compelling evidence that the ADS was not engaged, then the jurisdiction's infringement agency can choose to confirm the infringement notice against the registered owner or human driver.

Scenario B

An enforcement officer observes the vehicle's action and forms a reasonable belief that the ADS was engaged at the time of the incident (based on matters like their own observations and interviews with the vehicle occupants and witnesses). The officer would issue a report against the ADSE (which could be a form of infringement notice within the jurisdiction's systems) and report the incident to the in-service regulator. The regulator could investigate the incident as a potential breach of the ADSE's obligations under the AVSL.

Scenario C

An enforcement officer observes the vehicle's action, and it is unclear whether the ADS was engaged at the time of the incident. The officer could issue an infringement notice to the vehicle's driver/user or the registered owner. The same 'nomination of driver' process applies as in scenario A. If the ADSE accepts responsibility for the infringement, then a similar process of notification and engagement by the ADSE with the infringements agency and in-service regulator as scenario A would apply.

Question 20: Do you agree that when a breach of road traffic laws occurs and:

- the ADS is engaged, or
- a roadside enforcement agency forms a reasonable belief that the ADS was engaged at the time of the breach

that the incident should be treated as a potential breach of the general safety duty and not handled through the infringement system for human drivers?

Question 21: Do you agree that when a breach of a road traffic law occurs and a roadside enforcement agency forms a reasonable belief that the remote driver was in control of the vehicle at the time of the breach, that the incident should be referred to the in-service regulator and not handled through the infringement system for human drivers?

Question 22: Do you agree that when a breach of road traffic laws occurs and:

- it is unclear to a roadside enforcement agency which entity is in control of the vehicle at the time of a road traffic law breach, or
- a road safety camera detects a road traffic law breach

that the infringement notice be issued in the first instance to the human driver or registered owner/operator with a process to nominate the ADS or remote driver as the driver if required?

Are there other approaches that should be considered?

9 Relationship between the in-service regulator and other agencies

Key points

- The in-service regulator will need to interact with other regulators and law enforcement agencies at the Commonwealth, state/territory and local government levels to carry out its functions and to ensure a coordinated approach to safety assurance for automated vehicles.
- There will be overlapping functions and shared duties between the in-service regulator and other regulators. These will need to be clearly identified, and arrangements will be needed to ensure there is no duplication of the regulatory task.
- Information will need to be shared between the in-service regulator, other regulators and law enforcement agencies in the performance of in-service safety functions.

9.1 Purpose of this chapter

The purpose of this chapter is to:

- identify and describe the other regulators and enforcement agencies that the inservice safety regulator will need to interact with
- identify any overlapping functions to enable decisions to be made about the lead regulator where there are shared duties
- identify where data and information will need to be shared between the in-service safety regulator and other regulators or enforcement agencies (chapter 10 provides a proposal of how data and information sharing might work).

9.2 Relevant regulated parties

As discussed in chapter 2, the NTC previously consulted on the parties who will play a role in ensuring the in-service safety of automated vehicles and considered how these parties are regulated. The AVSL will regulate the ADSE, ADSE executive officers and remote drivers in relation to the in-service safety of automated vehicles. State and territory legislation will provide rules for the fallback-ready user and other relevant existing parties such as registered owners.

The in-service regulator will need to interact with and share information with other regulators and agencies:

- where a regulator has overlapping functions in relation to the parties regulated by the in-service regulator
- to support the smooth functioning of the regulatory framework for in-service safety.

9.3 Interactions with other regulators and agencies

There are a number of regulators that play a role in road safety. Existing regulators will play a role in regulating certain aspects of automated vehicle in-service safety. These include

DITRDC, state and territory vehicle and road transport agencies, road managers and police agencies. Although they have a more general jurisdiction, the various WHS authorities and product safety and consumer law regulators can investigate practices and products that affect road safety. State and territory commercial passenger transport legislation may impose safety obligations on providers of passenger services.

The in-service safety regulator will have to interact closely with some regulators and agencies, while there are others it may only interact with occasionally. The in-service safety regulator's relationship with regulators will need careful consideration, especially when it interacts with other regulators in circumstances where a regulated party performs multiple roles.

The regulators and agencies that the in-service regulator will have to interact with regularly are identified below.

9.3.1 First-supply regulator

DITRDC is the first-supply regulator and will regulate automated vehicles and automated vehicle components at their first supply to the Australian market under the RVSA.⁹⁵ The RVSA requires all road vehicles or road vehicle components imported as new or second hand to comply with the relevant ADRs at the time of manufacture and supply to the Australian market.

As noted in section 1.2.1, ADSEs will need to submit a statement of compliance to DITRDC showing how they meet a set of safety criteria and obligations before they are granted a type approval. All vehicles entering the market under that type approval will need to conform to the declaration made at first supply.

Some of the first-supply criteria have an ongoing in-service element – for example, the criteria relating to compliance with the road rules, ODD, installation of system upgrades, education/training and data sharing and recording. These criteria are proposed to be given effect in the national law and enforced by the in-service regulator.

The first-supply regulator and the in-service regulator will have overlapping compliance and enforcement responsibilities in relation to ADSs in service. For example, at first supply, the ADSE will identify the ODD of the ADS and demonstrate that the ADS is able to operate safely within its ODD, is incapable of operating outside its ODD and able to transition to a minimal risk condition when outside its ODD. For new vehicles or ADS entering the market, any change to ADS or ODD beyond the first-supply approval would require a variation of the type approval or a new type approval under the RVSA.⁹⁶ The first-supply regulator could take compliance and enforcement action under the RVSA if the ADSE breached these requirements. This could include a voluntary or compulsory recall of in-service ADSs if there is a risk of injury to any person due to the changes to the ADS or ODD. Changes to the ADS or ODD may also trigger action by the in-service regulator if the manner in which the changes were carried out or the consequence of the changes resulted in a breach by the ADSE of the general safety duty or prescriptive duties under the AVSL.

⁹⁵ The implementation of the first-supply safety criteria is being developed by DITRDC.

⁹⁶ Road Vehicles Standards Act 2018 (Cwlth) s 26; Road Vehicles Standards Rules 2019 (Cwlth) s 51.

Arrangements for interaction between the first-supply regulator and the in-service regulator will need to address:

- effective operational liaison and timely information sharing on matters relating to automated vehicle safety
- cooperation in investigations that are of mutual interest to both regulators
- cooperation and information sharing in compliance and enforcement action, including agreement on 'who takes the lead on what' in areas of overlap
- providing clarity to regulated parties about the roles of the regulators and compliance obligations under the respective legislation that they administer.

9.3.2 Roadside enforcement agencies

Several agencies play a role in roadside enforcement, including police, road transport authorised officers, NHVR officers and local government parking officers. Traffic management officers manage traffic flows, respond to on-road incidents (crashes, breakdowns and debris on roads) that affect the flow of traffic and coordinate emergency responses – for example, road closures due to floods and bushfires. NHVR officers have broad powers relating to intercepting and examining vehicles, including heavy vehicles. Local government parking officers administer and enforce restrictions on stopping and parking. The police investigate traffic offences and monitor and enforce compliance with road rules. In this paper these officers are collectively referred to as roadside enforcement officers. The role of the police in criminal investigations and enforcement is considered separately in section 9.3.3.

State, territory and local government regulators and law enforcement agencies will be responsible for enforcing the rules that apply to the fallback-ready user, as well as human drivers of automated vehicles (drivers that are not fallback-ready users). They will also regulate registered owners of automated vehicles. These regulators will play a complementary role to that performed by the in-service regulator in regulating the ADSE to ensure the safety of ADSs.

Roadside enforcement officers will in the first instance observe incidents or breaches that may require investigation by the in-service regulator – for example, an automated vehicle running a red light or breaking down in the middle of the road. These incidents could have been caused by the ADS, the remote driver or the fallback-ready user. Roadside enforcement officers will be responsible for reporting observed safety issues that are suspected to relate to the ADS (or remote driver) to the in-service safety regulator for further action.

These complementary roles and interactions will require coordination and information sharing between law enforcement and road agencies and the in-service regulator. Arrangements for interaction between the in-service regulator and roadside enforcement agencies will need to address:

- procedures for efficient functioning of the roadside enforcement model
- procedures for information sharing.

This could be done through agreement or an MoU with the lead enforcement agencies in each jurisdiction on how roadside enforcement is to be managed and by setting up a forum for regular discussions and meetings to resolve issues as they emerge.

9.3.3 Law enforcement and emergency services

This section considers the role of the police in general law enforcement and criminal investigations. First responders to the scene of a crash include police, fire services and emergency medical services. The police are responsible for investigating fatal crashes.

At first supply, an ADSE will be required to demonstrate how it will ensure that police can access accurate information about whether an ADS was engaged at a point in time, how police access to information will be facilitated at the roadside, and how the ADS will ensure safe interaction with emergency services. The in-service regulator will have a role in influencing the adoption of best practices by the ADSE in relation to data recording, access to information and safe interaction with emergency services through ongoing monitoring and enforcement of the general safety duty.

Arrangements for interaction between the in-service regulator and law enforcement and emergency services will need to address:

- procedures for information sharing
- procedures for serious crash investigations
- coordination of enforcement action in areas of overlap (for example, where there
 is an offence under state or territory criminal law and as well as a breach of
 obligations under the AVSL)
- coordination of education activity including the development of any educational material targeted at fallback-ready users, other road users and law enforcement and emergency officers.

At the Commonwealth level, the Australian Federal Police and the Australian Cyber Security Centre are responsible for cyberattack prevention/investigation. The in-service regulator will need to work and share information with the Australian Federal Police and the Australian Cyber Security Centre to investigate the origins and effects of a cyberattack.

9.3.4 National Heavy Vehicle Regulator

The preceding section discussed the role of the NHVR in traffic enforcement. This section discusses the role of the NHVR in enforcing compliance with general safety duties on certain regulated parties.

The HVNL is aimed at regulating parties who can reasonably influence the safe and efficient heavy vehicle journey. Duties are place on parties listed in the chain of responsibility – these parties include an employer of a driver and an operator of a vehicle. If the ADSE performs a role that brings it within the chain of responsibility under the HVNL (for example, if it is an employer of a driver of a heavy vehicle), it will have to comply with the primary duty under the HVNL.⁹⁷ The in-service regulator will enforce compliance by ADSEs with the general safety duty under the AVSL. There will therefore be overlapping areas of responsibility between the NHVR and the in-service regulator.

The rules to be made for the fallback-ready user and remote drivers will need to consider heavy vehicle fatigue and other obligations that apply to a driver of a heavy vehicle, and these would need to be included in the HVNL.

Arrangements for interaction between the in-service regulator and the NHVR will need to address:

- effective operational liaison and timely information sharing on matters relating to heavy vehicle safety
- cooperation in investigations that are of mutual interest to both regulators
- cooperation and information sharing in compliance and enforcement action, including agreement on 'who takes the lead on what' in areas of overlap

⁹⁷ The primary duty is contained in s 26C of the Heavy Vehicle National Law Act 2012 (Qld).

 providing clarity to regulated parties regarding the roles of the regulators and compliance obligations under the respective legislation that they administer.

9.3.5 Work health and safety regulators

Most of Australia applies harmonised WHS legislation that requires employers to take reasonably practicable steps to eliminate or mitigate risks associated with their business or undertaking.⁹⁸ These statutory duties are owed to a number of parties, not just employees. Each state and territory has its own regulator and legislation that mirrors the model WHS legislation. WHS law requires those conducting a business or undertaking to ensure the health and safety of their employees. People conducting a business or undertaking must also ensure that, so far as is reasonably practicable, the workplace and anything arising from the workplace does not put at risk the health or safety of any person. These safety duties under WHS law could extend to drivers and passengers of commercial fleets, rideshare/passenger transport vehicles and other scenarios where a vehicle is used for a work purpose. Where an ADSE operates a commercial fleet of rideshare/passenger transport vehicles, including its drivers and passengers) as well the general safety duty under the AVSL.

The AVSL may need to clarify which law prevails in the event of any inconsistency between state and territory WHS legislation and the national law. The in-service regulator will need to interact closely with WHS regulators in all jurisdictions. The interactions between the inservice regulator would include the sharing of information and cooperation in investigations that are of mutual interest to both regulators.

9.3.6 Australian Competition and Consumer Commission

The ACCC's primary responsibility is to ensure individuals and businesses comply with the Competition and Consumer Act, which includes the Australian Consumer Law. Its key responsibility is to prevent misleading behaviour and unconscionable conduct, and to minimise the risk posed by unsafe consumer goods and product-related services.

An ADSE may have obligations under the Australian Consumer Law.⁹⁹ Compliance obligations under the Australian Consumer Law apply to those who supply consumer goods in trade or commerce and include notification of voluntary recalls. Vehicle recall notifications are currently issued under the Australian Consumer Law. DITRDC administers the recalls, as well as investigates safety issues and ensures compliance with ADRs. The ACCC refers reports that it receives concerning motor vehicle safety to DITRDC.¹⁰⁰ The RVSA will provide the framework for the voluntary and compulsory recall of road vehicles and approved road vehicle components by DITRDC when it commences.

The in-service regulator would need to liaise with the ACCC to identify and avoid duplication of supervisory responsibilities and to track any emerging issues in relation to automated vehicle safety.

⁹⁸ Model WHS Law. The frameworks in Western Australia (*Occupational Safety and Health Act 1984*) and Victoria (*Occupational Health and Safety Act 2004*) are not based on the model law, but their application to automated vehicles is similar.

⁹⁹ Due to the agreed first-supply requirements for automated vehicles, an ADSE will be the type approval holder under the RVSA and therefore the importer or manufacturer for the purposes of the Australian Consumer Law.
¹⁰⁰ ACCC submission to consultation RIS available at <u>https://www.ntc.gov.au/submission_data/614</u>.

9.3.7 Australian Securities and Investment Commission

Infrastructure and transport ministers have agreed that due diligence obligations be imposed in the AVSL on executive officers of the ADSE to ensure the ADSE complies with the general safety duty.

The Corporations Act requires directors and officers of a corporation to discharge their duties with reasonable care and diligence. It also obliges those persons to discharge their duties in good faith and in the best interests of the corporation. While public safety is not the object of the Corporations Act, an ADSE's executive officer could potentially breach their fiduciary duty to the corporation if they failed to act in a way that advances public safety, and thereby exposed the corporation to litigation or the brand damage. In those cases, there could be an overlap of responsibility between the in-service regulator and the regulator that enforces compliance with Corporations Act, ASIC. The in-service regulator would need to liaise with ASIC to identify and avoid a duplication of regulatory responsibilities and to ensure cooperation in investigations that are of mutual interest to both regulators.

As discussed in chapter 4, the NTC is proposing that certain circumstances like the cessation of trading by an ADSE or the merger or acquisition of an ADSE with a new entity may trigger a requirement for the ADSE, or the new entity, to notify the in-service regulator of the event. Generally, these events also trigger a notification requirement to ASIC. The inservice regulator will liaise with ASIC when considering the 'accreditation' of new entities to take on the responsibilities of an ADSE.

9.3.8 Commercial passenger transport regulators

State and territory passenger transport legislation ensures the safety of commercial passenger transport services such as taxis, hire cars and rideshare services. While the detail of the obligations varies across states and territories, broadly owners and operators/drivers of vehicles used to provide a commercial passenger service are responsible for ensuring the safety of the vehicle.

Where an ADSE provides commercial passenger services, its compliance with the general safety duty under the AVSL will overlap with safety duties under state and transport commercial passenger legislation. The in-service regulator would need to liaise with state and territory commercial passenger transport regulators to ensure cooperation in investigations that are of mutual interest to regulators.

As ADSEs operating commercial fleets are likely to operate at the national level, the inservice regulator and state and territory regulators will need to share information about potential breaches of safety duties.

- **Question 23:** Are the interactions between the in-service regulator and other regulators and agencies accurately described?
- **Question 24:** Are there other agencies that the in-service regulator will need to interact with?

9.4 Managing interactions with regulators and agencies

The in-service regulator will need to work closely with the regulators and agencies described above to create a framework for cooperation. The framework will facilitate collaboration and the exchange of information. As described in chapter 6, engagement with jurisdictions will be one of the key functions of the in-service regulator. The in-service regulator will need to build a general level of cooperation and communication.

Informal interactions will need to be supported by more formal arrangements. This may require provisions in legislation supplemented by service-level agreements and MoUs between the in-service regulator and other regulators and agencies.

Legislation can specify how overlapping duties should be managed and how a conflict in legislation should be resolved. For example, the *Rail Safety National Law (South Australia) Act 2012* gives primacy to WHS law over the Rail Safety National Law (South Australia) Act. Section 48 of the Act provides:

(1) If a provision of the occupational health and safety legislation applies to railway operations, that provision continues to apply, and must be observed, in addition to this Law.

(2) If a provision of this Law is inconsistent with a provision of the occupational health and safety legislation, the provision of the occupational health and safety legislation prevails to the extent of any inconsistency.

Legislation will also need to support information sharing and coordination by the in-service regulator. The in-service regulator's powers to access and share information with other regulators and agencies will need to be included in the AVSL. Powers for state and territory traffic and law enforcement agencies and the NHVR to access information from, and share information with, the in-service regulator will need to be included in relevant legislation.

Overlapping responsibilities across jurisdictions and arrangements for information sharing and coordinated action will need to be implemented through MoUs and service-level agreements. MoUs are common where there is jurisdictional overlap and areas of mutual interest. An example is the MoU between the ACCC and ASIC.¹⁰¹

To facilitate engagement between agencies, especially in the early stages soon after the scheme commences, it is anticipated that the in-service regulator will set up consultative committees to:

- identify and resolve issues that affect the smooth functioning of overall framework
- facilitate the development of information-sharing frameworks
- coordinate the development of educational and guidance material directed at a range of entities with a role in in-service safety.

¹⁰¹ MoU between the ASIC and the ACCC signed on 21 December 2004 available at <u>https://download.asic.gov.au/media/2065149/mou-accc-asic.pdf</u>.

10 Access to information by the in-service regulator and information exchange with other regulators and agencies

Key points

- The in-service regulator will require access to information about the operation of automated vehicles and regulated parties to effectively perform its role of ensuring the in-service safety of automated vehicles.
- This information may be disclosed through a variety of methods that include voluntary arrangements with ADSEs and/or the use of legislative powers.
- The in-service regulator and other agencies will need to exchange information on the safety of automated vehicles. This exchange will be facilitated by statutory powers, agency agreements and collaboration across entities.
- The in-service regulator will need clear legislative authority to collect, use and disclose personal information to other agencies that is reasonably necessary for its functions and activities under the national law.
- The in-service regulator's management of personal information will need to comply with Australia's privacy principles. A privacy impact assessment will be undertaken before the NTC finalises the policy details of the AVSL.

10.1 Purpose of this chapter

The purpose of this chapter is to:

- outline the types of information required by the in-service regulator and the purposes that the information will be used for
- outline who the source of this information will be for example, the ADSE, firstsupply regulator and other transport and enforcement agencies
- discuss information flows and exchange arrangements between regulated parties, regulators and other agencies
- propose powers required by the in-service regulator to access relevant information, including any privacy implications.

10.2 Key concepts in this chapter

10.2.1 Information and data terms

In this chapter, much of the discussion uses the term 'information' rather than 'data'. The NTC acknowledges that an automated vehicle will generate data on its operation that regulators may require access to. 'Data' as defined by the Productivity Commission, refers to 'representations of facts that are stored or transmitted as qualified or quantified symbols. It comprises material such as characters, text, words, numbers, pictures, sound or video' (Productivity Commission, 2017, p. 54).

It is likely that the in-service regulator will, for most of its functions, require *information*, rather than data, on the ADS's operation, the ADSE's safety systems and corporate details. In this chapter the term 'information' is used for data that is organised, collated, analysed and interpreted.¹⁰² It is acknowledged that in the context of discussing the in-service regulator's access to automated vehicle-related information, this may include data.

10.2.2 The ADSE will have information recording and sharing obligations

Any discussion of proposed powers of the in-service regulator to access information must occur in the context of information (and data) obligations that will be placed on the ADSE.

One of the obligations the ADSE must self-certify against at first supply focuses on data recording and sharing. The ADSE must outline how it will record information about the driving performance of the vehicle. The information recorded will relate to the general safe operation of the ADS (including data about crashes) and enforcing road traffic laws.

The ADSE must provide recorded data to relevant parties (such as police, road agencies, insurers and consumers) as necessary and in compliance with requirements to manage information under privacy laws. The data provided must be standardised, readable and accessible to ensure its usability and relevance.

This places an obligation on ADSEs to record and share information; however, it does not provide a power for an in-service regulator to access this information so it can undertake its functions. The relevant (incidental) powers of the in-service regulator to require information from the ADSE (and other regulated parties) is discussed in chapter 7.

10.2.3 Access to information will support a risk-based approach to compliance and enforcement

To apply the AVSL effectively, the in-service regulator will need accurate information about instances of noncompliance (failures to meet standards and follow rules in the law). This will include when, where, how and why noncompliance occurs. This information will allow the inservice regulator to target the highest risks in an efficient and cost-effective way. Information will also underpin intelligence-led activities and strategies. Information is a key enabler for a risk-based approach to regulation by the in-service regulator, and examples may be:

Minor safety risk: An Type of information required and use: The inoccupant reports an service regulator may require the ADSE to automated vehicle is braking examine the issue and assess its response. harshly at give-way signs. Major safety risk: A fleet of Type of information required and use: The in-ADSs disengage without service regulator would require information that warning to the fallback-ready relates to the ADS design and validation process and human-machine interface (including users. declarations made by the ADSE at first supply). The in-service regulator would need to assess whether the ADSE and its executive officers have failed to meet their duties under the AVSL.

¹⁰² Adopted from the Productivity Commission's definition that information is 'the meaning resulting from the interpretation of facts conveyed through data (and other sources). Information can be derived from a set of data after it has been presented in context and interpreted' (Productivity Commission, 2017, pp. 54-55).

This chapter focuses on information required by the in-service regulator to fulfil its compliance and enforcement functions under the AVSL. Other regulators may require access to information to apply the laws that they are responsible for that relate to the operation of automated vehicles - for example, WHS regulators where an automated vehicle is a workplace. The NTC anticipates that other regulators will require similar information to that required by the in-service regulator. The information requirements of other regulators are not discussed in this paper except to the extent of the relationship between regulators (chapter 9) and possible information flows between agencies in section 10.6.

10.3 Types of information required by the in-service regulator

The NTC anticipates that the in-service regulator will require access to information, broadly grouped into two categories:

- information on the parties involved in the automated vehicle's operation
- information about the operation of the automated vehicle.

10.3.1 Information on the parties involved the automated vehicle's operation

The in-service regulator is likely to require information about several parties involved in the operation and use of an automated vehicle:

- 1. The ADSE. The in-service regulator will require information on:
 - the ADSE's approval process at first supply including evidence provided in support of its statement of compliance
 - the ADSE's management of organisational risks and its processes to manage ADS safety risks
 - the ADSE's executive officers and senior management.

This information will be required for the in-service regulator to monitor and investigate compliance with the AVSL, including compliance with the general safety duty and actions by ADSE executive officers.

2. Information that identifies the fall-back ready user, the driver, the owner, the remote driver and occupants of an automated vehicle.

This information could be required where human behaviour may be a relevant or contributing factor to an investigation into safety issues with the automated vehicle's operation.

10.3.2 Information about the operation of the automated vehicle

The in-service regulator is likely to require information relevant to the on-road operation of the vehicle. This will include:

- information about the vehicle's identification (make/model)
- information on the current ADS version and upgrade history.

(Some of this information may be held by other agencies, the in-service regulator itself and/or the ADS.)

The in-service regulator will also require information that is primarily generated by the vehicle including:

- information on who was in control at a point in time the ADS or human, the level of automation engaged, any transition requests to the driver or fallback-ready user
- information on the vehicle's location, speed, brake activation and acceleration

information on the circumstances that may have caused or contributed to an incident.

The NTC anticipates that the in-service regulator will require access to a relatively small proportion of the data and information generated by the vehicle.

Some types of vehicle generated data will include data on the operation of the internal vehicle systems and about interactions between the vehicle systems and external objects and other information systems. It will also capture data on the occupants of the vehicle and their interactions with the vehicle's systems. This may be alertness or readiness to respond to ADS requests and non-operational matters such as seat settings and infotainment system use.¹⁰³

Importantly, some of the data generated feeds into other vehicle systems for processing, so it is unlikely that the regulator will require or receive many direct sources of automated vehicle-generated data, but rather collated information about the operation of the automated vehicle. Some of the data generated by the vehicle may be stored in the vehicle or it may be stored externally (in the cloud or by a third party).

The ADSE is required under the statement of compliance to ensure the vehicle has real-time monitoring of the vehicle's driving performance and incidents. However, this obligation does not extend to providing data in real time to third parties. The process by which third parties will get access to real-time data is the subject of discussions across industry and at international forums.¹⁰⁴

10.4 For what purposes will the in-service regulator use the information it accesses?

The in-service regulator will require information to achieve the AVSL's objectives. A core objective of the law will be to minimise in-service safety risks. The in-service regulator will apply the objectives of the law by monitoring and enforcing compliance, in particular with the general safety duty.

This chapter focuses on information required by the in-service regulator to fulfil its compliance and enforcement functions. The in-service regulator may have additional functions that do not directly relate to compliance and enforcement – for example, customer service. The chapter does not focus on information that the in-service regulator may use to execute those other functions.

This project also does not focus on access to automated vehicle information by government for law enforcement activities outside the context of regulating the in-service safety of automated vehicles (terrorism investigations, assaults, property damage). Any access to automated vehicle information for these purposes would be based on the existing powers in the respective regimes.

¹⁰³ The types of data generated by automated vehicle (and C-ITS) technology have previously been identified in *Regulating government access to C-ITS and automated vehicle data* (August 2019), p. 27 <u>https://www.ntc.gov.au/sites/default/files/assets/files/NTC-Policy-Paper-Regulating-government-access-to-C-ITS-and-AV-data.pdf</u>.

¹⁰⁴ Note Singapore's rules that require real-time data to be provided if authorities request it in writing – see appendix E.

10.4.1 Information required will relate to the in-service regulator's compliance and enforcement functions

Chapters 6 and 7 discussed a range of proposed functions and compliance and enforcement powers for the in-service regulator. It was assessed that the regulator will require access to information to effectively perform the following **key** compliance and enforcement functions under the AVSL:

- monitoring, investigating and enforcement
- collaborating with other agencies and regulators
- accreditation and regulatory approvals
- developing standards
- crash investigation.

Crash investigation use case for access to information and data

Potential data and information sought by the in-service regulator:

- Data Storage System for Automated Driving to identify who was in control at the time of the incident, ADS level of automation engaged, transition demands to the fall-back ready user and responses
- Event Data Recorder on speed, acceleration, lane change, brake activation
- in-cabin camera and biological or health sensor information to assess the behaviour of the driver and/or occupants
- audio data on voice commands and other inputs
- external camera and lidar images to identify factors outside the vehicle
- ADS version and system diagnostic check history
- ADSE's evidence in support of the statement of compliance at first supply
- first-supply regulator's decision on the ADSE's application to supply the ADS to the market
- previous safety-related investigations on the ADSE or ADS.

10.5 From whom will the in-service regulator seek information?

The NTC anticipates that the in-service regulator will require information from a range of entities to effectively perform its functions. The in-service regulator will need to interact with entities involved in the vehicle's use and also other regulators and agencies (within and outside the transport sector).

The in-service regulator will have to establish relationships with other regulators and agencies to support the exchange of information. These entities maintain a number of information systems that the in-service regulator will have to consider when structuring information exchange agreements and when designing its own information systems. This issue is discussed further in section 10.7.3.

The NTC expects the following entities will provide information to, and may require information from, the in-service regulator.

10.5.1 ADSE

The ADSE will hold critical information about the automated vehicle's operation:

- dynamic data that identifies the entity in control of the vehicle at a point in time (the ADS, the human driver or the remote driver) and information on transition requests. The in-service regulator may require that this data is provided as a compiled information report.
- Information on the ADSE's systems and processes to manage safety risks. These could range from policies to ensure systemic software errors are identified and addressed, to mechanisms that prevent an ADS from operating when it detects it is approaching the limits of its ODD. Many of these systems will have been a part of the ADSE's statement of compliance at first supply. This information would be provided to the in-service regulator as part of its investigations into whether the ADSE complies with the general safety duty or other duties under the AVSL.

The ADSE also holds corporate organisational data on senior decision-makers. It will have to provide this information to the in-service regulator to enable effective investigation of executive officer due diligence obligations.

If the in-service regulator has a role to accredit a new entity to take on responsibility for an ADS from an ADSE, then the in-service regulator would require broadly similar information listed above from the new entity.

10.5.2 First-supply regulator

The in-service regulator may require (from the first-supply regulator) details of the ADSE, information submitted by the ADSE in support of its claims against the statement of compliance and the first-supply regulator's decisions. The in-service regulator may use this information to monitor and enforce the ADSE's compliance with its obligations under the AVSL. The first-supply regulator will need to review its authority to share information with the in-service regulator.¹⁰⁵

10.5.3 Registration and licensing authorities

State and territory transport agencies maintain registers of vehicle details and driver licensing records. The in-service regulator may require access to information about the vehicle's registration and its registered owner/operator – which may be the ADSE, an individual or another entity like a corporate fleet operator. The in-service regulator may also require information on the licensing status of the fallback-ready user or human driver (including remote driver) to investigate their role in an incident.

Much of the vehicle and driver information discussed here may be sourced from the National Exchange of Vehicle and Driver Information System (NEVIDS). NEVDIS is a system that exchanges data about vehicle identification and registration and driver licences across Australia's state and territory transport authorities.

Austroads, the entity that manages NEVDIS, is considering work to design and implement a common data pathway for acquiring and sharing automated vehicle data stored in registration systems. Given these developments, it would be efficient for the in-service regulator to source vehicle and driver information from NEVDIS rather than individual road agency databases.

10.5.4 Law enforcement agencies

Law enforcement agencies may hold information about entities and circumstances of observed on-road incidents that relate to the in-service safety of automated vehicles.

¹⁰⁵ Section 65 of the *Road Vehicles Standards Act 2018* enables the Secretary of DITRDC to share information obtained while performing functions under the Act with a range of named entities and 'any other body prescribed by the rules'.

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Agencies like the Australian Federal Police and the Australian Cyber Security Centre may also hold information relating to cyberattack prevention and investigation.

The in-service regulator may seek access to information from these agencies to assess whether an incident is indicative of an ADSE breaching its in-service duties, as well as to understand more systemic risks within the automated vehicle fleet.

10.5.5 National Heavy Vehicle Regulator

The National Heavy Vehicle Regulation holds information on its compliance and enforcement activities related to the operation of heavy vehicles. The regulator's National Compliance Information System captures data using state and territory cameras and monitoring systems (National Heavy Vehicle Regulator, 2019). The system contains nationwide information about Australia's heavy vehicles, their movements, drivers and operators.

The in-service regulator may need access to information held by the NHVR for its own functions that relate to automated heavy vehicle compliance with the AVSL.

10.5.6 Road managers – private and public

The in-service regulator may seek information held by public and private road managers about the operation of an automated vehicle – for example, the video or toll accounts of a vehicle's movement along a road. Information-sharing arrangements with private sector entities delivering services typically provided by government, such as toll road operators, are likely to have similar requirements as those with public sector agencies.

The in-service regulator may seek information from road managers if the regulator has a role to approve in-service modifications that geographically change the ADS's ODD. The in-service regulator may also seek road manager information as part of its assessment of an appropriate road access arrangement if there are circumstances where the first-supply regulator consults the in-service regulator on an ADS's stated or requested ODD.

10.5.7 Remote drivers

The in-service regulator will have responsibility for regulating remote drivers.¹⁰⁶ It will require information from the remote driver on their commercial operations and details of their role in safety-related incidents.

10.5.8 Regulators outside transport systems

Regulators that are responsible for sectors such as WHS, consumer safety and competition, and corporations' governance may also have information that the in-service regulator will require. Information exchange with these regulators would most likely occur with much less frequency than with the other agencies listed earlier in this section.

Question 25: Are there other information types, purposes or parties relevant to the inservice regulator's access to information?

¹⁰⁶ Agreed by infrastructure and transport ministers in June 2020.

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10.6 Possible information flows for compliance and enforcement between key parties

In-service compliance and enforcement will be effective and efficient where there are clear information flows between regulated parties and the various agencies that have a role in overseeing the operation of automated vehicles on our roads.

Figure 4 draws together the key types of information that will be required to support the regulation of automated vehicles, the parties who will provide the information and who they will exchange it with. The NTC acknowledges that Figure 4 is a high-level overview and does not capture all information types, the regulator's uses or parties that will be involved in inservice safety of automated vehicles. Any information exchange to and from the in-service regulator will need to be supported by collaborative relationships, underpinned by statutory provisions and agreements that clarify parties' roles and responsibilities.

Question 26: Have the key information flows that the in-service regulator needs to be a party to been identified? Are there others that you suggest?



Figure 4. Possible information flows for in-service compliance and enforcement of automated vehicles

*Other regulators discussed in chapter 9 are omitted from this diagram (for example, occupational health and safety agencies where the automated vehicle is a workplace, and point-to-point transport commissioners where commercial fleets of on-demand automated vehicles are a business model).

10.7 Information exchange frameworks

The in-service regulator will need to develop an effective information exchange framework to guide how it manages the information it holds and to ensure good decision making. Information on ADS safety issues will be identified and reported through a variety of different pathways. The information framework must be capable of accepting and managing these inputs consistently. It will also need to incorporate the principles for government access to C-ITS and automated vehicle data (set out in Table 3 below), which include managing personal information consistently with the privacy rights of individuals.

Three key framework tools that the in-service regulator could use to manage information are:

- interagency and industry agreements
- expressly placing obligations on agencies in law to share information and maintain accurate records
- system-to-system design.

10.7.1 Interagency and industry agreements

Interagency agreements – often structured as information-sharing agreements, MoUs and service-level agreements – are commonly used across government to manage information exchange between agencies. The NTC anticipates that the in-service regulator will use a variety of agreements to support its relationship with various parties – for example the first-supply regulator and state and territory road agencies.

The in-service regulator may also want to enter into agreements with the ADSE, other regulated parties or other entities to voluntarily provide information that will assist the regulator to understand emerging safety risks. Information provided by entities to the regulator would take into account their own privacy policies.

The statutory power that the in-service regulator may require to enter into agreements with other agencies, regulated parties and industry is discussed in section 10.8.

10.7.2 Obligations in law

The obligations of the in-service regulator and other agencies managing information may need to be clarified in law. For example, the HVNL sets out obligations between the regulator and jurisdictions to share information that is held on the register of heavy vehicles. This includes obligations to ensure information is accurate, to provide information promptly, to record details of defect notices issued, to update records and to correct records if notified.¹⁰⁷ The Royal Commission into Misconduct in the Banking Superannuation and Financial Services Industry recommended in 2019 that the law be amended to oblige two regulators (the Australian Prudential Regulation Authority and ASIC) to 'share information to the maximum extent practicable'.¹⁰⁸ The Commonwealth Government is currently drafting legislative provisions that give effect to the recommendation (The Treasury, 2020).

The statutory power that the in-service regulator may require to exchange information with other agencies is discussed in section 10.8.

¹⁰⁸ Recommendation 6.9. The report can be accessed at

¹⁰⁷ Heavy Vehicle National Law Act 2012 (Qld) s 686A (4)–(5), Heavy Vehicle (Registration) National Regulation (Qld) rr 6–9.

https://www.royalcommission.gov.au/sites/default/files/2019-02/fsrc-volume-1-final-report.pdf.

10.7.3 Information exchange between government information systems

A significant proportion of the information that the in-service regulator will require to perform its functions will be held by other regulators or agencies in their own systems. For example:

- The first-supply regulator (and its systems like the Register of Approved Vehicles) will hold information on the ADSE, the ADS and its type approval decisions.
- Registration and licensing agency systems and NEVDIS will hold vehicle registration information on the automated vehicle including any ADS descriptor, the ADSE and the vehicle's registered owner.

It will be desirable for the national in-service regulator's systems to interact with, and leverage off, the datasets within information systems (databases and so on) that exist or are under development. The in-service regulator may not require a database in its initial phase; however, when its systems are developed a possible system-to-system information exchange for automated vehicle in-service safety is at Figure 5.

Figure 5. Possible system-to-system data flow for automated vehicles



AV: automated vehicle; FCAI: Federal Chamber of Automotive Industry; OEM: Original Equipment Manufacturer

10.8 Access to information powers required by the in-service regulator

The in-service regulator will require statutory powers to access information so it can effectively and efficiently perform its functions and meet its safety objectives. The AVSL would need to contain these powers and place obligations on regulated parties to provide information. Access to information in this context is a subset of, or is incidental to, the substantive compliance and enforcement powers discussed in chapter 7 – for example, the power of the regulator to enter a premises and require documents to be produced.

The in-service regulator will require a broadly expressed power to exchange information for purposes beyond compliance and enforcement. For example, it is common for principal Acts to enable a regulator to perform actions that are incidental to their functions, like entering into agreements that clarify roles and relationships, but may also involve exchange of information.

The principal Act's supporting regulations could be used to detail the purpose that the information can be used for, the parties that the regulator can interact with and respective party obligations.

The in-service regulator will need clear legislative authority to collect, use and disclose personal information that is reasonably necessary for its functions and activities under the AVSL and the regulation of automated vehicle safety generally. The in-service regulator's

management of personal information will need to comply with Australia's privacy principles. This is discussed further in section 10.9.

10.8.1 Power to expressly access information, enable information exchange and enter agreements for purposes relating to the AVSL and other purposes

The in-service regulator will require statutory authority to request and disclose information in relation to administering the AVSL and the regulation of automated vehicle safety generally. Chapter 6 identified that the regulator would require information access power for its functions in monitoring, enforcement and producing guidelines and standards.

10.8.2 Power to exchange information for the purposes of interagency cooperation

The AVSL could expressly state that the regulator may exercise its functions in cooperation with other agencies or jurisdictions. This could include provisions that enable the regulator to request information from another agency, to use the information and to disclose information to other agencies. The provision could clarify that agencies are empowered to provide information to the regulator.¹⁰⁹

The in-service regulator may also require the authority to exchange information for AVSL purposes relevant to the regulation of automated vehicles under other legal frameworks more generally (for example, state and territory road traffic and safety laws, cybersecurity and RVSA frameworks). This power would provide a clear legal basis to exchange information and may reduce the need for information-sharing agreements or service-level agreements.¹¹⁰ It may also assist the in-service regulator to effectively contribute to policies that are the responsibility of other agencies, such as road safety policies within states and territories.

Agencies that the in-service regulator would most likely seek to exchange information with would need to review their enabling legislation to identify any barriers to exchanging information.

Subject to the limits discussed below, it is proposed that the AVSL confers power to enable the exchange of information (authority to collect, use, disclose and share information):

- for purposes that are associated with regulating automated vehicles
- between broadly defined parties, agencies and jurisdictions (preliminarily identified in section 10.5).

¹⁰⁹ For example, s 660 of the HVNL empowers the NHVR to exercise its functions in cooperation with participating jurisdictions or the Commonwealth. The NHVR may ask for information it requires to exercise its functions under the HVNL and use that information to exercise its functions. It may also give information to a government agency of a participating jurisdiction or the Commonwealth that they require to exercise their functions under their laws. A government agency that receives a request for information from the NHVR is authorised to give the information to the NHVR. A government agency that receives information from the NHVR is authorised to use the information only to exercise the intended functions.

¹¹⁰ There is current discussion on a proposal (option 5.4 of the HVNL Consultation Regulation Impact Statement) to expand the information that can be shared under s 660(2) of the HVNL between the NHVR and agencies to any purpose associated with the regulation of heavy vehicles, not just relating to its functions under the HVNL.

It has been observed that while agencies do share information with the NHVR, for purposes wider than administration of the HVNL, this currently requires an information sharing or service agreement. Expanding s 660(2) will remove the need for these agreements. The HVNL would be amended to provide that state, territory and Commonwealth agencies, including police agencies, be able to disclose information (whether it be data, personal information or otherwise) collected or held by an agency to the NHVR for any purpose associated with the regulation of heavy vehicles. For the most part relevant jurisdictional privacy legislation provides for the disclosure of information where required or authorised by or under an Australian law.
10.8.3 Agreements with industry and regulated parties

The in-service regulator may wish to enter into agreements with the industry it regulates to foster greater cooperation and increase understanding of automated vehicle safety risks and emerging industry trends.

The regulator's power to enter into agreements could be derived from a general power 'to do all things necessary or convenient in connection with the performance of the regulator's functions'.¹¹¹ Sometimes a regulator's information-sharing power is specified – for example, the New South Wales Point-to-Point Commissioner's authorisation to enter into information exchange agreements with agencies specified in the principal Act, including regulated parties (providers of passenger services).¹¹² The information that can be exchanged relates mainly to the purposes of the Act and is reasonably necessary to assist in the exercise of the Commissioner's functions.

The issue of information-sharing agreements with industry was recently raised in response to the HVNL review. The NHVR has submitted that the HVNL should allow greater sharing of information of industry to the NHVR as it could enable the regulator's officers 'to work with industry on understanding and eliminating the root cause of problems in a more cost-effective way'.¹¹³

The NTC proposes that the AVSL provides a clearly expressed power for the regulator to enter into information exchange agreements with regulated parties and industry bodies.

Question 27: Do the proposed information access powers meet the objectives of the in-service regulator? Are there other statutory powers for information access that the regulator will require to support its compliance and enforcement functions?

10.9 Limits on government information access, use and disclosure

Information collected from ADSEs by the in-service regulator and government agencies under the framework created by the AVSL may include personal information.¹¹⁴ The collection, use and disclosure of personal information by the in-service regulator and other relevant government agencies will need to comply with privacy laws.

The privacy implications of information access, use and disclosure sharing by the in-service regulator and between relevant government agencies will be considered in a privacy impact assessment to be undertaken before the policy details of the AVSL are finalised. The assessment will analyse how the NTC's compliance and enforcement proposals may affect the privacy of individuals and make suggestions on how any impacts will be managed, minimised or eliminated.

¹¹¹ See, for example, s 10 of the Australian Maritime Safety Authority Act 1990.

¹¹² Point to point transport (taxis and hire vehicles) Act 2016 (NSW) s 149.

¹¹³ NHVR submission to Effective Enforcement Heavy Vehicle National Law Issues Paper (November 2019) available at <u>https://www.nhvr.gov.au/files/201912-1123-nhvr-submission-ntc-effective-enforcement-issues-paper.pdf</u>.

¹¹⁴ The concept of personal information adopted broadly in the *Privacy Act 1988* (Cwlth) and relevant state and territory legislation is whether an individual is reasonably identifiable directly from the collected data – for example, if it reveals an individual's name or address – or from the combination of the data with other relevant datasets the collecting entity has access to. 'Sensitive information' broadly refers to certain types of information about the individual – for example, their race or ethnic origin, sexual orientation, political opinions or health information. The collection, use or disclosure of sensitive information may need to meet higher standards than other types of information.

10.9.1 Previous consultation on privacy implications and ministerial decisions

In 2018 and 2019, the NTC considered the privacy challenges of government access to data from automated vehicles and C-ITS (National Transport Commission, 2018, 2019b). It was concluded that data and information produced by C-ITS and automated vehicle technology will most likely be personal information and sensitive information.

The NTC considered that data from automated vehicles like sensor input units and event data recorders have limited value on their own in identifying individuals. However, when combined with data from, for example, in-cabin and external cameras and microphones, the data may reveal significant personal information. Vehicles may also include special purpose biometric, biological or health sensors for use in assessing wakefulness, attentiveness, intoxication, mental stress, physical distress or impaired reactions for a driver or other vehicle occupant.

The NTC also concluded that information from automated vehicles held by road and law enforcement agencies could become personal information because those agencies have access to a range of datasets and the technical capacity to analyse data that, when combined with the automated vehicle information, could reveal the identity of an individual.

To address this, ministers noted the 11 design principles listed in Table 3 to guide the development of laws on access to automated vehicle information by government agencies. These principles aim to balance the need for government access to information with the privacy of individuals using the technology.

Table 3. Principles for government access to C-ITS and automated vehicle data

The laws and aligned standards for C-ITS and automated vehicles should:

- balance the benefits of government access to C-ITS and automated vehicle data with additional privacy protections to appropriately limit the collection, use and disclosure of C-ITS and automated vehicle data
- 2. be consistent with, and informed by, existing and emerging Australian and international privacy and data access frameworks
- 3. embed access powers and privacy protections for C-ITS and automated vehicle data in legislation
- 4. clearly define C-ITS and automated vehicle data in inclusive and technology neutral terms
- 5. align government entities' approach to managing C-ITS and automated vehicle data with the objectives underlying existing concepts of personal information
- 6. specify the C-ITS and automated vehicle data covered, the purposes for which the data can be used and the parties to whom the purpose limitations apply while not impeding access to data with a warrant or court order authorising a different use
- 7. recognise the importance of notifying users in plain English about government collection, use, disclosure and storage of C-ITS and automated vehicle data
- 8. recognise that meaningful informed consent is important but provide avenues for government entities to balance individuals' expectations of privacy in alternative ways where obtaining such consent is not possible
- 9. recognise the difficulty of irreversibly de-identifying C-ITS and automated vehicle data in many circumstances
- 10. support data security
- 11. allow for regular review of privacy protections for C-ITS and automated vehicle data.

10.9.2 ADSE obligation to record and share ADS information

The first-supply requirement on the ADSE to record and share data will be given effect in the AVSL.

ADSE's will also need to share other information relevant to the on-road operation of the vehicle with the in-service regulator, for example:

- information about the vehicle's identification (make/model)
- information on the current ADS version and upgrade history.

An ADSE's privacy obligations to users, owners or passengers of automated vehicles are not affected by the proposals in this paper. They will continue to be regulated by applicable existing Commonwealth and state and territory privacy legislation. This could include obligations on the ADSE to:

- have a privacy policy that explains how it manages personal information
- obtain consent to the collection and disclosure of personal information
- detail how a person can access their personal information held by the ADSE
- ensure the personal information it holds is accurate, up to date and complete.

10.9.3 Implications of government agencies accessing personal information

The collection, use and disclosure of personal information by the in-service regulator and other government agencies that seek to hold personal information produced by automated vehicles will need to comply with the *Privacy Act 1988* (Cwlth), or state and territory privacy legislation if the AVSL is implemented using applied law.

As discussed previously, the purposes of the data recording and sharing requirements to be imposed on the ADSE are to:

- ensure the ADS is safe
- ensure ADSE compliance with the general safety duty
- ensure compliance by fallback-ready users with state and territory driving laws
- ensure compliance by remote drivers with the rules that apply to remote drivers.

Access to personal information

To provide certainty that the government agencies identified in this chapter are able to access personal information (including that may be derived from ADSs) the NTC considers that:

- the AVSL will need to include a clear power for the in-service regulator, state and territory roadside enforcement officers and other agencies that may have a role in automated vehicle safety to collect personal information (the collection, use and disclosure of personal information would be for the purposes described above)
- state and territory legislation will need to be reviewed and amended if required to provide state and territory enforcement officers with the power to collect, use and disclose vehicle data at the roadside as well as indirectly via the ADSE for the purposes described above.

The AVSL will reflect the key elements of the Australian Privacy Principles (APP 3) on collection of personal information – that is:

... personal information (including sensitive information) may only collected by the government agency where this information is reasonably necessary for, or directly related to, defined functions or activities.

The HVNL provides an example of privacy protections around collecting information that could be incorporated into legislation. For instance, s 401 of the HVNL provides that:

(1) An intelligent access program service provider must ensure, so far as is reasonably practicable, the intelligent access program information the service provider collects—

(a) is necessary for the purpose for which it is collected or a directly related purpose; and

- (b) is not excessive for that purpose; and
- (c) is accurate, complete and up to date.

Maximum penalty—\$6000.

(2) An intelligent access program service provider must ensure, so far as is reasonably practicable, the collection of intelligent access program information by the service provider does not intrude to an unreasonable extent on the personal privacy of any individual to whom the information relates.

Maximum penalty-\$6000

Use and disclosure of personal information

Use and disclosure of the personal information collected by government agencies could be for:

- direct or primary use that is, the use which was notified to the subject as the purpose for which the information was collected – for example, to establish who is legally responsible for the automated vehicle when a road incident occurs
- secondary use:
 - which is not the primary use but is related to it; for example, the data collected at the roadside by a law enforcement officer may be used by the in-service regulator as evidence in an investigation regarding a breach of the general safety duty by the ADSE
 - unrelated to the original purpose of collection; for example, a law enforcement agency or road agency may seek to the use data collected at the roadside from an ADS as evidence to establish an unrelated criminal offence.

It is not intended that the AVSL authorises the use of personal information for purposes unrelated to the original purpose of collection.

The privacy implications of the collection, use and disclosure of personal information by relevant government agencies may have to be managed differently depending on the legislative implementation model adopted. This is discussed further in chapter 11.

As mentioned above, the NTC intends to conduct a privacy impact assessment to systematically consider the information access, use and disclosure proposals made in this chapter to identify the impact that these proposals might have on the privacy of individuals and to develop ways to manage, minimise or eliminate that impact.

Question 28: Do you agree that a specific power authorising collection, use and disclosure of personal information is required in the national law and in state and territory legislation?

Question 29: What privacy protections may be needed around the collection, use and disclosure of ADS-derived personal information?

11 Legislative implementation of the national approach to in-service safety

Key points

- Ministers have agreed that the national approach for in-service safety will be implemented through either complementary Commonwealth and state and territory law, or state and territory applied law.
- Each legislative implementation approach can achieve the key objectives of in-service safety for automated vehicles. Each has practical impacts on the implementation and operation of in-service safety.
- A state and territory applied law will potentially allow broader coverage of parties and operational issues and allow greater control by state governments of ongoing amendments to the law.
- A Commonwealth complementary law approach will better ensure national consistency and avoid any potential cross-border issues. It would allow better integration with the first-supply process. A Commonwealth law can also potentially be implemented and updated more quickly.

11.1 Purpose of this chapter

The purpose of this chapter is to:

- provide an overview of how the national law for in-service safety will operate in practice under alternative legislative implementation models
- present key differences in implementing and administering the national law under the alternative implementation models
- assess the legislative implementation options against a range of policy objectives.

Recommendations on the legislative implementation approach will be provided to ministers in 2021. Feedback to this chapter will inform an updated decision version of the NTC's decision RIS for the Office of Best Practice Regulation in 2021.

11.2 Previous consultation and ministers' decisions

The decision RIS assessed implementation of a national law establishing a single national regulator through either of two different legislative implementation methods:

- complementary Commonwealth and state and territory law (complementary law) (option 3 in the decision RIS)¹¹⁵
- state and territory applied law (option 4 in the decision RIS).

¹¹⁵ In the decision RIS the NTC often referred to this legislative implementation method as the Commonwealth law approach; however, this paper refers to it as the complementary law approach because this better reflects that the implementation method requires both Commonwealth and state and territory law.

The decision RIS assessed complementary law (option 3) as preferable for the following reasons:

- It achieves a single market and more consistent application of enforcement mechanisms.
- It allows for more efficient implementation and maintenance of the primary law through one parliament.
- PwC's cost-benefit analysis showed this approach had the highest net benefit, primarily because it was assessed as less likely to lead to delay in the uptake of automated vehicles in Australia.
- The approach had the most stakeholder support.

The decision RIS noted that further work was needed to support ministers to make a decision on the legislative implementation approach. The further areas identified are topics covered in this paper: compliance and enforcement, modifications, and market exit and transfer of ADSEs.

11.3 Legislative implementation approaches

Australia's federal structure divides legislative power between the Commonwealth and state levels of government. Key features include:

- Commonwealth laws must be supported by a 'head of power' in the Constitution.¹¹⁶ On some matters, the Constitution gives the Commonwealth exclusive powers. On other matters, the Commonwealth and the states have concurrent powers. The remaining matters are the exclusive jurisdiction of the states.
- Matters in relation to which the Commonwealth and the states have concurrent powers can be legislated on by the states, but the legislation will be ineffective if inconsistent with Commonwealth legislation to the extent of the inconsistency.¹¹⁷ The states retain legislative powers over matters not specifically listed in the Constitution.

This division of legislative power is reflected in the current split in regulation of vehicles and driving between the Commonwealth and the states and territories. The Commonwealth regulates the first supply of vehicles to the Australian market. The states and territories regulate vehicles and driving in service (this includes vehicle registration, human driving, driver licensing, passenger transport and road management and vehicle standards). Regardless of the legislative implementation approach, states and territories will continue to regulate these aspects of in-service vehicle use. The two levels of government will need to continue to cooperate to achieve a national approach to in-service safety.

11.3.1 Complementary law

Under a complementary law approach, the Commonwealth would rely on its corporations and communications heads of power to enact an AVSL. An ADSE is the entity that supplies an automated vehicle to the Australian market. In doing so it will need to establish certain corporate credentials – that is, corporate presence in Australia and minimum financial

¹¹⁶ The express heads of power that the Commonwealth may rely on are found at s 51 of the Constitution. The constitutional limitations on the Commonwealth's legislative powers do not apply to the territories. See *Australian Constitution* s 122.

¹¹⁷ Australian Constitution s 109.

requirements.¹¹⁸ The national law would regulate ADSEs, their executive officers and teleoperation of automated vehicles. The national law would also establish the in-service regulator. The AVSL, as amended over time, would apply to all state and territory jurisdictions.

States and territories would legislate to regulate human users of automated vehicles (such as fallback-ready users and occupants) because the Commonwealth has no authorising head of power to do this. States and territories would need to clarify that their driving laws only apply to human drivers so the 'field is clear' for the Commonwealth's AVSL to regulate vehicles operating in automated mode.

The regulator would have national jurisdiction. It would be accountable to a Commonwealth minister and the Commonwealth Parliament. Breaches of the AVSL would be enforced by the national in-service regulator and prosecuted in a federal court (should jurisdiction be conferred) or otherwise in state and territory courts exercising federal jurisdiction.¹¹⁹

11.3.2 State and territory applied law

Under the state and territory applied law approach, laws to regulate the in-service safety of automated vehicles could be made entirely in state and territory legislation. Under this approach, the AVSL would be a state or territory law, enacted by one state or territory (the 'host jurisdiction'). This law would regulate ADSEs, their executive officers and teleoperators of automated vehicles. It would establish a national in-service regulator. Each of the other states and territories (the participating jurisdictions) would pass an application Act applying the national law in their jurisdiction.¹²⁰ The laws enacted by state and territory jurisdictions could potentially include amendments to the national law (also known as derogations). Individual states and territories could also choose not to participate in the national scheme.¹²¹

Applied law could achieve a nationally consistent law, if states and territories chose to participate and were willing to adopt the legislation fully consistent with other jurisdictions (that is, without derogations). The ability of applied law to achieve true national consistency depends on how each state and territory applies the law in their jurisdiction. For example, a participating jurisdiction could specify that the host's law applies 'as in force from time to time', which would automatically apply future amendments made to the national law. However, a participating jurisdiction could also specify that the host's law applies at a particular time, in which case any amendments to the national law would also need to be passed in the participating jurisdiction.

Under the applied law approach, participating jurisdictions could choose to modify the national law as it applies in the participating jurisdiction at any time. This introduces the risk of introducing inconsistencies over time, even if initial national consistency is achieved (Edwards, 2014, pp. 92-96).

The national regulator would be based in the agreed host jurisdiction. It would have national jurisdiction (in effect) by having jurisdiction concurrently in all states and territories. It would likely be accountable to the infrastructure and transport ministers acting collectively.

¹¹⁸ See appendix A, A.2.2 and A 2.3. Note that it is expected that DITRDC will implement these obligations under mechanisms in the RVSA.

¹¹⁹ Federal jurisdiction is the authority to exercise the judicial power of the Commonwealth. The Constitution authorises state and territory courts to be invested with federal jurisdiction.

¹²⁰ Alternatively, rather than 'applying' the national law as enacted by the host jurisdiction, states and territories could enact separate legislation that 'mirrors' the national law enacted in a host jurisdiction.¹²⁰ The mirror legislation will need to be amended each time the national law enacted by the host jurisdiction is changed.

¹²¹ For example, the Northern Territory and Western Australia do not participate in the HVNL scheme and have their own separate regulatory frameworks for heavy vehicles.

Breaches of the AVSL would be enforced by the national in-service regulator in state and territory courts. If an ADSE's act or omission simultaneously beached the general safety duty in more than one state or territory, the regulator would select one state or territory court for prosecution. This is discussed further in section 11.5.

As in the complementary law option, states and territories would need to legislate to regulate human users of automated vehicles such as fallback-ready users and occupants.

Examples of state and territory applied law schemes

The below examples show that differences in the way that the national law is applied have an impact on the level of national consistency achieved.

Heavy Vehicle National Law

The HVNL is enacted by Queensland as the host jurisdiction.¹²² Queensland's law is applied by other participating states and territories through application by reference¹²³ (where the law in the participating jurisdiction refers to the Queensland Act) or, in the case of South Australia, using a 'mirror' law approach (where an identical act is passed in the local parliament). Proposed amendments to the HVNL are developed by the NTC in consultation with jurisdictions. Infrastructure and transport ministers approve amendments to the HVNL. Amendments must be passed by the Queensland Parliament to have effect in the participating jurisdictions that apply the law by reference.¹²⁴

Health Practitioners Law

The Health Practitioner Regulation National Law (Health Practitioners Law) establishes a national registration and accreditation scheme for health practitioners. The Health Practitioners National Law was enacted by Queensland.¹²⁵ It was then applied in each state and territory by application by reference and, in the case of Western Australia, by enactment of mirror legislation. The COAG Health Council oversees a national scheme. Health ministers from each state and territory and the Commonwealth are members of a Ministerial Council. The Ministerial Council makes regulations for the purposes of the national law. If the regulations are disallowed by one parliament, the disallowance does not have effect unless and until a majority of jurisdictions also disallow the regulation. If a majority of state and territory parliaments pass similar disallowance motion, then the regulation is repealed nationally.¹²⁶

11.3.3 Key elements common to both approaches

A single national regulator would be created under either legislative implementation approach. The duties placed on all in-service parties would be the same.

Road rules applying to the dynamic driving task for the ADS would be in an ADS driving code. This code would be made under the AVSL. Initially the code could be a collation of the dynamic driving task road rules in each state and territory including relevant jurisdictional

¹²² Heavy Vehicle National Law 2012 (Qld).

¹²³ See, for example, Pt 2 of the *Heavy Vehicle National Law Application Act 2013* (Vic). Western Australia and the Northern Territory do not participate in the HVNL.

¹²⁴ Heavy Vehicle National Law 2012 (Qld) s 730.

¹²⁵ Health Practitioners Regulation National Law 2009 (Qld).

¹²⁶ Ibid., ss 245–247.

differences. The code could be maintained by the in-service regulator. Rules applying to teleoperation of automated vehicles would be made under the AVSL.

States and territories will continue to regulate all aspects of in-service vehicle use currently regulated at that level (for example, vehicle registration and road management) under each legislative implementation approach. States and territories will also need to amend their legislation to accommodate automated vehicles, such as deeming the ADS the driver when it is engaged and developing obligations for fallback-ready users.

It is likely that an intergovernmental agreement or similar instrument would be required under each approach. This agreement would cover important matters such as how the national law will be established and how amendments to the national law would be managed. Under the applied law approach, a more comprehensive intergovernmental agreement will likely need to be agreed than under the complementary law approach.

11.4 Key differences between the implementation approaches

11.4.1 Establishing and maintaining the law

The time to establish and amend legislation differs between the legislative implementation models.

A Commonwealth law would only need to pass through a single parliament. A state and territory applied law approach would require application Acts to be passed in all state and territory parliaments to establish the national framework. There is a risk that an applied law approach may introduce timing issues in enacting the various application Acts, which may cause a fragmented establishment of a national legislative framework and lead to delay in introducing automated vehicles.

Under the complementary law approach, *amendments* to the national law would also only need to pass through a single parliament. Under a state and territory applied law approach each time amendments are made to the national law, these would also need to be considered in the parliaments of the participating jurisdictions, unless all applying jurisdictions have applied the law as in force from time to time, without any requirement for further consideration of amendments in participating jurisdictions. Agreeing to and finalising the details of intended amendments is likely to take significantly more time and negotiation under the applied law approach.

An intergovernmental agreement to give effect to an applied law scheme would most likely need to include governance arrangements to manage amendments to the AVSL. For example, the *Intergovernmental Agreement on Heavy Vehicle Regulatory Reform* provides that subsequent amendments to the national law will be agreed to by the Infrastructure and Transport Council as per agreed procedural arrangements.¹²⁷ The relevant intergovernmental agreement will probably require unanimous approvals to amend the law, and amendments will need to be developed, agreed among all states and territories and approved by the relevant Ministerial Council, then passed by the host jurisdiction. This may lead to delays.

11.4.2 Scope of the law

A limitation of the complementary law approach is that amendments to the national law would always be subject to the constitutional limits of the Commonwealth's legislative power. The complementary law approach is particularly tailored to the central concern of regulating ADSEs but may not allow for the regulation of other parties, should it be required in the

¹²⁷ Articles 15–18, Intergovernmental Agreement on Heavy Vehicle Regulatory Reform 2011.

future. A national law under a state and territory applied law approach could more easily be given broader jurisdiction. For example, if in future jurisdictions consider that the in-service regulator should have a role in regulating vehicle repairers or fallback-ready users, the applied law approach could potentially accommodate that additional responsibility more easily.

A complementary law approach could provide better integration with the RVSA and the Commonwealth first-supply regulator. The Commonwealth Government also represents Australia on international forums, including working groups of the United Nations Economic Commission for Europe. These are developing international standards for automated vehicles.

11.4.3 National consistency

A limitation of the applied law approach is that when enacting the national laws, jurisdictions can 'derogate' from the national law to exclude, add to or modify sections of the national law in their jurisdictions. Substantial derogations could have significant effects on consistency of application of the national law. In its report on National Transport Regulatory Reform, the Productivity Commission noted that there were at least 70 derogations from the HVNL and enforcement provisions account for the most derogations, creating inconsistent application of enforcement powers (Productivity Commission, 2020).

11.4.4 Establishing a national regulator

Under the complementary law approach, Commonwealth law would establish a single national regulator with jurisdiction in all states and territories.

Under the applied law approach, each time a participating jurisdiction enacts an application Act, a separate regulator is, in effect, created for that participating jurisdiction. To achieve a single regulator, the AVSL will have to provide that legislation enacted by a jurisdiction, together with the legislation enacted by other participating jurisdictions, effectively establishes a regulator that is one single national entity.¹²⁸

11.4.5 Managing subordinate legislation under a national law

Infrastructure and transport ministers have agreed that the AVSL should enable regulation of:

- the performance of the dynamic driving task by ADSs
- remote driving (teleoperation) in which an ADSE uses individuals located outside of the vehicle to monitor and/or operate the ADS
- rules to support the general safety duty.

The AVSL will need to allow for rules of general application to be made in relation to these matters and other matters discussed in this paper.

It is common for Commonwealth legislation to allow for subordinate legislation. This involves parliament allowing delegation of its legislative power (to make rules with general application) to the Executive (a minister, Executive Council, Governor or an independent regulator). Parliament still retains the right to disallow rules made under delegation.

In a complementary law approach, the Commonwealth law could enable the making of delegated legislation. Regulations made under the Commonwealth law would be tabled in the Commonwealth Parliament, which would have the option to disallow them. The intergovernmental agreement will most likely need to provide a mechanism for jurisdictional

¹²⁸ See, for example, s 656(2) of the Heavy Vehicle National Law (NSW) No. 42a.

oversight over the making of delegated legislation. For example, the intergovernmental agreement on commercial vehicle safety reform that established a national law and national regulator for all commercial vessels in Australian waters sets out the procedures the Australian Maritime Safety Authority has to follow in developing subordinate legislation, including consultation with jurisdictions and procedures to resolve objections by jurisdictions to any piece of subordinate legislation.¹²⁹

Under state and territory applied law, the Infrastructure and Transport Council and/or a newly created body could be delegated the ability to make rules. However, as with amendments, rules made under a state and territory applied law scheme could give rise to potential national inconsistency because participating jurisdictions could disallow or amend the application of the national regulations in their jurisdiction. This could be overcome if a higher standard was required, such as that found in the Health Practitioners Law (see section 11.3.2). Under that law, if the regulations are disallowed by one parliament, the disallowance does not have effect even in that jurisdiction unless and until a majority of jurisdictions also disallow the regulation. This approach may maintain consistency for regulations made under an applied law and allows the framework and regulator to be accountable to parliaments. However, it could have the effect of overriding decisions made by parliaments in certain circumstances. This approach is not typical in applied law schemes.

11.5 Enforcement considerations in the implementation of the national law

Under both the complementary and state and territory applied law approaches, the regulator could have the powers proposed in chapter 7 – for example, the ability to issue infringement notices, to enter into enforceable undertakings and to prosecute an ADSE for a breach of the general safety duty. If the complementary law approach is adopted, the AVSL could largely reference parts of the Regulatory Powers Act. If an applied law approach is adopted, the required powers would need to be included in the national law.

The regulator's powers and the duties of regulated parties will remain the same under each approach. However, there are key differences in the enforcement of the law that will affect the regulator's actions and the ADSE's expectations of the consequences of not meeting their duties.

11.5.1 Court jurisdiction

Enforcement through the courts will operate differently. Under the complementary law approach, breaches of the AVSL will most likely be prosecuted in state and territory courts exercising federal jurisdiction. These courts could determine matters such as alleged breaches of the general safety duty and applications for injunctions. A common interpretation Act and rules of evidence would apply.¹³⁰

Under the state and territory applied law approach, enforcement must occur through separate state and territory courts or tribunals because the breaches will be under a state or territory law. Whenever there is an alleged breach of the law, the regulator will need to determine in which participating jurisdiction and court to bring proceedings against the ADSE.

¹²⁹ See articles 22–24, *Intergovernmental Agreement on Commercial Vessel Safety Reform* 2011. The Commonwealth implemented the national law by enacting the *Marine Safety (Domestic Commercial Vessel) National Law Act* 2012.

¹³⁰ Acts Interpretation Act 1901 (Cwlth) and the Evidence Act 1995 (Cwlth).

The courts would interpret the national law as applied in each participating jurisdiction by reference to different Interpretation Acts. While the national law itself would remain consistent, inconsistent interpretation and application of the law could over time could result in inconsistent enforcement outcomes.¹³¹ This could be avoided if the participating jurisdictions agreed to disapply their interpretation Acts and apply the interpretation Act of a jurisdiction (so far as the national law is concerned).¹³² There might also be some variation in the rules of evidence that are applied by state and territory courts.¹³³

Double jeopardy

An ADSE could simultaneously breach the law in multiple states and territories through a single act or omission such as a breach of the general safety duty through a defective software update. Under an applied law scheme, the regulator would be required to select a single jurisdiction's court for prosecution.

The state court hearing the matter will focus on the alleged breach of the law in that jurisdiction, and not the breach of the laws of other states and territories. However, if the ADSE is found guilty (either at the end of a trial or upon entering a plea) the court is able to take into account the harm caused by the ADSE's act in other jurisdictions in its sentencing, which may lead to a greater penalty.

Due to the doctrine of double jeopardy, once an ADSE has been prosecuted in one state for a breach of a software update, it most likely could not be prosecuted in another state for the same negligent act.¹³⁴ Other applied law frameworks such as the HVNL and the Health Practitioners National Law also have this limitation. However, in these frameworks, enforcement is generally a more localised matter. Although breaches of these laws can result in cross-border complexities, there would be few breaches that could simultaneously and equally breach the law of every state and territory as could occur with an unsafe ADS software update.

Judicial review

Judicial review describes the application to a superior court for a review of a decision that the applicant alleges is unlawful. This type of review focuses on the legality of a decision and not its merits. The role of courts is to determine if the decision was made in accordance with the law. For example, an ADSE might apply for judicial review where the in-service regulator took into account something that was irrelevant to its decision. An applicant will seek a remedy such as an order restraining the regulator from a particular action, an order compelling the regulator to do a thing or an order quashing the regulator's decision.

Under a state and territory applied law approach, the regulator's actions would be open to judicial review in the Supreme Court of every state and territory. This openness to action in multiple courts would not exist in the complementary law approach, where judicial review would be to the Federal Court. It is worth noting this may not be a significant problem in practice, as the HVNL has the same limitation and the NTC is not aware of an application for judicial review of the NHVR's actions.

¹³¹ In addition, the ACT and Victoria require that legislation be interpreted in a manner compatible with human rights. See, for example, the *Charter of Human Rights and Responsibilities Act 2006* (Vic).

¹³² See, for example, s 10 and Sch 1 of the National Heavy Vehicle Law No 42a 2013 (NSW).

¹³³ The NSW, Tasmanian and Victorian evidence Acts generally mirror the *Evidence Act 1995* (Cwlth). The Commonwealth Act applies in the ACT. In other jurisdictions, the laws of evidence may vary.

¹³⁴ This is particularly an issue for a risk-based general safety duty, which is currently the central feature of the law. As the offence is focused on risk (and not the resulting harm), prosecuting an ADSE in multiple jurisdictions would offend the doctrine of double jeopardy. More localised offences, such as an offence against operating outside an ODD in a particular state, would be less likely to encounter this problem.

Merits review

Some of the issues involved with using multiple, separate state and territory courts to regulate firms operating nationally could be mitigated if the regulator is subject to a robust and accountable internal review mechanism so that, where appropriate, certain disputes or complaints could be resolved outside of court. Some areas of regulation would be more suited to this than others; for example, if the regulator had a role in approving accreditation of ADSEs, remote drivers or teleoperation services, there should be a mechanism to appeal that decision internally, and then subsequently to the state or territory administrative tribunal.

Scenario – Court jurisdiction

Sonia has driven her automated vehicle from her home in Canberra to Sydney to visit family. She is involved in a minor accident in the Sydney CBD and is injured. On investigation, the in-service regulator finds that Sonia had been given a handover request by the ADS to avoid a pothole but was not given sufficient warning to do so. Further investigation reveals this to be a systemic defect in all ADSs of the same type, introduced when the ADSE (based in Adelaide) rolled out a software update.

The regulator considers this a serious breach of the ADSE's general safety duty because (a) fallback-ready users in their automated vehicles do not have sufficient time to respond to handback requests, (b) the ADS should have performed a minimal risk manoeuvre such as braking when Sonia did not take control of the vehicle following notification, and (c) a preliminary investigation has found that the ADSE did not perform sufficient testing before rolling out the update. The breach is considered to have occurred simultaneously in every state and territory when the software update was rolled out. The regulator decides to bring proceedings against the ADSE.

Under a complementary law approach, the regulator could bring proceedings in a state or territory court exercising federal jurisdiction for breach of the general safety duty nationally. This would most likely be in South Australia where the ADSE has its head office.

Under a state and territory applied law approach, the regulator must decide one state or territory to bring proceedings in. The court chosen would consider the breach under their state law. The regulator faces pressure from multiple jurisdictions to bring the proceedings in their courts. It could bring proceedings in:

- New South Wales, where the incident occurred
- the ACT, where Sonia's vehicle is registered
- South Australia, where the ADSE has its Australian head office, because it might hold relevant evidence
- any other state and territory because it understands there are other individuals that have been involved in subsequent incidents due to the software defect.

The regulator chooses to bring proceedings in South Australia. This would mean the ADSE would be held accountable for its breach of the general safety in South Australia. Those from outside South Australia injured by the same breach, and other state governments, will have to accept the results of proceedings. Whether the ADSE is convicted or acquitted, further proceedings cannot be brought against the ADSE in other states for the same breach of the safety duty due to the doctrine of double jeopardy.

11.5.2 Extraterritorial operation

Under both the complementary law and state and territory law approaches, there may be practical difficulties in enforcing obligations against ADSE executive officers based overseas. However, the Commonwealth's external affairs head of power and international personality could make the regulator's enforcement of due diligence obligations against executive officers based overseas easier.

The state and territory applied law approach may have more significant limitations for crossborder enforcement across states. It is likely that a state law (for example, a Western Australian law) that attempts to regulate ADSEs or remote drivers based in another state, but operating in Western Australia, would be valid law. However, enforcement and questions around jurisdiction would present practical challenges. A general safety duty regime (which may need to account for multiple acts and omissions that, in aggregate, form an alleged breach) could be particularly vulnerable to confusion regarding jurisdiction.

11.5.3 Roadside enforcement

Roadside enforcement powers – for example, the powers that roadside enforcement officers (including law enforcement officers) exercise to pull over a vehicle or obtain information from a human driver – are located within state and territory legislation (and the HVNL). These powers will continue to sit within state and territory legislation under either legislative implementation approach.

Chapter 8 notes that existing powers may not be adequate to address roadside enforcement requirements to manage the safety risks of automated vehicles and interacting with them. State and territory legislation will need to be audited to assess this.

If a complementary law approach is adopted, additional powers may be needed by roadside law enforcement officers – for example, the power to direct a remote driver to 'drive' an automated vehicle to the kerbside. The powers may need to be included in Commonwealth law (so authorised officers under the national law can exercise the power) as well as in state and territory law (so roadside enforcement officers, whether or not authorised under the national law, can exercise those powers).

11.6 Privacy laws

Data collected from ADSEs by the in-service regulator and government agencies may include personal information, or be combined with other datasets to create personal information. The collection, use and disclosure of personal (and sensitive) information by the in-service regulator and other relevant government agencies will need to comply with privacy laws.

The Commonwealth Privacy Act contains 13 privacy principles governing the collection, use and disclosure of personal information. It applies to federal government agencies and other types of organisations. States and territories have their own privacy laws that cover the handling of personal information by government agencies within their jurisdictions such as police and road transport agencies. There are some differences between state and territory privacy laws, including in the definitions of personal information and sensitive information. In the NTC's 2018 discussion paper *Regulating government access to C-ITS and automated vehicle data*, these differences were summarised, noting that the differences in the definitions of personal information (National Transport Commission, 2018, pp. 33-34).

The privacy implications of the collection, use of disclosure of personal information may need to be managed differently depending on the legislative implementation model adopted. Under a complementary law approach, the Commonwealth Privacy Act (and the Australian

Privacy Principles) would apply to the collection, use and disclosure of personal information under the national AVSL. Under a state and territory applied law approach, state and territory legislation would apply to the collection, use and disclosure of personal information under the national AVSL. The approach taken in some applied law schemes is to adopt the privacy legislation of the host jurisdiction while disapplying the privacy legislation of other participating jurisdictions so that the regulator is subject to the privacy laws of the host jurisdiction. This is the approach for instance adopted by the HVNL.

11.7 State law interaction with inconsistent Commonwealth law

Where a valid Commonwealth law and state or territory law cover the same subject matter, s 109 of the Constitution deems the state or territory law invalid to the extent of any inconsistency. Commonwealth laws may express an intention to be taken as a complete statement of the law that will govern a particular area by employing ss 109 and 122 (the Commonwealth's power to make laws for territories) so that the states and territories are unable to make further laws concerning the matter. This is described as an intention to 'cover the field'.

Section 78 of the RVSA provides for new road vehicles to be used on public roads even if they do not comply with a road vehicle standard imposed by a law of the state or territory in certain circumstances, including if it was manufactured or provided by a constitutional corporation. Given elements of the statement of compliance will be implemented under the RVSA; ADSEs are constitutional corporations; and the Commonwealth's very broad power to make laws for the territories (s 122), there are risks that certain features of in-service automated vehicle regulation achieved through state and territory law could be invalid due to inconsistency with the RVSA. The NTC will need to further consider whether s 78 of the RVSA raises any consistency issues under s 109 of the Constitution.

11.8 Policy analysis of the implementation approach

11.8.1 National consistency

A national approach can be implemented through both a complementary law approach and a state and territory law approach.

Under a complementary law approach, the framework must enable jurisdictional input on:

- policy development and implementation by the national in-service regulator set up under Commonwealth law
- the development of subordinate legislation under Commonwealth law
- other matters like data sharing between the Commonwealth and state and territory jurisdictions.

Due to the limitations on the Commonwealth's legislative powers, state and territory jurisdictions will need to legislate to regulate parties other than ADSEs, ADSE executive officers and remote drivers. Complementary law leaves open the possibility of inconsistencies being introduced, given its use of state and territory law to 'fill the gaps'. However, those inconsistencies are less likely to depart significantly from the national consistency goal.

A number of factors can reduce the consistency of a national law under the applied law approach including:

- the manner in which the national law is implemented in state and territory jurisdictions
- non-participation by jurisdictions in the applied law scheme

- derogations from the national law
- disallowance of subordinate legislation by state parliaments
- inconsistency in enforcement outcomes due to prosecution in state and territory courts and application of state and territory interpretation acts and sentencing guidelines.

Applied law schemes can manage these factors to achieve greater consistency. However, this requires a high level of decision making by consensus. The governance arrangements are also likely to be complex and decision making will be slower.

An applied law approach may provide greater ability for states and territories to tailor regulatory requirements to respond to local priorities and enable smoother administration of in-service regulation. States and territories currently regulate most in-service vehicle issues and road users such as human drivers, pedestrians and cyclists. Regulating all in-service parties at the state and territory level could facilitate a holistic approach and help avoid potential inconsistencies or conflicts that may arise (if not managed) if the states and territories regulate one area of in-service safety and the Commonwealth another.

The state and territory applied law approach could mean that both conventional and automated vehicles would be regulated under state and territory law, potentially providing efficiencies between those two frameworks. The AVSL could also potentially accommodate the regulation of other parties like repairers in the future. This could increase the potential for nationally consistent regulation of these expanded elements.

11.8.2 Parliamentary sovereignty and accountability considerations

Key aspects of road safety, including in-service vehicles and drivers, are regulated by states and territories. The arrival of automated vehicles disrupts the status quo because although the Commonwealth does not regulate human drivers, corporate drivers such as ADSEs do fall under the Commonwealth's legislative power. A complementary law approach may cause states and territories concern about their role in road safety.

The in-service regulator would be accountable to a single Commonwealth minister and the Commonwealth Parliament under the complementary law approach. Under the state and territory applied law approach, the regulator would most likely be accountable to infrastructure and transport ministers collectively. Care would need to be taken to ensure the regulator is accountable through appropriate governance arrangements.

11.8.3 Cost and efficiencies

The complementary law approach could be more cost-effective in terms of the amendments to the law. Subordinate instruments could be made relatively quickly by one level of government. Although it would depend on the detail of the instrument being maintained, it is likely that applied law, given it involves multiple jurisdictions, would necessarily require more from states and territories in policy development.

The cost-benefit analysis to the decision RIS found that the complementary law approach has a slightly higher net benefit than the state and territory applied law approach, given the higher level of consistency provided by Commonwealth law. The assessment was largely based on the likelihood that each approach would either delay or bring forward uptake of automated vehicles, which in-turn would delay or bring forward realising the benefits the automated vehicles are anticipated to provide (PwC, 2019, p. 60).

Question 30: Do you agree with the differences outlined between the legislative implementation approaches? Which approach will best achieve the reform outcomes?

Key points

- The content of the AVSL must be decided in order to progress to the next stage of implementing the national approach to in-service safety for automated vehicles and related reforms.
- The NTC is seeking submissions to this discussion paper by 11 December 2020.

12.1 Conclusion – summary of proposal

Infrastructure and transport ministers have agreed the need for a regulatory framework to manage the in-service safety of automated vehicles, to assure their safety over their lifecycle and to ensure nationally consistent.

Ministers have already agreed to the key elements of the approach to in-service safety: a new national law, a general safety duty on ADSEs and associated due diligence obligations on their executives, and a new national regulator.

This discussion paper sets out the next level of detail required to develop the national law. The proposals cover:

- the general safety duty on ADSEs, its limits, supporting prescriptive duties and interaction with the first-supply safety assurance process
 - The general safety duty is an outcomes-focused duty that will require the ADSE to take positive steps to ensure the safe operation/performance of the ADS.
 - ADSEs will be required to ensure safety 'so far as reasonably practicable'.
 - Prescriptive duties under the general safety duty will support the ADSE to achieve compliance.
- due diligence obligations on ADSE executive offers and the limits of these obligations
 - Executive officers are officers with decision-making authority who are in a position to influence safety.
 - Due diligence obligations will apply only to the extent of an executive officers' personal influence. They will not make executive officers automatically liable for an ADSE's breaches of a general safety duty.
 - A defence of 'reasonable reliance' would clarify that it is reasonable for executive officers to rely on information from others where they themselves do not have the requisite technical knowledge.
- an accreditation process for the in-service regulator to manage the transfer of an ADSE's responsibilities for an in-service ADS to a new entity
 - The proposed process will see the in-service regulator authorise a transfer of responsibilities where a new entity has met obligations relating to corporate presence, minimum financial requirements and data recording and sharing.
- options for managing ADSE modifications to in-service ADSs, and options for managing modifications by other parties

- The proposed process for modifications made by an ADSE to expand the ODD of an ADS or change its level of automation will give the in-service regulator an approvals function.
- The NTC is seeking feedback on how modifications made by other parties can be managed.
- the in-service regulator's functions
 - The in-service regulator will have a range of functions including monitoring, education and guidance, enforcement, engagement with jurisdictions, research, creating standards, customer service and reporting to ministers.
 - The NTC is also consulting on potential crash investigation (for enforcement), accreditation and regulatory approvals functions.
- the in-service regulator's establishment and scaling up
 - A project team will resolve operational and legal matters before the in-service regulator commences operation.
 - The in-service regulator will initially perform limited functions. Additional functions will be phased in as the automated vehicle market grows and the scope of the regulatory task increases.
- the in-service regulator's compliance and enforcement powers and prescriptive requirements on the ADSE that are not related to the general safety duty and their associated sanctions
 - A range of powers will enable the in-service regulator to tailor its responses to the nature and seriousness of a breach.
 - Powers include issuing improvement notices, directions to act, infringement notices, formal warnings, enforceable undertakings and seeking injunctions. The NTC is also seeking feedback on the power to suspend an ADS's operation.
 - Prescriptive requirements on the ADSE will ensure the regulator can effectively manage the safety framework and engage proactively with the ADSE to achieve compliance.
 - Breaches of the AVSL will be subject to civil or criminal penalties depending on the severity of the breach.
- roadside enforcement agencies' role in interacting with automated vehicles and addressing roadside safety risks, including managing road traffic law breaches
 - A nationally consistent approach to roadside enforcement should be developed.
 - A breach of a road traffic law that occurs when an ADS is engaged, or when a roadside enforcement agency reasonably believes an ADS was engaged, should be taken as evidence of a breach of the general safety duty.
- the in-service regulator's interactions with other regulators and agencies and way to manage them
 - Close interaction is needed for the in-service regulator to carry out its functions and to ensure a coordinated approach to safety assurance for automated vehicles.
 - Overlapping functions and shared duties will need to be clearly identified and arrangements will be needed to ensure there is no duplication.
 - Interactions will be both formal (for example, legislation and service-level agreements) and informal.

- the information access and exchange framework required by the in-service regulator
 - The AVSL will confer power to enable the in-service regulator to exchange information with other regulators and agencies
 - for any purpose associated with the regulation of automated vehicles
 - between broadly defined agencies or jurisdictions and industry
 - through direct exchange of information and other methods like agreements.
 - The power to share personal information with others will need to be in accordance with information privacy principles.
 - A privacy impact assessment will be undertaken before the policy detail of the AVSL is finalised.
- the practical differences of implementing the national approach to in-service safety using different legislative implementation approaches.
 - The national approach to in-service safety could be implemented through a complementary law approach or a state and territory applied law approach. Each approach has practical impacts on the implementation and operation of in-service safety.

12.2 Consultation

The NTC has prepared this discussion paper to test these proposals with the stakeholder community and wider public. Submissions are sought on the questions in this paper and any other relevant matters by 11 December 2020. Further information on providing submissions and engaging in other ways can be found on page 3.

12.3 Next steps

12.3.1 In-service approach

Following consultation, the NTC will assess feedback to further refine the proposals and develop a policy paper. This will inform recommendations to ministers in 2021.

The NTC will also update the decision RIS to take into account the further work and stakeholder feedback on a legislative implementation approach. The update will refine the assessment of options 3 (a complementary law approach) and 4 (a state and territory law approach) in order to propose a final recommended option. This will inform recommendations to ministers in 2021.

The NTC considers this will address the key elements of the national approach to in-service safety. The next stage in progressing the in-service reforms will involve drafting the AVSL and the necessary amendments to legislation at the state and territory level.

12.3.2 Longer term work

There are further important reforms that are either already in progress or due to start following ministers' decisions in 2021. These include:

- finalising first-supply arrangements, including the content of the ADR that incorporates the safety criteria and obligations
- drafting the AVSL

- state and territory amendments to their laws to accommodate automated vehicles
- a potential agreement (such as an intergovernmental agreement) to establish the practical arrangements between governments to implement and maintain the national framework
- deciding the regulatory body (new or existing) to be the in-service regulator and creating a project office to establish it.

Appendix A First supply safety criteria and obligations

A.1 Safety criteria

A.1.1 Safe system design and validation process

The applicant must explain why it chose particular design, validation and verification processes, and how these ensure a safe technology is developed and maintained for the life of the automated driving system (ADS). The life of the ADS should be set by the applicant and represent the amount of time the applicant proposes to support the ADS, including by way of software upgrades. The applicant's design and verification processes should cover all safety-critical issues such as unsafe maintenance, repairs, physical modifications and other system failure, as well as the ADS reaching the end of its life and no longer being supported by the applicant. For example, the applicant could design the ADS to disengage (temporarily or permanently), or for back-up systems to take over where safety-critical issues arise or the system otherwise fails.

Where the ADS is supplied as an aftermarket device (rather than a device already fitted to the vehicle), compatibility (that is, the vehicle types the ADS can be fitted to) should be specified as an element of system design.

The applicant should document decisions relating to the choice of design, validation and verification processes and include empirical evidence or research to support the safety assertions made. Such documentation could explain why particular processes were chosen. Where applicable, the applicant should use guidance, industry best practices, design principles and standards developed by established standards organisations.

A.1.2 Operational design domain

The applicant must identify the operational design domain (ODD) of the ADS and demonstrate how it will ensure the ADS is:

- able to operate safely within its defined ODD
- incapable of operating in areas outside of its defined ODD
- able to transition to a minimal risk condition when outside its defined ODD.

This could include documentation outlining the process for assessing and verifying the ADS's functionality both within and outside the defined ODD.

The applicant should also outline how it will review and manage changes to the defined ODD. Major changes to the ODD are likely to be significant modifications requiring the applicant to submit a new Statement of Compliance for approval before introducing the change into the market.

A.1.3 Human-machine interface

The applicant must outline how the human–machine interface (HMI) will facilitate interaction between the ADS and relevant parties (both internal and external to the vehicle) that allows the vehicle to operate safely.

In relation to human drivers and occupants, elements of the HMI interaction link with the education and training criterion. The information communicated by the HMI should include, but is not limited to:

communicating to the human driver when it is safe for the driver to engage the ADS

- informing the human driver if the ADS is engaged and the level of automation engaged
- requesting the human driver or fallback-ready user take back control of the vehicle with sufficient time for the human driver or fallback-ready user to respond, including in an emerging hazard situation. In addition, the applicant should outline the safeguards to ensure a fallback-ready user is actually ready to take back control. This could include monitoring by the ADS of human readiness to take back control and alert systems where such readiness is not apparent
- drawing attention to potential safety risks related to human monitoring and readiness to re-engage with the driving task
- informing vehicle occupants of the ADS's current and intended actions to allow occupants to predict vehicle behaviour
- indicating whether the ADS is functioning properly or experiencing a malfunction.

In relation to parties external to the vehicle, the HMI should communicate information such as the ADS's state of operation should be communicated by the HMI via an external communication interface. This could, for example, take the form of an external screen.

The applicant must also outline how it designed and verified the HMI and reference any appropriate international standards or agreed guidelines for HMIs.

A.1.4 Compliance with relevant road traffic laws

The applicant must demonstrate how it will ensure the vehicle operates in compliance with relevant road traffic laws when the ADS is engaged. In particular, how the ADS will comply with:

- relevant road traffic laws, including any variations in each state and territory
- amendments to the relevant road traffic laws when they come into force.

This could include documentation outlining the process for assessing and verifying the ADS's compliance with relevant road traffic laws and the process for updating the ADS to comply with amendments to those laws.

The applicant must also demonstrate how the ADS will respond in a safe way where strict compliance with relevant road traffic laws is not possible. This requirement closely links with the on-road behavioural competency criterion.

A.1.5 Interaction with enforcement and other emergency services

The applicant must demonstrate how it will ensure that police can access accurate information about whether the ADS is engaged at a given time, the level of automation engaged and any handover of control requests. The applicant should also demonstrate how it may facilitate police access to this information in real time at the roadside.

The applicant must demonstrate how it will ensure safe interaction with emergency services (including but not limited to police, fire and ambulance services) more broadly when the ADS is engaged. This includes interactions on-road and at the roadside.

A.1.6 Minimal risk condition

The applicant must demonstrate how the ADS will detect that it cannot operate safely and the steps the ADS will take to bring the vehicle to a minimal risk condition.

This could include documentation outlining the process for verifying the ability of the ADS to detect and respond to such circumstances. The steps the ADS must take to bring the vehicle to a minimal risk condition are likely to vary depending on the reason why the ADS cannot operate safely, other traffic and road users present, and on the level of automation engaged.

Therefore, a range of approaches to bring the vehicle to a minimal risk condition may need to be considered.

A.1.7 On-road behavioural competency

The applicant must demonstrate how the ADS will appropriately respond to foreseeable and unusual conditions that may affect its safe operation and interact in a predictable and safe way with other road users. This could include documentation outlining the process for verifying the ADS's:

- object and event detection and response capabilities
- crash-avoidance capabilities
- ability to respond to unusual events within its ODD
- on-road interaction with other road users, including vulnerable road users.

A.1.8 Installation of system upgrades

The applicant must demonstrate how it will manage system upgrade risks. This includes ensuring safety-critical system upgrades to the ADS are installed and do not result in the operation of an unsafe ADS.

The applicant must explain how it will notify registered owners/operators that a safety-critical upgrade has been installed or is available and needs to be installed. For such safety-critical upgrades, the applicant must also demonstrate how it will:

- detect failures to install upgrades (including failures of automatic updates, failures by registered owners/operators to take action when an upgrade is available, or failures in receipt of over-the-air software updates)
- detect system failures once upgrades are installed
- ensure the ADS is safely disengaged if such failures occur.

This could include documentation outlining the process for verifying the ADS's ability to:

- update automatically and notify the registered owner/operator of the update
- notify the registered owner/operator of available system upgrades
- detect and respond to failures to install upgrades
- detect and respond to any system failures following the installation of upgrades.

A.1.9 Verifying for the Australian road environment

The applicant must demonstrate how it has considered the Australian road environment in designing, developing and verifying the ADS, including its forward planning processes to ensure compliance with changes to the road environment (such as changes to road infrastructure).

This could include documentation outlining the process for verifying the response of the ADS to the Australian road environment such as interaction with road signs in various states and territories, and interaction with Australian flora and fauna.

A.1.10 Cybersecurity

The applicant must demonstrate:

 the capacity and competency of the ADS to minimise cybersecurity threats and vulnerabilities, including risks of cyber intrusion and other data security breaches

- the ADS's ability to detect and minimise the consequences of cyber intrusions and data security breaches that occur. Relevant consequences include those on road user safety and consequences for individual privacy following a data breach. One way to minimise negative effects on safety could be to include a manual override mechanism
- the applicant's processes for maintaining the ADS's capacity and competency to minimise cybersecurity threats, vulnerabilities and consequences of intrusions and breaches over the life of the ADS.

The applicant should refer to relevant legislation, industry standards and guidance for vehicle cybersecurity (domestic and international) and explain how it has incorporated these into its processes for designing, developing and maintaining the ADS.

A.1.11 Education and training

The applicant must outline the education and training it will provide to relevant parties about its ADS and how this will minimise the safety risks of using and operating the ADS. Education and training should consider different types of vehicles (including light and heavy vehicles) and different types of vehicle users. Without limiting the education and training to be provided, such education and training should consider:

- training human drivers and fallback-ready users to safely disengage and re-engage the ADS and the driving task
- informing human drivers of their obligations and responsibilities, particularly any fallback-ready user obligations
- informing consumers of the ADS's capabilities by clearly describing its automated capability, its level of automation, use limitations, restrictions on modifications and any restrictions of the automated technology such as the operational design domain
- facilitating the maintenance and repair of the ADS, including post-crash before it is put back in service
- facilitating employee, dealer and distributor understanding of the technology and operation so relevant information can be accurately conveyed to consumers and purchasers
- ongoing education as required, including education and training to end users who are not the original vehicle owner and to communicate the impact of upgrades.

The development of education and training should be well documented. Such documentation could explain the reasons for the education and training chosen and how it will facilitate proper and safe use of the applicant's ADS. The automated driving system entity (ADSE) should also make use of best practice or standards.

A.2 Obligations

A.2.1 Data recording and sharing

The applicant must outline the ADS data it will record and how it will provide the data to relevant parties. Without limiting the data to be recorded and shared, the applicant must explain how it will ensure:

- the vehicle has real-time monitoring of driving performance and incidents, including event data records in the lead-up to any crash that identifies which party was in control of the vehicle at the relevant time
- the vehicle can provide road agencies and insurers with crash data

- relevant parties (including police) receive information about the level of automation engaged at a point in time if required
- individuals receive data to dispute liability (for example, data showing which party was in control to defend road traffic infringements and dispute liability for crashes) when the individual makes a reasonable request
- data is provided in a standardised, readable and accessible format when relevant
- data is retained to the extent necessary to provide it to relevant parties (the amount of time data is retained for may depend on the purpose(s) the information could be used for – for example, law enforcement and insurance)
- data relevant to the enforcement of road traffic laws and the general safe operation of the ADS (including data relevant to crashes) is stored in Australia. This does not require the applicant to store the data exclusively in Australia.

In responding to this criterion, the applicant should note that the *Privacy Act 1988* (Cth) places limits on the collection, use and disclosure of personal information, which may limit the data the applicant can record and share.

A.2.2 Corporate presence in Australia

The applicant must provide evidence of its corporate presence in Australia.

A.2.3 Minimum financial requirements

The applicant must provide evidence of its current financial position, its grounds for claiming it will have a strong financial position in the future and the level of insurance held.

Appendix B Illustrative obligations and offence provisions

This appendix summarises all obligations and offences described throughout the discussion paper and shows what penalties could look like under the Automated Vehicle Safety Law.

Illustrative obligations and offence provisions	Illustrative penalties
General safety duty An Automated Driving System Entity (ADSE) must ensure so far as is reasonably practicable that its automated driving system is safe when used for a purpose for which it was designed, manufactured, supplied or installed.	A breach of the general safety duty is a criminal offence. Category 1 offences will relate to the most serious cases of noncompliance, involving
	recklessness in exposing an individual to whom a duty of care is owed to the risk of death, serious illness or injury.
	Maximum penalty
	 (a) if an individual commits the offence – x penalty units or five years imprisonment or both (b) if a corporation commits the offence – corporate multiplier (x 5)
	Category 2 offences will relate to a person who fails to comply with their health and safety duty (without the presence of recklessness) and in doing so exposes an individual to a risk of death or serious injury or illness.
	Maximum penalty (a) if an individual commits the offence – x penalty units

	 (b) if a corporation commits the offence – corporate multiplier (× 5)
	Category 3 offences will relate to a person who fails to comply with their health and safety duty without the aggravating factors present in the first two categories.
	Maximum penalty
	 (a) if an individual commits the offence – x penalty units (b) if a corporation commits the offence – corporate multiplier (× 5)
	The offences focus on the culpability of the offender and the level of risk and not the actual consequences or outcomes of the breach.
	A breach of the general safety duty is a criminal offence (reflecting a broad community interest in ensuring that persons who have a duty of care but do not observe that duty should be liable to a criminal sanction for placing another person's safety at risk). The in-service regulator will also be able to use a range of administrative tools such as formal warnings or enforceable undertakings to ensure ADSE compliance with the general safety duty.
Prescriptive requirements – general safety duty	Breaches of prescriptive requirements: Civil
 The ADSE must ensure, so far as is reasonably practicable, that systems are developed, used and maintained to carry out the general safety duty. 	penalty offences

	The ADSE must ensure, so far as is reasonably practicable, that system upgrades to the ADS are installed safely and do not result in the operation of an unsafe ADS.	Breaches of individual prescriptive requirements under the general safety duty may be treated as civil penalty offences or may result in criminal prosecution for a breach of the general safety duty itself based on an assessment of the risk posed by the breach. This will ensure the in-service regulator has a range of compliance and enforcement responses to encourage compliance with the general safety duty.
1	The ADSE must notify the in-service regulator and users of any systemic safety issues affecting the ADS.	
1	The ADSE must ensure, so far as is reasonably practicable, that the ADS software is without risks to the health and safety of users.	
	The ADSE must record and store data relevant to compliance with the general safety duty.	
	The ADSE must store and record data relevant to performing the general safety duty.	
•	The ADSE must, so far as is reasonably practicable, provide education and training to relevant parties such as users of its ADSs.	
	The ADSE, so far as is reasonably practicable, must prevent the operation of an ADS when the ADSE is aware the ADS is unsafe.	
	The ADSE must ensure, so far as is reasonably practicable, that the ADS can comply with relevant road traffic laws.	
	The ADSE must ensure, so far as is reasonably practicable, that the ADS cannot operate outside its approved operational design domain.	
ADSE se	nior executive due diligence	A breach of the due diligence obligation in
Senior ex complies	ecutives of the ADSE must exercise due diligence to ensure the ADSE with the general safety duty.	relation to a breach of the general safety duty is a criminal offence.
		Maximum penalty—\$x
		The penalty for contravention of the general safety duty by an individual (may include imprisonment for a category 1 offence).

Any duty of due diligence would, consistent with the Council of Australian Governments' principles, ¹³⁵ be limited to those who are in a position to influence the ADSE's compliance with its general safety duty.	The executive may be convicted of an offence even if the ADSE has not been proceeded against for, or convicted of, an offence relating to the safety duty.
ADSE transferability – reporting requirements Notification requirements	Breach of the notification requirements: Civil penalty offence.
 An entity that merges with or acquires an ADSE in accordance with the requirements of the <i>Corporations Act 2001</i> must notify the in-service regulator within a reasonable period (to be defined in legislation). 	Breach of the prohibition on operation until a new entity is accredited: Civil penalty offence,
 If the ADSE enters voluntary administration or liquidation as defined in the Corporations Act the ADSE must notify the regulator within a reasonable period (to be defined in legislation). 	Breach of the prohibition on operation where
 If an ADSE has stopped trading, it must notify the in-service regulator within a reasonable period (to be defined in legislation). 	there is no responsible ADSE: Criminal offence, penalty to be decided. An objective of the in- service framework is to ensure that there is a legal
 Prohibition on operation unless new entity is accredited by the in-service regulator In circumstances where a notification requirement has been triggered (for example, due to a merger or acquisition) it is an offence for the original ADSE to allow the ADS to engage until supported by an entity that has been accredited by the in-service regulator. 	entity responsible for the ADS while it is in operation. A breach of this requirement has the potential to undermine the entire framework. The threat of criminal prosecution should provide a significant deterrence against a breach.
In-service modifications Documentation requirements	Documentation requirements: Civil penalty offence.

¹³⁵ COAG Principles on Directors' Liability Provisions, adopted December 2009.

¹³⁶ Where an offence is expressed as a continuing offence, a person is guilty of a separate offence for each day of noncompliance, where an act or thing must be done within a particular period or before a particular time. Continuing offences can create a strong incentive for compliance as quickly as possible following an initial contravention.

 The ADSE must maintain a log of all in-service modifications that it implements in relation to its ADSs. Prohibition on certain modifications without approval from the in-service regulator 	Prohibition on certain modifications: Civil penalty offence. Continuing offence.	
 The ADSE must not implement modifications to in-service ADSs that change their performance or functionality beyond what was declared at first supply without approval from the in-service regulator. 		
Prescriptive requirements to support audit by the in-service regulator	Breaches of prescriptive requirements: Civil	
The ADSE must report 'safety incidents' for example, the ADSE must report breaches of road rules.	penalty offences.	
The ADSE must not falsify information provided to the in-service regulator.	Penalties will be set at a sufficiently high level to ensure compliance because the auditing powers are crucial for performing regulator functions.	
	Some of the offences – for example, failure to report safety incidents – may be continuing offences.	
	Falsification of information: Criminal offence.	
Compliance with directions from in-service regulator	Civil penalty offence. Will be continuing offences.	
The ADSE must comply with:		
 improvement notices 		
 directions to act 		
 variation of permission to operate. 		
Roadside enforcement	Civil penalty offence.	

 The ADSE must provide the in-service regulator with an enforcement interaction protocol. 	
 The ADSE must review and update its law enforcement interaction protocol(s) periodically. 	
Data recording and sharing	Civil penalty offence – will be continuing offence.
An ADSE must ensure its automated vehicles record data relevant to enforcement of road traffic laws and the general safe operation of the ADS (including data relating to crashes). This will include real-time monitoring of driving performance and incidents, including event data records in the lead-up to any crash to identify which party was in control of the vehicle at the relevant time and the level of automation engaged.	
The ADSE must provide this data in a standardised, readable and accessible format in response to a reasonable request from:	
 in-service regulator 	
 Australian Transport Safety Bureau 	
 police 	
 road agencies 	
 insurers 	
 consumers. 	
The ADSE will need to retain the data for as long as required, to the extent necessary to provide it to relevant parties (the amount of time data is retained for may depend on the purpose(s) the information could be used for).	
Data relevant to the enforcement of road traffic laws and the general safe operation of the ADS (including data relevant to crashes) must be stored in Australia.	
Privacy protections – data access, use and disclosure	
To be included after developing the privacy impact assessment.	

Appendix C Regulatory Powers Act

The monitoring, investigation and enforcement powers contained in the *Regulatory Powers* (*Standard Provisions*) *Act 2014* (Cwlth) (Regulatory Powers Act) are summarised below.

C.1.1 Monitoring powers

Part 2 of the Regulatory Powers Act creates a framework for monitoring whether a provision has been, or is being, complied with and the correctness of information.

The monitoring powers provided in Part 2 include inspection powers and entry and seizure powers – for example, the power to enter premises with consent or under a warrant and:

- search premises
- examine or observe any activity conducted on the premises
- take measurements of or conduct tests on any thing on the premises
- inspect any document on the premises and make copies of such documents
- operate electronic equipment on the premises
- secure evidence of the contravention of a provision
- ask questions and seek the production of document.

C.1.2 Investigation powers

Part 3 of the Regulatory Powers Act creates a framework for gathering material that relates to the contravention of offence provisions and civil penalty provisions. Part 3 provides that an authorised person may enter premises if the authorised person suspects on reasonable grounds that there may be material on the premises related to the contravention of an offence provision or a civil penalty provision that is subject to investigation under that Part. An authorised person who enters premises may exercise investigation powers including:

- search the premises and any thing on the premises for evidence relevant to a contravention seize evidence that he/she finds on the premises if entry was under a warrant
- ask the occupier of premises entered by consent to answer any questions, and to produce any document, relating to evidential material
- if entry to the premises is under an investigation warrant, require any person on the premises to answer any questions, and produce any document, relating to evidential material of the kind specified in the warrant. It is a civil penalty offence if a person fails to comply with the request.

C.1.3 Enforcement powers

Part 4 of the Regulatory Powers Act creates a framework for:

seeking civil penalty orders from a court in relation to contraventions of civil penalty provisions. It contains some rules of general application in relation to civil penalty provisions (such as the state of mind that must be proved and the defence of mistake of fact). Paragraph 82(5)(a) of the Regulatory Powers Act provides that a court may impose up to five times the pecuniary penalty specified for the civil penalty provision if the person against whom the order is sought is a body corporate

- the use of infringement notices where an infringement officer reasonably believes that a legislative provision has been contravened. A person who is given an infringement notice can choose to pay an amount as an alternative to having court proceedings brought against them for a contravention. If the person does not choose to pay the amount, proceedings can be brought against the person in relation to the contravention
- accepting and enforcing undertakings relating to compliance with provisions
- using injunctions (including interim injunctions) to enforce provisions. Injunctions
 may be used to restrain a person from contravening a provision enforceable under
 this Part, or to compel compliance with such a provision.

Appendix D Overseas approaches to manage roadside safety risks and roadside enforcement

There have been developments by industry and regulators to manage roadside safety risks and enforcement.

D.1.1 Industry-developed protocol – Waymo

Waymo has developed a law enforcement interaction protocol for first responders to interact with their level 4 SAE Chrysler Pacifica automated vehicles (which are being tested in a number of US states where no safety driver is required) (Waymo, 2019).

Waymo vehicles can be identified by other road users by exterior logos, licence plates and roof-mounted lidar. Its vehicles can identify first responder vehicles (emergency lights, sirens and appearance) and the vehicles can respond by pulling over and stopping when safe.

The protocol contains information for first responders on:

- how to enter the vehicle, disable the ADS, move the vehicle and isolate the power source
- where to find documents on the vehicle's owner, vehicle registration and insurance
- how to communicate with Waymo support staff.

Waymo's protocols manage interaction by support staff with vehicle passengers in the event of the vehicle being pulled over or involved in a collision. Staff and/or systems provide information through in-vehicle speakers, on the in-vehicle displays, and by communicating with passengers through in-vehicle telecommunications capabilities. Waymo support staff are dispatched to provide on-scene support, when needed, for passengers and first responders.

Waymo vehicles can detect that they have been in a collision and will react differently depending on the collision severity. Waymo states that the car will disengage its ADS if an airbag has been deployed, a door is open, the transmission is in park mode, or if the parking brake is engaged.

The protocol regarding a collision advises that:

- the vehicle will brake until it reaches a full stop and immediately notify Waymo's support staff
- Waymo support staff will call emergency services if the circumstances warrant (for example, where there is a significant collision in which police may be needed because of injuries or vehicles blocking traffic)
- Waymo support staff will be dispatched to provide on-scene support for passengers and first responders.

D.1.2 Legislative requirements – Arizona and California

The US state of Arizona requires automated vehicle companies seeking to deploy vehicles with level 4 and 5 automation to submit a law enforcement interaction protocol (Arizona Department of Transportation, 2018). The protocol is required to instruct first responders how to interact with the vehicle in emergency and traffic enforcement situations. The protocol must include:

- how to communicate with a fleet support specialist who is available during the times the vehicle is in operation
- how to safely remove the vehicle from the roadway
- how to recognise whether the vehicle is in automated mode and steps to safely tow the vehicle
- any additional information the manufacturer deems necessary regarding hazardous conditions or public safety risks associated with the operation of the vehicle.

The state of California has a similar requirement that manufacturers seeking to test or deploy automated vehicles submit a law enforcement interaction plan (State of California Department of Motor Vehicles, 2020).

Appendix E International consideration of data storage and information access requirements

Requirements for automated vehicle generated data, storage and access are also likely to be set at international forums and a number of elements are emerging. International developments will inform the design of some elements of an information access framework for automated vehicles in Australia because Australia's policy on vehicle standards is to align wherever possible with international standards.

There is clear support from industry and government that Australia should align with international standards. The Commonwealth Government is actively engaged with working parties in the United Nations Economic Commission for Europe that are responsible for road safety and vehicle regulations.

We have thematically summarised below some key elements being progressed in overseas jurisdictions and at international forums.

E.1.1 Recording automated driving system data for safety-related events

Global Forum on Road Traffic Safety (WP.1) and World Forum Harmonisation of Vehicle Regulations (WP.29)

WP.1 and WP.29 are deliberating on international reforms to allow for the legal, safe and reliable operation of automated vehicles.

WP.29 is considering a Data Storage System for Automated Driving (DSSAD) proposal of the International Organization of Motor Vehicle Manufacturers. The proposal defines the data that vehicles with an automated driving system are required to record leading up to, during and immediately following a significant safety-related event. The requirements include data (with timestamps) relevant to vehicle control – for example, automated driving system status, transition demand, take over and minimal risk manoeuvre (UNECE, 2019).

Several elements of the DSSAD are unclear:

- the period of time the DSSAD will record data leading up to an event and after an event
- the method of access to the DSSAD (on board or off-board via a data server)
- how long after an event the DSSAD will store data.

Recently WP.29 has adopted a revised framework on automated vehicles (Economic Commission for Europe, 2019) that contains WP.29 work priorities and timelines. The framework indicates that the approach to data storage systems for automated vehicles be completed by 2021. It is likely that if WP.29 adopts a DSSAD requirement, it will be adopted by Australia in the Australian Design Rules.

European Commission

The European Commission is proposing revisions to the General Safety Regulation to mandate data recorders for automated vehicles. The data recorders will clarify who was driving during an accident. The proposal is subject to approval by the European Parliament (European Commission, 2018).
Germany

The German Road Traffic Act requires automated vehicles to have a data recording device that records both the vehicle's control mode and any instances of a request by the vehicle for the driver to take control. The data recorded must be made available to authorities for law enforcement purposes (Bird & Bird, 2019). It also must be disclosed to any third party where the vehicle was involved in an accident and the third party has plausible facts that the data is needed to assert, satisfy or defend claims resulting from an accident.

Singapore

The *Road Traffic (Autonomous Motor Vehicles) Rules 2017* requires automated vehicles on public roads to have a data recorder installed. The recorder must capture date/timestamp, vehicle location, speed, whether the human or ADS or teleoperator is in control, operator override history, sensor data and camera/video data from internal and external facing cameras¹³⁷ (Government of Singapore, 2020).

Singapore also has national technical standards (TR68) (Roy, 2019) to guide industry's development and deployment of automated vehicles. The standards are voluntary and provide technical detail on data types and data formats that should be recorded and exchanged for automated vehicles with high and full automation (SAE levels 4 and 5).

California

Californian regulations governing the deployment of automated vehicles require a manufacturer to certify the automated vehicle is equipped with an autonomous technology data recorder that can store 'autonomous technology sensor data for all vehicle functions that are controlled by the autonomous technology at least 30 seconds before a collision with another vehicle, person, or other object while the vehicle is operating in autonomous mode'.¹³⁸

Japan

The Road Transport Vehicle Act has been amended to allow SAE level 3 automated vehicles to operate on public roads. (DLA Piper, 2019). Vehicles are required to be fitted with a data recorder and for drivers 'to save and store all driving data captured by the recorder' (Allsop & Baldwin, 2019).

In December 2019, the Ministry of Land, Infrastructure, Transport and Tourism began public consultation on a safety standard for automated vehicles. It defines things an 'operating status recording device' must record and the length of time that recordings should be kept. These requirements do not prescribe the technology to be used.

E.1.2 Period that information must be stored for, method of access and format

Some jurisdictions have mandated the period of time that the information captured by a data recorder must be stored for and how it can be accessed:

- Germany requires data to be stored for six months, or three years in the event the vehicle has previously been involved in an accident (Noerr, 2017). There is current debate about whether obligations should be set that require the data to be stored in the vehicle, in the cloud and/or via a third-party data trustee (Bird & Bird, 2019). This discussion may form part of the review of the Act due later in 2020.
- Singapore requires data to be kept for three years from the recording date. The data recorder must collect data in a digital format approved by the government.

¹³⁷ Road Traffic (Autonomous Motor Vehicles) Rules 2017 (Singapore), r 17(4).

¹³⁸ Regulation §228.06(a)(6).

The data from the recorder must be provided in a format readable by the government when requested. This could include providing data on a real-time basis. The data may be used for investigations, inspections or audits. The applicant has an obligation to ensure the data captured by a data recorder is not edited. Civil penalties apply¹³⁹ (Government of Singapore, 2020).

 California requires data to be captured and stored in a read-only format. It must be capable of being accessed and retrieved by a commercially available tool.

¹³⁹ Road Traffic (Autonomous Motor Vehicles) Rules 2017 (Singapore), r 17(3), (5) and (6).

A national in-service safety law for automated vehicles: Discussion paper October 2020

Glossary

Term	Definition
Australian Design Rules (ADRs)	National standards for safety, anti-theft and emissions in vehicle design.
Australian Road Rules	National model law intended to provide the basis for nationally consistent road rules in each jurisdiction. These rules do not, by themselves, have any legal effect.
Austroads	The peak organisation of Australasian road transport and traffic agencies.
Automated driving system (ADS)	The hardware and software collectively capable of performing the entire dynamic driving task on a sustained basis. It is a type of driving automation system used in vehicles with SAE levels 3, 4 or 5 of automation as established in standard SAE J3016 by the Society of Automotive Engineers International (SAE).
Automated driving system entity (ADSE)	The legal entity that certifies that the automated driving system can safely perform the driving task in place of a human driver. The ADSE will self-nominate by seeking type approval for the automated driving system under the <i>Road Vehicle Standards Act 2018</i> (Cwlth).
Automated vehicles	A vehicle with SAE levels 3–5 automation. It is a vehicle that has an automated driving system, which means it is capable of performing the entire dynamic driving task on a sustained basis without human input. It is distinct from vehicles with automated features to assist a driver (SAE levels 1–2), which still require a human driver to perform part of the dynamic driving task.
Department of Infrastructure, Transport, Regional Development and Cities (DITRDC)	Department of the Commonwealth Government responsible for administering the <i>Road Vehicle Standards Act 2018</i> and housing the Office of Future Transport Technology.
Dynamic driving task	All the operational and tactical functions required to operate a vehicle in on-road traffic. This includes steering, acceleration and deceleration, object and event detection and response, manoeuvre planning and enhancing conspicuity through lighting signalling. The dynamic driving task excludes strategic functions like trip planning, such as where and when to travel and route selections.
Driving automation features	Automation features that assist the driver, such as lane-changing features. A vehicle with driver assistance features is not capable of performing the entire dynamic driving task and requires a human

	driver. It can cover SAE level 1 (either longitudinal or lateral vehicle control) and SAE level 2 (longitudinal and lateral control).
Fallback-ready user	A human in a vehicle with SAE level 3 automation who can operate the vehicle, who is receptive to requests from the automated driving system to intervene and is receptive to evident dynamic driving task performance-relevant system failures. The fallback-ready user is expected to respond by taking control of the vehicle.
First supply	The market entry of motor vehicles to Australia.
Global Forum on Road Traffic Safety (WP.1)	A permanent working party of the United Nations Economic Commission for Europe (see below) that administers the Geneva and Vienna Conventions.
Heavy Vehicle National Law (HVNL)	National laws related to the regulation of heavy vehicles over 4.5 tonnes. Operational in all Australian states and territories except Western Australia and the Northern Territory.
Human– machine interface	Interface between a human operator and a machine. Includes functional and ergonomic design of the interface (human factors).
In service	Vehicles supplied to the Australian market and are now in use.
In-service safety	The safety of automated vehicles once the vehicles are on the roads or 'in service'.
<i>Motor Vehicle Standards Act 1989</i> (Cwlth)	Commonwealth legislation to control the safety, environmental and antitheft performance of all new and used vehicles entering the Australian market for the first time. The <i>Road Vehicle Standards Act 2018</i> (Cwth) will replace this Act.
National Heavy Vehicle Regulator (NHVR)	Australia's independent regulator for all vehicles over 4.5 tonnes gross vehicle mass (heavy vehicles). It administers one set of laws for heavy vehicles under the Heavy Vehicle National Law, delivering a comprehensive range of services under a consistent regulatory framework.
Operational design domain (ODD)	The specific conditions under which a driving automation system or feature is designed to function (for example, locations, weather conditions, driving modes).
Road Vehicle Standards Act 2018 (Cwlth)	Commonwealth legislation to control the safety, environmental and anti-theft performance of all new and used vehicles entering the Australian market for the first time, and to set national road vehicle standards. It replaces the <i>Motor Vehicle Standards Act 1989</i> (Cwlth) from 2019. The main provisions of the Act came into effect on 10 December 2019. There is a 12-month transitional period, allowing some type approval holders to continue operating under existing approvals until 10 December 2020.

Remote driver	The remote driver (sometimes described as a 'remote operator' or 'teleoperator') is a human who can operate an automated vehicle but who is not seated in a position to manually operate vehicle controls such as brakes and steering (SAE International, 2018, p. 16). A remote driver may operate the vehicle from outside it or inside it.
Society of Automotive Engineers (SAE)	A global professional association and standards-developing organisation for engineering professionals. It established the levels of vehicle automation in its technical document J3016.
SAE level 3	Where the automated driving system undertakes the entire dynamic driving task in situations within its 'operational design domain'. The human driver does not have to monitor the driving environment or the automated driving system but must be receptive to automated driving system requests to intervene and any system failures. SAE level 3 is also referred to as 'conditional automation'.
SAE level 4	Where the automated driving system undertakes the entire dynamic driving task for sustained periods in situations within its 'operational design domain'. When the system is driving the vehicle, a human driver is not required to monitor the driving environment or the driving task. Nor are they required to intervene because the automated driving system can bring the vehicle to a safe stop unassisted. SAE level 4 is also referred to as 'high automation'.
SAE level 5	Where all aspects of the dynamic driving task and monitoring of the driving environment are undertaken by the automated driving system. The automated driving system can operate on all roads at all times. No human driver is required. SAE level 5 is also referred to as 'full automation'.
System failure	A malfunction in an automated driving system and/or other vehicle system that prevents the automated driving system from reliably sustaining dynamic driving task performance (partial or complete).
United Nations Economic Commission for Europe Working Party 1 (WP.1)	United Nations permanent body that focuses on improving road safety. Its primary function is to serve as guardian of the United Nations legal instruments aimed at harmonising traffic rules.
United Nations Economic Commission for Europe Working Party 29 (WP.29)	United Nations forum within the institutional framework of the UNECE Inland Transport Committee. It works as a global forum allowing open discussion on motor vehicle regulations.

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