



Department of **Transport**  
**Main Roads** Western Australia  
**Public Transport Authority**

# How to trial an Automated Vehicle in Western Australia:

## Guidelines for Trialling Organisations



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# 1. Introduction

**These *Guidelines for Trialling Organisations (Guidelines)* have been developed to outline the process for conducting Automated Vehicle (AV) trials in Western Australia. This is a comprehensive guide to preparing an AV Trial Application and conducting safe AV trials by identifying, assessing and treating all risks.**

**These Guidelines have been written to assist you, the Trialling Organisation.**

The Department of Transport (DoT) can assist you in preparing an AV Trial Application. After reading the Guidelines, if you have any questions about the application process please contact DoT's AV Reform Team (AVRT).

Email: [CAVTrials@transport.wa.gov.au](mailto:CAVTrials@transport.wa.gov.au)

You should also review the National Transport Commission's *Guidelines for Trials of Automated Vehicles in Australia* (NTC Guidelines). These can be found at the NTC website ([www.ntc.gov.au](http://www.ntc.gov.au)) and are the basis on which these Guidelines were developed.

## What is an AV?

Automated Vehicles, or AVs, are vehicles that include an Automated Driving System (ADS) capable of performing the entire Dynamic Driving Task (DDT), including steering, acceleration, braking and monitoring the driving for sustained periods of time. This term encapsulates vehicles with conditional, high, and full automation.

The SAE J3016 Levels of Automation are globally recognised and are used to categorise the capability of the AV into six different levels, from 0-5.<sup>1</sup> Level 0 automation has no driving automation, and the human driver has full control of every aspect of the DDT (some momentary driver support technologies such as automatic emergency braking fall under Level 0). By contrast, a vehicle at Level 5 automation has 'full driving automation' by the ADS which is fully capable of completing the entire DDT. A Level 5 vehicle does not require a human driver in any circumstance.

## What is an AV trial?

An AV trial is a trial of a prototype or advanced ADS either on public roads (on-road) or private roads (off-road), or a combination of both, for the purpose of testing and assuring the safe operation of the system.

Trials are currently the only way for AVs of Level 3 and above to be operated on-road until the regulatory system is in place to support commercial deployment of AVs more broadly.

If you wish to operate an AV of Level 3 or above on-road, you need to complete an AV Trial Application, regardless of what type of vehicle it is, whether it was imported or modified, or how long it may operate for.

## Government roles

The WA Government's responsibility is to create a safe environment for all road users while technology is being tested, not to test the technology itself. As a result, this means the Department of Transport (DoT):

- » facilitates AV trials;
- » provides advice;
- » identifies and connects you with key stakeholders; and
- » ensures as far as possible a safe environment for all road users while an AV trial is underway.

DoT is the issuing authority for a letter of approval to support importation of an AV, the permit to operate an unlicensed vehicle including relevant conditions, and providing exemptions to certain provisions in legislation.

<sup>1</sup> J3016C: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles - SAE International



## SAE J3016™ Levels of Driving Automation

	SAE LEVEL 0	SAE LEVEL 1	SAE LEVEL 2	SAE LEVEL 3	SAE LEVEL 4	SAE LEVEL 5
<b>What does the human in the driver's seat have to do?</b>	You <b>are</b> driving whenever these driver support features are engaged - even if your feet are off the pedals and you are not steering			You <b>are not</b> driving when these automated driving features are engaged - even if you are seated in "the driver's seat"		
	You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety			When the feature requests,  you must drive	These automated driving features will not require you to take over driving	
	<b>These are driver support features</b>			<b>These are automated driving features</b>		
<b>What do these features do?</b>	These features are limited to providing warnings and momentary assistance	These features provide steering <b>OR</b> brake/acceleration support to the driver	These features provide steering <b>AND</b> brake/acceleration support to the driver	These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met		This feature can drive the vehicle under all conditions
<b>Example features</b>	<ul style="list-style-type: none"> <li>» automatic emergency braking</li> <li>» blind spot warning</li> <li>» lane departure warning</li> </ul>	<ul style="list-style-type: none"> <li>» lane centering</li> <li>» <b>OR</b></li> <li>» adaptive cruise control</li> </ul>	<ul style="list-style-type: none"> <li>» lane centering</li> <li>» <b>AND</b></li> <li>» adaptive cruise control at the same time</li> </ul>	» traffic jam chauffeur	<ul style="list-style-type: none"> <li>» local driverless taxi</li> <li>» pedals/steering wheel may or may not be installed</li> </ul>	» same as Level 4, but feature can drive everywhere in all conditions

Vehicles operating at or between Level 0 and Level 2 automation are controlled by a human driver, with Level 1 and 2 vehicles supported by Advanced Driver Assistance Systems (ADAS). These vehicles are commercially available and operating on Western Australian roads and are not subject to the AV trial process.

### Governance

The DoT is the lead agency for AV trials. However, several WA Government agencies are consulted in the assessment of AV Trial Applications.

The **Connected and Automated Vehicles Working Group** and **Connected and Automated Vehicles Advisory Committee** comprise members from the following agencies:

- » Department of Fire and Emergency Services
- » Department of Mines, Industry Regulation and Safety

- » Department of Planning, Lands and Heritage
- » Department of Transport
- » Insurance Commission of Western Australia
- » Main Roads Western Australia
- » The Public Transport Authority
- » Road Safety Commission
- » The WA Police Force

Other agencies may also be consulted on a case-by-case basis.

## Definitions

Term	Definition
AARP	Australian Automation and Robotics Precinct – a dedicated testing facility in Neerabup, Western Australia.
ADAS	Advanced Driver Assistance System.
ADR	Australian Design Rules.
ADS	Automated Driving System – the hardware and software collectively capable of performing the entire dynamic driving task (DDT, defined below) on a sustained basis without human input.
AV	Automated vehicle - a vehicle that has an ADS. It is distinct from a vehicle with ADAS such as lane-keep assist.
AVRT	Automated Vehicle Reform Team - the team within the Department of Transport responsible for facilitating Automated Vehicle trials.
AV Trial Application	The formal application process for an Automated Vehicle trial.
AV Trial Application Form	The application form provided for Trialling Organisations to complete to submit their AV Trial Application (Appendix 1).
AV Trial Guidelines (Guidelines)	This document; Guidelines for Trialling Organisations.
Communications Plan	A framework for the different stakeholders affected by or affecting the trial, the types of communication required relating to the AV trial and any associated timing and messaging.
DDT	Dynamic Driving Task – the group of operational and tactical functions required to operate a vehicle in traffic. Such as steering, acceleration and deceleration, object and event detection and response, manoeuvre planning, enhancing conspicuousness through lighting, signalling and so on. It does not include strategic functions such as trip planning.
DITRDC	The Commonwealth Department of Infrastructure, Transport, Regional Development and Cities – the department responsible for importation of vehicles.
DoT	The Department of Transport (WA)
Fallback-ready user (FBRU)	In a Level 3 vehicle, a capable human driver who can operate the vehicle, and who is receptive to requests from the ADS to intervene and to evident DDT performance-relevant system failures. The FBRU is expected to respond to requests from the ADS by taking control of the vehicle.
GPS	Global Positioning System
In-principle approval for importation	A letter issued by the DoT which indicates to the Commonwealth Government its support for a Trialling Organisation to import an AV for the purposes of trial and evaluation. The letter does not pre-empt on-road access.

Term	Definition
Level 2	'Partial Driving Automation' – the human driver is responsible for the control of the vehicle with assistance from automated features.
Level 3	'Conditional driving automation' – the ADS undertakes the entire DDT within its operational design domain. When the ADS is driving, the human operator does not have to monitor the driving environment or the driving task but must be receptive to ADS requests to intervene and any system failures.
Level 4	'High Driving Automation' – the ADS undertakes the entire DDT within its ODD. When the ADS is driving, the human operator is not required to monitor the driving environment or the driving task, nor are they required to intervene because the ADS can bring the vehicle to a safe stop unassisted.
Level 5	'Full Driving Automation' – the ADS undertakes all aspects of the DDT and monitoring of the driving environment. The ADS can operate on all roads at all times. No human operator is required.
LiDAR	Light Detection and Ranging - a type of sensor that can be used to support automated driving features.
Minimum risk manoeuvre	A manoeuvre conducted by the ADS that brings the vehicle to a stationary condition in a legally permissible position on or next to the roadway, as far as practicable, in a manner that minimises safety risk and discomfort to occupants.
Non-serious incident	A non-serious incident includes: <ul style="list-style-type: none"> <li>» near-misses;</li> <li>» when a human takes back emergency control of the vehicle, or the vehicle deactivates where there is no human driver, and this does not result in any injury or death (for example, making an emergency stop or using the emergency stop function to avoid a collision);</li> <li>» a public complaint regarding the performance of the vehicle.</li> </ul>
NTC	National Transport Commission
NTC Guidelines	The National Transport Commission's Guidelines for Trials of Automated Vehicles in Australia 2020
ODD	Operational Design Domain – the specific conditions under which an ADS or feature is designed to function (may include parameters relating to weather, location, road infrastructure, driving modes, etc).
Off-road	Driving environments not 'on-road' (see below). This may include the Australian Automation and Robotics Precinct, a private test area, a mine site, or a private industrial location. In this context it does not refer to whether a road is sealed or unsealed.

Term	Definition
On-road	The public road network, including any highway, road or street open to, or used by, the public and includes every carriageway, footway, reservation, median strip and traffic island on it. This includes both State and locally managed road networks and may also include carparks, 4WD tracks etc.
Permit	Issued by the DoT, a permit is the mechanism used to provide authority for an unlicensed vehicle (the trial AV) to be operated on public roads. A permit can be issued for a maximum period of 12 months.
Process Map	A diagram outlining the process undertaken for a trialling organisation to conduct a trial in Western Australia.
RADAR	Radio Detection and Ranging - a type of sensor that can be used to support automated driving features.
RVSA	The Commonwealth law - Road Vehicle Standards Act 2018
SAE Levels of Automation	Globally recognised levels of automation (0-5) and associated descriptors of vehicle capability to undertake the dynamic driving task.
Serious incident	A crash involving a trial vehicle or a contravention of any law such as exceeding the speed limit or a red-light violation.
Staging	When an AV trial is broken down into segments with discrete objectives and parameters so that the risk can be scaled on the basis of proven vehicle capability.
Traffic Management Plan	A document that outlines the traffic control and traffic management procedures to be implemented by the Trialling Organisation to manage potential hazards associated with the traffic environment during the trial.
Trial Concept	The preliminary, high-level scope and objectives for a proposed AV trial.
Trialling Organisation	The organisation responsible for the automated vehicle trial.
V2I	Vehicle-to-infrastructure – the wireless exchange of data between a vehicle and road infrastructure.
V2V	Vehicle-to-vehicle – communication between vehicles.
V2X	Vehicle-to-everything – communication between a vehicle and any entity that may affect, or be affected by, the vehicle.
Vehicle Supervisor	Vehicle Supervisor – within the scope of an AV Trial, the human driver (fallback-ready user) responsible for monitoring the driving environment and capable of taking control of the vehicle when required.
We / us	The Department of Transport
You	The Trialling Organisation



## Further reading

Austrroads website: [Future Vehicles and Technology | Austrroads](#)

DoT website: [Automated vehicles \(transport.wa.gov.au\)](#)

NTC guidelines: [Automated vehicle trial guidelines | National Transport Commission \(ntc.gov.au\)](#)

WA legislation: In addition to directly relevant road safety and vehicle legislation, you may need to consider other legislative provisions relating to occupational health and safety, consumer protection and environmental issues, depending on the nature of the AV trial. A list of identified acts and regulations are listed on the DoT website: [Automated vehicles \(transport.wa.gov.au\)](#)

## 2. AV trial planning

**The foundational component of the entire AV trial is the initial planning phase. This will determine the best way to progress through the subsequent phases and enable the WA Government to provide early indications of potential obstacles to conducting the trial.**

**We recommend you consider the use of a Responsibility Assignment Matrix (commonly referred to as a RACI or Responsible, Accountable, Consulted and Informed matrix) to help you manage the different components of the AV trial process.**

### 2.1 Scope trial and required AV (Trial Concept)

You should develop a Trial Concept prior to engaging with the AVRT to assist us in providing you with relevant guidance. The focus of this step is developing the objectives and general outline of the proposal.

#### Stakeholder engagement

You must list the groups you intend to engage with before and during the trial, including identifying key stakeholders and potential participants. There is no need to provide a Communications Plan in the AV trial planning phase.

Your list of stakeholders could include local governments, road user groups, law enforcement agencies, emergency services, infrastructure managers, public transport providers and the broader community.

#### Scope and outcomes

You need to identify what you are trying to achieve by conducting an AV trial in Western Australia.

For example, you may want to:

- » test a specific AV technology in WA road conditions;
- » raise public awareness for AVs or a specific AV technology;
- » assess the suitability of the existing road environment for AV technology; or
- » trial an AV as a potential alternative to a human-driven passenger service.

It is worth identifying in this step if there will be key dependencies as part of the project i.e. traffic light integration.

#### Location(s)

You must clearly identify the proposed trial location. This could be specific roads, routes or regions. The more specific you are, the better we can assist you to identify specific considerations, such as traffic flow or unique road infrastructure. Global Positioning System (GPS) coordinates are to be provided to the level of detail available.

The DoT, in partnership with other government agencies, will consider the location suitability for an AV trial.

#### Vehicle type

You must advise what vehicle/s you are proposing to trial. In this phase, you should consider at a high level the limitations of the proposed vehicle/s and its capability to meet the trial objective within the proposed location.

When choosing an AV for trialling, you should consider characteristics such as the level of automation, whether it has been trialled before in Australia, any limitations of the vehicle's Operational Design Domain (ODD) and the dimensions of the vehicle.

The ODD should be described in the highest level of detail you have available. This may include detailing limitations such as data connectivity, reliance on road markings, weather conditions or speed limits.

Vehicles that are not appropriate for the proposed trial location will not be approved or may have significant conditions and limitations placed on their use. This may limit your ability to achieve the trial objective.

You should also consider the availability of the vehicle, and whether it is already within Australia or whether you will need to import it for the purpose of an AV trial.

More specific vehicle information will be required for the formal AV Trial Application.

#### Partnerships and collaborations

You should identify if there are other parties who will participate in the proposal or who are required to partner with you for your trial to be delivered successfully.

## Staging

It may be appropriate, depending on the scale of your trial and trial objectives, to break your trial into smaller stages. In this context, each stage would be a discrete set of activities with increasing complexity and risk tolerability that maintain the safety of the AV, passengers and other road users. Safe operation of the AV will need to be adequately demonstrated before progressing to the subsequent stage.

You should consider your ultimate trial objectives and whether these could be achieved through testing in stages. Where the trial design may create high levels of risk, the AV Reform Team will recommend demonstrating AV capability in lower risk settings in the first instance.

Required reporting at the end of each stage will inform the DoT's assessment before moving to the next stage.

All new AV Trial Applications will commence with a Vehicle Supervisor in the vehicle who can take control of the vehicle where required. If the trial objectives include operating the vehicle without a Vehicle Supervisor, then staging will be required.

## 2.2 In-principle support for trial

In-principle support for your AV trial will enable you to seek a letter of in-principle approval for importation of the AV from DoT and form the basis of developing an AV Trial Application.

### Engagement with AVRT

It is recommended you engage with the AVRT within the DoT once you have a Trial Concept. Early engagement with the AVRT on the trial planning will assist in identifying any gaps or concerns in the proposed trial and provide an opportunity to resolve any initial concerns.

If the AVRT identifies a potential obstacle to the trial proceeding, it will consult with relevant WA Government agencies and provide advice to you. Where required, the AVRT can coordinate a meeting with the relevant stakeholders.

## Off-road and/or on-road trial

You need to identify whether the trial is intended to be entirely off-road or entirely on-road, or a combination of both. If the trial is to be entirely off-road, you will not need to complete every phase of these Guidelines.

### Recommendation to use NTC Guidelines (even where not required)

Even where the trial may be in part or in its entirety undertaken off-road, the NTC Guidelines provide useful structure and advice for the operation of AV trials which are recommended for any AV trial conducted in WA.

### Review

You may be requested to provide further information to address queries or clarifications from the AVRT or reviewing WA Government agencies. You may also choose to revise your trial planning to change the scope, objectives or other parameters.

It is common for there to be ongoing communication between you and the AVRT to ensure the elements of the AV trial are understood by both parties and the trial poses no immediate concerns.

The information you provide to the AVRT during this AV trial planning phase may help to streamline the subsequent phases of the trialling process.

## 3. Importation of AV

If the vehicle is to be imported as an AV for the purposes of an AV trial, you will be responsible for importing the vehicle into Australia. Importation of vehicles is regulated by the Commonwealth Government.

The Commonwealth Government will request that you provide a letter of support from the home jurisdiction's road transport authority. In Western Australia, you will need to seek this from DoT to support your application.

Information guiding this section and further requirements for importation can be found at:

[Importing a road vehicle into Australia | Department of Infrastructure, Transport, Regional Development and Communications, Australian Government](#)

### 3.1 When importation is not required

There may be some instances in which importation is not required:

1. The AV is already being used for trial or off-road purposes within WA.
2. The vehicle is currently licensed in Australia, operating below Level 3 automation and is intended to be modified to a higher level of automation to enable operation as an AV.
3. The AV is already operating in another jurisdiction and just needs to be relocated within Australia.

In these cases, you can skip to Chapter 4: AV Testing.

### 3.2 Letter of approval for importation

Once you have identified and sourced the vehicle you intend to use for your trial, you should request a letter of approval for importation of the vehicle. Some vehicle information is required at this stage, including the make, model, chassis number and/or Vehicle Identification Number.

If you did not complete the AV trial planning phase, the AVRT will also request information on the objectives and scope of your trial.

Unless the proposal conflicts with WA Government commitments or objectives, or poses safety risks, DoT will issue a letter of in-principle approval for importation and trial of the AV.

To assess whether this conflicts with other WA Government commitments or objectives, or poses safety risks, the AVRT will circulate the request to affected WA Government agencies (Refer to Chapter 1: Introduction; Governance). If you completed the AV Trial Planning phase, this step will be focused on the specific vehicle information you now supply.

If the AVRT confirms in-principle approval should be given, it consults with the Vehicle Safety and Standards branch which then prepares the letter of in-principle approval for importation.

Where the request is approved and a letter is issued, the AVRT will provide you with a copy of the Process Map, these Guidelines, the AV Trial Application Form and the NTC Guidelines.

Any included technical requirements and other advice from DoT in this letter will be a guide only and limited by the level of detail you provide.

The AVRT will recommend you operate in accordance with NTC Guidelines, even for off-road trials. The AVRT will also confirm there will be no access to the road network until a separate AV Trial Application has been approved.

### 3.3 Requirements from Commonwealth Government

Under Section 22 of the Commonwealth's *Road Vehicle Standards Act 2018* (RVSA), it is an offence to import a road vehicle into Australia without an approval. The Commonwealth Government Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) manages the approval process through an online application system, ROVER.

The importation process may vary depending on the type of vehicle and whether the vehicle is compliant with Australian Design Rules (ADR) for road use, or whether the vehicle is non-compliant and is only going to be used on roads for the purposes of the AV trial.

Detailed instructions can be found on the DITRDC website: Importing a road vehicle into Australia | Department of Infrastructure, Transport, Regional Development and Communications, Australian Government.

Advice from this DITRDC website is that it may take up to 60 business days for your application to be assessed and decided on by DITRDC. Ensure you allow enough time for the approval to be granted before importing the vehicle.

#### If not approved

If your request is not approved, you should review any feedback from DITRDC and consider whether there is an alternate solution, such as modifications or an alternate vehicle type, that could meet the requirements of the trial objectives laid out in the Trial Concept.

### Import approval conditions

If you receive import approval for your AV, the approval will include conditions stipulated by DITRDC. Conditions may include, but are not limited to:

- a. Limitations on area of operation unless otherwise agreed with State authorities
- b. Limitations on sale of vehicle
- c. Terms for end of service
- d. Reporting obligation on vehicle exportation or being destroyed

Conditions are applied by DITRDC and are outside of the authority of the WA Government.

### 3.4 Importation

On receipt of the importation approval from DITRDC, you can import the AV in accordance with any terms and conditions provided.

You should provide AVRT a copy of your import approval and estimated date of arrival of the trial vehicle so the trial progress can be monitored.

## 4. AV Testing (off-road)

To submit an AV Trial Application (outlined in Chapter 5), you must have demonstrated the capability of the AV in an Australian environment. This AV testing outside of the public road network (off-road) is essential to demonstrating the AV's capability for an on-road trial. While the testing will vary depending on the AV's technology, vehicle type and trial objectives, you should ensure the AV can safely undertake all required manoeuvres of the Dynamic Driving Task (DDT) that may occur during the proposed on-road trial.

If you intend to operate this AV or identical AVs in other jurisdictions in Australia, please advise the AVRT. There may be an opportunity to work with other state and territory governments and complete one set of testing for the vehicle which will satisfy many of the requirements of both WA and the other jurisdiction.

### 4.1 If proven technology

If the vehicle has been operated in another Australian jurisdiction, you can use on-road operation or off-road testing from other jurisdictions to demonstrate the vehicle's capability. If this is the case, please discuss the testing requirements with the AVRT.

If the vehicle is an identical vehicle to one which has been subject to off-road testing in Western Australia, then testing may be condensed.

### 4.2 Testing facility

Off-road testing can occur at an appropriate site. Please check with the AVRT that the site selected falls within the definition of 'off-road'.

If you have not identified a testing site, you may consider the Australian Automation and Robotics Precinct (AARP), located in Neerabup, 40km north of the Perth CBD. There are three test beds that can be rented, with a schedule of rates available on the AARP website. Check with the AARP as to availability should you choose to use this facility.

According to the AARP website, Test Bed 3 is a *1-hectare area designed as an urban streetscape scenario and will include a 4-way intersection, a roundabout and seal roadway for self-navigating vehicle testing, among other uses.*

For further information, you can review the AARP website: [Australian Automation and Robotics Precinct - Overview - DevelopmentWA - Shaping our State's future](#)

### 4.3 Demonstrate AV capability

There are a number of tests that may need to be conducted to demonstrate the capability of an AV, depending on your proposed AV type, technology, level of automation and trial objectives.

Some tests may need to be conducted with the vehicle under manual operation on the public road network (where the vehicle meets ADRs for normal road use). Off-road testing of the vehicle capability with respect to signage would be necessary to progress to on-road testing. Please discuss with the AVRT if you consider testing needs to be done on public roads, rather than off-road, for example if the technology being tested includes detection capabilities on public roads without being in charge of the vehicle.

While these Guidelines do not specify the tests you should undertake to prove the capability of your AV, the following list of off-road tests may provide some examples:

- » Vehicle manoeuvres as will be undertaken on the proposed trial route.
- » Detecting and responding to obstacles on the road or adjacent corridor.
- » Correctly interpreting and responding to line markings, signs and signals in various weather conditions and at different angles (roadworks, fixed signage, school zone signs, closed lane alerts in tunnels, smart freeways).
- » Stopping safely in various controlled stop and emergency stop scenarios.
- » Responding to various simulated traffic scenarios.
- » Responding to temporary traffic management arrangements (temporary traffic lights, traffic warden, traffic cones, inactive traffic lights).

- » Responding to a cyclist/eRideable on the road (for example, will the vehicle overtake a bicycle on double white lines?).
- » How the vehicle responds to Safe Active Streets and non-standard road design (i.e. bike boulevards, self-explaining roads).
- » The Vehicle Supervisor taking control of the vehicle or handing back control to the vehicle.
- » Speed limit changes including variable speed limits and un-signed built-up areas.
- » How the vehicle responds to unsealed roads of various conditions (or are these outside the ODD?).
- » Embarking or disembarking passengers.
- » Simulated failure of systems (i.e. lack of data connectivity).
- » Traffic signal connectivity interaction.
- » Responding to a parked emergency vehicle (SLOMO laws).
- » Understanding clear zones and no parking areas.
- » Testing lateral shift / merge behaviour / overtaking in various scenarios.

The list of approved signs for use in Western Australia can be found on the Main Roads WA website.<sup>2</sup>

Further to this list, you should also consider additional testing for heavy vehicles:

- » platooning;
- » travelling on bridge structures and positioning on bridges (reduced speed);
- » V2V communication to react to escort or pilot vehicle;
- » overtaking behaviours and regional roads (traditionally heavy vehicles will move to the outside edge and slow down to allow light vehicles to overtake them on regional roads);
- » recognition of and use of arrester beds; and
- » responding to brake failures or locked brakes.

## 4.4 Assess operation and integration with existing transport system

The tests identified in Chapter 4.3 will determine whether your vehicle can interact with key road infrastructure and some pre-determined scenarios. Depending on the testing conducted in an off-road environment and the proposed AV trial location, you should discuss with the AVRT any further investigations that may be required to ensure a thorough assessment of the proposed AV operation within the existing transport system.

This may include additional scenarios such as:

- » giving way to a merging bus;
- » vehicles parking in the left-hand lane on some urban roads; and
- » interacting with frequently stopping and slow-moving garbage trucks or street sweepers.

## 4.5 Engage AVRT for advice

It is strongly recommended you engage with the AVRT during, or at the completion of testing, before submitting an AV Trial Application. This could provide clarification before preparing the formal proposal. Depending on the type of technology proposed for trial, it may be appropriate to provide physical demonstrations of the AV in an off-road environment.

<sup>2</sup> <https://www.mainroads.wa.gov.au/technical-commercial/technical-library/signs-index/>

## 5. AV Trial Application

The AV Trial Application is the means by which you seek a permit for operation of a non-standard vehicle on the WA road network. If you are seeking to conduct a trial which doesn't align with any of the sections in this chapter, please discuss with the AVRT and we will assist you in completing an application.

### 5.1 NTC Guidelines

Our process is based on the NTC Guidelines, used by all Australian jurisdictions, and can be referred to for further information or context as appropriate: [Automated vehicle program | National Transport Commission \(ntc.gov.au\)](https://www.ntc.gov.au/automated-vehicle-program).

### 5.2 Completing the application form

The AV Trial Application Form is at Appendix 1. The AV Trial Application Form is a template only – information can be supplied in alternate formats, as long as all the required information is incorporated and clearly labelled.

The DoT's intention in seeking detailed information is not to collect commercially sensitive information, but to satisfy the DoT that the ADS in the AV is capable of performing the tasks within the proposed trial and that your safety, as well as the safety of other road users, has been adequately addressed.

If a section of the AV Trial Application Form is not relevant for your trial, please provide an explanation as to why. If you are unsure, please contact the AVRT.

### 5.3 Section 1: Trial applicant

#### Applicant details

This is the Trialling Organisation or entity that will be issued a permit, if approved, and include name, address and contact details.

#### Local Government support

You should provide a letter of support from the relevant Local Government/s in which your trial will be undertaken. DoT may contact the Local Government/s to confirm support and ensure they have no concerns with your proposed AV trial.

Please include details for all Local Governments impacted by the trial.

#### Other partnerships

List any other organisations whose support is required for you to successfully undertake the trial. This may be an academic institution, key consultant, another trialling organisation, or other organisation.

### 5.4 Section 2: Trial summary

#### Trial objectives

Include a summary of the objectives of the AV trial, including what is being tested, developed, or studied during the trial. For example, the trial may be testing specific technologies, or be an overarching proof of concept or a demonstration. This should align with your Trial Concept.

You should also outline the assessment criteria used to determine whether your trial is successful.

#### Trial staging

Stages may be appropriate to scale different parameters of the trial. These may include, but are not limited to, level of automation, length or complexity of route, capability to carry passengers, speed of vehicle, interaction with traffic and/or infrastructure and complexity of navigable obstacles.

If relevant, you should outline the discrete stages of the trial to incrementally increase the capability, route/s or risk of the trialling AV on-road.

### 5.5 Section 3: Vehicle technology

#### Vehicle details

This must include make, model, body type, colour, vehicle identification number and/or chassis number of the vehicle. You should also include the dimensions, weight, axle weights and tyre sizes. This information assists with the safety assessment for the operation of the vehicle on a public road.

#### Vehicle description

Describe the trial vehicle and the capabilities of the ADS. Include photos of the vehicle and key components (e.g. top view, side views and quarter view of the vehicle, sensors and safety features).



Please refer to the SAE J3016 in relation to the vehicle capabilities.<sup>3</sup>

## Operational Design Domain

The ODD is the specific conditions an ADS or feature is designed to function in (for example, locations, weather conditions, driving modes).

Your application must describe the ADS's ODD in detail. This is required to be precise as it will inform DoT's assessment of the suitability of the proposed trial. The ODD should specify the exact environment and conditions in which the ADS can be operated safely. For example, this could include, but is not limited to:

- » Infrastructure requirements
  - » Types of roads
  - » Traffic conditions
  - » Signs and line markings
  - » Available digital maps (including how to ensure currency and update protocol)
  - » V2I connectivity (for example, with traffic signals)
  - » Satellite access (particularly in non-urban areas)
- » Environmental requirements
  - » Weather and visibility conditions
  - » Maximum and minimum temperatures
  - » Wind speed
  - » Time of day limitations
- » Other requirements
  - » Geographic limitations, such as geofencing
  - » Vehicle limitations (for example, gross vehicle mass)

You should provide adequate information about how the ADS will be restricted to its ODD and how it will transition control to a Vehicle Supervisor if it reaches the limits of its ODD.

If changes to the ODD are expected during the trial, you must provide information about how this will be managed, including how and when you will communicate with DoT. Changes must be reviewed and approved by DoT before they can be implemented.

## Human machine interface

Initially, AV Trials are expected to be conducted with a human Vehicle Supervisor in the vehicle who can manually take control of the vehicle where required. The Vehicle Supervisor may also be referred to as a fallback-ready user.

Under this heading you must outline the interaction process between the automated and human driving modes.

You should provide an explanation of how the ADS:

- » hands over control of the vehicle to the Vehicle Supervisor;
- » informs the Vehicle Supervisor that the ADS is engaged;
- » requests the Vehicle Supervisor to take control of the vehicle, and how much time the Vehicle Supervisor is given to respond;
- » conducts a minimum risk manoeuvre and under what conditions; and
- » indicates whether the ADS is functioning properly or experiencing a malfunction.

You should provide an explanation of how the Vehicle Supervisor:

- » hands over control of the vehicle to the ADS;
- » gains control of the vehicle when requested to by the ADS;
- » gains control of the vehicle in a timely manner at the discretion of the Vehicle Supervisor (such as to avoid anticipated incidents or respond to directions of an enforcement officer);
- » interacts with the vehicle when the ADS is or is not engaged; and
- » must act when the ADS is functioning properly or experiencing a malfunction.

## Import approval conditions

If not previously provided, you should include a copy of the import approval issued to the trial vehicle including any conditions. If the vehicle is yet to be imported, please provide details of proposed importation process and timeframe for the vehicle to arrive in Western Australia.

3 [J3016C: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles - SAE International](#)

## Compliance with vehicle standards

An AV trial is enabled by the Director General of DoT granting exemptions to the laws with which the vehicle does not comply.

You will need to detail which laws your trial is seeking exemption from. These laws may include the following:

- » *Road Traffic (Administration) Act 2008*
- » *Road Traffic (Administration) Regulations 2014*
- » *Road Traffic (Authorisation to Drive) Act 2008*
- » *Road Traffic (Authorisation to Drive) Regulations 2014*
- » *Road Traffic (Blood Sampling and Analysis) Regulations 1975*
- » *Road Traffic (Breath Analysis) Regulations 1975*
- » *Road Traffic (Drug Driving) Regulations 2007*
- » *Road Traffic (Omnibus) Regulations 1975*
- » *Road Traffic (Urine Sampling and Analysis) Regulations 1983*
- » *Road Traffic (Vehicles) Act 2012*
- » *Road Traffic (Vehicles) Regulations 2014*
- » *Road Traffic Code 2000*

## Restraints

Restraints may be required depending on the type of vehicle and trial to be undertaken. Unless an exemption has been obtained, each seat in an AV trial vehicle must have a seatbelt and/or other suitable restraint fitted. These must be used by all occupants including the Vehicle Supervisor.

Children under the age of seven must not be carried in the first stage of a trial. In subsequent stages, they must be restrained using an age-appropriate child restraint.

The standard restraint requirements may be modified, or an exemption provided, for trial vehicles depending on the type of vehicle and/or the type of trial that is to be undertaken.

For example, an exemption may permit:

- » transport of unrestrained standing passengers if all seats are occupied;

- » the use of lap belts in low-speed vehicles instead of three-point belts; or
- » fitting seat belts or anchorages that meet a standard other than that required under the *Road Traffic (Vehicles) Regulations 2014*.

Specific exemptions for restraints will not be considered in the first stage of a trial where the vehicle has not been operated on-road previously.

If you require further information regarding restraints, please contact the AVRT in the first instance.

## 5.6 Section 4: Management of trials

You are required to provide DoT an overview of the governance of the trial operations.

This includes trial parameters (including reference to proposed trial assessment criteria and expected outcomes), supervision of the vehicle and trial and incident management.

### Trial location(s)

You should describe the trial location/s and attach maps if applicable.

Indicate:

- the extent to which the location falls within the AV's ODD;
- whether any State and Territory borders are crossed in the trial;
- time of day and season the AV will operate (anticipated weather conditions); and
- which roads will be used and whether they are considered on-road (*refer to definition*).

### Vehicle Supervisors

Outline how you will designate and train Vehicle Supervisors. Ensure you have a sufficient number of Vehicle Supervisors to manage the trial, that they have the appropriate licence (if they are going to control the vehicle at any point) and are fit to drive and operate the vehicle.

## Description of the technology being trialled

You should provide a description of the technology being trialled.

Please include available data on the below items, where appropriate. Pictures and diagrams are useful in describing key components such as sensors. If these have been addressed in earlier sections (such as Section 5.5) then please note that in responding to this item.

Level of automation (refer to the SAE J3016 on page 5)

- » Speeds
  - » What is the maximum speed of the vehicle operated by the ADS?
  - » What is the maximum speed of the vehicle operated manually?
  - » What will be the maximum speed for the trial purposes in each stage?
- » Connectivity
  - » Is the vehicle fitted with V2X or V2V communication systems? If so, what are their capabilities and compliance standards?
- » Obstacle detection systems
  - » What type of systems are used to detect obstacles such as pedestrians or items on the path? i.e. Light Detection and Ranging (LiDAR), Radio Detection and Ranging (RADAR). Provide the specifications for each system.
  - » Identify whether the systems fuse data together or are processed independently.
- » Supervisory system
  - » Is the system able to detect loss of a sensor, malfunction of a critical computer, failure of communication linkages? Please explain the system's expected behaviours in such failures.
  - » Following a malfunction, how is the system tested prior to restarting?

- » Positioning
  - » What systems does the ADS use to localise or position itself? For example, Global Positioning System (GPS), Odometer, Machine Vision, LiDAR. Please provide specifications for each system used.
  - » Identify whether the systems fuse data together or are processed independently.
  - » How does the system behave when accuracy cannot be achieved?
  - » Does the localisation system use a prior map of the route? If so, how is the required data collected or obtained to develop map/s?
  - » Does the localisation system dependent on the quality and availability of a mobile phone network?

## Traffic Management Plan (TMP)

You must provide an accredited traffic management plan that identifies the trial's anticipated traffic risks and mitigating actions.

Give consideration to:

- » traffic density/vehicles;
- » speed environment;
- » vulnerable road users such as pedestrians, cyclists, mobility scooters, eRideable users;
- » signage;
- » irregular events – construction, road detours, flooding;
- » complex intersections and mergers;
- » regional variations in the road design;
- » railroad or other interfaces; and
- » a crisis management plan.

Further information regarding the TMP may be found on Main Roads Western Australia's website: [Main Roads Western Australia - TMP](#). This search will provide you with access to a template, TMP Authorisation Checklist and examples of completed TMPs.

It is strongly recommended you discuss the TMP with Main Roads prior to submission so they can assist you with the process. Please contact the AVRT to coordinate a meeting.

If there are perceived significant impacts of the trial to normal traffic from the traffic management plan, further information may be requested by the AVRT.

### Infrastructure or network requirements

You should provide a description of the infrastructure and communication networks you plan to integrate with as part of the trial in the form of a full route assessment, this assessment shall include details such as, but not limited to:

- » access requirements for communication networks or Intelligent Transport Systems and Devices;
- » details of road surface and existing on-site infrastructure;
- » method of communication with network devices;
- » whether temporary road infrastructure is required; and
- » details of how the vehicle will respond to driving conditions in rural environments, unsurfaced roads with limited road signage and road marking.

### Passenger transport

If you anticipate carrying passengers on the automated vehicle trial, a staged trial may need to be considered depending on the trial proposal. Ordinarily, passengers cannot be charged fares for transport in unlicensed vehicles. Please discuss with the AVRT if your trial proposal includes charging fares to passengers to use the service.

Provide a map of the proposed trial area/route including origin, any proposed stops and end destination. This must include the area/routes used when the vehicle is in and out of service.

To enable DoT to provide you with accurate advice, you will also need to answer and provide details to the following questions:

- » Which entity or entities are funding and providing the trial service and for what purpose?
- » Will the trial service be open for use by the general public?
- » Will the trial service impede or interact with any public transport stop/station, or existing public transport service?
- » Will the trial service operate to a timetable, on a continuous loop/shuttle, or on demand?

- » What are the proposed operational timeframes (in and out of service)?
- » What is the maximum number of passengers per trip?
- » How will your trial service be accessible for older or young passengers or those with physical disabilities?
- » If tickets are required, how will you manage tickets for the service?
- » How will vehicle supervisors manage inappropriate passenger behaviour?
- » Is there an expectation to conduct surveys or passenger follow up?

Further information may be requested for transport planning purposes.

### Engagement with public and other stakeholders (Communications Plan)

You must set out how you intend to engage with the public and other key stakeholders as part of the trial. This could include engagement with local governments, road user groups, law enforcement agencies, emergency services, infrastructure managers and public transport providers.

Considerations for public engagement:

- » Are there any specific demographic features the trial must consider (for example, high population of older residents)?
- » Are there any community concerns associated with the trial?
- » What education and training has been, or is proposed to be, provided to the public?
- » How will other road users (for example, drivers, pedestrians, cyclists) interact with the AV?

Consideration for stakeholder engagement:

- » How will the WA Police Force be engaged before and during the trial?
- » What key local and state government stakeholders need to be engaged?
- » Are there key local businesses or schools that should be consulted?
- » Will media be involved before, during or after the trial? Are there any pre-planned media events?

If you seek attendance from the Minister for Transport or senior DoT staff for a media event, significant notice will be required. Please engage with DoT Communications team via [media@transport.wa.gov.au](mailto:media@transport.wa.gov.au) or the media enquiries line 0438 999 196.

Ensure the information here is consistent with how you indicated you would communicate with these parties in Chapter 2.1.

## Managing change

You should set out your change management strategy for changes to the vehicle, required infrastructure or other potential/likely upgrades over the course of the trial.

You must explain how you will:

- » make updates to software and hardware as issues are discovered and technology evolves; and
- » manage the effects of changes to the road network (such as changes to road conditions and roadworks) that are likely to occur over the course of the AV trial.

Software updates that substantially change the performance of the vehicle, such as a change to the vehicle's ODD, are likely to be considered significant modifications and the applicant should engage with DoT to determine if any adjustments are required to the permit or conditions of the trial.

## 5.7 Section 5: Insurance

Your trial will NOT be covered by the WA Government's Motor Accident Injury Insurance scheme. You will need to source suitable insurance to cover the costs of the death of or bodily injury to third parties in the event of a trial vehicle collision with a third-party vehicle or person. The value of the insurance cover should be calculated through the planning process for the trial. Other insurance products may be required.

The NTC Guidelines state that relevant insurances for a trial could include:

- » compulsory third-party insurance;
- » comprehensive vehicle insurance;
- » public liability insurance;

- » product liability insurance;
- » self-insurance; and
- » work or occupational health and safety insurance.

You should describe details of suitable insurance to protect against trial risks, personal injury and loss. Your proposed level of insurance will be reviewed as part of the assessment of the AV Trial Application.

## 5.8 Section 6: Safety management plan and mitigation

To assure DoT of the safe deployment of the trial for other road users, you must develop a safety management plan outlining all relevant safety risks for the trial and how they will be mitigated or eliminated. Your safety management plans will need to demonstrate your safety culture that will enable you to manage emerging risks during the trial.

The safety risks you should address in your safety management plan are laid out in this section. If some risks are not relevant due to the scope of the trial, you should outline this in your response.

### Safety management

Demonstrate how safety will be prioritised and achieved through due planning and risk mitigation in accordance with the Road Safety Commission's safe system of safe roads, safe speeds, safe vehicles, safe road users and post-crash response.

The Road Safety Commission's road safety strategy can be found here: [Driving Change Road Safety Strategy 2020-2030](#).

### Risk assessment

Describe risks associated with the trial and provide a mitigation plan for each risk. You should give consideration to:

- » Security risks (e.g. cyber and physical security)
- » Risks to other road users (e.g. other vehicles, pedestrians, cyclists, motorcycles and people with disabilities)
- » Risks to/from road infrastructure
- » Risks of system(s) failure
- » Appropriate transition processes
- » Whether there is a Vehicle Supervisor and/or operator

- » Pre-trial testing
- » Training provided for, and the eligibility of, the driver or operator
- » “Fitness for duty”
- » Vehicle identifiers
- » Occupant safety
- » Workplace health and safety for the Vehicle Supervisor and/or operator
- » How the vehicle interacts with emergency vehicles
- » How the vehicle interacts with emergency personnel
- » Safety of emergency responders in the case of the vehicle being in an accident
- » Use in inappropriate conditions
- » Software updates

## 5.9 Section 7: Data and information

As part of the assessment of your AV Trial Application, we will consider what arrangements you have in place to collect, store, process, use and disseminate data. This should also consider how you will manage ad hoc requests for information from government agencies such as WA Police.

### Data and cybersecurity plan

A data and cyber security framework is required to ensure security of data collected and disseminated by the AV during and after the AV Trial. Where there are members of the public accessing the AV as part of the trial, their data must be kept secure.

You must outline how you will ensure the security of the AV from external cyber threats, whether that be to access data or interfere with the operation of the vehicle.

Should Government prepare a formal framework you must adhere to, these Guidelines will be updated.

Provision of data and information for serious and non-serious incidents

In the case of a serious or non-serious incident, you will be required to provide as much information and data on the incident and immediately prior to the incident as is available.

Consistent with the NTC guidelines, a serious incident is “defined as a crash involving a trial vehicle or a contravention of any law such as exceeding the speed limit or a red-light violation”.

It may involve:

- » injury;
- » property damage;
- » violation of laws;
- » a security breach; or
- » grave safety concerns.

Non-serious incidents include:

- » near-misses;
- » when a human takes back emergency control of the vehicle, or the vehicle deactivates where there is no human driver, and this does not result in any injury or death (for example, making an emergency stop or using the emergency stop function to avoid a collision); or
- » or a public complaint regarding the performance of the vehicle.

The timeliness of reporting these incidents and the reporting requirements are detailed in Chapter 6.5: Reporting.

Please describe how you will record vehicle data and sensor information throughout your trial. Include details of what hardware (black box) will be used to record data. Any data provided to DoT, such as in the case of a serious incident, is expected to be able to be read and interpreted without specific software or data analysis skills.

Include details of any current or proposed national or international information data standards (IOS, Standards Australia, etc.) that will be used in respect of the way the data is collected, recorded, formatted, or transmitted.

You should also consider minimum requirements for collecting and retaining data and information.

## Research information and reports

The DoT will require you to complete a short form as an end-of-stage report:

- » at the end of a stage of the trial, before proceeding to the next stage;
- » when seeking an extension/renewal of the permit for the AV, unless exempted; and
- » at the completion of the trial.

A template for the end-of-stage report can be found in Appendix 3.

You should also describe other research that will be undertaken during the trial and availability of this information to DoT (such as passenger surveys or travel demand modelling). Further information may be requested for transport planning purposes. Please discuss with the AVRT before completing your AV Trial Application.

## 5.10 Section 8: Additional information

### Inspections and performance testing

The DoT may request to inspect the vehicle before on-road operations can commence as part of the AV trial.

### Accessibility

You should set out how you intend to manage specific safety and accessibility concerns, including interactions with road users or passengers with disabilities, during the trial. You may be asked to demonstrate compliance with applicable disability and accessibility legislation if you are proposing to provide passenger services.

This may include the *Disability Services Act 1993* and any relevant Accessibility Policies or Disability Access and Inclusion Plans of partner organisations or the local government authority responsible for the area/s in which your trial is operating.

## 5.11 Assessment of trial application

The DoT will compile and circulate the AV Trial Application to key State Government agencies as listed in Chapter 1: Introduction; Governance. Other agencies may also be consulted if required, depending on the nature of the proposal.

Subject to other critical priorities and the complexity of the application, agencies will provide initial comment to DoT within three (3) weeks and the DoT will provide any requests for clarification or feedback back to you after this time.

## 5.12 Review and submission

Depending on the nature of the feedback and clarifications, iterations of the AV Trial Application may be required. DoT can coordinate any discussions with relevant agencies to resolve outstanding items, if required. Once all items raised by agencies have been addressed, the final proposal is formally submitted to DoT and a recommendation is made internally to issue a permit for the AV.

If the matters raised by agencies are unable to be resolved, you have the following options:

1. Consider altering the parameters of the trial, i.e. location, vehicle type;
2. Consider increasing the stages within the trial, to demonstrate competency of the vehicle in a more limited environment before proposing a more complex or high-risk trial;
3. Consider alternate testing options i.e. additional testing to be undertaken at the AARP before proposing an on-road trial; or
4. Discontinuing the trial application at this stage and reconsidering the trial objectives.

## 6. AV Trial (on-road)

### 6.1 Permit(s)

A permit is required for temporary operation of a non-standard vehicle on the WA road network.

If issued, the permit will include conditions and has a maximum period of 12 months. If the trial is to extend beyond this time, a new permit will be required. The AVRT will provide advice on any further information or required amendments to the original AV Trial Application when you request a subsequent permit.

Conditions on the permit that may apply include:

- » The class of driver licence required for the Vehicle Supervisor
- » Operator of the vehicle must have possession of the permit
- » Operation of the vehicle must be in accordance with a submitted Traffic Management Plan (current applicable TMP)
- » Vehicle must have person on hand to take control of vehicle if necessary (i.e. a Vehicle Supervisor)
- » Limitations on the route of operation

Suitable insurance for the trial will be required and will be a condition for issuing the permit.

Other conditions may also be applied.

### Process and fee

Where an AV Trial Application is approved, AVRT will submit a request for an unlicensed vehicle permit on behalf of the applicant. The permit is issued by DoT for a small processing fee, payable by you. DoT staff will contact you to confirm contact details and payment. An electronic copy and hard copy of the permit will be supplied once payment is made.

### Responsibilities for permit holder

It is important to understand each party's responsibilities if your AV Trial Application is approved. The specific obligations on the permit holder and Vehicle Supervisor/s will be contained in the permit.

The Trialling Organisation (refer Chapter 5.3) will be the permit holder. The permit holder is responsible for the overall safety and management of the trial.

This includes:

- » ensuring the safe operation of the trial and those who interact with it;
- » managing risks in accordance with the safety management plan;
- » complying with reporting obligations; and
- » overseeing and managing the Vehicle Supervisor/s by making sure they are suitably trained, licensed and authorised and comply with their responsibilities as listed below.

The Vehicle Supervisor/s (refer Chapter 5.6, Vehicle Supervisors) are responsible for the safe operation of the AV and its occupants during the trial. This includes:

- » being suitably licensed and authorised;
- » complying with requirements for drivers in Western Australia, such as blood alcohol limits;
- » monitoring the vehicle's functions when operated by the ADS;
- » being fit and alert and able to take control of the vehicle at all times;
- » responding to any requests of authorised officers; and
- » providing support to passengers (if operating a passenger service).

### 6.2 Communications

Different communications may be required before, during and after the trial, depending on the nature of the trial and its impact on other agencies or the public. This may include pre-trial advertising/notices, engagement with groups or community information sessions or public signage within the trial area. This should be discussed with the affected Local Government/s and any partnering agencies.

You should conduct these communications in accordance with the Communication Plan outlined in your AV Trial Application (Chapter 5.6).



## 6.3 Implementation

On-road trials can proceed in accordance with the AV Trial Application and the issued permit. Data should be kept in accordance with the AV Trial Application for use in end-of-stage reports and will also be required as part of incident reporting (Chapter 6.5).

## 6.4 Staging

If the AV Trial Application identifies different stages for the trial, then the trial must be implemented in accordance with the proposed stages. The bounds of each stage of the trial should be clearly established, whether this be by number of trips, length of time or the achievement of trial stage objectives.

At the end of each stage, an end-of-stage report must be completed for DoT.

Commencement of the subsequent stage will be dependent on:

- » whether sufficient information was supplied for it in the initial trial proposal (i.e. does the traffic management plan and safety management plan cover the next stage of the trial);
- » whether the permit allows for the next stage of trial – if not, progressing the subsequent stage would require a new permit; and
- » any preparations that may need to be undertaken prior to commencement.

If the approved AV Trial Application did not provide sufficient information for DoT to assess subsequent stages, further information will now be required. You should liaise with the AVRT to determine what additional information will be required.

## 6.5 Reporting

Some reporting is required by exception, such as in the case of an incident. Other regular reporting is required at the end of each stage, permit period or trial.

*Note: As Austroads project FCA6347 Consistent evaluation and reporting of automated vehicle trials has commenced, there may be future variations to the reporting and evaluation sections to ensure consistency with other Australian jurisdictions.*

## Regular reporting

Regular reports will be required to ensure that the AV Trial is operating in accordance with the approved AV Trial Application and the permit.

An end-of-stage report template is supplied at Appendix 3. This should be completed and submitted to [CAVTrials@transport.wa.gov.au](mailto:CAVTrials@transport.wa.gov.au):

- » at the end of a stage of the AV trial;
- » before seeking renewal of the AV permit; and
- » at the end of the AV trial.

Any proposed changes to the AV Trial Application should be communicated to DoT at the earliest available opportunity. i.e. changes to how Vehicle Supervisors operate the vehicle, Trialling Organisation details, errors and/or adjustments made to the operation of the vehicle, changes to the ODD, and so on.

## Exception reporting

Exception reporting is required in the case of a serious or non-serious incident involving the AV trial. A template that can be used to assist you in exception reporting is at Appendix 4.

A serious incident is “defined as a crash involving a trial vehicle or a contravention of any law such as exceeding the speed limit or a red-light violation”. It may involve injury, property damage, violation of laws, a security breach or grave safety concerns. In the case of a serious incident, you are required to:

- » provide an initial report within 24 hours (exceptional circumstances may extend this timeframe);
- » provide a full report, including relevant data and information, within 7 days;
- » abide by existing State crash reporting requirements; and
- » comply with data and information requirements as per Chapter 5.9 of these Guidelines.

Non-serious incidents include near-misses; when a human takes back emergency control of the vehicle, or the vehicle deactivates where there is no human driver, and this does not result in any injury or death (for example, making an emergency stop or using the emergency stop function to avoid a collision); or a public complaint regarding the performance of the vehicle.

In the case of a non-serious incident, you are required to:

- » report these incidents on a monthly basis (written advice); or
- » if requested earlier, within 7 days.

In accordance with Chapter 5.9, you should ensure any relevant data or further information will be provided to DoT in a readily accessible format when required. Incident information will be provided to Government stakeholders to review and determine if further action will be required.

Notification details for all type of incidents, at a minimum, must include:

- » time;
- » date;
- » location;
- » automation status (for example, ADS in control, Vehicle Supervisor transitioning, etc);
- » traffic conditions (for example, empty road, in heavy traffic);
- » road and weather conditions;
- » vehicle information (speed, brake/throttle applications, vehicle fault condition description, etc);
- » sensor information in relation to other road users and surrounding road environment;
- » identity of the vehicle operator at the time of incident;
- » driver and person in charge of the vehicle at the time of the incident;
- » number of passengers, seating position and use of restraints by each passenger;
- » description of the reported incident; and
- » incident type.

## Engagement with AVRT

The AVRT should be a key stakeholder in the trial and provision should be made for occasional meetings to discuss the progress of the trial and any future staging, if appropriate. Staff from the AVRT may wish to view the trial while in operation.

## 7. Evaluation

Once your AV trial has completed, it is time for assessing the execution of the trial and achievement of objectives. These findings will not only inform your organisation but also assist DoT and other government agencies in determining whether the WA road network is currently capable of supporting the technology you trialled and any potential improvements to the trial process.

### 7.1 Final report

A final end-of-trial report is required. This should be completed in accordance with the outline in Chapter 5.9 and Appendix 3. It may be beneficial to organise a meeting with the AVRT to discuss the outcomes of the trial in more detail.

*Note: As Austroads project FCA6347 Consistent evaluation and reporting of automated vehicle trials has commenced, there may be future variations to the reporting and evaluation sections to ensure consistency with other Australian jurisdictions.*

### 7.2 Vehicle

#### Review import and permit conditions

The import approval from the Department of Infrastructure, Transport, Regional Development and Communications and the permit/s issued by DoT include conditions governing the use of the vehicle and what may be required at the end of the trial and evaluation period. It is your responsibility to ensure these conditions are complied with. The vehicle is bound to the terms of the import approval and the permit.

#### Future use

If you wish to use the vehicle for another trial or another purpose, you must start the relevant process from the beginning. If the intention is to use the AV for another AV trial, you will need to complete a new AV Trial Application, however some sections may be condensed or re-submitted from the completed trial.

Vehicle certification is only an option for use on the road network as a non-AV manually driven vehicle. Currently all AV uses only occur through a permit via the AV Trial Application process.

#### Disposal

Import and/or permit conditions may require that at the end of the trial period, the vehicle is must be disposed of.

### 7.3 Feedback and input to AVRT review

You are encouraged to provide feedback to the AVRT regarding the trial process. Feedback on the process and the end-of-stage reviews will feed into internal processes within DoT to incorporate in any future improvements and to consolidate WA trial learnings.

### 7.4 Trial outcomes

Information collected by DoT through the facilitation of an AV trial will inform further improvements in the AV trial process and the development of policy and legislative frameworks for the future commercial deployment of automated vehicles. This may also include learnings fed back into the National Transport Commission or Austroads.

# Appendix 1 – AV Trial Application Form



Department of **Transport**  
Main Roads Western Australia  
Public Transport Authority

## TP2

### Automated Vehicle Trial Applications for Authorisation and Vehicle Licensing Exemptions



**Trialling Organisations** should address all criteria set out in the *AV Trial Application Form*. If some criteria are not relevant, the Trialling Organisation should explain in their application why these criteria should not apply.

Trialling Organisations should refer to *How to Trial an Automated Vehicle in Western Australia: Guidelines for Trialling Organisations* in completing this application.

FILE: DT/1802359  
DOCUMENT: A1151707

**Please send completed applications to:**  
Project Manager - Automated Vehicle Reforms  
Post: GPO Box C102, Perth WA 6839  
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## 1. TRIALLING ORGANISATION DETAILS

Organisation Name

ACN

ABN

Place of business

**Respondents**

**Key contact person 1**

**Key contact person 2**

Name

Title

Phone

Mobile

Email

Role in trial

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## 2. EXECUTIVE SUMMARY

### Brief summary of trial

What is the purpose of the trial? What is the anticipated timeline until deployment?

What is the time frame of the trial? Please include details of all trial collaborators.

### Trial Stages

Please detail trial stages, and indicate which stage/s are being applied for in this application.



## Vehicle Importation approval

**Describe the type of import approval issued to the trial vehicle.**

Will WA Government support be requested to facilitate the importation of the vehicle into Australia?

Please provide details of proposed importation process, timescales, and port of entry.

## Vehicle and other exemptions (Area of non-compliance)

The trial is enabled when the Director General of the Department of Transport grants exemptions to the laws with which the vehicle does not comply. **From which laws is your trial seeking exemption?**

**Note:** If there is more than one trial vehicle, then put details about other vehicles on a copy of section 3 and attach to this application with information provided in Section 9.

## 4. MANAGEMENT OF TRIALS

### Trial location(s)

**Describe the proposed trial location(s) and attach maps if applicable.** Indicate:

- » The extent to which the location falls within the operational design domain;
- » Whether any borders are crossed in the trial;
- » Time of day and season (anticipated weather conditions); and
- » Which roads will be used and whether they are public or privately owned.

### Description of the technology being trialled

**Describe the technology being trialled.** Please include data on:

- » Traffic density/vehicles
- » Level of automation
- » Technology specifications
- » Speeds
- » Number of passengers
- » Accessibility

Please provide information of any previous trials of this technology.



## Traffic management plan

**Provide a traffic management plan that identifies the trial's anticipated traffic risks and mitigating actions.**

Give consideration to:

- » Traffic density/vehicles
- » Speed environment
- » Pedestrians
- » Signage
- » Irregular events – construction, road detours, flooding
- » Complex intersections and merges
- » Regional variations in the road design
- » Rail-road or other interfaces
- » A crisis management plan

## Infrastructure or network requirements

**Provide information about any infrastructure or network requirements for the trial.**

### **Engagement with the public and other stakeholders**

Provide detail on intention to engage with the public and other key stakeholders.

### **Managing change**

Set out change management strategy to manage changes to the vehicle or infrastructure or other potential/likely upgrades over the course of the trial. (e.g. management of the vehicle, technology and recharging infrastructure)

## 5. INSURANCE

### Public liability insurances and other insurance covers

Describe details of appropriate insurance to protect against trial risks, personal injury and loss.

**Note:** Trial applicants should note that they will NOT be covered by the WA Government's Motor Injury Insurance scheme. Operators will need to source appropriate insurance to cover the costs of the death of or bodily injury to third parties in the event of a trial vehicle collision with a third party's vehicle or person. The value of insurance cover should be calculated through the planning process for the trial. The DoT will consider whether the proposals are appropriate in light of an assessment of detailed trial proposals.

## 6. SAFETY MANAGEMENT PLAN AND MITIGATION

### Risk assessment and mitigation plan

Describe risks associated with the trial and provide mitigation plan for each risk.

Give consideration to:

- » Security risks (e.g. cyber and physical security)
- » Risks to other road users (e.g. pedestrians, cyclists, motorcycles and people with disabilities)
- » Risks to road infrastructure
- » Risks of system(s) failure
- » Appropriate transition processes
- » Whether there is a human driver and/or operator
- » Pre-trial testing
- » Training provided for, and the eligibility of, the driver or operator
- » “Fitness for duty”
- » Vehicle identifiers
- » Occupant safety

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## 7. DATA AND INFORMATION

### Data and information collection

As part of the consideration of approval for a trial, the Department of Transport will consider what arrangements are in place to collect, use and disseminate data. Any information collected must be made available to the Department of Transport and WA Police immediately on demand.

Incidents that might indicate any shortfall in vehicle performance or any previously undetected risks to public safety must be reported immediately to the Department of Transport.

## **Provision of data and information for serious incidents**

Describe the mechanism for capturing and reporting of serious incidents and the data that will be collected. Provide detail on how this information will be provided to DOT in a readily accessible format. Give consideration to minimum requirements for data and information.

Please describe how you will record data and sensor information throughout your trial. Include details of what hardware (black box) will be used to record data, and what software will be required to read and interpret the data collected.

Include details of any current or proposed national or international information data standards (ISO, Standards Australia, IEEE, etc.) that will be used in respect of the way the data is collected, recorded, formatted or transmitted.

## **Research information and reports**

Describe other research that will be undertaken during the trial and availability of this information to DOT (i.e. passenger surveys, human/technology research).

## 8. ADDITIONAL INFORMATION

### Any additional information

Provide any addition information not addressed in the above criteria.

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## 9. TABLE OF DOCUMENTS ATTACHED

List of attached documents

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## 10. DECLARATION

I declare that the information on this form is true and correct. I understand that the Department of Transport will treat the knowing provision of false or misleading information very seriously and that the penalty for a relevant offence could include imprisonment (see s.36 Road Traffic (Administration) Act 2008 and s.170 Criminal Code).

**Name and position of trial organiser**

**Signature**

**Date**



### **Trialling organisation**

Trial location/s

Report type (End of stage / end of permit/end of trial)

**Trial summary** (Stage/objectives/limitations)

### **Report period**

**Number of passengers carried** (If relevant)

**Number of disengagements**

**Reasons for disengagements**

**Resolutions for disengagements**

**What worked well**

**Trial challenges**

**Progress against trial or stage objectives**

**Feedback from users/public**



### Trialling organisation

#### Incident type

Serious / non-serious

Injury/property damage/security/near miss /etc

#### Incident description

**Time**

**Date**

**Location** (Please provide as much detail as possible)

#### Automation status at time of incident

(Level of automation / manually operated by  
Vehicle Supervisor / in transition to Vehicle Supervisor)

**Traffic conditions** (No traffic / moderate traffic / heavy traffic)

#### Road and weather conditions

(Include whether there were roadworks, road closures or other unforeseen circumstances)

**Vehicle information at the time of incident** (Speed, brake/throttle application, vehicle fault condition description, etc)



**Sensor information in relation to other road users and surrounding road environment**

**Number of passengers, seating position and use of restraints by each passenger**

**Vehicle Supervisor information (Name)**

**Actions taken by the Vehicle Supervisor**

**Actions taken by the Trialling Organisation**

**Any further information**

## Department of Transport

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