

AUSTRALIA'S FIRST AUTOMATED VEHICLE TRIAL AITPM EXCELLENCE AWARDS 2018

Categories: Traffic Engineering / Management Transport Planning



For the better

CONTENTS

1.	Introduction	1
1.1	Overview	1
1.2	RAC Automated Vehicle trial: Structure.....	1
1.3	Traffic management.....	3
2.	Relevance to the category	11
3.	Excellence attributes.....	11
4.	Originality and innovation.....	12
4.1	Investing in Technology to Address road safety challenges.....	12
4.2	Collaborative Approach	12
4.3	BREAKING NEW GROUND IN TRIAL DESIGN	13
4.4	Risk management.....	14
4.5	Informing and ensuring readiness	14
5.	Summary.....	15

1. INTRODUCTION

We are pleased to submit the RAC Automated Vehicle Program- Intellibus Trial for the Transport Engineering / Management and Transport Planning categories of the AITPM Excellence Awards 2018.

1.1 OVERVIEW

RAC is a leading advocate on the mobility issues and challenges facing our State and we work collaboratively with all levels of Government to ensure Western Australians can move around using safe, easy and sustainable mobility options. Automated Vehicle (AV) technology is rapidly advancing and is the biggest disruption to the mobility sector since the invention of motor cars.

Since 2015, RAC has been working with the Western Australian State Government, City of South Perth and Navya SAS, testing and evaluating a fully driverless, electric shuttle bus, RAC Intellibus.

In an Australian first, a Level Four High Automation vehicle has been deployed as part of a public trial in the City of South Perth. The Intellibus is a Navya Arma and is fitted with multi-sensor technology providing 3D perception allowing it to map its environment, detect obstacles, interpret information and navigate. It operates autonomously through Global Navigation Satellite System (GNSS), Light Detection and Ranging (LiDAR) sensors, Stereovision Cameras and Inertial Measurement Units and includes a number of safety features including emergency stop buttons, SOS intercom, Autonomous Emergency Braking (AEB), Auto Power Shortage Brake, Impact Sensor, seatbelts and self- diagnostics software.

The launch of the public trial on the 31st of August 2016, received national and international media coverage, however, prior to the public launch, the multi-disciplinary project team undertook a rigorous testing program and validation, site assessments, traffic management plans, and road safety audits.

This submission outlines how traditional traffic and transport industry approaches, which are currently designed for managing human road users, were considered, adapted and applied for the first time for a Level Four AV in Australia.

The trial is a first step in increasing the level of awareness and understanding of the impact of AV technology on the existing transport network and continuing to share our experience, knowledge and results of the trial to better inform future practices involving AVs, remains a priority.

1.2 RAC AUTOMATED VEHICLE TRIAL: STRUCTURE

In a purposeful trial, we are testing how AVs operate and consider their likely impact. The trial's aims are:

- > Increase understanding about the potential impacts and opportunities from the advent of AV technology;
- > Give members of the public the chance to see AV technology, and eventually use and experience it; and
- > Further help WA and Australia prepare a roadmap for changes to support and safely transition to AV technology.

When RAC made an application to the Department of Infrastructure and Regional Development in January 2016 and again in April 2017, to import a Level Four High Automation vehicle, we were required to do so under the ‘Testing and Evaluation’ category as the vehicle did not comply with Australian Design Rules. Once imported the RAC Intellibus had to obtain a permit to operate on a pre-determined route in South Perth is “Special Exceeding 48 hours” and states that it must have a “person on hand at all times to take control of vehicle if necessary”.

The public trial is the final stage of three distinct stages which were designed to test and evaluate AV technology in a variety of settings and scenes with increasing levels of complexity, then, finally managing interaction with road users while having registered passengers on-board. The trial inception occurred in 2015, was announced on the 9th of February 2016 and officially launched when Stage 1 commenced on the 13th of April 2016.

1.2.1 Stage One

Vehicle commissioning and the closed testing stage were undertaken over an intensive eight-week period between 26 April and 29 June, 2016. With no pre-existing test guidelines for level 4 driverless vehicles in place, RAC worked hands-on with local specialist technicians, involved in the commissioning of Autonomous mining vehicles and Navya, to develop an extensive test plan.



Figure 1 Closed testing site and path

The scope of this stage was to observe the vehicle and investigate the boundaries of its behaviour including testing perception and operation in automatic mode. Tests also considered the system behaviour in different traffic scenarios including give way points,

roundabouts and controlled stops. These tests helped to understand sensor range and sensitivity and informed the configuration of the shuttle's behaviour on public roads, in the next two stages.



Figure 2 Frontal Static Object Perception Test

We were also able to record and validate aspects of behaviour including how this might compare to human driving behaviour.

1.2.2 Stage Two

The second stage involved mapping and validating the on-road route over a period of several weeks. An approved Traffic Management Plan was put in place (discussed in greater detail in section 1.3.3 Traffic Management Plans). Navya and RAC completed this process outside of peak traffic hours between 6pm and 6am while working closely with the City of South Perth to restrict on-street parking and inform the City's local residents.

Ancillary infrastructure was also constructed including an on-site community information hub ("Hub") and storage facilities on which the RTK GPS base station was mounted.

1.2.3 Stage Three

Stage Three officially began on the 1st of September 2016 and continues to take trial participants on a 3.4 kilometre circular route along South Perth Esplanade to the Old Mill. To adhere to our Special Permit two Chaperones are on board the shuttle at all times with the ability to take back control if required. One Chaperone explains how the technology works and responds to questions from passengers while the other Chaperone remains attentive to the traffic environment and is ready to take back control if necessary. Although, the shuttle can seat eleven people and has standing room for four people, to enhance the opportunity for discussion, the allocation of seats via RAC's website (www.rac.com.au/intellibus) and booking page, is limited to a maximum of eight passengers per ride. There is also a minimum age requirement, that is, over the age of

seven years as well as the need for a guardian or parent for all passengers under the age of 15 years. The pre-allocation of seats enables all participants to be surveyed about their views before and following their participation.

In 2017 RAC acquired a second Navya Arma to support our objectives to better understand how reliable level 4 AVs operate in real traffic conditions and their likely impact in an Australian-specific environment as well as ensuring the community has an opportunity to use and experience AV technology while it remains in its early stage of development.



Figure 3 Intellibus taking passengers in South Perth

1.3 TRAFFIC MANAGEMENT

1.3.1 Site Assessment

Operating the Intellibus on public roads is and remains a complex process going beyond controlled and short-term demonstrations. Critical steps in this process included selecting a route, gaining permit approvals, building an insurance structure, undertaking risk assessments and safety audits, developing a communications framework and identifying an evaluation methodology.

RAC, Navya and the State Government with WSP | Parsons Brinkerhoff (Perth and Melbourne offices), developed a multi-criteria framework for assessing suitable routes. This occurred over a number of meetings including a workshop with RAC and the WA Transport Portfolio.

The workshop was designed to establish a range of route assessment criteria and their relative levels of importance, with the agreed criteria placing significant emphasis on safety, including the vehicle's interactions with the road environment and other vehicles, as well as interactions with pedestrians and cyclists.

The following criteria were considered critical:

- Height/density of the tree canopy;
- Urban environment;
- Road environment;
- Number/complexity of interactions;
- Environmental/weather characteristics;
- Local/strategic access; and
- Strategic/transport function.

There were also a number of mandatory criteria which were specific to the vehicle's performance and operation including:

- Pavement quality;
- 3G/4G coverage;
- Length of route;
- Suitable storage and charging facilities;
- Security;
- Turning radii; and
- Roadworks/development activity.

In the first round of analysis, some 18 routes were investigated, including urban streets/centres of activity, university campuses and tourist destinations. Each site was scored against a weighted matrix of the above criteria and ranked based upon their relative importance to one another.

RAC went on to investigate an additional five route options which included site visits by an accredited Road Safety Auditor.

The site assessment report investigated the proposed route, including potential stopping locations as well as the site's suitability against each of the critical and mandatory criteria. A list of recommendations and other road treatment requirements were also considered to ensure, with the guidance of RAC's technical specialists, the suitability of the road environment to the AV technology.

Following the site assessment process, RAC went on to assess and select the eventual location for the trial, South Perth, which in close consultation with the city was further broken into three phases, with each phase increasing in complexity, both in traffic condition as well as for the AV technology.

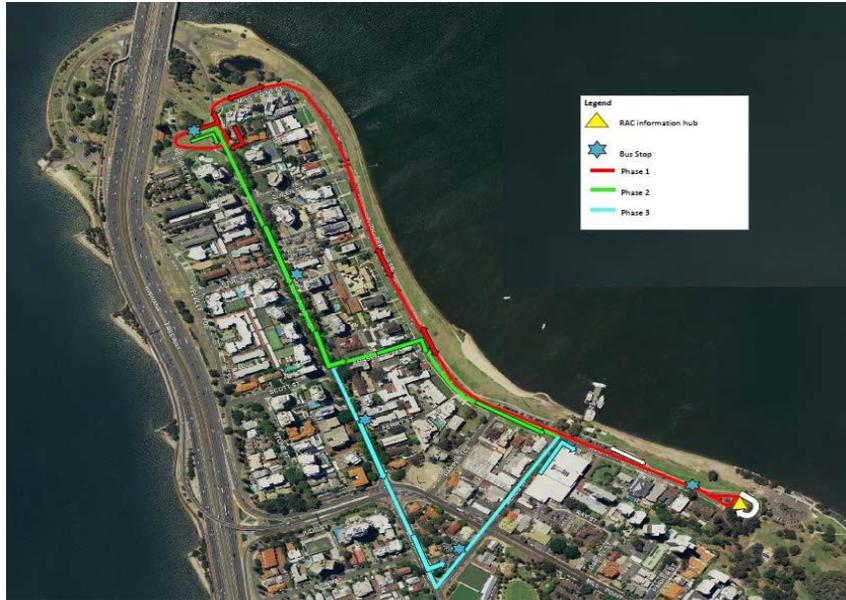


Figure 4 The South Perth route in three phases

1.3.2 Site surveys and feature maps

RAC also worked with GTA Consulting to carry out extensive mapping of geometric features and traffic conditions for the South Perth site, incorporating:

- Existing traffic and parking conditions;
- Road geometry; and
- Any constraints or potential issues for the vehicle



Figure 5 A feature map of the South Perth route prepared by GTA

The feature maps informed advance planning and preparation work for Stage Two of the trial, which involved mapping and validating the path under closed conditions on open road.

1.3.3 Traffic Management Plans

A Traffic Management Plan (TMP) was also prepared by RAC in concert with Advanced Traffic Management as part of Stage Two, taking into account the specific requirements of the AV sensors to map the path, while dealing with more traditional requirements such as traffic control.

A TMP was required for two driving modes, recording the environment in manual mode as well as correcting and validating the path in autonomous mode.

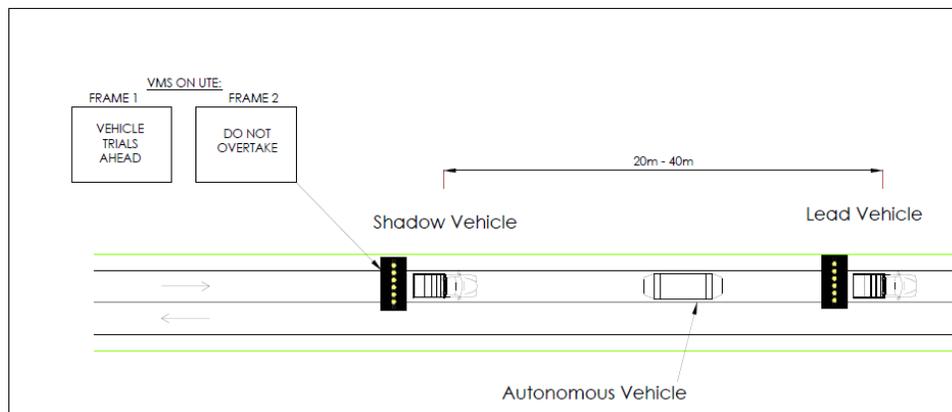


Figure 6 Traffic control diagram when mapping in manual mode



Figure 7 Mapping in manual mode in South Perth



Figure 8 A LiDAR map of the South Perth route

To validate and correct the path, RAC arranged for a 'filming vehicle' to travel in front of the shuttle so that the behaviour of the shuttle could be viewed and any lane creeping observed.

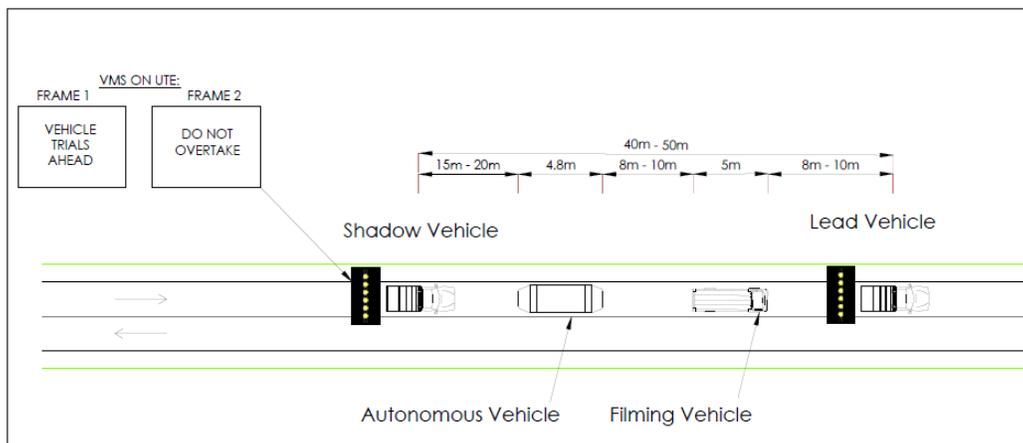


Figure 9 Traffic control diagram when validating the path while in autonomous mode

Following the successful completion of Stage Two, the Traffic Management Plan was expanded to manage the day to day operation of the shuttle during the public trial. This was a highly iterative and collaborative process between the technical, road safety audit and traffic management teams. There are variations of traffic management requirements to manage the various operating modes of the shuttle. These scenarios include:

- Mapping;
- Testing following software/hardware upgrades;
- Ad-hoc operational issues; and
- Training of Chaperones.

1.3.4 Road Safety Audits and Corrective Action Reports

RAC worked with GTA Consulting to conduct a pre-launch Road Safety Audit to identify and

assess the impact of any possible issues along the proposed route, to pay particular attention to any possible pedestrian or cyclist conflicts, to report on the conclusions drawn and to make recommendations regarding aspects that involve unnecessary or unreasonable hazards. The Road Safety Audit is supported by Operational Safety Reviews on an ongoing basis conducted in liaison with the City of South Perth.

Local traffic volume data indicates that South Perth Esplanade has 2,395 on a 12-hour weekday average and Mill Point Road has 16,640 for the same average. The cycle count information on the Recreational Shared Path at the end of South Perth Esplanade was 1,416 on an average weekday in 2014/2015. South Perth Esplanade is proximate to the busy Mends Street café strip as well as the South Perth Ferry Terminal. Posted speed limits along the route vary from 20kph (advisory) to 50kph, although the nature of the area encourages a much lower average operating speed.

The Road Safety Audit made a number of recommendations for example, recommending the implementation of signage along the route to signal that the shuttle was operating in autonomous mode. These signs were created in liaison with Main Roads Western Australia.



Figure 10 Traffic management sign near shared foot path

Results from the closed testing stage verified the accuracy of the shuttle’s positioning and perception systems and allowed RAC to determine certain behaviours of the shuttle in its new environment. These behaviours informed the configuration settings of the shuttle’s behaviour in relation to passing distance to parked vehicles, speed of travel and braking speed at intersections and sections near shared paths, sensor range at T-junctions and intersections, and giving way at a pinched point. These factors informed the Corrective Action Report and its recommendations.

1.3.5 Monitoring and evaluation Community perception

Currently, AVs are the topic of news headlines, often on a daily basis, and as more information becomes available, people will be better informed to decide how the technology could impact their own lifestyles. It is evident from RAC's own research that public opinion is mixed in WA, but that the community is receptive and the discussion is already shifting towards when and how, rather than if fully automated vehicles will be introduced.

Outcome monitoring and broader evaluation is a critical but, sometimes unprioritised or an unfunded component to any project. To understand what Western Australians know, think and feel about AVs, RAC commissioned Painted Dog Research to conduct a series of surveys to better understand the awareness and understanding of AVs. The first survey was completed in April 2016 prior to the launch of the trial by 955 respondents (637 of which were RAC members and 318 non-members) from across WA (78 per cent from the Perth metropolitan area and 22 per cent from regional areas). Surveys were conducted again in December 2016 and December 2017. Age, gender and location sampling quotas were applied and data was weighted to be representative of the WA population.

In it, four in five Western Australians stated that they believed fully autonomous vehicles will be commercially available between 2020 and 2030 (the timeframe within which most manufacturers are claiming their vehicles will be released into the market¹). Attitudes towards AVs are very mixed and safety is a major consideration, with respondents being uncertain whether we will be safer with or without them. Three in five respondents agree the Government should be investing to ensure readiness for AVs by 2025 and half (55 per cent) believe vehicle manufacturers and industry should be leading the way. Only one in five has confidence the Government can be ready in this timeframe.

Despite AVs being in the early stages of development, almost half of Western Australians felt positively towards them (28 per cent of which felt extremely positive). Crash history, attitudes towards driving, and driving frequency did not have any impact on these attitudes. However, given the newness of the technology it is not that surprising that 26 per cent of Western Australians had negative feelings towards AVs.

When prompted, the benefits most Western Australians agreed would occur if all vehicles were fully autonomous were enhanced freedom and independence for the young, ageing and people with mobility difficulties, and more productive and efficient use of travel time. Males, those who drive vehicles with level 1 and 2 automation and those with an awareness of AVs were significantly more likely to have a higher level of agreement with all prompted benefits. In terms of concerns relating to the operation of AVs on WA's roads, when prompted, not being able to manually override the vehicle was the top concern, followed by cyber security issues and responsibility in the event of a crash.

¹ Main Roads Western Australia (2015), "Automated Vehicles: Are we ready?", <<https://www.mainroads.wa.gov.au/Documents/Automated%20Vehicle%20Report.RCN-D15%5E2381741.PDF>>

Each person who participates in the RAC AV Trial receives a survey post survey which asks respondents questions about their experience. Across all surveys safety is the biggest concern. These findings are key in discovering the difference the experience has in shaping perceptions about AVs with 53 per cent of respondents in the post ride survey saying that they are very concerned about 'not being able to manually override the vehicle and take control if the system fail (compared to 79 per cent in the first wave, and 78 per cent in the second wave).

Building community trust and confidence in the technology is pivotal, survey finding show that RAC AV Trial is making a difference in allowing an opportunity to experience AVs firsthand. The findings from the survey therefore clearly show that feelings about AVs and the benefits that could be delivered are mixed and there is a reasonable level of acceptance that these vehicles will be available to use and / or buy in the very near future.

Of the 8,500 people who have taken part in the Trial so far, RAC has received an excellent response to the post-ride survey. In response to the question, "Having experienced the Intellibus, how do you feel about driverless vehicles?" some answers have included:

"When a car pulled unexpectedly in front of us and we stopped – I experienced a thunderflash (sic) of understanding that if all vehicles were driverless and guided by computer technology that incident would never have happened."

"Learning more about how driverless technology works has helped to ease some of the concerns that I've had about it."

In response to the question on whether a vehicle like the Intellibus could be used as a service in WA in the future, 97.9% of the respondents believe so.

Operational reporting and data collection

In addition to the post-ride survey, the Chaperones record and describe every journey during its operation hours in South Perth. In these reports, four types of interventions exist, External; Shuttle – AV technology; Shuttle – Mechanical; and other or unknown. External relates to traffic and interaction with other road users, including poor parking as well as road works or changes to the road environment.

The three kilometre route is divided into six sections with the Chaperones being able to specify the section as well as the direction they are heading if an intervention was required. A type of intervention which can be applied, for example, is the Chaperone regaining control of the shuttle and manually driving around an oversized vehicle parked outside of the designated parking bay. Logging and collecting operational data in the form of these reports continues to inform ongoing Road Safety Audits and Corrective Action Reports in liaison with the City of South Perth; and knowledge about how drivers feel about and interact with the technology.

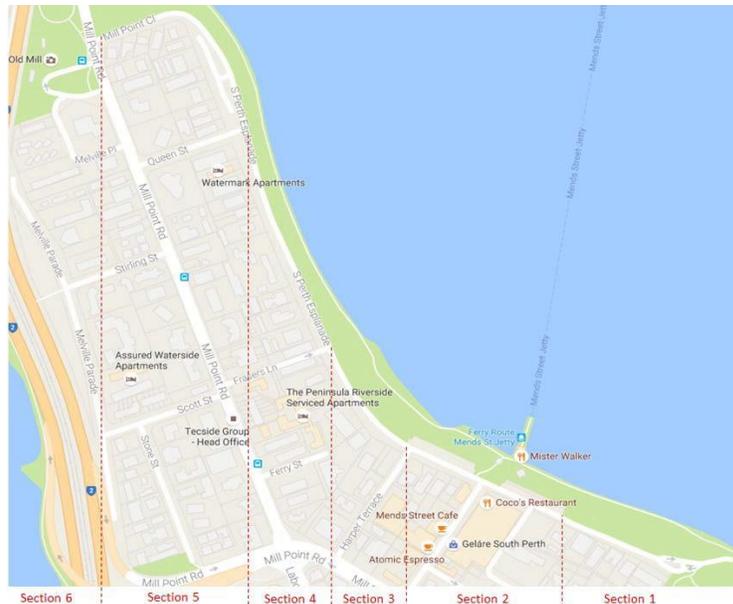


Figure 11 South Perth route in sections from the Operational Intervention Report

2. RELEVANCE TO THE CATEGORY

Autonomous vehicle technology is rapidly advancing, and while there are still many unknowns about what a future with AVs will look like, these vehicles will no doubt have considerable implications for our transport networks, towns and cities, and will change the way we move around.

A well-defined roadmap for how we plan and manage the challenges of regulating AV technology has never been more important to ensure the safe transition of AVs onto roads and guide an outcome focused approach to their implementation as part of an integrated transport system.

The operations of the RAC AV Trial are complex in managing current traffic management and planning with the five groups of technology combined to operate an AV:

- Human-vehicle interface;
- Sensors/ communications (Vehicle to Infrastructure (V2I) and Vehicle to Everything (V2X)) that collect data about the vehicle operation;
- Sensors/ communications (V2I and V2X) that collect data about the external environment;
- Algorithmic control over vehicle operation and function; and
- Artificial intelligence (AI) control over vehicle operation and function.

As laws and regulations continue to be challenged by rapid technological innovation, the emergence of AVs offer an opportunity to review and create a new set of governing rules. A longstanding objective of investing in the development of the driverless vehicle trial in South Perth is to encourage and develop further trials, build research and also encourage wider collaboration. Ultimately our aim is to increase the understanding of how driverless

vehicles can be integrated and operate within to our transport system, and how they could best be applied to benefit the community.

3. EXCELLENCE ATTRIBUTES

Discussed further throughout this submission, the initiatives exhibit the following excellence attributes.

Demonstrate leadership and knowledge transfer for industry by:

- tackling a major community issue;
- breaking new ground in project design while leveraging tried and tested approaches;
- learning through 'doing' and sharing learnings with others.

Demonstrate excellence in innovation by:

- accepting (and managing) risk in order to innovate;
- applying and adjusting prototype technology for the Australian context.

Adopt a safety first approach by:

- Developing a safety management framework;
- Taking a staged (and phased) approach to both the Trial and route;
- Breaking new ground in terms of approaches to testing and assessment.

Adopting an ethos of cooperation and collaboration by:

- Openly engaging with industry, federal, state and local government;
- Sharing knowledge through submissions and supporting other Trials;
- Taking a partnership approach to delivery.

4. ORIGINALITY AND INNOVATION

The initiatives are considered to be original and innovative due to the following:

4.1 INVESTING IN TECHNOLOGY TO ADDRESS ROAD SAFETY CHALLENGES

Road injury is one of the largest causes of hospitalisation and death for Australians under 45 years of age, and serious road injuries accounted for \$27 billion per year or 18 per cent of Australia's total health expenditure². In WA, too many people continue to die or be seriously injured on our roads, with 161 people dying on our roads in 2015 and 195 in 2016. The rate of serious injury is 30 times per fatality, while the rate of injury per fatality

² University of New South Wales, (2015), "Inquiry into aspects of road safety in Australia", Senate Standing Committees on Rural and Regional Affairs and Transport References Committee Inquiry, Submission 50

is almost 120 times.

It has been widely reported that the advent of AV technology could help eliminate a majority of crashes involving some form of human error. For example, independent vehicle safety advocate, the Australasian New Car Assessment Program (ANCAP), which crash tests and rates new vehicles will, from 2018, require that any new vehicle that wants to achieve a five-star ANCAP safety rating must be fitted with Emergency Autonomous Breaking.

AVs use a number of sensors combined with localisation technology to constantly monitor a full 360-degree view of their environment. Autonomous and connected vehicles (both Vehicle to Vehicle (V2V) and V2I) could eliminate not only blind spots and unforeseen obstacles, but significantly reduce the probability of crashes by eliminating human error. Human error accounts for almost 90 per cent of crashes, with speeding, drink and drug driving and inattention being the three biggest killers on our roads. By automating the driving task, the possibility of a crash-free road environment is more likely than ever. For AV technology to really make an impact on road safety, there needs to be a greater understanding about the potential benefits of the technology in vehicle design and standards.

Our Trial is not a pursuit of technology for technology's sake, but a commitment to look at how AV technology can be applied to solve urban and regional mobility challenges in Australia.

4.2 COLLABORATIVE APPROACH

As previously mentioned, RAC partnered with the WA State Government as well as the City of South Perth from the beginning of the AV Trial and from November 2017 with the support of the Australian Government.



Figure 12: Former Minister for Transport Bill Marmion, Mayor of the City of South Perth Sue Doherty and RAC Group CEO, Terry Agnew at the trial launch

Furthermore, RAC received Discretionary Approval to import a non-compliant vehicle for the purposes of Testing and Evaluation from the Federal Government. RAC also obtained a Special Permit to operate on public road by the Department of Transport including Compulsory Third Party insurance through WA's public insurance agency, the Insurance Commission of WA.

With all new and innovative trials, many of the questions that a road authority has may not be fully responded to due to the newness of the technology, however, a trial presents the opportunity to learn and share these findings together. RAC continues to meet on a regular basis with its Government partners to provide updates and share knowledge.

The success of the trial in increasing the level of awareness and understanding AV technology is a testament to what can be achieved when a range of organisations come together in pursuit of shared goals.

4.3 BREAKING NEW GROUND IN TRIAL DESIGN

Following the launch on the 31st of August, Stage Three officially began on the 1st of September 2016 and continues to take trial participants along South Perth Esplanade to the Old Mill and back.

RAC has a dedicated on site information hub, where the team of Chaperones provide detailed information about the trial and induct participants before their ride. During the ride, the Chaperones, who remain in contact with the hub via two-way radio, describe and explain the workings of the sensors and the AV technology, as it interacts with a number of traffic conditions on the road.

The route takes approximately 20 minutes to complete and interacts with travelling and parked vehicles, heavy vehicles, pedestrians and cyclists. Each participant is able to provide feedback on their experience and their views on the technology by completing a post-ride survey.



Figure 13: RAC's Intellibus travelling along South Perth Esplanade with Trial participants.

4.4 RISK MANAGEMENT

Safety is of paramount importance to RAC and its partners and this was a critical consideration in the trial design.

RAC has taken a safety first approach, undertaking testing on a closed site, before attempting to trial on public roads, then with members of the public. All stages of the trial were supported by risk assessments, safety audits, communications plans, and close consultation with road agencies.

To ensure the safe delivery of the trial, RAC has sought and acquired a number of levels of insurance as well as undertaking multiple risk assessments.

4.5 INFORMING AND ENSURING READINESS

The advent of AVs will significantly disrupt traditional approaches to transport policy and planning frameworks, systems and networks. It is critical that both industry and government invest in not only the technology but the framework that will be needed to support its safe and successful introduction. In short, we must develop and invest in programs that will facilitate readiness.

A multitude, more than 700 in Australia, of legislative and regulatory barriers exist for fully driverless vehicles to operate on public road, notwithstanding non-compliance with Australian Design Rules to import into Australia. Through the trial, RAC has worked with Government to understand the barriers to trial in WA and test this type of technology under current regulatory conditions.

The Trial is helping RAC and its partners gain and share practical knowledge by overcoming issues relating to vehicle registration, insurance, liability and risk. At a more granular level, almost every task, decision and step, in this project is a first, helping RAC and our technical advisors (including Navya, MTGA, ARRB, WSP Parsons Brinkerhoff, GTA Consulting and Advanced Traffic Management) to build skills and ultimately facilitate a safe transition to AVs.

The Trial has also provided insight for RAC submissions relating to policy and planning for AVs provided to various national inquiries, discussion papers, commissions and agencies. These are:

- Standing Committee on Industry, Innovation, Science and Resources: Inquiry into the social issues relating to land-based driverless vehicles in Australia,
- National Transport Commission's Discussion Papers: National Guidelines for Automated Vehicle Trials; Safety Assurance for Automated Vehicles; and Changing Driving Laws to Support AVs;
- Transport for NSW's Future Transport Technology Roadmap,
- VicRoads' Future Directions Paper: How Victoria will continue to support the development of automated vehicles.

5. SUMMARY

The Intellibus has travelled over 12,000km in autonomous mode and with over 13,500 people registered to take part in the public trial, RAC's Intellibus continues to operate five days per week with passengers. We continue to monitor the shuttle's operation on road with ongoing Road Safety Audits and reviews of the Traffic Management Plan.

We continue to work with road authorities who will need to integrate the necessary technology within the road infrastructure to enable AVs to operate safely (for vehicles to operate in full autonomy, a flawless communication network is needed for example) but also to consider the implications of AVs as part of an integrated transport system when planning future road infrastructure requirements. RAC is now working with road authorities, Navya and AV technology suppliers to plan the next phase of its South Perth route.

AVs have the potential to deliver significant benefits in terms of road safety and enhanced mobility but equally there is the possibility that vehicle trips and kilometres travelled could increase. Public trials of the technology take preparation from being theory to reality and, will not only be crucial in advancing understanding of the implications of AVs, but also in increasing community acceptance.

RAC hopes this first step will lead to further trials, research and collaboration, to increase Australia's understanding of how AVs can be integrated into our transport system and their effects on the way we move around our State and nation.