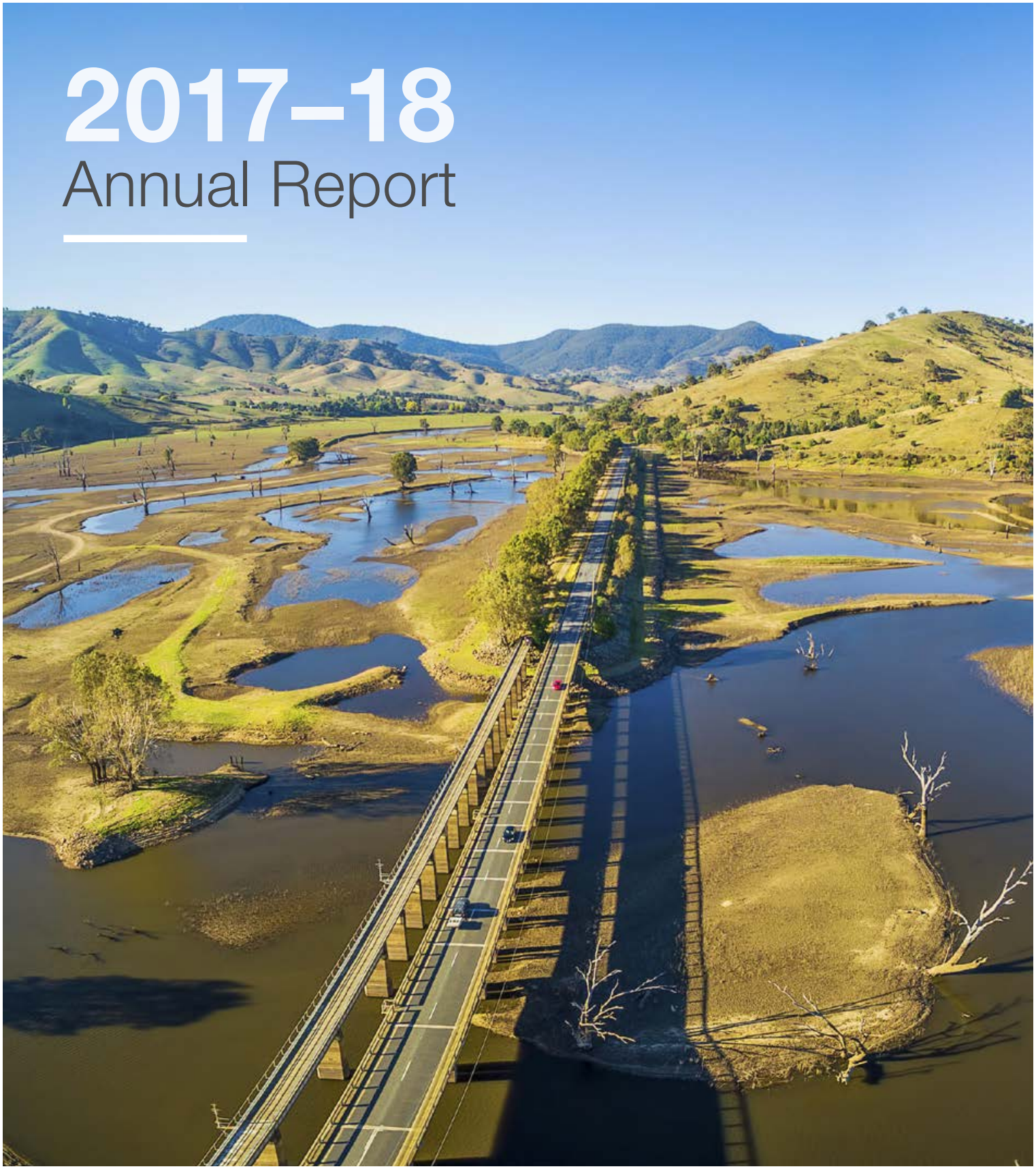
2017–18
Annual Report



Austroads

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Austroads Annual Report 2017–18

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Cover photo: Murray Valley Highway and bridge over Lake Hume, Victoria
Photography: tsvibrav/istock

Overview

Austroads is the peak organisation of Australasian road transport and traffic agencies.

Austroads members are collectively responsible for the management of over 900,000 kilometres of roads valued at more than $250 billion representing the single largest community asset in Australia and New Zealand.

Austroads' purpose is to support our member organisations to deliver an improved Australasian road transport network. One that meets the future needs of the community, industry and economy. A road network that is safer for all users and provides vital and reliable connections to places and people. A network that uses resources wisely and is mindful of its impact on the environment.

To succeed in this task, we undertake leading-edge road and transport research which underpins our input to policy development and published guidance on the design, construction and management of the road network and its associated infrastructure.

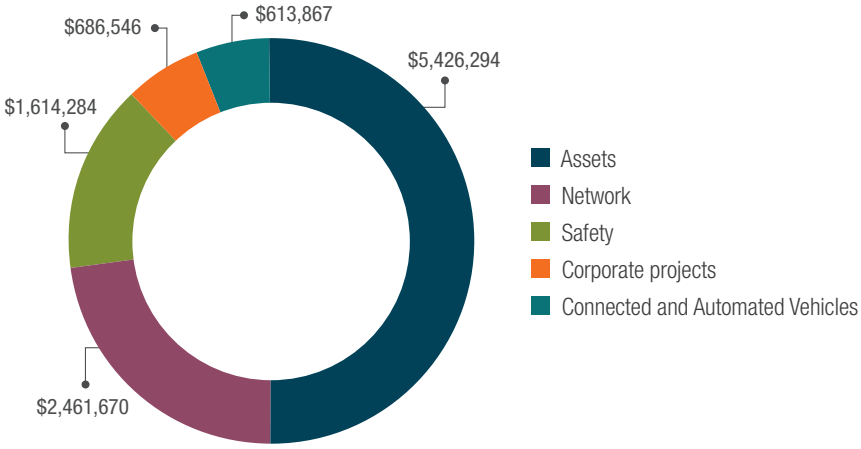
We also administer the National Exchange of Vehicle and Driver Information System (NEVDIS), a unique national system which enables road authorities to interact across state borders and directly supports the transport and automotive industries.

Austroads provides a collective approach that delivers value for money, encourages shared knowledge and drives consistency for road users.

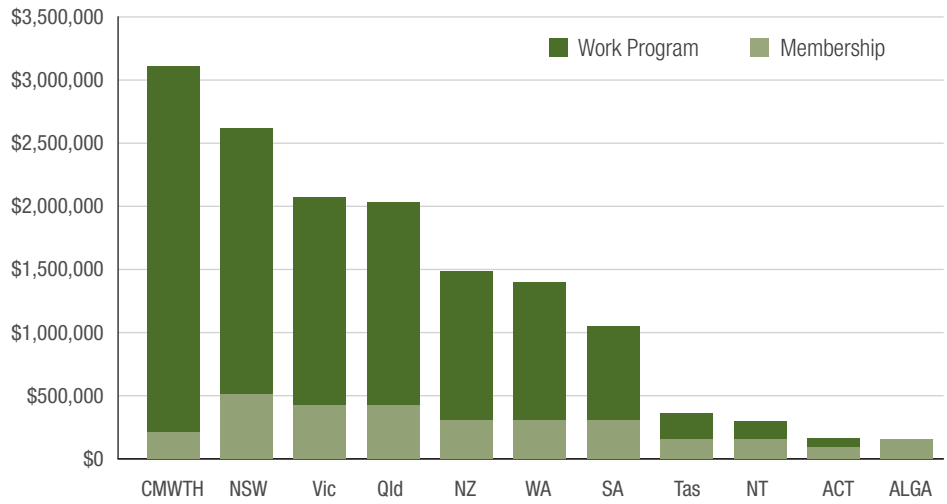
Members

- Roads and Maritime Services New South Wales
- Roads Corporation Victoria
- Queensland Department of Transport and Main Roads
- Main Roads Western Australia
- Department of Planning, Transport and Infrastructure South Australia
- Department of State Growth Tasmania
- Department of Infrastructure, Planning and Logistics Northern Territory
- Transport Canberra and City Services Directorate, Australian Capital Territory
- Commonwealth Department of Infrastructure, Regional Development and Cities
- Australian Local Government Association
- New Zealand Transport Agency

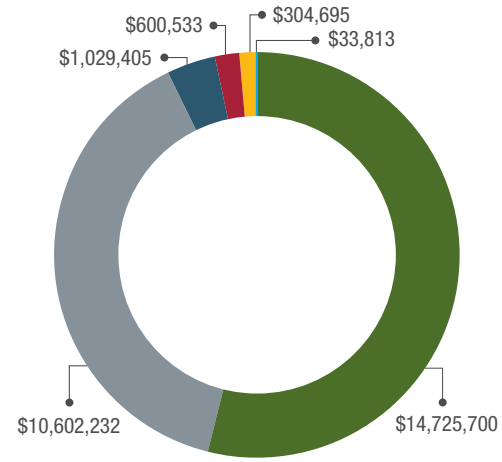
WORK PROGRAM EXPENDITURE 2017–18



AUSTROADS FUNDING CONTRIBUTION SHARES 2017–18

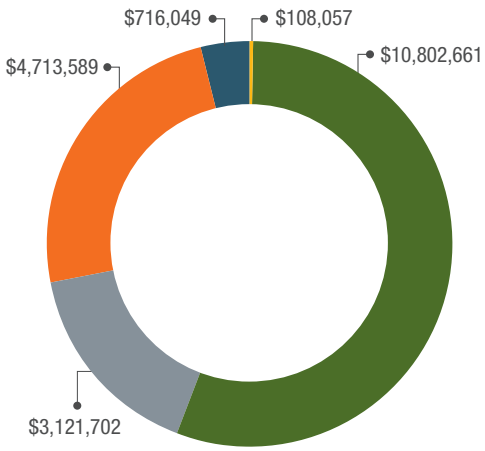


CONSOLIDATED INCOME 2017–18



Membership contributions
Interest
NEVDIS
Publications
Special programs and projects
Other

CONSOLIDATED EXPENDITURE 2017–18



Work program
Special projects
NEVDIS
Publications
Corporate/admin

2017–18 HIGHLIGHTS:

$10.8 million
research work program expenditure

28.9
full-time equivalent staff

43
projects completed

167 million
NEVDIS transactions

118
publications and webinars produced

349,000
publications accessed

2.6 million
web page views

22,600
webinar participants

Neil Scales, OBE

> "In Australia and New Zealand 85% of our engineers are men and so I am encouraged that the most recent recruits to the Austroads Board are highly placed and experienced women.

Chair's Report

Austroads has continued to build on the successes of last year and has delivered an exceptional body of research along with significant digital developments.

The Austroads Board members have been energetic and collaborative in this second year of delivery of the Austroads Strategic Plan 2016-20. Career changes resulted in the resignation of four Board members, Tommy Parker (NZTA), Paul Gelston (DPTI SA), Andrew Kirkman (DIPL NT) and Peter Todd (VicRoads). I wish to acknowledge the excellent contribution each of these members made to Austroads, in some cases over an extended period of time – well done and thank you!

In Australia and New Zealand 85% of our engineers are men and so I am encouraged that their replacements are highly placed and experienced women.

Louise McCormick is an Executive Engineer, Chartered Fellow and Senior Civil/Structural Engineer with 19 years' experience in the public and private sectors. In 2016, Louise was appointed as the General Manager for Transport and Civil Services Division within the Department of Infrastructure, Planning and Logistics NT.

Judith Formston is Manager, Traffic Operations within the Department of Planning, Transport and Infrastructure, South Australia. Judith is responsible for network operations, the traffic management centre and heavy vehicle access. She is also responsible for heavy vehicle access and heavy vehicle road reform policy advice.

Anita Curnow is the Executive Director Access and Operations at VicRoads. She is responsible for the day to day operation of the road network and incident response, ITS standards, procurement and asset management, heavy vehicle access, productivity and compliance, road user behaviour policy and programs, and vehicle and motorcycling policy. She has been involved in significant organisational and cultural change at VicRoads, including encouragement of women in technical and leadership roles. In 2017 Anita was named one of the Top 50 Public Sector Women in Victoria and also named

Monash University's Civil Engineering Alumnus of the Year.

They join an active and engaged Board that is providing strong leadership to an organisation that is recognised nationally and internationally for the quality of its research, information resources and services.

The decision of Ministers at the May 2018 Transport Infrastructure Council meeting to fold Transport Certification Australia (TCA) into Austroads deserves special note. The Austroads Board, in consultation with the TCA Board, will be developing timelines and actions necessary to manage the transition. Austroads' Board members endorsed this decision at the July 2018 meeting and legal representation has been engaged to commence the required legal and due diligence processes.

I offer warm congratulations to each of the people recognised with Austroads awards. The awards recognise the contribution of individuals to the Austroads work program. In particular, I acknowledge the work of the people who received outstanding service awards.

- **John Esnouf (VicRoads)** has recently managed nine Austroads pavements research projects for the Assets Program and is Chair of the Bituminous Surfacings Working Group. John's focus on work health and safety improvements have influenced Austroads member practice and encouraged member representatives to share their learnings and experience.
- **Philip Blake (ex DPTI, SA)** has provided exceptional support to Austroads for more than 25 years. In that time, he has been an active member of Task Forces and Working Groups, and managed numerous projects. He has been enthusiastically involved in the areas of Road Safety, Network, C-ITS and CAV.
- **Stuart Ballingall (VicRoads)** has been seconded to Austroads for the past five years as the Program Director for the Connected and Automated Vehicles Program. Stuart's outstanding leadership and contribution to work in this area has been recognised both nationally and internationally.
- **Daniel Cassar (VicRoads)** has made an outstanding contribution to Austroads and Australasian road safety over the last seven years, especially in relation to roadside safety barriers. Daniel's passion to make a lasting improvement, deliver high quality solutions and forward the progress of safety has been truly outstanding. As a result, Daniel is widely recognised and highly respected in VicRoads, Austroads and across Australasia as an authority on road safety and frequently sought for his opinion and advice in this area.

The people who manage Austroads projects and serve on Task Forces and Working Groups often undertake that work in addition to their regular duties. While I understand that many find their involvement with Austroads highly rewarding, I am grateful for all of your efforts. This can represent a significant additional workload and Austroads is reliant on your assistance.

I also thank my fellow Board members and the Austroads national office staff for their hard work and commitment during the year. In particular, Nick Koukoulas, Chief Executive who continues to provide excellent leadership and he has been very ably assisted by David Francis, Chief Operating Officer.

I would also like to thank Austroads Program Managers, Coordinators and other Program staff for the outstanding contribution they have made to our work program. The high quality of Austroads outputs is a reflection of their excellent efforts.

I look forward to working with you all in 2018–19 as we continue with our important task of working towards harmonisation to deliver an improved and sustainable Australasian road transport network.

Neil Scales, OBE
Chair, Austroads

> "I look forward to working with you all in 2018-19 as we continue with our important task of working towards harmonisation to deliver an improved and sustainable Australasian road transport network.

Chief Executive's Report

This second year of the Austroads Strategic Plan 2016-20 delivery has been very pleasing. The process changes established last year to improve the development and delivery of our research projects were further refined and have proven to be very successful.

We have continued to reduce the number of projects, but we are not doing less research. Our projects are more complex, larger in scale and they have more significant outcomes. The impacts of these can sometimes take time to fully resolve. For example, in March 2017 Austroads finalised a project which examined the benefits of introducing enhanced end to end supply chain visibility and recommended the adoption of the GS1 Global Data Standards. The project was undertaken with the Australian Logistics Council (ALC) Supply Chain Standards Working Group and GS1 Australia. Pilot studies were undertaken with TOLL, Arrium OneSteel and Nestlé. In August 2018 the Australian Logistics Council released a policy statement encouraging its members to work towards the adoption of GS1 Global Data Standards. The standards provide a common label format for consistent identification of freight units and a common data file format to exchange data throughout the freight transportation process. Based on our pilot findings, the economic benefit to Australia could exceed $1 billion.

This year we also embarked on two significant corporate projects which were identified as priorities by the Board. The Australia and New Zealand Roads Capability Analysis 2017-2027 examined how 'traditional' and 'non-traditional' skills demand will form for roads agencies over the coming decade, what will be the key threats to workforce capability in the roads sector, and what positive steps roads agencies can take to respond to meet the short and longer term challenges ahead to 2037. The work builds on past capability analysis work commissioned by Austroads. The approach of the most recent analysis was world leading as it considered the expanded skill set required by road agencies of the future with a specific focus on technologists, data analysts, network operators, asset managers and transport planners.

The Austroads Online project is combining our corporate website (austroads.com.au) and publications website (onlinepublications.austroads.com.au) into a single site and will provide the Austroads Guides as an online resource. The broad priorities of the project are to: improve users' experience; better share knowledge and project outcomes; better use digital technology; and achieve administration efficiencies. The site development has been challenging but I am confident the new site will provide us with a flexible system that will serve us well into the future. Site development started in January 2018 and we expect to be being user testing by the end of July with the site going live in September. Considering the scope of the work required, this has been a remarkable turnaround but more importantly, I think our users are going to be delighted by the change.

I am very pleased with the results of our continued focus to improve our capacity to deliver projects on time. For the first time we finished the year with no projects running more than six months late. We have four projects running less than six months late and 66 running on time. This is a significant improvement on past performance and I acknowledge the work of our Project Managers, Program Coordinators, Program Managers and National Office staff to deliver this result.

As the financial summary shows, NEVDIS performed strongly again in the 2017–18 financial year. The continuing increase in the demand for NEVDIS services is now allowing us to reduce the financial contributions from member agencies and support initiatives such as making the Austroads Guides freely available. The NEVDIS team are to be congratulated for their strong performance throughout the year, particularly with the major projects they are undertaking including the complete re-write and re-platform of the NEVDIS system and the successful on-time delivery of the National Heavy Vehicle Registration System for the National Heavy Vehicle Regulator on 1 July 2018.

Nick Koukoulas

> "I am very pleased with the results of our continued focus to improve our capacity to deliver projects on time.

I would like to thank the Austroads Chair, Deputy Chair, Board members, the Task Force and Working Groups members, our Project Managers and all Austroads staff for their work this year. We've seen some terrific gains and I am looking forward to confidently building on these over the next 12 months.

Nick Koukoulas
Chief Executive, Austroads

2017–18 Financial Summary

INCOME AND EXPENDITURE TO 30 JUNE 2018

	Austroads	NEVDIS	Consolidated
Revenue	14,247,118	13,049,261	27,296,379
Expenses	-14,926,736	-4,535,323	-19,462,059
Surplus/deficit for the year	**-679,618**	**8,513,938**	**7,834,320**

STATEMENT OF FINANCIAL POSITION AS AT 30 JUNE 2018

	Austroads	NEVDIS	Consolidated
Total assets	10,576,161	24,160,848	34,737,009
Total liabilities	-2,619,340	-1,384,720	-4,004,060
Net assets	**7,956,822**	**22,776,128**	**30,732,950**
Accumulated surplus b/f	8,636,440	14,262,190	22,898,630
Surplus/deficit for the year	-679,618	8,513,938	7,834,320
Total equity	**7,956,822**	**22,776,128**	**30,732,950**

Work Program

Austroads tracks progress on all projects and reports to the Board at each meeting on the overall delivery of the work program. There were 114 projects approved in the 2017–18 work program, with 78 projects continuing from previous financial years and 36 new projects starting in 2017–18. There were 31 projects due for completion in 2017–18, 17 were completed on schedule.

During 2017–18 a total of 43 projects were completed and one was cancelled. The table below provides a comparison of work program status figures as at 30 June for the last five financial years.

In 2018-19, 70 projects will carry over from 2017–18 and there are currently 28 new projects making a total of 98.

STATUS OF AUSTROADS WORK PROGRAM

Year	Number of projects						
	Completed	Cancelled or Deferred	> 12 months + late	6–12 months late	< 6 months late	On time	Total Active Projects
2013-14	39	6	7	11	17	93	173
2014-15	59	8	11	4	26	58	166
2015-16	62	3	2	1	22	58	148
2016-17	46	1	1	3	14	60	125
2017–18	43	1	0	0	4	66	114

Governance

Austroads Ltd is a company limited by guarantee under the Corporations Act 2001.

Austroads is governed by a Board of directors. There is currently one director from each member organisation. They are the chief executive or a senior executive officer of their organisation.

The Austroads national office, based in Sydney, provides secretariat support to the Board. The Chief Executive is the Company Secretary and Public Officer of Austroads Ltd. There is also an Executive Committee.

At its October 2016 meeting the Austroads Board determined new appointments to important leadership positions on the Board and Executive Committee.

Neil Scales OBE, Director-General of Queensland Department of Transport and Main Roads, was appointed Chair on 13 October 2016, following the retirement of Peter Duncan AM. The appointment is for a two-year term.

Shane Gregory, General Manager State Roads for the Department of State Growth, Tasmania, was appointed Deputy Chair on 13 October 2016, following Neil Scales appointment of Chair.

The Chief Executive, Nick Koukoulas, is Company Secretary and Public Officer of Austroads Ltd.

At the April Board meeting, Neil Scales called for nominations to the Executive Committee to fill the following vacancies:

- Paul Gelston retired from DPTI SA and subsequently as a Director of Austroads Ltd on 31 December 2018.
- Tommy Parker resigned from NZTA and subsequently as a Director of Austroads Ltd on 6 April 2018.
- Peter Todd resigned from VicRoads and subsequently as a Director of Austroads Ltd on 9 March 2018.

Three directors were appointed, and the Austroads Executive Committee now comprises:

- Neil Scales OBE, Austroads Chair
- Shane Gregory, Austroads Deputy Chair
- Nick Koukoulas, Austroads Chief Executive
- Louise McCormick, Department of Infrastructure, Planning and Logistics Northern Territory
- Alex Foulds, Department of Infrastructure, Regional Development and Cities
- Ken Kanofski, Roads and Maritime Services NSW

Austroads board members at work during the April 2018 meeting in the national office, Sydney.

Activities

Austroads:

Conducts strategic research which helps road agencies address current and emerging issues.

Maintains and publishes Guides to promote a nationally consistent approach to the design, maintenance and operation of road networks.

Facilitates the sharing of knowledge by widely disseminating research outputs, conducting seminars, and promoting the use of Austroads work.

Conducts business activities on behalf of Australasian road agencies.

Fosters international collaboration by engaging with and supporting international road organisations.

Structure

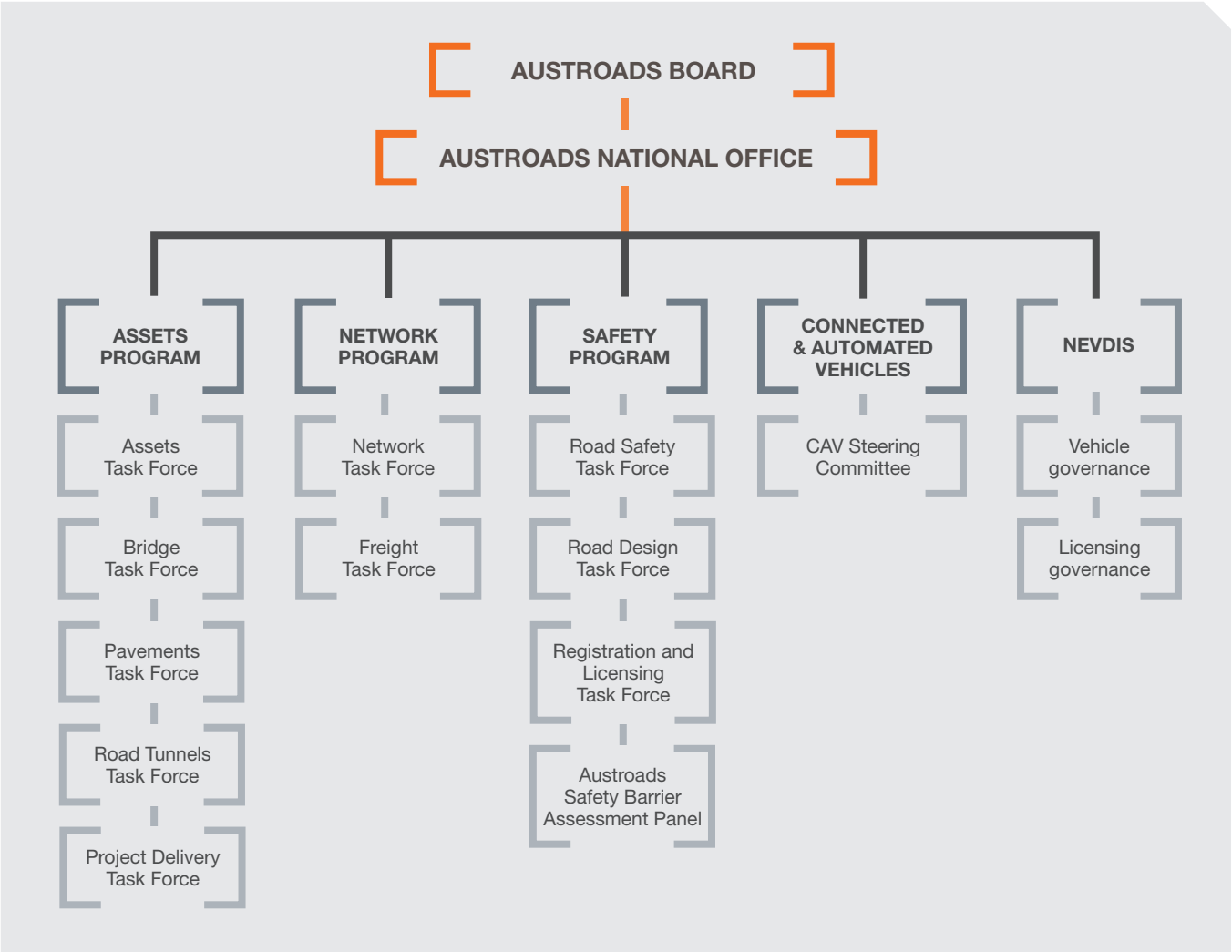
Austroads uses a program management approach to deliver the strategic plan.

Each program focuses on an operational area of the road system but in doing so they address the strategic priorities of Austroads by undertaking a range of projects and contribute to improving transport in Australia and New Zealand.

Austroads relies on the expertise of its member organisations to achieve its outcomes and member organisation staff play an integral role in Austroads operations. This encourages a collegiate, collaborative approach and facilitates learning, development, sharing and a high level of consistency across jurisdictions.

Program Managers are responsible for the development and management of annual work programs and provide reports to the Board. The Task Forces identify areas of interest and develop project proposals, oversee projects, promote the dissemination of results and provide a forum for the exchange of information between Austroads' member and related organisations.

AUSTROADS MANAGEMENT STRUCTURE



Awards

Each year Austroads Awards recognise the contribution of individuals to our work program.

The people managing Austroads projects and serving on Task Forces and Working Groups often undertake that work in addition to their regular work for member organisations. The awards acknowledge their efforts and commitment on which our success depends. In 2017–18 Austroads recognised the following people for their exceptional service.

Austroads Outstanding Service Award

JOHN ESNOUF – VICROADS

In recognition of his management of, and long-standing contributions to, an important program of research for the Assets Program and Pavements Task Force and as Chair of the Bituminous Surfacings Working Group.

Recent Austroads projects managed include:

- Monitoring of Austroads Sprayed Seal Trial Sites (APT2039).
- Guidelines and Specifications for Bituminous Micro-surfacings (APT2040).
- Key Properties of Cutters for Optimal Sprayed Seal Performance (APT2063).
- The Relationship Between Tyre/Road Horizontal Stresses Generated by Heavy Vehicles and the Performance of the Pavement Surfacing (AT1540).
- Standards Australia – Bitumen and Related Materials for Roads (TO1993).
- Maximising the Performance of Sprayed Seals (TT1820).
- Binder Characterisation Properties for Enhanced Performance (TT1823).
- Development of a Sprayed Seal Binder Cracking Test (TT2037).
- Review of Guide to Pavement Technology Parts 4F and 4K (TT1850).

John has been a key contributor to technology development and getting the research into practice through the review and update of the Guides, national specifications, test methods and Australian Standards.

He has also driven key WH&S safety improvements such as the introduction of forward moving aggregate spreaders for sprayed sealing works. This initiative alone is the basis of the current Austroads Safety Alerts reporting system which enables regular sharing of this important information.

PHILIP BLAKE – EX DEPARTMENT OF PLANNING TRANSPORT & INFRASTRUCTURE, SA

In recognition of his outstanding contribution to Austroads and its activities over many years.

Phil has been involved in Austroads in a variety of capacities for over 25 years. He has been an active member of various Task Forces and Working Groups and managed a number of projects. He has been enthusiastically involved in the areas of Road Safety, Network, C-ITS and CAV. His contribution to Austroads and its outputs has been exceptional. He retired from DPTI on 22 June 2018.

Phil Blake is presented with his Outstanding Service Award

STUART BALLINGALL – VICROADS

In recognition of his outstanding contribution to Austroads and its activities over a number of years as Program Director of the C-ITS and CAV Programs.

Stuart has been involved with Austroads over a number of years but particularly over the last five years as Program Director for the Austroads CAV Program on secondment from VicRoads. Austroads commenced work in the area of C-ITS in 2008 and expanded this in 2014 to include connected and automated vehicles. Stuart's leadership of the Program and his contribution to work in this area has been outstanding. He is recognised both nationally and internationally as an expert source of knowledge in this subject and has successfully represented Austroads in many forums.

Stuart completes his role as CAV Program Director on 30 June 2018 and will resume on a full-time basis with VicRoads.

DANIEL CASSAR – VICROADS

In recognition of his outstanding contribution to Austroads and Road Safety throughout Australasia over the last 7 years, especially on the topic of roadside safety barriers.

Since commencing his role as Principal Road Design Engineer with VicRoads in 2011, Daniel's passion to make a lasting improvement, deliver high quality solutions and forward the progress of safety has been truly outstanding. As a result, Daniel is widely recognised and highly respected in VicRoads, Austroads and across Australasia as an authority on road safety and frequently sought for his opinion and advice in this area.

He has been a key driver in the implementation of the Australia/New Zealand safety barrier installation accreditation scheme including gaining support from all Australasian road agencies to implement the scheme.

He has been responsible for implementing numerous safety barrier initiatives to improve the minimum level of safety and to inspire industry innovation.

He has worked tirelessly to build technical capability including an active role within the VicRoads technical training program for the past 7 years and his commitment to always provide practical and educational technical advice.

Austroads Special Commendation Awards

JAMES HUGHES – NEW ZEALAND TRANSPORT AGENCY

In recognition of his ongoing contribution to the work and objectives of Austroads through his exceptional work with the Road Design Task Force over the last decade. Particularly for his role in the development and maintenance of the Austroads Guide to Road Design including management of project. Inclusion of Recent Road Safety Research in the Guide to Road Design (SRD6045) and input into other projects and sharing New Zealand experiences.

PETER ELLIS – ROADS AND MARITIME SERVICES, NSW

In recognition of his ongoing contribution to the work and objectives of Austroads through his exceptional work with the Road Design Task Force over the last decade, particularly for his role in the development and maintenance of the Austroads Guide to Road Design including management of projects Review Guide to Road Design – Part 6: Roadside Design, Safety and Barriers (clearzones) (TP2056), Rollover Crashes – Road Design Risk Factors and Infrastructure Solutions (SRD6070), Guide to Road Design – Revision of Part 7: Geotechnical Investigation and Design (SRD6071), and input into other projects.

RICHARD FANNING – VICROADS

In recognition of his ongoing contribution to the work and objectives of Austroads through his exceptional work with the Road Design Task Force over the last decade, particularly for his role in the development and maintenance of the Austroads Guide to Road Design including successful management of strategic project Road Cross-section Design for Road Stereotypes (including network safety plans) and a Safe System (SSP2068) and input into other projects.

COLIN BRODIE – NEW ZEALAND TRANSPORT AGENCY

In recognition of his outstanding contribution to improving road safety both nationally and internationally, his extensive work with the Road Safety Task Force and Roads & Roadside Theme Group, being an ambassador for Safe Systems, and his role in the development of the National Road Safety Action Plan for 2018-2020, setting a strong agreed national agenda for roads and roadside safety improvement.

Austroads Achievement Awards: Assets Program

MICK SAVAGE – IPWEA

In recognition of his management of an important project for the Assets Program and Assets Task Force: Appropriate use of marginal and non-standard pavement materials and road construction maintenance (AAM2101).

NIGEL CASEY – ROADS AND MARITIME SERVICES NSW

In recognition of his outstanding contribution to the Road Tunnels Task Force in terms of participation and generation of priority research proposals and papers and the development and ongoing management of two important projects: Use of a driving simulator as a safety assured method of assessing and approving alternative in–tunnel aesthetic solutions (ART6011) and Dangerous goods in tunnels (ART6037).

MAHES RAJAKARUNA – MAIN ROADS WA

In recognition of his management of an important project for the Assets Program and Bridge Task Force: Structural design and material properties of drainage pipes (forming part of AAM2103) and his involvement with the Standards Australia Committee WS28 on this topic.

RON KOORENGEVEL – MAIN ROADS WA

In recognition of his management of an important project for the Assets Program and Assets Task Force: Harmonisation of pavement markings and national pavement marking specification (AAM2111) and his leadership of the Road Authority Pavement Markings Working Group.

MANDI MEES – NTC (EX ROADS AUSTRALIA)

In recognition of her participation and support provided for an important project for the Assets Program and Assets Task Force: Harmonisation of pavement markings and national pavement marking specification (AAM2111) and her strong contribution and industry leadership as part of the Road Authority Pavement Markings Working Group.

GRAHAM HOBBS – TRANSPORT & MAIN ROADS, QLD

In recognition of his management of an important project for the Assets Program and Project Delivery Task Force: National harmonisation of general conditions of contract (APD2010) and his participation in the Project Delivery Task Force and Pre-qualifications Working Group.

ANDREW PAPACOSTAS – VICROADS

In recognition of his management of two important projects for the Assets Program and Pavements Task Force: Implementation of a new pavement design system through publication of an updated AGPT Part 2 (TP1969) and Improving the cost effectiveness of foamed bitumen stabilised pavements (TT2046) and his longstanding participation in the Pavements Task Force and the Pavement Structures Working Group.

MIKE PICKERING – TRANSPORT & MAIN ROADS, QLD

In recognition of his management of an important project for the Assets Program and Pavements Task Force: Encouraging pavement design innovations (TT2044) and his participation in the Pavements Task Force.

SHANE TEPPER – DEPARTMENT OF INFRASTRUCTURE, PLANNING AND LOGISTICS, NT

In recognition of his management of an important long-term project for the Assets Program and Assets Task Force: Long-term performance monitoring to develop consistent performance models (AT1064) and his participation in the Assets Task Force.

Austroads Achievement Awards: Network Program

JASON VENZ – TRANSPORT & MAIN ROADS, QLD

For his leadership of the National ITS Architecture including the successful delivery of Network project – Development of ITS Architecture (Stage 2) – Logical Architecture (NS1697).

DAVE LANDMARK – MAIN ROADS WA

In recognition of his ongoing contributions to the Traffic Management Working Group and successful management of an important project, Revision of Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings (NP2023).

CAMERON LEE – VICROADS

In recognition of his management of an important project for the Network Program and Network Task Force, Road Transport Management Framework and Principles (NEG2080).

IAIN MCAULEY – NEW ZEALAND TRANSPORT AGENCY

In recognition of his technical knowledge and project management for the Network Operations Planning Concept of Operations project (NEG2079).

CHRIS RAY – ROADS AND MARITIME SERVICES NSW

In recognition of his successful project management and technical knowledge in the review and updating Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis (NTM2081).

KAMAL WEERATUNGA – MAIN ROADS WA

In recognition of his successful project management and technical knowledge in the review and updating Austroads Guide to Traffic Management Part 5: Road Management (NTM2081).

PAWEL POTAPOWICZ – CANBERRA CITY SERVICES ACT

In recognition of his successful project management and technical knowledge in the review and updating Austroads Guide to Traffic Management Part 13: Road Environment Safety (NTM2081).

NATALIE LOCKWOOD – AUSTROADS

In recognition of her excellent project management and technical leadership in the Network project – Strategic Review of Guide to Traffic Management (NTM6058).

THANG NGUYEN – TRANSPORT FOR NSW

In recognition of his successful management of an important project for the Freight Task Force – Modelling for High Productivity Vehicles in Metropolitan Areas (NEF2097).

PETER FRAUENFELDER – TRANSPORT FOR VICTORIA

In recognition of his excellent project management and technical knowledge for the Freight project – Local Roads and High Productivity Freight Vehicles Access (NEF2096).

CHRISTIAN CHONG-WHITE – ROADS AND MARITIME SERVICE NSW

In recognition of his excellent project management and technical leadership for the Network project – Network Performance Indicators (NEG1995).

WARWICK NORTON – NATIONAL HEAVY VEHICLE REGULATOR

In recognition of his outstanding project management and technical knowledge for the Freight project – Development of National Mass Assessment Procedures for Over Size and Over Mass (OSOM) Vehicles (NEF1893).

GLENN BUNTING – NEW ZEALAND TRANSPORT AGENCY

In recognition of his ongoing contributions to the Network Task Force and management of Network Operations Decision Support Tool: Requirements and Development project (NS2003).

Austroads Achievement Awards: Safety Program

GEOFF HUGHES – NATIONAL MOTOR VEHICLE THEFT REDUCTION COUNCIL

In recognition of his ongoing contribution to the objectives of Austroads through participation in the Registration & Licensing Task Force and a strong commitment to harmonisation and process improvement, and as the Austroads National Motor Vehicle Theft Reduction Council partner, and particularly through the management of project Development of Damage Assessment Criteria for a National Written Off Heavy Vehicle Register (SRL6083) setting a strong basis for more effective regulation of the heavy vehicle industry and improved road safety.

World Road Association

The WRA Council met on 25–26 October 2017 in Bonn Germany. It was agreed that the new area of interest in connected and automated vehicles was in line with the current Strategic Plan and confirmed the recommendation of the Strategic Planning meeting.

This new Task Force will generate a lot of interest and a call will be made for contributors to this Task Force in early 2018. There were a number of presentations from Germany, Italy and France showcasing the trials they are carrying out in urban and rural areas in each of those countries.

Australasian nominations for the TF B.2 Automated Vehicles: Challenges and Opportunities for Road Operators and Road Authorities were received effective April 2018 as follows:

- Dennis Walsh, General Manager – Land Transport Safety, Queensland Department of Transport and Main Roads. (Corresponding Member)
- Matthew Hall, Technical Leader - Motorway Optimisation, Network Design Services, VicRoads.

World Road Congress 2023

At the July 2017 Board meeting, Board members selected Sydney as the city to progress the Australasian bid for the 2023 World Road Congress.

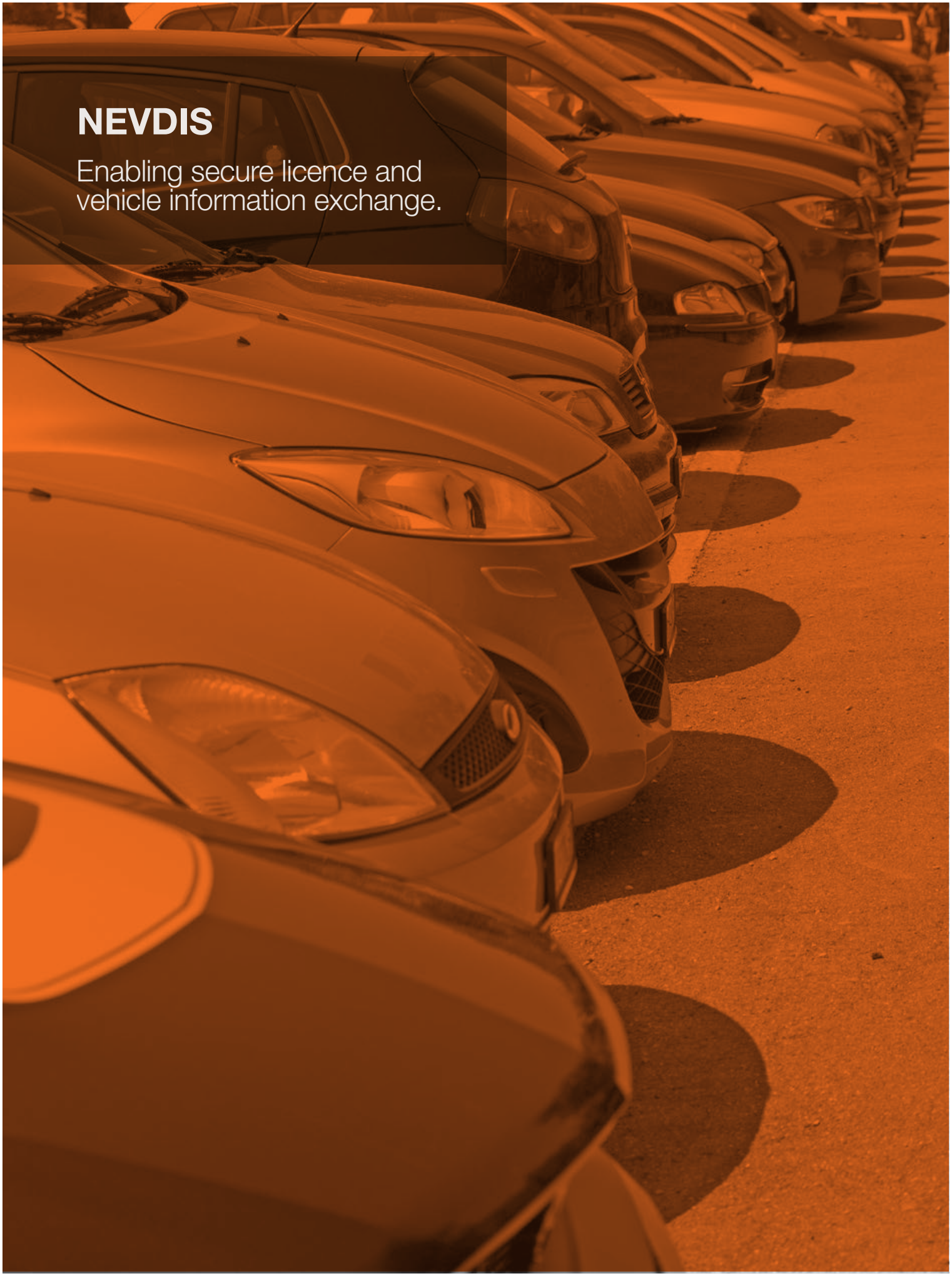
It was also endorsed at that meeting that Sydney moving forward would have the full support of all Board members and the submission to the World Road Association in Paris will be a collaborative Australasian bid.

We established a Bid Committee for the bid process and lobbying activities and numerous regular meetings have been held and it continues to gather momentum.

The Committee members are:

- Ken Kanofski, Chief Executive, RMS NSW [Chair]
- Nick Koukoulas, Chief Executive, Austroads
- Jeff McCarthy, Executive Director Technical and Project Services, RMS NSW
- Kathy Roil, Chief of Staff, Office of the Chief Executive, RMS NSW
- Daniel Wilson, Corporate Communications Manager, Community and Stakeholder Engagement, RMS NSW
- Susan Harris, Chief Executive Officer, ITS Australia
- Ian Webb, Chief Executive, Roads Australia
- Renee Hall, Head of Bidding, Business Events Sydney
- Kirsty Winning, Bid Manager, Business Events Sydney
- Mindy Ison, Project Advisor, Business Events Sydney
- Jill Davies, Consultant, Business Events Sydney
- David Francis, Chief Operating Officer, Austroads
- Saideh Alam, Office Manager, Austroads

The deadline for submission will be 15 August 2018. Proposals will be presented to the Council of PIARC in Yokohama on either Wednesday, 24 October or Thursday, 25 October 2018. Presentation duration will be approximately 20-25 min and the Council will decide which proposal it selects on 25 October 2018.



NEVDIS

Enabling secure licence and vehicle information exchange.

Overview

The National Exchange of Vehicle and Driver Information System (NEVDIS) was established in 1998 and is owned by Austroads on behalf of the eight states and territory jurisdictions who contribute information.

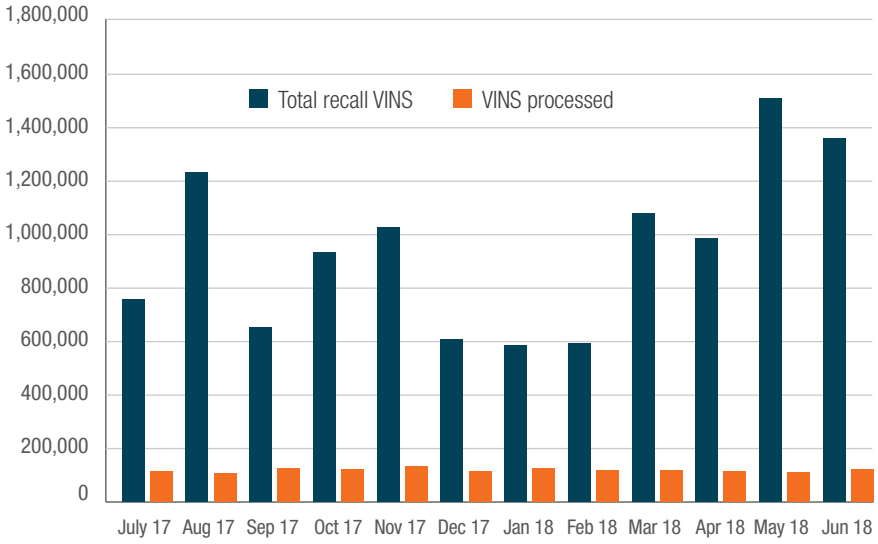
NEVDIS is a unique national system which enables road authorities to interact across state borders and directly supports the transport and automotive industries. Australia's automotive industry employs more than 312,000 people comprising over 50,000 businesses with revenue in excess of $165 billion.

This essential customer service system exchanges national information about vehicles and driver licenses. Its primary purpose is to prevent fraud and theft by ensuring 'one vehicle, one Vehicle Identification Number (VIN)' and 'one person, one driver licence'.

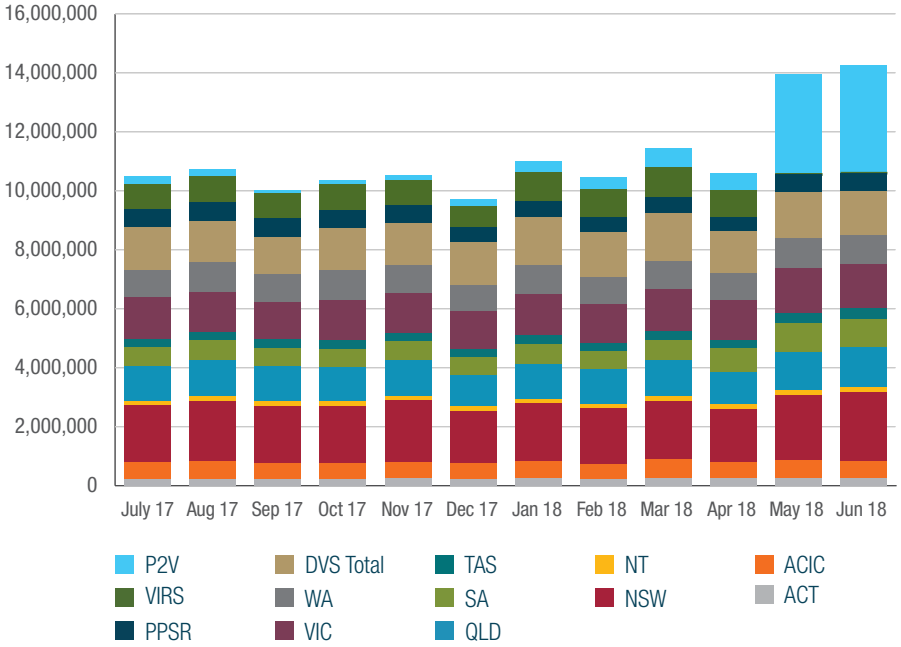
In addition to information supplied by road agencies, NEVDIS collects Vehicle Identification Number (VIN) data for compliance from vehicle wholesalers and stolen information from police.

It also provides information to public and private sector organisations to facilitate provenance checking on vehicles, matching of biographic details on licenses, motor vehicle insurance underwriting and vehicle safety recalls.

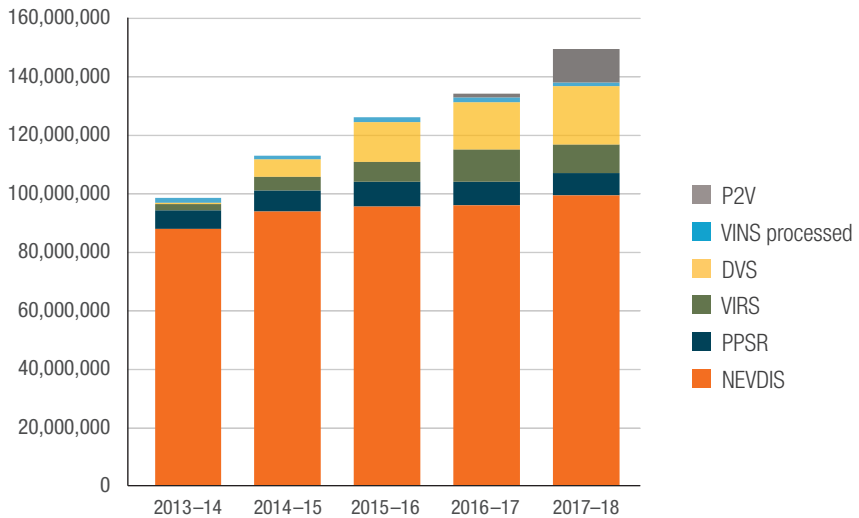
NEVDIS VIN TRANSACTION 2017–18



NEVDIS TRANSACTIONS 2017–18



NEVDIS TRANSACTIONS FIVE YEAR COMPARISON



2017–18 Highlights

The NEVDIS system processed 167 million transactions in 2017–18, a 24% increase in comparison to 2016-17. This is largely due to increases in Safety Recall activities / extracts as well as an increase in uptake of the Plate to VIN (P2V) Service.

Service availability was sustained with a scheduled uptime of 99.9% in 2017–18 due to the efforts of the NEVDIS Administration Unit and its outsourced managed services vendors.

NEVDIS continues to work on a number of significant projects:

- The NEVDIS **Re-platform** is well advanced and currently undergoing User Acceptance Testing by stakeholders. It is scheduled for deployment to production early November 2018.
- The NEVDIS **Re-write** is progressing very well with a scheduled go live date of March 2019. The rewritten application will be run in parallel with the legacy system to ensure all stakeholders are comfortable with the production environment and to mitigate any risks to the critical function performed by NEVDIS.
- Work is being undertaken to replace the aging **Wide Area Network (WAN)** which involved a tender for the WAN replacement as well as a new Managed Services component. Work on the physical WAN refresh will commence around October 2018.
- NEVDIS was also tasked with the delivery of a critical component of the **National Heavy Vehicle Registration System (NHVRS)** on behalf of the National Heavy Vehicle regulator (NHVR). This work involved considerable liaison with the State and Territory Road Authorities and NHVR themselves.

Due to the nature of the work involved, the original timeline was heavily compressed determining final requirements and specifications with an unmovable go-live date that reflected the changes in, and adoption of, the Heavy Vehicle National Law. To deploy a solution NEVDIS required a fundamental change to the way it functions. NEVDIS were able to overcome the time and design challenges and the go-live deadline of 1 July 2018 was successfully met.

This was a significant achievement as work was also maintained on the other projects NEVDIS had in play at the time.

Takata airbag inflators continue to generate significant **Safety Recall** activity, and NEVDIS has continued to support Vehicle Manufactures through conducting related safety recall extracts fee-free. This offer will continue through to 31 December 2020.

Since instigating this initiative NEVDIS has provided over 10 million vehicle registered operators to those conducting the recalls. This has proven invaluable to the Vehicle Manufacturers and has a strong public interest and societal benefit aspect.

NEVDIS has decommissioned one of its commercial interfaces (Vehicle Information Request System – VIRS) with the functionality being replicated through the plate to **P2V** service. This service has gained considerable patronage during the 2017–18 financial year and is predicted to see continued strong growth throughout 2018-19.

The **Personal Property Security Register (PPSR)** transaction volumes remain steady.

The **Document Verification Service (DVS)** activities saw strong growth in early 2017–18 and remained steady for the balance of the financial year.

Through the entire NEVDIS operation there are two key imperatives that are adhered to:

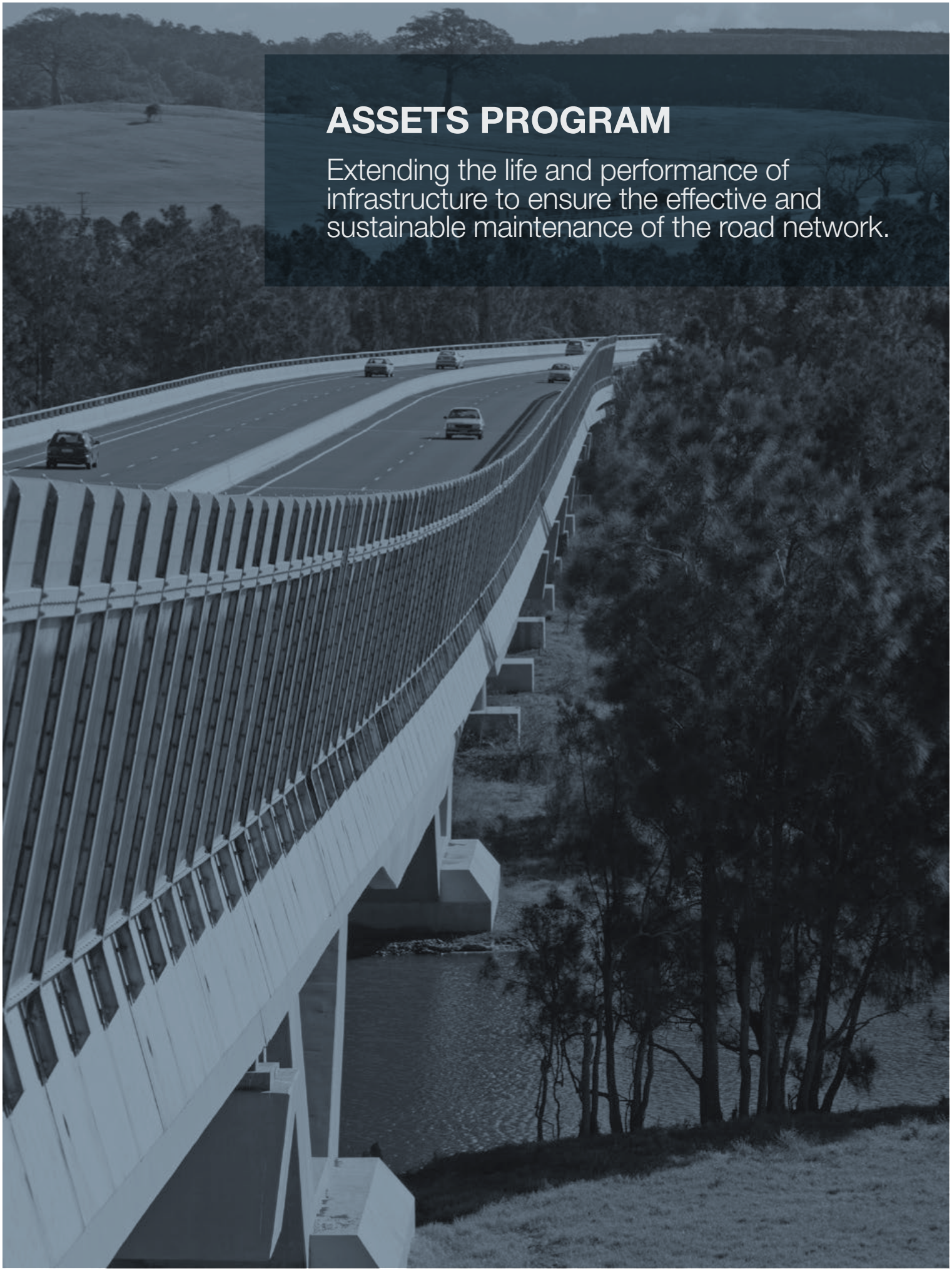
1. **NEVDIS' primary purpose** is to facilitate the provision of vehicle and driver information between jurisdictions. It is non-negotiable that this core role remains the number one priority and that service to jurisdictions is maintained or enhanced in the future.
2. It is imperative that privacy laws are adhered to with the use of any information in the NEVDIS database.

Future Focus

NEVDIS (Austroads) remains a not-for-profit entity but continues to seek to identify opportunities in both operational efficiencies and additional revenue streams which may partially or fully negate the need for funding by jurisdictions.

NEVDIS covers 100% of Austroads administrative costs allowing all member contributions to be utilised for research – priorities for which are identified by the Austroads Board.

NEVDIS is also seeking additional and alternate data sources to augment existing holdings to achieve improved data accuracy and completeness. This will have a direct benefit to core stakeholders, provide a stronger base for analytical activities and a higher quality service to commercial users.



ASSETS PROGRAM

Extending the life and performance of infrastructure to ensure the effective and sustainable maintenance of the road network.

Overview

The strategic priority of the Assets Program is to extend the life and performance of infrastructure to ensure the effective and sustainable maintenance of the road network.

Rapid change in the operating environment for the Assets Program continues. Areas of change include digitisation, big data, connected and automated vehicles, road user expectations, financial capacity and adverse weather events. Roads sector asset management is evolving to align with international practices including the ISO 55000 asset management standards. In support of member agency operations, the Austroads Guides need continual review and update to ensure they reflect the latest developments and technologies and this has been a key focus for the Assets Program in 2017–18. As an input to this around 40 projects were progressed across the assets work streams.

Work streams

- Emerging technology – materials development
- Strategic management of road infrastructure
- Managing loading impacts
- Pavement management
- Bridge management
- Managing for climate change
- Sustainable roads and roadsides
- Managing rural and remote roads

People

DR RICHARD YEO, PROGRAM MANAGER ASSETS (until April 2018)

Dr Richard Yeo has extensive research and management experience in the roads sector. He led the Austroads Assets Program from April 2016 to April 2018. In this role he brought his technical background, leadership skills and network of contacts across the industry to drive the development of new knowledge and its implementation into practice.

"The Assets Program Manager role provided a great opportunity for me to lead research programs across five Australasian Task Forces covering asset management, bridges, tunnels, pavements and surfacings, and project delivery. With strategic direction from Austroads board, these Task Forces drive the research and knowledge sharing activities which support Austroads key purpose – improving safety, productivity and sustainability of the road networks". Richard has subsequently returned to the Australian Road Research Board (ARRB) as Chief Operating Officer

PROGRAM COORDINATOR: Jo Hill (January 2017–June 2018) and Liz Karas (June 2018 ongoing).

PROGRAM MANAGER: Ross Guppy (July 2018 ongoing).

ASSETS TASK FORCE

Karl Cloos, TCCS ACT	Liam Terris, RMS NSW
Catherine Dear, VicRoads	John Robertson, MR WA
Riaz Ul-Islam, RMS NSW	Dr Tim Martin, ARRB
Andrew Golding, QLD DTMR	Ramon Staheli, NTC
Mick Savage, IPWEA	Greg Moxon, DIRDAC
Janey Mitson, DPTI SA	Shane Tepper, DoT NT
David Jansen, VicRoads	Andrew Hargrave, DSG TAS

PAVEMENTS TASK FORCE

Erik Denneman, AAPA	John Nichols, CCAA
John Donbavand, NZTA	Andrew Papacostas, VicRoads
Sam Henwood, RMS NSW	Mike Pickering, QLD DTMR
Paul Keech, ALGA	Bryan Pidwerbesky, CC NZ
Les Marchant, MR WA	Hugo Van Loon, DPTI SA
Dr Robert Urquhart ARRB	Barry Walker, DSG TAS
Bryan Matyorauta, DoT NT	Graham Hennessy, AustStab
Kym Neaylon, CPEE	Dr Michael Moffatt, ARRB

BRIDGE TASK FORCE

Adam Lim, MR WA	Richard Underhill, DoT NT
Phil Molloy, DPTI SA	Anthony Rooke, ARRB
Andy Ng, VicRoads	Tanya Nelson, QLD DTMR
Barry Wright, NZTA	Neil Wong, NTC
Angela Ransom, QLD DTMR	Vincent Tang, DSG TAS
Parvez Shah, RMS NSW	Dr Neal Lake, ARRB

ROAD TUNNELS TASK FORCE

Bob Allen, ATOG	Nigel Lloyd, NZTA	Greg Pipikios, Transurban
Nigel Casey, RMS NSW	Geoff McKernan, Transurban	John Venables, MR WA
Georgia Stylianos, VicRoads	Nooru Mohamed, QLD DTMR	Michael Tziotis, ARRB
Yan Yan Xiao, DPTI SA	Tony Peglas, ATS	

PROJECT DELIVERY TASK FORCE

Brian Bestwick, RMS NSW	Benjamin Champion, DPTI SA	Adil Jamil, DSG TAS
Leo Coci, MR WA	Graham Hobbs, QLD DTMR	Colin MacKay, NZTA
Andrew Williams, VicRoads	Richard Underhill, DoT NT	Dr Richard Yeo, ARRB

ASSETS PROGRAM TECHNICAL WORKING GROUPS

Bituminous Surfacings Working Group

This group is chaired by a member agency representative and it is composed of road agency staff, stakeholders and industry practitioners who have an interest in projects related to bituminous sprayed seals and the performance of bitumen and polymer modified binders.

Asphalt Research Working Group

This group is chaired by a member agency representative and is generally composed of road agency practitioners, stakeholders and AAPA representatives.

Pavement Structures Working Group

This group is comprised of member agency representatives and stakeholders and reviews in detail, projects relating to pavement design and performance.

Road Authority Pavement Marking Working Group

This group comprises road agency and industry practitioners who are working towards national harmonisation of pavement markings, performance-based requirements and test methods and updating national standards. This work is key as consistency in pavement markings will support optimised asset management outcomes and future connected and automated vehicle operations.

Utilities in Road Reserves Working Group

This group comprises road agency practitioners who are working together to ensure a united position for road agencies in response to the ever growing and complex arrangements related to utilities in road reserves. With the national broadband network roll-out, the growing number of telecommunications providers, gas, electricity, water and other utilities providers all occupying and seeking access to critical road and bridge infrastructure, the role of this working group has never been more important.

Occupational Health and Safety Working Group

In July 2017 Austroads Board established an Austroads WH&S 'safety alerts' system with the objective of knowledge and information sharing covering issues and changes to practices in jurisdictions and between jurisdictions for improved safety outcomes. Through the Assets Program and under the Project Delivery Task Force, this group comprises jurisdictional WH&S representatives who share information through Task Force meetings, the Austroads website and through regular reports to Austroads Board.

Prequalification Working Group

This working group has oversight and management of the highly successful national prequalification scheme for major contractors. This scheme involves a mutual recognition agreement across most member road agencies such that once prequalified for road and/or bridgeworks in one jurisdiction, there is a relatively straight forward process to obtain prequalification with the other participating road agencies.

Steel Fabrication Specification Working Group

This new working group was formed in February 2018 by the Bridge Task Force to progress the development of a harmonised national steel fabrication specification.

Agreed Practice Outputs

- Guide to Asset Management
- Guide to Pavement Technology
- Guide to Bridge Technology
- Guide to Road Tunnels
- Guide to Project Delivery
- Test Methods
- Work Tips and Technical Notes

Program Activities

Materials Development

The road network has traditionally been constructed of a wide range of local and manufactured materials as cost effectively as possible to meet road user needs. As level of service expectations grow and with rapid technology change, it is important to undertake materials research to encourage fit for purpose and sustainable use of available materials for roads.

In **July 2017**, Austroads published the results of a three-year Austroads project TT1908 on assessment and implementation of high modulus asphalt (EME2).

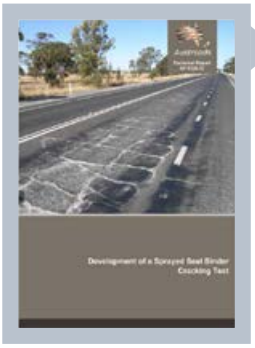
The purpose of this project was to assist industry in the successful transfer of French Enrobés à Module Elevé Class 2 (EME2) technology to Australia. EME2 technology offers the prospect of reduced asphalt thicknesses for heavy duty pavements, and lower construction and maintenance costs.

EME2 mixes are produced using a hard-paving grade bitumen applied at a high binder content (approximately 6%). Compared to conventional asphalt bases with unmodified binders, EME2 asphalt is characterised by high stiffness, high durability, superior resistance to permanent deformation and good fatigue resistance. International and Australian experience indicates that significant pavement thickness reductions can be achieved using EME2.

As part of the project, an Australian specification framework for EME2 mixes was developed and the requirements for manufacturing, paving and compliance were provided. Demonstration trials were also carried out as part of the validation process.

The final EME2 mix design specification limits are provided and discussed in this report.

austroads.com.au/publications/pavement/ap-t323-17



In **September 2017,** Austroads published a report on the development of a laboratory sprayed seal binder cracking test which can be used to measure the relative fatigue resistance of thin binder films with thicknesses comparable to those of sprayed seals (1–3 mm).

Initial studies involved optimising the experimental equipment and test conditions used in a prototype sprayed seal binder cracking test which was developed during Austroads project TT1820 *Maximising the Performance of Sprayed Seals*. Once the test conditions were optimised, the results obtained in the test were verified by comparing the results obtained for a series of four bitumen samples and 12 polymer modified binders (PMBs) with the conventional asphalt fatigue life results obtained after each of the materials was incorporated into a single type of 10 mm dense graded asphalt mix. A very good correlation was found between sprayed seal cracking test fatigue life results and conventional asphalt fatigue life results.

The results obtained in sprayed seal binder cracking tests and asphalt fatigue tests during the study and Austroads project TT1823 *Binder Characterisation Properties for Enhanced Performance* were also compared with the results obtained in two prospective binder quality control tests (i.e. force ratio and stress ratio tests) which could be included in the Australian PMB specification in the future. Based on these comparisons, both quality control tests appear to be suitable for ranking the low temperature cracking performance of Australian PMBs when they are used in sprayed sealing and asphalt applications. Stress ratio tests appear to be more versatile than force ratio tests as they are able to effectively characterise a wider range of Australian PMBs.

The results obtained in the study indicated that sprayed seal binder cracking tests were suitable for characterising the fatigue cracking performance of thin films of unaged (i.e. fresh) binders.

austroads.com.au/publications/pavement/ap-t326-17

In **September 2017**, Austroads published the results of tests to investigate whether the much faster accelerated mortar bar test could be employed instead of the slow concrete prism test to evaluate supplementary cementitious materials.

The project (TT1905) report provides the results of testing of three potentially reactive aggregates by the accelerated mortar bar test (AMBT) and the concrete prism test (CPT). The tests were conducted using reference mixes, which contained plain Portland cement as binder, as well as mixes which incorporated different supplementary cementitious materials (SCMs) at various cement replacement dosages.

The SCMs were used as countermeasures against alkali-aggregate reaction (AAR) in concrete. The purpose of the testing program was to investigate whether the much faster AMBT method could be employed instead of the slow CPT method for the evaluation of the efficiency of the SCMs to suppress AAR.

The comparison between the AMBT and CPT methods indicated that the already-practised period of 21 days seems to be the shortest time that the effects of SCM can be detected and produces the best agreement between the results of the two methods.

The results also showed that the dosage of SCMs for AAR suppression was highly dependent on the nature of the aggregate. As a result, a universal rule cannot be prescribed.

austroads.com.au/publications/bridges/ap-t328-17

In **October 2017**, Austroads published a report which details the experimental phase of an Austroads project to review the specifications and use of geopolymer concrete. The findings indicated that acceptable grades of structural geopolymer concrete can be made for field applications.

This phase of the project involved formulating and testing geopolymer recipes for their workability, setting time, strength development, mechanical behaviour, durability properties and abrasion resistance. The flexural and ductility behaviours of large reinforced geopolymer concrete beams were also compared to those of equivalent ordinary Portland cement (OPC) concrete. The results show that commercially available Australian fly ash and blast furnace slag materials are suitable for the manufacture of geopolymer concrete, using solid sodium metasilicate alkali activators.

Geopolymer concrete formulations were developed for casting under ambient conditions; they performed satisfactorily with respect to workability, setting time, drying shrinkage, strength development, mechanical properties, and durability properties. Fly ash/slag blends in the range of 60/40 and 40/60, including 50/50 fly ash/slag, performed particularly well, and exhibited superior performance with respect to drying shrinkage, sulfate resistance, chloride penetration and alkali-aggregate reaction (AAR) compared to OPC-based concretes. However, 100% slag-based geopolymers may be prone to AAR, at high alkali contents, and exhibited much larger volume of permeable voids (VPV) values than equivalent OPC concretes, although the high VPV values do not necessarily indicate high porosity but are relate to hydrated phases in the geopolymer concrete.

The abrasion resistance of geopolymer concrete is slightly lower than the equivalent OPC concrete, but formulations can be improved by lowering the water content. The ultimate load capacity of large beams made with OPC and geopolymer concretes are very similar, but the ductility of geopolymer beams was lower than that of OPC concrete, arising from the higher bond strength between the geopolymer concrete and steel than between OPC concrete and steel.

This experimental work followed an extensive literature review, published as Austroads Technical Report AP-T318-16 and Austroads Research Report AP-R531-16.

On 1 May 2018, a webinar was held and was presented by Dr Ahmad Shayan and Fred Andrews-Phaedonos (Project Manager VicRoads). It outlined the findings of an Austroads geopolymer concrete project and a current update of the use, monitoring and specification of geopolymer concrete by VicRoads over the past nine years.

austroads.com.au/publications/bridges/ap-t329-17

austroads.com.au/publications/bridges/web-gpc-18

In **January 2018,** Austroads published a report which proposes a national performance-based asphalt mix design specification that aims to take full advantage of current and emerging asphalt technologies.

Part 4B of the Austroads Guide to Pavement Technology provides a recommended approach to the design and characterisation of asphalt mixes in Australia and New Zealand. However, the approach to asphalt mix design and performance characterisation varies between road agencies and may not necessarily be adequate to take full advantage of the enhanced performance characteristics that many new asphalt technologies can provide.

This project identified gaps in the current Austroads approach for the design and characterisation of performance properties of asphalt mixes. The ultimate aim is to develop a harmonised national performance-based asphalt specification framework that would take full advantage of the enhanced performance characteristics of current and emerging asphalt technologies.

On 27 February 2018, a very well attended webinar was held to provide an overview of the project findings. This was presented by Joe Grobler and there was an extended Q&A session which showed the level of industry interest in this subject.

austroads.com.au/publications/pavement/ap-t331-18

austroads.com.au/publications/pavement/web-t331-18

In **May 2018**, Austroads published updated guidelines and specifications for the use of microsurfacing treatments in Australia. The publication provides specific guidelines to assist road managers in the use of microsurfacing materials and it provides a model specification to be used as a framework when developing a national or local microsurfacing specification.

The document was produced by the Austroads Bituminous Surfacings Working Group and the guidelines are based on extensive experience gained in the use of the process across the country over the last 25 years.

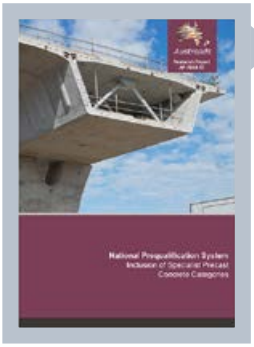
On 14 June 2018, a project webinar was presented by Steve Patrick. It provided an overview of the updated Austroads microsurfacing guidelines and model specification.

austroads.com.au/publications/pavement/ap-r569-18

austroads.com.au/publications/pavement/web-r569-18

Strategic Management of Road Infrastructure

The focus on strategic asset management has grown internationally with a range of guidance materials emerging such as the ISO 55000 standards series, the international infrastructure management manual and similar. Road agencies are responding to these developments and aligning with worlds best practice. Austroads is supporting this through a number of national projects.



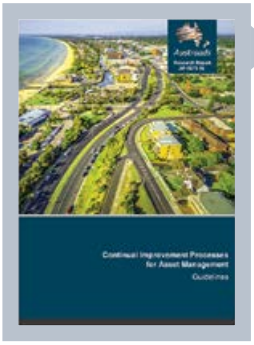
In **November 2017**, Austroads published a report which presents the outcomes of the harmonisation work undertaken to develop new specialist precast concrete categories for inclusion in the Austroads National Prequalification System for Civil (Road and Bridge) Construction Contracts.

Road agencies that adopt these categories will be able to offer mutual recognition arrangements to prequalified contractors, subject to specified restrictions and conditions.

The project initially set out to investigate and define proposed new specialist categories in each of these areas and explain how they could be incorporated into the National Prequalification System. The proposed new specialist categories were investigated, and it was found that, at the time, only the area of precast concrete was suited to the development of a specialist prequalification scheme.

This report focuses specifically on the area of precast concrete and presents four separate categories for the fabrication of precast concrete products for potential inclusion into the National Prequalification System, including a number of appendices containing system documentation (e.g. guidelines, application form, etc.). It includes a thorough description of the proposed new category, background to its development, the minimum requirements that are proposed to be met for prequalification, the mutual recognition framework, and how the precast concrete category (and contractors prequalified in them) will be managed at the national level.

austroads.com.au/publications/project-delivery/ap-r554-17



In **May 2018**, Austroads published a guideline that was prepared in response to the need for a more structured approach to continual improvement in asset management. An associated a report that aims to provide asset management practitioners with an understanding of the methodology utilised in creating a framework for successful continual improvement implementation was also published.

Surveys have indicated road management organisations do not always have a structured continual improvement process that satisfies the requirements of *ISO55001:2014 Asset management – Asset management – Management Systems - Requirements*. Having a structured process in place has the potential to provide significant value to organisations.

The guideline aims to provide asset management practitioners with an understanding of the factors that contribute to enabling and sustaining continual improvement. The current challenges within the industry in relation to continual improvement are discussed, with a framework provided for successful implementation.

This document suggests that at the core of every successful organisation implementing continual improvement, is a supportive and enabling environment. Once this environment is achieved, continual improvement will become second nature.

On 28 June 2018, a webinar was held and was presented by Aneurin Hughes, and Stephen Walker. It provided an overview of a guideline that aims to provide asset management practitioners with an understanding of the factors that contribute to enabling and sustaining continual improvement.

austroads.com.au/publications/asset-management/ap-r571-18

austroads.com.au/publications/asset-management/web-r571-18

austroads.com.au/publications/asset-management/ap-r572-18

In **June 2018**, Austroads published a revised standard that has been developed to support asset information management systems for data collection, finance, risk, and information. It is the product of comprehensive consultation in Australia and New Zealand across the roads industry.

The Data Standard for Road Management and Investment provides road agencies and their suppliers, in Australia and New Zealand, with a specification for the data that supports common operational activities.

The asset Data Standard provides road network funding agencies with a specification to inform structure of reports and submissions requested from road agencies, to enable more equitable evidence-based investment decision making.

Specifically, the Standard establishes a common understanding of the meaning or semantics of the data, to ensure appropriate use and interpretation of the data by its stakeholders.

The Standard also recognises various levels of sophistication in inventory and asset planning practice and provides relevant data item details in this regard. Accordingly, the Standard will benefit any road industry stakeholder who utilises data for road research, policy development, expenditure comparisons, funding approvals, supporting national reforms, national reporting, innovation, shared services, and inter-organisation communications.

austroads.com.au/publications/asset-management/ap-t334-18

In support of the merging area of Digital Engineering and BIM, in March 2018, Austroads published a report that compares the Austroads asset Data Standard with buildingSMARTS's IFC4 and Uniclass 2015. Developments in these naming schema are ongoing work in progress and improving alignment is of critical importance to digital information sharing.

The Data Specifications Inventory of 32 object classes within Austroads asset Data Standard (Version 2) was mapped as far as possible to buildingSMART's IFC4 Add2 and to the UK Government's Uniclass 2015. This reveals gaps and inconsistencies in all three documents, which need to be addressed as road infrastructure asset management, across the asset lifecycle, moves towards adoption of Building Information Modelling (BIM).

The report recommended that Austroads continue to revise its asset Data Standard, and contributes to the development of IFC Infrastructure (which is developing more physical objects in the realm of infrastructure), and of Uniclass 2015 (which does not yet include a properties table).

austroads.com.au/publications/asset-management/ap-t333-18

Looking forward to future development of the Data Standard into Digital Engineering and Building Information Modelling (BIM), in **May 2018** Austroads published a report that recommends development of a *National Hub* for storing virtual location references.

An extensive review of location reference literature and direct enquiry within Australian and New Zealand road agencies was aggregated into a new theoretical framework for location, location reference methods (LRM) and location referencing systems (LRS). This virtual location framework establishes location as independent of any single physical representation of location and associated location reference method families. Three families of LRM are described; topological, geospatial and geometric. Common elements of each family are: points, lines, paths and areas.

This project proposes a new Primary Location Reference System designed to support and to depend upon existing secondary reference systems and families of LRMs. The proposed new system is an open standard location referencing method for horizontal network infrastructure. It is designed to support an Austroads BIM environment.

In the new system, a National Hub for Location Referencing would store each location as an independent virtual object. The system would be designed to facilitate information exchange using an extended OpenLRTM, the location reference method adopted by the European DATEX II standard.

austroads.com.au/publications/asset-management/ap-r568-18

austroads.com.au/publications/asset-management/web-r568-18

In **July 2018**, Austroads published an updated Guide to Asset Management (GAM) comprising 15 Parts. The GAM supports key business processes in any organisation employing infrastructure networks and physical asset systems delivering services to customers. Equally importantly, asset management business processes must be integrated with other business functions, in particular finance, human resources, customer management and information technology.

Austroads GAM provides guidance to road managers on the application of contemporary 'whole of organisation' asset management practice to road networks.

While the term 'asset management' has a technical or maintenance meaning for many, there is greater recognition that a wider organisational approach is needed, a focus emphasised in the International Standard for Asset Management ISO 55001. Asset management has continued to develop as decision-makers increase their focus on the value it can bring to an organisation, and as awareness increases of the importance of risk management.

The 2018 edition of the GAM has been written with these principles in mind; however, it also continues to provide a substantial depth of technical guidance. Technical asset management practice continues to improve through on-going research; technical guidance is provided to assist agencies in the most efficient and effective monitoring of pavement performance.

The new edition includes the impact of autonomous vehicles and digital infrastructure, measures to reduce the environmental impact of asset management and the recently developed practice of reliability centred maintenance. It also documents the outcomes of Austroads research covering asset condition monitoring equipment, asset performance prediction models and practices that account for risk.

The Guide is relevant to all those involved in the management of road infrastructure assets (including structures and non-pavement assets), and those seeking to learn more about the

fundamental concepts, principles, issues and procedures.

This project was managed by David Darwin, New Zealand Transport Agency on behalf of the Austroads Assets Task Force with Dr Tim Martin as lead author.

The 15 parts of the Guide have been published under three broad themes:

- management overview
- asset management processes, and
- technical information:

Guide to Asset Management – Overview Part 1: Introduction
austroads.com.au/publications/asset-management/agam01

Guide to Asset Management – Overview Part 2: Managing Asset Management
austroads.com.au/publications/asset-management/agam02

Guide to Asset Management – Processes Part 3: Scope of Asset Management
austroads.com.au/publications/asset-management/agam03

Guide to Asset Management – Processes Part 4: Customer Needs, Expectations and Levels of Service
austroads.com.au/publications/asset-management/agam04

Guide to Asset Management – Processes Part 5: Strategic Approach to Managing Road Networks
austroads.com.au/publications/asset-management/agam05

Guide to Asset Management – Processes Part 6: Defining and Understanding Asset Requirements
austroads.com.au/publications/asset-management/agam06

Guide to Asset Management – Processes Part 7: Program Development and Implementation
austroads.com.au/publications/asset-management/agam07

Guide to Asset Management – Processes Part 8: Financial Management
austroads.com.au/publications/asset-management/agam08

Guide to Asset Management – Processes Part 9: Asset Information Management Systems and Data
austroads.com.au/publications/asset-management/agam09

Guide to Asset Management – Processes Part 10: Implementation and Improvement
austroads.com.au/publications/asset-management/agam10

Guide to Asset Management – Technical Information Part 11: Techniques to Reduce Social and Environmental Impacts
austroads.com.au/publications/asset-management/agam11

Guide to Asset Management – Technical Information Part 12: Pavements
austroads.com.au/publications/asset-management/agam12

Guide to Asset Management – Technical Information Part 13: Structures
austroads.com.au/publications/asset-management/agam13

Guide to Asset Management – Technical Information Part 14: Other Assets
austroads.com.au/publications/asset-management/agam14

Guide to Asset Management – Technical Information Part 15: Technical Supplements
austroads.com.au/publications/asset-management/agam15

In **April 2018**, Austroads published the first edition of the Guide to Project Delivery Part 5: Road Construction Quality Assurance.

Many of the shortcomings experienced in quality assured contracts reflect the way in which road agency requirements have been specified and administered. Emphasis has been placed on third party accredited quality systems, and not on the fundamentals of what is being assured, the assurance process, and the level and focus of independent surveillance and audit required to verify the adequacy of the contractor's quality control process and Quality Assurance (QA) evidence.

This Guide has been developed to address these issues by providing:

- a clear specification of road agency requirements for QA
- a targeted, risk-based approach to independent monitoring and reporting on the performance of a contractor's QA process a resource that can be used for training across the industry.

austroads.com.au/publications/project-delivery/agpd05

austroads.com.au/publications/project-delivery/web-agpd05-18

Managing Loading Impacts

Increasing road network freight productivity is not an option with the growing freight task demanding more from road and bridge assets. High productivity innovative freight vehicles with telematics technologies are leading the way and road agencies are responding by better matching the asset capacity to demand.

In terms of the impact of heavy freight vehicles on road infrastructure, a common distress mechanism is wheelpath rutting. For many years a suitable rutting performance test for unbound granular materials has been a focus for international research. In **August 2017**, Austroads published a report which examines the capacity of the large wheel-tracking laboratory test method to predict the in-service performance of granular materials.

The project (TT1819) was led by the Pavements Task Force.

In order to assess the capacity of the large wheel-tracking test for assessment of rutting of unbound pavement materials, five granular bases were tested for rut-resistance under full scale accelerated pavement testing using the ARRB Accelerated Loading Facility (ALF). The ALF results were compared to representative results from a number of laboratory characterisation tests including large wheel-tracking, repeated load triaxial and shear strength.

It was concluded that the large wheel-tracking test was the best available test to rank granular base rut-resistance. It is a useful performance-based test, which can lead to significant cost saving by optimising the use of otherwise non-traditional locally available aggregate resources. VicRoads has already put the large format wheeltracker test to good use with significant multi-million dollar project savings through validation of use of alternative granular base materials for major road construction projects.

austroads.com.au/publications/pavement/ap-t324-17

In **August 2017**, Austroads published the findings of a seven-year project designed to improve our understanding of pavement surface failures caused by changing configurations and horizontal shear force loadings of freight vehicles.

The project's (AT1540) main purpose was to gain an improved understanding of the failure mechanisms that are particular to the pavement surfacing layer – as distinct from the structural layer – that may be caused by changing configurations and loadings of freight vehicles.

The project led to the development of the Surface Wear Tester (SWT), which was demonstrated as capable of applying sufficiently high levels of horizontal force to a surfacing (with emphasis on sprayed seal surfacings) to allow comparative testing to failure for a range of binder types and operating conditions.

Possible amendments to the current prescriptive performance-based standard for horizontal load are discussed.

austroads.com.au/publications/pavement/ap-t325-17

In **September 2017**, Austroads published a report detailing investigations that were conducted to verify the new Austroads sprayed seal design guidelines.

To verify the appropriateness of the proposed basic voids factor (Vf), and the initial sealing design approach (and also to validate the necessary assumptions made to develop them), several seals that were constructed using the new approaches in the Northern Territory and Victoria were inspected.

The performance of the sprayed seals designed and constructed with the new or the existing basic voids factor was similar. It was therefore not possible to make a definitive judgement on the appropriateness of the proposed voids factor based on these inspections alone.

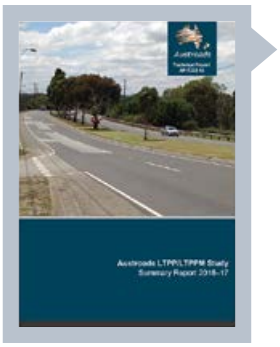
A series of double/double initial seals with a modified binder were constructed to investigate whether more robust, longer-lasting initial seals (than traditional initial seals) could be developed. The performance of these seals was generally satisfactory after four years of service life, suggesting that a more durable initial seal is possible utilising this type of sprayed seal.

Inspections of a special double/double initial seal, utilising multiple layers, large aggregate sizes and a highly modified polymer modified binder suggested that new and innovative approaches, using previously-unadvised materials and methods, can be used to design initial seals that perform well in high-stress locations, but only if they are managed and used with care.

austroads.com.au/publications/pavement/ap-t327-17

Pavement Management

In the context of the freight task and international best practice in road asset management, Austroads supports its member agencies in harmonisation and improvement in pavement management.

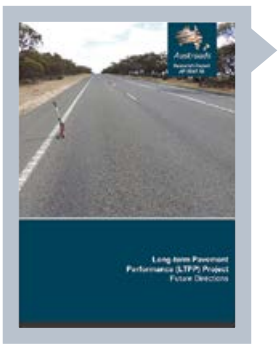


In **March 2018,** Austroads published a report that provides a summary of works undertaken during the period 2016–17 for the Austroads project AT1064 – Long-term pavement performance (LTPP).

Austroads has funded the long-term pavement performance study since late 1994. The project monitors the whole of life structural and functional performance of in-service pavement test sites across Australia.

The report also presents a summary of the LTPP/LTPP (Maintenance (LTPPM)) current conditions and historical performance trends over the entire monitoring period and a brief summary of results of a survey on future directions of the project.

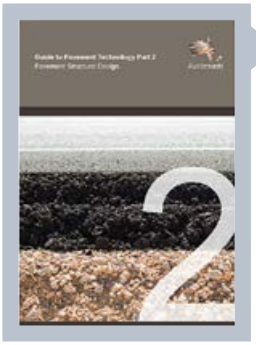
austroads.com.au/publications/pavement/ap-t332-18



As a key part of the AT1064 LTPP project, in **April 2018**, Austroads published a report that presents the proposed future directions for long-term pavement performance studies in Australasia. The proposed way forward is based on the results of a 2017 survey directed to the LTPP Project Steering Group and Assets Task Force (ATF) with the objective of assessing their views regarding the future direction and management of the project together with a wider perspective on the value of Australasian LTPP data.

The survey showed unanimous support for the LTPP project to continue, supported by ongoing Austroads funding. The survey found that some adjustments were required to the management of site monitoring, involving addition of specific pavement and surfacing types selected for certain traffic and climatic conditions and incorporation of road agency data for upgrading the interim Road Deterioration (RD) and Works Effects (WE) models. The report concludes that the fundamental requirement for LTPP and LTPPM studies remains very strong going forward.

austroads.com.au/publications/pavement/ap-r567-18



In **December 2017**, Austroads published the fourth edition of the Guide to Pavement Technology Part 2: Pavement Structural Design.

Knowledge of pavement technology is of critical importance for all transport agencies in Australia and New Zealand. Austroads and others (e.g. state and territory road agencies, local government, and industry) have amassed a great deal of knowledge on pavement technology, techniques, and considerations. The purpose of the Austroads *Guide to Pavement Technology* is to assemble this knowledge into a single authoritative electronic publication that will be a readily available, accessible and comprehensive resource for practitioners in Australia and New Zealand.

The target audience for the Austroads *Guide to Pavement Technology* includes all those involved with the management of roads, including industry, and students seeking to learn more about the fundamental concepts, principles, issues and procedures associated with pavement technology.

Guide to Pavement Technology Part 2: Pavement Structural Design provides advice for the structural design of sealed road pavements. The advice has been generally developed from the approaches followed by the Austroads member agencies. However, as it encompasses the wide range of materials and conditions found in Australia and New Zealand, some parts are broadly based.

This Part covers the assessment of revised input parameters needed for design, design methods for flexible and rigid pavements and gives guidance on the economic comparisons of alternative pavement designs.

On 9 March 2018, a webinar was held providing an overview of the major changes to the design of heavy-duty flexible pavements, including the new: axle-strain approach central to the mechanistic-empirical design method, definitions of design traffic, and characterisation of cemented material and asphalt. This revised Guide Part represents the most significant update in the past decade. It includes revisions that bring new technical knowledge developed through around 30 pavement research projects into practice for all structural pavement designs going forward.

austroads.com.au/publications/pavement/agpt02

austroads.com.au/publications/pavement/web-agpt-18

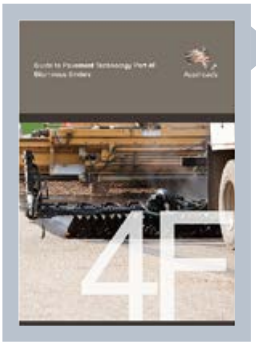
In **December 2017**, Austroads published Second Edition of Guide to Pavement Technology Part 4C: Materials for Concrete Road Pavements.

Part 4C of the Guide to Pavement Technology summarises aspects of Australian and New Zealand practice in materials for use in concrete road pavements including:

- base concrete and lean-mix concrete subbase
- concrete curing compounds
- steel reinforcement including tie bars and dowel bars
- joint sealants and fillers.

On 9 March 2018, a webinar was held providing an overview of the changes to the Guide part.

austroads.com.au/publications/pavement/agpt04c



In **August 2017**, Austroads published Second Edition of Guide to Pavement Technology Part 4F: Bituminous Binders.

Guide to Pavement Technology Part 4F: Bituminous Binders is a guide to the use of bituminous materials in road construction and maintenance. Bituminous materials include bitumen obtained from refining crude petroleum oil and products derived from bitumen through additional manufacturing processes or the use of additives. Reference is also made to other sources of bituminous materials and non-bituminous binders.

The Guide introduces bituminous binder technology, including the properties, composition and principal assessment tests of bituminous materials. It also discusses the selection of bituminous binder types for particular applications. The document is part of a number of publications forming the Austroads *Guide to Pavement Technology*.

austroads.com.au/publications/pavement/agpt04f

Bridge Management

Bridges form a key enabling component of the transport network. Road agencies manage large portfolios of bridge stock with a range of ages, capacities, conditions and traffic demands. Bridge management is a key focus area for Austroads.

In **February 2018**, Austroads published an updated Guide to Bridge Technology to align with the recently revised AS 5100 and changes in industry practice.

The Guide provides a step-by-step approach to the planning process, building materials, bridge construction, learnings from the past, types of bridge designs and the management and ongoing maintenance of older bridge types.

Bridges in Australia and New Zealand are designed in accordance with AS 5100 (Bridge Design), and the NZ Transport Agency Bridge Manual. The Guide provides supporting information to the Standards, enabling users to apply and interpret them to achieve the best design, assessment, management and maintenance outcomes.

The Guide to Bridge Technology was first published in 2009 and a complete revision of this series has been undertaken, including the addition of a new Part which covers the hydraulic design of waterway structures.

The Guide now has eight parts:

Part 1: Introduction and bridge performance

austroads.com.au/publications/bridges/agbt01

This Part covers the scope of the Guide to Bridge Technology, including factors affecting bridge performance, the relationship to the bridge design standards, and an understanding of the evolution of bridges and bridge loadings.

Part 2: Materials

austroads.com.au/publications/bridges/agbt02

The full range of bridge building materials is discussed in Part 2 including concrete, steel, timber and non-metallic components. It also discusses the material characteristics including the individual stress mechanisms.

Part 3: Typical bridge superstructures, substructures and components

austroads.com.au/publications/bridges/agbt03

Superstructure and substructure components – namely timber, steel, wrought iron, reinforced and pre-stressed concrete are discussed including typical bridge types such as suspension, cable stayed and arched types as well as bridge foundations.

Part 4: Design procurement and concept design

austroads.com.au/publications/bridges/agbt04

Bridge design process procurement models, specification requirements, design and delivery management processes, design checking and review concepts, the use of standardised components, aesthetics/architectural requirements, standard presentation of drawings and reports, designing for constructability and maintenance are covered. The service life of the structure and components, mining and subsidence, flood plains, bridge loadings, and geotechnical and environmental considerations are also discussed.

Part 5: Structural drafting

austroads.com.au/publications/bridges/agbt05

This Part covers the detailed drawing aspects required to clearly convey to the consultant/construction contractor the specifics of the project. It discusses the various Standards including details required for cost estimating and material quantities. Coverage also includes reinforcement identification details.

Part 6: Bridge construction

austroads.com.au/publications/bridges/agbt06

This Part provides guidance to the bridge owner's representative on site and focuses on bridge technology, high-risk construction processes e.g. piling, pre-stressing, and the relevant technical surveillance requirements during the construction phase. Bridge geometry, the management of existing road traffic and temporary works are also discussed in this Part.

Part 7: Maintenance and management of existing bridges

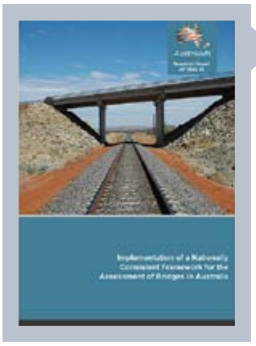
austroads.com.au/publications/bridges/agbt07

Maintenance issues for timber, reinforced and pre-stressed concrete, steel, wrought and cast-iron bridges are discussed. Other bridge components including bridge bearings and deck joints are also referred to. This Part also covers the monitoring, inspection and management of bridge conditions.

Part 8: Hydraulic Design of Waterway Structures

austroads.com.au/publications/bridges/agbt08

Guidelines for the hydraulic design of bridges, culverts and floodway is provided including design of new bridges for scour and monitoring and evaluation of scour at existing bridge sites.



In **April 2018**, Austroads published a report that extends work previously undertaken to investigate the development and implementation of a national automated bridge assessment framework.

The report outlines the ongoing validation works, recommends a set of activities to assist in the deployment of the framework, and provides a roadmap to implementation.

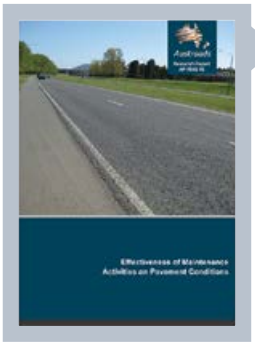
This project has built on work conducted in Austroads project TP1681, which first investigated the potential for the framework. This stage of the project included further validation work, small scale trials of the framework with state jurisdictions and identification of key factors for the implementation.

Additionally, a roadmap to implementation has been prepared to highlight key areas which must be addressed to ensure the framework can be deployed.

austroads.com.au/publications/bridges/ap-r565-18

Managing for Climate Change

With road assets used by everyone on a daily basis, assessing and planning for impacts of climate change, adverse weather and natural disasters on the infrastructure is a key consideration. Infrastructure resilience and adaptation to a changing climate has been a key factor for member agencies with recent major flooding in Queensland and Victoria. Austroads is responding to these challenges and supporting member agencies with updated Guide materials and other initiatives.



In **April 2018**, Austroads published a report that clarifies the effectiveness of periodic maintenance and rehabilitation activities on pavement condition and distress (roughness, rutting and cracking) deterioration rates.

This was addressed by estimating trends in pavement deterioration in three jurisdictions (New South Wales, Queensland and Victoria) from a time series of observational data (supplied by the jurisdictions) using mostly the ARRB iPave high speed condition and deflection data. In order to assess the effectiveness of the various pavement maintenance treatments, a comparison of these observational trends with historical and predicted rates of deterioration was made.

The main findings of the study were:

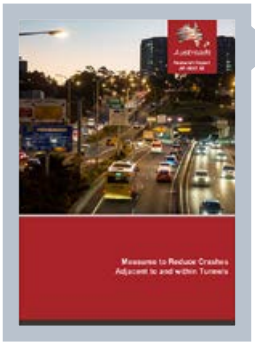
- A comparison between the observed deterioration rates derived from the time series of observational data with historically-derived rates and the Austroads RD model estimates suggested that the three approaches produced comparable results in terms of roughness and rutting deterioration, but not for cracking.
- Based on the historical rates of roughness and rutting deterioration representing pre-treatment deterioration, the post-treatment roughness deterioration rates in NSW and Victoria were reduced by a range of between 8% (seals) and 58% (OGA), demonstrating the effectiveness of the surface treatments.

Comparisons of functional condition parameters (roughness, rutting and cracking) against the mean maximum deflection found that their deterioration rates were significantly influenced by pavement strength. The effect of traffic and climate on deterioration was not as strong as pavement strength. However, with changes in weather patterns and more frequent and severe weather events, there is likely to be an increasing influence of climate on road strength and deterioration.

austroads.com.au/publications/pavement/ap-r566-18

Sustainable Roads and Roadsides

The Australasian road network is one of the most extensive per head of population. Sustainability of this road network is a key objective for road agencies as road user expectations and freight demands grow. Making optimal use of available resources to sustain the road network and understanding how the network changes over time in response to various traffic and environmental impacts is a key objective.



Sustainability and resilience themes were a key focus for the Assets Task Force in 2018. Meetings were held in specific areas including Christchurch (earthquake recovery and resilience, digital engineering in asset replacement) north Queensland (extreme weather events, tourism and land slips) and Geelong (economic contribution of tourism, effects of bush fires and subsequent slope stability above and below the road).

In **January 2018**, Austroads published a report which identifies factors that contribute to the occurrence and severity of crashes adjacent to and within tunnels and suggests remedial treatments that will reduce the incidence and severity of these crashes.

A preliminary examination of recorded road crashes immediately adjacent to and within a selected sample of Australian tunnels found that, while tunnels are relatively safe when compared with other parts of the road network, crashes in or near them are a significant source of road trauma and cause substantial delays to road users across the road network.

As road tunnels form an important part of the road network, there is a need to ensure motorists

The Tunnels Task Force inspects Adelaide's O-Bahn project

can travel in a 'Safe System' consistent with the *National Road Safety Strategy 2011–2020*. Such a system acknowledges that road users will inevitably make mistakes, and that when they do, they should not be penalised with death or serious injury.

The outcomes of the research will help to reduce the risk and severity of crashes adjacent to and within new and existing road tunnels.

austroads.com.au/publications/tunnels/ap-r557-18

Managing Rural and Remote Roads

While much of the population resides in major urban centres, the road network must also deliver on community service obligations and accessibility in rural and remote areas. Marginal and non-standard materials are often the only cost-effective resource for road construction in these areas.

In **June 2018**, Austroads published a report that considers the use of marginal and non-standard materials in road construction and maintenance. This project concluded that considerable evidence exists, both nationally and internationally, in support of the wider use of marginal and non-standard road pavement materials in sealed roads. The project report identified evidence from studies of unsealed roads which demonstrate the effective selection of unsealed road wearing course materials, and the benefits of good-quality construction and maintenance practices.

The basis for the use of marginal and non-standard materials is presented together with national and international case studies which provide supporting evidence of the successful use of marginal materials.

Increased focus on the quality of design, materials testing, and construction is seen as a pre-requisite to optimise the use of marginal and non-standard materials. The project findings support the wider use of preliminary materials assessment techniques and the report proposes a materials assessment protocol for low volume roads.

Each section of the report provides summarised take-home messages for asset managers to aid the application of the report's findings in different circumstances.

A webinar held on 17 July 2018 outlined ways to optimise the use of marginal and non-standard materials and gain best value from the successful performance of standard materials.

austroads.com.au/publications/asset-management/ap-t335-18

austroads.com.au/publications/asset-management/web-t335-18

Future Focus

The assets program will continue to deliver on the Austroads strategic plan objective of extending the life and performance of infrastructure to ensure the effective and sustainable maintenance of the road network. Emerging focus areas will likely include:

- harmonisation in areas such as national technical specifications
- freight efficiency to drive economic outcomes – managing loading impacts
- strategic asset management – focused on improved road user experience and journeys
- sustainable roads and roadsides
- connecting people and places – community service obligations, optimised levels of service, infrastructure needs for connected and automated vehicles.

The Assets forward work program was developed by the respective Task Forces on an annual basis guided by the Austroads strategic plan and focus areas. While Austroads has a focus on early, rapid project delivery, followed by implementation to drive benefits, the assets work program involves some areas where a multi year approach is required.

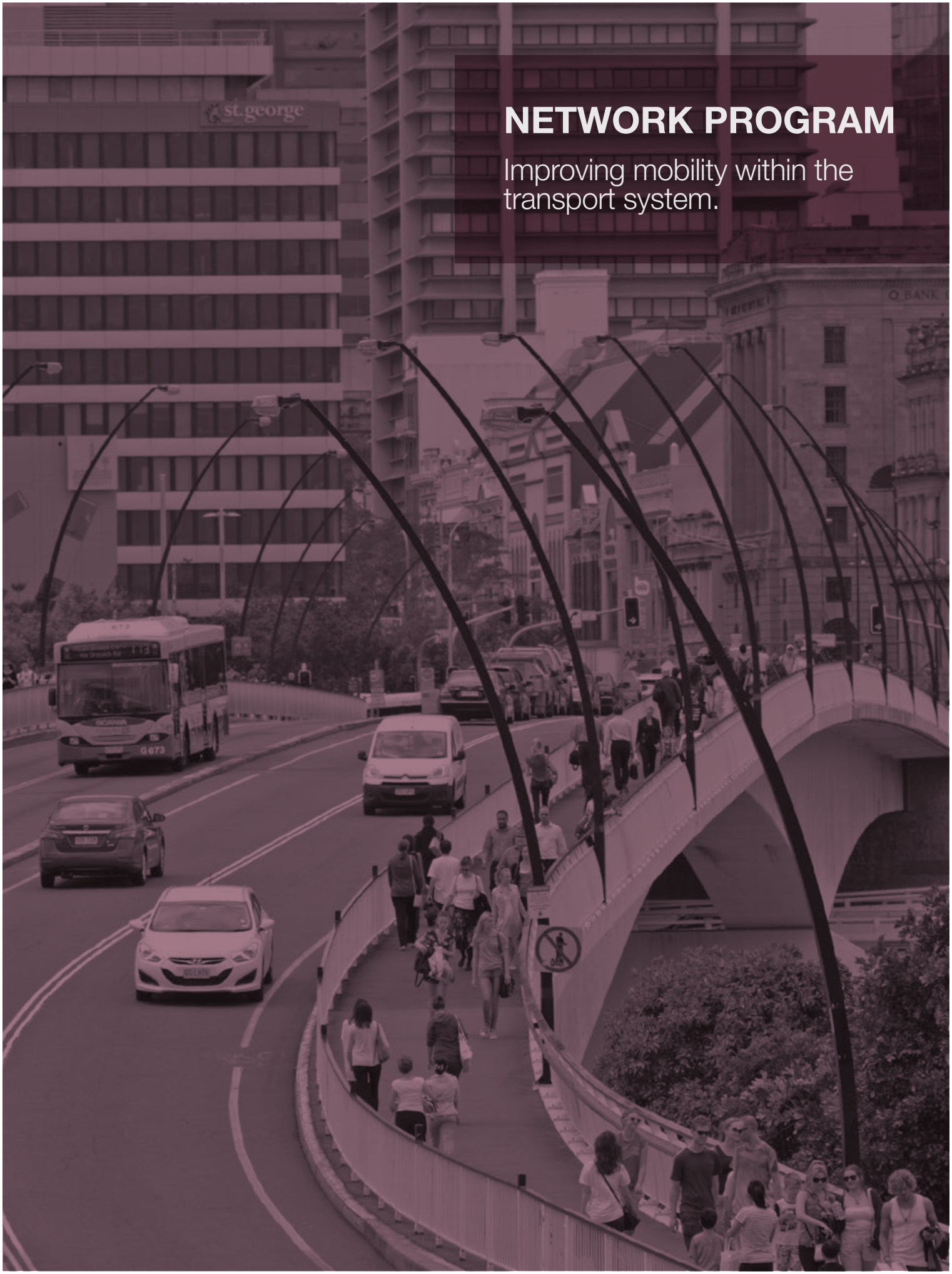
A good example is the use of accelerated pavement testing.

This approach is widely used internationally to provide very rapid results on the performance of pavement structures under heavy axle loading. Rather than wait 10 or 20 years to understand the performance of a specific design or treatment, a wide range of variables can be assessed in detail over just a few years. Research of this nature involves a detailed review of the literature to ensure no duplication of effort, this informs the experiment design and then test roads are constructed. It can take between 6 to 12 months post construction to ensure that the test roads are representative of the design situation. Traffic loading can then be applied using the accelerated loading facility (ALF) which yields the required performance data in months not decades.

It is through this type of applied research that the Austroads Guide to Pavement Technology was updated which generated significant and rapid benefits for member agencies.

Projects approved for commencement in 2018-19 include:

Assets	
AAM6143	Prolonging the Life of Assets under Increasing Demand
AAM6144	Sustainable Roads Through Fit for Purpose Use of Available Materials
AAM6165	Improve Asset Management, Safety and Project Efficiencies Through Balanced Telecommunications Legislation Changes (White Paper)
Bridge Technology	
ABT6111	Bridge Assessment Beyond AS5100 Deterministic Methodology
Pavement Technology	
APT6157	Maxmising the Use of Sustainable Rehabilitation Treatments
APT6150	Standards Australia – Bitumen and Related Materials for Roads
APT6158	Improving the Cost Effectiveness of Asphalt Surfaced Gravel Roads
Road Tunnels	
ART6122	Dangerous Goods in Tunnels – Stage 2 – Towards Implementation of Risk Assessment Process



NETWORK PROGRAM

Improving mobility within the transport system.

Overview

The strategic priority of the Network Program is to improve mobility within the transport system.

In alignment with the Austroads Strategic Plan 2016–20, the Network Program supports road and transport agencies to improve freight and network operations, understand and embrace emerging technologies and integrate across transport modes.

The Program engages with stakeholders in government, industry, academia and the private sector, to enable the provision of harmonised guidance and research, which includes the Guide to Traffic Management series and the Guide to Smart Motorways.

The 2017–18 work program explored how road agencies can optimise transport systems through managing freight and network operations. The program also considered the current and future technology needs for road agencies and what tools Austroads can develop or maintain to assist. The program provided improved guidance on traffic management and operations, with almost half of the Guide to Traffic Management series republished.

Work Streams

- Emerging technology – ITS, C-ITS, automated vehicles
- Managing urban congestion
- Traffic management planning and infrastructure
- Freight transport/road productivity
- Active travel and integration with public transport
- Funding models

People

NATALIE LOCKWOOD, PROGRAM MANAGER NETWORK

Natalie Lockwood has worked as a Civil Engineer for Main Roads Western Austroads for 14 years and has held Program Coordination and Management roles in Austroads since 2009. Natalie has experience in Stakeholder Management, Road Safety and Materials Engineering and in 2013 managed the development of the Travel Wellbeing stream of the Main Roads WA 2020 Strategic Plan. Natalie was also awarded the Main Roads Managing Director's Professional Excellence Award in 2013.

"I recognise the significant depth of knowledge and experience in the Austroads. Task Forces and Working Groups. Through working with the state and territory representatives, we are able to provide technical advice and leadership in network operations, freight management and Cooperative ITS " Natalie said.

Natalie acknowledges the important work underway in the Assets, Connected and Automated Vehicles and Safety Programs, and our vision to deliver best practice research in a collaborative and agile environment.

"I acknowledge the challenges ahead, particularly with the growing congestion and productivity demands on our road networks. I look forward to continuing to work with Austroads member agencies and our stakeholders, to face these challenges together," Natalie said.

PROGRAM COORDINATOR: Judi Jarvis

NETWORK TASK FORCE

Kellee McGilvray, RMS NSW	Andrew Excell, DPTI SA
Martin Blake, DSG TAS	John Oppes, QLD DTMR
Mark Beasley, MR WA	Ben Hubbard, TCCS ACT
Glenn Bunting, NZTA	Aftab Abro, DIPL NT
Sameem Moslih, VicRoads	

FREIGHT TASK FORCE

Susie Mackay, RMS NSW	Mathew Fogg, MR WA
Anthony Swan, DIRDAC	Eric Henderson, VicRoads
Andrew Poole, DSG TAS	Kym Foster, ALGA
Russell Hoelzl, QLD DTMR	Tim Wyatt, TCCS ACT
Jose Arredondo, NHVR	Mike Wilde, DPTI SA
Brett Clifford, DIPL NT	Mandi Mees, NTC

OTHER TECHNICAL WORKING GROUPS

Traffic Management Working Group (TMWG)

The TMWG ensures that the Guide to Traffic Management and the Guide to Smart Motorways represents contemporary traffic management practice and is adopted by jurisdictions as the primary technical reference for Australia and New Zealand. The group is represented by each of the member organisations.

System Managers Working Group (SMWG)

The SMWG ensures consistency and value for money in the transition of ITS research into operational practice and alignment with emerging technologies for example CAV. The group is represented by each of the member organisations.

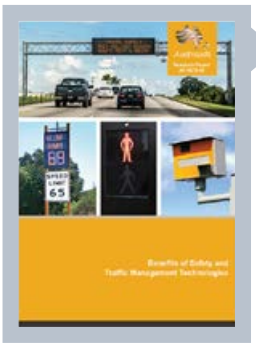
Agreed Practice Outputs

- Guide to Traffic Management
- Guide to Smart Motorways
- Cycling Aspects to Austroads Guides

Program activities

Emerging technology – ITS, C-ITS, automated vehicles

With a range of new intelligent, cooperative and automated technologies currently in development and commencing early trials both overseas and in Australia, it is important that Governments assess these technologies against best practice and prepare for their implementation. The program is working to identify the technologies that may improve aspects of congestion and incident management and network and traffic signal operations.



In **May 2018**, Austroads published a report that details the results of a domestic and international review of recently-developed intelligent transport systems technologies, including a qualitative indication of their costs and benefits.

A total of 70 technologies were identified of which 25 are under the direct purview of Austroads member agencies. A process for evaluating the technical quality of publications was developed and applied to 39 studies.

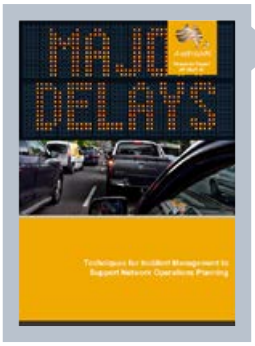
A webinar held on 19 June 2018 summarised the results of a domestic and international review of recently-developed ITS technologies.

austroads.com.au/publications/traffic-management/ap-r570-18

austroads.com.au/publications/traffic-management/web-r570-18

Managing Urban Congestion

Congestion results in significant costs to the community and industry through the interruption of traffic flow and lengthening of journey times, resulting in greater travel time variability (reliability) and less operational efficiency (productivity). There is no single 'solution' for improving road congestion. Carefully selected interventions integrated across transport modes, rather than operated independently, will have a greater combined impact than the individual components.



In **July 2017**, Austroads published a report that investigates current local and international incident management techniques and proposes an Australasian incident management framework that supports network operations planning.

A literature review highlights the fact that traffic incident management (TIM) is not only a process of managing multi-agency, multi-jurisdictional response to road traffic incidents, but also a broader management program that involves an objective setup, stakeholder collaboration, option development and selection, implementation and performance evaluation.

Baseline and emerging TIM techniques and practices for the collection of road and traffic data and the response to incident management needs were also reviewed and new and emerging techniques for traffic incident management identified.

To assist in the establishment of a harmonised TIM methodology across Australasia, an incident management framework was developed based on the leading practices and techniques. The adoption of this integrated framework, which is underpinned by seven management principles, would improve the operation and safety of the road network by reducing the impact of planned and unplanned incidents.

On 29 August 2017, a webinar was held and was presented by Dr Aut Karndacharuk and Asif Hassan. It provided an overview of contemporary local and international incident management practices and a harmonised traffic incident management (TIM) framework that supports network operations planning. The framework provides road network and incident managers with overarching guidance and a common understanding of the on-going processes for integrating traffic incident management approaches. It is anticipated that the implementation of the framework will enhance the operation and safety of the road network.

austroads.com.au/publications/traffic-management/ap-r547-17

austroads.com.au/publications/traffic-management/web-r547-17

In **September 2017**, Austroads published a RTM framework that will enable an integrated approach to road transport management ensuring a safe, efficient, reliable and sustainable road transport system.

The framework presents the multifaceted aspects of RTM in a systematic and harmonised manner.

This report reviews international and local road transport management (RTM) practice to inform the development of a harmonised RTM framework.

A key objective of the RTM framework is to enable a safe, efficient, reliable and sustainable road transport system. The framework will enable an integrated and harmonised approach to strategic planning, network operations, road safety, asset management and land use planning.

The framework is underpinned by 15 interrelated principles relating to mobility, safety, assets and technology.

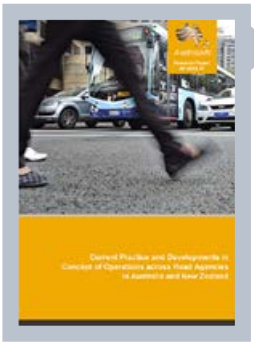
The RTM principles can be considered in the context of integrated system planning focusing on the whole jurisdiction, an entire city or region and at the transport network level to more detailed planning that occurs at corridor, route and link levels. The framework can also be applied to the infrastructure asset life cycle from strategic and solution planning to design, construction, operation and maintenance.

The report details the work undertaken to develop the framework including a literature review (particularly of international practice), a review of current RTM practice in Australia and New Zealand, and stakeholder consultation. It also considers how the adoption of new and emerging transport technologies, particularly those related to electric, connected and autonomous vehicles, and the increasing demand for a better use of Intelligent Transport System for road and transport management, will alter the way RTM principles interact.

On 26 October 2017, a webinar was held and was presented by Dr Aut Karndacharuk and Asif Hassan. It provided an overview of current and contemporary road transport management practices in Australasia and a harmonised framework.

austroads.com.au/publications/network/ap-r552-17

austroads.com.au/publications/traffic-management/web-r552-17



In **October 2017**, Austroads published new guidelines to help network operations planning staff develop a Concept of Operations (ConOps), a best practice resource.

Though network operations planning is growing, there is a perceived disconnect between those who work at the strategic end of the process and those involved in the tactical or operational day-to-day end.

Roles and responsibilities are not always clear and defined, feedback loops not always transparent, and stakeholders seem to have relatively low visibility of what goes on at each end of the process and the respective challenges faced by those people who operate the road network.

A Concept of Operations (ConOps) document would bridge the gap and provide a best practice resource for all those involved in network operations planning.

These guidelines do not attempt to give detailed instructions on developing a ConOps, rather they set out several principles to be considered in developing a ConOps.

A webinar held on 21 November 2017 provided an overview of new guidelines to help network operations planning staff develop a Concept of Operations (ConOps), a best practice resource. Our presenter outlined:

- What a ConOps is: high level intension of the ConOps for network operations planning and how it is a key enabler for translating key transport policy and guidance into the network operations planning process
- Developing a ConOps: the principles that should be considered in developing a ConOps
- Network Operations Planning in Australasia: the status of network operations planning in New Zealand and Australia.

austroads.com.au/publications/traffic-management/ap-r553-17

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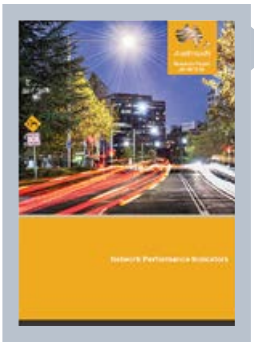


In **June 2018**, Austroads published a report to establish robust principles for the presentation of the NPIs in order to increase their use and application across the road agencies in Australasia.

The purpose of the Austroads NEG1995: Network Performance Indicators study was to understand customer and community expectations with respect to the Austroads Network Performance Indicators (NPIs).

In order to fulfil the study purpose and seek to realign the NPIs, the study comprises four distinct tasks:

- Industry practice review.
- Development of key principles.
- Stakeholder consultation.
- Development of proof of concept configurable dashboard example.

This final report details the outputs of each of these tasks.

A webinar held on 12 July 2018 outlined a set of principles for the presentation of Austroads' Network Performance Indicators which could underpin increased use and application across road agencies in Australasia for both current and future iterations.

austroads.com.au/publications/network/ap-r573-18

austroads.com.au/publications/network/web-r573-18

Traffic Management Planning and Infrastructure

The 13-part Austroads Guide to Traffic Management series provides comprehensive coverage of traffic management guidance for practitioners, in the public and private sectors, involved in traffic engineering, road design and road safety. As contemporary practice in areas such as Safe System and network operations are evolving, the program is ensuring that Austroads continues to provide an agreed and consistent approach across Australasia.

In **July 2017**, Austroads published an updated edition of the *Guide to Traffic Management Part 5: Road Management*.

The Guide to Traffic Management Part 5: Road Management (AGTM Part 5) is concerned with traffic management on sections of road between major intersections. It focuses on traffic management issues and treatments related to various situations but does not provide dimensions or other details for the design of treatments as these are provided in the Guide to Road Design.

Guidance on traffic management at intersections is provided in the *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings*. *AGTM Part 5* presents detailed information and guidelines relating to the factors that need to be considered in applying traffic management techniques and treatments to road types that include motorways and expressways, urban arterial roads, urban local roads, rural highways and rural local roads.

It considers the needs of all road users including pedestrians, cyclists, motorcyclists, heavy vehicles and public transport. It provides the guidance under the four key areas of access management, road space requirements for general traffic use, allocation of road space between road users, lane management and speed limits.

A webinar held on 12 September 2017 provided an overview of the key changes to the Guide to Traffic Management Part 5, such as the incorporation of concepts such as Movement and Place, Network Operation Planning, road allocation and the establishment of speed limits. It is particularly useful for practitioners dealing with mid-block road management, including speed management.

austroads.com.au/publications/traffic-management/agtm05

austroads.com.au/publications/traffic-management/web-agtm05-17

In **September 2017**, Austroads published an updated edition of the *Guide to Traffic Management Part 13: Road Safety Environment* bringing the guidance in line with the latest Safe System research.

Part 13: Road Environment Safety is concerned with traffic management practice under the Safe System philosophy. The Guide emphasises the need for the road system to provide an environment which assists road users to behave effectively and safely. It considers the role of traffic management in influencing road user behaviour and provides guidance for practitioners specifically on road safety aspects of traffic management.

Part 13 defines a safe road environment and the broad approaches for achieving it. It outlines basic human factors as related to users of the road and traffic environment, and how these can be influenced by road design and traffic management practice. It also describes the basic components of road safety engineering and its application in terms of risk engineering concepts, primary strategies and safety management systems, and outlines the principles and practice of managing safety in the road environment, as related to road infrastructure features and the basic tools of traffic engineering and management.

A webinar held on 16 November 2017 provided an overview of the key changes to the Guide to Traffic Management Part 13, such as updated information on driver workload and the Safe System, and incorporation of a discussion on human factors. It is particularly useful for practitioners dealing with road safety aspects of traffic management in the road environment.

austroads.com.au/publications/traffic-management/agtm13

austroads.com.au/publications/traffic-management/web-agtm13-17

In **November 2017**, Austroads published an updated edition of the *Guide to Traffic Management Part 3: Traffic Studies and Analysis*. On 13 March 2018, an Errata was issued, and corrections were made to Equation 5 in Section 4.1.1 and the worked example in Commentary 1.1.1.

Guide to Traffic Management Part 3: Traffic Studies and Analysis is concerned with the collection and analysis of traffic data for the purpose of traffic management and traffic control within a network. It serves as a means to ensure some degree of consistency in conducting traffic studies and surveys. It provides guidance on the different types of traffic studies and surveys that can be undertaken, their use and application, and methods for traffic data collection and analysis.

Part 3 covers applications of the theory presented in Part 2 of the Guide and provides guidance on traffic analysis for uninterrupted and interrupted flow facilities and for various types of intersections. It outlines sound methods of analysis for effective traffic management, design and control.

A webinar held on 30 November 2017 provided an overview of the key changes to the Guide to Traffic Management Part 3, such as use cases, impact and some supporting techniques for the use of emerging data sources; discussion and development of high-level modelling guidelines; and latest research and initiative in the traffic capacity analysis area.

austroads.com.au/publications/traffic-management/agtm03

austroads.com.au/publications/traffic-management/web-agtm03-17

Freight Transport/Road Productivity

The program recognises the context of increasing freight demand, changing funding arrangements for infrastructure development and maintenance and recognises the need for better integration of modes across the transport sector.

In **November 2017**, Austroads published draft guidelines for the weighing of oversized and overmass (OSOM) vehicle combinations using portable scales.

The existing Austroads guidelines for weighing heavy vehicles do not address the weighing of OSOM vehicles and this project aimed to develop a nationally-consistent procedure for assessing the mass of OSOM vehicles and develop Mass Measurement Adjustment (MMA) factors applicable to OSOM vehicles.

This report describes the conduct of field trials involving repeated weighing of four different Oversize Overmass (OSOM) vehicle combinations using portable scales. The field test outputs were analysed to determine the level of accuracy to be expected when weighing such vehicles during roadside inspections with portable scales.

A number of Mass Measurement Adjustment (MMA) values were developed, similar to those already in use for conventional vehicles (i.e. non-OSOM vehicles) across Australia. Procedures are described for weighing OSOM vehicles using portable scales on sites complying with the three Site Categories already used for roadside inspections. Findings are provided as draft guidelines for inspection work.

A webinar held on 12 December 2017outlined the vehicles and weighing methods that were used in the field testing and discusses the process of turning the test data into a workable set of Mass Measurement Adjustments.

austroads.com.au/publications/freight/ap-r555-17

austroads.com.au/publications/freight/web-r555-17

In **January 2018**, Austroads published a report which examines the impact of Performance Based Standard (PBS) 2B vehicles accessing metropolitan roads.

The report includes a literature review and stakeholder consultation on key issues and potential impacts as well as the likely take-up of the vehicles, if access is granted.

The report proposes a modelling framework. The focus of the framework is understanding the operational impacts of granting access, in particular the impacts on general traffic. The recommended analysis approach is microsimulation modelling and

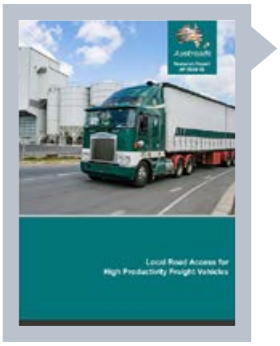
the parameters required for this are calibrated and presented in the report.

Numerical experiments were conducted to examine how access could impact on metropolitan network performance. PBS 2B vehicle access to King Georges Road (Sydney) and typical motorway segment were examined as case studies.

On 13 February 2018, a webinar was held and was presented by Dr Ian Espada. It presented the findings of an Austroads project on the modelling of high productivity freight vehicles (HPFVs) in metropolitan areas. It covered literature review on the impacts to road operation, stakeholder consultation on issues and concerns, modelling framework for HPFV access analysis, and scenario analysis on arterial and motorway operation.

austroads.com.au/publications/freight/ap-r558-18

austroads.com.au/publications/freight/web-r558-18



In **February 2018**, Austroads published report that examines the status of Australia's municipal Performance Based Standards (PBS) networks and the challenges of providing access to High Productivity Freight Vehicles (HPFV) on local roads.

The many challenges local road managers face when assessing roads for HPFV access are impeding Australia's progression towards safer and more efficient road freight transport.

A comprehensive outline of the contemporary barriers to local road access was compiled following an intensive consultation process including face-to-face interviews with more than 40 professionals from state road authorities, local government associations, local councils, transport industry associations, transport companies and other government agencies, and an online stakeholder survey.

Real-life case studies were compiled to demonstrate how some road managers have overcome concerns about swept path width, intersection clearance time, route compliance, increased infrastructure consumption, bridge loading and stakeholder acceptance to ultimately provide access where it was warranted.

Ten recommendations for further investigation are presented, focusing on education, funding needs, legislative change, appeals processes, cost recovery frameworks and route assessment guidelines and tools.

On 27 March 2018, a webinar was held and was presented by Rob Di Cristoforo. It outlined the contemporary barriers to local road access for high productivity freight vehicles, and some of the options available for local road managers when considering road access.

austroads.com.au/publications/freight/ap-r559-18

austroads.com.au/publications/freight/web-r559-18

Active Travel and Integration with Public Transport

The program provides comprehensive coverage of traffic management principles, including the areas where vehicles interact with active transport modes and public transport. As contemporary practice evolves, the program ensures that Austroads continues to provide an agreed and consistent approach across Australasia.

In **September 2017**, Austroads published a report documenting techniques and technologies in use to improve the efficiency of on-road public transport.

On-road public transport provides the ability for people to move between their homes, employment, recreation and services efficiently with less road space being required per passenger than private car use. In response to this, practitioners in many Australian and New Zealand cities are putting in place road space and signalling techniques and technologies which can improve the travel time, travel time reliability, frequency and comfort for on-road public transport users.

This report provides a best practice evaluation of priority measures for the provision of road-based facilities for buses and light rail systems (including streetcars and trams) for application in Australia and New Zealand. It highlights case studies across jurisdictions which show a range of impacts from prioritising on-road public transport.

A webinar held on 26 September 2017 provided guidance on improved on-road public transport drawn from the experience of jurisdictions in Australia, New Zealand and overseas.

austroads.com.au/publications/network/ap-r550-17

austroads.com.au/publications/network/web-r550-17

In **April 2018**, Austroads published a user guide that describes the operation and outputs of the *Australasian Pedestrian Crossing Facility Selection Web Tool* located at austroads.com.au/network-operations/network-management/pedestrian-facility-selection-tool

This guide describes the user interface of the tool, including:

- how to access the tool
- the types of facilities that can and cannot be assessed
- computer requirements
- a quick-start guide to using the tool
- a description of the usability features
- inputs and outputs relating to each section of the tool
- known issues and troubleshooting.

The 2018 tool updates include economic values, save/load function, maintenance costs, crossing upgrades and unfeasibility reasons.

A webinar held on 29 May 2018 provided an introduction to the Pedestrian Facility Selection Tool and a demonstration on how to use it with a fully worked example. The tool is designed to help Australian and New Zealand practitioners select the most appropriate type of pedestrian crossing based on walkability, safety and economic outcomes.

austroads.com.au/publications/active-travel/ap-r472a-18

austroads.com.au/publications/network/web-r472a-18

Future Focus

The work program for 2018–19 supports the program objective to improve mobility in the transport system.

The work program will explore how existing and emerging technologies can support both productivity and safety objectives, in urban, rural and remote areas across Australia and New Zealand.

As well undertaking a rigorous project scoping process, an assessment of strategic, stakeholder and content linkages was also completed during the development of the work program.

Each project will engage with a broad stakeholder group, including industry and the other Austroads Programs, to deliver research outcomes that will inform increased mobility and reliability, decrease congestion and maximise safety in the transport system.

The one year forward program aligns with the nominated work streams and priorities identified by the Board.

Projects approved for commencement in 2018–19 include:

Network	
NEG6114	Improving the reliability of Heavy Vehicle Parameters to support more accurate traffic modelling in Australia / New Zealand
NEG6019	National ITS Architecture and Framework (NIA/F) – Stage 3: National Content and Governance
NEG6120	Building Transport Modelling Management Capability in Australasian Road and Transport Agencies
NEG6121	Security Vulnerability of Existing Intelligent Transportation Systems and Devices
Traffic Management	
NTM6118	Updating Austroads pedestrian planning and design guidance in line with international good practice
Freight	
NEF6113	Harmonisation of Measurement and Mass Assessment Procedures for Special Purpose Vehicles (SPVs) in Australasia
NEF6116	Exploration of Heavy Freight Vehicle Dimensions: productivity, safety and other considerations
NEF6133	Investigation and Development of Bridge Formulae for Inclusion in the Performance Based Standards Network Classification Guidelines

SAFETY PROGRAM

Improving the efficient, reliable and safe operation of the road network.

Overview

The strategic priority of the Safety Program is to design, build and manage road transport systems that will protect road users and reduce the number of deaths and serious injuries.

Road safety performance in Australia continues to be closely watched due to the slow-down in the reduction of serious road trauma over the last few years. This is a trend around the world and also experienced within Australia and New Zealand. However, there have been recent reports of improvement in road safety performance by some Australian states which will be monitored.

Austroads is committed to progressing the Safe System approach, building on existing countermeasures which have been shown to be effective, and to progress further improvements in reducing deaths and serious injuries.

Work Streams

- Emerging technology – C-ITS, automated vehicles
- National Road Safety Strategy Priorities
- Understanding crashes and risks
- Safe Systems incorporating safer road and roadside infrastructure, safer speeds and safer vehicles
- Driver licensing and vehicle registration
- Vulnerable road users including pedestrians, bicycle riders, motorcycle riders, older people and indigenous people.

People

DAVID BOBBERMEN, PROGRAM MANAGER SAFETY

David Bobbermen has worked in a variety of road infrastructure disciplines for more than 35 years and held senior engineering, policy, operational and management positions for Transport and Main Roads Queensland. David led the planning and rapid implementation of an affordable network-wide response to one of the worst performing highways in Australia. This resulted in reducing fatalities by 40% within two years which was recognised by the 3M Australasian College of Road Safety Diamond Award for 2015.

David is working with practitioners across all jurisdictions to share best practice and make a significant change to improve road safety performance across Australia and New Zealand. With approximately 50% of crashes occurring on local government roads, Austroads is also ensuring practices are developed with local government practitioners in mind. “This will be important as Austroads adopts and implements safe system thinking for all roads’, and supports jurisdictions in implementing the Road Safety Action Plan 2018 to 2020. I want to develop a culture where no stone is unturned in the endeavour to save lives,” David said.

PROGRAM COORDINATOR: Leonie Pattinson

ROAD SAFETY TASK FORCE

Bernard Carlon, TfNSW	Mandi Mees, NTC (from March 2018)
Geoff Davidson, JACSD ACT	Kym Foster, ALGA
Marcus James, DIRDAC	Katrina Cristofani, DIRDAC
David Moyses, MR WA	Harry Wilson, NZTA
Jeff Potter, NTC	Brett Clifford, DoT NT
Melissa Watts, RSC WA	Craig Hoey, DSG TAS
Belinda Owen, JACSD ACT (from March 2018)	Brent Johnston, MoT NZ
	Colin Brodie, NZTA
Gabby O’Neill, DPTI SA	Ann-Maree Knox, QLD DTMR
Doug Fryer, Victoria Police	Joanna Robinson, QLD DTMR
Chris Brennan, Transport for Victoria	Antonietta Cavallo, TfNSW
Sharon Nyakuengama, DIRDAC	

ROAD DESIGN TASK FORCE

Richard Fanning, VicRoads	Geoff Armstrong, Eurobodalla Shire Council
Albert Wong, MR WA	Mike Whitehead, DTMR Qld
Ben McHugh, Roads ACT	Andrew Baker, GHD Pty Ltd
Michael Tziotis, ARRB Group Ltd	Peter Ellis, RMS NSW
Tom Brock, GHD Pty Ltd	Tony Napoli, Blacktown City Council
James Hughes, NZTA	Edi Winkler, DPTI SA

REGISTRATION AND LICENSING TASK FORCE

Tim Matthews, Austroads NEVDIS	Cheryl Richey, TfNSW	Geoff Davidson, JACSD ACT
Tammy Wigg, NHVR	Helen Lindner, VicRoads	Emma Kokar, DPTI SA
Paul Davies, NTC	Chris Davers, WA DoT	Harry Wilson, NZTA
Geoff Hughes, NMVTRC	Melissa Cummins, QLD DTMR	Martin Crane, DSG TAS
Matthew Squire, DIRDAC	Glenda Thornton, DIPL NT	Claire Manalo DIPL NT (from May 2018)
Claudia Huertas, RMS NSW		

AUSTROADS SAFETY BARRIER ASSESSMENT PANEL (ASBAP)

Austroads Safety Barrier Assessment Panel uses a structured system to assess products proposed for deployment in Australia and New Zealand. Products are evaluated in accordance with the Safe Design of Structures Code of Practice published by Safe Work Australia, and the Safety in Design requirements of the Work Health and Safety Acts enacted by Australian State governments. The Panel also takes guidance from AS/NZS 3845 in relation to testing protocols and other information.

Stann Robb, Chair, RMS NSW	Jade Hogan, RMS NSW	Julian Chisnall, NZTA
Daniel Naish, QLD DTMR	Evan Coulson, VicRoads (from August 2017)	Bruce Snook, MR WA
Phil Molloy, DPTI SA	Karl Cloos, Roads ACT	Peter Hubble, DIER TAS
Bryan Matyorauta, DIPL NT	Daniel Cassar, VicRoads	

OTHER TECHNICAL REFERENCE AND WORKING GROUPS

Safe System Theme Groups
These four groups are comprised of representatives from state and territory government agencies and the Commonwealth. They are aligned with the four Safe System elements:

1. Safe roads and roadsides
2. Safe speeds
3. Safe vehicles
4. Safe people.

Agreed Practice Outputs

- Guide to Road Safety
- Guide to Road Design
- Assessing Fitness to Drive

Program Activities

National Road Safety Strategy Priorities

Ambitious trauma targets have been set through the *United Nations Decade of Action for Road Safety 2011–2020*, with a global goal of stabilizing and then reducing the forecasted level of global road fatalities by increasing activities conducted at national, regional and global levels. Australian Governments support the *UN Decade of Action* and are committed to the *National Road Safety Strategy (NRSS) 2011–2020* to achieve those targets by 2020.

While fatalities were reducing in line with the targeted outcome in the early years of the decade, more recently a plateau in performance has occurred in Australia and New Zealand. This plateau was also experienced by other OECD countries. In this context, Australian Road and Transport agencies have focused on initiatives to both provide immediate mitigation of crashes plus also longer-term actions for sustainable crash reduction. This was the basis used in developing the National Road Safety Action Plan 2018–2020.

Austroads together with the Federal Government, through the Road Safety Task Force, oversees the development of the *National Road Safety Action Plans* which support the NRSS. Austroads is working cooperatively with the Commonwealth, and state and territory road agencies to facilitate delivery of the *National Road Safety Action Plan 2018–2020*.

“While fatalities were reducing in line with the targeted outcome in the early years of the decade, more recently a plateau in performance has occurred in Australia and New Zealand.

In supporting all jurisdictions, Austroads is in the final stages of delivering the prototype process which integrates safe system principles, contemporary safety treatments, dimensional road design guidance, and speed management options into the one simple decision-making method. This development has been designed to provide access to a simple and easy-to-use process for all road authorities but particularly those that are comparatively smaller and to assist road authorities develop their own network-wide safety plan.

In **December 2017**, Austroads published a report that provides a synthesis of key safety solutions as well as issues that need to be considered when effectively addressing safety on urban mixed use arterial routes.

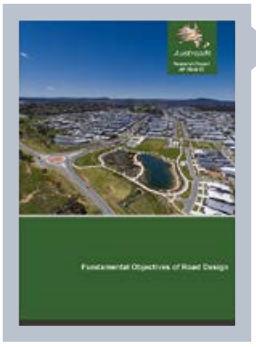
Mixed use urban arterials account for a large proportion of high-severity crashes in Australia and New Zealand, particularly involving vulnerable road users. Austroads commissioned research to help identify solutions that might be applied on these arterial roads to improve safety through the provision of Safe System infrastructure.

The project involved assessment of six case studies around Australia and New Zealand. Preliminary concept designs were developed for each of the routes based on the findings from the workshops and subsequent discussions. The likely safety benefits were assessed with estimates of likely crash reductions as well as alignment with the Safe System objective of eliminating death and serious injury.

A webinar held on 8 February 2018 outlined ways to improve safety and achieve Safe System outcomes on mixed use arterial roads.

austroads.com.au/publications/road-design/ap-t330-17

austroads.com.au/publications/road-safety/web-t330-17



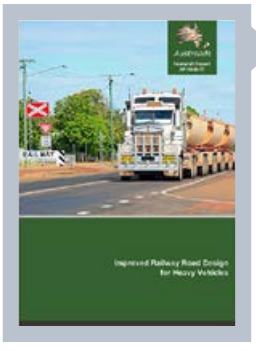
In **August 2017**, Austroads published a report that identifies improvements to guidance, education and practice to ensure the fundamental objectives of road design are achieved in new and existing road projects.

The report provides a foundational road design definition and a series of road design principles that it recommends be incorporated into the Austroads *Guide to Road Design*.

While the project concluded that the design guidance in Australia is technically sound, it recommended:

- better educating designers and practitioners on the importance of road design objectives and how to achieve them
- improving design development and evaluation guidance to enable designers to apply robust engineering judgment, value engineering, Safe System principles, and assess whole-of-life costs
- providing evaluation tools to encourage the development and evaluation of multiple design solutions
- adapting existing design practices including requiring practitioners to demonstrate how design solutions achieve the objectives of road design.

austroads.com.au/publications/road-design/ap-r548-17



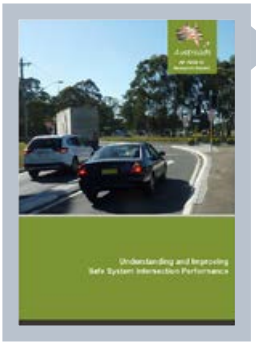
In **August 2017**, Austroads published a report which identifies road design improvements to better cater for the safe passage of heavy vehicles through railway level crossings.

Crashes involving heavy vehicles have been identified as a major safety issue in Australia and New Zealand with the volume of heavy vehicles expected to significantly increase over the next five to 10 years.

An analysis of heavy vehicle crashes at railway level crossings across Australia and New Zealand found that many locations did not have warning signs installed to the standards at the time of the crash, sight distances for approaching vehicle drivers were obstructed by development on abutting properties or vegetation, and delineation was poorly maintained.

Several opportunities for improvements were identified, principally to guidance on applying the sight lines and sight distances for a range of approaches, particularly on curved roads. Other improvements suggested include the addition of a short stacking warning sign and improving delineation by having all road approaches sealed to enable pavement markings, such as RAIL X and edgelines.

austroads.com.au/publications/freight/ap-r549-17



In **December 2017**, Austroads published a report that concluded that achievement of Safe System for intersections requires significant supporting contributions from emerging transport disciplines such as C-ITS, autonomous vehicles, and Movement and Place.

Intersection crashes account for approximately 30% of severe injuries in Australia and New Zealand. This study sought to improve understanding of the key factors in intersection severe injury crashes, and to develop initiatives to improve the design of intersections for better alignment with the Safe System objective of minimising death and serious injury.

The study reviewed recent literature and data to synthesise the following Safe System intersection design principles: minimise conflict points, remove/simplify road user decisions, minimise impact angles, and minimise entry and impact speeds.

Using inputs from literature and data findings, a new safety analytical method, and practitioners, the study proposed nine innovative intersection design concepts seeking to increase Safe System alignment across a wide range of scenarios (urban/rural, new/retrofit). These design concepts form a starting point for practitioners' trials and refinement.

The study concluded that achievement of Safe System for intersections requires significant supporting contributions from emerging transport disciplines such as C-ITS, autonomous vehicles, and Movement and Place.

austroads.com.au/publications/road-design/ap-r556-17

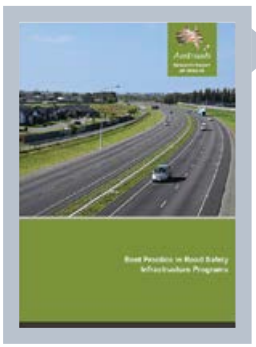
In **March 2018**, Austroads published a report thatproposes a future work to further develop the concept of vehicles as workplaces.

Work health and safety legislation in Australia and New Zealand defines vehicles as a workplace. Vehicle use in road traffic is by far the most significant contributor to work-related traumatic injury.

This report discusses the context within which work health and safety and road traffic safety currently intersect, and the process followed during the preparation of a work health and safety guide. The report includes an engagement strategy to support ongoing work in the area and is itself supported by a communications plan and evaluation plan.

The draft work health and safety guide provided in this report closes a gap in the provision of work health and safety guidance on managing vehicle use in road traffic. It provides pointers on how to address road traffic as a hazard, and on the hazards that are likely to be encountered in the use of vehicles in road traffic.

austroads.com.au/publications/road-safety/ap-r561-18



In **April 2018**, Austroads published a report that provides best practice recommendations for the development of Road Safety Infrastructure Programs (RSIPs) that align with the safe system approach.

For many years, investment in road safety infrastructure in Australia and New Zealand has taken a bottom-up approach of targeting safety improvements at locations with an established safety problem. While this approach served Australia and New Zealand well in the past, it does not fully embrace the safe system philosophy on which the Australian and New Zealand road safety strategies are based.

The report's recommendations provide practical information on ways to improve program design, process and implementation. When implemented by road controlling authorities, this best practice approach will effectively contribute towards an enduring and safer transport system with fewer fatalities and serious injuries.

A webinar held on 15 May 2018 provided best practice recommendations for the development of Road Safety Infrastructure Programs (RSIPs) that align with the safe system approach.

austroads.com.au/publications/road-safety/ap-r562-18

austroads.com.au/publications/road-safety/web-r562-18

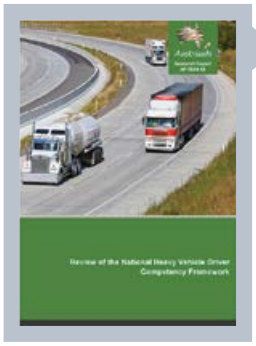
In **May 2018**, Austroads published a report that sets out a rationale for modifying the national vehicle registration framework to enable better end-of-life management of vehicles.

The report proposes two alternatives to the current arrangements: Open Loop involving a tightening of the current arrangements and Closed Loop which would regulate the whole vehicle lifecycle from manufacture to destruction. Both approaches are currently operating in other countries.

While Option 1 will place an additional regulatory burden on registered operators who fail to pay their registration fee on time, Option 2 will place a more significant burden on any registered operator who does not maintain the vehicle's registration for on-road use.

The report creates a framework for a subsequent cost benefit analysis to be prepared.

austroads.com.au/publications/road-safety/ap-r563-18



In **May 2018**, Austroads published a report that reviews the National Heavy Vehicle Driver Competency Framework and its adoption or otherwise by states and territories.

A number of areas for consideration by Austroads are identified including increased focus on or inclusion of additional competencies; minimum training duration and consideration of a practical experience requirement.

The relationship between licensing regulator oversight and VET sector oversight of outsourced provision is considered. Minimum requirements for outsourced trainers and assessors are discussed. Auditing and review requirements of outsourced service provision are considered.

austroads.com.au/publications/freight/ap-r564-18

Understanding Crashes and Risks

By focussing on key crash types that contribute to fatal and serious injury on our road networks, Austroads has developed research programs to support both system-wide and targeted responses for the highest trauma risks identified by road and transport authorities.

In **March 2018**, Austroads published a report that provides a compendium of knowledge on Safe System treatments and identifies real world experience in the practical application of solutions that can mitigate crash severity.

The Safe System is internationally regarded as the best practice approach to road safety. Although Australia and New Zealand have been early adopters of the approach since 2004, there has generally been a lack of clarity amongst practitioners on how best to integrate the approach into their daily activities.

Assessment frameworks and tools are also now emerging that allow the alignment with Safe System to be better quantified. A hierarchy of treatments is described that provide practitioners with a basic understanding of the types of practices that should now be applied on a trajectory towards a Safe System. Primary treatments are capable of virtually eliminating death and injury and certain supporting treatments can transform the network a step closer to reducing the overall harm being caused.

A webinar held on 10 May 2018 provided an overview of the new Austroads compendium of knowledge on Safe System treatments and real world experience in the practical application of solutions that can mitigate crash severity. It outlined information covered in a series of workshops on the translation of the Safe System approach, enabling attendees to consider the application of the theories onto their own road networks.

austroads.com.au/publications/road-safety/ap-r560-18

austroads.com.au/publications/road-safety/web-r560-18

Embedding Safe Systems

Embedding the Safe System approach to improving road safety in its work program is a key focus for the Austroads Safety Program.

The Safe System approach has been endorsed by the OECD and adopted in the National Road Safety Strategy 2011–2020 and the supporting National Road Safety Action Plans. It recognises that people make mistakes that can lead to road crashes. Further, while all road users (pedestrians, passengers, drivers, motorcyclists and cyclists) have a responsibility to act with care and within traffic laws, a shared responsibility exists with those who design, build, manage and use roads and vehicles to prevent crashes resulting in serious injury or death and to provide post-crash care.

SAFE SYSTEM INFRASTRUCTURE WORKSHOPS

Austroads ran a series of thirteen two-day Safe System Infrastructure workshops across Australia and New Zealand.

The workshops discussed the safety aspects of road infrastructure, from local roads right through to arterials of national significance. Expert facilitators and presenters explored the translation of the Safe System approach into practice, enabling attendees to consider the application of the theories onto their own road networks.

The workshops have received very positive feedback from participants who have included transport and urban planners, traffic engineers, network managers, road designers, road safety managers, road planners, asset managers, project managers, local government practitioners and consultants and those involved with or responsible for active transport or environmental management.

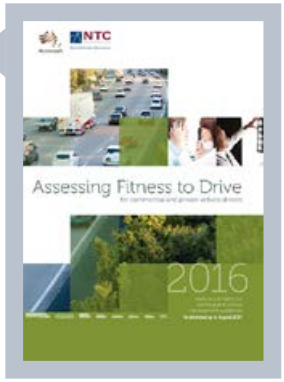
As a result of numerous requests to extend the series, three more workshops were delivered in February and March 2018. A webinar and leader's pack are also being developed.

Driver Licensing and Vehicle Registration

The Registration and Licensing program is continuing its focus on driver licence harmonisation, better management of end of life vehicles, and access to driver licensing by Indigenous and other road users and other road users experiencing barriers to obtaining and retaining driver licences.

ASSESSING FITNESS TO DRIVE

In August 2017, Austroads published an amended *Assessing Fitness to Drive*, a joint publication of Austroads and the National Transport Commission (NTC), that details the medical standards for driver licensing for use by health professionals and driver licensing authorities.



The corrigendum sets out corrections to Assessing Fitness to Drive which came into effect on 1 October 2016 and was published by the National Transport Commission and Austroads on 1 September 2016.

Two errors have been identified in *Assessing Fitness to Drive* relating to:

1. repaired abdominal and thoracic aneurysms; and
2. use of visual aids, specifically telescopic lenses (bioptic lenses) and electronic aids.

Participants in the Safe System Infrastructure workshops across Australia and New Zealand

This Corrigendum corrects those errors and updates contact details for the Driver Licensing authorities listed in Appendix 9.

austroads.com.au/drivers-and-vehicles/assessing-fitness-to-drive

INDIGENOUS DRIVER LICENSING

Lack of appropriate access to driver licensing services is a barrier to employment, economic participation and access to government and non-government services by Aboriginal and Torres Strait Islander people.

Austroads is undertaking a project designed to recognise service response solutions to licensing barriers to increase licence ownership and retention among Aboriginal and Torres Strait Islander road users.

Potential benefits of the project include:

- Improved economic and social participation outcomes in Aboriginal and Torres Strait Islander communities, reduced Aboriginal and Torres Strait Islander engagement in the criminal justice system for traffic-related matters, reduced burden on the welfare system, and reduced costs within the criminal justice system.
- Policy principles to inform ways to better engage those hard to reach road-users who might be culturally and linguistically diverse groups and/or socially disadvantaged Australians living in urban, rural and remote regions who struggle to meet the regulatory requirements and/or financial costs of licence ownership.

Vulnerable Road Users

Road safety for vulnerable road users continues to be a focus for the program. While treatments have been integrated into the Report *Towards Safe System Infrastructure, A Compendium of Current Knowledge* reported above, a new project has been initiated to consider vulnerable road users in the context of movement and place.

Future Focus

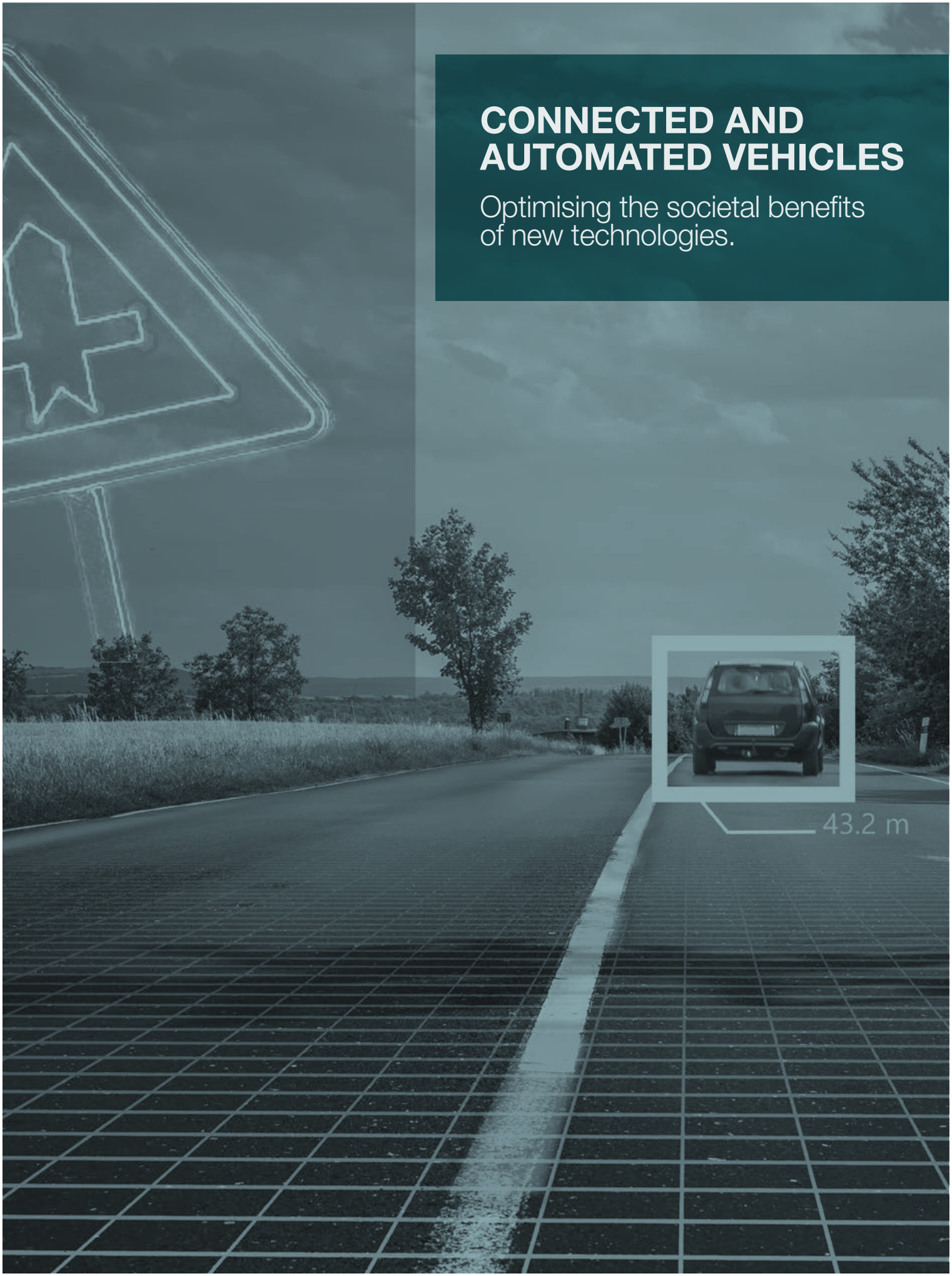
The Safety Program will continue to work towards preventing death and serious injuries on our roads using a Safe System approach.

The Safety work program for 2018-19 addresses the following:

- Supports the Programs objectives and outputs.
- Supports the three sub programs and specifically:
  - The implementation of National Road Safety Action Plan for 2018–2020.
  - Building on current work with jurisdictions to address current and emerging safety challenges to reduce serious road trauma.
- Promoting harmonisation of road design practice, adoption of emerging technology and incorporation of the safe systems approach in our Guides.
- Increasing consistency and efficiency in registration and licensing across jurisdictions, improve registration and licensing service delivery to enable more convenient and accessible services, and improve access to driver licences for Indigenous Australians and those Australians experiencing disadvantage.

Projects approved for commencement in 2018–19 include:

Road Safety	
SAG6126	An Australian Drink Driving Policy and Regulatory Framework
SAG6127	Local Government Guidance Document and Webinars
SAG6129	National View on Regional and Remote Road Safety
SAG6130	Integrating Safe Systems with Movement and Place for Vulnerable Road Users
SAG6132	A National Approach to Measuring Non-Fatal Crash Outcomes – Stage 2
SAG6145	Review of the Guide to Road Safety and Structure for Online Access
Registration and Licensing	
SRL6134	Overseas Driver Licensing Policy Review
SRL6140	National Heavy Vehicle Driver Competency Framework Stage 2 Implementation Guidance
Road Design	
SRD6107	Update to the Guide to Road Design Parts 1, 2 and 8 and Minor Updates to Other Parts (for example part 6)
SRD6108	Road Cross Section Design for Road Stereotypes – Review of Use in Corridor Safety Planning, Update Research Based on Operational Learnings



CONNECTED AND AUTOMATED VEHICLES

Optimising the societal benefits of new technologies.

Overview

The next generation of motor vehicles are planned to include an increased level of wireless connectivity and automated driving capability. The convergence of these technologies has given rise to the term Connected and Automated Vehicles (CAV).

The potential societal benefits from these emerging technologies are significant, particularly with regard to road safety, transport efficiency and productivity, and environmental outcomes. To support deployment and optimise the benefits from these technologies, there is a need for regulatory and operational frameworks to be in place.

The Austroads CAV Program is working closely with key government and industry stakeholders towards establishing the required supporting frameworks, and to optimise the potential societal benefits of CAVs..

Work Streams

- The key focus areas for the CAV Program are Automated Vehicles and Cooperative Intelligent Transport Systems (C-ITS).

People

STUART BALLINGALL, PROGRAM DIRECTOR CONNECTED AND AUTOMATED VEHICLES (ENDED 30 JUNE 2018)

Stuart Ballingall is the Program Director Connected & Automated Vehicles at Austroads. Stuart also has a leading role preparing for emerging transport technologies in his role as Director Transport Futures at VicRoads, and as a member of the Australasian New Car Assessment Program (ANCAP) board of directors, and the National Positioning Infrastructure Advisory Board.

Stuart has significant experience leading technical programs that span across the transport, automotive, and ICT industries, including with General Motors Holden, the Royal Automobile Club of Victoria (RACV), and VicRoads.

Stuart is also an active member on numerous government and industry forums, both at the national and international level.

Qualifications held by Stuart include a Bachelor of Engineering (honours) and a Master of Business Administration (MBA).

PROJECT MANAGER – AUTOMATED VEHICLES: Chris Jones (VicRoads, Victoria)

PROJECT MANAGER C-ITS: Niko Limans (Transport and Main Roads, Queensland)

TECHNICAL SUPPORT CAV: Richard Zhou (VicRoads, Victoria)

TECHNICAL SUPPORT C-ITS: Geoff McDonald (Transport and Main Roads, Queensland)

PROGRAM GOVERNANCE

The Austroads CAV Program has a governance structure that provides effective guidance, decision making and program management controls. Key governance groups for the program include:

- Steering Committee – provides technical endorsement and guidance to the program of work, and linkages to jurisdiction projects and initiatives. It comprises representatives from Austroads road agency members, the Commonwealth and the NTC.
- Industry Reference Group – provides a forum to engage, consult, share knowledge, and seek guidance and direction. It comprises a large number of peak industry groups and government stakeholders across a wide range of relevant domains.

CAV STEERING COMMITTEE

Dennis Walsh, QLD DTMR	Roland Pittar, DIRDaC
Wayne Harvey, VicRoads	Peter Hubble, DSG TAS
Steven Shaw, RMS NSW	Dirk Van Der Valt, NZTA
Benjamin Hubbard, TCCS ACT	Lee MacKenzie, MoT NZ
Jeremy Conway, DPTI SA	John Wall, TfNSW
Kamal Weeratunga, MR WA	Marcus Burke, NTC

2017–18 Program Activities

Automated vehicles

The term Automated Vehicle (AV) generally refers to a road vehicle in which one or more of the primary driving controls (steering, acceleration, braking) are automated for a sustained period. Vehicles with 'partial' automation (SAE level 2) are already on our roads, which enable the driver to be assisted with the driving task in limited scenarios (e.g. autopilot assist, traffic jam assist). Vehicles with 'self-driving' capability (SAE levels 3–5) could possibly come to market and operate in limited scenarios from 2020.

TRIALS OF CONNECTED AND AUTOMATED VEHICLES:

Austroads member agencies are undertaking an increasing number of CAV trial projects and initiatives. The Austroads website provides an authoritative list of the key CAV trials that are occurring across the jurisdictions.

Under the *National Land Transport Technology Policy Framework and Action Plan*, there is a commitment from Australian transport ministers to share knowledge, identify gaps, and reduce duplication of efforts on CAV trials (Action 3). Austroads plays a key role in ensure that knowledge sharing and collaboration is occurring across these trials. To support this, Austroads has established the *Austroads Trials and Technology Working Group*, which is coordinated by the CAV program.

On 24 June 2018, a webinar was presented by Chris Jones, Dr Miranda Blogg, John Wall and Samantha Taylor on three major CAV trials across Australia. The trials featured included:

- Queensland's Department of Transport and Main Roads – Connected and Automated Vehicle Initiative
- Transport for New South Wales – Cooperative Intelligent Transport Initiative
- ARRB/ConnectEast/VicRoads – Trials of Partially Automated Vehicles on Motorways

austroads.com.au/publications/connected-and-automated-vehicles/web-cavtrials-18

SS1867: SAFETY BENEFITS OF CONNECTED AND AUTOMATED VEHICLES

In **October 2017**, Austroads published a report that aimed to identify emerging C-ITS and AD applications and assess the safety benefits of a selection of those judged to have the greatest potential for Australia and New Zealand. A range of C-ITS and AD technology research documents were reviewed and policy experts from the UK, US and Europe were contacted and asked to provide information about current C-ITS and AD research activities, their thoughts on the likely deployment timelines and the key challenges (including human factors issues) to widespread adoption.

Two rapidly developing technology areas, Cooperative Intelligent Transport Systems (C-ITS) and Automated Driving applications, are reputed to have a substantial impact on road trauma through the increased use of technology both to assist drivers with the driving task, as well as providing enhanced crash avoidance capabilities. This project aimed to identify emerging C-ITS and AD applications and assess their potential safety benefits for Australia and New Zealand.

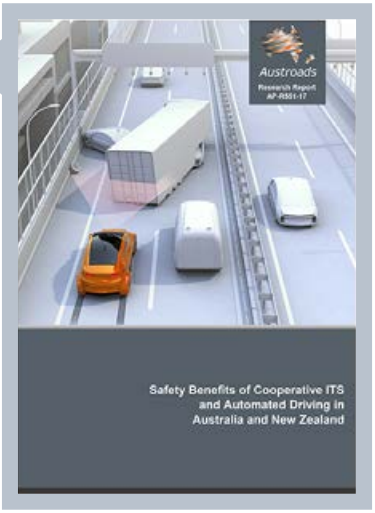
A comprehensive literature review and expert consultation found that C-ITS and AD were predicted to have significant potential to reduce road crash risk and injury consequences, with estimates varying widely between studies.

Using an analysis of Australian serious injury real-world crashes, expert estimates were made of the potential effectiveness of the following light passenger vehicle applications, as well as estimates of the annual savings in serious injuries Australia and New Zealand-wide.

Despite the clear potential benefits, several limitations were found that will need to be addressed before widespread implementation becomes possible.

On **23 October 2017**, a webinar was presented by Chris Jones and Dr David Logan. It provided an overview of the findings of an Austroads research report into the safety benefits of Cooperative ITS and Automated Driving in Australia and New Zealand.

> "Automated Vehicles are vehicles that have one or more of the primary driving controls (steering, acceleration, braking) that are automated for a sustained period of time.



austroads.com.au/publications/road-safety/ap-r551-17

austroads.com.au/publications/connected-and-automated-vehicles/web-r551-17

Road operations and registration and licensing

The introduction of AVs will have many implications for road agencies. This could potentially include changes to how roads are designed, maintained and operated. There could also be an effect on how vehicles are registered and drivers are licensed. A collaborative approach is being taken with local preparations to support the deployment of automated vehicles, in which Austroads has a key role. The following highlights some of the key Austroads project activities to progress this through.

CAP6088: INFRASTRUCTURE FOR AUTOMATED DRIVING ON RURAL AND URBAN FREEWAYS AND HIGHWAYS

This is a Board priority project, which answers the question – what changes, if any, are required to road infrastructure to support automated driving? The five modules are:

- determining minimum requirements for highway and freeway infrastructure. This could include physical and digital infrastructure, including provision of cellular communications across the freeway and highway network
- running a pilot survey to determine readiness of these assets for automated highway driving
- investigating current specifications in road operators maintenance, project to determine if any gaps in any requirements
- assessing any gaps between current specifications so that high level advice can be provided on future investments
- investigating new methods of exchange of data between vehicles and road operators to maintain asset readiness and highlight exceptions

A final report will be published early 2019.

SRL6102: REGISTRATION AND LICENSING

The NTC's work program includes preparation for an 'end-to-end' regulatory environment for AVs by 2020. Aligned to this work, TIC/TISOC endorsed an action for Austroads to prepare advice on the impacts of the proposed safety assurance system for AVs on the jurisdictions registration and licensing (R&L) systems. Austroads project SRL6102, under the Safety and Registration and Licensing program, is progressing this action, which is due to report to TISOC in September 2018.

CAV6056: IMPLICATIONS OF TRAFFIC SIGN RECOGNITION FOR ROAD AUTHORITIES

Austroads has been investigating issues with traffic sign recognition systems fitted in modern passenger vehicles. Traffic sign recognition is a key component of current market speed assistance systems and will also be used in the development of more highly automated vehicles.

To better understand the issues, Austroads conducted a range of tests of vehicle on-road in Melbourne, Sydney and Auckland, and at the Australian Automotive Research Centre.

This project has identified a range of issues with Australian traffic signage, including, electronic sign configuration, appearance variability, fine text perception on signs, vehicle mounted signs, and sign location.

A final report will be published in September 2018 and will include recommendations for road authorities on improvements to traffic sign design for vehicles.

CAV2107: AUTOMATED VEHICLE – USE CASES

This project has identified seven key use-cases for road operators to consider. These are motorway driving, rural driving, urban driving, complex signalized intersections, passenger pick up and drop off, and platooning (light and heavy).

Priority use cases will be identified and analysed, with recommended actions developed for road operators on how to best support them. The project has identified that future requirements for each use-case are difficult to determine. However, some use-cases such as rural driving, and motorway driving are closer to deployment and therefore more available information to inform analysis.

Changes could include recommendations for local governments, policy makers (road rules), state and territory road authorities. A final report will be published in 2018.

Cooperative Intelligent Transport Systems (C-ITS)

A connected vehicle ecosystem is emerging in which vehicles will share data wirelessly with other vehicles, with infrastructure, with transport management systems, and with mobile devices. Commonly referred to as Cooperative Intelligent Transport Systems (C-ITS), this ecosystem will enable a wide range of vehicle and transport applications to be deployed that cooperatively work together to deliver safety, mobility and environmental outcomes that are in addition to what many standalone systems can achieve.

A hybrid or neutral communication technology approach will be supported, recognising that C-ITS stations may use a range of communication technologies from the Dedicated Short Range Communications (DSRC) using the 5.9 GHz band for vehicle critical safety applications due to its low latency and high availability of data transfer, and next generation of cellular-based C-ITS technologies (C-V2X) using 4G/upcoming 5G which may become available in the future. Deployment models and standards for C-ITS in Australia will not, as far as practicable, limit or preclude any particular communications technology.

Regulatory and operational arrangements in Australia will support a nationally consistent C ITS deployment, achieving continuity of service across jurisdictions and interoperability between different ITS stations and different transport modes.

Some key points regarding the international and local status of C-ITS include the following:

- **ACMA licence issued for ITS use of 5.9 GHz band in Australia** – The Australian Communications and Media Authority (ACMA) issued the *Intelligent Transport Systems (ITS) Class License 2017* in December 2017. While this was a major milestone for the Austroads CAV program, work is continuing with key government and industry stakeholders to develop guidance and compliance assurance arrangements to support C-ITS deployment.
- **New satellite positioning services for Australia (and New Zealand)** – Another major milestone for the CAV program. As part of the Commonwealth's budget announcement in May 2018, $225 million has been budgeted to develop improved satellite positioning services for Australia, including a new Satellite Based Augmentation System (SBAS). Austroads has been actively supporting the case for an SBAS, due to its ability to directly support both C-ITS and AV deployments.
- **Austroads is an associated member of C-Roads** – C-Roads is a platform of a joint initiative of European Member States and road operators co-financed by the European Union, for testing and implementing C-ITS services in light of cross-border harmonisation and interoperability. Austroads has been participating in a several discussion with C-Roads Steering Committee members as well as having an access to the C-Roads standards and specifications and distribute important/critical information and updates to Australia and New Zealand jurisdictions.
- **Security management** – It is anticipated that a common security and certificate policy will be developed for Australia, following future decisions about whether to develop a domestic security credential management system (SCMS), or leverage an international deployment. Australia's security and certificate policy will be guided by security and certificate policies that are being established under European and UN bodies. Along with the adoption of agreed international security standards and specifications, this should ensure an appropriate level of trust between C-ITS stations, and protect against hacking, malicious acts, and unauthorised access.

CAV2109 – COOPERATIVE ITS OPERATIONAL FRAMEWORK

Project has two key components:

1. **Evaluation of the European C-ITS platform including a Threat, Vulnerability and Risk Analysis (TVRA)**

   This project is to evaluate the C-ITS platform under deployment in Europe including a Threat, Vulnerability and Risk Assessment (TVRA) and where Australia and New Zealand may need to deviate from the European implementation. This is deemed necessary to gain an understanding of the system limits and threats posed to the C-ITS environment, so that appropriate measures can be identified to counter and mitigate those threats.

   The evaluation should identify risks to the C-ITS environment by isolating the vulnerabilities of the environment, assessing the likelihood of a malicious attack on those vulnerabilities, determining the impact that such an attack will have on the C-ITS environment and expanded to cover centre and personal stations to vehicle services using cellular network for example, 4G/upcoming 5G.

2. **Compliance Assessment Framework (CAF)**

   The project is to identify and assess options for an assurance compliance framework in the area of Cooperative Intelligent Transport Systems (C-ITS) that will ensure the safe operation of C-ITS in Australia and New Zealand. A report setting out the options for the development of a C-ITS compliance assessment framework, including potential governance and process models, technical performance requirements and validation.

   To ensure that ITS devices are fit-for-purpose, are interoperable, and do not compromise safety, it will be necessary for them to comply with a range of agreed standards and specifications. These are likely to include but not be limited to standards and specifications relating to data messages, applications, networking protocols, security, device management and the physical communications transceiver. It should also consider compliance throughout the lifecycle of the ITS station, not just a market entry.

Future Focus

The focus of the CAV program going forward will increasingly be on operational arrangements to support the safe introduction and operation of CAVs on our road networks.

CAV Program – Strategic Overview
The successful deployment of CAVs in Australia and New Zealand will require a collaborative approach across key stakeholders. To ensure effective collaboration across government entities, the roles of key stakeholders need to be clearly understood. The following summarises these roles:

- Austroads – lead role regarding operational arrangements to support CAVs, incl. road infrastructure design & maintenance, road & traffic operations, vehicle registration and driver licensing. Austroads will also be a key input to policy and regulatory initiatives but will not lead these.
- Commonwealth DIRDC – lead role regarding national land transport policy and regulation, including administering the policy and regulatory frameworks for vehicles and related transport technologies.
- National Transport Commission (NTC) – lead role with review and reform of Australian transport policy and regulations, under the direction and endorsement of TIC and TISOC.
- New Zealand – the Ministry of Transport and NZTA have lead roles with policy, regulatory and operational arrangements in New Zealand. Both are members of the Austroads CAV program and play a key role in facilitating collaboration and consistency between Australia and New Zealand.
- Australian jurisdictions – key role regarding policies and regulations at the state/territory level, and with operating roads, registering vehicles and licensing drivers. Local councils also have a key role.
- Other government entities – other key government entities will be involved and/or engaged by the CAV program where appropriate, including ARRB, TCA, ACMA, Geoscience Australia, etc.

OBJECTIVES:

The CAV program has two high-level objectives that guides its decision making:

1. Support the market introduction and operation of CAVs on our road networks.
2. Optimise potential societal benefits of CAVs, including safety, mobility, efficiency & sustainability.

SCOPE OF ACTIVITIES:

Activities and functions considered in-scope for the CAV program include:

- Research and investigations – including into potential operational problems, technical feasibility, assessment of benefits, analysis of gaps and options, etc.
- Operational arrangements – where appropriate, play a lead role with the establishment of nationally consistent approach to operations (e.g. type-approve of C-ITS, safety assurance for AVs, etc).
- Guides & standards – ensure that relevant Austroads Guides and other related guidelines and standards are updated to consider CAVs and support a harmonised & consistent approach.
- CAV trials & deployments – support CAV trial projects and deployments, with a focus on strategic direction, compliance, interoperability and harmonisation.
- Stakeholder engagement & knowledge sharing – Austroads to be recognised as an authority on CAV issues, and take a lead engaging with govt/industry stakeholders and facilitating knowledge sharing.

Activities and functions considered out-of-scope include:

- Policy and regulation – development, review and/or administration of policies and regulations.
- Operations – may lead the establishment of operational arrangements, but Austroads itself does not intend to become an operator of CAV-related services (although its members might).
- CAV trials – may assist members and other government entities but will not manage trials itself.
- Industry development – it is not Austroads role to attract/develop industry activity & jobs.

GOVERNANCE:

Key governance groups include the following:

- Austroads Board – approve the CAV program, including strategic role & program budget.
- CAV Program Board – endorse strategic direction, ensure collaboration across govt programs.
- CAV Program Manager – lead and manage delivery of the CAV program.
- CAV Steering Committee – enable member direction, consultation, engagement, endorsement.
- CAV Industry Reference Group – industry/govt consultation, knowledge sharing, engagement.
- Austroads Working Groups – established as required (e.g. Trials and Technology Working Group).

Compilation of the 2018–19 program has been guided by feedback from DIRDC, the NTC and jurisdictions, and builds upon activities and outcomes which are ongoing from the 2017–18 program.

Projects approved for commencement in 2018–19 include:

- CAV 6119: Pavement Markings for Machine Vision
- CAV6138: Integrating Advanced Driver Assistance Systems in Driver Education
- CAV6057 – Directions to C-ITS deployment

  Project has two key components:
  - C-ITS Communication Technologies
  - Revision of C-ITS Strategic Plan
- CAV6060 – Strategic directions for security in C-ITS

ELECTRIC VEHICLES:

At the Austroads April 2018 Board Meeting, it was agreed that the CAV Program should expand to include coordinating guidance on electric vehicles and charging facilities as they relate to corridor management and network operations. This will include liaison arrangements with Standards Australia. 2018–19 projects will be formed to consider this topic.

KNOWLEDGE SHARING

Building capacity through exchange and collaboration.

Overview

Knowledge sharing and capacity building are core activities for all Austroads Programs.

The delivery of publications, tools, webinars and presentations is supported by a small communications team based in the Austroads national office.

2017–18 Activities

During the year we produced 118 publications including 18 Guides, 41 reports, 12 test methods.

More than 349,000 publications were downloaded or sold, a 2% increase on the previous year.

This year we significantly expanded the Austroads webinar series, delivering 24 online sessions to an audience of more than 2,500. More than 20,000 watched recordings posted on the Austroads corporate website, a massive 500% increase on the previous year. The webinars have received consistently excellent feedback from participants and next year we will be looking at opportunities to expand the content beyond our research projects.

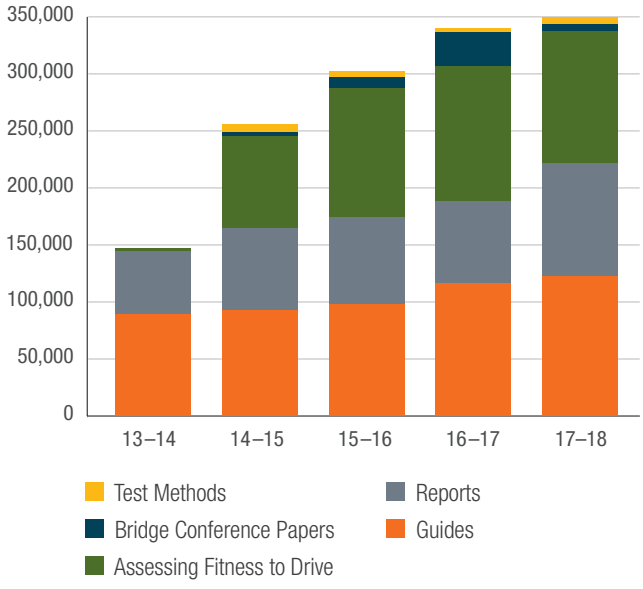
Austroads is a founding partner of the Australasian Road Safety Conference. The third conference was held in October 2017 in Perth. Austroads Chief Executive welcomed more than 650 delegates to the conference which was an outstanding opportunity for road safety experts to connect. Discussions around automated vehicles and the future of road safety at one end of the road safety spectrum and then papers and presentations on the issues confronting indigenous drivers in so many communities gave us much food for thought through the conference.

Austroads also participated in the APAA Sprayed Sealing Workshops and sponsored the 9th International Conference on Bridge Maintenance, Safety and Management (IABMAS 2018) held in Melbourne.

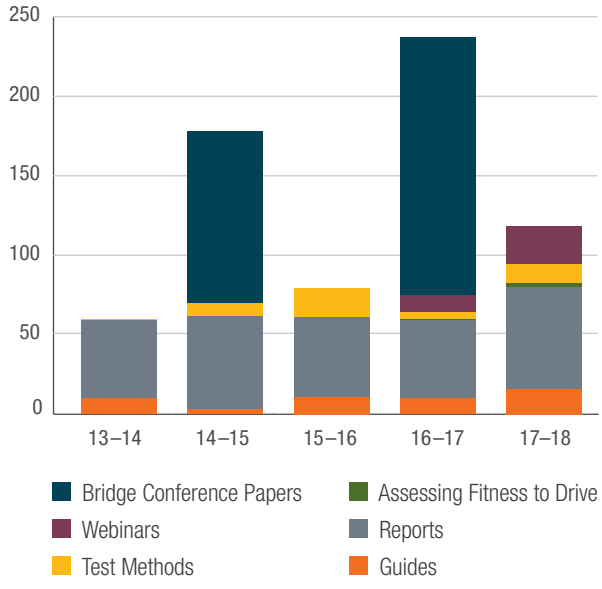
Visits to Austroads website have continued to increase. More than 479,000 users (46,000 more than the previous year) viewed 2.6 million pages (300,000 more than the previous year) on the corporate and publications websites.

The project to consolidate our corporate and publications websites into a single site and provide the Austroads Guides as a digital resource has progressed exceptionally well. The new site will improve users' experience and knowledge sharing. On 1 July 2018 the PDFs of Austroads Guides were made freely available to all users online. This saw a sharp increase in Guide downloads (an unexpectedly a similar increase in report and test method downloads) and very positive feedback from users all over the world. The site is due to go live in early September and we are very excited about the future opportunities this will bring to operationalise the Guide content, digitise our processes and enhance user experience and accessibility.

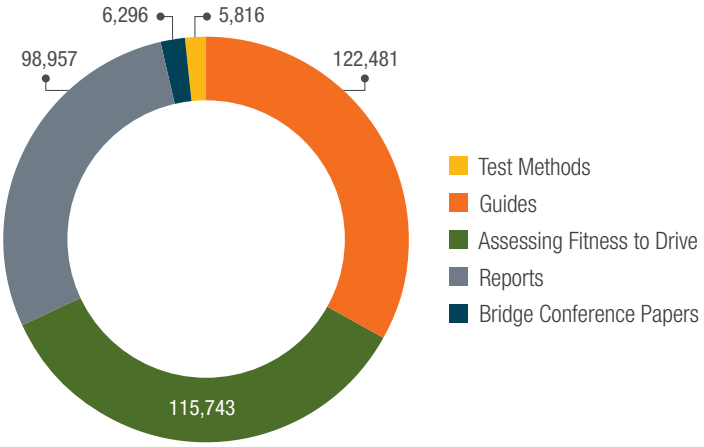
PUBLICATION DOWNLOADS AND SALES 5 YEAR COMPARISON



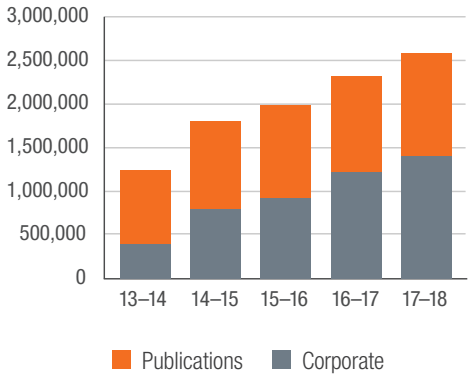
PUBLICATIONS AND WEBINARS PRODUCED 5 YEAR COMPARISON



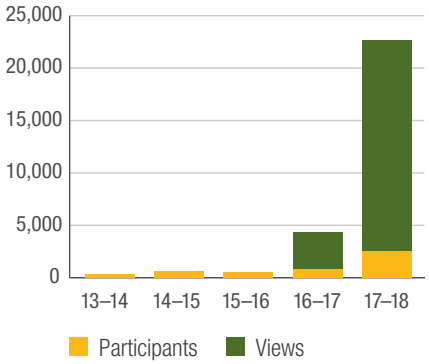
PUBLICATION DOWNLOADS AND SALES 2017–18



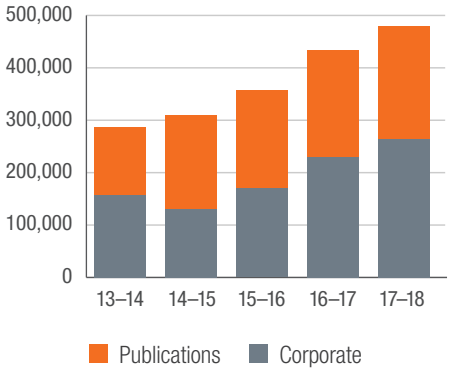
WEBSITE PAGE VIEWS



WEBINARS



WEBSITE USERS



PUBLICATIONS AND WEBINARS: 1 JULY – 30 JUNE 2018

Guides		Downloads
AP-G56-COR1	Assessing Fitness to Drive Corrigendum	13,300
AP-G56-17	Assessing Fitness to Drive 2016 (as amended up to August 2017)	106,819
AGBT01-18	Guide to Bridge Technology Part 1: Introduction and Bridge Performance	157
AGBT02-18	Guide to Bridge Technology Part 2: Materials	123
AGBT03-18	Guide to Bridge Technology Part 3: Typical Superstructures, Substructures and Components	162
AGBT04-18	Guide to Bridge Technology Part 4: Design Procurement and Concept Design	168
AGBT05-18	Guide to Bridge Technology Part 5: Structural Design	134
AGBT06-18	Guide to Bridge Technology Part 6: Bridge Construction	174
AGBT07-18	Guide to Bridge Technology Part 7: Maintenance and Management of Existing Bridges	169
AGBT08-18	Guide to Bridge Technology Part 8: Hydraulic Design of Waterway Structures	221
AGPD05-18	Guide to Project Delivery Part 5: Road Construction Quality Assurance	294
AGPT02-17	Guide to Pavement Technology Part 2: Pavement Structural Design	2,866
AGPT04F-17	Guide to Pavement Technology Part 4F: Bituminous Binders	529
AGPT04C-17	Guide to Pavement Technology Part 4C: Materials for Concrete Road Pavements	352
AGTM03-17	Guide to Traffic Management Part 3: Traffic Studies and Analysis	1,243
AGTM05-17	Guide to Traffic Management Part 5: Road Management	1,098
AGTM06-17	Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings	2837
AGTM13-17	Guide to Traffic Management Part 13: Road Safety Environment	555

For consultation		Downloads
TTMP-FEB18	Guide to Temporary Traffic Management Practice Part 4: Static Worksites (Draft for Industry Consultation)	4,584
	Guide to Temporary Traffic Management Practice Part 5: Mobile Works (Draft for Industry Consultation)	
	Guide to Temporary Traffic Management Practice Part 6: Short Term Low Impact Worksites (Draft for Industry Consultation)	
TTMP-MAR18	Guide to Temporary Traffic Management Practice Part 2: Traffic Management Plan (Draft for Industry Consultation)	2,369
	Guide to Temporary Traffic Management Practice Part 8: Traffic Controller Instructions (Draft for Industry Consultation)	
APD2110-DRAFT	Draft National Capital Works (NCW4) General Conditions of Contract (Consultation)	283

Research and Technical Reports		Downloads
AP-R547-17	High Modulus High Fatigue Resistance Asphalt (EME2) Technology Transfer: Final Report	390
AP-R548-17	Fundamental Objectives of Road Design	1,013
AP-R549-17	Improved Railway Road Design for Heavy Vehicles	502
AP-R550-17	Prioritising On-Road Public Transport	594
AP-R551-17	Safety Benefits of Cooperative ITS and Automated Driving in Australia and New Zealand	891
AP-R552-17	Road Transport Management Framework and Principles	567
AP-R553-17	Current Practice and Developments in Concept of Operations Across Road Agencies in Australia and New Zealand	325
AP-R554-17	National Prequalification System – Inclusion of Specialist Precast Concrete Categories	100
AP-R555-17	Development of National Mass Assessment Procedures for Over Size and Over Mass (OSOM) Vehicles	223
AP-R556-17	Safe System Infrastructure on Mixed Use Arterials: Summary Report	901
AP-R557-18	Measures to Reduce Crashes Adjacent to and within Tunnels	155
AP-R558-18	Modelling for High Productivity Vehicles in Metropolitan Areas	266
AP-R559-18	Local Road Access for High Productivity Freight Vehicles	321
AP-R560-18	Towards Safe System Infrastructure: A Compendium of Current Knowledge	1,095
AP-R561-18	Vehicles as Workplaces (published 15 March 2018)	431
AP-R562-18	Best Practice in Road Safety Infrastructure Programs	646
AP-R563-18	Better Management of End-of-Life Vehicles	144
AP-R564-18	Review of the National Heavy Vehicle Driver Competency Framework	213
AP-R565-18	Implementation of a Nationally Consistent Framework for the Assessment of Bridges in Australia	289
AP-R566-18	Effectiveness of Maintenance Activities on Pavement Conditions	625
AP-R567-18	Long-term Pavement Performance (LTPP) Project: Future Directions	288
AP-R568-18	Scoping Study for a Location Referencing Model to Support the BIM Environment	244
AP-R569-18	Guidelines and Specifications for Microsurfacing	545
AP-R570-18	Benefits of Safety and Traffic Management Technologies	421
AP-R571-18	Continual Improvement Processes for Asset Management: Guidelines	314
AP-R572-18	Continual Improvement Processes for Asset Management: Background Research	218
AP-R573-18	Network Performance Indicators	258
AP-R472A-18	Australasian Pedestrian Facility Selection Tool [V2.0] User Guide	256
AP-T323-17	Techniques for Incident Management to Support Network Operations Planning	639
AP-T324-17	Improved Laboratory Characterisation of the Deformation Properties of Granular Materials	586
AP-T325-17	Heavy Vehicle Horizontal Stresses and Pavement Surface Performance	829
AP-T326-17	Development of a Sprayed Seal Binder Cracking Test	349
AP-T327-17	Validation of Revised Austroads Sprayed Seal Design Approaches: Site Inspection	428

Research and Technical Reports		Downloads
AP-T328-17	Accelerated Evaluation of the Effectiveness of Supplementary Cementitious Materials to Suppress Damaging AAR Expansion in Concrete Structures	175
AP-T329-17	Specification and use of Geopolymer Concrete in the Manufacture of Structural Components and Non-structural Components: Experimental Work	418
AP-T330-18	Safe System Infrastructure on Mixed Use Arterials	890
AP-T331-18	National Performance-based Asphalt Specification Framework	491
AP-T332-18	Austroads LTPP/LTPPM Study: Summary Report 2016–17	382
AP-T333-18	Asset Data Harmonisation Stage III: BIM IFC Alignment Review	282
AP-T334-18	Data Standard for Road Management and Investment in Australia and New Zealand: Version 2	199
AP-T335-18	Appropriate Use of Marginal and Non-standard Pavement Materials and Road Construction Maintenance	276

Internal Reports		Downloads
IR-259-17	Prioritising On-Road Public Transport: Updating the Guide to Traffic Management	NA
IR-260-17	Opportunities to Harmonise Driver Licence Practices	NA
IR-261-17	Road Transport Management Framework and Principles: Proposed Updates to Austroads Guides	NA
IR-262-17	Strategic Review of the Guide to Traffic Management	NA
IR-263-17	HPT Field Trial Report from ACER	NA
IR-264-17	Investigation of Treated Black Spots that did not Achieve Expected Safety Benefits	NA
IR-265-17	Key Interventions to Reduce Road Trauma - Forecasting Potential Road Safety Gains	NA
IR-266-17	Mitigating the Growing Drug Driving and Driver Distraction Risk: Phase 1 Scoping Summary Report	NA
IR-267-17	Properties of general purpose cement with increased percentages of limestone	NA
IR-268-18	Review of the National Heavy Vehicle Driver Competency Framework	NA
IR-269-18	C-ITS Security Standards and Options for Compliance Assurance	NA
IR-270-18	System Requirements for a C-ITS Security Credential Management System	NA
IR-271-18	Initial System Architecture for a C-ITS Security Credential Management System	NA
IR-272-18	Indicative Cost Estimates for a C-ITS Security Credential Management System	NA
IR-273-18	Aligning Registration and Licensing Operations with the Proposed Safety Assurance System for Automated Vehicles	NA

Other Publications		Downloads
AP-C20-17	Austroads Annual Report 2016-17	1,135
AP-C102-17	Guidelines: National Prequalification System for Precast Concrete Products	142
AGPT-T221-18	Sampling of Bituminous Slurry	122
AGPT-T270-18	Determination of Optimum Amount of Added Water for Bituminous Slurry (Consistency Test)	122
AGPT-T271-18	Determination of Set and Cure for Bituminous Slurry (Cohesion Test)	121
AGPT-T272-18	Determination of Abrasion Loss of Bituminous Slurry (Wet Track Abrasion Test)	123
AGPT-T273-18	Determination of Excess Binder in Bituminous Slurry (Loaded Wheel Test)	200
AGPT-T530-18	Calibration of Bitumen Sprayers: General Introduction and List of Methods	49
AGPT-T531-18	Volumetric Calibration of Bitumen Pumping System	42
AGPT-T532-18	Transverse Distribution by Fixed Pit Facility	40
AGPT-T533-18	Transverse Distribution by Field Mat	46
AGPT-T534-18	Transverse Distribution by Portable Trough	49
AGPT-T535-18	Road Speed and Distance Calibration	43
AGPT-T536-18	Viscosity of Calibration Fluid	57

Webinars	Attendees	Recording views
Guideline for Continual Improvement Processes for Asset Management	144	127
Benefits of Safety and Traffic Management Technologies	130	491
Guidelines and Specifications for Microsurfacing	95	329
Updated Pedestrian Facility Selection Tool	138	471
Best Practice in Road Safety Infrastructure Programs	155	594
Towards Safe System Infrastructure	269	466
Geopolymer Concrete and its Applications	123	396
Local Road Access for High Productivity Freight Vehicles	85	389
Pavement Design: Guide to Pavement Technology Parts 2 and 4C	214	923
National Performance-based Asphalt Specification Framework	123	277
Modelling of High Productivity Vehicles in Metropolitan Areas	64	241
Safe System Infrastructure on Mixed Use Arterials	220	320
Development of National Mass Assessment Procedures for Oversize Overmass Vehicles	56	244
Strategic Review of the Guide to Traffic Management	55	340
Guide to Traffic Management Part 3: Traffic Studies and Analysis	72	365
Current Practice and Developments in Concept of Operations across Road Agencies in Australia and New Zealand	38	255
Guide to Traffic Management Part 13: Road Environment Safety	28	302
Intersections: Guide to Traffic Management Part 6 and Guide to Road Design Part 4 and 4A	252	1,144
Road Transport Management Framework and Principles	35	260
Safety Benefits of Cooperative ITS and Automated Driving in Australia and New Zealand	102	350
Prioritising On-Road Public Transport	68	339
Guide to Traffic Management Part 5: Road Management	27	311
Techniques for Incident Management to Support Network Operations Planning	25	233
Investigating the Potential Benefits of Enhanced End to End Supply Chain Visibility	45	189

FINANCIALS AND DIRECTORS' REPORTS

Table of Contents

The directors of Austroads Ltd ("the Company") present this report on the Company for the financial year ended 30 June 2018.

Directors

The names of each person who has been a director during the year and to the date of this report are:

- Neil Scales OBE
- Shane Gregory
- Kenneth Kanofski
- Adrian Beresford-Wylie
- Tommy Parker (to 6 April 2018)
- Paul Gelston (to December 2017)
- Andrew Kirkman (to 1 September 2017)
- Peter Todd (to 9 March 2018)
- Alex Foulds
- Emma Thomas
- Peter Woronzow
- Louise McCormick (commenced 1 September 2017)
- Judith Formston (commenced January 2018)
- Anita Curnow (commenced June 2018)

Directors have been in office since the start of the financial year and are still directors to the date of this report unless otherwise stated.

Principal Activities

The principal activities of the Company during the financial year were to coordinate road transport related research and projects and to produce publications related to road transport.

The Company's short-term objectives are to:

- conduct strategic research that assist road agencies to address current and emerging issues
- develop guides to establish national consistency on technical and operational aspects of road networks
- facilitate knowledge sharing by promoting the wide dissemination of outputs and technology, conducting seminars and promoting the use of the Company's work;
- maintain and develop NEVDIS on behalf of road agencies as an essential national vehicle and driver licence information exchange
- foster international involvement by engaging with and supporting international road organisations.

The Company's long-term objectives are to:

- promote improved Australian and New Zealand transport outcomes
- provide expert technical input to national policy development on road and road transport issues
- promote improved practice and capability by road agencies
- promote consistency in road and road agency operations
- redevelop NEVDIS and pursue opportunities to make the system financially self sufficient.

Strategies

The Company uses a program management approach to the delivery of the strategic plan. Each program focuses on an operational area of the road system but in doing so they address the Company's strategic priorities by undertaking a range of projects and contribute to improving transport outcomes in Australia and New Zealand. Austroads utilises the expertise of its member organisations to develop and deliver its research programs. This encourages a collaborative approach and facilitates learning, development, sharing and a high level of consistency across jurisdictions.
An Operational Plan, which is monitored and reviewed by the Board, includes a number of proposed outputs for each program and an indicative four year work plan with projects to produce these outputs.

Key Performance Measures

The Company's Outputs

The following measures have been developed to assess performance and progress against the delivery of actions identified in each of the Company programs:

- **Projects completed on time and on budget**

  All research projects were completed within the overall related program budget. The completion of projects within their scheduled timeframe continues to be a challenge but has improved on previous years. There were 31 projects scheduled for completion in 2017-18 of which 17 were completed on schedule. At 30 June no projects were running more than six months late.

- **Take up of the Company outputs**

  In 2017–18, 349,000 publications were downloaded or sold, a 2%increase on the previous year. On average, more than 470 Austroads Guides are downloaded by local councils and member organisations every working day.

- **Adoption of Austroads Guides by road agencies**

  All road agencies across Australasia have adopted the Austroads Guides.

Information on Directors

Neil Scales OBE (Chair) | ONC (Eng), HNC (EEng), DMS, BSc (Eng), MSc (Control Engineering and Computer Systems), MBA, CEng (UK), FIEAust, FIET, FIMechE, FICE, FCILT, FCIT, FLJMU, FRSA, FSOE, MAICD

Neil Scales is Director-General of Queensland Department of Transport and Main Roads. He was previously CEO of TransLink, the public transport operator across Queensland. Prior to joining TransLink, Neil was the Chief Executive and Director General of Merseytravel; the transport authority for Merseyside in the north of England. Along with almost 40 years experience in the transport industry, he is a Fellow of three major UK engineering institutions. He received an OBE for services to public transport in 2005 and in 2011 he was awarded an honorary Fellowship from Liverpool John Moores University for his services to the region.

Shane Gregory (Deputy Chairperson) | Assoc Dip Eng (Civil), MAICD

Shane Gregory is the General Manager State Roads for the Department of State Growth, Tasmania. He started his career in 1985 with the former Highways Department of South Australia where he spent 11 years in various design roles. He moved to Western Australia in 1996 to work with Connell Wagner on public and private infrastructure projects, before relocating to Tasmania in 2000 to work in the civil contracting industry. Prior to his current role he was Manager of Planning and Design for the Department of Infrastructure, Energy and Resources between 2009 and 2012.

Kenneth Kanofski

Ken Kanofski was appointed Chief Executive of Roads and Maritime Services in August 2016. As Chief Executive, he is responsible for leading and managing the performance of the road and maritime networks to meet customer needs. This includes delivery of substantial infrastructure building programs, as well as maintaining, operating and regulating the networks. Prior to his appointment as Chief Executive, Ken spent three years as the Roads and Maritime Chief Operating

Officer. In this role, he was responsible for managing and operating the NSW road network including strategic network planning and investment prioritisation of a $9 billion-dollar a year infrastructure program. Ken has served as a board member and chair on statutory authorities, industry bodies and community organisations.

Adrian Beresford-Wylie | BA(Hons) LLB

Adrian Beresford-Wylie was appointed Executive Director of the Australian Local Government Association (ALGA) in 2006. He was previously a senior public servant in the Australian Public Service and headed the area dealing with local government and natural disasters in the Federal Department of Transport and Regional Services. Other roles include head of the road safety area of the Australian Transport Safety Bureau in 2000-2002 and advisor on maritime and land transport issues to the Hon. John Anderson MP, Deputy Prime Minister and Minister for Transport and Regional Services. He began his public service career in 1984 as a Foreign Affairs Officer with the Department of Foreign Affairs. He has also worked in corporate sales in Telstra and for a large law firm in Sydney.

Tommy Parker

Tommy Parker was General Manager, System Design and Delivery, New Zealand Transport Agency. Originally from the UK, Tommy worked with the New Zealand Transport Agency since its formation in 2009. He has extensive experience in the planning and delivery of transport projects across different modes and in different parts of the world, including the Middle East and the Caribbean. During his time with the New Zealand Transport Agency he was responsible for overseeing the national State Highway network. He also oversaw the establishment of the Auckland Motorway Alliance, helped establish the ATOC (Auckland Transport Operations Centre) and lead substantial capital improvement projects, including New Zealand's largest transport project, a $1.4billion three lane tunnel.

Paul Gelston | BEng (Civil), MIE(Aust)

Paul Gelston was Chief Operating Officer of the Department of Planning, Transport and Infrastructure, South Australia. Before taking up this position in March 2015, he was Director, Road and Traffic Management for four years. Paul has significant knowledge and experience in road and transport engineering. He commenced work in DPTI in 1977 and has held a variety of senior executive positions, including leading the delivery of major projects such as the Gallipoli Underpass on South Road. He has also worked for local government and developed a sound understanding of community service.

Andrew Kirkman

Andrew Kirkman was appointed Chief Executive, Department of Infrastructure Planning and Logistics Northern Territory in July 2015. Prior to this, he held the position of General Manager for the Land Development Corporation and continues to hold the position of Chief Executive of the Darwin Waterfront Corporation. With 17 years experience in the Northern Territory Public Service, he has held key positions in the Department of Housing, Australasia Railway Corporation, Department of the Chief Minister and NT Treasury. Andrew has also worked in finance and commercial roles in the private sector, locally in the mining industry and overseas on public private partnerships.

Peter Todd | BEng (Civil)(Hons), MBA

Peter Todd was the Deputy Chief Executive at VicRoads, Victoria. He was responsible for managing the operation of Victoria's road network, leading the delivery of projects through state-wide regional and project offices, internal technical services to the organisation and management of concessions for private road operators in Victoria. He first joined VicRoads in March 2012, as the Regional Director for Metropolitan South East. Prior to joining VicRoads, Peter was the General Manager Roads and Traffic for the Department of Infrastructure, Energy and Resources in Tasmania (DIER). He joined DIER from the then Transport South Australia where he had extensive experience in planning, design and operations of both metropolitan and rural roads. Peter has more than 30 years experience in road transport engineering, planning, project management and delivery.

Alex Foulds | BA, MBA

Alex Foulds came to the Infrastructure portfolio in 2009. He is currently Executive Director of Surface Transport Policy Division in the Department of Infrastructure, Regional Development and Cities. He is responsible for progressing the Australian Government's national reforms in surface transport policy and regulation (maritime, shipping, rail and road transport), road safety and vehicle design standards. He previously led implementation of the Australian Government's Infrastructure Investment Program, including the delivery, in partnership with states and territories, of major land transport infrastructure projects across Australia. Prior to this, he worked in a variety of Australian Public Service senior policy development, procurement and program delivery roles after a career as an infantry officer in the Australian Defence Force.

Emma Thomas

Emma Thomas is the Director-General for Transport Canberra and City Services (TCCS) and brings extensive experience in both the commercial and public sectors, including major infrastructure projects that span most forms of transport. Prior to leading TCCS, Emma was the Director-General of the Capital Metro Agency, delivering Canberra's first stage of light rail. Prior to this, she was the State Rail Commissioner for South Australia and Deputy Chief Executive of Public Transport. Previous experience also includes senior executive roles at Transport and Main Roads Queensland and Boeing. She commenced her career as an aeronautical engineer in the Royal Australian Air Force.

Peter Woronzow

BA (Economics). Grad Dip Public Sector Management. CPA.

Peter Woronzow has been Acting Managing Director responsible for the day to day operations of Main Roads Western Australia since July 2016. He has worked for Main Roads for 36 years, most recently as Executive Director Finance and Commercial Services a role that includes being the Chief Financial Officer. He has been part of the Corporate Executive Team for 12 years. Peter has been a member of the Alliance Boards that were responsible for delivering the Perth Bunbury Highway, Mandurah Entrance Road and Airport Gateway Projects. He is also a Board member of ARRB Group Ltd.

Louise McCormick (from September 2017)

Louise McCormick is an Executive Engineer, Chartered Fellow and Senior Civil/Structural Engineer with 19 years' experience in the public and private sectors. In 2016, Louise was appointed as the General Manager for Transport and Civil Services Division within the Department of Infrastructure, Planning and Logistics NT. Louise has managed some of the largest transport infrastructure projects in the Territory and contributed towards the Northern Territory's response to the White Paper on Developing Northern Australia from a transport and engineering perspective. Louise has played an active role in Engineers Australia, and her work has been recognised through industry awards for projects and individual awards including Young Professional Engineer of the Year for the NT in 2007; Winner of the 2010 NT Telstra Business Women's Award for Innovation; National Finalist for the 2010 Telstra Business Women's Award for Innovation.

Judith Formston (from January 2018) | Bcom

Judith Formston is Manager, Traffic Operations within the Department of Planning, Transport and Infrastructure, South Australia. Judith is responsible for network operations, the traffic management centre and heavy vehicle access. She is also responsible for heavy vehicle access and heavy vehicle road reform policy advice. Prior to undertaking her current role, she was engaged by the Office of the National Rail Safety Regulator, providing financial management and advice during the transition of jurisdictions into a National Regulatory Model. Over the past 17 years Judith has held a variety of senior policy, finance, budget and investment strategy positions, within the South Australian Government, including within the Department of Planning, Transport and Infrastructure and the Department of Treasury and Finance.

Anita Curnow (from June 2018)

Anita Curnow is the Executive Director Access and Operations at VicRoads, where she has worked in various executive roles over the last 15 years. She is responsible for the day to day operation of the road network and incident response, ITS standards, procurement and asset management, heavy vehicle access, productivity and compliance, road user behaviour policy and programs, and vehicle and motorcycling policy. She has been involved in significant organisational and cultural change at VicRoads, including encouragement of women in technical and leadership roles. Anita was named one of the 2017 Top 50 Public Sector Women in Victoria. She was also named Civil Engineering Alumnus of the Year for 2017, having undertaken both undergraduate and postgraduate studies there, and chairs the department's Industry Advisory Committee.

Company Secretary

The following person held the position of entity Secretary at the end of the financial year:

Nick Koukoulas | MBA, GAICD

Nick Koukoulas commenced with Austroads Ltd on 3 November 2014 as Chief Executive and was appointed company secretary on 6 November 2015 at the Austroads Board meeting. He is also a member of the Executive Committee.

Meetings of Directors

During the financial year, four meetings of directors were held. Attendances by each director were as follows:

Director	Eligible meetings	Meetings attended
Neil Scales	3	2
Shane Gregory	3	3
Kenneth Kanofski	3	3
Adrian Beresford-Wylie	3	3
Tommy Parker	2	1
Paul Gelston	2	1
Andrew Kirkman	1	-
Peter Todd	2	1
Alex Foulds	3	3
Emma Thomas	3	2
Peter Woronzow	3	2
Louise McCormick	2	1
Judith Formston	1	1
Anita Curnow	-	-

Alternate directors attended meetings as follows:

Alternate director	Alternate for	Meetings attended
Louise McCormick	Andrew Kirkman	1
Nicholas Papandonakis	Louise McCormick	1
Dennis Walsh	Neil Scales	-
Kym Foster	Adrian Beresford-Wylie	-
Alan Colegate	Peter Woronzow	-
Jeff McCarthy	Kenneth Kanofski	-
Andrew Wall	Peter Todd	1
David Darwin	Tommy Parker	1
Jim Corrigan	Emma Thomas	1

The Company is limited by guarantee and is incorporated under the *Corporations Act 2001*. If the Company is wound up, the constitution states that each member is required to contribute a maximum of $10 each towards meeting any outstanding obligations of the Company. At 30 June 2018, the total amount that members of the Company are liable to contribute if the Company is wound up is $110 (2017: $110).

Auditor's Independence Declaration

The lead auditor's independence declaration for the year ended 30 June 2018 has been received and can be found on page 69 of the financial report.
Signed in accordance with a resolution of the Board of Directors.

Neil Scales OBE
Chairperson
Dated this 7th day of September 2018

Auditor's Independence Declaration

PITCHER PARTNERS
ACCOUNTANTS • AUDITORS • ADVISORS

AUDITOR'S INDEPENDENCE DECLARATION
TO THE DIRECTORS OF AUSTROADS LIMITED
ABN 16 245 787 323

I declare that to the best of my knowledge and belief, during the year ended 30 June 2018 there have been no contraventions of:

i. the auditor independence requirements as set out in the *Corporations Act 2001* in relation to the audit; and

ii. any applicable code of professional conduct in relation to the audit.

Carl R Millington
Partner

PITCHER PARTNERS
Sydney

7 September 2018

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Statement of Profit or Loss and Other Comprehensive Income for the Year Ended 30 June 2018

	Notes	2018 $	2017 $
Revenue	2	27,296,378	27,839,600
Expenses			
Corporate Expenses	3(a)	4,713,589	4,410,364
Work Program	3(b)	10,802,661	12,369,495
Specific Projects	3(c)	716,049	770,321
Publications	3(d)	108,057	110,311
NEVDIS expenses	3(e)	3,121,702	3,029,098
Total expenses		19,462,058	20,689,589
Surplus for the year		**7,834,320**	**7,150,011**
Other comprehensive income		-	-
Total comprehensive income for the year		**7,834,320**	**7,150,011**
Total comprehensive income attributable to members of the entity		**7,834,320**	**7,150,011**

Statement of Financial Position as at 30 June 2018

	Notes	2018 $	2017 $
ASSETS			
Current assets			
Cash and Cash Equivalents	4	6,852,760	5,997,654
Term Deposits		20,900,000	18,000,000
Trade and Other Receivables	5	2,374,554	2,110,770
Other Assets	6	132,437	223,002
Total current assets		30,259,751	26,331,426
Non-current assets			
Plant and Equipment	7	143,834	232,178
Intangible assets	8	4,041,236	458,769
Other Assets	6	120,004	63,761
Total non-current assets		4,305,074	754,708
Total assets		**34,564,825**	**27,086,134**
LIABILITIES			
Current liabilities			
Trade and Other Payables	9	3,409,486	3,848,487
Provision for Employee Benefits	10	292,721	223,755
Total current liabilities		3,702,207	4,072,242
Non-current liabilities			
Provision for Employee Benefits	10	129,668	115,262
Total non-current liabilities		129,668	115,262
Total liabilities		**3,831,875**	**4,187,504**
Net assets		**30,732,950**	**22,898,630**
Equity			
Accumulated Surplus		6,356,820	7,036,439
NEVDIS Reserve	1(n)	24,376,130	15,862,191
Total Equity		**30,732,950**	**22,898,630**

The accompanying notes form part of these financial statements.

Statement of Changes in Equity for the Year Ended 30 June 2018

	NEVDIS Reserve $	Accumulated Surplus $	Total Equity $
Balance at 1 July 2016	8,573,272	7,175,347	15,748,619
Comprehensive income			
Surplus for the year	-	7,150,011	7,150,011
Transfer to Reserve	7,288,919	(7,288,919)	-
	7,288,919	(138,908)	7,150,011
Balance at 30 June 2017	15,862,191	7,036,439	22,898,630
Comprehensive income			
Surplus for the year	-	7,834,320	7,834,320
Transfer to Reserve	8,513,939	(8,513,939)	-
	8,513,939	**(679,619)**	**7,834,320**
Balance at 30 June 2018	**24,376,130**	**6,356,820**	**30,732,950**

Statement of Cash Flows for the Year Ended 30 June 2018

	Notes	2018 $	2017 $
Cash Flows from Operating Activities			
Member Contributions		16,198,270	17,752,405
Receipts from Customers		11,389,105	10,302,579
Publication Sales		344,731	472,662
Interest Received		600,533	419,444
External Project Funding		1,166,159	1,087,215
Cash generated from operating activities		29,698,797	30,034,305
Salaries and Related Costs		(2,163,193)	(2,426,973)
National Office including Corporate Projects		(7,285,130)	(5,458,711)
Publications		(118,863)	(121,342)
Programs		(12,670,581)	(14,825,876)
Cash used in operating activities		(22,237,767)	(22,832,902)
Net Cash Inflow from Operating Activities	12	**7,461,031**	**7,201,403**
Cash Flow from Investing Activities			
Movement in Term Deposits		(2,900,000)	(10,000,000)
Purchase of Plant and Equipment		(59,348)	(438,709)
Purchase of Intangible Assets		(3,646,577)	-
Cash used in Investing Activities		**(6,605,925)**	**(10,438,709)**
Net increase in cash held		855,106	(3,237,306)
Cash at the beginning of the financial year		5,997,654	9,234,960
Cash at the end of the financial year	4	**6,852,760**	**5,997,654**

The accompanying notes form part of these financial statements.

Notes to the Financial Statements for the Year Ended 30 June 2018

The financial statements are for Austroads Ltd. ("the Company") as an individual entity. The Company is a public entity limited by guarantee, incorporated and domiciled in Australia.

Note 1 — Summary of Significant Accounting Policies

Basis of Preparation

The directors have prepared the financial statements on the basis that the Company is a non-reporting entity because there are no users who are dependent on general purpose financial statements. These financial statements are therefore special purpose financial statements that have been prepared in order to meet the requirements of the Corporations Act 2001. The Company is not-for-profit entity for financial reporting purposes under Australian Accounting Standards.

The financial statements have been prepared in accordance with the mandatory Australian Accounting Standards applicable to entities reporting under the Corporations Act 2001 and the significant accounting policies disclosed below, which the directors have determined are appropriate to meet the needs of members. Such accounting policies are consistent with those of previous periods unless stated otherwise.

The financial statements, except for the cash flow information, have been prepared on an accruals basis and are based on historical costs unless otherwise stated in the notes. The accounting policies that have been adopted in the preparation of the statements are as follows:

The financial statements were authorised for issue on 3 October 2018 by the directors of the Company.

Accounting Policies

(a) Revenue

Membership revenue is recognised over the period of time to which it relates.

Grant revenue is recognised in the statement of comprehensive income when the Company obtains control of the grant and it is probable that the economic benefits gained from the grant will flow to the Company and the amount of the grant can be measured reliably.

If conditions are attached to the grant which must be satisfied before it is eligible to receive the contribution, the recognition of the grant as revenue will be deferred until those conditions are satisfied.

Interest revenue is recognised on a proportional basis taking into account the interest rate and period applicable.

Revenue from the rendering of a service is recognised upon the delivery of the service to the customers.

Publication Sales revenue is recognised monthly when advised by the distributor.

All revenue is stated net of the amount of goods and services tax (GST).

(b) Foreign currency translation

The financial statements of the Company are presented in Australian dollars, the Company's functional and presentation currency.

(c) Income tax

The Company has been exempted from income tax under section 50-5 of the *Income Tax Assessment Act 1997*.

(d) Leases

Payments made under operating leases where substantially all the risks and benefits remain with the lessor are charged to the income statement on a straight-line basis over the lease term.

(e) Plant and Equipment

Plant and equipment are measured on the cost basis less depreciation and impairment losses.

The carrying amount of plant and equipment is reviewed annually by directors to ensure it is not in excess of the recoverable amount from these assets. The recoverable amount is assessed on the basis of the expected net cash flows that will be received from the assets employment and subsequent disposal.

Depreciation

The depreciable amount of all fixed assets is depreciated on a straight line basis over the asset's useful life to the entity commencing from the time the asset is held ready for use.

The depreciation rates used for each class of depreciable assets are:

Class of Fixed Asset	Depreciation Rate
Furniture and office equipment	20 - 33.33%

The assets' residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period.

An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount.

Gains and losses on disposals are determined by comparing proceeds with the carrying amount. These gains or losses are included in the statement of profit or loss and other comprehensive income.

(f) Cash and cash equivalents

Cash and cash equivalents include cash on hand, deposits held at call with financial institutions, and other short term highly liquid investments with original maturities of three months or less.

(g) Trade receivables

All trade debtors are recognised at the amounts receivable as they are due for settlement no more than 120 days from the date of recognition, and no more than 30 days for other debtors.

There is no general provision for doubtful debts, as all receivables are fully recoverable.

(h) Goods and Services Tax (GST)

Revenues, expenses and assets are recognised net of the amount of GST, except where the amount of GST incurred is not recoverable from the Tax Office. In these circumstances the GST is recognised as part of the cost of acquisition of the asset or as part of an item of expense. Receivables and payables in the statement of financial position are shown inclusive of GST.

Cash flows are presented in the statement of cash flows on a gross basis, except for the GST component of investing and financing activities, which are disclosed as operating cash flows.

(i) Provision for employee entitlements

Provisions for long service leave and annual leave are made for all employees from the date of their commencement and are calculated at current pay rates. Additionally, provision is made for On Costs of 13% on long service leave and annual leave.

Provisions for long service leave for service under six years is treated as a non current liability.

(j) Trade and other payables

These amounts represent liabilities for goods and services provided to the Company prior to the end of financial year which are unpaid. The amounts are unsecured and are usually paid within 30 days of recognition.

(k) Income in advance

This represents the invoices raised or monies received during the year but goods and services not yet provided to members and customers at the end of the financial year.

(l) NEVDIS

The Company on behalf of Australian jurisdictional driver licensing and vehicle registration authorities contracted with Fujitsu Australia Limited to operate and maintain the National Exchange Vehicle Driver Information System (NEVDIS) to 8 September 2018. The annual fee is $1,745,724 (ex GST) plus volume based charges.

(m) Intangible assets

Intangible assets acquired separately are recorded at cost less accumulated amortisation and impairment. Amortisation is charged on a straight-line basis over their estimated useful lives.

The estimated useful life and amortisation method is reviewed at the end of each annual reporting period, with any changes in these accounting estimates being accounted for on a prospective basis.

(n) NEVDIS Reserve

A separate NEVDIS reserve is being shown to highlight profit and loss from NEVDIS acitivities and historical NEVDIS reserves brought forward. This reserve is separate to the other activities of Austroads.

(o) Comparative figures

Comparative figures have been adjusted to conform to changes in presentation for the current financial year, where required by Accounting Standards.

(p) Critical accounting estimates

The directors evaluate estimates and judgements incorporated into the financial statements based on historical knowledge and best available current information. Estimates assume a reasonable expectation of future events and are based on current trends and economic data, obtained externally and within the Company.

Key Judgments – Doubtful Debts Provision
Except as disclosed in the financial statements, the directors have assessed each debtor and believe that the full amount of debtors is recoverable.

(q) New accounting standards for application in future periods

Certain Australian Accounting Standards have recently been issued or amended but do not have mandatory application for the 30 June 2018 reporting period. The director's assessment of the impact of new standards and interpretations will not affect any of the amounts recognised in the financial statements.

Note 2 — Revenue

	2018 $	2017 $
(a) Member Contributions		
Membership Contributions	963,000	1,072,200
Membership Contributions (NEVDIS)	2,042,200	2,042,200
Work Program Contributions	11,720,500	13,024,150
	14,725,700	16,138,550
(b) Special Programs and Projects		
DIRD – Australian Bicycle Council Secretariat	45,000	129,150
IPWEA	-	25,000
AGD Funding for Project RS2028	-	-
Willingnes to Pay Study	630,000	1,061,500
Australian Transport and Assessment Planning (ATAP)	308,970	-
NMVTRC Contribution	45,435	-
NEVDIS:		
PPSR Enhancements Recovery	2,500,000	2,500,000
VIRS Commercial Phase	1,203,488	1,193,596
Safety Recalls	745,132	1,069,296
AEC Extract Charges	214,916	211,522
Data Extracts	16,512	16,512
DVS Private Sector	5,164,991	4,101,267
VSA income	41,650	26,950
WMI income	40,250	18,200
P2V Income - Vehicle	407,657	281,418
NHVR - Staff	212,028	57,972
RAV Project	55,608	45,747
	11,631,637	10,738,130
(c) Publications		
Gross Sales Revenue	303,619	421,451
Royalties	1,076	13,376
	304,695	434,827
(d) Interest Received		
Short Term Investments	228,050	274,769
Short Term Investments (NEVDIS)	362,305	224,350
Rental Bond Deposit	1,267	256
Rental Bond Deposit (NEVDIS)	8,911	8,663
	600,533	508,038
(e) Other Income		
Other income	200	-
Other income (NEVDIS)	33,613	20,055
	33,813	20,055
Total revenue	27,296,378	27,839,600

Note 3 — Expenses

	2018 $	2017 $
(a) Corporate		
Salaries and Related Charges	832,944	807,243
Salaries and Related Charges (NEVDIS)	1,413,621	1,499,731
Program Management	1,960,578	1,635,507
Corporate Services	49,803	31,507
Depreciation	46,505	39,151
Other National Office Expenses	410,138	397,225
	4,713,589	**4,410,364**
(b) Work Program		
Corporate Projects – Board Priorities	686,546	-
Safety	1,614,284	3,627,471
Assets	5,426,294	6,870,331
Network	2,461,670	1,653,634
Connected and Automated Vehicles	613,867	218,059
	10,802,661	12,369,495
(c) Specific Projects		
DIRD - Australian Bicycle Council Secretariat	90,200	129,147
AFTD Printing	-	44,508
AFTD Future Delivery	2,150	10,120
International Participation	47,913	65,170
Austroads ARRB Fellowship	-	30,000
Redevelop/Ongoing Austroads Databases and Publications Website	3,770	21,300
National Safety Barrier Assessment Panel - Independent Consultant	25,855	21,276
Australian Transport and Assessment Planning (ATAP)	168,119	123,127
CPEE Support	21,500	26,000
Support to ALGA Reps	17,880	10,156
Value of Travel Time Willingness to Pay	326,057	235,570
Discussion Paper Future of Road Authorities and Funding Issues	-	24,897
Austroads Guide online analysis	12,605	29,050
	716,049	**770,321**
(d) Publications		
Cost of Sales	66,057	68,311
Production and Distribution Management	42,000	42,000
	108,057	**110,311**

	2018 $	2017 $
(e) NEVDIS expenses		
Fujitsu Subscription and Operating Costs	2,505,428	2,524,631
NEVDIS RAV Project	52,102	77,260
Amortisation	64,110	52,299
Depreciation	101,187	92,426
Rent	126,223	121,262
Other	272,652	161,220
	3,121,702	**3,029,098**
Total Expenditure	**19,462,058**	**20,689,589**

Note 4 — Cash and Cash Equivalents

CURRENT		
Cash at bank and on hand	1,482,016	1,792,350
Cash at Bank (NEVDIS)	1,370,744	1,005,304
Short-term deposits and deposits at call	4,000,000	3,200,000
	6,852,760	**5,997,654**
Cash at the end of the financial year is reconciled to the statement of cash flow as follows:		
Cash and cash equivalents	**6,852,760**	**5,997,654**

Note 5 — Trade and Other Receivables

CURRENT		
Trade debtors	17,275	33,176
Trade debtors (NEVDIS)	221,265	249,419
Sundry and other debtors (NEVDIS)	2,086,477	1,769,072
Net Receivable from ATO	-	-
Accrued Income	49,537	59,103
	2,374,554	**2,110,770**

Note 6 — Other Assets

CURRENT		
Prepayments	42,422	38,861
Prepayments (NEVDIS)	90,015	129,166
Rental Deposit Bond	-	54,975
	132,437	**223,002**
NON-CURRENT		
Rental Deposit Bond	56,243	-
Rental Deposit Bond (NEVDIS)	63,761	63,761
	120,004	**63,761**

Note 7 — Plant and Equipment

NON-CURRENT		
Furniture and Office Equipment		
At Cost	239,850	200,317
Accumulated depreciation	(183,366)	(136,140)
	56,484	64,177
NON-CURRENT		
Furniture and Office Equipment (NEVDIS)		
At Cost	308,246	287,710
Accumulated depreciation	(220,896)	(119,709)
	87,350	168,001
Total Plant and Equipment	**143,834**	**232,178**

Note 8 — Intangible Assets

	2018 $	2017 $
NON-CURRENT		
Computer Software (NEVDIS)		
At Cost	192,350	192,350
Accumulated depreciation	(117,204)	(53,094)
	75,146	139,256
Work in Progress - Computer Software	3,966,090	319,513
Total Intangible Assets	**4,041,236**	**458,769**

Note 9 — Trade and Other Payables

CURRENT		
Trade and Other Payables	2,034,823	2,629,622
Other Payables	98,290	41,820
Trade and Other Payables (NEVDIS)	713,256	313,402
Other Payables (NEVDIS)	21,840	11,099
Net Payable to ATO	45,308	79,397
Accrued Expenses	182,800	568,888
Accrued Expenses (NEVDIS)	313,169	204,259
	3,409,486	**3,848,487**

Note 10 — Provision for Employee Benefits

CURRENT		
Provisions for Annual Leave	98,513	93,228
Provisions for Annual Leave (NEVDIS)	99,846	61,630
Provisions for Long Service Leave	94,362	68,897
	292,721	**223,755**
NON-CURRENT		
Provisions for Long Service Leave (NEVDIS)	64,427	50,021
Provisions for Long Service Leave	65,241	65,241
	129,668	**115,262**

Note 11 — Members' Guarantee

The Memorandum of Association of the Company provides that the liability of members is limited and that every member of the Company undertakes to contribute to the assets of the Company, in the event of it being wound up while he is a member, or within one year after he ceases to be a member and of the costs, charges and expenses of winding up and of the adjustment of rights of the members among themselves, such amount as may be required, not exceeding ten dollars ($10) per member.

Note 12 — Cash Flow Information

Reconciliation of profit from ordinary activities to net cash generated from operating activities

	2018 $	2017 $
Surplus for the year	7,834,320	7,150,011
Adjustment for non-cash-flow items:		
- Depreciation and amortisation	211,802	183,876
Change in operating assets and liabilities:		
- (Increase) in trade and other receivables	(263,784)	(116,154)
- Decrease/(increase) in other assets	34,322	(19,991)
- (Decrease)/increase in trade and other payables	(439,001)	180,536
- (Decrease) in income received in advance	-	(250,000)
- Increase in provision for employee benefits	83,372	73,125
Net Cash Generated from Operating Activities	**7,461,031**	**7,201,403**

Note 13 — Renumeration of Directors

No remuneration was paid or payable to directors in respect to or during the financial year.

	2018 $	2017 $

Note 14 — Renumeration of Auditors

During the year, the auditor of the company earned the following remuneration:

Audit of the financial statements	27,300	21,800
Other services	2,565	9,300
	29,865	31,100

Note 15 — Lease Commitments

Operating Lease Commitments – being for the rent of office:

Payable – minimum lease payments		
- Not later than 12 months	287,920	275,374
- Between 12 months and 5 years	615,819	259,379
	903,739	534,753

The lease for Austroads National Office expired on 30 June 2018 and a variation lease agreement was signed for a further term of 3 years. The current lease for Austroads NEVDIS will expire on 30 June 2020. A variation lease agreement was signed to align the termination date with Austroads National Office. Both leases for level 9 287 Elizabeth Street will now expire 30 June 2021.

Note 16 — Capital Commitments

Contracted for:		
NEVDIS re-platform, re-write software projects, NHVR and Wan Refresh	1,105,337	1,152,005
Less: Paid to 30 June 2018	(647,556)	(220,476)
Remaining Commitment	457,781	931,529

There are no other capital expenditure commitments contracted for as at 30 June 2018.

Note 17 — Contingent Liabilities or Assets

At 30 June 2018, the Company has no contingent liabilities or assets (2017: Nil).

Note 18 — Matters Subsequent to the End of the Financial Year

Ministers at the May 2018 Transport Infrastructure Council (the Council) meeting made the decision to 'fold Transport Certification Australia (TCA) into Austroads' and that the Austroads Board 'in consultation with the TCA Board, to develop timelines and actions necessary to manage the transition, with a report to Council through Transport and Infrastructure Senior Officers Committee (TISOC) in the second half of 2018'.

Austroads Board members endorsed this decision at their meeting on 5 July 2018 and instructed the Chief Executive: 'legal representation be engaged and the merger and acquisition, legal and due diligence processes required to merge TCA into Austroads commence as soon as possible'.

This process has commenced. Reports will be provided at the TISOC meeting on 21 September 2018 and the Council meeting on 9 November 2018.

Note 19 — Company Details

The registered office and principal place of business of the Company is: Level 9, 287 Elizabeth Street, SYDNEY NSW 2000

Directors' Declaration for the Year Ended 30 June 2018

The directors of Austroads Ltd. ("the Company") have determined that the Company is not a reporting entity, and that this special purpose financial report should be prepared in accordance with the accounting policies outlined in Note 1 to the financial statements.

The directors declare that the financial reports and notes set out on pages 70 to 75, are in accordance with the *Corporations Act 2001*, and:

1. The financial statements are in accordance with the *Corporations Act 2001* and:
   (a) comply with applicable Accounting Standards; and
   (b) give a true and fair view of the Company's financial position as at 30 June 2018 and of its performance for the financial year ended on that date in accordance with the accounting policies described in Note 1 of the financial statements.
2. In the directors' opinion, there are reasonable grounds to believe that the Company will be able to pay its debts as and when they become due and payable.

This declaration is made in accordance with a resolution of the directors.

Neil Scales OBE
Chair
Dated this 3rd day of October 2018

Independent Auditor's Report

PITCHER PARTNERS
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INDEPENDENT AUDITOR'S REPORT
TO THE DIRECTORS OF AUSTROADS LIMITED
ABN 16 245 787 323

Report on the Financial Report

Opinion

We have audited the special purpose financial report of Austroads Limited "the Company", which comprises the statement of financial position as at 30 June 2018, statement of profit or loss and other comprehensive income, statement of changes in equity and statement of cash flows for the year then ended, notes comprising a summary of significant accounting policies and other explanatory information.

In our opinion, the accompanying financial report of Austroads Limited is in accordance with the *Corporations Act 2001*, including:

(a) giving a true and fair view of the Company's financial position as at 30 June 2018 and of its performance for the year then ended; and
(b) complying with Australian Accounting Standards to the extent described in Note 1, and the *Corporations Regulations 2001*.

Basis for Opinion

We conducted our audit in accordance with Australian Auditing Standards. Our responsibilities under those standards are further described in *the Auditor's Responsibilities for the Audit of the Financial Report* section of our report. We are independent of the Company in accordance with the auditor independence requirements of the *Corporations Act 2001* and the ethical requirements of the Accounting Professional and Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants* "the Code" that are relevant to our audit of the financial report in Australia. We have also fulfilled our other ethical responsibilities in accordance with the Code.

We confirm that the independence declaration required by the *Corporations Act 2001*, which has been given to the directors of the Company, would be in the same terms if given to the directors as at the time of this auditor's report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

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INDEPENDENT AUDITOR'S REPORT
TO THE DIRECTORS OF AUSTROADS LIMITED
ABN 16 245 787 323

PITCHER PARTNERS

Emphasis of Matter – Basis of Accounting

We draw attention to Note 1 to the financial report, which describes the basis of accounting. The financial report has been prepared for the purpose of fulfilling the directors' financial reporting responsibilities under the *Corporations Act 2001*. As a result, the financial report may not be suitable for another purpose. Our opinion is not modified in respect of this matter.

Other Information

The directors are responsible for the other information. The other information comprises the information included in the Company's annual report for the year ended 30 June 2018, but does not include the financial report and the auditor's report thereon.

Our opinion on the financial report does not cover the other information and accordingly we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial report, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial report or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the Directors for the Financial Report

The directors of the Company are responsible for the preparation of the financial report that gives a true and fair view and have determined that the basis of preparation described in Note 1 to the financial report is appropriate to meet the requirements of the *Corporations Act 2001* and is appropriate to meet the needs of the members. The directors' responsibility also includes such internal control as the directors determine is necessary to enable the preparation of a financial report that gives a true and fair view and is free from material misstatement, whether due to fraud or error.

In preparing the financial report, the directors are responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Company or to cease operations, or have no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Report

Our objectives are to obtain reasonable assurance about whether the financial report as a whole is free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of this financial report.

INDEPENDENT AUDITOR'S REPORT
TO THE DIRECTORS OF AUSTROADS LIMITED
ABN 16 245 787 323

PITCHER PARTNERS

Auditor's Responsibilities for the Audit of the Financial Report (Continued)

As part of an audit in accordance with the Australian Auditing Standards, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the directors.
- Conclude on the appropriateness of the directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial report or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial report, including the disclosures, and whether the financial report represents the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

C MILLINGTON
Partner

PITCHER PARTNERS
Sydney

22 October 2018

Abbreviations

AAPA	Australian Asphalt Pavement Association
ACMA	Australian Communications Media Authority
AS	Australian Standard
ABC	Australian Bicycle Council
ACT	Australian Capital Territory
ALGA	Australian Local Government Association
ANZPAA	Australia New Zealand Policing Advisory Agency
ARRB	ARRB Group
ATOG	Australasian Tunnel Operators Group
ATS	Australasian Tunnelling Society
Auststab	Pavement Recycling and Stabilisation Association
BITRE	Bureau of Infrastructure, Transport and Regional Economics
C-ITS	Cooperative Intelligent Transport Systems
DSG Tas	Department of State Growth Tasmania
DIPL NT	Department of Infrastructure, Planning and Logistics Northern Territory
DIRD	Department of Infrastructure and Regional Development
DJCS ACT	Directorate of Justice and Community Safety Australian Capital Territory
DLP NT	Department of Lands and Planning Northern Territory
DoI NT	Department of Infrastructure Northern Territory
DoT NT	Department of Transport Northern Territory
DoT WA	Department of Transport Western Australia
DTMR Qld	Department of Transport and Main Roads Queensland
DPTI SA	Department of Planning, Transport and Infrastructure South Australia
DVS	Document Verification Service
IPWEA	Institute of Public Works Engineering Australasia
ITS	Intelligent Transport Systems
LMA	Linking Melbourne Authority
LTPP	Long Term Pavement Performance
MoT NZ	Ministry of Transport New Zealand
MR WA	Main Roads Western Australia
NAU	NEVDIS Administration Unit
NBN	National Broadband Network
NEVDIS	National Exchange of Vehicle and Driver Information System
NHVR	National Heavy Vehicle Regulator
NMVTRC	National Motor Vehicle Theft Reduction Council
NPI	National Performance Indicators
NRSEG	National Road Safety Executive Group
NRSS	National Road Safety Strategy 2011-2020
NSW	New South Wales
NTC	National Transport Commission
NZ	New Zealand
NZTA	New Zealand Transport Agency
PBS	Performance Based Standards
PMB	Polymer Modified Binders
PDF	Portable Document Format
WRA	World Road Association
PPSR	Personal Property Security Register
REAAA	Road Engineering Association of Asia and Australasia
RMS NSW	Roads and Maritime Services New South Wales
RUE	Road User Effects
SA	Standards Australia
SMA	Stone Mastic Asphalt
TAMS ACT	Department of Territory and Municipal Services Australian Capital Territory
TCCS	Transport Canberra and City Services Directorate
TfNSW	Transport for NSW
TISOC	Transport and Infrastructure Senior Officials' Committee
VIC	Victoria
VicRoads	Roads Corporation Victoria
VIN	Vehicle Identification Number
VIRS	Vehicle Information Request System
WA	Western Australia

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