Annual Report 2015-16

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Austroads is the association of Australasian road transport agencies

Austroads' purpose is 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.

Austroads member organisations are:

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

The success of Austroads is derived from the collaboration of member organisations and others in the road industry. It aims to be the Australasian leader in providing high quality information, advice and fostering research in the road transport sector.

2015-16 Overview

- $12.9m research work program expenditure
- 10.6 (full-time equivalent) national office staff and 8.6 NEVDIS staff
- 62 projects completed
- 79 publications released
- 317,000 Austroads publications sold and downloaded
- 125 million NEVDIS transactions

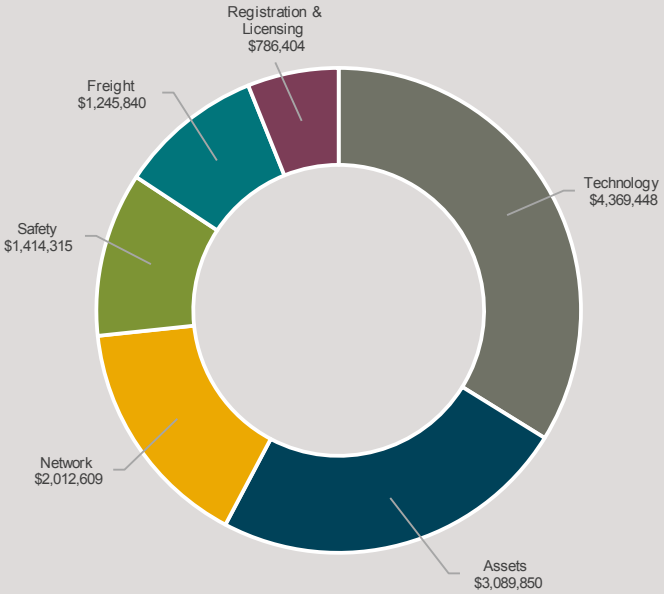
Work Program

Austroads tracks progress on all projects and reports to the Board at each meeting on the overall delivery of the work program.There were 148 projects approved in the 2015-16 work program, with 99 projects continuing from previous financial years and 49 new projects starting in 2015-16.There were 37 projects scheduled for completion in 2015-16. Seventeen were completed on schedule.

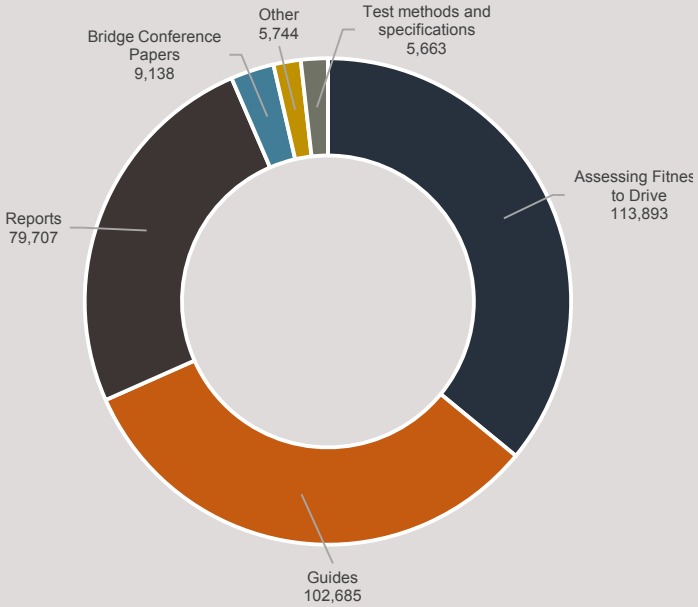
During 2015-16 a total of 62 projects were completed, two projects were cancelled and one was deferred, making a total of 65. The table below provides a comparison of work program status figures as at 30 June for the last five financial years.

In 2016-17, 83 projects will carry over from 2015-16 and there will be 38 new projects making a total of 121.

Research expenditure by program



Publication downloads and sales



Status of Austroads work program

Year	Number of projects					
	Completed	Cancelled or Deferred	12 months + late	6 - 12 months late	On time and < 6 months late	Total
2011-12	44	5	3	4	81	137
2012-13	46	7	6	0	107	166
2013-14	39	6	7	11	110	173
2014-15	59	8	11	4	84	166
2015-16	62	3	2	1	80	148

Chair's Report

This is the final year for the delivery of the Austroads Strategic Plan 2012-16. Significant progress was made delivering the strategic priorities outlined in the plan. This year alone the Program Managers and Coordinators delivered another impressive work program with 62 projects completed. In the life of the strategic plan 278 publications were produced and more than 850,000 were accessed.

The Board and I are extremely grateful for the Program Managers and Program Coordinators efforts in this final year of the strategic cycle. The Program Managers, who undertake their Austroads roles in addition to their day-to-day work commitments, deserve particular recognition. They have led their task forces and working groups to deliver a substantial body of work.

I am proud of the Board's collaborative efforts to develop the next strategic plan and commend the work of Chief Executive, Nick Koukoulas and his team to reshape the organisation in preparation of its delivery.

The 2016-2012 Austroads Strategic Plan will reposition Austroads for a strong, relevant and sustainable future by:

- acquiring research on a strongly competitive and value for money basis
- driving a research base that is cutting edge, leveraging off organisational capability and wider networks
- tracking the use and benefits of the research undertaken
- refocussing the project culture from quantity to quality with a new focus on adoption and visibility of outputs, timely delivery and alignment/collaboration between work streams
- improving stakeholder coordination and collaboration
- improving the organisation's agility and responsiveness.

In November 2015 we saw the first on-road trials of driverless cars in the Southern Hemisphere undertaken in Adelaide's southern suburbs.

Austroads is taking a lead role in this space and has commissioned a pivotal study to assess key issues road operators will face with the introduction of automated vehicles (AV) on Australian roads.

The project will draw on international and local expertise and be led by Austroads Program Director of Connected and Automated Vehicles, Stuart Ballingall.

Peter Duncan AM

It's not a matter of if but when automated vehicles will operate on our roads. Governments, road agencies and private road operators throughout the world will need to be ready to deal with the significant operational, social and economic ramifications of AV.

The key deliverable from this project will be guidance to road agencies, private road operators and other key stakeholders on what changes may be required to the way road networks are managed, so there is a consistent approach towards supporting and optimising the outcomes from the introduction and use of AV.

Austroads is also undertaking separate projects to investigate the potential registration and licensing issues with the introduction of AV and the safety benefits of Cooperative ITS and AV.

It's certainly an exciting time to be involved in transport and while I am looking forward to my retirement from Roads and Maritime Services later in 2016, I will still take an active interest in this fascinating area.

Austroads is an extraordinary organisation. It's work to bring about nationally harmonised practice is often very challenging. But it is mostly successful and the research and negotiation process that brings both individuals and organisations to that point of agreement is enriching on a personal, agency, national and international level.

I have been privileged to serve on the Austroads Board as a Director for five years and as Chair since October 2014. I am confident that Austroads will thrive well into the future and wish the Board, management, staff and all who are involved with the organisation every success in the future.

Peter Duncan AM
Chair, Austroads

Chief Executive's Report

With the delivery of the final work plans for the 2012-16 strategic plan and the preparations for the 2016-20 plan, the 2015-16 year has been challenging and fulfilling.

I am very pleased to note that all completed research projects were within their allocated budget. The completion of projects within their scheduled timeframe continues to be a challenge but has substantially improved this year. Of the 37 projects scheduled for completion by 30 June 2016, 13 were completed by that date. At 30 June there were only three projects running more than six months late, a significant reduction from 15 the previous year.

As the financial summary below shows, NEVDIS performed strongly again in the 2015-16 financial year. The increase in the demand for the services provided by NEVDIS continues to grow and I expect that the additional revenue raised through NEVDIS will partially offset jurisdictional contributions to Austroads in the future.

The 2016-20 strategic plan will reshape the way Austroads manages its work program and administers research projects.

The work of Austroads is highly respected and we will continue to fund strategic research and embrace collaboration and cooperation to ensure that this continues. We will continue to maintain the world renowned Austroads Guides and promote a harmonised approach to the design, maintenance and operation of road networks. Knowledge sharing will continue to be our core business.

However Austroads must design and implement an operational model that is sustainable and meets future needs.

Nick Koukoulas

Under the new four-year plan, the Austroads Programs will be consolidated to broaden the portfolio of work undertaken. The new Assets, Safety and Network Programs will be led by a full-time Program Manager. Program Managers will be director or senior executive level staff, seconded to Austroads for a temporary contract. Full-time Program Coordinators will be employed in Austroads National Office to provide administrative support to the Program Managers.

Austroads Task Forces will continue to play an essential role and their membership will continue to be drawn from member agencies.

We have worked hard to ensure that the systems are in place to support delivery of the new plan at the beginning of the 2016-17 financial year. I am looking forward to working with the new Program Managers as they lead the development of research work programs to deliver the objectives of the plan.

Nick Koukoulas
Chief Executive, Austroads

2015-16 Financial Summary

Income and Expenditure to 30 June 2016

	Austroads	NEVDIS	Consolidated
Revenue	$14,696,858	$8,584,456	$23,281,314
Expenses	-$15,913,949	-$4,193,886	-$20,107,835
Surplus/deficit for the year	**- $1,217,091**	**$4,390,570**	**$3,173,479**

Statement of Financial Position as at 30 June 2016

	Austroads	NEVDIS	Consolidated
Total assets	$10,623,139	$9,564,461	$20,187,600
Total liabilities	-$3,447,792	-$991,189	-$4,438,981
Net assets	**$7,175,347**	**$8,573,272**	**$15,748,619**
Equity			
Accumulated surplus b/f	$8,392,438	$4,182,702	$12,575,140
Surplus/deficit for the year	- $1,217,091	$4,390,570	$3,173,479
Total equity	**$7,175,347**	**$8,573,272**	**$15,748,619**

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 November 2014 meeting the Austroads Board determined new appointments to important leadership positions on the Board and Executive Committee.

Peter Duncan AM, Chief Executive, Roads and Maritime Services New South Wales, was appointed Chair of the Austroads Board for a two year term in November 2014. Mr Duncan will retire from the Board in October 2016.

In November 2014 Clare Gardiner-Barnes, then Chief Executive, Department of Transport Northern Territory, was appointed Deputy Chair. In August 2015 Ms Gardiner-Barnes accepted a new role as Deputy Secretary, Freight, Strategy and Planning at Transport for New South Wales.

In October 2015 Neil Scales OBE, Director General of the Department of Transport and Main Roads Queensland was appointed Deputy Chair.

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

The Austroads Executive Committee comprises:

- Peter Duncan AM, Austroads Chair
- Neil Scales OBE, Austroads Deputy Chair
- Shane Gregory, Department of State Growth Tasmania
- Stephen Troughton, Main Roads Western Australia
- Nick Koukoulas, Austroads Chief Executive.

Activities

Austroads:

- conducts strategic research by undertaking projects which assist road agencies to address current and emerging issues that have the potential to have a major impact on their operation
- develops and publishes Guides for adoption by road agencies to establish national consistency on the technical and operational aspects of road networks
- facilitates the sharing of knowledge by promoting the wide dissemination of research outputs, conducting seminars, and promoting the use of Austroads work
- Conducts business activities on behalf of Australasian road agencies
- maintains and develops NEVDIS on behalf of road agencies as an essential national vehicle and driver licence information exchange
- 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 eight 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.

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 2015-16 Austroads recognised the following people for their exceptional service.

Outstanding Service Award

Michael Sutton – DIRD

Michael has been a long-time supporter of Austroads in a variety of capacities including Program Manager, Freight Task Force Chair and Alternate Board Member.

His contributions to Austroads particularly at Board meetings as a Program Manager / Alternate Board Member / Commonwealth Representative have always been insightful, well balanced and aimed at the best result for all involved.

His advice and ongoing support and guidance of Austroads particularly at times through Commonwealth processes has been invaluable and greatly appreciated.

He has always been a champion of the Austroads cause and has provided a great deal of support aimed at ensuring Austroads is continually being valued by its members and the broader road and transport industry of Australia and New Zealand.

Citation for the award: In recognition of your outstanding contribution to Austroads and its activities as a Program Manager / Alternate Board Member / Commonwealth Representative over an extended period. Your work and enthusiastic support has ensured that Austroads continues to be valued and highly regarded by its members and the broader road and transport industry of Australia and New Zealand.

Austroads Special Commendation

Robert Hogan – DIRD

Robert has made an extensive contribution to improving safety through his most recent role as General Manager, Vehicle Safety Standards with the Department of Infrastructure and Regional Development, as well as prior roles in road safety, infrastructure investment and other areas in the Department.

He played a leading role in the development of a Global Technical Regulation on Pole Side Impact, which will measurably reduce deaths and injuries from road crashes across the world and in Australia, where more than 20 per cent of road deaths each year are from side impacts.

He also provided a leadership role in the development of the National Road Safety Strategy 2011-2020 and the Action Plan for 2015-2017, setting a strong agreed national agenda for vehicle safety improvement.

Citation for the Award: In recognition of your outstanding contribution to improving road safety both nationally and internationally, and your role in the development of the National Road Safety Strategy 2011-2020 and the Action Plan for 2015-2017, setting a strong agreed national agenda for vehicle safety improvement.

Achievement Award

Leo Mortimer – New Zealand Ministry of Transport

Citation for the Award: In recognition of your significant contribution to improving road safety in New Zealand and internationally through your role on the Austroads Safety Task Force from 2012 - 2016, representing the New Zealand Ministry of Transport.

World Road Association

In November 2015, then Deputy Prime Minister Warren Truss lead the 40+ Australasian delegation to the 25th World Road Congress in Seoul.

Austroads sponsored the award for the best paper submitted in the category of 'Safety of Road Users and Road Workers'. Neil Scales, DTMR Qld, presented Canadians Paul De Leur and David Hill with the award for their paper *Justifying Road Safety Investments for Locations without Collisions by Quantifying Road Safety Risk*.

The award for 'Road Maintenance and Operation' category, sponsored by the USA, was presented to David Hinds, DTMR Qld for his paper *Transport Network Reconstruction-Recovering from Multiple Natural Disasters*.

Austroads also conducted a national competition for the best paper from a young professional from Australia or New Zealand. The winner, Catherine Roh, NZTA, presented her paper at the Technical Committee 1.5 Risk Management.

In February 2016 Austroads appointed a strong team of local practitioners to participate in the World Road Association (PIARC) technical committees.

The appointments were made to coincide with the release of PIARC's 2016-2019 Strategic Plan. The Plan has five central strategic themes:

- Management and finance
- Access and mobility
- Safety
- Infrastructure
- Climate change, environment and disasters

PIARC established 18 technical committees and four task forces to conduct joint studies related to the strategic themes. Australian and New Zealand representatives have been nominated to serve on 15 committees and three task forces, with 11 as corresponding members and 14 as full members. Helen Murphy from VicRoads was appointed Chair of Technical Committee TC E.2 Environment Considerations in Road Projects and Operations and Rob Hannaby from NZTA will be the Committee's English-Speaking Secretary.

Representatives are expected to report regularly on the work of their PIARC committees. Reports are available on the Austroads website.

Strategic Achievements 2012-16

This is the last year of the Austroads four-year strategic cycle. In that time Austroads has made significant achievements across all eight priorities identified in the 2012-16 Strategic Plan.

Leadership | Austroads will play a leadership role in the Australasian transport sector and be a major contributor to the national reform agenda

- Implementation of our Identity Proofing Guidelines will help prevent identity theft and improve national security outcomes.
- Our National Road Safety Action Plan 2015-2017 will focus national efforts to deliver long-term improvements to the safety of Australia's road transport system.

Relationships | Austroads will build strong relationships with stakeholders in the transport sector and foster a collaborative approach across the sector

- We regularly collaborate with a wide range of industry stakeholders, including the National Transport Commission, the Bureau of Infrastructure, Transport and Regional and Economics, and the National Heavy Vehicle Regulator.
- We engage with the World Road Association and have collaboration agreements in place with equivalent organisations in other countries to keep abreast of emerging trends and to share knowledge.

Customer Service | Assisting member agencies to identify and understand community needs and achieve social outcomes

- Our collaboration with the Commonwealth provides motor vehicle dealers, business and consumers with a national "one stop" consumer protection service, via the Personal Property Securities Register.
- Our heavy vehicle research identified ways to reduce road noise and improve drivers' braking techniques on steep descents, resulting in direct safety and environmental benefits to communities.
- An Austroads learning resource and assessment model is working to close the gap between urban mainstream and remote indigenous learner drivers.
- Our three tiered overseas driver licensing system effectively balances the need to strengthen bilateral relationships against the need to maintain strong road safety outcomes.
- Our National Exchange of Vehicle and Driver Information System (NEVDIS) enables critical registration and licensing processes to be undertaken by every state and territory.

Asset Management | Assisting member agencies to provide the road network services the community needs at least long term cost

- Our improved understanding of the impact of high productivity freight on pavements has informed policy development about freight access and user charges.
- Our advice about the potential impact of emerging technology on asset management has enabled jurisdictions to improve their asset management practices.
- Our research into pavement decay and condition measurement has made the asset management of pavements more effective.
- Our agreed approaches to harmonising test methods have improved the comparability of condition and performance metrics.

Productivity | Assisting member agencies to maximise the contribution that roads and related infrastructure make to the economy

- Our National Prequalification System for Civil Construction has reduced red-tape, administrative burden and cost overheads to contractors working across borders.
- *Building and Construction Procurement Guide* providing a consistent and clear approach to procurement for government and industry.
- Our vehicle information services streamline insurance quotation processes and reduce the potential for fraud.
- Our research identified $12.6 billion in safety, productivity and environmental savings by 2030 through the use of high productivity vehicles.
- New guidelines standardising bridge barrier designs have provided consistency and cost savings to designers, contractors and agencies.
- Our pavement research has allowed agencies to significantly reduce their costs while maintaining safety.
- The development of a regulatory and operational framework for C-ITS will ensure that emerging C-ITS equipment and services can be deployed locally and operate effectively.
- The adoption of our national ITS Architecture will improve road agency responsiveness to the adoption of emerging technologies through improved system integration, interoperability and standardisation of specifications.
- The adoption of our Network Operational Planning Framework will improve planning for an integrated, multi-modal network.

Road Safety | Assisting member agencies to reduce the impact of road trauma

- Our research is helping road agencies move towards Safe System principles as they design, build and operate their networks.
- Introducing nationally consistent, engineering based, criteria for the assessment of written-off vehicles has reduced the potential for re-birthing severely damaged vehicles.
- Improved road design guidance to accommodate newer types of heavy freight vehicles and establishment of the national Heavy Vehicle Competency Framework, has improved safety for heavy vehicle users and the community.
- Comprehensive national medical standards for driver licensing have helped health professionals and licensing authorities to assess driver capability.
- Consistent national criteria that restrict access to high powered vehicles by novice drivers has made it easier for law enforcement agencies and car sellers to identify a high powered vehicle.
- Current work will establish a national library of Hazard Perception Test scenarios for motor vehicles and, in a world first, for motorcycles.

Environmentally Sustainable Transport | Assisting member agencies to manage the delivery of infrastructure services and use of the road network in a more sustainable way

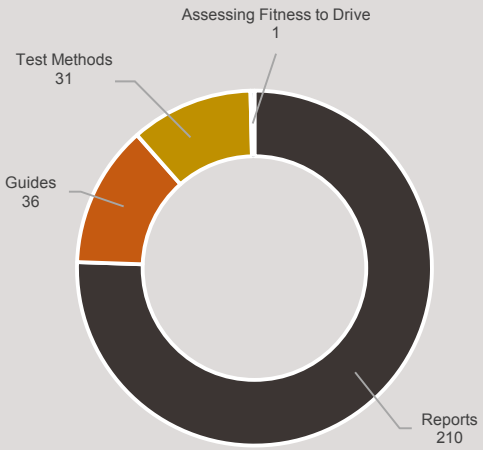
- Our research will maximise the use of geopolymer concrete (made from waste or industrial by-products) and reclaimed asphalt.
- The Australian Bicycle Council provides a forum for sharing information between stakeholders implementing the National Cycling Strategy 2011-16.

Knowledge Sharing | Austroads will create improved distribution, sharing, learning and innovation to support decision making

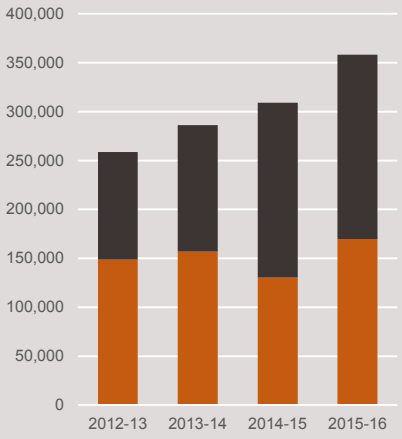
- Our Task Forces and Working Groups provide an important forum for road and transport agencies to exchange information on national and international projects and issues.
- The Austroads Guides are Australasia's leading road engineering guidelines. Respected internationally, they cover the full range of road agency operations and have been adopted as primary references by all member agencies.
- The charts on the following page indicate the success of Austroads knowledge sharing activities in the 2012-16 strategic cycle.

Knowledge sharing outcomes 2012-16

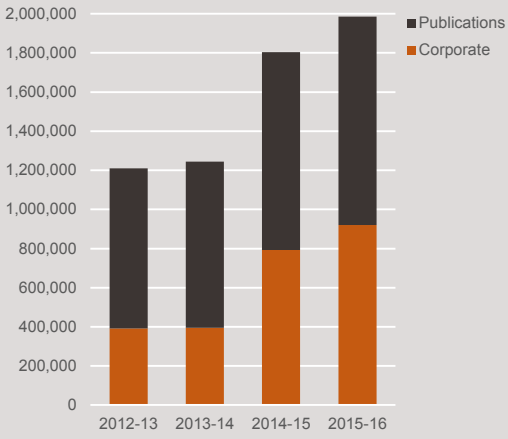
278 publications produced 2012-16



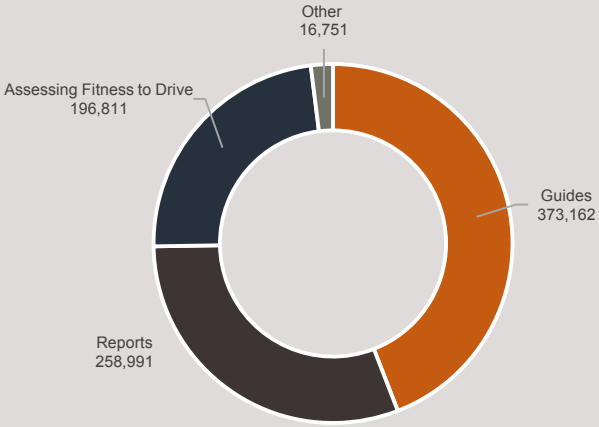
1.2 million website users 2012-16



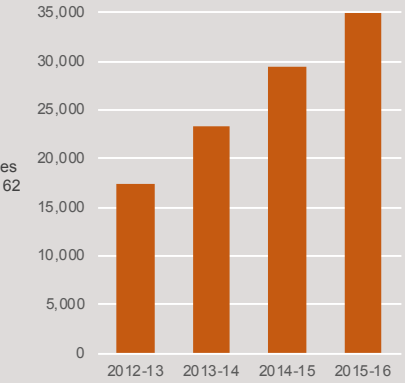
6.2 million website pages viewed 2012-16



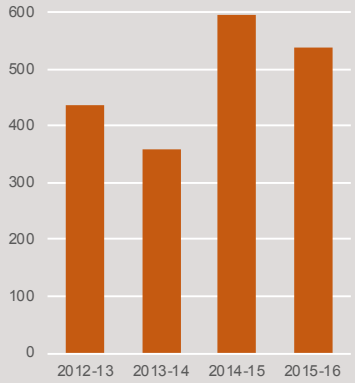
850,000 publications accessed 2012-16



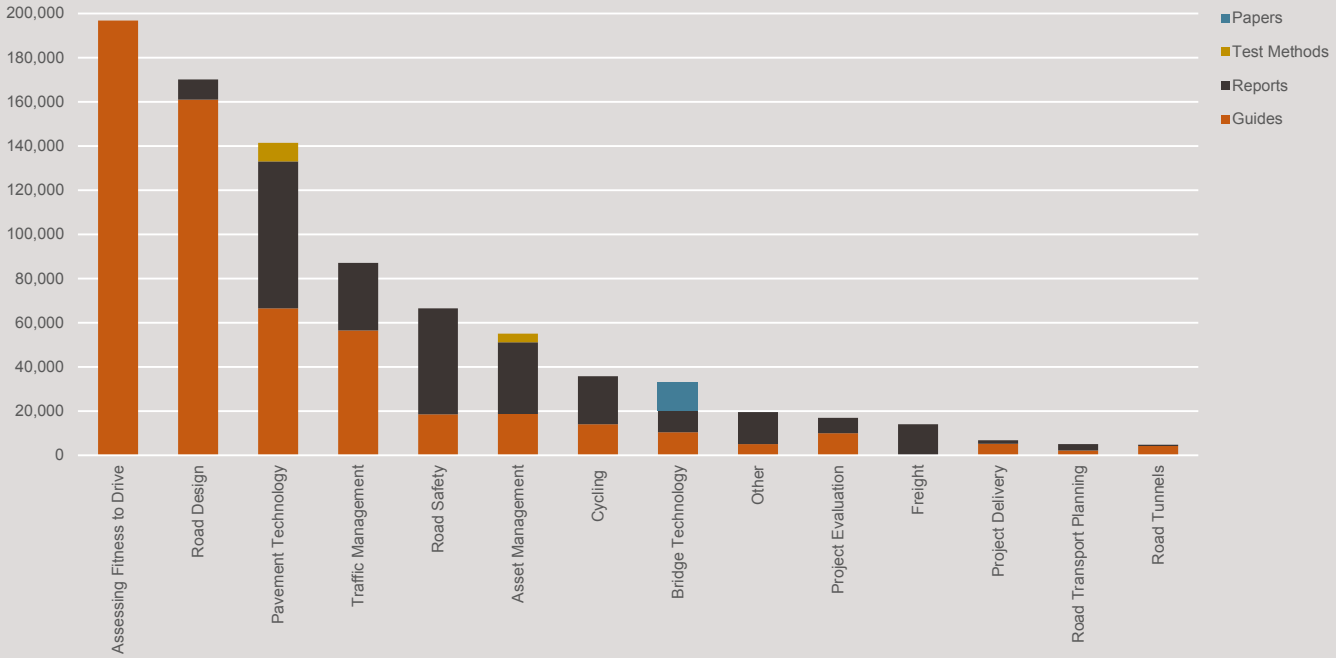
35,000 RoadWatch subscribers 2012-16



1932 webinar participants 2012-16



Publications accessed by subject and type 2012-16



Assets Program

providing the road services the community needs at least long term cost

People

Program Manager: David Darwin
Highways and Network Operations Outcome Delivery Manager,
NZ Transport Agency

Program Coordinator: Sarah Mayne
NZ Transport Agency

The Program's work program is guided by the Assets Task Force, which has representatives from state and territory road agencies, the National Transport Commission, the Commonwealth Department of Infrastructure and Regional Development, and the Institute of Public Works Engineering Australasia. The Program Manager chairs the meetings of the Assets Task Force.

Assets Task Force

Karl Cloos, TCCS ACT	Janey Mitson, DPTI SA	Ramon Staheli, NTC
Catherine Dear, VicRoads	Greg Moxon, DIRD	Phil Standen, RMS NSW
Andrew Golding, TMR Qld	John Robertson, MR WA	Shane Tepper, DoT NT
Andrew Hargrave, DSG TAS	Mick Savage, IPWEA	

Other technical groups

- National PMS Users Working Group
- Road Authority Pavement Making Working Group
- Telecommunication in Road Reserves Working Group

Overview

The work of the Assets Program aims to provide the road services the community needs at least long term cost.

Australia and New Zealand invest more than $21 billion annually in road construction and maintenance. Austroads plays an important role helping agencies to understand how to maximise their return on this significant investment made on behalf of the community.

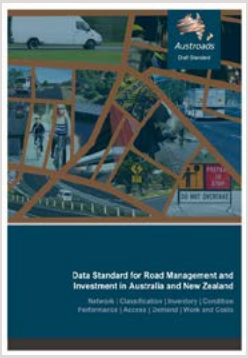
Outputs include:

- customer defined levels of service integrated into asset management practice
- road and bridge wear under increased loads quantified and cost impact identified
- Guide to Asset Management updated
- guidance on non-pavement asset management
- the efficiency of asset management intervention strategies improved.

2015-16 Highlights

Harmonising road asset data standards

Projects BA1935: Asset Register Proposal – Stage 1 Business Case, BA2057 Road Asset Data Harmonisation Stage II : Final Business Case and Implementation and ASP2112 Road Asset Data Standard Stage III: Implementation.



Austroads is undertaking an ambitious project to establish a harmonised road asset data standard for use in Australia and New Zealand.

The Road Asset Data Standard Project has been initiated in response to requests from stakeholders who increasingly need to share data with other road management agencies but are frustrated by the lack of common data standards.

A business case developed in 2014 shows significant benefits and cost savings can be obtained by road management and governance agencies being able to readily share common data between each other.

Benefits could include improved understanding of road assets, direct savings to agencies for data management and reporting, consistent and comparable data to support better government decision making and supporting new technology and transport innovation.

Road managers include national, state and local government agencies which each collect information to inform their asset management strategies and to determine expenditure priorities. The lack of a harmonised road asset data standards means that each road manager collects similar, yet slightly different, information. The minor but consequential differences in road asset data limit the comparability of asset information between road networks, and increases the costs of working across different road networks.

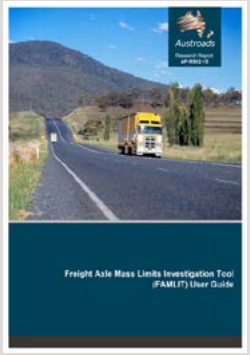
Opus International Consultants and GISSA (authors of "A Spec") have been appointed to deliver the project which will involve extensive research into existing data requirements and current practice. It will be developed in close consultation with local governments and road agencies in Australia and New Zealand.

Workshops were held in February and March 2016 across Australia and New Zealand to allow practitioners to contribute to the development of the Road Assets Data Standard. In April a further draft of the Standard was released for comment.

The work to develop the Standard will continue in 2016-17 under two projects: BA2057 Road Asset Data Harmonisation Stage II: Final Business Case and Implementation; and ASP2112 Road Asset Data Standard Stage III: Implementation.

Updated Freight Axle Mass Limits Investigation Tool released

Project AT1734: Refine and Deploy the road wear modelling methodologies



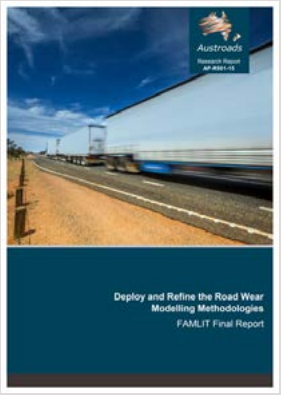
The Freight Axle Mass Limits Investigation Tool (FAMLIT) is a Microsoft Excel-based pavement life-cycle costing analysis tool that takes road and traffic inputs and produces equivalent annual uniform cost outputs. These costs are based on the present value of the road agency maintenance and rehabilitation works costs over the life of each road segment.

In December 2015 Austroads published an updated version of the tool and hands-on user guide.

FAMLIT can be used to understand and quantify the marginal cost of road wear caused by increased heavy vehicle traffic loads to inform road asset managers of the potential increases in maintenance and rehabilitation costs on their network.

FAMLIT was simplified and expanded to make it more user-friendly, which allows it to be easily applied to more tasks. The underlying code was overhauled to make it more stable and efficient, which will make future maintenance and modifications to the code easier.

The user guide describes the tool's data inputs, data outputs and performance models.



A report *Deploy and Refine the Road Wear Modelling Methodologies: FAMLIT Final Report* provides an overview of the process of calculating the marginal cost of road pavement wear and the FAMLIT software.

It details the final steps in the completion of the project, current status of the software, its capabilities and outlines some of the difficulties undergone through the development of FAMLIT.

Better understanding level of service requirements for heavy vehicle drivers

Project AT1732: Defining Asset Management LOS Requirements for Freight on Rural Arterial Roads

In April 2016 Austroads published survey responses by road freight drivers, operators and road infrastructure managers to better understand their asset management level of service (LOS) requirements.

The responses identified three primary road attributes impacting on LOS for heavy vehicle drivers and freight operators: ride comfort (road roughness); road shoulder width and condition; and road and bridge geometry and general access.

A follow-up survey investigated the responses of truck and car drivers to variations to the above identified three key road inventory attributes. Analysis of sample rating data indicated that LOS ratings provided by car and truck drivers closely followed changes in LOS for roughness, shoulder width and lane geometry, but truck drivers on average rated LOS below that rated by car drivers.

To account for differences in ride comfort ratings between car and truck drivers, two ride comfort measures (Heavy Articulated Truck Index (HATI) and the Heavy Vehicle Roughness Band Index (HVRBI)) were used as well as the International Roughness Index (IRI) used by road agencies.

HATI is truck specific and used by some agencies to assess truck ride comfort. The experimental HVRBI measure was included because it can model cab and seat responses in estimating the ride comfort of the freight vehicle types used. The IRI models the suspension characteristics of cars and therefore is only partly capable of estimating heavy vehicle responses. The comparisons of truck and car driver ratings with the three roughness measures support further development of ride comfort measures aligned with truck ride responses. Used together with IRI these measure should allow asset managers to deliver LOS levels better suited to the needs of cars and freight vehicles.

The report recommends further research is undertaken to clearly determine a process for road agencies to set a separate LOS for: ride comfort; lane and shoulder width; and road geometry for rural roads based on road function (class) and rural freight vehicle requirements. This report documents the outcomes of surveys of road freight drivers, operators and road infrastructure managers to better understand their asset management level of service (LOS) requirements.

Harmonising test methods

Project BA1907: Harmonisation of Test Methods

Austroads' suite of road condition monitoring specifications and test methods provide asset managers with a uniform approach to measure and report on road condition. Developed 10 years ago, they have improved decision making confidence and reduced contractual disputes.

Since their development, new road condition monitoring technologies such as the Laser Condition Monitoring System and Traffic Speed Deflectometer have been developed and adopted by Austroads member agencies.

BA1907 is a Board priority project and in May 2016 the first set of 15 updated specifications and test methods were published.

The specifications provide the minimum equipment, calibration, validation and survey methods required to measure network level pavement:

- roughness using an inertial profilometer (*AGAM-S001-16*).
- rutting using a laser profilometer (*AGAM-S004-16*).
- surface texture using a laser profilometer (*AGAM-S005-16*).

The test methods define procedures for:

- measuring the roughness of road pavements, determined from the direct measurement of the longitudinal profile of the road surface using an inertial profilometer (*AGAM-T001-16*).
- performing validation checks of the measurements of pavement roughness determined using an inertial profilometer (*AGAM-T002-16* and *AGAM-T003-16*).
- conducting repeatability and bias measurement checks for roughness measurements made by an inertial profilometer (*AGAM-T004-16*).
- measuring the rutting of road pavements, determined by the direct measurement of the transverse profile of the road surface using a laser profilometer (*AGAM-T009-16*).
- validation checks of the measurements of pavement rutting determined using a laser profilometer (*AGAM-T010-16* and *AGAM-T011-16*)
- conducting repeatability and bias of measurement checks for rut measurements made by a laser profilometer (*AGAM-T012-16*).
- measuring the surface macro-texture of road pavements, determined by the direct measurement of the surface profile using a laser profilometer (*AGAM-T013-16*)
- validation checks of the measurements of pavement surface macro-texture determined using a laser profilometer (*AGAM-T014-16* and *AGAM-T015-16*)
- conducting repeatability and bias of measurement checks for pavement surface texture measurements made by a laser profilometer (*AGAM-T016-16*).

Updating the Guide to Asset Management

Significant progress has been made on the review of the Austroads *Guide to Asset Management*. The Guide set will be updated to respond to stakeholder needs, reflect modern practice, incorporate the findings of recent research and include guidance on aligning asset management practices with the requirements of the forthcoming Asset Management Standard ISO55000. It is expected the revised Guide will be available in 2017.

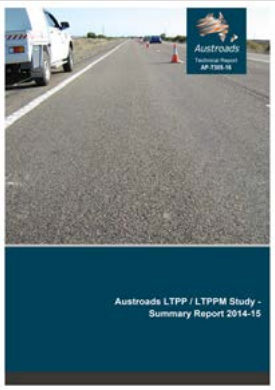
Long-term Pavement Performance Project continues to build knowledge

Project AT1064: Long-Term Performance Monitoring to Develop Consistent Performance Models

Austroads established its long-term pavement performance (LTPP) project in late 1994. Since its commencement the project has monitored more than 40 inservice pavement sites under different climate and traffic loading regimes. The sites include sealed granular, asphalt, cemented-treated and concrete pavement sections on rural and urban major roads and highways.

In January 2016 Austroads published the results of a proof of concept study using the data condensation technology of stochastic information packets (SIPs) in Microsoft Excel. The approach opens new opportunities in data collection, storage and analysis as large quantities of data can be stored in a relatively small space. This allows full data sets to be easily stored, transported and used. Cost estimates, project management, quality control, quality assurance and all engineering calculations where averages are currently used as input, can be replaced with the techniques described in this study.

When connected to a pavement management system, this approach was able to accurately quantify the risks, in percentile probabilities, of achieving the target level of service (LoS) and of meeting annual targeted maintenance costs.



In February Austroads published a summary of activities completed during 2014–15 for the Austroads long term pavement performance monitoring project.

The project currently monitors the structural and functional performance of 19 in-service pavement test sites across Australia. The report includes a summary of the LTPP/LTPPM current conditions and performance trends over the monitoring period and an overview of the proposed future work program.

Future Focus

In line with the 2016-20 Strategic Plan, the Asset Program will lead the:

- Assets Task Force
- Bridge Task Force
- Pavements Task Force
- Project Delivery Task Force
- Road Tunnels Task Force.

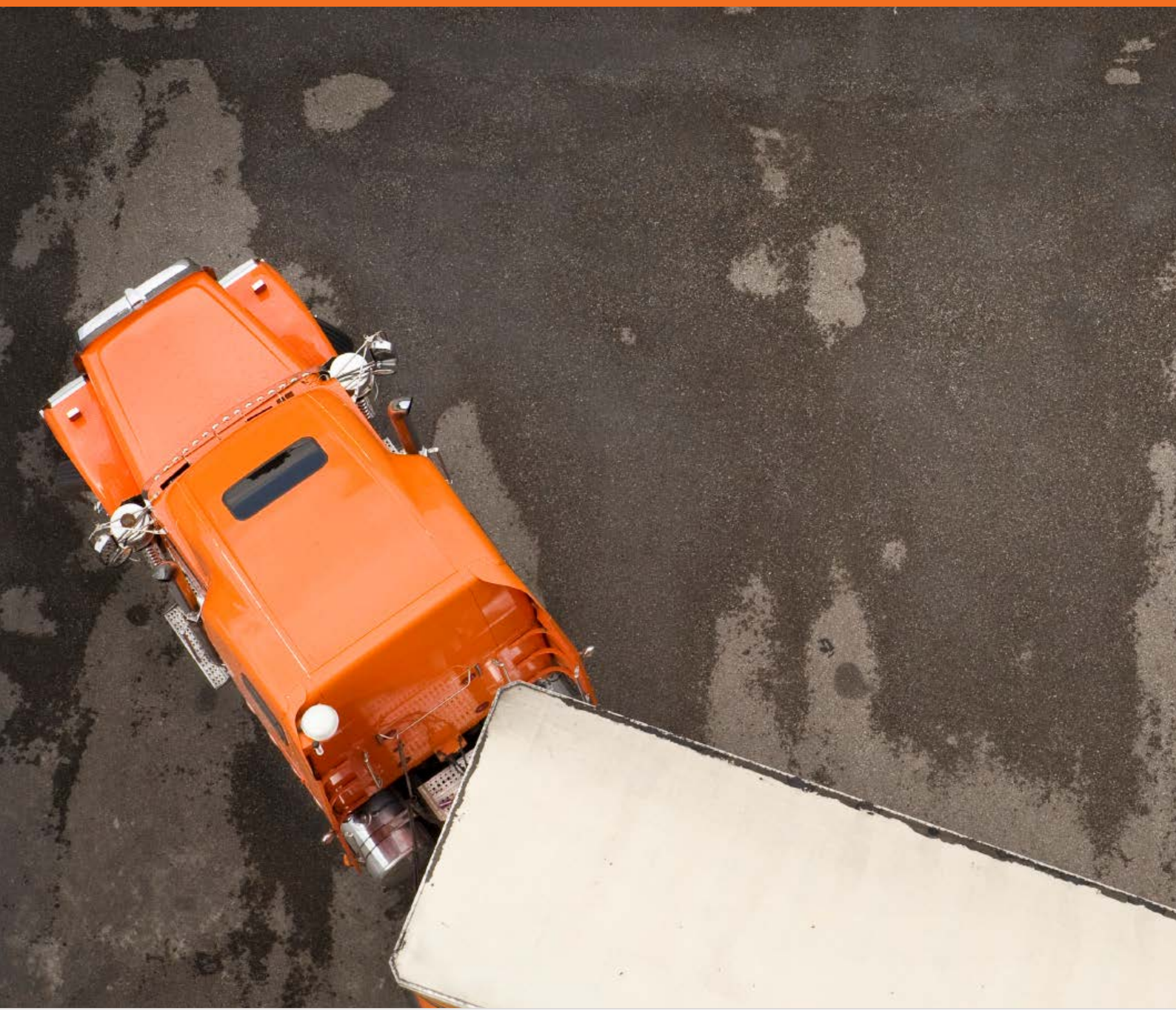
The Assets Task Force will oversee seven new projects starting in 2016-17, including:

- a Board priority project to harmonise pavement markings and develop a national pavement marking specification
- developing a performance and investment framework for road infrastructure, providing costings for the delivery of alternative maintenance programs with different levels of service
- providing guidance on continual improvement processes for asset management
- reducing the cost of roadwork on lower volume or remote networks by providing guidance on the use of marginal or non-standard materials, and proposing modifications to material and practice standards and specifications
- improving the comparability of financial information relating to asset management, and enhance our ability to implement funding reforms that require a forward looking cost base by providing guidance on appropriate componentisation of assets for use in financial and inventory information systems
- preparing a register of good practice case studies and embedding them in the Guide to Asset Management
- enhancing our ability to target maintenance interventions that most benefit truck ride quality and safety by better understanding the impact of roads of different roughness on differently configured freight vehicles.

The Assets Program will also lead work to examine the implementation of digital engineering in the roads sector. This potentially disruptive technology involves a move from static two-dimensional Computer Aided Design (CAD) to three-dimensional design and modeling of the various infrastructure components in a seamless and interoperable way. Additionally, project scheduling and cost control can be integrated into the models which can also be transferred into operational and maintenance phases. The Task Force will set the technical standards for the roads sector and provide skill development and knowledge sharing opportunities for practitioners.

Freight Program

improving productivity and safety outcomes in meeting the road freight task



People

Program Manager: Marcus James
General Manager, Surface Transport Productivity, DIRD

Program Coordinator: Tracey Wilkinson
DIRD

The Program's work program is guided by the Freight Task Force, which has representatives from state and territory road agencies, the National Transport Commission, the National Heavy Vehicle Regulator, the Commonwealth Department of Infrastructure and Regional Development, and the Australian Local Government Association. The Program Manager chairs the meetings of the Freight Task Force.

Freight Task Force

Brett Clifford, DoT NT	Russell Hoelzl, DTMR Qld	Lindsay Oxlad, DPTI SA
Anita Curnow, VicRoads	Andrew Hyles, DIRD	Andrew Poole, DSG Tas
Matt Elischer, NHVR	Russell Ingham, DTMR Qld	Jeff Potter, NTC
Kym Foster, ALGA	Marinus La Rooij, NZTA	Tim Wyatt, TCCS ACT
Patricia Grunert, RMS NSW	Kevin Loftus, MR WA	

Overview

The Freight Program enables the Commonwealth and state and territory road agencies to collaborate to improve productivity, sustainability and safety in the movement of freight on the road network. The Program provides a unique environment for road agencies, policy officers and research agencies to work towards a common goal.

Integral to the operation of the Freight Program is the coordination of ongoing and new work across relevant agencies to ensure that duplication of work is minimised and that any identified gaps can be rectified, where appropriate.

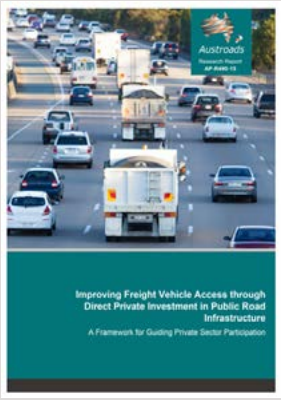
Outputs include:

- national standards and guidelines to improve the productivity, sustainability and safety of road freight movement
- policy framework for light freight vehicles
- research reports, guidelines and tools to improve outcomes relating to road freight access, including access to roads, bridges and intermodal facilities
- guidelines and tools to improve bridge access decision making
- national performance indicators related to heavy vehicles and freight to inform policy development and decision-making
- national competencies and capability framework for road freight regulators
- best practice guidelines for the management of road access and amenity at freight terminals and facilities.

2015-16 Highlights

Private investment framework to improve road access for freight

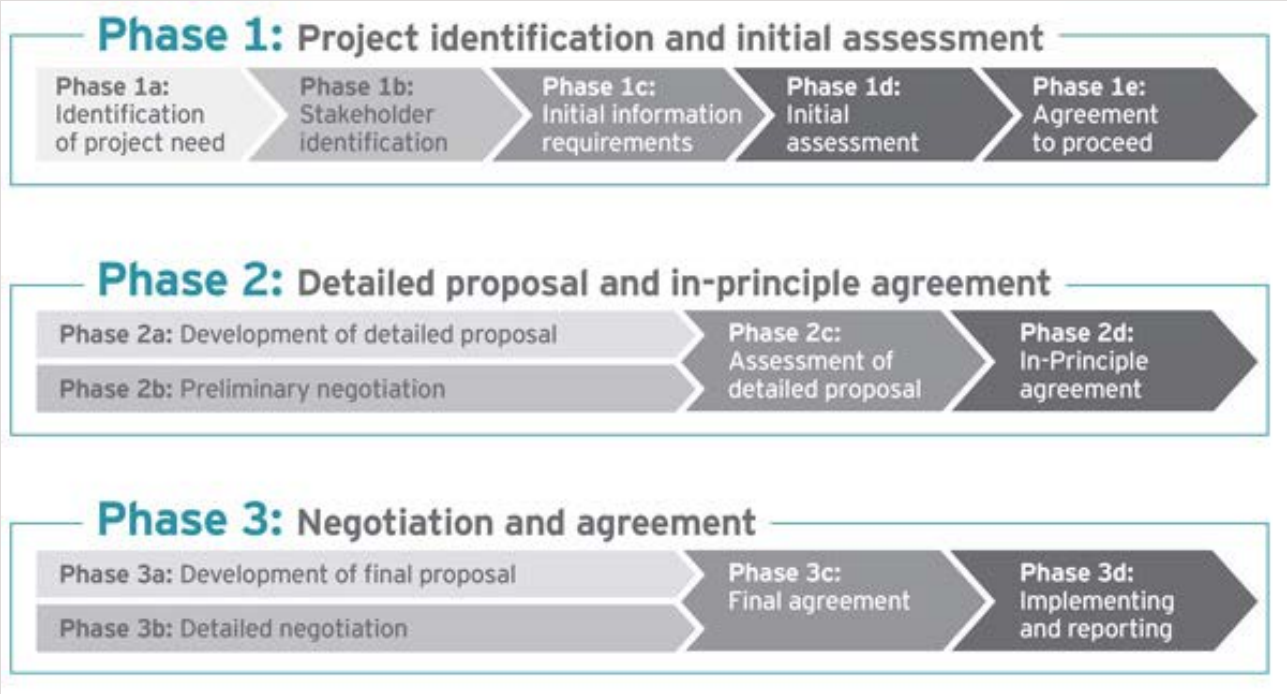
Project FS1892: Improving Access Through Private Investment in Public Roads



In September 2015 Austroads published a generic framework for private investment in public road infrastructure.

Roads are key enablers of economic and commercial activity, most particularly for those activities that are reliant on freight. The freight industry is constantly looking for ways to increase productivity to improve business profitability and competitiveness and to limit the costs passed on to consumers due to increasing freight costs. Often this requires upgrades to the existing network to accommodate different vehicles or different operations.

The framework seeks to improve access for freight vehicles through direct private investment in public road infrastructure. It is aimed specifically at providing industry and government certainty of process where industry can invest in specific projects that would improve productivity for their operations.



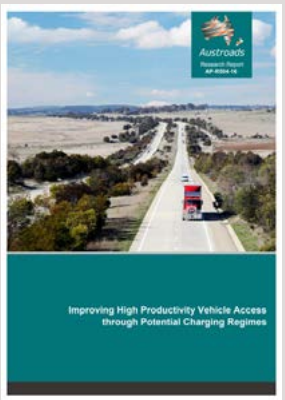
Generic framework for private investment in public road infrastructure

In November 2015 the Transport and Infrastructure Council agreed that the framework should be adopted by road managers.

The framework is intended to be used for one-off, smaller-scale, high productivity vehicle access enhancement, including first/last mile, farm gate access and pinchpoints such as bridges. The framework ensures that transport operators consider the benefits that they expect to receive from smaller-scale road enhancements in the light of the costs of such enhancements - costs that may either be partially or fully meet.

Improving high productivity vehicle access

Project FS1923: Improving High Productivity Vehicles (HPV) through Potential Charging Regimes



In February 2016 Austroads published an assessment of how different charging regimes could increase high productivity vehicle (HPV) access to roads.

The analysis found that:

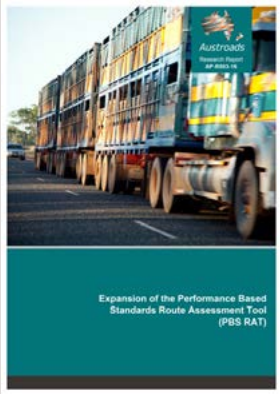
- The National Transport Commission's Heavy Vehicle Charging Regime (PAYGO) delivers stability and underlying support for increasing HPV access. Its national approach cannot recompense road managers for freight upgrade investment, and within category subsidies exist.
- New Zealand's Road User Charging (NZRUC) Regime aligns HPV road use impacts with a corresponding mass distance charge for road cost recovery. Charge levels are derived from the extensive information from its distance licence sales. NZRUC delivers a fairer charging, more flexible but higher resource cost system, while facilitating HPV use.
- A Mass Distance Location (MDL) Charging Model remains a conceptual road charging approach, without any trials to establish its viability and practicality. Its potential to recover HPV road impact costs by route segment rather than nationally at reasonable costs is not known. A trial to prove MDL practicality and effect on increased HPV access could be progressed.
- A road, corridor or area charging regime could be introduced to complement the PAYGO or NZRUC regime, but not the MDL model. Progressing this concept requires significant matters being addressed.

It was found that A-doubles are the most efficient form of HPV, with logistics constraining about 40 percent of long distance HPVs from using the major case study inland freight route.

The study's authors recommended additional research be undertaken including examining the effect of increasing HPV access on freight contestable rail corridors.

Development priorities identified for PBS Route Assessment Tool

Project FS1891: Expansion of PBS RAT (Route Assessment Tool)



In January 2016 Austroads released expansion options and development priorities for the Performance Based Standards Route Assessment Tool (PBS RAT). The PBS RAT is an online tool designed to help local government road managers determine the most appropriate heavy vehicle configurations for operation on local road assets.

Federal, state and local road managers, as well as industry experts, were consulted to prioritise system development directions. The report identifies and ranks system expansion priorities based on factors such as demand, importance, impact, usability and development feasibility.

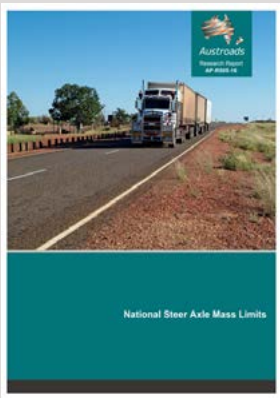
The proposed development priorities are:

- classification of non-PBS vehicles module
- bridge data collection module for local government
- a swept path analysis support tool for intersection assessment
- a safety module.

The report also proposes undertaking a more focused investigation using the priorities identified in this initial investigation.

Identifying optimum steer axle mass limits

Project FS2001: National Steer Axle Mass Limits



In February 2016 Austroads published a review of issues associated with potential changes to mass limits for steer axles on heavy vehicles in Australia.

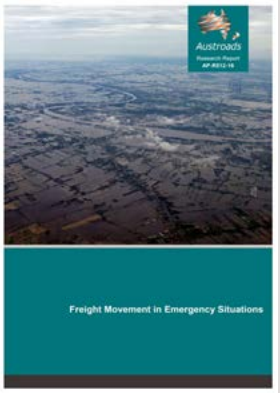
The project aimed to establish optimum steer axle mass limits, with a particular focus on suitability for road trains, to accommodate the needs of the transport industry into the future. The practical engineering issues associated with a heavier load on the steer axle and the fitments of wider tyres were investigated via industry consultation.

A pavement life cycle costing analysis was undertaken to determine the pavement maintenance costs associated with increased steer axle limits. The load wear cost model selected for this task was embodied in the Freight Axle Mass Limits Investigation Tool which was used to quantify the marginal differences in pavement deterioration. A selection of 25 road segments was used for analysis with 30 loading scenarios.

The study found that the optimum steer axle mass limit is 7.0 t, with a wider (greater than 375 mm) tyre size. This increase in steer axle limit can be applied to road train operators with minimal change in operations. The finding suggests that it is possible to increase the steer axle mass above 7.0 t before an increase in cost is realised, however an increase to 7.0 t allows a margin of safety for the limitations of the testing (variations in tyre construction and inflation pressure) on which the reference loads are based. An increase to 7.0 t will also be consistent with current limits in the Northern Territory.

Keeping freight moving in emergencies

Project FS1808: Freight Movement in Emergency Situations



In April 2016 Austroads published the results of a study confirming the importance of maintaining freight movement to communities impacted by emergencies.

In the three years prior to 2013, Australasia experienced a severe earthquake decimating the City of Christchurch, Victoria's most tragic bushfires, category 4/5 cyclones in Queensland and Western Australia, and major general flooding in Queensland, New South Wales and Victoria.

In the face of these types of disasters jurisdictions have had to develop rapid and innovative responses to keep freight moving on damaged or non-typical transport networks. This has included pre-positioning goods before emergencies; stockpiling materials and sometimes plant on areas of hard-standing adjacent to bridges, fords and range crossings; planning and designing heavy vehicle rest areas to allow double and triple road trains to turn around; and developing technology to communicate emergency traffic management plan deviations for different classes of light and heavy vehicles.

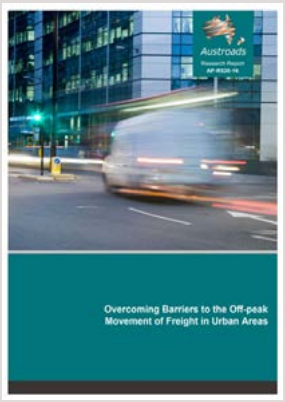
Depending on the scale of the disaster, response and recovery traffic movements and preserving security for damaged towns and dwellings, can overwhelm or constrain the availability of the remaining transport elements for their normal social and economic use. This can impede the ability to maintain crucial freight movements required by businesses and for employment.

The report recommends:

- jurisdictions establish an economic resilience goal and integrate resulting practices into emergency management processes
- jurisdictions incorporate maintenance of essential and general freight movement into emergency planning, including for crashes impacting freight routes
- assessing the creation of a national information system for road users in emergencies
- governments prioritise important economic areas and their transport links in freight movement emergency planning
- emergency and heavy vehicle units within road agencies regularly meet with road freight stakeholders and selected operators
- jurisdictions investigate establishing a unit similar to WA's State Emergency Management Commission to assess potential hazards and advise on the mitigation and management.

Overcoming barriers to off-peak movement of urban freight

Project FS1999: Overcoming Barriers to the Off- Peak Movement of Freight in Urban Areas



Off-peak deliveries in urban areas have the potential to reduce congestion, improve air quality, improve road safety, and assist with freight and logistics operations.

In May 2016 Austroads published a study that examined successful examples of off-peak freight movement around the world and identified obstacles limiting the uptake of off-peak delivery in Australia.

The project was conducted in three phases and involved an international literature review and discussions with more than 60 people across 40 organisations including international experts, Australian retailers and jurisdictions.

Off-peak freight movement initiatives, such as re-timing consortiums and out-of-hours delivery pilot trials, are being successfully implemented around the world. While examples from New York City and London may not seem transferable to urban Australia due to the differences in density of the cities and transport system, the principles and processes can be applied to the Australian urban environment, particularly our inner cities.

The research found that while quiet off-peak or out-of-hours deliveries are beneficial to society on numerous fronts, the obstacles to implementation can vary significantly from organisation to organisation, and jurisdiction to jurisdiction. Some of the obstacles are legacy issues, some are cost related, others are a reluctance to change and some are perceived (such as nervousness about resident complaints). Furthermore, sometimes it is a matter of simply not knowing who to contact to initiate change.

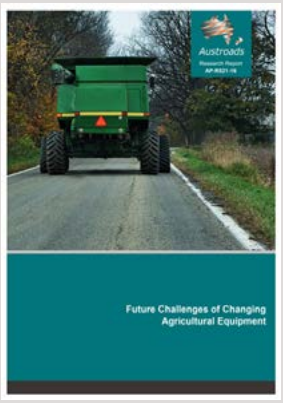
In freight transport generally, small changes in the supply chain can produce major benefits, which means that research, trials and collaboration in the area of freight demand management and off-peak deliveries can lead to efficiency gains.

The report recommends a number of steps which can be taken to both prepare and encourage change in urban freight deliveries. These include working together in a partnership approach, having discussions around the use of new technology to assist in off-peak deliveries, and demonstrating benefits from trials.

A new project starting in 2016 will use the findings of this project to establish and evaluate a series of trials in Victoria.

Addressing challenges of changing agricultural equipment

Project FS2033: Future Challenges of Changing Agricultural Equipment



In June 2016 Austroads finalised a project that investigated the policy challenges presented by the operation of agricultural vehicles on public roads in Australia and New Zealand.

The agricultural vehicle fleet encompasses a wide range of equipment with substantial variation in mass and dimensions.

Tractors and harvesters can weigh up to 30 tonnes. Harvester 'header' trailers can be more than 20 metres long. Tilling and seeding equipment can be up to eight metres wide and six metres high, even when folded to reduce their dimensions for on-road transport. Combinations of towed implements can be more than 40 metres long, and above 50 tonnes gross mass.

In addition to size and mass, there are a range of other safety and infrastructure considerations. Agricultural tyres are wide, and their pavement impacts are not well understood. Some implements are built to carry loads, which considerably increases their mass. The use of light vehicles to tow relatively heavier implements is commonplace, and the fitment of brakes to towed implements is rare.

The agricultural fleet is also constantly evolving, driven by economic forces and developments in technology. This requires road owners to constantly update their policies.

The research identifies agricultural industry trends and suggests the most likely future scenario will see incremental increases in the average physical size and mass of most equipment, driven primarily by the need for greater productivity.

The project reviewed jurisdictions' policies on agricultural vehicle mass and dimensions, identified discrepancies between the policies and the current/future agricultural fleet, and conducted technical assessments to investigate the impacts.

The report recommends that the current limitations and variations in existing policies should be addressed as a priority, not only to ensure that the risks are managed, but also to provide greater clarity and certainty to the agricultural industry. Limits and requirements should be harmonised across jurisdictions to the greatest extent possible, in a similar manner that has been achieved in the conventional heavy vehicle industry since the creation of the National Heavy Vehicle Regulator.

The project's findings have already informed discussion on a range of issues including size and mass regulations, travel restrictions and conditions, brake performance and towed mass ratios, the operation of laden agricultural vehicles, and appropriate standards on safety warning equipment.

The research findings can be used by jurisdictions to develop policies that will allow current and future agricultural equipment from local and overseas markets to be operated on public roads without undue additional risk to safety and infrastructure. The findings also allow the industry to make better informed decisions regarding future equipment purchases, and its operation within the bounds of jurisdictional policy.

Future Focus

In 2016-17 the Freight Task Force will come under the leadership of the new Austroads Network Program.

The 2016-17 work program continues the research required for the development of the heavy vehicle road reform agenda, which is a priority for transport Ministers. It will also help to develop processes to address High Productivity Vehicle (HPV) access, including seeking a model for HPV access in metro areas. The Task Force will also look at issues surrounding establishing extended hours delivery trials.

Research into these issues will improve productivity and safety in meeting the freight task through establishing consistency across jurisdictions in access decision making processes.

The Freight Task Force is leading a strategic priority project that will explore the development of a national Community Service Obligation (CSO) framework for roads. The framework will encompass both heavy and light vehicles, with the intention of developing a methodology for establishing baseline service standards and, quantifying and costing CSOs.

Research will also help identify heavy vehicle best practice by developing a better understanding of the way road freight is managed in other countries. Other research projects will examine productivity and safety benefits. This will align with strategic priorities and the national agenda, including infrastructure planning and investment, which is on the Transport and Infrastructure Council's agenda.

Network Program

improving the efficient, reliable and safe operation of the road network

People

Program Manager: Craig Moran
General Manager, Road Network Operations, RMS NSW

Program Coordinator: Jill Hislop
Austroads National Office

The Program's work program is guided by the Network Task Force, which has representatives from state and territory road agencies, and the Bureau of Infrastructure, Transport and Regional Economics.

Network Task Force

Aftab Abro, DoT NT	Andrew Excell, DPTI SA	Rifaat Shoukrallah, TCCS ACT
Glenn Bunting, NZTA	Tom McHugh, MR WA	Andrew Wall, VicRoads
Richard Burk, DSG Tas	John Oppes, DTMR Qld	

Other technical groups

- Traffic Management Working Group
- System Managers Working Group
- Australian Bicycle Council
- Cooperative ITS Industry Reference Group
- Cooperative ITS Steering Committee

Overview

The Network Program provides road agencies and practitioners with contemporary technical guidance on managing road networks for all road users through a national research program and the Guide to Traffic Management. An integral part of the Program is to ensure that Australia and New Zealand are positioned to adopt advances in technology and to respond to emerging priorities in managing the road network.

Outputs include:

- ITS architecture and protocols agreed nationally
- harmonisation of traffic system requirements
- network operations planning for all modes
- network performance measures
- National Cycling Strategy 2011-16 implementation
- standardised Information services for users
- Guide to Traffic Management updates.

2015-16 Highlights

Improving road worksite safety

Project NT1919: Traffic Control at Worksites implementation

The temporary management of traffic in association with road works requires careful planning and implementation to ensure both an efficient operation and a safe environment for workers and road users.

Risk management, compliance safety inspections and auditing are key techniques to assist in providing an environment where safety is a priority.

Earlier work by Austroads identified the key skill sets required by staff working on, planning for and inspecting road worksites.

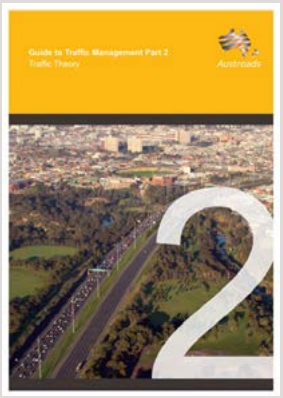
This project delivered training and assessment material for eight units of competency:

- RIICOM201D Communicate in the workplace
- RIIBEF402D Supervise on-site operations
- RIICWD503D Prepare work zone traffic management plan
- RIIGOV401D Apply, monitor and report on compliance systems
- RIIRIS301D Apply risk management process
- RIIWHS201D Work safely and follow WHS policies and procedures
- RIIWHS205D Control traffic with stop-slow bat
- RIIWHS302D Implement traffic management plans.

Seven documents were developed for each unit and the material has been made available to Registered Training Organisations via a new Austroads training website.

Updating the Guide to Traffic Management

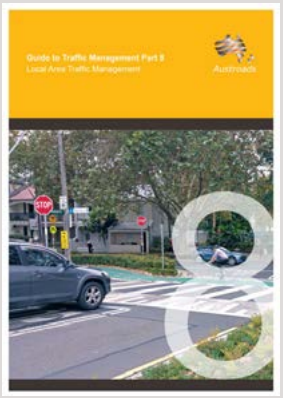
Project NT2005: Guide to Traffic Management Part 2: Traffic Theory



Guide to Traffic Management Part 2: Traffic Theory provides practitioners with the theoretical background to appreciate the nature of traffic behaviour and to develop and assess traffic management plans and road design proposals.

This second edition, published in October 2015, includes new sections on the Kinemetic wave model, an alternative method of delay calculation in gap acceptance situations and recent Austroads research findings on ramp metering, variable speed limits and other managed motorway tools. Sections have been updated to reflect the latest Austroads research findings regarding freeway flow under congested conditions.

Project NT1798: Guide to Traffic Management Part 8: Local Area Traffic Management (LATM)

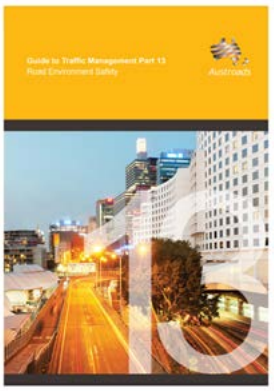


Guide to Traffic Management Part 8: Local Area Traffic Management is concerned with planning and managing road space use within a local area, to reduce traffic volumes and speeds in local streets, to increase amenity and improve safety and access for residents, especially pedestrians and cyclists. It provides guidance for planners and engineers associated with the design, development and management of residential precincts.

The 2016 edition of the Guide, published in May, includes updates to:

- reflect new design concepts and approaches to safety and local area traffic management
- incorporate new evidence on the advantages and disadvantages of some LATM treatments
- highlight that all four pillars of a Safe System should be central to the design of any LATM scheme
- recognise that new LATM treatments have been developed and successfully trialled, and that the LATM treatments in most common use have changed
- reflect the increased amount of information reported in relation to the management of pedestrians and cyclists within LATM treatments, particularly at lower speeds
- recognise the increasing role of technology.

Project NT2006: Guide to Traffic Management Part 13: Road Environment Safety



Guide to Traffic Management 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.

The 2015 edition, released in August, includes:

- updated Safe System content
- additional information regarding road safety audit and road safety assessment programs
- the safety management framework for the evaluation of roadside hazards and their treatment options.

Improving bicycle wayfinding

Project NS1998: Bicycle Wayfinding Signage

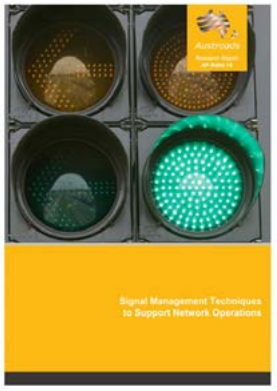
Directional and wayfinding signs are critical elements of any transport system.

As road authorities and local councils develop their bicycle facilities into region-wide networks, signs become an essential element in facilitating trips across a whole city, town or urban region. Signs for cycling networks can also inform bicycle riders of routes which are more direct or less heavily trafficked. Cycling network signs can help raise community awareness of the many route possibilities for bicycle travel other than single routes or the general street system.

In October 2015 Austroads published guidance for practitioners on the design of bicycle wayfinding schemes. This guidance will be considered in the future updates to the relevant Austroads Guides.

Signal Management Toolkit

Project NT1909: Techniques for Signal Management to Support Network Operations



In October 2015 Austroads published a Signal Management Toolkit. The Toolkit provides guidance on managing and operating signals to realise the intent of network operation planning and achieve the desired performance outcomes for road users.

The Toolkit provides indicative impacts of a range of techniques used to afford priority to a particular user, including emergency vehicles, public transport (trams and buses), pedestrians, cyclists, freight and private motorists (general traffic). The impact assessment framework is aligned with Austroads Level of Service metrics for network operations planning and considers the impacts of each technique on other road users in relation to their key needs of relevance to signal operations (i.e. mobility, safety and access).

The impact assessment was undertaken in collaboration with road agency and industry practitioners to ensure it reflects operational experience.

Addressing accessibility in the Network Operations Planning Framework

Project NT1783: Improving accessibility with network operations planning

Poor access to transport can act as a barrier to people's participation in a range of social, civic and economic activities.

In November 2015 Austroads published an extension to the network operation planning framework to address transport accessibility issues.

The extended framework itemises the general principles and steps in developing an accessibility-based network operation plan (NOP).

The framework includes general guidance on accessibility metrics for employment, education, retail and recreation, health and community services, and freight. The framework was applied to the Burwood Heights Activity Centre (in Melbourne) to illustrate how the framework can be applied.

The report recommends that the general principles and key steps of the proposed accessibility-based NOP framework be incorporated into the Guide to Traffic Management. It also recommends that the framework be incorporated into the development of network operation plans, where appropriate.

To facilitate the application of the accessibility-based NOP, the development of a computer software application is recommended. The tool would assist planners to assess travel time and journey LOS gaps.

A new Austroads project starting in 2016 will develop the business case and specifications for the next generation NOP tool.

ITS Activities Roadmap establishes shared vision

Project NS1927: ITS Roadmap

Austroads is committed to the delivery of priority areas identified in the Policy Framework for Intelligent Transport Systems in Australia published by the Standing Council on Transport and Infrastructure in 2012.

As part of this commitment, in November 2015 Austroads released an Intelligent Transport Systems (ITS) roadmap that establishes a shared vision of ITS activities to achieve the effective development and deployment of ITS in Australia and New Zealand.

Developed collaboratively by road agencies and ITS-Australia, the roadmap shows collective activities to be led by Austroads to achieve national harmonisation and activities to be progressed by individual road agencies to address local priorities.

ITS involves the application of advanced Information and Communications Technology (ICT) to surface transportation to achieve safety, efficiency and environmental benefits. This includes traffic management systems, traveller information and warning systems, and Cooperative ITS (C-ITS) applications involving vehicle to infrastructure and vehicle to vehicle communications.

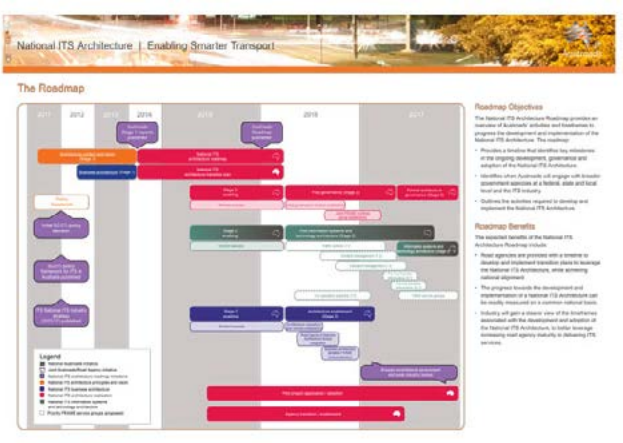
ITS has an important role to play in responding to a number of significant challenges including:

- growth in the freight task
- road crashes
- road traffic congestion
- greenhouse emissions
- system interoperability
- mobility and social inclusiveness.

The response to these challenges will require innovative solutions that leverage significant international advances in technology.

ITS Architecture enables smarter transport

Project NS1928: ITS Architecture Roadmap and Transition Planning



In March 2016 Austroads published a National ITS Architecture Roadmap. The document provides an overview of Austroads' activities and timeframes to progress the development and implementation of the National ITS Architecture. The roadmap:

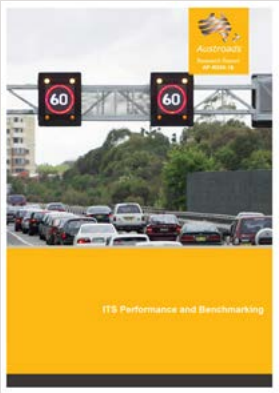
- provides a timeline that identifies key milestones in the ongoing development, governance and adoption of the National ITS Architecture
- identifies when Austroads will engage with broader government agencies at a federal, state and local level and the ITS industry
- outlines the activities required to develop and implement the National ITS Architecture.

The expected benefits of the National ITS Architecture Roadmap include:

- road agencies are provided with a timeline to develop and implement transition plans to leverage the National ITS Architecture, while achieving national alignment
- the progress towards the development and implementation of a National ITS Architecture can be readily measured on a common national basis
- industry will gain a clearer view of the timeframes associated with the development and adoption of the National ITS Architecture, to better leverage increasing road agency maturity in delivering ITS services.

ITS performance and benchmarking

Project NT1913: ITS Performance Benchmarking



In January 2016 Austroads published a consistent methodology to evaluate and report on ITS asset performance from a road user perspective.

ITS assets are being installed throughout the road environment to manage and control the road network. Over time, faults in ITS assets can have significant impacts on the productivity and reliability of the network. Quantifying the cost to the community of signal faults allows jurisdictions to prioritise and initiate action to reduce the occurrence.

The report reviews current ITS performance evaluation practices amongst Austroads and road agencies. VicRoads methodology was adopted and generalised, and a five-step framework was established to retrieve, analyse and report on asset performance. User availability estimated from major alarms was used as the key performance indicator. Asset alarm data from SCATS signals, motorway electronic variable speed limit signs and lane use management systems, and school zone electronic speed limit signs were collected from various Austroads jurisdictions to demonstrate the processes of the methodology.

The methodology could form the basis of a national process for Austroads jurisdictions to collect, analyse and report the performance of critical ITS assets consistently across all jurisdictions.

Future Focus

In line with the 2016-20 Strategic Plan, the Network Program will lead the Network and Freight Task Forces. The Network Task Force has developed a forward one-year program to align with the nominated work streams and Board priorities in the Strategic Plan. Projects starting in 2016-17 include:

- development of a governance framework and implementation of harmonised specifications, product acceptance process and register for ITS products and services
- development of a concept of operations framework for Network Operations Planning (NOP). The framework will describe the characteristics of each part of the NOP process from the perspective of those involved in the process.
- seeking to understand customer expectations in planning, investment, management and operations National Performance Indicators and the communication of journey and traveller information. The project will also seek to understand the future role of the road manager and the emerging capability requirements for road agencies in the future
- development of a nationally agreed framework for road transport management. It is envisaged that this will encourage a more harmonised approach across jurisdictions and across many Austroads Guides, which currently have individual frameworks e.g. asset management, network operations and safe system.
- updating three parts of the Guide to Traffic Management with the latest research findings and contemporary traffic management practice: Part 3 Traffic Studies; Part 5 Road Management; and Part 13 Road Environment Safety
- reviewing contemporary local and international incident management practice to develop a framework that supports network operations planning. It is envisaged that this work will encourage a more integrated approach to incident management, with consideration of network operations planning and safe system principles, to improve congestion and network performance.

Registration and Licensing Program

enhancing consistency, security and integrity of Australia and New Zealand's driver licensing and vehicle registration systems

People

Program Manager: Paul Rajan (until May 2016)
Executive Director Transport Services, Department of Transport NT

Program Coordinator: Leonie Pattinson
Austroads National Office

Program Manager: David Bobbermen (from May 2016)
Austroads Safety Program Manager

The Program's work program is guided by the Registration and Licensing Task Force, which has representatives from state and territory registration and licensing agencies, the National Transport Commission, the Commonwealth Department of Infrastructure and Regional Development, the National Motor Vehicle Theft Reduction Council and the NEVDIS Administration Unit. The Program Manager chairs the meetings of the Registration and Licensing Task Force.

Registration and Licensing Task Force

Martin Crane, DSG Tas	Emma Kokar, DPTI SA	Tim Matthews, NEVDIS
Paul Davies, NTC	Andrew Lee, DoT WA	Kelly Miller, TfNSW
Geoffrey Davidson, JCSD ACT	Helen Lindner, VicRoads	Cate Quinn, NZTA
Geoff Hughes, NMVTRC	Andrew Mahon, DTMR Qld	Matthew Squire, DIRD

Other technical groups: Registration and Licensing Working Group

Overview

The Registration and Licensing Program aims to enhance consistency, security and integrity of Australia and New Zealand's driver licensing and vehicle registration systems. Improvements to these systems have the potential to improve economic and social outcomes for the nation, its states and territories, and individuals.

The program has a significant touch point with customers through the policy and service delivery models of road agencies which support most of the population to access vehicle registration and driver licensing services.

The program aims to improve social outcomes specifically for Indigenous Australians by closing gaps through the development of best practice frameworks and policy amendments, and strengthening security and integrity through improved enrolment processes and technology.

Outputs include:

- enhanced security of Australian driver licences and vehicle identification
- improved management of higher risk drivers
- improved online and digital registration and licensing service delivery to enable more convenient and accessible services
- increased consistency and efficiency in registration and licensing across jurisdictions
- vehicle registration schemes which encourage use of safe and efficient vehicles
- improved access to driver licences for Indigenous Australians.

2015-16 Highlights

Strengthening identity management in driver licensing

Project RS2027: Implementation of national identity proofing guidelines

Identity crime and misuse is one of Australia's most prevalent crimes with an estimated 750,000 to 937,000 people experiencing financial loss as a result, and a total economic impact estimated to exceed $1.6 billion each year.

A driver's licence is the most convenient and widely used identity document in Australia. Driver licences are commonly accepted by Government agencies and the business community as primary proof of identity because they contain a photo of the person, security features, and are issued by a trusted source.

In May 2016 Austroads published the public policy statement *Strengthening Identity Management in Driver Licensing.* The statement underpins the work of road agencies to implement identity proofing processes specified in the National Identity Proofing Guidelines.

Development of world first hazard perception video library underway

Project RS1911: Car and Motorcycle Hazard Perception Test - Phase 2

Novice car drivers are over-represented in road crashes and poor hazard perception skills have been shown to contribute to novice driver crash involvement.

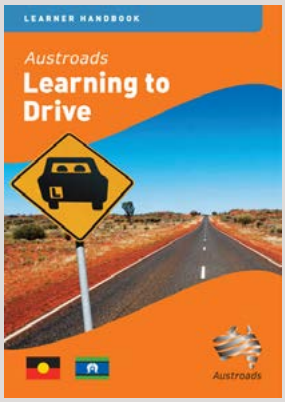
Hazard perception tests are currently part of the licensing process in New South Wales, South Australia, Victoria, Western Australia and Queensland.

In August 2015 Austroads called for expressions of interest to produce a suite of new car and motorcycle hazard perception test videos and supporting material.

The short 15 second computer generated video clips will replace the clips currently used in the tests which need updating. In a world first, the new clips will incorporate specific scenarios for motorcycle riders.

Australian company, Monkeystack, was awarded the contract to produce the clips. The project is progressing well and is expected to be completed by mid 2017.

Increasing access to *Austroads Learning to Drive*



The Austroads Learning to Drive handbook is part of a toolkit designed to improve driver licensing outcomes for Aboriginal and Torres Strait Islanders living in remote communities.

The handbook covers the road rules, including road signs, and is written in plain English. It is specifically targeted to the learning needs of Indigenous people and can be applied in urban, rural and remote communities.

The book is also a sought-after resource by migrant resource centres, TAFEs and not for profit organisations running community programs supporting people whose first language is not English. In June 2016 Austroads made a PDF of the handbook freely available and hard copies available for the cost of postage and handling.

Consistent regulation of personal electric transportation devices

Project RS1978: Alternative Vehicles – Motorised Personal Transportation Devices

Personal Electric Transportation Devices (PETDs) are typically intended for recreational or commuting use, are normally small and portable, and are designed to carry one person over medium range distances at speeds of up to 25km/h.

This project developed a national policy framework for PETDs to ensure that devices are regulated consistently across Australia. In July 2016 Austroads submitted a proposal to the National Transport Commission for consideration by the Australian Road Rules (ARR) Maintenance Advisory Group. It includes definitions, access and conditions of use for PETDs.

Accelerated heavy vehicle licensing rejected on road safety grounds

Project RS1979: Review of Heavy Vehicle Licence Graduation Criteria

In April 2016 the Program concluded a project that considered implementing a nationally agreed accelerated, graduated pathway through all heavy vehicle licence classes. The project examined whether an accelerated pathway for mature drivers could remove regulatory barriers and improve the availability of drivers to the transport industry without compromising road safety.

A road safety panel was established to provide advice on desirable attributes of a graduated scheme which would have no adverse impact on road safety. The panel concluded that, at this time, there was insufficient justification to support a national accelerated pathway for heavy vehicle licensing on road safety grounds. The panel proposed that, in the first instance, jurisdictional crash and licensing data be analysed to develop a better understanding of the role of tenure duration in heavy vehicle licensing on crash outcomes.

ARRB was engaged to undertake a preliminary examination of crash data to help inform the feasibility of the proposed analysis. They also concluded that there is insufficient justification, on road safety grounds, to proceed with defining a nationally agreed accelerated licence pathway for heavy vehicle operators.

Future Focus

In 2016-17 the Registration and Licensing Program will come under the leadership of the new Austroads Safety Program. The shift recognises the important connection registration and licensing management has to road safety outcomes.

In November 2015 the Program finalised its strategic intent for 2016-2020.

The Program's objective for the new strategic cycle is to enhance consistency, security and integrity of systems and processes to improve economic and social outcomes with a focus on customer experience.

The Registration and Licensing Task Force will lead national development of registration and licensing programs with a focus on policy and program convergence, customer service improvement and service delivery efficiencies in the following areas:

- registration and road worthiness
- licensing
- identity and access management
- compliance
- ease of service
- data integrity.

The strategic statement presents a range of potential project based initiatives to form the basis of the forward work plan for the Program. Projects to be undertaken in 2016-17 include:

- a joint project with the National Motor Vehicle Theft Reduction Council to improve the management of end-of-life vehicles
- continued development and testing of the library of hazard perception test video clips and supporting material
- finalisation of a draft Australian Technical Standard which outlines the design specifications for motorised mobility devices and their use on public infrastructure and public transport
- identifying measures to increase national uniformity and ease of customer navigation in the administration of driver licenses and associated regulations
- working with agencies and Indigenous communities, to identify the suitability of current programs offered by road agencies, courts or revenue protection agencies to enable the retention of a driver licence even though a sanction action has been ordered or applied.

The new Austroads Connected and Automated Vehicles work stream will undertake a Board priority project that investigates potential registration and licensing issues associated with the introduction of automated vehicles.

Road agency staff and researchers met community leaders at Yarrabah in June 2016 to view their indigenous licensing unit in action.

National Exchange of Vehicle & Driver Information System

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 $162 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 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 insurance underwriting and vehicle safety recalls.

2015-16 Highlights

The NEVDIS system processed just under 125 million enquiries in 2015-16, a 14% increase in comparison to 2014-15.

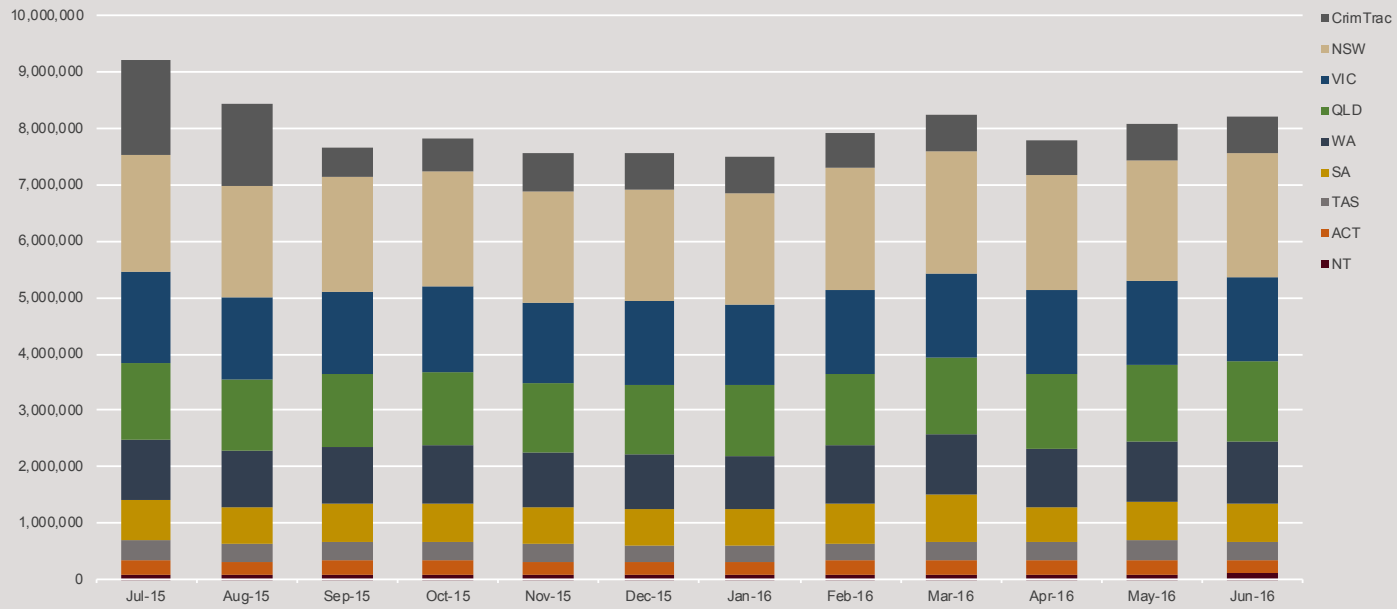
In July 2015 the NEVDIS Administration Unit (NAU) relocated from Roads and Maritime Services in North Sydney to the Austroads national office. The office space was expanded to accommodate the team and a review of skills sets and staffing needs was completed.

The physical relocation and cultural organisational change resulted in significant staff turnover. The NEVDIS team successfully maintained a high standard of service to stakeholders with a reliability uptime of 99.9% in 2015-16.

The NEVDIS core application is now over 13 years old and reliant on specialist skills and outdated architecture. A project to modernise NEVDIS, to enable new functionality and enhancements without invoking considerable and expensive changes to jurisdiction's systems, was approved by the Board in 2015-16. The NEVDIS re-platform project will facilitate the migration of NEVDIS and ancillary systems to a 'Platform as a Service' (PaaS) cloud computing model and is scheduled to be completed by the end of the 2016-17 financial year.

In April 2016 an update of the NEVDIS Participation Agreement and the business rules was completed. The revised documents take into consideration new commercial agreements and the extension of services provided to non-jurisdictional clients such as the Attorney-General's Department (Document Verification Service) and the Australian Financial Security Authority (Personal Properties Securities Register).

NEVDIS jurisdictional transactions



In August 2015 the NAU completed a project to ensure that vehicle attribute fields in the NEVDIS database are fully populated and accurate. NAU worked with FCAI to capture the full set of vehicle attributes at the time of registration. While not all jurisdictions are currently using the full information set, they may opt-in at any time to access the data.

NEVDIS generates revenue from corporate and public sector entities through the PPSR, DVS Commercial, VIRS (MotorWeb), Safety Recall and Data Extract products.

During the year a number of large, high profile, safety recalls were conducted. NAU processed 197 recalls during the year impacting 2.25 million vehicles.

The system processed 1.5 million VIN transactions during the year.

While servicing the information exchange needs of road agencies remains the core focus of NEVDIS, in December 2015 the NAU successfully deployed the Plate-to-VIN (P2V) commercial service in 2015-16.

The P2V initiative is designed to meet the demand for access to vehicle data held in NEVDIS from commercial or government enterprises. The web service allows clients to access a wide range of NEVDIS vehicle data products via a secured Virtual Private Network (VPN) connection.

The core product links:

- number plate and state with vehicle identification number
- number plate and state with chassis number
- vehicle identification number with number plate.

Optional additional data products include: registration status, written-off status, written-off history and stolen status.

From January 1 2016, NEVDIS became the sole administrator of all World Manufacturer Identifiers (WMIs) issued to Australian vehicle manufacturers. The WMI forms the first three characters of the 17-character Vehicle Identifier Number (VIN).

The VIN provides a coded description of the vehicle including: manufacturer, year of production, place of production and vehicle characteristics.

WMIs are structured differently depending on the manufacturer's volume. In Australia, less than 500 vehicles per annum is designated as a Low Volume Manufacturer and more than 500 vehicles is designated as High Volume.

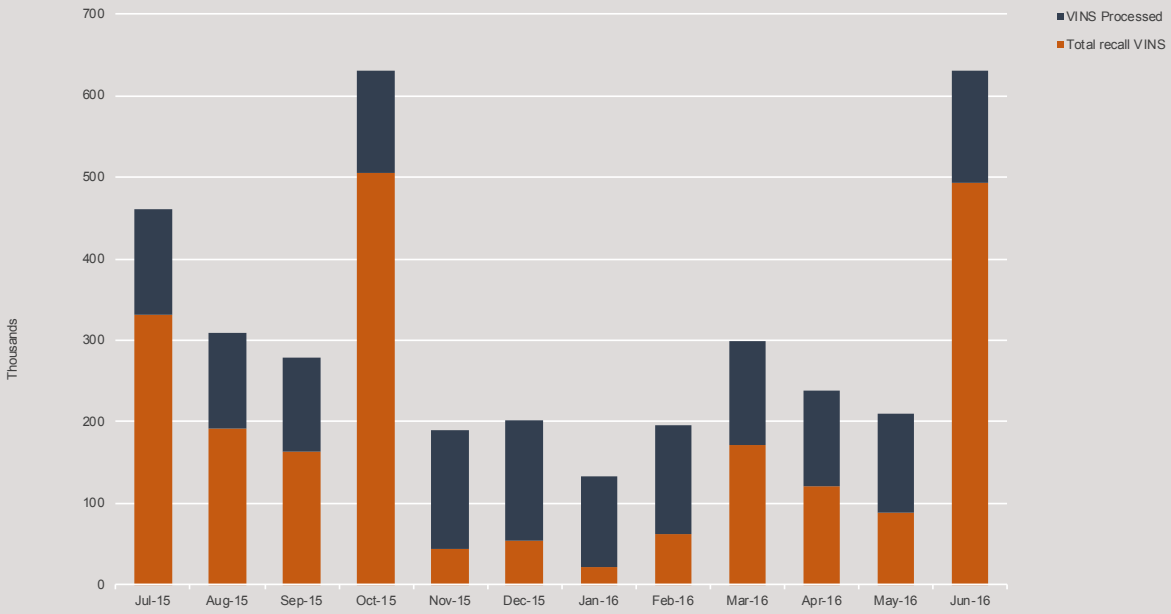
On a global scale, WMIs are administered by the US based company Society of Automotive Engineers (SAE). Locally in Australia, low volume WMIs were managed by NEVDIS, while high volume WMIs were managed by SAI Global. This decision to make NEVDIS the Australian WMI administrator was endorsed by SAI Global and SAE.

The consolidation of WMI administration will tighten management and make it easier for manufacturers. During the year NAU issued 44 WIMs.

Future Focus

NEVDIS intends to remain a not-for-profit entity but analysis has identified a number of additional opportunities that have the potential to generate sufficient surplus to fund NEVDIS' future investment requirements as well as partially or fully negate the need for future funding of NEVDIS by jurisdictions.

NEVDIS VIN transactions



Safety Program

preventing death and serious injuries using a Safe System approach

People

Program Manager: Iain Cameron
Passenger Services General Manager, On Demand Transport, DoT WA

Program Coordinator: Natalie Lockwood
MR WA

The Program's work program is guided by the Safety Task Force, which has representatives from state and territory road agencies, the National Transport Commission, the Commonwealth Department of Infrastructure and Regional Development, and Australia New Zealand Policing Advisory Agency. The Program Manager chairs the meetings of the Safety Task Force.

Safety Task Force

Melanie Atlee, ANZPAA	Geoff Davidson, DJCS ACT	Sharon Nyakuengama, DIRD
Colin Brodie, NZTA	Craig Hoey, DSG Tas	Paula Norman, DPTI SA
Bernard Carlon, TfNSW	Marcus James, DIRD	Jeff Potter, NTC
Antonietta Cavallo, VicRoads	Brent Johnston, MoT NZ	Jane Richards, TMR Qld
Brett Clifford, DoT NT		

Overview

The work of the Safety Program aims to prevent death and serious injuries using a Safe System approach. The Austroads Safety Program is well placed to understand current and emerging safety challenges facing jurisdictions working together to reduce serious road trauma. In addition to initiating and managing the Austroads research program, the Task Force is responsible for advice on road safety policy and strategy advice and development. Through the Commonwealth Department of Infrastructure and Regional Development the Program reports to TISOC on the implementation of the National Road Safety Strategy (NRSS) and National Road Safety Action Plan (NRSAP).

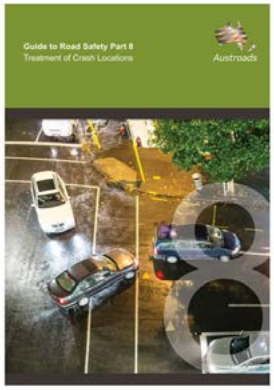
Outputs include:

- Austroads guides and other documents incorporating safe system principles and practices
- National Road Safety Strategy and NZ's 'Safer Journeys' initiatives including;
  - guidelines for graduated licensing
  - risk-based speed limit setting methodology
- initiatives effectively supporting the Global Decade of Action for Road Safety
- investigation of emerging road safety issues
- investigation of potential applications of cooperative ITS to produce improved safety outcomes
- Guide to Road Safety updated.

2015-16 Highlights

Updated guidance on treatment of crash locations

Project ST1776: Revision of Austroads Guide to Road Safety Part 8: Treatment of Crash Locations



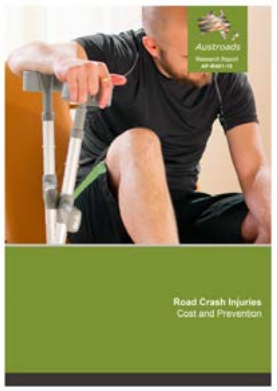
In November 2015 Austroads published an updated edition of *Guide to Road Safety Part 8: Treatment of Crash Locations*.

The Guide contains practical, hands-on advice to help practitioners investigate and treat locations on the road system which are experiencing crashes. By effectively treating these locations, through the application of effective engineering solutions, the number and severity of crashes can be reduced.

The structure of this second edition of the Guide was substantially revised. Other significant changes include: increased linkages to and inclusion of 'proactive' measures; added information on developing a program to address crash risk; inclusion of greater detail on the Safe System approach; additional countermeasures; updating terminology; increased focus on route reviews; and commentary has been added on prioritising fatal and severe injury crashes over other crashes.

Understanding the costs of road crashes

Project SS1494: Road crash injuries – cost and prevention



In September 2015 Austroads released the results of a three-year in-depth crash investigation designed to provide information about the causes and costs of a sample of serious (hospitalised) injury crashes in NSW.

Between March 2010 and February 2013, participants were recruited following admission to participating NSW trauma hospitals due to injury as an occupant of a passenger motor vehicle.

Participants were interviewed. The case vehicle and crash scene were inspected. Injury codes and cost data were obtained from hospital records. A multi-disciplinary Crash Review Team reviewed 94 crashes to agree on contributing factors, sources of injury, and recommended safety strategies, using a Safe System framework.

Results highlight that common errors often resulted at least in part from features of the road environment.

The Crash Review Team suggested strategies to address negative behaviours, including changes to the road environment and licensing system. Suggested injury mitigation strategies focused on improving vehicle restraint systems and structural integrity, as well as removing unprotected nonfrangible poles and trees that are close to the carriageway.

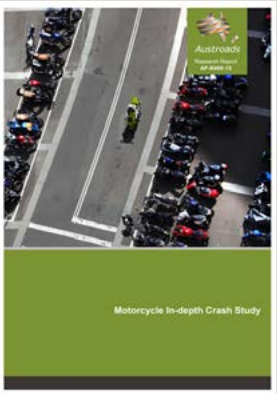
Indices of driver fatigue were used to examine the set of operational criteria used in NSW to classify crashes as fatigue-related, via comparison with CrashLink data. Results suggest that fatigue-involvement in crashes would be improved by considering measures of specific fatigue risk factors (e.g. amount and quality of last sleep, duration of driving).

In addition to providing average costs of in-hospital treatment, the project provided an opportunity for a small prospective case series study examining costs of injury for six months following discharge.

Results suggest that the substantial financial costs are borne mostly by Medicare, Workcover, and CTP insurance, though participants reported experiencing financial strain due to up-front payments. Facilitating claims procedures may improve post-crash experience, and education campaigns that highlight “everyday” consequences of injury may assist with reducing risky driving behaviour.

Insight into the causes of road crashes

Project SS1710: Motor cycle in depth crash study



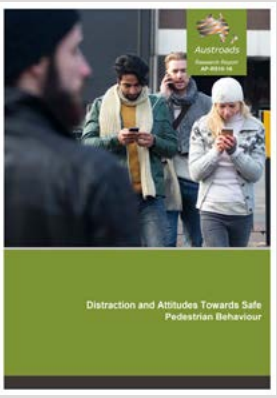
Motorcyclists represent an increasing proportion of road crash casualties in NSW and Australia.

In November 2015 Austroads published the results of an in-depth investigation into a sample of motorcycle crashes which provides new insight into crash contributing factors. The findings will help inform the development of targeted road safety policies and programs to reduce motorcycle crashes and road trauma.

The results indicate that riders using sports motorcycles and who are unfamiliar with their motorcycle, have a greater likelihood of being involved in serious injury crashes than riders using other motorcycle types and those very familiar with their vehicles. Protective factors identified in the case-control analysis included increasing age of the rider, and increased coverage by protective clothing. An additional protective effect was observed when the trip purpose was reported as commuting or general transport rather than for recreational purposes.

Four major themes arose in relation to crash causation and countermeasures: motorcyclists need to be seen; braking ability needs to be optimised; rider control needs to be maintained; and riders need appropriate experience.

Project SS1957: Pedestrian behaviour – distraction and attitudes towards safe pedestrian behaviour



Pedestrians account for around 14% of Australian road deaths annually. International research suggests that pedestrian distraction from smart phones may lead to greater risk of trauma. Ownership of smart phones in Australia is high, suggesting this may present an emerging road safety challenge.

In February 2016 Austroads published research that examined factors influencing safe pedestrian behaviour.

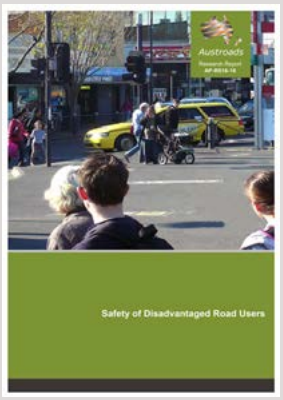
The project had three components: a literature review; an intercept survey with pedestrians; and an on-line survey of pedestrians.

The literature review identified that pedestrian distraction from technology is influenced by age, gender, and type of activity. It found that non-intersection locations are more likely than intersections for pedestrian crashes generally, though there is no research on distraction-specific crashes.

The results of the surveys suggested that use of smart phones while crossing the road was low for the sample overall, but significantly higher among 18-30 year olds, with 30% indicating they used their smart phones for texting or internet access at risky levels while crossing the road.

The report suggests that countermeasures should integrate education and engineering interventions within a Safe System approach, target pedestrians under 30 years, and be located at high pedestrian activity locations.

Project SS1761: Improving Safety for Disadvantaged Groups



In April 2016 Austroads published the results of a literature review and statistical analysis which investigated the relationship between disadvantage and road casualties.

The literature review confirmed that many studies have demonstrated increasing traffic injuries with lower socioeconomic status, despite wide difference in their design and the measures used.

The statistical analysis matched the postcodes of people involved in crashes with an index of social disadvantage derived from census data. Within each Statistical Local Area (SLA) the population was divided into two gender and four age groups. Fatalities or serious injuries (FSI) in the crash database were allocated to these groups. Negative binomial models were developed for South Australia and Victoria, the only two jurisdictions for which serious injury and postcode data were available.

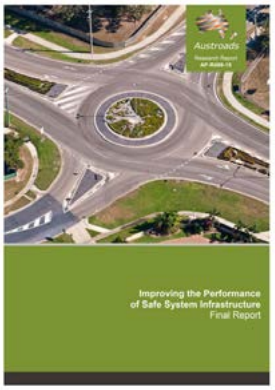
The models agreed well, but some features of the results were unexpected: the highest FSI rates were experienced by communities towards the middle of the range of disadvantage, and communities in the inner regional areas had unexpectedly high FSI rates. A negative binomial model was also developed for NSW based on all casualties rather than FSI since the database does not distinguish between serious and other injuries.

The model which emerged was very different from the others, showing a progressive increase in casualty rate with increasing disadvantage. Contrary to expectations, the injury rate for major cities was the highest, and injury rate for very remote communities was the lowest.

Recommendations include analysis of the South Australian and Victorian data using all injury crashes to determine if the results from NSW can be replicated, investigation of the reasons for the high FSI rate for inner regional communities, and monitoring future programs to address disadvantage.

Infrastructure improvements to reduce crashes

Project ST1767: Improving the performance of Safe System infrastructure



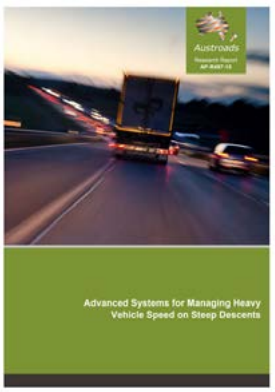
In November 2015 Austroads published the findings of a three-year study which reviewed the safety performance of selected road infrastructure elements and provided solutions that were more closely aligned with the Safe System ideal.

The review examined the performance of signalised intersections, roundabouts and wire rope barriers. The solutions were developed following a literature review, statistical analysis of site data, in-depth crash data analysis, and expert guidance.

The review found that the safety performance of signalised intersections can be improved by managing high entry speeds. Roundabouts showing poor safety outcomes for cyclists and motorcyclists can be made safer by reducing approach and entry speeds.

Wire rope barriers were seen to deliver positive safety improvements relative to other roadside design options. Guidance refinement could further optimise safety outcomes.

Project ST1863: Development of a detection and advanced warning system for at-risk heavy commercial vehicles on steep descents



There have been a number of crashes and incidents involving heavy vehicles on long, steep descents. Some heavy vehicle drivers, particularly those who are inexperienced or unfamiliar with the terrain, may not select an appropriate gear.

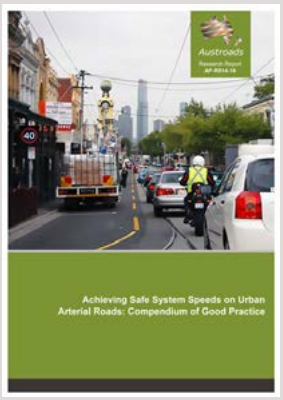
In response to these issues Austroads established a research project to determine whether a technical solution could provide appropriate early warning of unsafe operations by heavy vehicle drivers on descents.

The project report was published in November 2015. A literature review determined that there are not many infrastructure-based technological systems operating, and there is only limited data on effectiveness. Where the systems have been formally assessed, the assessments indicated a positive effect on driver behaviour.

Although no studies relating to the safety benefits of in-vehicle telematics or DSRC for steep descents were found, the review incorporated searches for general information on the capabilities of telematics devices. Based on general claims about the technical capabilities of in-vehicle telematics, the review was able to identify, on an elementary level, how they may serve as a warning system to heavy vehicle drivers and possibly intervene prior to an incident.

Additionally, the study used a heavy vehicle thermal brake model to examine the effect that road grade, vehicle speed, retarder level and vehicle mass had on brake temperatures on steep downgrades. It found vehicle mass and grade had the largest effect on brake temperatures, while retardation power and vehicle speeds had a lesser, but still significant effect.

Project ST1768: Achieving Safe System speeds on urban arterial roads



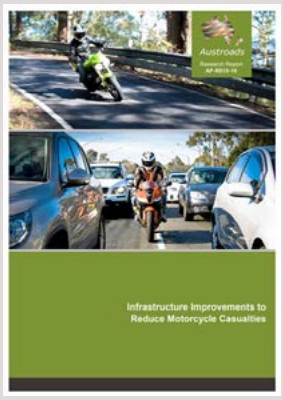
In April 2016 Austroads released a compendium of 27 engineering-based treatments that, either as a stand-alone treatment or in combination, will lower the operating speed on urban arterial roads to Safe System speeds.

A significant proportion of road crashes occur on urban arterial roads including those that lead to fatalities and serious injuries. Installation of these types of treatments have the potential to reduce the incidence and severity of crashes.

While the study focussed on engineering measures, some information on non-engineering-based treatments (e.g. enforcement, in-vehicle systems, road user education, and publicity) is provided along with information on speed management measures in work and school zones.

Several emerging treatments were identified as having considerable potential for effective long-term use, including signalised roundabouts, turbo roundabouts, road diets, raised intersections, wombat crossings, raised platforms and dwell-on-red signals.

Project ST1870: Infrastructure improvements to reduce motorcycle casualties



In July 2016 Austroads published the findings of a two-year study which sought to identify infrastructure improvements to reduce motorcycle crash risk and crash severity.

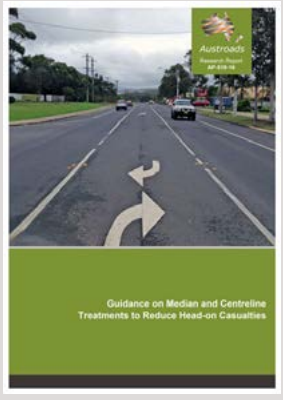
In 2012, motorcycle riders made up 16% of all Australian road fatalities and 22% of serious injury casualties despite representing only a small percentage of total traffic volume.

The report highlights the relationship between motorcycle crashes and road infrastructure, and specifically, how road infrastructure influences both the likelihood of a crash occurring or the resulting severity of a crash.

Road infrastructure elements considered in the study included design parameters, road surface condition, roadside hazards and overall maintenance condition.

The report concludes that motorcycle crash risk can be managed, but requires changes in practice, in design, asset management funding and routine maintenance performance contracts. The report also recommends updates to the Austroads Guides.

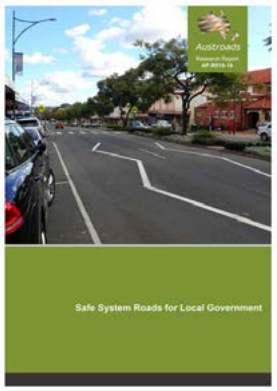
Project SS1959: Guidance on median and centreline treatments to reduce head-on casualties



In June 2016 Austroads published a compendium of local and overseas practice in minimising the risk and severity of head-on crashes. The report is intended to assist road safety practitioners identify effective actions that can be taken to reduce the incidence and severity of such crashes, with a focus on median and centreline treatments.

In addition to discussing well-proven methods to address head-on crashes, this report presents some innovative treatments for which there is currently insufficient data to confirm their benefits, but which may be effective in reducing head-on crashes where the crash history does not justify the expense of applying more established treatments.

Project ST1769: Safe System roads for local government



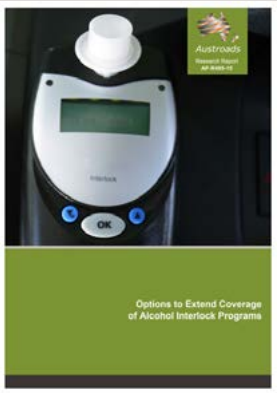
In April 2016 Austroads released a report that examines the safety performance of local government managed roads and identifies cost effective Safe System measures.

Australian and New Zealand local councils manage more than 80% of the length of all public roads. Local roads tend to carry significantly lower traffic volumes than the state road networks; however, analysis shows they contribute to more than half of all casualties resulting from road crashes, and an estimated 40-46% of fatalities.

The report presents a Safe System assessment framework developed for use by local government practitioners on local government-managed roads. It also provides an overview of the changes made to the Road Safety Engineering Toolkit to incorporate the assessment framework.

Policy considerations to reduce road crashes

Project SS1754: Options to extend coverage of alcohol interlock programs



Despite high levels of community education and sustained enforcement, alcohol-related crashes and drink-driving offences continue to pose a threat to road safety.

Alcohol interlock programs are one element of enforcement. High-range, repeat or other serious drink-driving offenders can be required to fit alcohol interlocks to their vehicles. The interlock is an electronic breath-testing device that prevents the car from starting if alcohol is detected.

In September 2015 Austroads published a report examining options to extend the coverage of alcohol interlock programs to: a wider segment of drink-driving offenders; other high-risk groups and corporate fleets.

The report recommends a harmonised national mandatory approach for both existing offender-based programs and non-offender programs.

Project SS1758: Development of a model safety management system for a road authority

Safety management systems are an integral aspect of how rail, maritime and aviation safety is managed and improved.

In November 2015 Austroads released a report promoting the development of safety management systems within road agencies..

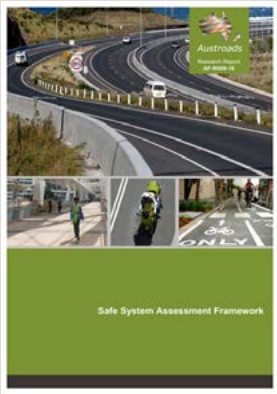
The report contains a Starter's Guide to implement ISO 39001. The benchmark set by ISO 39001 reinforces the case for a sustained program of work to support the widespread adoption of formal results-focussed safety management systems amongst all agencies responsible for the safe movement of users on their road networks.

The report includes a summary of survey results of Australian and New Zealand Road Agencies, a gap analysis and ten recommendations on how to address the current gap in understanding of the role of Safety Management Systems for Road Safety.

The survey results overall suggest that there is substantial variance in awareness of ISO 39001 and safety management systems between Australasian road agencies. There is a strong case for raising awareness and promoting the importance of safety management systems across all road agencies.

The recommendations for Austroads and its members focus on raising awareness, setting context, leadership, planning, monitoring, evaluation and improvement of road safety management systems.

Project SS1958: Development of a Safe System Assessment Framework for road infrastructure projects



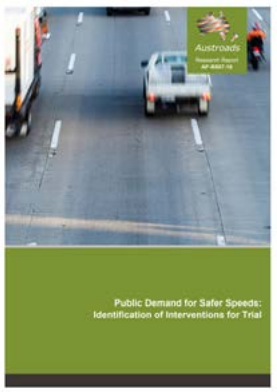
In February 2016 Austroads published an assessment framework designed to help road agencies methodically consider Safe System objectives in road infrastructure projects.

The framework considers key crash types that lead to fatal and serious crash outcomes, as well as the risks associated with these crashes (exposure, likelihood and severity). It provides prompts

to ensure each pillar of the Safe System are considered. A treatment hierarchy is also provided to help identify the most effective treatments that might be used to minimise death and serious injury.

The framework was developed following a review of literature on Safe System infrastructure and existing risk assessment frameworks. Examples are provided on its application.

Project SS1962: Creating, sustaining and/or increasing public demand for safer speeds – identification of interventions for trial



Speeding is a major contributor to road injuries and fatalities and remains prevalent. Changing community perceptions about speeding is an important priority.

In February 2016 Austroads published research which aims to identify a range of potential interventions for future trial and evaluation aimed at creating, increasing, and/or sustaining public demand for safer speeds.

The project had three phases: a literature review; consultations with key stakeholders regarding intervention options (including feasibility, and likely benefits and costs of identified interventions); and providing research results, including recommendations for future phases of the program of work.

A draft campaign strategy was developed for which there was overwhelming positive support. Wide diversity of practice across jurisdictions makes the recommendation of individual interventions for specific areas problematic. Individual jurisdictions should consider a range of costs and benefits of the proposed strategy to determine the likely feasibility from their unique perspective. Issues to be addressed when considering implementation of the proposed strategy include speed limit setting policies, resourcing, messaging and advertising strategies, and political will associated with promoting safer speeds.

Future Focus

In line with the 2016-2020 Strategic Plan, the Safety Program will lead the: Safety Task Force; Registration and Licensing Task Force; and Road Design Task Force.

The Safety Program will focus on:

- providing comprehensive and integrated guidance for road system managers
- promotion of road safety planning as a priority issue for decision makers
- identifying and sharing step change safety improvements
- integrating a common safety language for the Program.

The Safety work program will address the Safety objective in the Austroads Strategic Plan 2016-20 by setting a program of strategic and technical research to address each of the four cornerstones of the safe system:

- safe roads and roadsides
- safe vehicles
- safe speeds
- safe road users.

There is also strong alignment with the National Road Safety Action Plan 2015-2017.

The 2016-17 work program will include nine continuing projects and thee new projects starting in the second half of 2016:

- providing best practice recommendations for future Road Infrastructure Safety Programme (RISP) development that aligns with the Safe System approach, with a focus on reducing fatal and serious casualties
- investigating reducing work-related road trauma with closer collaboration between road authorities, workplace safety authorities and justice departments to enable the application of workplace safety requirements to the management of motor vehicle used for work purposes
- updating *Guide to Road Safety Part 6: Road Safety Audit.*

The new Connected and Automated Vehicles Program will undertake a project to assess the safety benefits of C-ITS and automated vehicles.

Austroads is a key sponsor of the Australasian Road Safety Conference to be held in Canberra in September 2016. The Safety Program will use the conference as an opportunity to canvass attendees for potential step change safety improvements to help shape the 2017-18 forward work plan.

Technology Program

developing and promoting best practice and innovation

Technology Program Overview

The work of the Technology Program aims to develop, implement and promote best practice and innovation in the field of road infrastructure design and construction.

Program outputs include:

- Guidance on improved design and materials management for enhanced pavement structural performance
- Improved understanding of material characteristics and vehicle interactions for improved quality and life of road surfacings including enhanced test methods and delivery techniques
- Guidance on management of scarce and quality resources (particularly in rural locations)
- Enhanced bridge design guidelines including improved evaluation methods for bridge load capacity including deterioration models
- Guidance on road design to improve safety for road users and provide efficiency, consistency and value for money designs
- Guidance of the design, management and safety of road tunnels
- Enhanced economic evaluation, methodology and data
- Austroads Guides updated and improved with integration of jurisdictional supplements
- Promote national harmonisation of standards, specifications, material test procedures and project delivery initiatives.

People

Program Manager: John Spathonis
Principal Manager (Research & Development), DTMR Qld

Program Coordinator: Craig Smith
DTMR Qld

The Program Manager chairs the meetings of the Technology Program Task Forces. The Technology Program Task Forces are:

- Bridge Task Force
- Road Design Task Force
- Pavement Task Force
- Road Tunnels Task Force
- Economic Evaluation and Planning Task Force
- Project Delivery Task Force

Cheif Engineers Group

Mark Bondietti, WALGA	Chris Harrison, RMS (Chair)	Julie Mitchell, DTMR Qld
Karl Cloos, TCCS ACT	Mick Lorenz, DPTI SA	Doug Morgan, MR WA
Agnelo Duarte, VicRoads	Louise McCormick, DoT NT	Kevin Reid, NZTA

The Chief Engineers Group was established by the Board in June 2014 to provide ongoing advice and guidance to Austroads on:

- emerging technical issues which are expected to impact on the Australasian road system and Australasian road agencies where a national response would be appropriate
- prioritising the work of Austroads across technical areas and particularly in relation to bridges, pavements, road design and tunnels
- adoption and implementation of research outputs in these areas by road agencies and ensuring that they provide real business benefits
- oversighting the current operation and future development of Austroads work in national product assessment (TIPES)
- Austroads structures and groups within the Technology Program
- strategic priorities for Austroads technical research.

The Group is issues based and meets on a needs basis, generally after a Board meeting to action or discuss the outcomes of that meeting.

Bridge Technology

The Bridge Task Force coordinates research that is working towards:

- developing enhanced bridge design guidelines
- improving evaluation methods for bridge load capacity including deterioration models
- ensuring the Austroads Guides are up-to-date and better integrated with jurisdictional supplements
- the revision of Australian Standard AS5100: Bridge Design.

Bridge Task Force

The Bridge Taskforce has representatives from state and territory road agencies, and the National Transport Commission.

Adam Lim, MR WA	Angela Ransom, DTMR Qld	Richard Underhill, DoT NT
Phil Molloy, DPTI SA	Parvez Shah, RMS NSW	Neil Wong, NTC
Andy Ng, VicRoads	Vincent Tang, DSG Tas	Barry Wright, NZTA

2015-16 Highlights

Significant improvements in bridge design have been developed and documented through the major rewrite of the Australian Standard AS5100 which is expected to be published in the first half of 2017. These enhancements are being incorporated into the Austroads Guide to Bridge Technology to ensure alignment with the revised standard. Part 7 of AS5100 provides detailed guidance on bridge capacity assessment, part of a new approach developed to assist the freight industry gain consistent access approvals.

Future Focus

In line with the 2016-2020 Austroads Strategic Plan, the Bridge Task Force will be led by the Assets Program.

The review of the Guide to Bridge Technology is progressing well but some project aspects are likely to be delayed as they are dependent on publication of AS5100.

Three additional bridge projects are continuing into 2016-17. Work to support a faster response to heavy vehicle route assessment applications is continuing. Discussions have occurred with the Heavy Vehicle Regulator. The first stage (a literature review) of the assessment process for more complex bridge conditions, which are outside the scope of AS5100, has been completed.

The work program has focussed on improving practices to extend the service life of major bridge structures in corrosive environments to beyond 100 years and innovation through assessment of new materials such as geopolymer concrete as well as industry changes including effects of limestone cement on concrete properties. This work is concluding in 2016.

The investigation into the effects of additional limestone in cement is progressing well with all the required materials sourced and test specimen manufacture underway.

The Austroads Bridge Conference, Australia's premier bridge conference, will be held in Melbourne in April 2017. The ABC2017 is hosted by VicRoads.

Road Design

The Road Design Task Force has progressed projects which:

- determine the efficacy, including safety performance, of the various treatments used to gradually reduce vehicle speeds in high speed environments
- review the Austroads Guide to Road Design
- determine the optimum acceleration lengths for entrance ramps onto motorways
- reduce the incidence and severity of crashes involving cyclists at roundabouts.

Road Design Task Force

The Road Design Task Force has representatives from Australian and New Zealand road agencies, the Australian Local Government Association (ALGA), and the Association of Consulting Engineers (ACE).

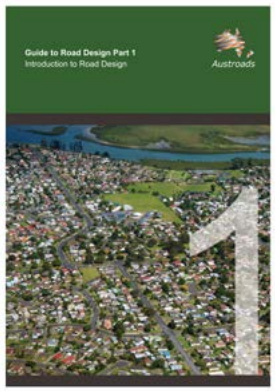
Andrew Baker, ACE	James Hughes, NZTA	Tony Napoli, ALGA
Tom Brock, ACE	Gemma Kernich, ABC	Usman Siddique, DoI NT
Peter Ellis, RMS NSW	Ben McHugh, ACT	Mike Whitehead, DTMR Qld
Richard Fanning, VicRoads	Bill Moodie, DoI NT	Albert Wong, MR WA

2015-16 Highlights

Updating the Guide to Road Design

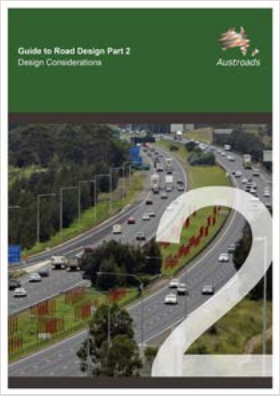
In 2015 Austroads published four updated editions of the Guide to Road Design.

Project TP1844: Guide to Road Design Revision of Part 1 and Part 2



Guide to Road Design Part 1: Introduction to Road Design provides an introduction to the road design process, defining its status, purpose and areas of application. It describes the functions and content of the 15 parts in the Guide to Road Design. The context of the road design process, its philosophy and principles are discussed. The use of each Part of the Guide and the relationship between them and the design process are covered. Part 1 of the Guide is particularly useful for designers who are new to road design or are using the Guide to Road Design for the first time.

Changes in this fourth edition of the Guide include additional linkage of road design with Safe System principles and updating of terminology, figures and references. The PDF version of the Guide has been made freely available.

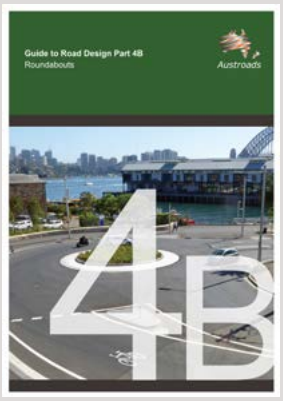


Guide to Road Design Part 2: Design Considerations provides a detailed description of the three critical aspects of road design: the design objectives that apply to a road design project; context-sensitive design; and the factors that influence the road design, including road design in the context of the Safe System philosophy.

Guidance is provided to practitioners on the range of considerations that may have to be assessed in developing a road project. The Guide also describes the basis of the guidelines and the context in which they should be applied. It also provides links to other Austroads Guides and the resources that give further guidance on design inputs.

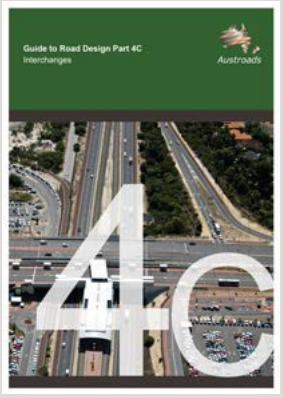
Changes contained in this second edition of the Guide include updates that discuss how the Safe System approach can be incorporated into the road design process. Updates to references and cross-references to other Austroads Guides have also been made, along with changes to the commentaries section.

Project TP1718: Update to the Guide to Road Design Part 4



Guide to Road Design Part 4B: Roundabouts provides guidance on the geometric design of roundabouts, enabling the development of safe and efficient layouts. It also provides information on pedestrian and cyclist treatments, pavement markings, signs and landscaping.

This third edition of the Guide contains new information relating to the extended design domain for vehicle entry path radii. Updates include: additional road safety and geometric design information; amendments to the information about bicycles at roundabouts, including deletion of commentary and figures relating to bicycle lanes within roundabouts; and amendments to the information on the use of spiral linemarking.

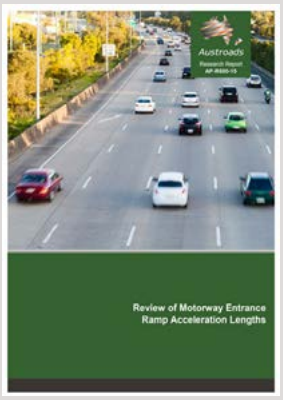


Guide to Road Design Part 4C: Interchanges provides guidance on the geometric design of interchanges between: freeways and arterial roads; two freeways; and two major arterial roads. It covers the geometric design of all the elements of an interchange including the: alignment and cross-section of the freeway in the vicinity of the interchange, the intersecting road and the ramps; merge and diverge ramp terminals at the freeway; and ramp terminals at the intersecting road.

Updates to this second edition include: new road safety information and additional information on design objectives and staged development; additional information on factors that may influence the type of interchange; additional section providing information on safety screens; additional information on criteria to be considered for grading at a cross-road; amending the longitudinal grade of a minor road to not exceed 2%; and an additional section on oversized and high wide load corridors.

Review of Motorway Entrance Ramp Acceleration Lengths

Project TS1843: Grade Corrected Acceleration Lengths for Motorway Entrance Ramps



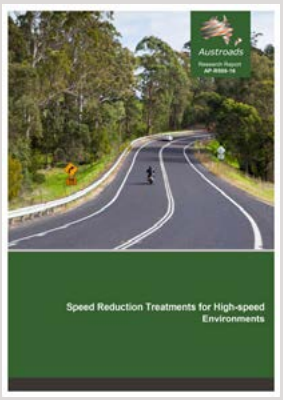
In December 2015 Austroads published an investigation into whether the ramp acceleration lengths provided in the Austroads Guides are valid for modern Australian vehicles.

The study included a literature review, speed data collection and crash analysis.

It found that the current method of using passenger vehicles as the design vehicle for acceleration on entrance ramps is appropriate. There is also potential for reducing acceleration lengths at entrance ramps. Further research is required to investigate human factors and design elements that affect acceleration rates and to ascertain whether acceleration rates could be increased.

Understanding the performance of speed reduction treatments in high-speed environments

Project TT1545: Speed Reduction Devices for High Speed Environments



Speed management is a key component of the Safe System approach. In February 2016 Austroads published an examination of the performance of different types of speed-reducing treatments in high-speed environments. The project also considered how desired speed can be aligned with a safe, anticipated operating speed with the goal of making high-speed roads more self-explanatory.

Treatments reviewed included: perceptual countermeasures; transverse rumble strips; vehicle activated signs; gateway treatments; route-based curve treatments; wide median centrelines; and sight distance adjustments on intersection approaches.

Based on the outcomes of this review, these treatments may merit further consideration for future Austroads research and guidance.

Future Focus

In line with the Austroads Strategic Plan 2016-2020, the Road Design Task Force will be led by the Safety Program.

The Road Design Task Force will continue projects to:

- revise the Guide to Road Design Parts 3, 4, 4A, 6 and 6A
- explain for practitioners, the fundamental objectives of road design
- verify Austroads design criteria that are based on objective safety evidence
- determine improved railway level crossing road design for heavy vehicles
- investigate road design options to improve bicycle safety at roundabouts.

Pavement Technology

The Austroads Pavement Task Force coordinates research that is working towards:

- providing guidance on improved design and materials management for enhanced pavement structural performance
- improving our understanding of material characteristics and vehicle interactions for improved quality and life of road surfacings including enhanced test methods and delivery techniques
- providing guidance on the management of scarce and quality resources (particularly in rural locations)
- ensuring the Austroads Guides are updated and improved with integration of jurisdictional supplements.

Pavement Task Force

The Pavement Task Force is the lead forum in Australia and New Zealand on road pavement technology. The Task Force is comprised of senior representatives from Austroads jurisdictions, the Australian Local Government Association (ALGA), and key industry stakeholders including AAPA, AustStab, CCAA, and Civil Contractors NZ.

Michael Caltibiano, AAPA	Bryan Matyorauta, DoT NT	Bryan Pidwerbesky, CC NZ
John Donbavand, NZTA	Kym Neaylon, Opus International	Hugo Van Loon, DPTI SA
Graham Hennessy, RMS NSW	John Nichols, CCAA	Barry Walker, DSG Tas
Paul Keech, ALGA	Andrew Papacostas, VicRoads	Greg White, AustStab
Les Marchant, MR WA	Mike Pickering, DTMR Qld	

Other technical working groups

- **Bituminous Surfacings Working Group** This group is chaired by a member of the Pavements Task Force but is generally composed of practitioners and industry representatives who have an interest in projects related to bituminous sprayed seals.
- **Asphalt Reference Working Group** This group is chaired by a state road authority representative and is generally composed of practitioners and industry representatives who have an interest in projects related to the use of asphalt.
- **Pavement Structures Working Group** This group is comprised of jurisdictional representatives, AAPA, AustStab and ARRB and reviews in detail, projects relating to pavement design.

Leah Fisher, CEO AustStab; James Loney; Ray Farrelly CEO CPEE; and Nick Koukoulas CE Austroads.

James Loney Recognised in CPEE Annual Student Excellence Awards

James Loney, Durkin Constructions was presented with the inaugural Centre for Pavement Engineering Education (CPEE) annual Student Excellence Awards at the Austroads national office in February 2016.

The award reconises Jame's exceptional achivement in the unit Insitu Stablisation which he completed in 2015.

Austroads is a foundation member of CPEE and funds the ongoing development of pavement technology units.

2015-16 Highlights

Improving the design of asphalt pavements

Project TT1826: Improved design procedures for asphalt pavements

In March 2016 Austroads published the final report on a three year project to improve the design procedures for asphalt pavements. The object of the work in this final year was to validate the proposed improved procedures for the characterisation of asphalt modulus and asphalt mix fatigue performance.

Based on the work, a revised text for Austroads Guide to Pavement Technology Part 2 was prepared. Changes include the introduction of flexural modulus master curves for the characterisation of the resilient response of asphalt in pavement design. Field and laboratory experiments were conducted to validate recommended changes. The findings support the proposed changes to the design procedures in the Guide.

In January 2016 the project also delivered a new test method that specifies procedures for the characterisation of the stiffness and fatigue behaviour of bituminous mixtures using a four-point bending test configuration.

Project TT1817: Maximising the use of reclaimed asphalt pavement in asphalt mix design

In April 2016 Austroads published guidance on the design and specification of recycled asphalt pavement (RAP) mixes to reduce uncertainty surrounding the performance of asphalt mixes designed and manufactured with RAP.

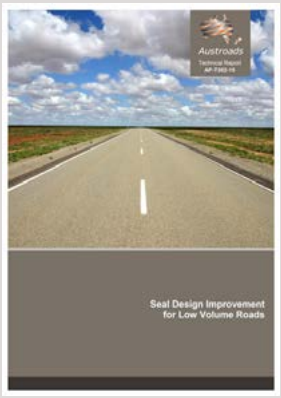
The use of RAP in asphalt mixes has significant economic and environmental benefits but requires design and production controls to ensure the product performs satisfactorily.

A feasibility study concluded that the RAP can be subjected to recycling multiple times. A long-term monitoring of RAP sources showed that there is little variation within a stockpile; however, there is significant variation within stockpiles over time. A comprehensive sensitivity study, using the Monte Carlo simulation, was performed as part of the validation process to provide insight into the variability, impact and risk assessment for asphalt mixes containing RAP. Binder blend characterisation should be required for asphalt mixes with RAP content greater than 15%.

The report notes the importance of implementing a RAP management plan and proposes amendments to the *Guide to Pavement Technology Part 4B: Asphalt* to incorporate the binder blend characterisation for mix designs containing RAP.

Maximising the life of sprayed seals

Project TT1820: Maximising the performance of sprayed seals



The Austroads sprayed seal design method was published in 2006 and is used by practitioners to construct sprayed seals across Australia.

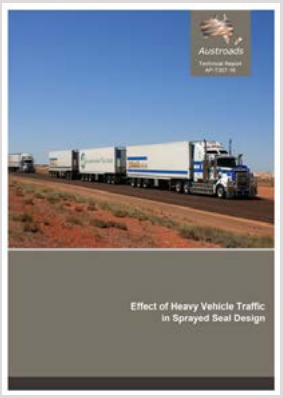
In September 2015 Austroads proposed a new basic voids factor for single/single seals which will require lower basic voids factors to be used for low volume roads.

In recent years a number of practitioners had indicated that the basic voids factor for single/single seals in the current Austroads sprayed seal design method was too high for low volume roads. A questionnaire distributed to jurisdictions and local councils confirmed that concern. Issues with bleeding of seals, and concerns about the effects of high percentages or seasonal changes in heavy traffic, were also highlighted.

A literature review indicated that the Austroads basic voids factor had developed empirically over time based on observations by sealing experts and practitioners. In comparison the New Zealand equivalent factor is based on quantitative measurements obtained during an extensive series of road trials. The New Zealand approach informed the propose changes to the Austroads factor.

The revised Austroads basic voids factor was compared with recent Australian seal data/observations and it appears its use would not result in issues with sprayed seals.

Project TT2017: Performance based specifications for binders



In July 2016 Austroads published a report that examines the effect of heavy vehicle loading on sprayed seals, with a view to incorporating loading impacts into the Austroads sprayed seal design method.

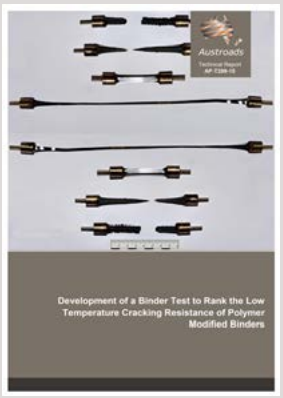
Sprayed seal surfacings on flexible granular pavements are a major pavement type in rural Australia, comprising some 90% of surfaced roads. One of the foremost challenges facing Australian road surfacings practitioners is the performance of sprayed seal surfacings under the increasing numbers of large heavy vehicles on major and rural transport routes.

The current Austroads sprayed seal design method includes an equivalent heavy vehicle (EHV) factor to account for the effect of heavy vehicles on sprayed seal design. The EHV factor is calculated using a simple equation which includes contributions from the proportions of heavy vehicles and large heavy vehicles which are obtained from a traffic count.

The research found that large-scale changes to the heavy vehicle fleet, or further development of load damage exponent knowledge for sprayed seals, may require an equation for the EHV factor which is more complicated than the simple equation currently used.

Improving binder performance

Project TT1823: Binder characterisation properties for enhanced performance



The current Australian polymer modified binder (PMB) specification includes low temperature stiffness tests but does not include a binder test which ranks the resistance of PMBs to low temperature cracking on the road.

In July 2015 Austroads published the results of an investigation into whether binder force ratio tests, conducted using the ARRB elastometer, could be included as a binder test in the Australian PMB specification to rank the low temperature cracking performance of binders.

Based on the results and studies by other researchers, extensiometer force ratio tests appear to be suitable for ranking the low temperature cracking performance of nine of the 13 binder grades which have specified test properties listed in the Australian PMB specification.

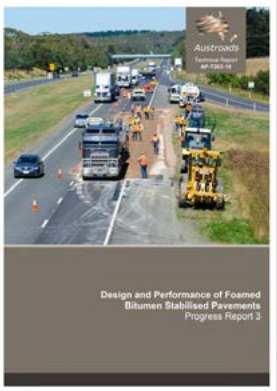
The results of preliminary studies indicated that further research is required to optimise the extensiometer test conditions to be used to characterise the properties of hard PMBs as they broke during testing when standard extensiometer test conditions were used. Further work has been proposed to determine whether appropriate extensiometer test conditions can be developed so that force ratio results can be used to rank the low temperature cracking performance of hard PMB grades.

Improving the design of foamed bitumen stabilised materials

Project TT1825: Mix design and field evaluation of foamed bitumen stabilised pavements

In July 2012 Austroads commissioned a research project designed to:

- improve the Austroads procedures for the structural design of foamed bitumen stabilised materials for new pavements and structural rehabilitation treatments
- identify distress modes of bitumen stabilised pavements from the trial sites
- improve and harmonise national mix design procedures for bitumen stabilised materials.



In November 2015 Austroads published a progress report that summarises the test methods drafted and currently being reviewed within the context of an Austroads mix design process.

In relation to the structural design of foamed bitumen stabilised pavements, in March 2015, trial sections were constructed on the Western Highway in Ballan, Victoria. The report details the construction and early-life monitoring of performance.

The results of other foamed bitumen stabilised sections are also provided, including 18-month performance data for the Newell Highway, Bellata, New South Wales; two-year performance data for the trial section on Calder Freeway, Woodend, Victoria; and the fatigue cracking of Port Wakefield Road, Virginia, South Australia within two years of opening to traffic. In addition, the latest performance data from Kewdale Road and Kwinana Freeway in Perth are described.

Future Focus

In line with the Austroads Strategic Plan 2016-2020, the Pavements Task Force will be led by the Assets Program.

There are nine continuing projects in the pavements area including:

- development of a new laboratory test method to remove the necessity to conduct extended field trials to determine sprayed seal binder propensity for cracking
- research into the performance of foamed bitumen stabilisation including monitoring the established in-service field trials and assessing the performance impacts of incorporating a high proportion of reclaimed asphalt pavement (RAP) in the stabilised material.

Projects starting in 2016-17 include:

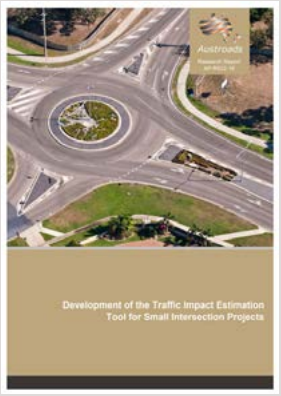
- developing a national harmonised, performance based, asphalt mix design and specification framework to encourage innovation
- monitoring Austroads sprayed seal trial sites, allowing comparative performance of the full suite of polymer modified binders against conventional binders
- developing micro surfacings guidelines and specifications, updating Austroads guidance on low cost and innovative road surface rejuvenation treatments
- evaluating sprayed seal cutting agents, investigating concerns that cutting agents commonly used in sprayed seal operations may not meet requirements
- updating Guide to Pavement Technology
  - Part 3: Pavement Surfacings
  - Part 4C: Materials for Concrete Roads
  - Part 4E: Recycled Materials
- reviewing CPEE distance learning units.

Economic Evaluation and Planning

2015-16 Highlights

Evaluating small intersection projects

Project TT1838: Traffic impact estimation tool for small intersection projects including safety initiatives



Austroads developed the Small Intersection Evaluation (SIE) tool to help practitioners undertake a quick economic evaluation of small intersection projects including: give-ways/stops, roundabouts and traffic signals.

The tool can be used by practitioners working with basic traffic data to estimate road user cost impacts, primarily delay and fuel costs, as well as crash costs.

The SIE Tool does not aim to replicate sophisticated intersection analysis software or the packages developed by various jurisdictions to undertake detailed analysis of large intersection projects. Rather, the objective is to facilitate the economic evaluation of a number of small intersection projects which could provide an indication of the most promising projects which can then be subject to further detailed analysis thereafter.

The report, *Development of the Traffic Impact Estimation Tool for Small Intersection Projects*, describes the development of the tool.

Future Focus

From 2015-16 the type of work undertaken by the Economic Evaluation and Planning Task Force has been managed by the National Guidelines for Transport System Management Steering Committee. Austroads has continued to support the work of the Committee by providing project assistance. Funding will also be considered for road related research required for the ongoing development and maintenance of the Australian Transport Assessment and Planning (ATAP) Guidelines.

Tunnel Technology

The Road Tunnels Task Force coordinates research program that is working towards providing guidance relating to the safety, design and management of road tunnels.

Road Tunnels Task Force

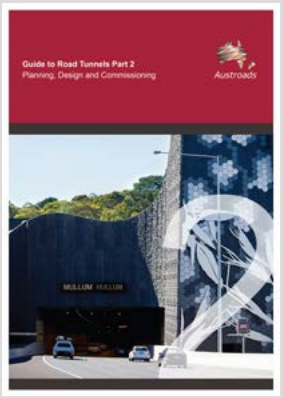
The Road Tunnels Task Force consists of jurisdictional representatives from around Australia and New Zealand, and representatives of the Australasian Tunnelling Society (ATS), Australasian Tunnel Operators Group (ATOG) and Transurban.

Bob Allen, ATOG	Nigel Lloyd, NZTA	Ted Nye, ATS
Nigel Casey, RMS NSW	Geoff McKernan, Transurban	Greg Pipikios, Transurban
Bruce Dandie, ATS	Nooru Mohamed, DTMR Qld	John Venables, MR WA
Lisa Hauth, VicRoads	Kingsley Noble, DPTI SA	

2015-16 Highlights

Updating the Guide to Road Tunnels

Project TP1840: Revision of Austroads Guide to Road Tunnels Part 2: Planning, Design and Commissioning



The Guide to Road Tunnels Part 2 provides guidance to those making decisions in the planning, design, operation and maintenance of new road tunnels in Australia and New Zealand. Principles and standards identified are based on both Australasian and international experience.

Part 2 sets out the Austroads expectations regarding appropriate design for road tunnels. It discusses all aspects of planning, design and commissioning of road tunnels including structural and geotechnical requirements, fire and life safety, ventilation, lighting, traffic monitoring and control, plant monitoring and control, electrical power supply and the requirements for associated building structures.

It is expected that the Guide will be used by engineers and technical specialists in tunnel technology working on the planning, design and operation of road tunnels, proponents of road tunnel solutions, senior decision makers (in an overview role) and regulators in the various jurisdictions associated with the construction of tunnels.

This second edition of the Guide provides updated material across the areas of design considerations, structural requirements, geometric design, environmental considerations, fans, CCTV and operational readiness.

Future Focus

In line with the Austroads Strategic Plan 2016-2020, the Tunnels Task Force will be led by the Assets Program.

The project investigating measures to reduce accidents in road tunnels is continuing and due for completion in 2016-17.

A new project will revise two parts to the Guide to Road Tunnels Part 1: Introduction to Road Tunnels and Part 3: Operations and Maintenance. A new Part 4: Retrofit will also be developed.

Project Delivery

The key focus of the Project Delivery Task Force has been to share experiences, and seek efficiencies and harmonisation in the delivery of infrastructure involving tens of billions of dollars expended annually. Development and operation of the national pre-qualification scheme for construction contractors has been a huge success driven by the Task Force.

Project Delivery Task Force

Project Delivery Task Force has representatives from Australian and New Zealand road agencies.

Brian Bestwick, RMS NSW	Richard Edwards, DPTI SA	Adil Jamil, DSG TAS
Leo Coci, MR WA	Graham Hobbs, DTMR Qld	Colin MacKay, NZTA
John Cunningham, VicRoads	Stephen Hoyne, NT	

2015-16 Highlights

National Prequalification

The National Prequalification System for Civil (Road and Bridge) Construction Contracts is administered by the state and territory road agencies. The system classifies contractors who wish to tender for road and bridge construction contracts based on their technical and managerial expertise, financial capacity and previous performance.

The system identifies prequalification categories for road construction, bridge construction and financial levels. It considers financial and technical capacity separately as these components represent different types of risks.

In December 2015 the descriptions of the categories were updated and expanded.

In January 2016 Austroads published a revised Guideline template for agencies to adapt for use within their local jurisdiction.

New Prequalification Categories

In late 2014 Austroads sought industry and public feedback on a proposal to add two new specialist categories, precast concrete products and fabricated steel products. Work on the additional specialist categories for the national prequalification system is being finalised ready for publication.

Future Focus

In line with the Austroads Strategic Plan 2016-2020, the Project Delivery Task Force will be led by the Assets Program.

The Task Force will oversee two new projects in 2016-17:

- national harmonisation of general conditions of contract, in response to changes in the Australian Standards which will require jurisdictions to assess and adopt a new approach
- development of a new Guide to Project Delivery Part 5: Construction Quality Assurance.

Publications released 2015-16

Corporate Reports

Code	Title	Released	2015-16 downloads
AP-C20-15	Austroads Annual Report 2014-15	Nov-15	1122
AP-C29-15	Austroads Strategic Plan 2016-2020	Dec-15	1876
AP-C87-15	Austroads Glossary of Terms (2015 Edition)	Aug-15	2213
AP-C91-15	Australian Cycling Participation 2015	Jul-15	3409
AP-C93-15	National Cycling Strategy: Implementation Report 2014	Jul-15	569
AP-C95-15	ITS Strategic Directions: A roadmap of ITS activities in Australia and New Zealand	Nov-15	477
AP-C96-16	Guidelines: National Prequalification System for Civil (Road and Bridge) Construction	Jan-16	459
AP-C97-16	Austroads Learning to Drive	Jun-16	452

Guides

Code	Title	Released	2015-16 downloads
AGRD01-15	Guide to Road Design Part 1: Introduction to Road Design	Sep-15	2186
AGRD02-15	Guide to Road Design Part 2: Design Considerations	Sep-15	1520
AGRD04B-15	Guide to Road Design Part 4B: Roundabouts	Dec-15	1459
AGRD04C-15	Guide to Road Design Part 4C: Interchanges	Dec-15	1003
AGRD06B-15	Guide to Road Design Part 6B: Roadside Environment	Jul-15	1417
AGRS08-15	Guide to Road Safety Part 8: Treatment of Crash Locations	Nov-15	668
AGRT02-15	Guide to Road Tunnels Part 2: Planning, Design and Commissioning	Nov-15	294
AGTM02-15	Guide to Traffic Management Part 2: Traffic Theory	Oct-15	606
AGTM04-15	Guide to Traffic Management Part 4: Network Management	Jul-15	700
AGTM08-16	Guide to Traffic Management Part 8: Local Area Traffic Management	May-16	390
AGTM13-15	Guide to Traffic Management Part 13: Road Environment Safety	Aug-15	498

Research Reports

Code	Title	Released	2015-16 downloads
AP-R487-15	Improved Bridge Deterioration Models, Predictive Tools and Costs	Jun-15	653
AP-R489-15	Motorcycle In-depth Crash Study	Nov-15	1061
AP-R490-15	Improving Freight Vehicle Access through Direct Private Investment in Public Road Infrastructure: A Framework for Guiding Private Sector Participation	Sep-15	355
AP-R491-15	Road Crash Injuries: Cost and Prevention	Sep-15	748
AP-R492-15	Bicycle Wayfinding	Sep-15	748
AP-R493-15	Bicycle Wayfinding: Literature Review	Sep-15	675
AP-R494-15	Signal Management Techniques to Support Network Operations	Oct-15	803
AP-R495-15	Options to Extend Coverage of Alcohol Interlock Programs	Sep-15	388
AP-R496-15	Safety Management Systems for Road Agencies ISO 39001 and the Next Step Towards a Safe Road Transport System	Nov-15	582
AP-R497-15	Advanced Systems for Managing Heavy Vehicle Speed on Steep Descents	Nov-15	428
AP-R498-15	Improving the Performance of Safe System Infrastructure: Final Report	Nov-15	775
AP-R499-15	Development of the Accessibility-Based Network Operations Planning Framework	Nov-15	406
AP-R500-15	Review of Motorway Entrance Ramp Acceleration Lengths	Dec-15	510
AP-R501-15	Deploy and Refine the Road Wear Modelling Methodologies: FAMLIT Final Report	Dec-15	199
AP-R502-15	Freight Axle Mass Limits Investigation Tool (FAMLIT) User Guide	Dec-15	340
AP-R503-16	Expansion of the Performance Based Standards Route Assessment Tool (PBS RAT)	Jan-16	226
AP-R504-16	Improving High Productivity Vehicle Access through Potential Charging Regimes	Feb-16	178
AP-R505-16	National Steer Axle Mass Limits	Feb-16	311
AP-R506-16	ITS Performance and Benchmarking	Jan-16	615
AP-R507-16	Public Demand for Safer Speeds: Identification of Interventions for Trial	Feb-16	699
AP-R508-16	Speed Reduction Treatments for High-speed Environments	Feb-16	1027
AP-R509-16	Safe System Assessment Framework	Feb-16	1088
AP-R510-16	Distraction and Attitudes Towards Safe Pedestrian Behaviour	Feb-16	739
AP-R511-16	Improved Design Procedures for Asphalt Pavements	Mar-16	1114
AP-R512-16	Freight Movement in Emergency Situations	Apr-16	188
AP-R513-16	ITS Architecture Roadmap	Mar-16	463
AP-R514-16	Achieving Safe System Speeds on Urban Arterial Roads: Compendium of Good Practice	Apr-16	1103
AP-R516-16	Safety of Disadvantaged Road Users	Apr-16	500
AP-R517-16	Maximising the Use of Reclaimed Asphalt Pavement in Asphalt Mix Design: Field Validation	Apr-16	711
AP-R518-16	Safe System Roads for Local Government	Apr-16	647
AP-R519-16	Guidance on Median and Centreline Treatments to Reduce Head-on Casualties	Jun-16	740
AP-R520-16	Overcoming Barriers to the Off-peak Movement of Freight in Urban Areas	May-16	311

Technical Reports

Code	Title	Released	2015-16 downloads
AP-T296-15	Improved Design Procedures for Asphalt Pavements: Outcomes for Year 2 of 3	Jul-15	711
AP-T297-15	Analysing Dynamic Wheel Loading and its Effects on the Network	Jul-15	456
AP-T298-15	Development of a Durability Test Method for Sprayed Sealing Binders: A Field Validation Study	Jul-15	388
AP-T299-15	Development of a Binder Test to Rank the Low Temperature Cracking Resistance of Polymer Modified Binders	Jul-15	450
AP-T300-15	Review of Overseas Tunnels	Jul-15	579
AP-T301-15	Expanding Information by Utilising Uncertain Data	Aug-15	315
AP-T304-16	Incorporating Uncertainty in Pavement Management System (PMS) Modelling: Phase 1	Jan-16	276
AP-T305-16	Austroads LTPP / LTPPM Study - Summary Report 2014-15	Feb-16	330
AP-T306-16	Defining Asset Management Level of Service Requirements for Freight on Rural Arterial Roads	Apr-16	376
BA2057-DRAFT	Second Round Consultations on Austroads Road Data Standard	Apr-16	308

Test Methods

Code	Title	Released	2015-16 downloads
AGPT-T274-16	Characterisation of flexural stiffness and fatigue performance of bituminous mixes	Jan-16	476
AGPT-T124-16	Toughness of Polymer Modified Binders (ARRB Extensiometer)	Feb-16	332
AGPT-T054-15	Determination of Permanent Deformation Characteristics of Unbound Granular Materials by a Wheel-tracking Test	Sep-16	310
AGAM-S001-16	Specification for Pavement Roughness Measurement with an Inertial Profilometer	May-16	80
AGAM-S004-16	Specification for Pavement Rutting Measurement with an Inertial Profilometer	May-16	58
AGAM-S005-16	Specification for Pavement Surface Texture Measurement with an Inertial Profilometer	May-16	62
AGAM-T001-16	Pavement Roughness Measurement with an Inertial Profilometer	May-16	78
AGAM-T002-16	Validation of an Inertial Profilometer for Measuring Pavement Roughness (Reference Device Method)	May-16	52
AGAM-T003-16	Validation of an Inertial Profilometer for Measuring Pavement Roughness (Loop Method)	May-16	40
AGAM-T004-16	Pavement Roughness Repeatability and Bias Checks for an Inertial Profilometer	May-16	55
AGAM-T009-16	Pavement Rutting Measurement with an Inertial Profilometer	May-16	69
AGAM-T010-16	Validation of an Inertial Profilometer for Measuring Pavement Rutting (Reference Device Method)	May-16	40
AGAM-T011-16	Validation of an Inertial Profilometer for Measuring Pavement Rutting (Loop Method)	May-16	40
AGAM-T012-16	Pavement Rutting Repeatability and Bias Error Checks for an Inertial Profilometer	May-16	64
AGAM-T013-16	Pavement Surface Texture Measurement with an Inertial Profilometer	May-16	128
AGAM-T014-16	Validation of an Inertial Profilometer for Measuring Pavement Surface Texture (Reference Device Method)	May-16	191
AGAM-T015-16	Validation of an Inertial Profilometer for Measuring Pavement Surface Texture (Loop Method)	May-16	200
AGAM-T016-16	Pavement Surface Texture Repeatability and Bias Error Checks for an Inertial Profilometer	May-16	272

Financials and Directors' Reports

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The directors of Austroads Ltd ("the Company") present this report on the Company for the financial year ended 30 June 2016.

Directors

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

- Peter Duncan AM (Chair)
- Adrian Beresford-Wylie
- Allan Frost
- Clare Gardiner-Barnes (Deputy Chair) (until July 2015)
- Paul Gelston
- Tony Gill PSM
- Shane Gregory
- Andrew Jaggers (until October 2015)
- Andrew Kirkman (commenced July 2015)
- Neil Scales OBE (Deputy Chair) (commenced October 2015)
- Peter Todd
- Stephen Troughton (until July 2016)

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 manage these programs. This provides opportunities for the staff of member organisations to participate in the operation of the Company and the development and delivery of projects. It also 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 their allocated budget. The completion of projects within their scheduled timeframe continues to be a challenge but has substantially improved this year.There were 37 projects scheduled for completion in 2015-16. Seventeen were completed on schedule. At 30 June there were only three projects running more than six months late, a significant reduction from 15 the previous year.
- Take up of the Company outputs
  In 2015-16, 317,000 publications were downloaded or sold. This is 50,000 more than last year. On average, more than 400 Austroads Guides are downloaded by local councils and member organisations every working day (a 20% increase on last year).
- Adoption of Austroads Guides by road agencies
  All road agencies across Australasia have adopted the Austroads Guides.

Information on Directors

Peter Duncan AM (Chairperson) | FIPAA G.Dip. Mgt, A.Dip. Land. Studies, Grad. Cert Traffic Eng, Cert. L&ESD

Mr Duncan was appointed Chairperson in November 2014, and is a member of the Austroads Executive Committee.

Mr Duncan is Chief Executive of Roads and Maritime Services NSW. Formerly, he was Deputy Director General of the Department of Premier and Cabinet. Previous roles include Director General of the Department of Services, Technology and Administration; Chief Executive Officer of Forests NSW; Director and Chief Executive of the Centennial Park and Moore Park Trust; and Director Estate Management at Olympic Coordination Authority.

Early in his career Mr Duncan worked for a number of years in Road Design and Traffic Engineering with the Department of Main Roads, local government and private consultancies. He has also served on a number of boards and government committees. Current appointments include Roads Australia board member and Director of the WestConnex Delivery Authority. He is a member of Australian Institute of Company Directors and a Justice of the Peace in NSW.

In 2013, Mr Duncan was made a Member (AM) in the General Division of the Order of Australia for significant service to public administration in New South Wales, and to conservation and the environment.

Adrian Beresford-Wylie | BA(Hons) LLB
Mr Beresford-Wylie is the Chief Executive Officer of the Australian Local Government Association (ALGA). He took up that position in May 2006.

Mr Beresford-Wylie was 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.

Allan Frost | BBS. CA. FCPA.
Mr Frost is the Group Manager, Organisational Support for the New Zealand Transport Agency, and is a member of its Leadership Team and was previously the Chief Financial Officer and subsequently Chief Information Officer for the Ministry of Agriculture and Forestry. Mr Frost also sat on the Ministry's management executive board and has considerable experience in change, information services and financial management.

Clare Gardiner-Barnes | DTeach, GDA, MSWAP (until July 2015)
Ms Gardiner-Barnes was appointed Deputy Chairperson in November 2015, and was a member of the Austroads Executive Committee.

At the time of her directorship, Ms Gardiner-Barnes was the Chief Executive of the Department of Transport, Northern Territory. Ms Gardiner-Barnes has more than 20 years experience in the public sector taking on key leadership roles across education, women's issues, children and families, disability, homelessness, child care, disaster recovery and domestic and family violence. For two years she held the position of Chief Executive Officer, Department of Children and Families leading Whole of Government reforms across the child protection system in the Northern Territory.

Paul Gelston | BEng (Civil), MIE(Aust)
Mr Gelston is Chief Operating Officer of the Department of Planning, Transport and Infrastructure, South Australia. Before taking up his current position in March 2015, Mr Gelston was Director, Road and Traffic Management for four years. 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. Mr Gelston has significant knowledge and experience in road and transport engineering. Mr Gelston has a degree in Civil Engineering from the University of Adelaide in 1976. He is a member of Engineers Australia, the Australian Institute of Traffic Planning and Management and the Institute of Public Works Engineering Australia.

Tony Gill PSM | BESc
Mr Gill was Director, Roads in the ACT's Department of Territory and Municipal Services (in 2016 the organisation changed its name to Transport Canberra and City Services Directorate). Prior to his current role Mr Gill held various positions with the department, covering traffic management and road maintenance responsibilities. He also worked for private consultant engineers Scott and Furphy from 1985 to 1988 and prior to this as a graduate engineer with Dublin County Council, Ireland for four years.

Shane Gregory | Assoc Dip Eng (Civil), MAICD
Mr Gregory is a member of the Austroads Executive Committee.

Mr Gregory is the General Manager, State Roads for the Department of State Growth, Tasmania.

Mr Gregory started his career in 1985 with the former Highways Department of South Australia where he spent 11 years in various technical roles. He moved to Western Australia in 1996 to work in engineering consulting in the private sector on various public and private infrastructure projects. Relocating to Tasmania in 2000 to work in the civil contracting industry he was involved in the civil construction, maintenance and road surfacing industries.

Prior to his current role Mr Gregory was Manager of Planning & Design for the Department of Infrastructure, Energy and Resources between 2009 and 2012. He has formerly held the role of Commissioner of Transport in Tasmania and is currently a Deputy Commissioner with the Tasmanian Planning Commission.

Andrew Jaggers | BEc, Grad Dip EnvLaw
Mr Jaggers is the Executive Director of the Infrastructure Investment Division at the Australian Government Department of Infrastructure and Regional Development. Mr Jaggers' Division is responsible for the delivery of major road, rail and port project funding. He has held a number of senior executive positions in the Australian Public Service, at the Department of the Prime Minister and Cabinet, and the Department of Families, Housing, Community Services and Indigenous Affairs.

Andrew Kirkman (from July 2015)
Mr Kirkman is the Chief Executive Officer, NT Department of Transport which he commenced in July 2015. Prior to this, Mr Kirkman 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, Mr Kirkman has previously held positions in the Department of Housing, including that of Deputy Chief Executive, Executive Director of Remote Housing and Executive Director of the Darwin Region. Mr Kirkman previously held key roles in the Australasia Railway Corporation, Department of the Chief Minister and NT Treasury. Mr Kirkman has also worked in finance and commercial roles in the private sector, locally in the mining industry and overseas on public private partnerships. Mr Kirkman is a Certified Practicing Accountant and has tertiary qualifications in business.

Neil Scales OBE | 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 (Deputy Chair from October 2015)
Mr Scales is a member of the Austroads Executive Committee.

Mr Scales is Director-General of the Department of Transport and Main Roads Queensland. He was previously CEO of TransLink, the public transport operator across Queensland. Prior to joining TransLink, Mr Scales 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 services to the region. Mr Scales is a Director of the ARRB Group and TCA, he is also a Board member of Roads Australia and a Commissioner of the National Transport Commission.

Peter Todd | BEng (Civil)(Hons), MBA
Mr Todd has been the Chief Operating Officer for VicRoads since May 2013. He is responsible for managing the operation of Victoria's road network, leading the delivery of projects through statewide 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, Mr Todd 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. Mr Todd has more than 30 years experience in road transport engineering, planning, project management and delivery. He is also a board member of AAPA.

Stephen Troughton | BEng (Hons), MBA CEng, MICE, CPEng, MIEAust, RPEQ
Mr Troughton is a member of the Austroads Executive Committee.

Mr Troughton was appointed Managing Director of Main Roads Western Australia in February 2013. Prior to joining Main Roads he gained extensive experience in managing business areas in Australia, the United Kingdom and the Middle East and has considerable experience in overall project management and delivery of major infrastructure and property projects for government and the private sector. He moved to Australia in 2007 working in various areas within private industry based in Queensland.

In addition to sitting on the Board of Austroads Ltd he is also a Board member of Roads Australia, the Planning and Transport Research Centre, the Western Australian Pavement Research Centre and the ROADS Foundation and is a member of the Australian Institute of Company Directors.

Company Secretary

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

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

Meetings of Directors

During the financial year, two meetings of directors were held.

Attendances by each director were as follows:

Director	Eligible meetings	Meetings attended
Peter Duncan	2	2
Adrian Beresford-Wylie	2	2
Allan Frost	2	1
Clare Gardiner-Barnes (until July 2015)	0	0
Paul Gelston	2	2
Tony Gill	2	2
Shane Gregory	2	2
Andrew Jaggers (until October 2015)	1	0
Andrew Kirkman (commenced July 2015)	2	2
Neil Scales	2	2
Peter Todd	2	1
Stephen Troughton	2	2

Alternate directors attended meetings as follows:

Alternate director	Alternate for	Meetings attended
Marcus James	Andrew Jaggers	1
David Darwin	Allan Frost	1
Charles Broadhurst	Peter Todd	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 2016, the total amount that members of the Company are liable to contribute if the Company is wound up is $110 (2015: $110).

Auditor's Independence Declaration

The lead auditor's independence declaration for the year ended 30 June 2016 has been received and can be found on page 60 of the financial report.

Signed in accordance with a resolution of the Board of Directors.

Peter Duncan AM
Chairperson
Dated this 14th day of September 2016

Auditor's Independence Statement

PITCHER PARTNERS
ACCOUNTANTS • AUDITORS • ADVISORS

AUDITOR'S INDEPENDENCE DECLARATION
UNDER SECTION 307C OF THE CORPORATIONS ACT 2001
TO THE DIRECTORS OF AUSTROADS LTD

As lead auditor for the audit of Austroads Ltd for the year ended 30 June 2016, I declare that, to the best of my knowledge and belief, there have been:

a) no contraventions of the auditor independence requirements of the *Corporations Act 2001* in relation to the audit; and

b) no contraventions of any applicable code of professional conduct in relation to the audit.

S TZANNES
Partner

PITCHER PARTNERS
Sydney

9 September 2016

Statement of Profit or Loss and Other Comprehensive Income for the Year Ended 30 June 2016

	Notes	2016	2015 (Restated)
		$	$
Revenue	2	23,281,314	20,493,506
Expenses			
Corporate Expenses	3(a)	2,939,605	1,844,262
Work Program	3(b)	12,918,466	9,471,661
Specific Projects	3(c)	964,629	769,396
Publications	3(d)	94,023	89,031
NEVDIS expenses	3(e)	3,191,112	4,512,148
Total expenses		20,107,835	16,686,498
Profit from continuing operations before income tax expense		3,173,479	3,807,008
Income tax expense	1(c)	-	-
Profit for the year		**3,173,479**	**3,807,008**
Other comprehensive income		-	-
Total comprehensive income for the year		**3,173,479**	**3,807,008**
Total comprehensive income attributable to members of the entity		**3,173,479**	**3,807,008**

Statement of Financial Position for the Year Ended 30 June 2016

	Notes	2016	2015 (Restated)	1-Jul-14 (Restated)
		$	$	$
ASSETS				
Current assets				
Cash and Cash Equivalents	4	17,234,960	14,301,629	11,020,046
Trade and Other Receivables	5	1,994,616	1,365,556	842,780
Other Assets	6	150,111	45,828	44,733
Total current assets		19,379,687	15,713,013	11,907,559
Non-current assets				
Plant and Equipment	7	329,606	88,214	94,290
Intangible assets	8	106,508	-	-
Other Assets	6	116,661	115,771	51,865
Total non-current assets		552,775	203,985	146,155
Total assets		**19,932,462**	**15,916,998**	**12,053,714**
LIABILITIES				
Current liabilities				
Trade and Other Payables	9	3,667,951	3,131,359	3,056,536
Income Received in Advance	10	250,000	60,000	49,900
Provision for Employee Benefits	11	223,002	119,092	162,312
Total current liabilities		4,140,953	3,310,451	3,268,748
Non-current liabilities				
Provision for Employee Benefits	11	42,890	31,407	16,834
		42,890	31,407	16,834
Total liabilities		**4,183,843**	**3,341,858**	**3,285,582**
Net assets		**15,748,619**	**12,575,140**	**8,768,132**
Equity				
Accumulated Surplus		7,175,347	8,392,438	6,211,456
NEVDIS Reserve	1(n)	8,573,272	4,182,702	2,556,676
Total Equity		**15,748,619**	**12,575,140**	**8,768,132**

The accompanying notes form part of these financial statements.

Statement of Changes in Equity for the Year Ended 30 June 2016

	NEVDIS Reserve $	Accumulated Surplus $	Total Equity $
Balance at 1 July 2014	2,556,676	6,211,456	8,768,132
Comprehensive income			
Profit for the year	1,626,026	2,180,982	3,807,008
Other comprehensive income	-	-	-
	1,626,026	2,180,982	3,807,008
Balance at 30 June 2015 restated	4,182,702	8,392,438	12,575,140
Comprehensive income			
Profit/(Loss) for the year	4,390,570	(1,217,091)	3,173,479
Other comprehensive income	-	-	-
	4,390,570	(1,217,091)	3,173,479
Balance at 30 June 2016	**8,573,272**	**7,175,347**	**15,748,619**

Statement of Cash Flows for the Year Ended 30 June 2016

	Notes	2016 $	2015 $
Cash Flows from Operating Activities			
Member Contributions		17,449,520	17,113,910
Receipts from Customers		6,766,619	4,473,274
Publication Sales		359,947	359,726
Interest Received		423,634	325,538
External Project Funding		437,500	215,283
Cash generated from operating activities		25,437,220	22,487,730
Salaries and Related Costs		(1,818,481)	(867,400)
National Office including Corporate Projects		(5,456,603)	(7,768,783)
Publications		(103,426)	(97,935)
Programs		(14,505,161)	(10,565,750)
Net GST (Payment)/Refund		(212,642)	112,537
Cash used in operating activities		(22,096,312)	(19,187,329)
Net Cash Inflow from Operating Activities	13	**3,340,908**	**3,300,401**
Cash Flow from Investing Activities			
Proceeds from sale of Plant and Equipment		-	16,864
Purchase of Plant and Equipment		(407,577)	(35,682)
Cash used in Investing Activities		**(407,577)**	**(18,818)**
Net increase in cash held		2,933,331	3,281,583
Cash at the beginning of the financial year		14,301,629	11,020,046
Cash at the end of the financial year	4	**17,234,960**	**14,301,629**

The accompanying notes form part of these financial statements.

Notes to the Financial Statements for the Year Ended 30 June 2016

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 12 September 2016 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 twelve 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 there has been no need for it.

(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.

(h) Goods and Services Tax (GST) (continued)

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.

Notes to the Financial Statements for the Year Ended 30 June 2016

(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 2016. The annual fee is $2,150,423 (ex GST) payable monthly in arrears.

(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 2016 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.

(r) Change in Accounting Policy
In August 2015, the NEVDIS Administration Unit relocated to the Austroads national office. NEVDIS staff were transitioned into the Austroads national office and were engaged as Austroads employees (previously engaged by RMS NSW). For the year ended 30 June 2016 there has been a change in accounting policy whereby the financial results of the NEVDIS unit have been integrated into the Austroads Ltd financial statements. As a result of this change in accounting policy, the 2015 financial year comparatives have been restated on this basis. Also in accordance with Standard AASB 108, the Statement of Financial Position shows the restated comparatives as at 1 July 2014.

	2016	2015 (Restated)
	$	$
Note 2 — Revenue		
(a) Member Contributions		
Membership Contributions	1,051,000	1,030,000
Membership Contributions (NEVDIS)	2,042,200	2,002,100
Work Program Contributions	12,770,000	12,526,001
	15,863,200	15,558,101
(b) Special Programs and Projects		
DIRD – Australian Bicycle Council Secretariat	165,000	161,530
Cassowary/Blayney Shire AT1933	-	25,000
AGD Funding for Project RS2028	60,000	-
NEVDIS:		
PPSR Enhancements Recovery	1,554,148	1,562,374
VIRS Commercial Phase	836,085	628,760
Safety Recalls	732,352	463,132
AEC Extract Charges	208,072	190,856
Data Extracts	14,713	14,112
DVS Private Sector	3,025,493	1,230,144
VSA income	9,450	-
WMI income	5,950	-
	6,611,263	4,275,908
Publications		
Gross Sales Revenue	365,355	337,350
Royalties	3,407	1,165
	368,762	338,515
Interest Received		
Short Term Investments	275,348	272,299
Short Term Investments (NEVDIS)	130,854	43,096
Rental Bond Deposit	1,118	1,737
Rental Bond Deposit (NEVDIS)	11,475	-
	418,795	317,132
Other Income		
Net profit on sale of non-current assets	5,630	250
Other income (NEVDIS)	13,664	3,600
	19,294	3,850
Total revenue	**23,281,314**	**20,493,506**
Note 3 — Expenses		
(a) Corporate		
Salaries and Related Charges	676,839	733,818
Salaries and Related Charges (NEVDIS)	1,002,774	-
Program Management	775,176	619,961
Corporate Services	58,927	86,419
Depreciation	31,600	25,144
Other National Office Expenses	394,289	378,920
	2,939,605	**1,844,262**
(b) Work Program		
Technology	4,369,448	3,775,425
Safety	1,414,315	1,763,927
Assets	3,089,850	2,055,220
Network	2,012,609	1,133,467
Freight	1,245,840	435,892
Registration and Licensing	786,404	307,730
	12,918,466	**9,471,661**

Notes to the Financial Statements for the Year Ended 30 June 2016

	2016	2015 (Restated)
	$	$
Note 3 — Expenses continued		
(c) Specific Projects		
Indigenous Learner Driver Tool Kit	11,589	-
Cooperative ITS Project Director	272,037	230,238
DIRD - Australian Bicycle Council Secretariat	165,000	161,654
International Participation	55,042	28,952
Austroads ARRB Fellowship	60,000	55,000
Redevelop Austroads Databases and Publications Website	24,640	3,147
National Safety Barrier Assessment Panel - Independent Consultant	26,044	26,565
Review of the NGTSM	271,414	100,757
CPEE Distance Learning Units	16,000	15,000
Support to ALGA Reps	2,831	12,553
Cooperative ITS Non ARRB Contracts	25,432	45,000
In Depth Study - ARRB Project	18,150	5,850
Test Methods and Pavement Technology Work Tips	-	4,680
DPTI SA Road Safety Knowledge Transfer	-	50,000
Australian Standards Development related activity	8,000	30,000
Guides online analysis	8,450	-
	964,629	**769,396**
(d) Publications		
Cost of Sales	52,023	47,031
Production and Distribution Management	42,000	42,000
	94,023	**89,031**
(e) NEVDIS expenses		
Fujitsu Subscription and Operating Costs	2,212,575	2,300,636
RMS NEVDIS Administration Unit and Salaries	563,170	1,881,003
NEVDIS Projects	86,286	169,257
Depreciation	28,077	-
Rent	118,821	-
Other	182,183	161,252
	3,191,112	**4,512,148**
Total Expenditure	**20,107,835**	**16,686,498**

Note 4 — Cash and Cash Equivalents

CURRENT		
Cash at bank and on hand	1,575,595	2,324,317
Cash at Bank (NEVDIS)	759,365	920,918
Short-term deposits and deposits at call	8,400,000	7,995,209
Short-term deposits and deposits at call (NEVDIS)	6,500,000	3,061,185
	17,234,960	14,301,629
Cash at the end of the financial year is reconciled to the statement of cash flow as follows:		
Cash and cash equivalents	17,234,960	14,301,629

Note 5 — Trade and Other Receivables

	2016	2015 (Restated)
	$	$
CURRENT		
Trade debtors	32,120	12,641
Trade debtors (NEVDIS)	473,615	194,123
Sundry and other debtors (NEVDIS)	1,315,782	1,000,377
Net Receivable from ATO	98,965	105,654
Accrued Income	74,134	52,761
	1,994,616	1,365,556

Note 6 — Other Assets

CURRENT		
Prepayments	44,705	43,165
Prepayments (NEVDIS)	105,406	2,663
	150,111	45,828
NON-CURRENT		
Rental Deposit Bond	54,015	53,603
Rental Deposit Bond (NEVDIS)	62,646	62,168
	116,661	115,771

Note 7 — Plant and Equipment

NON-CURRENT		
Furniture and Office Equipment		
At Cost	197,938	194,894
Accumulated depreciation	(109,471)	(106,680)
	88,467	88,214
NON-CURRENT		
Furniture and Office Equipment (NEVDIS)		
At Cost	268,421	-
Accumulated depreciation	(27,282)	-
	241,139	-
Total Plant and Equipment	329,606	88,214

Note 8 — Intangible Assets

NON-CURRENT		
Computer Software (NEVDIS)		
At Cost	107,303	-
Accumulated depreciation	(795)	-
	106,508	-

Note 9 — Trade and Other Payables

CURRENT		
Trade and Other Payables	2,752,413	1,925,961
Trade and Other Payables (NEVDIS)	469,342	473,367
Accrued Expenses	252,813	146,667
Accrued Expenses (NEVDIS)	193,383	585,364
	3,667,951	3,131,359

Note 10 — Income Received in Advance

CURRENT		
Income Received in Advance	250,000	60,000
	250,000	60,000

Notes to the Financial Statements for the Year Ended 30 June 2016

	2016 $	2015 (Restated) $
Note 11 — Provision for Employee Benefits		
CURRENT		
Provisions for Annual Leave	91,856	74,989
Provisions for Annual Leave (NEVDIS)	44,669	-
Provisions for Long Service Leave	57,820	44,103
Provisions for Long Service Leave (NEVDIS)	28,657	-
	223,002	119,092
NON-CURRENT		
Provisions for Long Service Leave	42,890	31,407

Note 12 — 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 13 — Cash Flow Information		
Reconciliation of profit from ordinary activities to net cash generated from operating activities		
Profit for the year	3,173,479	3,807,008
Adjustment for non-cash-flow items:		
- Depreciation and amortisation	59,677	25,144
- Gain on disposal of plant and equipment	-	(250)
Change in operating assets and liabilities:		
- Increase in trade and other receivables	(629,060)	(522,776)
- Increase in other assets	(105,173)	(65,001)
- Increase in trade and other payables	536,592	74,823
- Increase in income received in advance	190,000	10,100
- Increase/(decrease) in provision for employee benefits	115,393	(28,647)
Net Cash Generated from Operating Activities	**3,340,908**	3,300,401

	2016 $	2015 (Restated) $
Note 14 — Remuneration of Directors		
There is no Income received, or due and receivable by the directors.		
Note 15 — Remuneration of Auditors		
During the year, the auditor of the company earned the following remuneration:		
Audit of the financial statements	20,500	16,000
Other services	3,500	4,400
	24,000	20,400
Note 16 — Lease Commitments		
Operating Lease Commitments – being for the rent of office		
Payable – minimum lease payments		
-Not later than 12 months	258,859	138,882
-Between 12 months and 5 years	285,350	298,943
	544,209	437,825

The property lease was renewed for another 5 years, with rent payable monthly.

Note 17 — Contingent Liabilities or Assets

At 30 June 2016, the Company has no contingent liabilities or assets (2015: Nil).

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

There were no subsequent events that occurred prior to the end of the financial year.

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 2016

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 61 to 66, 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 2016 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.

Peter Duncan, AM

Chairperson

Dated this 14th day of September 2016.

PITCHER PARTNERS
ACCOUNTANTS • AUDITORS • ADVISORS

INDEPENDENT AUDITOR'S REPORT
TO THE MEMBERS OF AUSTROADS LTD
ABN 16 245 787 323

Report on the Financial Report

We have audited the accompanying financial report, being a special purpose financial report, of Austroads Ltd ("the company"), which comprises the statement of financial position as at 30 June 2016, the statement of profit or loss and other comprehensive income, the statement of changes in equity and the statement of cash flows for the year then ended, notes comprising a summary of significant accounting policies and other explanatory information and the directors' declaration.

Directors' Responsibility for the Financial Report

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

Auditor's Responsibility

Our responsibility is to express an opinion on the financial report based on our audit. We conducted our audit in accordance with Australian Auditing Standards. Those standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal controls relevant to the entity's preparation of the financial report that gives a true and fair view 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 entity's internal controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial report.

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

PITCHER PARTNERS

INDEPENDENT AUDITOR'S REPORT
TO THE MEMBERS OF AUSTROADS LTD
ABN 16 245 787323

Independence

In conducting our audit, we have complied with the independence requirements of the *Corporations Act 2001*. We confirm that the independence declaration required by the *Corporations Act 2001*, provided to the directors of Austroads Ltd on 9th September, 2016, would be in the same terms if provided to the directors as at the date of signing this audit report

Opinion

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

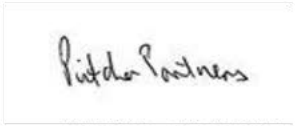
(i) giving a true and fair view of the company's financial position as at 30 June 2016 and of its performance for the year ended on that date in accordance with the accounting policies described in Note 1; and

(ii) complying with Australian Accounting Standards to the extent described in Note 1 and the *Corporations Regulations 2001*.

Basis of Accounting

Without modifying our opinion, 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.

Spiro Tzannes
Partner



PITCHER PARTNERS
Sydney

27 September 2016

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
DI NT	Department of Infrastructure 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 Australia
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

nevdis™
National Exchange of Vehicle & Driver Information System

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