The Australian Government’s Road Safety Functions
The ATSB: working to make transport safer

The ATSB’s objective is ‘safe transport’.

The Australian Transport Safety Bureau (ATSB) is an operationally independent body within the Federal Department of Transport and Regional Services (DOTARS) and is Australia’s prime agency for transport safety investigations. The ATSB is entirely separate from transport regulators and service providers. The ATSB’s objective is ‘safe transport’ and its mission is to maintain and improve transport safety and public confidence through excellence in:

• independent transport accident and incident investigation

• safety data analysis and research

• safety communication and education.

The ATSB performs its investigation functions in accordance with the provisions of the Transport Safety Investigation Act 2003 (TSI Act). Section 7 of the TSI Act indicates that the object of the Act is to improve transport safety through, among other things, independent investigations of transport accidents and incidents and the making of safety action statements and recommendations that draw on the results of those investigations. ATSB investigations are not intended to lay blame or provide a means for determining liability.
The organisation

The ATSB was formed on 1 July 1999. The Bureau’s Executive Director is supported by a Director, Safety Investigations and a Director, Safety Research and Education. Staff (approximately 100) include about 50 aviation, marine and rail safety investigators as well as human and organisational factors, flight-recorder and metallurgy specialists. Most are based in Canberra. Regional offices are located in Brisbane and Perth.

ATSB staff also include data notifications, analysis, statistical and research specialists, particularly in road safety and aviation safety.

The ATSB and transport safety

The ATSB contributes to transport safety by independently investigating, analysing and openly reporting on transport safety matters. All ATSB investigations are ‘no blame’ – the emphasis is on learning to improve future safety.

ATSB publications include reports on the facts and conclusions of investigations, safety research material, and statistics. Reports often contain recommendations for authorities and other parties to action in the interests of safety improvements.

Road safety

The ATSB coordinates the National Road Safety Strategy and biennial action plans for consideration and approval by Transport Ministers.

The ATSB’s road safety activities also include research, national coordination and facilitation, and publication of road death and injury statistics and information.

The ATSB does not have a road safety investigation role, although some similar bodies such as the US National Transportation Safety Board (NTSB) have a selective road safety investigation mandate.
On safety policy matters, the ATSB assists the Department’s two Ministers – the Deputy Prime Minister and Minister for Transport and Regional Services and the Minister for Local Government, Territories and Roads.

The ATSB’s road safety publications are available for free downloading from www.atsb.gov.au. Some recent research publications include:

- Review of the literature on daytime running lights (DRL)
- Benefits of seat belt reminder systems
- Re-analysis of travelling speed and the risk of crash involvement in Adelaide, South Australia
- Potential benefits and costs of speed changes on rural roads
- Survey on speeding and enforcement

**Legislative framework**

ATSB transport safety investigators exercise statutory powers delegated by the Executive Director in accordance with the provisions of the *Transport Safety Investigation Act 2003*. The TSI Act allows the Executive Director to investigate transport safety matters in the aviation, marine and rail transport modes within the Australian Government’s constitutional jurisdiction and to release transport safety information, including investigation reports that detail the findings and significant factors that led to a particular transport safety occurrence.

A comprehensive regime of provisions within the TSI Act is in place to maintain the confidentiality of, and legal protection for, a range of sensitive safety information obtained by ATSB investigators.
Improving the safety of roads is the single most significant achievable factor in reducing road trauma. Further investment in safer roads is highly justified on both social and economic grounds.

National funding

The Australian Government maintains a strong commitment to road funding through a number of road programmes, including: National Highways, Roads of National Importance, Roads to Recovery, Black Spot Programme and untied local road funding (table 6). Road funding overall was increased in the 2003–04 budget by $43.3 million over the previous year.

All maintenance, rehabilitation and construction activity on the National Highway is funded by the Australian Government, with the aim of providing a safe, efficient means for the transport of
passengers and freight. The objectives for the National Highway relating to road safety include allowing safe and reliable access by a significant proportion of Australians to the services provided by major population centres; minimising the cost of the National Highway to the Australian community; and contributing to ecologically sustainable development.

Table 6:
Australian Government funding for roads, 2003–04

<table>
<thead>
<tr>
<th>Programme</th>
<th>NSW</th>
<th>VIC</th>
<th>QLD</th>
<th>WA</th>
<th>SA</th>
<th>TAS</th>
<th>NT</th>
<th>ACT</th>
<th>Other</th>
<th>Total</th>
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<tr>
<td>National Highway</td>
<td>309.5</td>
<td>70.0</td>
<td>184.1</td>
<td>54.9</td>
<td>42.7</td>
<td>10.0</td>
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<td>68.2</td>
<td>40.9</td>
<td>16.7</td>
<td>8.4</td>
<td>3.6</td>
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<td>Roads to Recovery 2</td>
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<td>-</td>
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<td>313.5</td>
<td>402.1</td>
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<td>49.2</td>
<td>46.5</td>
<td>23.0</td>
<td>7.1</td>
<td>1784.6</td>
</tr>
</tbody>
</table>

1 Figures may not add to totals due to rounding.
2 Includes $2.2 million for Indian Ocean external territories and unincorporated areas.

Source: Department of Transport and Regional Services
AusLink: A national land transport plan

AusLink is the Australian Government’s plan for the development of the land transport system. AusLink will provide a new framework for developing an integrated National Land Transport Network. AusLink is based on adopting a strategic approach to ensure funding is allocated where it best serves Australia’s national interests.

AusLink’s key elements include:

- an identified National Land Transport Network comprising both road and rail infrastructure links and their intermodal connections
- development and implementation of a National Land Transport Plan
- greater collaboration and cooperation with other levels of government and the private sector
- support for regional growth and development, and
- future development towards a National Transport Policy.

The Australian Government’s primary focus in developing the AusLink proposal is to address the infrastructure challenges presented by forecast growth in the national freight task and to recognise the value of an efficient land transport network to Australia’s economic and social growth. Safety of the network is an important priority of the Government and will remain so under the new AusLink proposal.

The implementation of AusLink will not affect the current Black Spot Programme – it will continue in its current form until the end of 2005–06.

The Government announced on 22 January 2004 a $2 billion Australian Government injection into Australia’s local and national land transport network, especially in regional and outer metropolitan areas, as a down payment on the innovative AusLink programme.

The AusLink White Paper, to be released around the time of the 2004 Budget, will contain overall funding levels for AusLink, together with the Government’s five-year National Land Transport Plan for developing Australia’s National Land Transport Network.
New works on the National Highway are designed to meet the latest safety standards and the National Highway is among the safest roads when traffic volume is taken into account. Well-designed roads, particularly those that separate traffic streams, are safer and save the community costs in terms of road trauma prevented.

The Australian Government has spent more than $15 billion upgrading the National Highway during the past 25 years. This includes road improvements such as sealing shoulders, and increasing the number of lanes and divided highways, which undoubtedly save lives.

Safety concerns relating to the National Highway, such as the conflict between local and highway traffic, deteriorating road conditions endangering the safety of motorists, or deficiencies revealed by safety audits, can also be addressed through the National Highway Programme, particularly the Safety and Urgent Minor Works (SUMW) component. For example, more than $5 million in SUMW funding has been allocated for upgrading various Bruce Highway intersections with local roads around Cardwell, Tully and Innisfail following a safety audit that revealed that safety improvements were warranted.

A total of $36.4 million in SUMW funding has been allocated nationally for 2003–04. However, not all identified works on each section of the network can be funded under the SUMW component at any one time.

The Roads of National Importance (RONI) Programme is also directed at upgrading key road links and provides an important safety benefit. RONI funding for the Pacific Highway upgrading programme was largely in response to serious safety concerns with this highway.

The British Royal Commission on the Motor Car of 1908 saw the most serious problem of this infant technology to be dust thrown up from untarred roads.

DAVID COLLINGRIDGE, 1980
While the Australian Government is not directly responsible for roads outside the National Highway, which are the responsibility of the relevant state/territory and local governments, funding is available to state/territory and local governments for the treatment of serious crash locations under the national Black Spot Programme (see chapter 11).

Existing legislation (the Australian Land Transport Development Act 1988) prevents the application of Black Spot Programme funding to the National Highway. Black Spot Programme funding is also not used for works on sections of declared Roads of National Importance (RONIs) where separate funding is available. This reflects the Government’s concern to ensure that there is no ‘double-dipping’ from funds for road projects.

In addition to the national Black Spot Programme, road safety initiatives can be funded under the Roads to Recovery programme. The Roads to Recovery Act makes funding available to councils to use for the construction, upgrade or maintenance of roads over the life of the programme. The programme commenced in February 2001 and is due to expire on 30 June 2005. The $1.2 billion Roads to Recovery programme has made significant improvements to local road maintenance and development, which represents the largest ever injection of funds into local roads by any Australian Government. Funding is provided directly to councils, which determine their own spending priorities.

Local roads funding mechanisms also operate under the Local Government (Financial Assistance) Act 1995. Identified local road Financial Assistance Grants (FAGs) are distributed between the states and territories based on historical shares. Councils are responsible for the bulk of the nation’s road network (by length) and these grants contribute significantly towards maintaining these roads and other services provided by councils. Councils may use funds from its FAGs for road safety. Local government will receive over $462 million nationally in FAGs funding for local roads in 2003–04.
black spot programmes: saving lives, reducing injuries

A black spot or area is a location with a particularly high frequency of crashes. Black spots are usually associated with certain characteristics of the road environment such as busy intersections and sharp curvature.

National and state black spot programmes have played a major role in reducing the number of people killed and injured on Australia’s roads, together with other measures including increased enforcement of seat belt wearing, random breath testing, speed limits and continuing improvements in design rules for vehicle safety.

The National Road Safety Strategy 2001–2010 estimated that black spot programmes would contribute over one-third of the 19 per cent targeted reduction in the national road death rate to be achieved through safer roads (see chapter 5).
The national Black Spot Programme

The Australian Government commenced a Road Safety Black Spot Programme in 1990, as a direct response to the unacceptable nature of road trauma statistics. The programme operated with a budget of $270 million from 1990–91 to 1992–93. The current Black Spot Programme was initiated in 1996. The programme is now in its eighth year, having been twice extended.

Since 1996, more than 2,900 projects at crash sites across Australia have been approved – an investment in road safety of more than $320 million. The number of projects approved in each jurisdiction up to 2003–04 are shown in figure 27 and the amount spent in figure 28.
Funding for black spot locations for each year through to 2005–06 will be $44.5 million. Each state and territory receives an annual allocation according to population and proportion of casualty crashes. Funding allocations to states and territories for each of the years 2002–03 through to 2005–06 are set out in table 7.

The national Black Spot Programme is directed at improving the physical condition or traffic management at locations with a high incidence of crashes involving death and serious injury, by implementing treatments such as roundabouts, traffic signals, improved warning signs and edge sealing. The purpose of the programme is to maximise lives saved per dollar spent.

Funding is mainly available for the treatment of black spot sites with a proven history of crashes. Project proposals must demonstrate a safety benefit-cost ratio of at least 2:1. Up to 20 per cent of proposals may also be considered on the basis of the recommendations of a road safety audit. Given that about 50 per cent of fatalities and serious
injuries occur on rural roads, approximately 50 per cent of programme funds are reserved for projects in rural areas.

An evaluation of the Programme completed by the Bureau of Transport Economics (BTE) in 2001 estimated that it had prevented at least 32 fatalities and more than 1500 serious crashes in its first three years and returned an average $14 in benefit for every $1 invested. Further benefits will continue to accrue over the life of the black spot treatments that were applied. Before the end of the current funding allocation in June 2006, the national Black Spot Programme is expected to be evaluated again to determine both its effectiveness in reducing crashes and the economic benefits and costs.

Overall, the evaluation provides very strong evidence that the [Black Spot] Program achieved its aim of improving safety at locations with a history of crashes involving death or serious injury.
Since the introduction of the federally funded Black Spot Programme, total funding by state and territory governments for black spot treatment has increased, and several jurisdictions have introduced black spot programmes funded by them along similar lines to the national Programme.

Main Roads Western Australia has administered a state black spot programme since 2000. The Western Australian government has allocated $6.5 million for highways and main roads and $9.75 million for local roads annually for four years to June 2004. A total of 257 projects with high safety benefits have been approved, at a cost of $17 million, most of which will be completed during 2003–04. Of these, 208 projects are located on local roads.

In 2002, South Australia also introduced a state black spot programme, with funding of $3.5 million per year, supported by a comprehensive package of new safety regulations and education campaigns. Around 80 per cent of funding will be allocated to Transport SA roads and 20 per cent to council roads, given the proportion of casualty crashes that occur on arterial roads (maintained by Transport SA) and local roads (maintained by councils).

For four years until 2002–03, Victoria had a state black spot programme, administered by VicRoads. Funding was from a special dividend of $240 million from the Transport Accident Commission. A total of 1 098 projects were undertaken across the state.

The New South Wales Roads and Traffic Authority (RTA) treats black spots within its other road programmes. For example, the current programme upgrading the existing Pacific Highway specifically aims to eliminate black spots to reduce crashes and save lives. The RTA offers several funding programmes for local councils to assist them with black spot treatment and road safety audits, but does not have a black spot programme with direct nominations from the public.

Other jurisdictions undertake black spot treatments as part of their general roads programmes.
Benefits of black spot programmes

Overall safety benefit-cost ratios of black spot programmes tend to be very favourable and there is no doubt that they contribute to the reduction of all types of road crashes. Most black spot treatments involve relatively low costs compared with benefits that accrue over time and therefore provide substantial economic returns.

The Bureau of Transport and Communications Economics evaluated the federal Black Spot Programme that operated between 1990–91 to 1992–93. The study found that fatalities at treated sample sites fell by one-third and injuries requiring hospitalisation by two-thirds. Overall, the decrease in crashes involving injury at sample sites was over 2.5 times what would have been expected if the treatments had not been applied.

As noted earlier, the Bureau of Transport Economics evaluation of the Black Spot Programme between 1996–97 and 1998–99 showed that the programme had been highly effective in reducing casualty crashes and that some engineering treatments were consistently very successful.

Chapter 32 contains a more detailed survey of black spot treatment issues.
The Vehicle Safety Standards (VSS) branch of the Department of Transport and Regional Services (DOTARS) is tasked with administering the Motor Vehicle Standards Act 1989 and related activities. The functions of the branch include the certification of new vehicles, participation in the development of national and international standards and safety-related research.

...close to three quarters of the targeted 40 per cent reduction in per capita fatality rates [by 2010] could be achieved from maintenance of real funding for road measures...and the flow through effects of vehicle safety improvements that were already implemented or scheduled.
The MVSA and subsequent amendments provide a framework for uniform national vehicle standards. These standards are intended to make road vehicles safe to use, control emission levels of road vehicles, secure road vehicles from theft and promote the saving of energy.

The Australian Government has jurisdiction over motor vehicles up to the point of first supply to the market. Once a vehicle has been supplied to the market, it falls within the purview of individual states and territories. The states and territories are therefore responsible for regulation of vehicles that are 'in-service'; including vehicle registration, licensing and roadworthiness. Operational requirements for vehicles, such as axle mass limits, are also controlled by vehicle registering authorities in states and territories.

A range of standards are set under the MVSA, known as the Australian Design Rules (ADRs). Road vehicles (including trailers) are assessed against these standards before they can be supplied to the Australian market.

Supply of vehicles to the Australian market requires an authority from the Minister for Transport and Regional Services. For practicality, this authority is delegated to the Administrator of Vehicle Standards. The authority is commonly referred to as 'Compliance Plate Approval' and gives a vehicle manufacturer consent to fit a valid Compliance Plate (or 'Identification Plate') to a vehicle before it is supplied to the Australian market. While this procedure generally applies to new vehicles, there are arrangements in place that also allow for fitment of identification plates to vehicles that have been used for transport in other countries before they are brought into Australia.
Vehicle certification

Australia employs a ‘type approval’ system of vehicle certification. Under this system, a vehicle or vehicles representing a vehicle ‘type’ (make/model/variant) is tested. The compliance of this vehicle then allows other vehicles that are of the same type to be supplied for use in transport. A vehicle model has to be tested and certified before it can be sold.

Vehicle testing is conducted by manufacturers, who subsequently submit a summary of the test results to VSS for certification. This process is followed up with an audit system to ensure that testing has been conducted correctly and that the test vehicles are representative of vehicles that are supplied to the market.

The Australian Design Rules (ADRs)

The ADRs cover a wide range of vehicle standards, including requirements for active and passive safety, noise and gaseous emissions, theft and labelling for energy consumption. The ADRs are subject to a progressive review process with a view to harmonisation with international standards where possible, and in particular with the vehicle regulations of the United Nations Economic Commission for Europe (UNECE).

Australia is a signatory to the ‘1958 Agreement’ which allows reciprocal recognition of approvals against individual UNECE regulations. This is an option available to all UN member countries, but can only be used by countries employing a type approval system. A second agreement, the ‘1998 Agreement’, provides for the development of internationally harmonised ‘Global Technical Regulations’ that do not contain an approval mechanism, and can therefore be used by countries such as the USA that employ a ‘self-certification’ system.

Perhaps the reason so many people are satisfied with our automobiles is because we aren’t.
Being a signatory to the 1958 Agreement gives Australia voting rights on international standards for motor vehicles made under the UNECE. This also enables Australia to issue approvals to UNECE regulations. Australia is party to a World Trade Organization (WTO) agreement on technical barriers to trade. Harmonisation with international standards fulfils this WTO requirement.

Standards unique to Australia result in increased cost of vehicle development and production for the Australian market, and therefore increased cost to the consumer. Harmonisation with international standards can therefore provide consumers with more affordable vehicles.

In general, modern vehicles offer consumers higher levels of safety, as they incorporate newer safety technologies and meet more recent and stringent safety standards. Greater affordability of new vehicles has a flow-on effect through the national vehicle fleet with a greater number of more modern vehicles being purchased, and consequent safety benefits to the community. It is also important to ensure that where unique Australian standards are in place, they provide a net benefit to the community. This assessment has been included in the progressive review of the ADRs. In some cases, international standards are accepted as alternatives to an ADR, and manufacturers may choose to test to these requirements.

Performance requirements

Where possible, the ADRs are performance-based, that is, they specify a level of performance that a vehicle or system must achieve, rather than specific design features. For example, the ADR for passenger car braking requires a defined level of deceleration under prescribed test conditions, rather than requiring that brakes be of a specified size or material. In the same manner, the ADRs for the protection of occupants in a frontal crash do not require that airbags be fitted to any vehicle; rather, the ADR specifies an impact condition and dummy requirements and imposes limits on the loadings that can be recorded by instrumented dummies. Airbags may (or may not) then be used to achieve these results. This approach is less restrictive than a prescriptive requirement and is better able to accommodate new technologies.
Vehicle standards research

The International Harmonised Research Activities (IHRA) was formed at the 15th Enhanced Safety of Vehicles (ESV) conference held in Melbourne in 1996. The individual working groups that have been formed under IHRA provide a mechanism for the sharing of vehicle safety related research and collaboration at an international level. It is hoped that, through this process, the duplication of research effort can be avoided, and there would be an increased possibility of harmonisation of international standards.

There are five IHRA Working Groups: Biomechanics; Pedestrian Safety; Vehicle Compatibility and Frontal Impact; Side Impact; and Intelligent Transport Systems (ITS). Pedestrian safety, compatibility and side impact have been identified from crash statistics as priority research areas. These three IHRA working groups are all working towards test procedures aimed at improving road safety in each of these crash modes. The biomechanics working group provides information on dummies and injury assessment to support the pedestrian safety, side impact and compatibility working groups. ITS has been identified as a fast-evolving area that will require research to ensure that safety benefits are obtained from these technologies and that unexpected safety risks do not arise (see chapter 39).

The IHRA working groups comprise government vehicle safety regulators from around the world. Australia chairs the IHRA working group on side impact and is regularly represented in working groups for vehicle compatibility, pedestrian safety and biomechanics. The IHRA working groups are overseen by a steering committee and report regularly to the steering committee as well as at ESV conferences.

The charter of the IHRA side impact working group is to coordinate research worldwide to support the development of future side impact test procedures to maximise harmonisation with the objective of enhancing safety in real world side crashes.

The IHRA side impact working group has drafted a complementary set of test procedures to address the distribution of injuries and crash types observed in the crash data. This set of tests will cover a wider range of impact conditions, occupant sizes and seating positions than current regulations. The procedures include a mobile deformable barrier to car test using a small adult (female) dummy in a forward seating position, as well as a vehicle-to-pole test using a mid-sized adult male dummy seated in mid-position. In addition, interior headform testing is proposed, as this should reduce the risk of head injury in side impact crashes that diverge from the specific configuration in the vehicle crash tests. Out-of-position tests are also included to minimise the risk of injuries due to deploying airbags.
Vehicle compatibility refers to the crash interaction and consequent injury outcomes for occupants in two colliding vehicles. Vehicle mass, the geometric layout of the front structure of the vehicle and the stiffness of the structure of the vehicle have all been identified as significant parameters influencing frontal compatibility. Incompatibility is most easily observed between dissimilar vehicle types, such as trucks and passenger cars or large four wheel drive vehicles and small passenger cars. In these instances there is a large difference in the mass of the vehicles, as well as differences in the height of the vehicle structures from the ground.

Commercial vehicles and vehicles designed for off-road use tend to have stiffer structures than passenger cars as a result of the need to meet load-carrying and off-road requirements. However, it is important to note that incompatibility also exists between vehicles of the same type. Passenger cars that may perform well in barrier tests designed to assess the injury risk to occupants in the vehicle do not necessarily perform as well in car-to-car collisions with other passenger cars.

Complex structural interactions occur between all colliding vehicles, with the degree of compatibility depending on the masses and structural designs of the individual vehicles involved in the collision. The IHRA Compatibility and Frontal Impact Working Group has been working towards the development of a test condition and assessment criteria that would be capable of discriminating between compatible and incompatible vehicle designs. Since it is not feasible to crash each vehicle model into every other vehicle model to assess compatibility, it is intended that compatibility assessments would be done with a barrier test. However, the specification of a test procedure and performance requirement to ensure frontal compatibility of future vehicle designs is a difficult task requiring further research and development.

Vehicle safety research activity in VSS has focussed on three major causes of road deaths in Australia. These are frontal impacts (including vehicle to vehicle compatibility), side impacts and impacts
between vehicles and pedestrians. Some recent major projects undertaken by VSS include:

- **The dependence of side impact injury risk on mobile deformable barrier configuration.** This involved a parametric study of the effect of factors such as stiffness, geometry, mass and speed of an impacting 'vehicle' (represented by a mobile deformable barrier) on injury outcomes for a struck vehicle. This was a collaborative research project conducted with assistance from Transport Canada and supports research by the IHRA Side Impact Working Group. This work was presented at the 2001 Enhanced Safety of Vehicles Conference.

- **Australian research to support the IHRA Vehicle Compatibility Working Group.** The work involves a range of car-to-car and car-to-barrier crash tests to assess a proposed methodology for evaluating frontal crash compatibility of vehicles. This work is part of the research being conducted within the IHRA Compatibility Working Group, and was presented at the 2003 Enhanced Safety of Vehicles Conference.

- **Vehicle design and operation for pedestrian protection – accident simulations and reconstructions.** This study details the reconstruction of a number of real-world impacts between pedestrians and cars in order to examine how injuries sustained by pedestrians in real life relate to the results of reconstruction tests using the methods chosen by the European Enhanced Vehicle-safety Committee (EEVC) for assessing pedestrian protection. This work was carried out in support of the IHRA Pedestrian Safety Working Group and was published as Vehicle Safety Standards Report 1 in 2003.

**Vehicle recall**

VSS has overall policy responsibility for monitoring the conduct and outcomes of motor vehicle safety recalls in Australia. This responsibility falls under the *Trade Practices Act 1974* and its requirement for suppliers to recall goods which 'will or may cause injury'. VSS handles this responsibility under an arrangement with the Consumer Safety Unit of the Treasury.

*A car is not the only thing that can be recalled by its maker.*

ANON