GOVERNMENT STATUS REPORT

AUSTRALIA

Keith Seyer
Chief Engineer
Vehicle Standards
Department of Transport and Regional Services

ABSTRACT

This paper reviews Australia’s involvement in reducing road trauma by the Federal Department of Transport and Regional Services in both the domestic and international arena since the 16th ESV in Windsor, Canada. The paper will focus on the following points:

• The road toll
• National Road Safety Strategy
• International Harmonised Research Activities committee
• Intelligent Transport Systems
• International Harmonisation
• New Vehicle Safety Regulations

THE AUSTRALIAN ROAD TOLL

Following large reductions in the early 1990s and a further substantial fall in 1997, the annual Australian road toll remained static until commencing an upswing in late 1999. This upswing continued throughout year 2000, resulting in a 3.0% increase in the year 2000 road toll and a 3.4% increase on the low water mark set in 1998. (The toll in 1998 had been the lowest Australian road toll since 1950). Of particular interest is that deaths amongst drivers increased in year 2000 to levels 15.0% above those seen in 1998.

Inroads continued to be made, however, into the pedestrian road toll. In the year 2000, there were 8.8% fewer pedestrian deaths in Australia than during 1998. Pedestrian road deaths have decreased steadily since 1995, suggesting that the national focus given to speed reduction in urban areas is paying dividends.

The increase in year 2000 was entirely attributable to male road users. Overall, male road deaths increased by 76 whereas female road deaths decreased by 24. Since 1998 there has been a 5.0% increase in road deaths amongst Australian males and a 0.4% decrease in road deaths amongst Australian females.

NATIONAL ROAD SAFETY STRATEGY

The National Road Safety Strategy is the cornerstone of Australia’s road safety initiative, linking the policies of all major bodies involved in road safety including:

• Federal/State/Territory governments
• Local governments,
• Health and education agencies,
• Police,
• Vehicle manufacturers,
• Transport industries,
• Motorist associations,
• Insurers, and
• Community groups

In November 2000, Transport Ministers, meeting as the Australian Transport Council, adopted a National Road Safety Strategy for the period to 2010. The Strategy contains the target of reducing the fatality rate (per population) by 40% over its 10-year life. Achieving this target will save 3,600 lives over the decade and cause Australia to have a fatality rate similar to the current lowest international fatality rate.

The Strategy further contains a range of Strategic Objectives addressing all significant areas contributing to road safety, and these are in turn supported by a menu of possible initiatives described in the associated Action Plan for 2001 and 2002.

The Strategy contains an assessment of how the target might be achieved. The major factors and their expected contribution to the target are:

<table>
<thead>
<tr>
<th>Objective Description</th>
<th>Expected Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safer roads – achieved through normal road construction (new roads being generally safer than old roads) and targeted black spot programs.</td>
<td>19%</td>
</tr>
<tr>
<td>Improved vehicle occupant protection</td>
<td>10%</td>
</tr>
</tbody>
</table>
flowing from recent and pending new ADRs, especially relating to side, frontal and offset frontal impact protection. The benefit of these measures is expected to increase beyond 2010 as the vehicle fleet is replaced.

New technology to reduce human error, which is effectively in-vehicle ITS and may include Mayday systems, intelligent speed limiters and intrusive seat belt warning systems. Due to the slow turnover of the vehicle fleet, little of the potential benefit of such systems is expected to be realised during the coming decade.

Improved road user behaviour, particularly from greater enforcement of speed and alcohol limits and assisted by better matching of speed limits to conditions and better training and licensing practices.

ATC will review progress of the Strategy annually and anticipates adopting new Action Plans every two years.

INTERNATIONAL HARMONISED RESEARCH ACTIVITIES

The International Harmonised Research Activities (IHRA) committee was formed at the 1996 Enhanced Safety of Vehicles Conference in Melbourne. This 17th ESV in Amsterdam marks the completion of IHRA’s first 5-year term.

At that inaugural meeting, IHRA identified six priority research areas where coordinated research effort could be focused to maximise global outcomes using the limited research resources available to us. These six areas were:

- Functional equivalence
- Intelligent Transport Systems
- Advanced offset frontal crash protection
- Vehicle compatibility
- Biomechanics
- Pedestrian safety

The USA and Australia worked together to draft a matrix to examine the functional equivalence of regulations on the same issue but having different specific requirements. Following completion of this task, it was removed from the IHRA agenda.

At the 16th ESV in Windsor, the IHRA steering committee agreed to the addition of a side impact working group under the chairmanship of Australia.

Side Impact Crash Protection

The detailed report on the status of work of the IHRA Side Impact Working Group (SIWG) will be given in the Side Impact Technical session during this conference.

The SIWG was formed after the 16th ESV in Windsor Canada and held its first meeting in September 1998 and is chaired by Australia.

To determine the side impact trauma problem, the group began by examining real world crashes in the 3 major geographical regions, North America, Europe and Asia-Pacific, to identify:

- types of side impact crashes occurring
- injuries being sustained by body region
- causes of these injuries, where possible
- characteristics of the drivers and passengers most at risk (gender, size, seating position, etc)

Members were asked to report on any research that examined the effects on injury risk of mass, stiffness and geometry of striking vehicles together with any other parameters that were considered important for side impact protection.

There has been close cooperation between the SIWG and IHRA working groups on advanced frontal, vehicle compatibility and biomechanics, and with the WorldSID Task Group who have been developing the requirements for a harmonised side impact test dummy.

After reviewing the available research data, members proposed a four-part test procedure that includes:

1. Mobile deformable barrier test.
2. Vehicle to pole test.
3. Out-of-position side airbag evaluation test(s).
4. Sub-systems head impact test.

However, further research is required to define some outstanding parameters in these test procedures. It is hoped this can be done if the group is given a further mandate.
Besides providing the chair and secretariat support for the SIWG, Australia has conducted a comprehensive parametric study in cooperation with Canada to examine the major factors affecting injury outcome in side impact crashes.

**Advanced Offset Frontal Crash Protection**

Australia participated in the European Experimental Vehicle Committee (EEVC) Working Group 11 work on developing ECE R94/01 and has adopted these requirements in Australian Design Rule 73/00 for passenger vehicles.

The main thrust of this IHRA working group has been to promote harmonisation of frontal crash regulations worldwide as a first stage. Australia strongly supports the move by the USA and Europe to introduce an offset frontal and rigid full frontal test procedure into their respective legislative frameworks in the near future.

However, Australia, and other countries, wishes to extend the offset frontal test procedure to other vehicle categories in the future as part of the second phase of this group’s work. To achieve this, further research will be required on barrier specification and test speed. While Australia has carried out some limited testing on a modified barrier design, resource constraints limited the extent of the work.

Australia believes that further work in offset crash protection needs to be mindful of the issue of vehicle compatibility and supports the IHRA initiative to link consideration of these two matters.

**Vehicle Compatibility**

Vehicle compatibility focuses on equalising crash outcome between unequal crash partners.

Australia supports the move from self-protection (minimising the injury of individual vehicles) to a holistic approach to minimise injury outcome for the whole vehicle fleet.

Australia has done work in developing an energy absorbing truck under-run barrier that tries to address the mass and geometric mismatch in truck/car crashes.

Australia has begun a vehicle compatibility program to examine likely candidates for a vehicle compatibility test procedure in cooperation with NHTSA. No conclusions have been drawn from this work yet and this issue remains one of the most challenging for government, industry and consumer groups worldwide in the new millennium.

**Biomechanics**

The work of the IHRA Biomechanics WG has focuse on the development of a new harmonised side impact test device. In 1999, Australia coordinated a review of worldwide anthropometric data as part of the IHRA Biomechanics WG’s work to define the anthropometry of the WorldSID side impact dummy.

In December 2000, Australia hosted a workshop to launch the prototype WorldSID. It is hoped that the dummy will become the harmonised test device to be used for the new side impact test procedure being developed by the IHRA SIWG.

Following completion of its work in support of developing WorldSID, the IHRA Biomechanics WG’s next task will be coordinating the development of a advanced frontal test device. In 1998, Australia participated in the worldwide evaluation of the new advanced frontal dummy, THOR being developed by NHTSA. As THOR has been evaluated by governments, industry and research organisations worldwide with encouraging results, Australia would support early considerations to make THOR the globally harmonised frontal test dummy for regulatory purposes.

Research institutes in Australia are continuing to work on establishing the mechanisms of neck (whiplash) and head injuries.

**Pedestrian Safety**

Pedestrians account for about 20% of fatalities on Australian roads annually.

DoTRS has funded the Road Accident Research Unit (RARU) at Adelaide University to build a test rig to examine the performance of popular Australian passenger cars to the draft EEVC pedestrian safety test procedure. This testing is part of a project to evaluate whether the draft EEVC test procedure is relevant in the Australia situation. This will include computer simulations of real world crashes and evaluation of Honda’s fullsiz POLAR2 pedestrian dummy.

RARU has been investigating pedestrian crashes for many years and is continuing its work on head injury mechanisms. This research is being provided to both the IHRA and ISO working groups for consideration.
Australia supports the development of a globally harmonised standard to improve the pedestrian friendliness of vehicle front structures.

INTELLIGENT TRANSPORT SYSTEMS

**e-Transport – the National Strategy for Intelligent Transport Systems (ITS)**

The Minister for Transport and Regional Services, the Hon John Anderson MP, launched e-Transport, the National Strategy for ITS, in December 1999.

e-Transport is a cooperative effort by Commonwealth, State and Territory Transport Ministers, in consultation with users and industry, to harness the enormous potential of advanced technologies to improve Australia’s transport systems, both public and private.

**Electronic Toll Collection (ETC)**

The Australian Transport Council agreed in 1998 that all ETC installations in Australia should be compliant with the European CEN standard (now the dominant worldwide standard), in the interest of ensuring interoperability ie. allowing vehicles to use different tolled roads without needing different sets of equipment in the vehicle. The CEN standard specifies the radiomagnetic frequency (5.8 gigahertz) and data protocols for communication between vehicle tags and tolling detectors.

The Melbourne Citylink and the Sydney Eastern Distributor are good examples where ETC is being used. By the end of 2000, well over 550,000 tags had been issued for use on the Melbourne Citylink, making it the single largest ETC facility in the world.

In New South Wales, Sydney’s tolled motorways will all feature e-tolling by mid 2001. NSW has developed a “dual protocol” approach whereby e-tags from any supplier can be read by the equipment on all of Sydney’s Government and privately operated motorways. In addition, e-tags from Melbourne’s Citylink can also be read. Australia will be the first country in the world where interoperability in ETC has been achieved.

**Intelligent Access Project (IAP)**

The IAP is sponsored by the Commonwealth, Queensland, New South Wales, South Australia, Western Australia and Tasmania. The Project is overseen by a Steering Committee that includes representatives of the participating States, the Commonwealth, the NRTC and industry. Tasmania, through the Department of Infrastructure Energy and Resources, is managing the Project.

The IAP is a demonstration Project under e-Transport and seeks to further the strategic goals identified in the National Strategy. The objective of the IAP is to deliver integrated information services to road users and road use data to road authorities by certified third party service providers.

The services to be offered relate to compliance with vehicle performance, routes available, travel speeds, configuration, mass carried, and time of operation associated with permits. In this way it will assist road authorities with management of heavy vehicles. While it does not require jurisdictions to offer uniform permits, it will allow vehicle operators to access services via a single interface throughout Australia.

**8th ITS World Congress**

The 8th World Congress on IT (www.itsworldcongress.org/home.htm) is being hosted by ITS Australia in Sydney from 30 September to 4 October 2001. This will be an important opportunity to promote the Australian ITS industry to an international audience. Some 3,000 delegates are expected to attend predominantly from Asia-Pacific, North America and Europe. Delegates will include National and Stat Transport Ministers, and Transport Chief Executives an staff. This Congress will significantly contribute to the promotion of the ITS industry and the sharing an coordination of technical knowledge.

**INTERNATIONAL HARMONISATION**

Australia has been committed to international standards harmonisation for many years. This culminated in the year 2000 when Australia became a signatory to the UN ECE 1958 Agreement.

As part of preparations to becoming a signatory, comprehensive review of the Australian Design Rule began 2 years ago and is due for completion by the end of 2001. The purpose of the review is to align the ADR with UN ECE Regulations wherever possible, provide safety was not degraded. This will occur through progressive adoption of the appropriate UN ECE Regulations as identified by the review.
Closer to home, Australia has been actively involved in the area of standards harmonisation that is essential to the continued rapid economic growth of international trade in the APEC region. With agreement that standards harmonisation is an essential component to achieve this goal, APEC economies agreed on some common themes to guide this work:

- Align APEC economies’ mandatory and voluntary standards with international standards.
- Achieve mutual recognition among APEC economies of conformity assessment in regulated and voluntary sectors.
- Promote cooperation in technical infrastructure development to facilitate broad participation in mutual recognition arrangements in both regulated and voluntary sectors.

The work occurring in the APEC Transportation Working Group under the leadership of Australia will assist in realising the benefits for the automotive sector.

Some of the work towards achieving these objectives has been completed and several economies have now made commitments to participate in United Nations Economic Commission for Europe WP29 activities, join the 1958 and/or the 1998 Agreements, and to accelerate alignment of APEC domestic automotive standards with international standards.

The latest RTHP project work focussed on assisting participating APEC economies to implement efficient vehicle certification systems and to develop specific guidelines and action plans to assist implementation of regulatory requirements for vehicle safety and environment protection to achieve internationally harmonised regulatory systems for the automotive sector. Future RTHP activities will build on this work and will aim to assist developing economies in particular.

**NEW VEHICLE SAFETY REGULATIONS**

DOTRS has put into place Australian Design Rule 73/00 based on UN ECE Regulation 94/01 for offset frontal crash protection. ADR 73/00 was introduced for new passenger car model approvals from 1 January 2000.

ADR 69/00 for full frontal impact occupant protection was introduced in July 1995 and is based on US Federal Motor Vehicle Safety Standard 208 with the important difference being that ADR 69/00 is a restrained only test with a perpendicular impact direction. This difference has allowed vehicle manufacturers to optimise their airbag systems for restrained occupants.

When ADR 73/00 was introduced in addition to ADR 69/00, Australia became the first country in the world to adopt 2 frontal crash tests requirements to cover the most frequent types of crashes causing road trauma. It is pleasing to see that the USA and Europe will follow suit in the near future.

ADR 72/00 for dynamic side impact occupant protection was introduced in January 1999 for passenger cars. This Design Rule accepts compliance with either US FMVSS 214 or ECE Regulation 95/01.

Australia is hopeful that the work of IHRA will see the introduction of a globally harmonised side impact regulation by 2010.

**THE FUTURE**

As we move into the 21st century, Australia supports the IHRA initiative for coordinated research in major areas to improve road safety.

It is important that we do not lose sight of the “big picture” – we must be careful to ensure that improvements in one crash scenario do not degrade safety in another. It is time to move from our previous focus on self protection to partner protection or vehicle compatibility problem.

We remain mindful of the horrific road toll in developing countries. Our work in promoting the benefits of international standards harmonisation will hopefully bring about significant reductions in road trauma in developing countries by making safer cars available at an affordable price.