MEMBERS OF THE ROAD SAFETY COMMITTEE

Back Row: (from left) Mr Don Kilgour MP, Mr Tony Plowman MP, Mr Craig Langdon MP, Deputy Chair, The Hon. Andrew Brideson MLC, Chairman

Front Row: (from left) Mr Garry Spry MP, The Hon. Elaine Carbines MLC, Mr Ian Trezise MP.
Rural Road Safety and Infrastructure

Report of the Road Safety Committee on the Inquiry into Rural Road Safety and Infrastructure

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**Committee Members**

Hon. Andrew Brideson, MLC  
Chairman

Mr Craig Langdon, MP  
Deputy Chairman

Hon. Elaine Carbines, MLC

Mr Don Kilgour, MP

Mr Tony Plowman, MP

Mr Garry Spry, MP

Mr Ian Trezise, MP

**Staff**

Mr Barry Aitken  
Executive Officer to 19 March 2001

Ms Alexandra Douglas  
Acting Executive Officer from 5 April 2001

Mr Graeme Both  
Research Officer

Mrs Lois Grogan  
Office Manager
The Victorian Road Safety Committee is constituted under the Parliamentary Committees Act 1968, as amended.

The Committee comprises seven members of Parliament drawn from both houses and all parties. The Chairman is elected by members of the Committee.

Section 4EE describes the function of the Committee as:

The functions of the Road Safety Committee are to inquire into, consider and report to the Parliament on any proposal, matter or thing concerned with road trauma or safety on roads and related matters, if the Committee is required or permitted so to do by or under this Act.

Committee Address

Correspondence: The Chairman
Road Safety Committee
Level 8
35 Spring Street
MELBOURNE VIC 3000
AUSTRALIA

Telephone: +61 3 9651 3634
Facsimile: +61 3 9651 3691

By resolution of the Legislative Council on the 1st March 2000, the Road Safety Committee is required under the Parliamentary Committees Act 1968 to inquire into, consider and report on the following:

The needs for road and bridge construction and maintenance initiatives in rural Victoria, with the aim of reporting to Parliament, by 30 June 2001, on options for infrastructure projects that improve road safety and best meet community needs.

Dated 1 March 2000
Chairman's Foreword

The genesis of the Inquiry was a reference from the Legislative Council to conduct an investigation into the broad topic of rural road safety and infrastructure.

The Parliamentary Road Safety Committee consulted widely with the Victorian rural community, speaking to representatives of nearly every rural municipality, many community road safety organisations, and numerous government officials, in Victoria, New South Wales and Canberra. Over 70 submissions were received and discussions held with more than 150 people. The Committee expresses its grateful appreciation to all those who made written submissions and/or appeared as witnesses.

The Committee discovered a complex and often not very transparent set of arrangements governing the funding of road infrastructure. Numerous road safety problems and possible solutions were presented to the Committee covering a wide range of problem situations and road user groups. An important issue raised by the community was the hazard of cars and heavy vehicles passing each other on narrow sealed roads with poorly maintained edges and gravel shoulders. A major challenge for the Committee was to determine what were the key issues and identify the most appropriate course of action.

Particularly in relation to providing a forgiving roadside for vehicles that run off the roadway the Committee was disappointed that a number of known effective actions are not being implemented more readily. The implementation of lower speed limits near school crossings and improved edgelining on the more narrow roads in fog-prone areas are other examples of safety actions that should be hastened.

The Inquiry has resulted in a large number of recommendations covering a wide spectrum of aspects of the rural road safety and infrastructure landscape. Many of these encourage further implementation of known effective actions. Some relate to physical actions, whereas others apply to research, planning, administrative and organisational matters. The Committee believes its recommendations are practical and can be readily implemented.

I thank the members of my Committee who have all participated fully in the process of the Inquiry. Each Committee member is dedicated to improving road safety for Victorians.

I also thank my Committee staff, Barry Aitken, Alexandra Douglas, Graeme Both and Lois Grogan for their splendid contributions to the Committee’s work.

Andrew R. Brideson MLC
Chairman
Executive Summary

This report concludes the inquiry into rural road safety and infrastructure. For the purposes of the inquiry the Committee interpreted ‘rural’ or country to mean the area outside the Melbourne Statistical Division as defined by the Australian Bureau of Statistics.

During 1999, 175 people lost their lives in 153 crashes and 1,760 were seriously injured on roads in rural Victoria. This was slightly less than half the fatalities and 30 per cent of the serious injuries in the State, though only a little more than a quarter of the population lives in country Victoria. Almost two thirds of fatal and serious injuries in country Victoria are on open roads. Rural intersections represent very hazardous locations and, specifically, local roads in country Victoria have a proportionately greater number of intersection and pedestrian crashes than arterial roads.

In country crashes more people are killed and seriously injured in single vehicles running off the road than in all other crash types combined. A disproportionate number of run-off-road crashes occur on curves.

In 60 km/h zones, most fatalities and serious injuries occur on local roads, where the crash risk is twice as high as on arterials. In 100 km/h zones, the crash rate per unit of travel is three times as high on local roads as on arterials.

Crashes on rural roads are more likely to be severe and involve a single-vehicle, often striking a fixed object such as a tree, pole, post, embankment or street furniture. A poor road environment is likely to be a significant contributing factor to crashes on Victorian rural roads, particularly those on local roads.

The Committee found that the interpretation of crash statistics was often hampered by lack of information about the travel risk of various road user groups on the different parts of the road network. The lack of travel data is a serious weakness that VicRoads should endeavour to rectify.

The economic cost of rural crashes is estimated as being in the range of $600m to $850m per annum, without taking into account the unquantifiable grief and suffering of surviving victims, their relatives and friends. An economic and social problem of such magnitude should not be tolerated in rural Victoria.

In relation to infrastructure the Committee found that it was difficult to obtain adequate rural road and bridge information. The lack of knowledge of the current Victorian rural road assets and conditions, and the rate at which they are improving or deteriorating, represents an impediment to good road asset management.

The inquiry provided the opportunity to review some of the many changes in road responsibilities and funding which have occurred since the inception
of the *Transport Act 1983*. The road funding picture in Victoria has become increasingly complex and confusing. It is now a maze of programs, partnerships and administrative categories. There is a need for simpler, easy to understand, road funding methods. This would improve public accountability and transparency.

The Committee concluded that there was clearly widespread community concern about the adequacy of rural road funding in many parts of the State. Numerous submissions and witnesses at hearings expressed concerns, especially for some category C roads and the more heavily used local roads. However the extent of the problem is less clear.

The quality of rural local roads varied significantly across the State and there appeared to be many municipalities that were struggling with the competing demands for road upkeep and other community desires for municipal expenditure. The Committee welcomes recent changes in the Victoria Grants Commission untied road grant allocation processes as well the federal Roads to Recovery program grants for local roads. However these initiatives should be considered as being only short term remedies. There is an urgent need for more substantial and long term approaches to the management of rural local roads.

The Committee also considers that there is a definite need to assemble a comprehensive quantitative picture of the overall road funding needs for both Victorian rural arterial and rural local roads, as a basis for determining the appropriate level and direction of future investment by the three levels of government.

The Committee considers there could be advantages in aligning the financial and operational management responsibilities for Main Roads. This would also be expected to lead to more uniform and consistent road management practices on the Main Road network. Such consistency would be expected to have road safety benefits.

There appears to be a funding imbalance between arterial and local roads in Victoria. It is important that the Government ensure a proper balance in the upkeep and development of the arterial and local road networks. Almost all trips involve travel on both parts of the network and users see the road network as a single entity providing for their road travel needs. Change to organisational responsibilities might be needed, as might be some investment in local road improvements by the State.

Over recent years the concept of 'regionally significant local roads' has developed. It includes not only identifying a set of roads to comprise the new road category but also encompasses more co-operative regional decision making arrangements. The Committee regards the regionally significant local road issue as one of long term national strategic importance and of particular relevance to influencing the Federal Government on the form of funding assistance which might follow after the *Roads to Recovery* program ends in December 2004.
Blackspots are identified by the number of reported casualty crashes occurring over a defined period. Because no account is taken of crash exposure, that is, the volume of traffic at the site, it is less likely that hazardous sites on low volume rural roads will be quickly identified. Some rural groups considered that the guidelines for blackspot programs had a built-in bias against rural projects, despite rural roads being a more hazardous environment. The VicRoads *Guidelines for Potential Blackspots (August 2001)* is an attempt to address these concerns.

Failure to identify the location of all crashes on roads is an information deficiency. The reporting and processing of property damage crash records should be independently reviewed, with a view to at least using the data currently received by VicRoads. Insurance records might also be used.

Market surveys have shown that good rural roads are considered important and that many roads, particularly local roads, have a considerable need for improvement.

A significant issue raised during the inquiry was vehicle speeds in shopping areas and other areas of pedestrian activity, speeding on poor quality roads and near schools. The increasing use of large heavy trucks on inadequately constructed roads and bridges and narrow sealed roads with poorly maintained edges and shoulders were common concerns. Dangerous roadsides for vehicles running off the roadway was another significant issue.

In some parts of Victoria, many bridges on local roads require upgrading for safety and load carrying purposes. Hazardous intersections, inadequate road delineation on the narrower roads, rough and dangerous road pavements and surface grip problems such as aquaplaning and skidding on wet and icy pavements were mentioned.

Inadequate footpaths, lack of suitable resting places, dangerous school bus routes and stops, railway crossing hazards, lighting and tourism-related issues were also concerns.

The Committee noted that there were some instances where the viewpoints of groups or individuals were in conflict. The most obvious case is between the need for clear roadside recovery zones, to give drivers of vehicles which have run off the roadway an opportunity to regain control, versus the desire of some to preserve vegetation for visual, flora or fauna reasons.

Likewise there are conflicts between the safety needs of vulnerable road users, especially young children near schools and elderly pedestrians in township shopping centres, and the desires of motorists and heavy vehicle operators to travel to destinations as quickly as possible, sometimes due to external pressures.

The balancing of various, often conflicting community viewpoints and priorities is not easy, however the Committee considers that the
preservation of human life is non negoiable and should never be traded off for other economic, social or environment objectives.

The Committee proposes a number of infrastructure options to improve rural road safety including improved speed management and better enforcement of heavy vehicle speed and load limits and route restrictions, a higher priority for widening narrow and heavily used category C roads and wider use of shoulder sealing across the rural road network.

Other actions include trialling a ‘network’ approach to the treatment of intersections by signing and other measures to raise hazard awareness, initiating a specific curve treatment safety program and reviewing the guidelines for edgelining and other delineation of narrow roads.

Increased attention should be given to better maintaining roads, in particular measures that improve surface grip in wet weather, improve opportunities to rest from driving and provide adequate footpaths for pedestrians and motorised wheelchair users.

A detailed investigation should be undertaken of a recent Swedish initiative of using safety barriers to separate traffic streams on single carriageway roads, to determine its possible application in Victoria.

The Committee considers there should also be a specific concentrated focus on reducing country road trauma on rural Main Roads and local roads. One way to do this is by creating Road Safety Officer positions at a local government level. Safety reviews of existing roads should also be undertaken on a regular basis to a level that both improves road safety and satisfies potential legal liability requirements.

Review of arterial road hierarchies, more consistent management of local roads, municipal local road hierarchy plans and land use planning were also topics for the Committee’s attention.
Recommendations

1. That accurate data on the current condition and rate of change of rural road and bridge networks, particularly for local roads, be regularly collected and published in a common format every three years.

2. That the Government review all the methods currently used to fund roads in Victoria and develop more appropriate methods.

3. That the sections of the Transport Act 1983 relating to State legal classifications be reviewed.

4. That the Department of Infrastructure ensure all municipalities report projections of future road conditions and funding requirements using a common reporting format.

5. That the Government investigate, quantify and publish the overall road funding needs for rural arterial and rural local roads. The results should be used to influence the level and direction of future Federal road funding.

6. That the road management guidelines for category C roads be reviewed to give a greater emphasis to road safety concerns.

7. That the Government review the responsibility for operational management of Main Roads to achieve economies of scale, provide more uniform road management practices and potentially improve road safety.

8. That the Government review the funding of rural roads, including consideration of possible changes to organisational responsibilities and funding arrangements, to ensure a balance in the development and on-going care between the arterial and local road networks.

9. That strong representations be made to the Federal Government for more realistic financial contributions to upgrade bridges on local roads for the new mass limits of vehicles fitted with road friendly suspension systems.

10. That the concepts of regionally significant local roads and regional decision-making to determine priorities be supported by the Government to improve the asset management of the most important rural local roads.

11. That to enable forward planning and effective use of funds the Government consider the introduction of rolling multi-year roadwork programs.
12. That the Government make public the information on the State’s contribution to roads and the distribution of those funds to rural and metropolitan roads.

13. That information on the travel patterns of rural residents and information on travel on the rural road network be gathered by VicRoads to better assess crash risk and target safety treatments.

14. That State and Federal blackspot programs be continued and expanded.

15. That VicRoads seek administrative efficiencies by better co-ordination of the three blackspot programs.

16. That blackspot identification criteria for low volume rural roads be established.

17. That the ‘potential’ blackspot category be evaluated and the proportion of blackspot program funding allocated to the category be kept under review.

18. That an independent review be undertaken of the costs and benefits of using property damage crash information, including insurance records, to identify locations where repeated crashes are occurring.

19. That studies of the effectiveness of crash reduction measures be continued, to maintain the accuracy of the factors used to predict the outcome of treatments.

20. That, if requested by the local municipality, VicRoads should reduce speed limits on Main Roads in areas of pedestrian activity in rural townships.

21. That VicRoads and municipalities undertake reviews of the speed management of arterial and local roads with poor alignments and road surfaces.

22. That school zones of 40 km/h in urban areas and 60km/h in rural 100 km/h speed zones be implemented at appropriate times at all schools.

23. That the ‘rail versus road’ issue for freight be reviewed by a Parliamentary Inquiry.

24. That VicRoads and the Victoria Police expand the enforcement of heavy vehicle speed, load limits and route restrictions to stop vehicles using inappropriate routes.
25. That VicRoads give a higher priority to widening narrow and heavily used category C roads.

26. That the current restriction of shoulder sealing on category B and C roads to locations ‘where warranted by accident records’ should be reviewed.

27. A proactive approach to shoulder sealing on isolated curves and at other identified hazardous locations on category B and C roads should commence.

28. That further investigation is undertaken of techniques for cost effectively sealing pavement edges to improve safety and assist in preserving pavements.

29. That VicRoads and municipalities develop and implement roadside management policies and strategies to improve road safety.

30. That projects be trialled by VicRoads to show the effectiveness of using the best roadside safety management practices.

31. That VicRoads initiate a specific curve treatment safety program as a matter of urgency.

32. That VicRoads and municipalities increase the use of guardrails and other forms of barriers as a means to providing a safer roadside for travellers.

33. That a detailed investigation be undertaken by VicRoads of safety barriers to separate traffic streams on single carriageway roads and implemented where appropriate.

34. That the Government financially assist rural municipalities to upgrade bridges on rural local roads.

35. That increased attention be given to improving bridge visibility and protection, including signing, lighting, guardrails and end posts.

36. That a ‘network’ approach to the treatment of country intersections, irrigation channels and other locations by signing and other inexpensive measures to raise hazard awareness be trialled to determine its effectiveness.

37. That VicRoads develop guidelines for the sealing of unsealed sections of road that approach intersections with sealed roads to improve safety and reduce maintenance costs and dust.
38. That VicRoads and municipalities review edgelining and other
delineation practices, particularly for the more narrow roads in
fog-prone areas.

39. That attention be given to better maintaining roads, in particular,
measures that improve surface grip in wet weather conditions.

40. That VicRoads review rest area guidelines, improve the
consistency of signing and develop a specific program of resting
places to combat driver fatigue throughout the rural road network.

41. That VicRoads give consideration to including footpath provision
and improvement in the list of treatments eligible for road safety
funding.

42. That VicRoads and municipalities give more attention to reducing
night-time rural crashes by improving lighting and road
delineation.

43. That there be a specific concentrated focus on reducing road
trauma on rural Main Roads and local roads.

44. That all rural municipalities develop and implement road safety
strategic plans.

45. That road safety officer positions be created at a local government
level to promote road safety both within the council and in the
wider community, with substantial financial assistance from
VicRoads.

46. That road safety audits be mandatory on any road project having a
State Government funding contribution.

47. That safety reviews of existing roads be undertaken on a regular
basis to improve road safety and satisfy potential legal liability
requirements.

48. That, to provide a more consistent and hence safer local road
network, there should be a more uniform approach to the
management of local roads across municipalities.

49. That municipalities establish rural local road hierarchy plans using
common categories.

50. That increased consideration be given to road safety issues in the
land use development process through inclusion of specific
requirements in relevant planning codes.
### Definitions and Abbreviations

#### Definitions

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<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Sealed road</td>
<td>A road pavement having a waterproof surface such as bitumen or concrete.</td>
</tr>
<tr>
<td>Tied funds</td>
<td>Funds are required to be spent on defined road activities.</td>
</tr>
<tr>
<td>Unsealed road</td>
<td>A road comprised of gravel or earth material not having a waterproof surface.</td>
</tr>
<tr>
<td>Untied funds</td>
<td>Funds do not have to be spent on roads.</td>
</tr>
<tr>
<td>VicRoads</td>
<td>Registered business name of Roads Corporation, the statutory body that manages the Victorian arterial road network.</td>
</tr>
</tbody>
</table>

#### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA</td>
<td>Australian Automobile Association</td>
</tr>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>ALGA</td>
<td>Australian Local Government Association</td>
</tr>
<tr>
<td>ALTD</td>
<td>Australian Land Transport Development</td>
</tr>
<tr>
<td>BRV</td>
<td>Better Roads Victoria</td>
</tr>
<tr>
<td>GST</td>
<td>Goods and Services Tax</td>
</tr>
<tr>
<td>LGPro</td>
<td>Local Government Professionals</td>
</tr>
<tr>
<td>MAV</td>
<td>Municipal Association of Victoria</td>
</tr>
<tr>
<td>MSD</td>
<td>Melbourne Statistical Division</td>
</tr>
<tr>
<td>NAASRA</td>
<td>National Association of Australian State Road Authorities</td>
</tr>
<tr>
<td>NRTC</td>
<td>National Road Transport Commission</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>RACV</td>
<td>Royal Automobile Club of Victoria Ltd</td>
</tr>
<tr>
<td>RONI</td>
<td>Roads of National Importance</td>
</tr>
<tr>
<td>TAC</td>
<td>Transport Accident Commission</td>
</tr>
<tr>
<td>TIRES</td>
<td>Timber Industry Road Evaluation Studies</td>
</tr>
</tbody>
</table>
Introduction

Interpreting the Terms of Reference

In March 2000, the Legislative Council of the Parliament of Victoria established an Inquiry by the Parliamentary Road Safety Committee into Rural Road Safety and Infrastructure, with terms of reference to investigate:

The needs for road and bridge construction and maintenance initiatives in rural Victoria, with the aim of reporting to Parliament by 30 June 2001, on options for infrastructure projects that improve road safety and best meet community needs.

As the terms of reference were broad the Committee developed its own interpretation of the intent and scope of the Inquiry and the meaning of the various words in the terms of reference.

Definition of Roads and Bridges

Legally the word ‘road’ refers to the road reservation between property boundaries, however this inquiry generally uses the word ‘road’ to refer to the portion of the reservation formed to carry traffic and the term ‘roadside’ to be the remainder of the reservation.

Unless otherwise mentioned the word ‘road’ includes both roads and structures such as bridges.¹

What is Construction and Maintenance?

Roads, and to a lesser extent, bridges, deteriorate over time due to traffic loading and climatic influences. They often become technically deficient or obsolete because of changing user requirements and vehicle characteristics, such as larger, faster and heavier vehicles. In addition they are subject to changes as a result of different use of land and economic activity. Hence, the need for a road, bridge or pedestrian overpass may expire well before it is physically unfit for use.

The physical asset management of roads and bridges does not readily fit the accounting concepts of capital and operating expenditure. Nor does the uneven deterioration in condition fit easily with the accounting concepts
of standard asset lives and depreciation assumptions, for example that all bridges have the same life of, say, 80 years.

The initial formation of a road across vacant land is construction and the day-to-day care of a road and the operation of traffic signals and lighting is maintenance. The periodic re-sealing of a road with bitumen, or gravel re-sheeting of an unsealed road, is also considered as maintenance.

In Victoria a partial restoration of a road, usually on its original alignment and to the same dimensions, is generally termed ‘rehabilitation’. A more complete restoration, often including some element of upgrading, is considered to be ‘reconstruction’. For accounting purposes ‘rehabilitation’ is sometimes considered as construction and sometimes as maintenance, whereas ‘reconstruction’ is generally grouped with new construction expenditure. Sometimes the component of a reconstruction project, which provides improved service (e.g. the widened strip of pavement or the realigned portion of the project length), may be counted as new construction and the remainder as maintenance.

The current accounting practice at VicRoads is for all expenditure on a project that adds an additional traffic lane, including overtaking lanes, to be treated as a capital expense and added to the asset value of the arterial road network. Other less significant restoration or upgrading activity is treated as maintenance.

Care must therefore be taken in interpreting accounting-based assessments of the road network. Such assessments provide but one dimension and need to be accompanied by an assessment of physical condition and the levels of service provided to users relative to their needs and expectations.

Given the above terminology considerations the Committee chose not to consider issues or solutions under the separate headings of construction and maintenance.

What is Rural Victoria?

There are a number of ways in which rural Victoria could be defined. The first interpretation considered by the Committee was the Australian Bureau of Statistics definition which for Victoria is the area outside the Melbourne Statistical Division (MSD). This is used by many government agencies and most statistics available below state-level will refer to the metropolitan area and the rest of Victoria. Only the Shire of Yarra Ranges straddles the boundary.

A second definition of ‘rural’ could be that used in the Regional Infrastructure Development Fund Act 1999. This includes the nine municipalities on the fringe of the growing Melbourne metropolis. These are Wyndham, Melton, Hume, Whittlesea, Nillumbik, Yarra Ranges, Cardinia, Casey and Mornington Pensinsula.
A third possibility was the area beyond the edge of the built-up Melbourne area. Urban speed limit signs and street lighting roughly define this boundary, although the Australian Bureau of Statistics has a precise boundary defined by contiguous Census Collector Districts of a defined population density. However, because it is constantly changing this boundary is generally unsuitable for most statistical purposes.

Another aspect for consideration was the major provincial cities, such as Geelong, Ballarat, Bendigo and Traralgon, other provincial cities, smaller cities, towns, villages and hamlets. In many of these concentrations of population the municipal boundaries extended well beyond the built-up area. Were these built-up areas to be considered ‘rural’?

The Committee chose to focus on the area beyond the Melbourne Statistical Division boundary because statistical information was more readily available. However some of the issues covered and conclusions drawn from the Inquiry will also apply to the non-built up areas within the Melbourne Statistical Division.

In this report the terms ‘country’ and ‘rural’ are regarded as identical. The Committee also adopted the term ‘open road’ to apply to country roads beyond ‘built-up’ areas.

**What are Infrastructure Projects?**

In some government publications the term ‘infrastructure projects’ is used only for significant new construction works, usually having a relatively large budget.

The Committee has taken a broader interpretation of the term to include any activity associated with infrastructure upkeep and upgrading. This includes crash investigations and analysis, asset management studies, strategies and action plans and all planning, construction and maintenance activities.

Furthermore, the Committee considered that the terms of reference did not require the identification of specific locations where various projects were required, or the type and cost of individual projects.

**State Road Classification Definitions**

Under the Australian Constitution, roads are the legal responsibility of States. Unless otherwise stated the Acts of Parliament mentioned in this Report are Victorian.

In Victoria, the *Transport Act 1983* established the Roads Corporation (trading as VicRoads) as the State road agency, and defined the responsibilities of the Minister for Transport, VicRoads and municipalities in relation to roads. Municipalities are responsible for local roads under the *Local Government Act 1989*. 


Roads can broadly be divided into those having an *arterial* function and those having a *local access* function.

In country Victoria *arterial roads* generally link regions, major activity centres and key towns. Key towns usually have a resident population greater than 500 people, and/or employment generators of more than 500 people.

Arterial roads defined in the *Transport Act 1983* include:

*State Highways*, the principal routes for the movement of people and goods between regions;

*Freeways*, high speed highways where access from adjacent properties and side roads is controlled;

*Main Roads*, the significant intra-regional roads for social and economic activity between key towns; and

*Tourist and Forest Roads*, providing access to areas of high tourist, recreational and timber extraction significance.

These form what is known as the declared or classified road system.

Roads that have not been declared by VicRoads as arterial roads are known as *local* or unclassified roads. They generally provide for local movement and access to properties, and are the responsibility of local government.

### Conduct of the Inquiry

#### Submissions

Submissions were received from over 70 organisations and individuals in response to invitations and advertisements seeking submissions. Appendix A lists the organisations and individuals who made submissions.

#### Hearings

The Committee considered there was benefit in gathering the views of community representatives and subsequently embarked on an extensive round of discussions in rural Victoria holding 10 public hearings at which all rural municipalities except the Shire of Macedon Ranges were involved. The meetings were held at Warrnambool, Geelong, Wodonga, Shepparton, Ballarat, Swan Hill, Horsham, Bendigo and Sale.

To compare municipalities and obtain as much information as possible the Committee also travelled to New South Wales and the Australian Capital Territory. In New South Wales the Committee met with municipalities, the Roads and Traffic Authority and the STAYSAFE Committee – Joint
Standing Committee on Road Safety. In the Australian Capital Territory the Committee met with the Australian Transport Safety Bureau, the Department of Transport and Regional Services and the Australian Local Government Association.


Appendix B lists the 157 witnesses who appeared before the Committee.

Endnotes

1 Structures include bridges, major culverts and overhead features such as sign gantries and pedestrian overpasses.
2 VicRoads, Submission to the Inquiry, August 2000, p. 103.
3 VicRoads, submission, pp. 4-5.
Rural Road Infrastructure and Management Strategies

Historical Development

Victoria’s country road networks were established more than a century ago. Since that time the means of moving people and goods has changed considerably. The gradual sealing of the arterial road network, primarily after World War II, and the commencement of a National Highway System in the mid-1970s contributed to the aggregation of local and later State-based economies into a single national economy. Many roads now no longer perform the function for which they were constructed.

Characteristics of the Road Network

Road Lengths

Country roads represent about 85% of the total road length in Victoria. Table 2.1 is a summary of road lengths. Table 2.2 provides further details.

Table 2.1 Victoria’s Road Lengths by Category

<table>
<thead>
<tr>
<th>Length (km)</th>
<th>Declared Arterial Roads</th>
<th>Unclassified</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highways and Freeways</td>
<td></td>
</tr>
<tr>
<td></td>
<td>National Highways</td>
<td>Roads of National Importance</td>
</tr>
<tr>
<td>Victoria (155,000 km)</td>
<td>1,010</td>
<td>560</td>
</tr>
<tr>
<td>Country Vic (132,000 km)</td>
<td>945</td>
<td>530</td>
</tr>
<tr>
<td>Mg’t Resp’y</td>
<td>State Government</td>
<td>Local Government</td>
</tr>
</tbody>
</table>

Source: VicRoads submission, Table 2, p. 5.
### Table 2.2 Estimated Road Lengths in Kilometres, Victoria, 1998

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Arterial Roads (Declared)</th>
<th>Local Roads Unclassified</th>
<th>Total</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freeways</td>
<td>Highways</td>
<td>Main Roads</td>
<td>Forest &amp; Tourist Roads</td>
<td>Total Arterial Roads</td>
</tr>
<tr>
<td>Geelong, Ballarat, Bendigo</td>
<td>60</td>
<td>362</td>
<td>597</td>
<td>14</td>
<td>1,033</td>
</tr>
<tr>
<td>Other Cities</td>
<td>127</td>
<td>1,301</td>
<td>1,561</td>
<td>167</td>
<td>3,156</td>
</tr>
<tr>
<td>Other Shires</td>
<td>345</td>
<td>4,465</td>
<td>8,310</td>
<td>1,684</td>
<td>14,803</td>
</tr>
<tr>
<td>Total Rural</td>
<td>532</td>
<td>6,129</td>
<td>10,468</td>
<td>1,865</td>
<td>18,992</td>
</tr>
<tr>
<td>Melbourne</td>
<td>381</td>
<td>488</td>
<td>2,236</td>
<td>141</td>
<td>3,245</td>
</tr>
<tr>
<td>TOTAL VICTORIA</td>
<td>912</td>
<td>6,616</td>
<td>12,704</td>
<td>2,006</td>
<td>22,238</td>
</tr>
</tbody>
</table>

Notes:  
1. Arterial road lengths rounded to the nearest kilometre.  
2. ‘Total Rural’ added by Committee.  
In the case of local roads the lengths are provided for both sealed roads, that is, those roads that have a bitumen or concrete surface, and unsealed roads.

Road Attributes and Condition

Arterial Roads

Of Victoria’s 19,000km country arterial road network, only approximately 105 kilometres, or about 0.5 per cent, is unsealed.²

In a submission to the Inquiry VicRoads provided information on the lengths of various widths of sealed arterial roads, their roughness and traffic volumes. In interpreting the information it should be noted that single lane sealed roads usually have a 3.7m wide sealed surface. Two lane highways now usually have a sealed surface of either 6.6m or 7.0m, so an arterial road with a sealed surface of less than 6.2m can be considered to be relatively narrow.³

There are approximately 300 km of arterial roads with narrow sealed width of 3.7m or less and 20 km of those narrow sections have very rough surfaces. However, these narrow and rough sections have low traffic volumes (less than 250 vehicles per day). Only 9 km of these narrow and rough sections carry more than 25 trucks per day.

The total length of arterial roads with seal widths above 3.7m but less than 6.2m is 2235 km, of which only some 20 km have very rough surfaces. One-third of these roads carry less than 500 vehicles per day and one fifth carry more than 50 trucks per day.⁴

VicRoads’ summation is that:

… most country arterial roads offer adequate surfaces with only a very small proportion of country arterial travel on roads that are narrow, or very rough, or both narrow and very rough.⁵

Local Roads

The Committee was not able to obtain sufficient data to provide a comparative picture of road width and roughness on local roads. Only a few municipalities provided the Committee with any quantitative data on their local road networks. However from Table 2.2 it can be calculated that one third of the length of the 113,000 km rural local road network is sealed.
Travel

The country road network carries more than two-thirds of all road freight moved in Victoria. It also provides access to employment, goods and services for the 28 per cent of Victorians who live in country areas, and is being increasingly used for recreational travel.

Information about travel on the Victorian road network is obtained from national questionnaire-based travel surveys conducted by the Australian Bureau of Statistics (ABS) and from travel estimates based on traffic counts published by the National Road Transport Commission (NRTC). On the basis of these data, VicRoads estimates road travel in Victoria for 1999 as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Million vehicle kilometres of travel</th>
<th>Percentage of travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural National Highways and Roads of National Importance</td>
<td>3,600</td>
<td>8%</td>
</tr>
<tr>
<td>Other Rural State Highways</td>
<td>4,800</td>
<td>11%</td>
</tr>
<tr>
<td>Rural Main Roads</td>
<td>3,800</td>
<td>9%</td>
</tr>
<tr>
<td>Rural Forest and Tourist roads</td>
<td>400</td>
<td>1%</td>
</tr>
<tr>
<td>Total rural arterial road travel</td>
<td>12,600</td>
<td>28%</td>
</tr>
<tr>
<td>Rural local road travel</td>
<td>5,000</td>
<td>11%</td>
</tr>
<tr>
<td>Total rural travel</td>
<td>17,600</td>
<td>39%</td>
</tr>
<tr>
<td>Total metropolitan travel</td>
<td>27,000</td>
<td>61%</td>
</tr>
<tr>
<td>TOTAL VICTORIA</td>
<td>44,600</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: VicRoads submission, Table 5, p.12.

In summary, country travel represents approximately 40% of total road travel in Victoria, with more than 70% of this travel being on country arterial roads.

As only 0.5% of the length of rural arterial road is unsealed almost all country arterial travel is on sealed roads. Data from the NRTC in the mid-1990s suggest that over 80% of the total travel on country local roads is on sealed roads. However, whether this is on wide or narrow roads or on smooth or rough pavements is unknown.

ABS travel surveys suggest that total travel in Victoria has been increasing at about 1.3% per annum in recent years, with travel in country Victoria increasing by about 1.1% per annum. However, growth in travel is not even
across the country road network; some roads are experiencing high growth while others have declining traffic.\(^9\)

The travel surveys also show that tonne-kilometres of freight moved are increasing at a much faster rate than truck kilometres of travel, indicating average truck loads are increasing quite significantly. Much of this growth is occurring in the larger six axle articulated and medium combination vehicles, commonly known as B-Doubles.\(^{10}\)

### Bridges

In contrast to the relative lack of statistical information about roads there is a reasonable amount of published information for bridges. *Victoria’s Bridge Strategy*, published in 1995, provides information on existing bridges, on material, age, load capacity and condition, though not specifically for bridges on country roads.\(^{11}\) VicRoads informed the Committee that there are 2,085 bridges and 1,600 major culverts on rural arterial roads.\(^{12}\)

Statistics on the material type, age, general condition, average annual maintenance cost and estimated current replacement cost of bridges on local roads were included in the VicRoads submission, but again the numbers for country local roads were not separately provided.\(^{13}\)

### Lack of Available Information

The last time a comprehensive quantitative picture of the road characteristics and conditions in Victoria was assembled was for June 1981 as part of the nationwide road study published by the then National Association of Australian State Road Authorities (NAASRA) in 1984.\(^{14}\) The investigation of rural and urban arterial roads in that study was quite extensive, but even that assessment of local roads was limited to an extrapolation from a very basic set of data assembled from a sample of municipalities.\(^{15}\)

While there have been major advances since then in information gathering techniques, such as automated data logging machines and laser measuring devices, published road quantity and quality information appears to have regressed.

Recent VicRoads annual reports provide a five year statistical summary of a number of performance measures, but not in sufficient detail to show how various parts of the country road network are performing, or whether the situation is improving or deteriorating.\(^{16}\)

Local road attributes, their state and rate of change, can only be gauged by examining broad annual statistics.\(^{17}\) There is very limited information about the amount of vehicle travel on the local road network.

The Committee considers there is a need for better information on the quality of roads and bridges and the amount of travel on them.
The Committee found that it was difficult to obtain information on rural road and bridge attributes, as the more detailed statistics are usually only available for Victoria as a whole.

The Committee considers that the lack of knowledge of the current Victorian rural road assets and conditions, and the rate at which they are improving or deteriorating, represents an impediment to good road asset management.

Systems are needed to accurately record road condition data across the entire rural road network. VicRoads and municipalities should be required to gather and report the results in a standard format at regular intervals, for example every three years.

**Recommendation**

1. That accurate data on the current condition and rate of change of rural road and bridge networks, particularly for local roads, be regularly collected and published in a common format every three years.

**Overview of Victoria's Arterial Road Infrastructure Strategies**

Victoria has a number of strategies that are supposed to guide the development and maintenance of Victoria’s arterial road infrastructure. They are:

- Victoria’s *Rural Arterial Road Network Strategy*
- The associated Highway Corridor strategies
- *A Stitch in Time* road maintenance strategy
- *National Roads in Victoria*
- *Victoria’s Bridges.*

**Rural Arterial Road Network Strategy (December 1996)**

This strategy provides the framework for managing Victoria’s rural Freeways, State Highways, Main Roads and Tourists roads. It is designed to provide Victoria with a rural arterial road system that is relevant to user needs and is affordable. The strategy was originally announced under the title *Linking Victoria.* It contains seven aspects:

1. Development of a (functional) road network that is easy for the motorist to use
2. Improvement of access between regions
3. Provision of additional capacity on major roads

4. Making rural travel safer

5. Reducing freight costs

6. Improving road facilities for tourists

7. Protecting and enhancing the road environment.

Further details of the seven elements are given in Appendix C.

The function and standards of rural arterial roads are defined by the principles shown in Table 2.4.

<table>
<thead>
<tr>
<th>Function of arterial roads</th>
<th>Standards of arterial roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>M roads</td>
<td>Will provide a consistent high standard of driving conditions with divided carriageways, four traffic lanes, sealed shoulders and with delineation and linemarking that is easily visible in all weather conditions.</td>
</tr>
<tr>
<td>A roads</td>
<td>Will provide a similar consistently high standard of driving conditions on a single carriageway. A program of shoulder sealing and overtaking lane construction will be carried out, initially on sections with daily traffic volumes of more than 2000 vehicles and strategic freight routes.</td>
</tr>
<tr>
<td>B roads</td>
<td>Will have sealed pavements wide enough for 2 traffic lanes, with good centreline and edge linemarking, shoulders and a high standard of guidepost delineation. Additional overtaking lanes to be provided on higher volume ‘B’ roads to improve safety &amp; capacity.</td>
</tr>
<tr>
<td>C roads</td>
<td>Will generally be two lane sealed roads with shoulders. Standards will be determined on the basis of cost-effectiveness, depending on traffic and terrain, accident records, load restrictions and frequent flooding.</td>
</tr>
</tbody>
</table>

Source: VicRoads submission, Table 20, p. 67.
The minimum technical performance standards for rural arterial roads are defined in detail in Appendix D.

The original Strategy document contained a map showing the principal routes and their associated route numbers. Later Statewide Route Numbering Scheme drivers’ guide maps provide more detail for the public.20

Highway Corridor Strategies

VicRoads is preparing highway corridor strategies for all major highway routes in Victoria. The function of each corridor and the appropriate performance standards have been set by Victoria’s Rural Arterial Road Network Strategy. The individual highway corridor strategies provide a greater level of detail.

The purpose of the highway corridor strategies is to establish a 10 to 15 year action plan required to protect land for future transport options and achieve the required land access controls by:

• Estimating future travel demand;
• Determining needs and priorities for significant improvements including road safety; and
• Identifying the planning activities.

The corridor strategies indicate the role of the route, the current conditions, and identify the works required to bring each highway up to the required performance standards. Priorities are established for actions in each corridor to provide a management plan for the route.

The corridor strategies are prepared in consultation with key community stakeholders such as local municipalities, transport operators, tourist agencies and operators, trader associations, the Victorian Farmers Federation, the Victoria Police, Heritage Victoria, RACV, etc.

The following Highway Corridor Strategies have been released:

• Goulburn Valley Highway (Route M39/A39) – July 1993
• Calder Highway (Route M79/A79) – October 1995
• Princes Highway East (Route M1/A1 and B620) – May 1997
• Northern Highway (Route B75) – January 1998
• Sunraysia Highway (Route B220) – October 1998
• South Gippsland Highway (Route M420/A440) – February 1999
• Bass Highway (Route M420/B460) and Phillip Island Road (Route A420) – July 1999; and
• Western Highway (Route M8/A8) – December 1999.21

National Roads in Victoria Strategy
This document is prepared annually and is the submission for Federal road funds under the Australian Land Transport Development (ALTD) legislation.

The latest version (2001-02 to 2004-05) proposes the following rural routes as new Roads of National Importance:

• Princes Highway (East of Melbourne) from Pakenham to New South Wales border; and
• Princes Highway (West) from Geelong to South Australian border.

The strategy also proposes a five-year forward program, which includes proposals for duplication of sections of the Princes Highway from Traralgon to Sale and Geelong to Colac. 22

Road Maintenance Strategy (July 1993)
A Stitch in Time is Victoria’s arterial road maintenance strategy, developed to ensure that each road maintenance dollar is spent as efficiently as possible. The goals of the strategy are:

• To ensure that road conditions meet user needs for safety;
• To improve the condition of busy freight roads where the saving in vehicle operating costs is greater than the maintenance treatment costs; and
• To achieve these conditions by cost-effective treatments which minimise long-term maintenance costs, particularly by focussing on timely prevention rather than cure.23

Victoria’s Bridges Strategy (July 1995)
The principal objectives of Victoria’s Bridges strategy are to:

• Ensure that Victoria’s bridge stock is managed in a way that promotes safety and efficiency;
• Ensure that road transport needs (such as vehicle load capacity and dimensions) are balanced with the cost of bridge maintenance, strengthening and replacement;
• Provide a performance-based framework for identifying bridge maintenance and replacement needs;
• Establish forward programs to address these needs; and

• Establish an implementation plan.

The strategy assists VicRoads and local government in the management of structures on the arterial road system.24

Effectiveness of Arterial Road Strategies

The Committee was concerned that the strategies sometimes appeared to be just rhetoric and that some highway corridor strategies were not being implemented as published. For example, the Goulburn Valley Highway (Route M39/A39) strategy of July 1993 states that the construction priorities for the duplication between the Hume Freeway and Shepparton were to proceed north from the Hume near Seymour and south from Shepparton.25 While the Hume to Nagambie section has been completed in accordance with the strategy, work has now commenced on a project about midway between Nagambie and Shepparton.26 This is not in accordance with the priorities established in the published strategy.

The Committee heard many concerns about the inadequacy of the arterial road infrastructure that raised doubts about the appropriateness of some aspects of the strategies, or how adequately the strategies were being implemented. These issues are discussed in more detail in later chapters.

The Committee was not alone in being concerned about the lack of public information on how well the strategies were being implemented. The RACV had similar concerns in relation to the extent to which bridgework was being funded in accordance with Victoria’s Bridges strategy:

RACV has been unable to ascertain if these targets have been met and believes that these figures should be more transparent.27

One of that organisation’s recommendations was that:

Better and more transparent benchmarking of bridge and culvert improvements is necessary to ensure targets are being met.28

The Committee agrees with that viewpoint, not just in relation to bridges and culverts, but to the whole spectrum of activities encompassed by the arterial road strategies.
Local Road Infrastructure Strategies

A small number of municipalities informed the Committee of their use of asset management systems. These forecast the likely future condition of road and bridge assets with various types of treatments and maintenance practices. Together with a road hierarchy, such asset management systems provide a quantitative basis for the development of local road infrastructure strategies.

Recommendation

1. That accurate data on the current condition and rate of change of rural road and bridge networks, particularly for local roads, be regularly collected and published in a common format every three years.

Endnotes

1 VicRoads, Submission to the Inquiry, August 2000, p. 4.
2 ibid., p. 70.
3 In pre-decimal days sealed road surfaces were typically 12, 16, 18, 20, 22 or 24 feet wide. 6.2 metres is equivalent to 20.3 feet so the VicRoads data regards 20 feet as narrow.
4 VicRoads, submission, p. 71.
5 ibid.
6 Measured in tonne kilometres.
7 VicRoads, submission, p.3.
9 VicRoads, submission, p. 13.
12 VicRoads, submission, p. 76.
13 VicRoads, submission, Appendix 17, pp. 121-124.
15 ibid.
17 Road lengths collected annually by Victoria Grants Commission. For summaries see the Australian Bureau of Statistics Local Government Finance publications.
18 VicRoads, submission, p. 66.
19 *Linking Victoria* is now a logo used for the signage of a number of transport projects. The Victorian Government now refers to the 1995 document by its secondary title of *Victoria’s rural arterial road strategy*.

20 VicRoads, submission, Appendix 12, p. 115.

21 VicRoads, submission, p. 72.

22 ibid., p. 71.

23 ibid., p. 73.

24 ibid., p. 75.


26 The Murchison East section.

27 Royal Automobile Club of Victoria Ltd, Submission to the Inquiry, June 2000, p. 15.

28 ibid., p. 4.

29 The municipalities included Baw Baw, Indigo, Moyne, Mount Alexander and Pyrenees Shires.
Road Funding and Responsibilities

A Historical Perspective

The Committee is of the view that some of today’s rural road infrastructure problems are a result of past decisions on road funding and responsibilities.

Submissions received described the historical economic forces influencing the physical development of the country road network and the legislation and funding events of the last century.¹ Both Federal and State governments have encouraged a major expansion in road assets, but are now leaving much of the task of funding the renewal of these assets to municipalities.²

The Committee considers that the key relevant historical events are:

- The creation of the Country Roads Board in 1913, which had as one of its principal charters the sealing of roads between significant towns.

- Extension of the sealed network during the 1960s and 70s. Many municipalities significantly extended the road network with funding primarily provided by the State and Federal Governments.

- The Transport Act 1983 that established the Road Construction Authority (later Roads Corporation) and officially broadened the role of the State road agency beyond its country origins.³

- A State Government review of rural road funding in the mid-1980s which resulted in not only a more distinct definition between the arterial and local road networks, but more importantly, a withdrawal by the State from any direct financial involvement in local roads.

In its submission Surf Coast Shire stated they believe many of the current road infrastructure challenges can be attributed to the loss of state funding.⁴
Current Road Funding Responsibilities

While VicRoads and municipalities share the management of Victoria’s road network, all three levels of government provide funding. The current funding arrangements were established at a Special Premiers’ Conference held in July 1991.

The source of funds for Victorian roads over the past decade or so is shown in Figure 3.1. Because much expenditure is sourced from grants passed down from one level of government to another, it is difficult to determine from where funds originate.

Figure 3.1 Source of Road Funding in Victoria, 1987-2000

Note: Dollars expressed in 1999 values.
Source: VicRoads submission, Figure 1, p. 6.

Federal Government Road Funding

The Federal Government currently provides road funds for the following:

- National Highways
- Roads of National Importance (RONI)
- Accident Blackspots
- Local Roads
- Roads to Recovery Program.
Until the financial year 1999-2000 the States and Territories also received Federal untied arterial road grants. The term ‘untied’ means the funds do not have to be spent on roads. As part of the tax reform arrangements applying from 1 July 2000 the States are expected to use part of the Goods and Services Tax (GST) revenue for this purpose.

**National Highways**

National Highways mainly link the State capital cities. The National Highways in Victoria are:

- the Hume Highway from the Western Ring Road to the New South Wales border at Wodonga;
- Western Highway from the Western Ring Road to the South Australian border near Bordertown;
- Goulburn Valley Highway from Seymour to the New South Wales border near Tocumwal;
- Sturt Highway from the NSW border at Mildura to the South Australian border near Renmark; and the
- Western Ring Road between the Hume and Western Highways.7

The Federal Government provides 100 per cent of the funds for construction and maintenance. Construction projects require approval by the Federal Minister for Transport and Regional Services as do annual safety and urgent minor works and maintenance programs.8

**Roads of National Importance**

This funding category commenced in the mid 1990s with agreement between the Federal, New South Wales and Queensland Governments to share the cost of a major ten year upgrade of the Pacific Highway between Sydney and Brisbane. In Victoria the Roads of National Importance are the Calder Highway from Melbourne to Mildura and the Princes Highway between Geelong and Melbourne.9

The Federal and State Governments share funding, generally 50 per cent each, for selected construction projects on these roads. Other construction works and all road maintenance on RONIs remain the financial responsibility of the State. There have been cases on the Calder Highway where one government wishes to proceed with a project but it does not suit the project priorities or available cash-flow profiles of the other government.10 This complicates the efficient management of roadworks.
Federal Accident Blackspot Program

A Federal Accident Blackspot Program to address crash sites on arterial and local roads operated from 1990-91 to 1992-93. Another program commenced in 1996-97 and is due to finish in June 2002. The blackspot program is discussed in detail in Chapter 6.

Trend in Federal Road Funding

Figure 3.2 shows the funding for the National Highway, RONI and Federal Accident Blackspot programs received by Victoria in recent years, in 1999-2000 dollar values. The amounts have fluctuated considerably over that period.

Figure 3.2 Trend in Federal Road Funding to Victoria

![](image)

Source: VicRoads submission, Figure 2, p. 7.

Untied Local Road Grants

The Federal Government also provides grants under the Local Government (Financial Assistance) Act 1995 to assist local government with roads. Since 1991 this money has been ‘untied’, however the amount and its distribution between States is still identified in the Federal Budget papers as funds intended for roads. The grants are adjusted annually for inflation and population changes to retain their value on a real per capita basis.11

Since 1991 Victorian municipalities have received 20.6 per cent annually of the total local road funds in Australia.12 This currently amounts to approximately $87m.13

The funds are distributed between municipalities by the Victoria Grants Commission using a formula that takes into account lengths of various types of roads and factors such as traffic volumes, freight, climate, materials availability and whether or not roads are strategic routes.14
Beginning this financial year a new distribution formula is being phased in over three financial years. This will generally favour most, but not all, rural municipalities.\textsuperscript{15}

In addition to the untied local road grants, municipalities also receive untied General Purpose grants under the same Federal legislation and via a separate Victoria Grants Commission distribution formula which includes some road elements. These General Purpose grants total around $220m per annum.

**Roads to Recovery Program**

In November 2000 the Federal Government announced a *Roads to Recovery* program, of which $1.2 billion was to be allocated nationally over four years as tied road grants to municipalities for local roads.

The *Roads to Recovery Act 2001* legislation specifies the total entitlements of each municipality in Australia. The funds are provided directly to municipalities to spend on their own road priorities. In Victoria the grants are calculated using the superseded Victoria Grants Commission untied local grants formula.\textsuperscript{16}

**Total Federal Road Funding**

Table 3.1 shows the composition of Federal road funding for the current and two previous financial years.

<table>
<thead>
<tr>
<th>Location</th>
<th>$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Highways</td>
<td>65.1</td>
</tr>
<tr>
<td>Roads of National Importance</td>
<td>16.2</td>
</tr>
<tr>
<td>Accident blackspots</td>
<td>8.5</td>
</tr>
<tr>
<td>Arterial roads (untied)</td>
<td>87.5</td>
</tr>
<tr>
<td>Local roads (untied)</td>
<td>80.0</td>
</tr>
<tr>
<td>‘Roads to Recovery’ local roads</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>257.5</strong></td>
</tr>
</tbody>
</table>

Note: * Arterial road grants were abolished as part of the New Tax Scheme arrangements introduced on 1 July 2000.

Source: VicRoads submission, and correspondence of 20 August 2001.
State Government Road Funding

The State Government is financially responsible for all work on the arterial road network, that is, declared state highways, freeways, main roads, forest and tourists’ roads. The funds come from its own resources as well as federal grants from the National Highway, RONI and Federal Accident Blackspot programs. The State also provides some special grants for projects on local roads.

State funds are provided through Budget appropriations and the Better Roads Victoria Program.

The annual budget appropriations fund maintenance and operating programs and some special capital works programs. In 1999-2000 the allocation to VicRoads was $353.5m and in 2000-2001 it was $507.03m. More than half the increase was an allocation of general revenue equivalent to the former untied federal arterial road grants, which were abolished when the GST was introduced.

The VicRoads Annual Report 1999-2000 provided details of the distribution of expenditure among the various VicRoads programs, such as Road System Management; Traffic and Road Use Management, etc. This provided some indication of funding priorities. The Committee noted that the 2000-2001 Annual Report does not provide this information, nor some previously published VicRoads Operating Statement and Balance Sheet details.

Early in 2000 the State Government announced that during the next four years it would devote $240 million to removing accident blackspots across the state. Blackspots are discussed in more detail in Chapter 5.

Better Roads Victoria Program

In 1993, the Better Roads Victoria Trust Fund was established with its funding initially based on a three cents per litre fuel franchise scheme. It provided a substantial boost to State road funding in the mid-1990s as can be seen in Figure 3.1. The program is primarily for the construction and reconstruction of arterial roads and bridges with a focus on projects that will contribute to economic development by reducing transport costs for business and improving the efficiency of roads. As can be seen in Table 3.2 there are a number of categories.
### Table 3.2 Composition of Better Roads Victoria Funding, 1999-2000

<table>
<thead>
<tr>
<th>Project Description</th>
<th>$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural arterial road projects</td>
<td>41.9</td>
</tr>
<tr>
<td>Rural arterial bridge upgrade</td>
<td>5.3</td>
</tr>
<tr>
<td>Rural reconstruction catch-up</td>
<td>3.0</td>
</tr>
<tr>
<td>Rural State impacted local roads</td>
<td>4.1</td>
</tr>
<tr>
<td><strong>Total rural</strong></td>
<td>54.3</td>
</tr>
<tr>
<td>Metropolitan arterial road projects</td>
<td>33.2</td>
</tr>
<tr>
<td>Metropolitan major network improvements</td>
<td>38.5</td>
</tr>
<tr>
<td><strong>Total metropolitan</strong></td>
<td>71.7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>126.0</td>
</tr>
</tbody>
</table>


The State Impacted Local Road category is for roadworks related to State Government initiatives, such as changes in major grain transport routes due to State railway closures. A limited amount of State funding is available in this category and in some instances municipalities offer to make a financial contribution to a project, usually one half.

In 1997-98 a Rural Local Timber Road projects sub-category was introduced within the State Impacted Local Road category. This was to assist municipalities improve local roads where timber is transported from forests on Crown Land, which does not provide rate revenue for the local municipality. Municipalities are required to contribute one seventh of the project cost.

Originally one third of the annual Better Roads Victoria (BRV) program expenditure was allocated to country roads and the remainder to roads in the Melbourne Statistical Division. This was on the basis that almost one third of travel, and hence fuel franchise receipts, was from travel in country areas. Table 3.2 shows that about 43 per cent of expenditure in 1999-2000 was on rural roads.

The State Government announced that from 2000-01, one third of the available funds would be for projects in country Victoria, one third for outer metropolitan growth suburbs and one third for projects in the metropolitan area.¹⁹

Further details of the BRV program categories and arrangements are given in Appendix E.
The Committee noted that information on the distribution between categories of BRV expenditure was not provided in the VicRoads Annual Report 2000-2001. This omission appeared to be part of a general reduction in publicly available information on road funding and expenditure in the most recent VicRoads annual report.

A question which should be asked is the continued relevance of a separate Trust Fund designated for roadworks when its original source, a State fuel franchise scheme, no longer exists. Furthermore the Trust Fund now provides only about one quarter of State Government road funding and the legislative basis is quite obscure. The most recent legislative reference is the *State Taxation Acts (Further Amendment) Act 1997* which authorised payment from the Consolidated Fund to the Trust Fund of $185m in 1997-1998 and in respect of each succeeding year:

\[\ldots\text{an amount equal to 45\% of the amount of ad valorem licence fees collected under the Business Franchise Acts in respect of petroleum products during the preceding financial year - in such instalments and at such times as are determined by the Treasurer.}\]

Such an amount can no longer be accurately calculated as the fees no longer exist.

The Committee considers that the continued need for the Trust Fund mechanism should be reviewed. If it is to continue, a more appropriate and transparent legislative mechanism should be developed to specify the annual level of funding provided.

**Total State Road Funding and its Distribution**

The Committee found determining the State Government contribution to roads difficult, as was obtaining data on the distribution of those funds to the rural and metropolitan areas of Victoria and to the types of works within those areas.

Figure 3.1, on page 20, shows that the State road funding contribution for 1999-2000 was approximately $590m. The graph was provided by VicRoads, but they did not provide a breakdown of funding nor indeed what the road funding was on. To add to the confusion the VicRoads Annual Report states that total State Government road funding was only $479.5m. The Committee notes the additional VicRoads’ contribution, from its own direct sources of revenue (fees, etc) was shown as $109.7m.21

In response to a request from the Committee for further information VicRoads provided a table of their annual expenditures reported to the National Road Transport Commission (NRTC), which uses a template of standard categories. An extract is shown in Appendix F and a summary shown in Table 3.3.
Table 3.3 Summary of VicRoads Expenditure, 1999-2000

<table>
<thead>
<tr>
<th>Expenditure category</th>
<th>$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Highways</td>
<td>88.7</td>
</tr>
<tr>
<td>Rural state arterials</td>
<td>284.9</td>
</tr>
<tr>
<td>Local road expenditure</td>
<td>8.5</td>
</tr>
<tr>
<td><strong>Approximate rural total</strong></td>
<td><strong>382.1</strong></td>
</tr>
<tr>
<td>Metropolitan state arterials</td>
<td>231.5</td>
</tr>
<tr>
<td><strong>TOTAL ROAD EXPENDITURE</strong></td>
<td><strong>614</strong></td>
</tr>
</tbody>
</table>

* Assumes all National Highway expenditure and State local road expenditure is in rural Victoria.


It is not possible to separate the Federal and State funding in the reported NRTC categories. However, as almost all the National Highways expenditure in 1999-2000 was in rural Victoria and all BRV local road expenditure was on rural roads the Committee estimated that around $382 million of Federal and State funds were spent in rural Victoria.

Unlike federal government road funding the Committee was also unable to gain a clear picture of trends in State road funding over time.

Recent Changes to Road Funding

The inquiry provided the Committee an opportunity to review some of the many changes in road responsibilities and funding which have occurred since the inception of the Transport Act 1983. In that legislation the Government abolished the previous practice requiring a relatively small (10% to 15%) municipal contribution to works on Main Roads, but also effectively withdrew from making contributions to works on local roads.

Since 1983 there have been a number of changes in relation to road responsibilities and funding, but rather than simplify the process, they have resulted in an administrative nightmare that is difficult to untangle. The changes include:

- The Better Roads Victoria Trust Fund established in 1993, which contained a local road category, this representing a departure from the 1991 Premiers’ Conference Agreement.

- The Roads of National Importance partnerships since the mid-1990s have enabled the acceleration of some projects that would have taken much longer to undertake if only State funds were available. However from a public viewpoint they do continue to blur the demarcation of road funding responsibilities of the Federal and State governments. The long
public arguments between the two levels of government over the Scoresby Freeway project, for example, create a public perception that provision of road facilities is ad-hoc and heavily influenced by party politics and elections.

- The *Victoria’s Rural Arterial Road Network Strategy* which introduced the concept of M, A, B and C roads, in some ways overshadowing the State legal categories. Although figures are not published on the expenditure on these new categories the annual VicRoads *Program Guidelines* tend to emphasise projects on M, A and B roads.  

- The new Statewide Blackspot program now covers local roads, with one quarter of the 2000-2001 allocations set aside for projects on these roads.

- The *Roads to Recovery* program funds are tied to roadworks and represent a major reversal of the ‘untying’ process of many forms of Federal financial assistance to the States and Local Government that characterised the 1990s.

### A Need for Simpler Road Funding Methods

In July 2001, the Institution of Engineers Australia 2000 *Infrastructure Report Card* urged, with regard to the future directions for roads in general:

> A national framework for the planning of road funding is required, as is a more sophisticated approach to allocation of priorities.

> Taxes and charges should be reformed and be more directly linked to road usage and allocation.

Although the Institution had the national scene in mind when making that statement the Committee considers that it also applies to Victoria.

The funding of roads in Victoria is now a maze of programs, partnerships and administrative categories. There is a need for simpler, easier to understand road funding methods. This would improve public accountability and transparency.

### Recommendation

2. That the Government review all the methods currently used to fund roads in Victoria and develop more appropriate methods.

The five legal arterial road classifications contained in the *Transport Act 1983* are now effectively irrelevant for funding purposes as spending is now focused on ‘programs’. Their legislative relevance should be reviewed.
Recommendation

3. That the sections of the Transport Act 1983 relating to State legal classifications be reviewed.

Local Government Road Funding

Municipalities maintain and upgrade local roads using Federal and State Government grants as well as revenue from property rates and other charges. Table 3.4 shows expenditure on Victorian local roads for 1999-2000.

<table>
<thead>
<tr>
<th></th>
<th>Maintaining roads $m</th>
<th>Road improvement $m</th>
<th>Total $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan</td>
<td>118.5</td>
<td>56.8</td>
<td>175.3</td>
</tr>
<tr>
<td>Rural</td>
<td>127.4</td>
<td>57.8</td>
<td>185.2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>245.9</td>
<td>114.6</td>
<td>360.5</td>
</tr>
</tbody>
</table>


The Committee found that it was not possible to readily determine the municipal funding of roads from their own rates and charges, as the above figures regard Federal untied local road grants and general purpose grants as being sources of municipal revenue.

The Committee noted the considerable diversity in the degree of road spending by municipalities. The ABS compared the figures for Yarriambiack, a large shire with a small population centred on Warracknabeal in the Wimmera area, with the City of Monash, a well-populated municipality in the middle south eastern suburbs of Melbourne:

The Shire of Yarriambiack spent the most for local road maintenance per capita ($370.60) and had the highest proportion of local road expenditure to total expenditure (31%) while the City of Monash spent the least ($5.50 per capita).

On average, local road expenditure as a proportion of total expenditure for those councils defined as rural (19.5%) was more than twice that of councils defined as metropolitan (9.2%).

Facing the Renewal Challenge Report

The Victoria Local Government Infrastructure Study Report Facing the Renewal Challenge was prepared in 1998 by consultants for the Department of Infrastructure. The objectives were to:
1. Determine the ability of councils to meet long term investment needs in the renewal and acquisition of infrastructure assets;

2. Develop a model for examining the challenges of the task; and

3. Make recommendations to improve the management of Victorian local government infrastructure assets.\(^{25}\)

The key recommendations were for the councils to recognise that asset management is a corporate, not a technical responsibility, and the need for:

- Good information;
- Comprehensive asset management planning;
- Community involvement in establishing service standards;
- Rigor in financial assessments; and
- Performance measurement of asset management.\(^{26}\)

The main emphasis of the report was to encourage municipalities to undertake their own strategic asset management investigations. However the report also provided results of asset management modelling suggesting a sizeable problem on local roads. The shortfall for all Victoria's municipalities was estimated at around $140m per annum.\(^{27}\) A comparable figure for rural local roads was not provided. However, the report noted that the municipalities estimated to require an increase in total capital funding, for all forms of infrastructure, of more than 50 per cent in the next five years, were predominantly rural shires.\(^{28}\)

Since publication of *Facing the Renewal Challenge* some rural municipalities have undertaken investigations of the condition of their assets, to supplement the findings of that accounting-based assessment of future asset replacement requirements. However those municipal investigations do not provide a suitable base to extrapolate a statewide picture.

South Australia has recently completed an infrastructure study entitled *Wealth of Opportunities* which the Australian Local Government Association (ALGA) says provides a blueprint for infrastructure asset management.\(^{29}\)

The Committee supports the undertaking of strategic asset management investigations by municipalities to enable them to better address community needs. A common approach to reporting projections of future road conditions and funding requirements should be adopted throughout Victoria.
Recommendation

4. That the Department of Infrastructure ensure all municipalities report projections of future road conditions and funding requirements using a common reporting format.

Road Funding Issues

Inadequate Funding

Numerous submissions and witnesses at hearings expressed concern about the adequacy of road funding, especially for some category C roads and the more heavily used local roads. The City of Greater Shepparton said that the level of funding for road paving is only satisfying 60 per cent of the estimated need.

Mr A. Paul, Chief Executive Officer, City of Greater Bendigo, said:

We are trying to allocate one bridge each year out of our capital works program. On the basis of 245 bridges, it is pretty self-evident what the timing of that program will be.

The Moyne Shire in their submission state that:

... unless there is a very significant injection of additional funds into roadworks or changes to the construction techniques, the system will continue its gradual deterioration and obviously fail to meet community and user expectations.

From the views presented to it the Committee concluded that there was clearly widespread community concern about the adequacy of rural road funding in many parts of the State. However the extent of the problem is less clear.

Quantifying and Addressing the Overall Funding Need

In their submission the RACV state that they:

... believe there is an urgent need for the State Government to assess the adequacy of Australia’s and moreover Victoria’s road and transport infrastructure, and hence determine the appropriate level and direction of investment which is needed to maintain our international competitiveness and meet social and environmental objectives.

As noted earlier, the last comprehensive assessment of Victorian roads was conducted two decades ago. Only two broad assessments of long
term road funding needs in Australia have been conducted since, these being the Bureau of Transport Economics Adequacy of Transport Infrastructure working papers in 1994 and their Roads 2020 document in 1997.\textsuperscript{36} 37

For this Inquiry VicRoads provided future funding estimates for part of the rural arterial network, obtained from the National Roads in Victoria strategy and the ten highway corridor strategies undertaken so far. The latter projects have an identified cost of $2.2b over a 15 year period.\textsuperscript{38} However the total funding need for the rural arterial network is not known.

The Committee noted that the quality of rural local roads varied significantly across the State and there appeared to be many municipalities that were struggling with the demands for road upkeep and other community desires for municipal expenditure.

The report Economic and Financial Challenges for Small Rural Councils prepared for the Municipal Association of Victoria found that:

- Relative to valuations and household incomes rural people pay an average of 3.9% of medium household income to rates compared to 2.3% for metropolitan rate payers;
- Rural councils have much larger road networks to look after, with an average 200 kms of road for every 1,000 residents, compared with 6 kms of road for every 1,000 metropolitan resident;
- Road spending takes a higher proportion of rural councils' annual budgets, 43% compared with 20% in Melbourne. This is the main reason why rural councils spend more per resident ($943) than do metropolitan councils ($505);
- Ensuring the condition of infrastructure, especially roads, will be a critical requirement for the success of initiatives to encourage economic development, such as the timber, dairy and horticultural industries.\textsuperscript{39}

A number of rural municipalities, especially those with long lengths of local roads to maintain and low populations and hence low property rate bases to provide revenue, currently face major road upkeep problems. These difficulties are likely to grow if population numbers continue to stagnate or decline and current road and bridge assets continue to age and deteriorate.

The Committee welcomes recent changes in the Victoria Grants Commission untied road grant allocation processes as well as the Federal Roads to Recovery program grants for local roads. However these initiatives should be considered as being only short term remedies. There is an urgent need for more substantial and long term approaches to the management of rural local roads.

One response provided by Moyne Shire, in the context of projections of a gradual deterioration of their local road system, was:
A more realistic combination, which could be pursued, is to

- obtain/raise some additional funding,
- set lower standards (and community expectations) on minor roads, and
- identify more cost effective and efficient treatment methods.40

The Committee considers a range of approaches should be investigated to address the strategic issue of the management of rural local roads in the long term.

The Committee also considers that there is a definite need to put together a comprehensive quantitative picture of the overall road funding needs for both Victorian rural arterial and rural local roads, as a basis for determining the appropriate level and direction of future investment by the three levels of government. In terms of timing, the Committee notes that the Federal Roads to Recovery Program finishes at the end of 2004 so the information would need to be available much earlier in order to effectively influence Federal road funding decisions.

**Recommendation**

5. That the Government investigate, quantify and publish the overall road funding needs for rural arterial and rural local roads. The results should be used to influence the level and direction of future Federal road funding.

**Lack of Main Road Upgrades**

Several councils were concerned about a perceived imbalance in the development of the rural arterial road network due to their inability to obtain funding for road widening projects on category C roads. For these roads the width and road edge standards are designed to:

> Generally maintain existing widths and standards unless upgrading (is) warranted by accident records.41

The Golden Plains Shire submission stated that the issue of road improvements on Main Roads has a very low priority for funding from VicRoads.42 Works Manager Mr B. Hollioake told the Committee:

> We understand VicRoads wants to get all its A-class and B-class roads up to scratch before it funds improvements on C-class roads. However, we think that policy may be a
bit strict when it can be argued that significant volumes of traffic are using those narrow roads.43

The submission from Colac-Otway Shire also noted:

Indications are that C category roads are not likely to be upgraded until A, and B type roads have been upgraded. The reality of this is that it is most likely it will never happen.44

The VicRoads approach to category C roads fails to take into account the adequacy of the existing width, volume of truck and car traffic, terrain, alignment and adjacent land use conditions.

The Committee considers that VicRoads may be placing too much emphasis on the width, alignment and riding quality of M, A and B roads to the detriment of the safety concerns of travellers on narrow, heavily used C roads.

**Recommendation**

6. That the road management guidelines for category C roads be reviewed to give a greater emphasis to road safety concerns.

**Main Road Management**

Historically the operational management of Main Roads was undertaken by municipalities. In those times almost all works on Main Roads were undertaken by ‘in-house’ municipal workforces. In the more remote areas municipalities would do works on Highways for VicRoads.

Mr P. Holloway, an infrastructure manager of the City of Ballarat, told the Committee:

I have noticed in the past few years that the main road network is the responsibility of VicRoads until a road starts showing signs of disrepair. The argument comes back that council is maintaining it and is responsible for it.45

The *Transport Act 1983* provides the capability for municipalities, with the approval of the Minister for Transport, to transfer the operational management to VicRoads. In recent years a growing number of municipalities are doing so. Almost 20 per cent of both rural and metropolitan municipalities now have their Main Roads managed by VicRoads. Large individual road improvement projects, particularly those over $3 million total cost, are now also usually directly managed by VicRoads.
There are practical and financial advantages for both VicRoads and municipalities in these arrangements. VicRoads can include additional roads in ‘area wide’ maintenance contracts with the private sector, thereby achieving economies of scale. Municipalities can focus on the local roads for which they are directly responsible.

At present the transfer of operational management from municipalities has been on an individual and ad-hoc basis. The Committee considers that the extent to which this transfer of management has occurred has now reached the stage where consideration should be given to whether all Main Roads should be managed by VicRoads.

The Committee considers there would be advantages in aligning the financial and operational management responsibilities for Main Roads. It would also be expected to lead to more uniform and consistent road management practices on the Main Road network. Such consistency would be expected to have road safety benefits.

**Recommendation**

7. That the Government review the responsibility for operational management of Main Roads to achieve economies of scale, provide more uniform road management practices and potentially improve road safety.

**The Imbalance of Arterial and Local Road Funding**

There appears to be a funding imbalance between arterial and local roads in Victoria. VicRoads has been a persuasive and successful advocate for Federal and State funding of the arterial roads which it manages. However, Victorian municipalities have had only limited success in obtaining funds for local roads from the other levels of government.

It is important that the State Government ensure a proper balance in the upkeep and development of the arterial and local road networks. Almost all trips involve travel on both parts of the network and users see the road network as a single entity providing for their travel needs.

The Committee therefore considers that the State Government should ensure a balanced and consistent management of the entire road network. This may require some form of statewide monitoring of physical road conditions and the service provided to all road users, including safety considerations. Change to organisational responsibilities might be needed, as might be some investment in local road improvements by the State.

**Recommendation**

8. That the Government review the funding of rural roads, including consideration of possible changes to organisational responsibilities and funding arrangements, to ensure a balance in
the development and on-going care between the arterial and local road networks.

Bridge Upgrading for Increased Load Limits

In 1996 the NRTC published the results of a Mass Limits Review which studied the feasibility and benefits of increasing mass limits for vehicles fitted with road friendly suspension systems. It concluded that there were substantial net economic benefits.

Vehicles with road friendly suspensions are now able to carry heavier loads on designated roads around Australia. This initiative will reduce export costs; means the present road freight task can be performed with fewer vehicles, and encourages a shift to latest technology vehicles with better safety and environmental performance.

However, there were some bridges, particularly on local roads, that would be unable to carry the increased truck loading. The upgrade to bridges in Victoria was estimated at $265m, comprising $115m for arterial roads and $150m for local roads. Although a figure for bridges on rural local roads was not available the Committee estimates the figure to be approximately $135m to $140m.

The load limit increase was implemented in Victoria on 1 July 1999. It provides for vehicles with road-friendly suspension to operate at the higher limits on a network of approved arterial roads, based on the load capacity of any bridges on the roads. Substantial progress has been made in upgrading bridges on arterial roads in Victoria to cater for the increased loads and more than 89 per cent of the arterial network is now accessible.

The Federal Government has offered $30m nationwide over a four-year period to assist State and local governments to upgrade inadequate bridges. The Victorian Government has advised that it will fund the upgrade on the arterial network, and all Federal money will be used for local road bridges. It is understood that the Federal Government has so far approved only $2m for Victoria.

As the bridge upgrading needs in Victoria alone are estimated to total $265m, the proposed federal contribution of only $30m nationwide does not demonstrate a realistic commitment to gain the full benefits of increased vehicle load limits.

Recommendation

9. That strong representations be made to the Federal Government for more realistic financial contributions to upgrade bridges on local roads for the new mass limits of vehicles fitted with road friendly suspension systems.
Regionally Significant Local Roads

Over recent years the concept of ‘regionally significant local roads’ has developed. The ALGA Rural Road Congress held at Moree, New South Wales in 2000 and Mildura in early 2001 has helped to advance the concept.

The concept includes not only identifying a set of roads to comprise the new road ‘category’ but also encompasses more co-operative regional decision making arrangements.

The Moree Rural Road Funding Report recommended that the Federal Government establish a framework for road investment based on:

- Road and transport priorities identified by regional infrastructure advisory groups comprising elected local, State and Federal representatives and their officers and representatives of industry; and

- The funding submissions made by the groups to the Commonwealth and State governments incorporate a Regional Asset Management Plan to ensure that adequate provision had been made for future maintenance.

The Institution of Engineers Australia and the Australian Automobile Association (AAA) have both given support to the concept, as have some municipalities.

The Institution of Engineers Australia has said, in referring to local roads, that the need for improved planning and an integrated approach is demonstrated by the trend in local government for the establishment of Regional Infrastructure Groups. It also said:

In addition a regional approach to asset management is recommended which would identify the local roads of regional significance, future funding liabilities, appropriate road standards, project priorities and all potential funding sources.

At the Mildura Rural Road Congress, Dr M. Lay, President of the AAA, in discussing the advisory groups, mentioned the Local Road Advisory Committee in South Australia. Unlike Victoria, in that state 15 per cent of the annual Federal untied local road grants is allocated to special projects. The Advisory Committee is responsible for assessing submissions from regional associations on local road projects of regional significance. Dr Lay also referred to the system of Regional Road Groups in Western Australia. He suggested:

… perhaps this South Australian model – or indeed a variant of the two – is one that could be taken up in other States as a first step towards meeting the Moree Congress (Butcher Report) recommendation of having the Commonwealth establish a framework for
investment based on road and transport priorities identified by Regional Infrastructure Groups (RIGs) comprising elected (local, State and Federal) representatives, industry and officers.

Whatever is agreed, the model should be ‘sold’ to the Commonwealth and a national approach promoted.

Funding could then be provided not only in the form of Financial Assistance Grants (FAGs) as at present, but also in the form of a ‘program’ for specific projects that support regional industry development.57

Dr Lay said that encouraging local government to think more regionally in identifying road priorities is fundamental to obtaining a successful outcome on these issues.58

Mr R. Dobrzynski, Chief Executive Officer, Delatite Shire, commented favourably on the operation of the advisory groups in other states:

(Those involved) spoke very highly of the co-operative spirit on those committees and the fact that they were actually achieving long-term solutions for local road networks in rural areas.59

In Victoria there has already been some beneficial experience with regional road advisory groups during the Timber Industry Road Evaluation Studies (TIRES). Comprising representatives from State agencies, municipalities and the timber industry these groups have enabled a regional viewpoint to be developed to address the transport issues associated with the timber industry. Mr Dobrzynski spoke favourably of the TIRES approach.60

The Committee regards the regionally significant local road issue as one of long term national strategic importance and of particular relevance to influencing the Federal Government on the form of funding assistance which might follow after the Roads to Recovery Program ends in December 2004.

The Committee strongly supports continued development of the concept. While ALGA have been leading the process nationally the State Government should be initiating complementary action in Victoria as a matter of priority.

**Recommendation**

10. That the concepts of regionally significant local roads and regional decision making to determine priorities be supported by the Government to improve the asset management of the most important rural local roads.
Some Options for Assisting Rural Municipalities

There are a number of ways the State could provide financial assistance to rural municipalities for local roads. These include:

- Providing a higher proportion of funds for rural local roads within the BRV and Statewide Blackspot programs.

- Shifting the arterial/local road boundary to include some local roads as arterial. According to the *Austroads RoadFacts 2000* publication rural local roads as a proportion of the total length of National Highways, rural arterial roads and rural local roads were 15.2% in Victoria in 1999, compared with over 20% in New South Wales and an Australian average of 15.9%. Therefore there is some scope for slightly adjusting the boundary so that a higher proportion of the Victorian road network is categorised as arterial, and hence funded by the State Government.  

- Introducing a new category of road between arterial and local, perhaps called ‘regional roads’. A shared funding arrangement might be appropriate. There are past precedents for this both in Victoria and interstate. In the 1970s and early 1980s Main Roads were typically 85-90% funded by the Victorian Government. In NSW the Roads and Traffic Authority currently funds ‘regional roads’ on a 50/50 basis.

- New programs targeting for specific purposes, such as improving local road bridges, assisting tourism or other industries, or aiding a particular user group such as already occurs with facilities for cyclists;

- Providing a ‘top up’ to an existing funding mechanism, such as the untied local Federal road grants distributed by the Victoria Grants Commission.

At least two municipalities made suggestions along those lines. For example, Greater Bendigo City proposed a separate local road bridge improvement program, while Moyne Shire proposed a broadening of the BRV funding program to cover all local roads.

The Committee notes that a downside with providing State Government assistance solely for a particular type of facility, such as bridges, or for roads supporting a particular industry group, is that it might not be the best way of assisting the most ‘needy’ municipalities.

There may also be other financial consequences that need consideration. For example, any direct State Government assistance for a local road project in a particular municipality may result in a reduction in the Federal general purpose financial assistance grant received by that municipality via the Victoria Grants Commission in the following year. This is due to the ‘horizontal equalisation’ principle that the Victoria Grants Commission must use in determining the grants to municipalities. ‘Horizontal equalisation’ is achieved if each council in a State is able to provide the average range, level and quality of services by reasonable effort, taking account of
differences in their capacities to raise revenue and differences in the expenditure needed to provide average services.\textsuperscript{63}

The Committee considers because of the Victoria Grants Commission processes, careful consideration needs be given to the form of any State Government assistance to rural municipalities.

**Forward Programming**

Some municipalities expressed dissatisfaction with the lack of notice of funding which leads to inefficient forward planning. This includes the possibility of some projects being prematurely planned for construction, or pre-planning of projects not occurring thereby leading to delays to commence physical works when funding was unexpectedly announced.

With regard to the State Government advising funding of a road project, Mr G. Maguire, Manager, Capital Works, City of Greater Bendigo said:

> We find that that comes out at any time, not necessarily at the start of a (financial) year. It could come out at the drop of a hat. I understand it is the Minister’s call as to when he will announce funding for that type of program. … It would be good to have advance warning that funding would be made available.\textsuperscript{64}

Better forward planning and prompt notification of funding availability would lead to more effective use of available State road funds. One method could be the introduction of rolling multi-year work programs.

**Recommendation**

11. That to enable forward planning and effective use of funds the Government consider the introduction of rolling multi-year roadwork programs.

**Road Funding Summary**

The Committee found it difficult to get a clear, consolidated picture of the total level and composition of road funding in Victoria, let alone the amount spent annually in rural Victoria.

Based on the figures for the three levels of government shown in Figure 3.1 a total of about $1.15b was spent on roads in Victoria in 1999-2000. The situation has since changed as a result of the new Federal-State taxation arrangements applying from 1 July 2000. The full impact of the new Roads to Recovery and Statewide Blackspot programs also has yet to be reflected in official public sector financial statements.
Chapter 3 – Road Funding and Responsibilities

The Committee was not able to determine the total annual amounts being spent on either rural arterial roads or rural local roads, nor was it possible to determine trends in these over time.

The Committee considers that a more transparent picture of overall road funding in Victoria, and its components, is needed. The Federal funding is complex but because of the level of financial transparency it can at least be reasonably determined at the metropolitan/rural and asset maintenance/preservation levels. However the State Government contribution is more difficult to ascertain, especially trends over time in the distribution of that money to the rural and metropolitan parts of the road network.

**Recommendation**

12. That the Government make public the information on the State's contribution to roads and the distribution of those funds to rural and metropolitan roads.

**Legal Implications of Failing to Properly Care for Roads**

There are important legal implications for road agencies and municipalities if they fail to identify and treat road hazards. A significant High Court decision made during the Inquiry has focused attention on this issue.

The City of Ballarat in their submission stated that previously public road authorities were not liable for physical injury or property damage caused by an authority’s failure to construct, or maintain, or repair a highway. The courts provided a form of immunity to the authority, due to the impact of financial hardship on the authority and in turn the taxpayer.65

This highway immunity rule meant a road authority could not be found liable for an accident occurring because a road or footpath fell into disrepair, but it would be liable if an accident resulted from the authority's poor construction or shoddy repair.66

At a public hearing with the Committee, Mr C. Jordan, then Chief Executive of VicRoads, was asked whether the organisation had a duty of care to protect drivers from their own mistakes. Specifically, what was VicRoads’ potential liability where a vehicle collided with a tree or rock or other off-road objects?

A legal opinion subsequently provided by VicRoads quoted a decision in the recent *Brodie and Ghantous* case, in which the High Court defined the duty as follows:

(VicRoads) is obliged to take reasonable care that its exercise of or failure to exercise its powers does not create a foreseeable risk of harm to road users. Where the state of a
roadway poses a risk, whether from design, construction, works or non repair, then to
discharge its duty of care, VicRoads is obliged to take reasonable steps within a
reasonable time to address the risk.

If the risk is unknown to (VicRoads), or latent, and only discoverable by inspection, then to
discharge its duty of care, VicRoads is obliged to take reasonable steps to ascertain the
existence of latent dangers which might reasonably be expected to exist.67

The opinion later included in its conclusions a statement that:

In some cases, where there has been a breach of its duty, and where it was reasonably
foreseeable that a vehicle might leave the road as a result, VicRoads may well be held to
have contributed to an accident, notwithstanding a high degree of negligence by a driver.68

The High Court decision has significant implications for all levels of
government in Australia and the Committee noted that, at its June 2001
meeting, the Council of Australian Governments discussed the High Court
decision and agreed to commission the Australian Transport Council to
examine the implications of the decision.69

Recommendations

2. That the Government review all the methods currently used to fund
roads in Victoria and develop more appropriate methods.

3. That the sections of the Transport Act 1983 relating to State legal
classifications be reviewed.

4. That the Department of Infrastructure ensure all municipalities
report projections of future road conditions and funding
requirements using a common reporting format.

5. That the Government investigate, quantify and publish the overall
road funding needs for rural arterial and rural local roads. The
results should be used to influence the level and direction of future
Federal road funding.

6. That the road management guidelines for category C roads be
reviewed to give a greater emphasis to road safety concerns.

7. That the Government review the responsibility for operational
management of Main Roads to achieve economies of scale,
provide more uniform road management practices and potentially
improve road safety.
8. That the Government review the funding of rural roads, including consideration of possible changes to organisational responsibilities and funding arrangements, to ensure a balance in the development and on-going care between the arterial and local road networks.

9. That strong representations be made to the Federal Government for more realistic financial contributions to upgrade bridges on local roads for the new mass limits of vehicles fitted with road friendly suspension systems.

10. That the concepts of regionally significant local roads and regional decision making to determine priorities be supported by the Government to improve the asset management of the most important rural local roads.

11. That to enable forward planning and effective use of funds the Government consider the introduction of rolling multi-year roadwork programs.

12. That the Government make public the information on the State’s contribution to roads and the distribution of those funds to rural and metropolitan roads.

Endnotes

1 VicRoads, Submission to the Inquiry, August 2000, p. 4; Shire of Surf Coast, Submission to the Inquiry, 19 July 2000, p. 2.
2 Shire of Surf Coast, submission, p. 2.
3 The Transport Act 1983 created the Road Construction Authority, the Road Traffic Authority and two public transport authorities. In 1989 the two road agencies were merged to form Roads Corporation (which trades as VicRoads).
4 Shire of Surf Coast, op. cit.
5 VicRoads, submission, p. 6.
6 Territories means the Northern Territory and the Australian Capital Territory.
7 VicRoads, submission, pp. 6-7.
8 ibid.
9 The section of the Calder Highway declared as a RONI is from the Tullamarine Freeway to the New South Wales border near Yelta, while on the Princes Highway West the RONI is from the Corio Overpass north east of Geelong to the Western Ring Road. (VicRoads, submission, p. 7)
10 For example, the Carlsruhe duplication project, which eventually received Federal Government funding in the May 2001 Budget.
12 VicRoads, submission, p. 9.
15 Victoria Grants Commission, correspondence, 18 July 2001 (email).
17 VicRoads, submission, p. 8.
19 VicRoads, submission, p. 9.
20 Victoria, State Taxation Acts (Further Amendment) Act 1997, s.4 (2) (b).
26 ibid., p. 13.
28 Facing the Renewal Challenge, p. 77.
30 The Transport Workers Union, Swan Hill Rural City, and Hindmarsh Shire submissions all expressed concerns about road funding.
31 City of Greater Shepparton, Submission to the Inquiry, July 2000, p. 3.
32 Minutes of Evidence, p. 368.
33 Shire of Moyne, Submission to the Inquiry, 18 July 2000, p. 4.
34 Royal Automobile Club of Victoria, Submission to the Inquiry, June 2000, p. 33.
35 National Association of Australian State Road Authorities (now Austroads), NAASRA Road Study, Final report and other associated reports, 1984. The Victorian results were also separately published by the then Road Construction Authority.
38 VicRoads, submission, p. 80.
40 Shire of Moyne, submission, p. 4.
43 Minutes of Evidence, p. 190.
44 Shire of Colac-Otway, Submission to the Inquiry, 19 July 2000, p. 3.
45 Minutes of Evidence, p. 176.
For example, semi-trailers previously allowed to carry 42.5 tonne are able to carry 45.5 tonne, while B-doubles, previously restricted to 62.5 tonne, can carry 68 tonne.


VicRoads, submission, p. 82.


Minutes of Evidence, p. 539.

ibid.

The term used by the ALGA for this group was Regional Infrastructure Groups (RIGs).


This was outlined in one of the attachments to the Moree Rural Road Funding Report.


Minutes of Evidence, p. 149.

ibid.

Austroads, Roadfacts 2000, p. 23.

City of Greater Bendigo, Submission to the Inquiry, 18 July 2000 and Shire of Moyne submission, p. 7.


Minutes of Evidence, p. 363.

City of Ballarat, Submission to the Inquiry, 8 November 2000, p. 14.


ibid., Phillips Fox legal opinion, p. 3.

ROADS magazine, op. cit.
Rural Road Safety

Introduction

Crashes

Published crash statistics in Victoria only include crashes where at least one person was injured sufficiently to require medical attention. Police Crash Reports are sent to VicRoads for processing, data enhancing and storing. As there is no legal requirement to report property damage crashes, except when an owner is not present, not all property damage crashes are reported to Police.

VicRoads, the RACV, the Transport Accident Commission (TAC) and some municipalities provided crash analyses to the Committee. In all cases the source is the VicRoads crash database CRASHSTATS.¹

The VicRoads analyses were for 1998 or 1999 and focused on fatal and serious injury crashes, the latter being where a person is admitted to hospital. The RACV provided more detailed analyses of rural crashes for the five years 1994 to 1998, broken down to the categories: fatalities, serious and minor injuries, often with gender and age group details.² Most of the crash statistics quoted in this chapter relate to collisions resulting in death or serious injuries.

The Committee noted that some municipalities were using CRASHSTATS as a scientific means to understanding the crash situations in their areas and to help them to develop appropriate countermeasures. However the majority of municipalities did not appear to undertake crash analysis in a systematic way.

Lack of Accurate Data

The interpretation of crash statistics is often hampered by lack of information about the travel risk of various road user groups on the different parts of the road network. A standard travel exposure measure used to determine crash risk is vehicle kilometres of travel. Many of the VicRoads crash conclusions had to be qualified by the statement ‘exposure not taken into account’.³
At best the lack of risk exposure data prevents an intelligent interpretation of crash numbers; at worst it leads to an entirely misleading understanding of the true crash risks of the various user groups and locations.

There are ways of overcoming these deficiencies. The RMIT University Transport Research Centre, for example, has an on-going program of collecting travel activity information from selected residents in the Melbourne Metropolitan area.\textsuperscript{4} This could be expanded to cover travel by country residents. Also, better analysis of road inventory and traffic count data can provide information on the amount of travel on critical parts of the network, such as at intersections, on curves, along narrow roads, etc.

Information on the travel activity patterns of rural residents and information on the amount of travel on various parts of the rural road network would enable a truer assessment of exposure to crash risk. This would result in better targeting of treatments to high risk groups and high risk locations.

The Committee considered that the lack of travel data is a serious weakness that VicRoads should endeavour to rectify.

**Recommendation**

13. That information on the travel patterns of rural residents and information on travel on the rural road network be gathered by VicRoads to better assess crash risk and target safety treatments.

**Crash Numbers and Trends**

During 1999, 175 people lost their lives in 153 crashes and 1,760 were seriously injured on roads in country Victoria. This was slightly less than half the fatalities and 30 per cent of the serious injuries in the State.\textsuperscript{5}

Since the early 1990s, the number of people killed and seriously injured in the Melbourne Statistical Division (MSD) have remained relatively constant, while in country Victoria the numbers have declined slightly.\textsuperscript{6}

Figure 4.1, however, shows that while the numbers of people seriously injured in country Victoria are roughly proportional to the population, the proportion killed is significantly higher.\textsuperscript{7}
In addition to those killed or seriously injured, on average over 4,600 people per annum require treatment by a doctor for minor injuries, bringing the total killed or injured to 6,600.\(^8\)
Where Country Crashes Occur

Figure 4.2 shows that 62% of fatalities and serious injuries in country Victoria occur on open rural roads, i.e. beyond ‘built-up’ areas; 21% occur in large provincial cities; 6% in small provincial cities; and 11% in other cities, small towns and hamlets.\(^9\)

**Figure 4.2 People Killed or Seriously Injured by Location Type, Country Victoria, 1999**

![Pie chart showing the distribution of crashes by location type.]

Source: VicRoads submission, Fig. 7, p. 16.

From the numbers in Figure 4.3 it can be calculated that 77% of persons killed in country Victoria were travelling on arterial roads. The proportion of people seriously injured who were on arterial roads was lower at 62%. One reason why the proportion of those killed on arterial roads is higher may be due to the generally higher speeds on those roads compared to local roads.
Figure 4.3 People Killed or Seriously Injured by Road Category, Country Victoria, 1998

Crash Rates

Crash occurrence varies with exposure to travel. Motorists are more likely to be involved in crashes with increased distance travelled. Crash rates are usually expressed in terms of crashes per 100 million vehicle kilometres of travel.\(^\text{10}\)

To compare crash rates on roads of different classifications, VicRoads estimated the amount of travel, in terms of vehicle kilometres, that occurs on parts of the road network. Table 4.1 shows the estimated crash rates for 1998.

Source: VicRoads submission, Fig. 9, p. 17.
**Table 4.1 Crash Rates in Casualty Crashes per 100 million Vehicle-Kilometres of Travel, 1998**

<table>
<thead>
<tr>
<th>Location</th>
<th>Road Classification</th>
<th>Arterial roads</th>
<th>Local roads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freeways</td>
<td>Highways</td>
<td>Main Roads</td>
</tr>
<tr>
<td>MSD</td>
<td>10</td>
<td>46</td>
<td>44</td>
</tr>
<tr>
<td>Geelong, Ballarat, Bendigo</td>
<td>--- ¹.</td>
<td>⁴⁰</td>
<td>³⁰</td>
</tr>
<tr>
<td>Other country cities</td>
<td>--- ¹.</td>
<td>³⁰</td>
<td>²¹</td>
</tr>
<tr>
<td>Open country roads</td>
<td>⁶</td>
<td>¹⁹</td>
<td>²¹</td>
</tr>
<tr>
<td>Victoria</td>
<td>⁹</td>
<td>³⁵</td>
<td>³⁰</td>
</tr>
</tbody>
</table>

Notes:  
1. Very small sample size
2. Mainly influenced by travel to snowfields

Source: VicRoads submission, Table 6, p. 18.

The difference between crash numbers and crash rates should be noted. Country local roads have a lower number of crashes, but much higher crash rates per unit of travel.¹¹

VicRoads state that crash rates in urban areas such as the Melbourne Statistical Division are typically higher than for rural areas because of the greater number of intersections and higher traffic volumes. They also noted:

Freeway crash rates are typically about a third the rate for other primary arterial roads, despite carrying more traffic, because of higher design standards to remove potential vehicle conflicts and hazards. Rates for local roads, which are (the) responsibility of Local Government, are higher because of lower design standards.¹²

Table 4.1 reveals that the ratio of the crash rate on local roads to the crash rate on arterial roads is much higher on open country roads (54/18) than for the MSD (57/35) or the provincial cities of Geelong, Ballarat and Bendigo (48/27). This is possibly due to a more diverse range of road conditions on open country roads.
Following a request from the Committee, VicRoads provided the numbers of fatal crashes, serious injury crashes, other injury crashes, road lengths and travel estimates which provided the basis for Table 4.1. They appear in detail in Appendix G.

VicRoads concluded that, for rural roads:

Although local roads typically exhibit higher accident rates per unit of travel than arterial roads, ... local roads carry considerably less traffic than arterial roads. As a result, the number of accidents per kilometre of road is considerably lower.

On average, about 6 times as many casualty accidents occur on arterial roads per kilometre of road (length) than on local roads.¹³

While the Committee notes the statistics quoted by VicRoads, the conclusion which should be drawn from the crash rate information is that the crash rates per unit of travel on rural local roads are unacceptably high relative to those on rural arterial roads.

**Speed Zones**

VicRoads provided a number of tables and graphs on crashes in different speed zones.¹⁴ In all speed zones except 110 km/h, the severity of crashes is higher in country Victoria than in the metropolitan area.¹⁵

**Figure 4.4 People Killed or Seriously Injured in Different Speed Zones, Arterial versus Local Roads, Country Victoria, 1994 - 1998**

Source: VicRoads submission, Fig. 12, p. 20.
Figure 4.4 shows that, in country Victoria, more people are killed or seriously injured on 60 km/h local roads than on arterial roads. In all other zones the reverse is true. While VicRoads did not suggest a reason, it might be due to less implementation of traffic management measures and speed enforcement on local roads in country towns than has occurred in metropolitan areas.

In 100 km/h zones more people are killed or seriously injured on arterial roads, as that is where most of the travel occurs.

However Figure 4.5 shows that the crash rate per unit of travel is three times higher than on local roads. The Committee considers that this substantially higher crash risk on local roads is unacceptable and measures should be taken to address the problem.

**Figure 4.5 Crash Rates in Different Speed Zones, Arterial versus Local Roads, Country Victoria**

Source: VicRoads submission, Fig. 13, p. 20.

**Unsealed Roads**

The RACV submission shows that 8% of all casualty crashes are on gravel roads and almost 3% on unpaved roads. The percentages are however lower for fatalities: 4.4% of deaths resulted from crashes on gravel roads while 1.6% of people were killed when travelling on unpaved roads. Such figures seem high relative to the proportion of travel likely to occur on such surfaces.

**Wet Roads**

The RACV submission also identified that 19% of casualty crashes were on wet roads. Again this seemed high relative to the amount of travel likely to occur in such conditions.
Intersections

Just over 30% of country crashes resulting in death or serious injury occur at intersections.\textsuperscript{21} They are very hazardous locations, because the distance travelled within and in the near vicinity of an intersection is very much smaller than that travelled between intersections.

Intersections are a proportionately bigger safety problem on local roads. About 29% of serious crashes on country arterial roads occur at intersections, whereas for local roads the proportion is higher at about 36%.\textsuperscript{22} This is possibly due to a lower standard of intersection warning signs and fewer road safety treatments on local roads.

Bridges

Fifty-four people were killed or seriously injured in crashes into bridges on arterial roads, and 13 on local road bridges during the five year period 1994-1998. This represents about 1% of all people killed or seriously injured on arterials and 0.4% of all people killed or seriously injured on local roads.\textsuperscript{23}

The VicRoads submission mentions that bridges represent about 0.7% of the length of the total arterial road network in Victoria.\textsuperscript{24} However, because this figure does not relate to the country road network or take into account traffic volumes, it is not possible to get a true representation of the exposure to crashes at bridges on the total country road network.

The RACV stated that:

\begin{quote}
Bridges are over-represented in crashes relative to their length on the road system and crashes involving bridges are likely to be more severe than other crashes as a whole.\textsuperscript{25}
\end{quote}

Fifty-eight per cent of crashes into bridges were single vehicle crashes where the driver ran off a straight road. Twenty-two per cent ran off the road on a curve.\textsuperscript{26} The numbers of bridges located on straight sections of road and on curves are unknown.

VicRoads noted that about half of the crashes at bridges occurred at night, at dusk or dawn. These crashes are over-represented because traffic volumes are much lower than during daylight hours.\textsuperscript{27}
Who is Involved in Country Crashes

Just over 80 per cent of drivers reported to have caused crashes lived in country Victoria.\(^{28}\)

Figures 4.6 and 4.7 present the numbers of serious injuries and fatalities respectively, again without taking exposure into account.

**Figure 4.6 Serious Injuries by Road User Group, 1999**

Source: VicRoads submission, Fig. 16, p. 22.

**Figure 4.7 Fatalities by Road User Group, 1999**

Source: VicRoads submission, Fig. 17, p. 23.
Drivers and Passengers

In both country Victoria and the Melbourne metropolitan area, drivers are the largest group of road users killed or seriously injured in terms of absolute numbers. In country Victoria the next largest group of people killed or seriously injured are passengers.29

Motorcyclists

Motorcycle riders (including pillion passengers) represent 9% of country deaths and 13% of serious injuries, compared with 1% of the total distance travelled.30 They are therefore very much over-represented in crashes.

Bicyclists

Cyclists are involved in 4% of all country fatalities and 6% of serious injuries. VicRoads note that the latter figure probably understates the problem, because many crashes involving cyclists are not reported to Police.31 The RACV quotes 5.4% as the proportion of cyclists involved in all road trauma over a five year period.32 Although no travel exposure information is available it is probable that cyclists are also over-represented in country crashes.

Pedestrians

Pedestrians represent 9% of country fatalities and 5% of serious injuries, emphasising their vulnerability in crashes. The three main groups identified by VicRoads are:

- School aged and young adults;
- People over 60 years of age; and
- The intoxicated. Thirty-one per cent of pedestrian deaths had a blood alcohol concentration over .05.33

Other Groups

RACV analyses show that:

- The proportion of fatalities for people aged 70 years and over appears high, but this may be due to the frailty of older people;
- Motorcyclists and possibly utility drivers may be over-represented relative to the amount of travel undertaken by these vehicle classes; and
- Males were more likely to crash on curves (24%) than females (18%).34
The RACV makes no comment on the latter gender difference, though it could be related to differences in travel speed or type of vehicle involved; males are involved in over 90 per cent of rural motorcycle crashes.  

**Types of Country Crashes**

Figure 4.8 shows that the most prevalent type of crash in country Victoria for death or serious injury involves a single vehicle running off the road.  

**Figure 4.8 People Killed or Seriously Injured by Initiating Movement, Country Victoria, 1999**

Source: VicRoads submission, Fig.21, p. 25.

VicRoads in their submission noted that:

While in terms of numbers, most crash types are more significant on arterial roads, local roads have greater numbers of cross-traffic crashes (implying problems with intersections) and pedestrian crashes (exposure not taken into account).  

A large number of single vehicles run-off-the-road and collide with objects. Trees are by far the most frequent objects struck, followed by embankments, fences/walls and poles. Bridges form a relatively small proportion (less than 3%) of objects struck. Both bridges and embankments are over represented given their relatively low occurrence in the road system.
It is common in road safety analysis to consider the causes of crashes in terms of three factors: human; environment; and vehicle.

The percentage of all Victorian crashes estimated to be caused by these three factors in 1999 is shown in Figure 4.9. Note that the total exceeds 100 per cent as most crashes have more than one contributing factor.

**Figure 4.9 Cause of crashes**

VicRoads state that driving behaviour that contributes to serious crashes on country roads includes:

- Drink driving. (25% of dead drivers have a blood alcohol concentration greater than .05.)
- Speeding.
- Not wearing seat belts. (20% of vehicle occupant fatalities.)
- Fatigue.\(^{39}\)

The Committee considers that a poor road environment is likely to be a hidden contributing factor to crashes on Victorian rural roads, particularly those that occur on local roads. Reasons include lower standards of road width, alignment, surface type and shoulders, intersections and bridges and a less forgiving roadside environment. Hazards due to wildlife and farm animals also add to the particular hazards of country driving.
Economic Cost of Crashes

Total Annual Economic Cost of Crashes in Victoria

The annual cost of casualty crashes in Victoria is estimated by VicRoads to be about $1.7 billion, of which about $600m is for rural crashes. This compares with an RACV estimate for rural crashes of $900m and a Transport Accident Commission estimate of $590m. Whatever the true figure, the total economic cost of crashes is very large and the un-costed social and emotional grief and distress cannot be calculated.

Average Economic Cost of Crashes

The estimated average economic costs of casualty crashes on various parts of the road network in Victoria are shown in Table 4.2. The figures are based on estimates used by Austroads of average crash costs for fatal, serious injury, and other injury crashes for urban and rural areas. These estimates reflect the number of persons killed or injured for each crash severity level on each part of the network.

Average costs in rural areas are generally 60% to 80% higher than for urban areas. This is because of the greater numbers of persons killed or injured per crash, compared with urban areas. VicRoads consider the greater severity of rural crashes to be due to higher vehicle speeds.

Table 4.2 Average Casualty Crash Costs in Victoria

<table>
<thead>
<tr>
<th>Location</th>
<th>Freeways</th>
<th>Highways</th>
<th>Main Roads</th>
<th>Forest &amp; Tourist Roads</th>
<th>All arterial roads</th>
<th>Local roads</th>
<th>All roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melbourne</td>
<td>93</td>
<td>89</td>
<td>87</td>
<td>102</td>
<td>88</td>
<td>93</td>
<td>90</td>
</tr>
<tr>
<td>Geelong, Ballarat, Bendigo</td>
<td>94</td>
<td>105</td>
<td>101</td>
<td>100</td>
<td></td>
<td>81</td>
<td>92</td>
</tr>
<tr>
<td>Other Cities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>102</td>
<td>105</td>
<td>109</td>
</tr>
<tr>
<td>Other Shires</td>
<td>152</td>
<td>176</td>
<td>153</td>
<td>139</td>
<td>162</td>
<td>128</td>
<td>148</td>
</tr>
</tbody>
</table>

Note: Units are $'000 in June 2000 prices.

The average crash costs shown in Table 4.2 reflect costs associated with crashes, including hospital and medical costs and loss of earnings. They do not include an allowance for loss of quality of life resulting from crashes, as included and reported recently by the Bureau of Transport Economics.\textsuperscript{44}

Austroads are currently reviewing their average crash costs. Initial indications are that inclusion of such an allowance would result in average costs for fatal and serious injury crashes being about 40% to 50% higher.

The figures in Table 4.2 show the much greater economic significance of a casualty crash in country Victoria compared to a crash in Melbourne. Road safety programs and prioritising methods need to take into account the significant difference in average crash costs between Melbourne and the various rural areas and give the latter some well-deserved priority.

**Economic Cost of Crashes at a Local Area Level**

In a local area situation the large statewide numbers quoted earlier can be hard to comprehend. A few municipalities estimated the economic cost of road crashes in their own areas. The City of Ballarat estimated the cost of crashes to be $63.5m per annum, equivalent to the council’s annual budget.\textsuperscript{45} The Shire of Moira estimated a cost of $140m for the eight year period 1991 to 1999, which is equivalent to some $18m per annum.\textsuperscript{46}

The Committee considers there is value in each municipality knowing the total annual economic cost of crashes in their area. There are a number of methods that can be used to estimate the total economic cost of crashes for a municipality. One way is to multiply the number of crashes of a particular severity by the average cost for that severity and add the results.\textsuperscript{47} The total cost could then be compared with other values such as the:

- Asset value of the road system;
- Annual municipal budget;
- Average rate payment per resident;
- Total expenditure on roadworks; and
- Cost of any specific municipal-funded road safety countermeasures (such as road safety officers or specific safety-related road maintenance).

Such comparisons ought to be made annually and the Committee considers there would be value in municipalities being encouraged to do so.
Summary

The rural crash information can be summarised as:

- 46% of fatalities occur in country Victoria though it has only 28% of the population.
- 62% of fatal and serious injuries in country Victoria are on open roads.
- 77% of persons killed in 1999 were on arterial roads where 72% of travel occurs.
- Country intersections represent very hazardous locations.
- Local roads in country Victoria have a greater proportion of crashes at intersections and involving pedestrians than arterial roads.
- More people are killed and seriously injured in single vehicles running off the road than in all other crash types combined.
- In 60 km/h zones, more fatalities and serious injuries occur on local roads than on arterial roads.
- A disproportionate number of run-off road crashes occur on curves.
- In 100 km/h zones, the crash rate per unit of travel is three times as high on local roads, although more people are killed or seriously injured on arterial roads, as that is where most of the travel occurs.
- Nearly 1% of serious crashes in country Victoria involve a bridge or major culvert which makes those locations a higher crash risk than other parts of the road network.

The Transport Accident Commission (TAC) stated:

In summary, crashes on rural roads are more likely to be severe, involve a single-vehicle oftentimes striking a fixed object such as a tree, embankment or street furniture.48

A poor road environment is likely to be a significant contributing factor to crashes on Victorian rural roads, particularly those on local roads.

The economic cost of rural crashes is estimated as being in the range of $600m to $900m per annum, without taking into account the unquantifiable grief and suffering of surviving victims, their relatives and friends.

The Committee considers that an economic and social problem of such magnitude should not be tolerated in rural Victoria.
Recommendation

13. That information on the travel patterns of rural residents and information on travel on the rural road network be gathered by VicRoads to better assess crash risk and target safety treatments.

Endnotes

1 The CRASHSTATS database is accessible at the VicRoads Internet site. See http://www.vicroads.vic.gov.au/road_safe/index.htm
2 Royal Automobile Club of Victoria, Submission to the Inquiry, June 2000, Appendix B, pp. 43-54.
3 For example, see the diagrams in VicRoads, Submission to the Inquiry, August 2000, pp. 25-28.
4 RMIT University, Transport Research Centre, Victorian Activity Travel Survey (VATS).
5 VicRoads, submission, pp. 13-14.
6 ibid., p. 15.
7 ibid.
8 Royal Automobile Club of Victoria, submission, pp. 10-11.
9 VicRoads, submission, p.16.
11 VicRoads, submission, p. 18.
13 ibid.
14 VicRoads, submission, pp. 19-21.
15 VicRoads, submission, Figure 14, p. 21.
16 The default speed limit in all built-up areas was reduced from 60 km/h to 50 km/h on 22 January 2001.
17 VicRoads, submission, p. 20.
18 Unpaved roads comprise both those with an earth formation to drain water away and those which have just a natural surface.
19 Royal Automobile Club of Victoria, submission, p. 49.
20 ibid.
21 VicRoads, submission, Fig. 15, p. 22.
22 ibid.
23 VicRoads, submission, p. 27.
24 ibid., p. 76.
25 Royal Automobile Club of Victoria, submission, p. 15.
26 VicRoads, submission, p. 28.
27 ibid.
28 ibid., p. 22.
30 ibid. The serious injury figure is from the RACV submission, p. 47.
31 VicRoads, submission, p. 24.
32 Royal Automobile Club of Victoria, submission, p. 47.
33 VicRoads, submission, p. 24.
34 Royal Automobile Club of Victoria, submission, pp. 45-48.
35 ibid., p. 46.
36 VicRoads, submission, p. 25.
38 ibid.
39 ibid., p. 29.
41 Royal Automobile Club of Victoria, submission, p. 10.
45 City of Ballarat, Submission to the Inquiry, 8 November 2000, p. 15.
47 Alternatively, as the source of the data is VicRoads, it may be more efficient for them to calculate and distribute the results to municipalities.
48 Transport Accident Commission, submission, p. 3.
Blackspot Programs

What are Blackspot Programs

A blackspot has been defined as an area where a number of crashes occur over a defined period, typically three or more casualty crashes within three years. Blackspot programs identify such sites. Selected sites are then investigated and engineering treatments developed. These are costed, the benefits estimated and the most cost-effective treatments then funded. It has been shown that this approach is most cost effective in terms of the reduced crashes per dollar invested. Typical treatments include:

- Roadside hazard treatment or removal;
- Intersection controls;
- Roundabouts and channelisation;
- Skid resistant pavements;
- Improved signage and delineation;
- Shoulder sealing;
- Installation of safety barriers and audio-tactile edge lining; and
- Increased bridge widths and provision of grade separations.¹

A ‘blacklength’ is a short section of road with a certain number of crashes per kilometre, again within a specified number of years. Unless otherwise indicated, in this report the term blackspots includes blacklengths.

Blackspot programs in Australia have recently included a ‘pro-active’ component to treat identified hazardous locations that do not meet the current criteria.

Blackspot programs are the most important infrastructure-related road safety initiative. However other more general road development, maintenance and traffic management programs also provide substantial indirect safety benefits.
In Victoria there are currently three blackspot programs:

- A Federal program;
- An on-going State program funded from State Budget appropriations; and
- A four year ‘Statewide’ program funded from a special TAC dividend.

Federal Accident Blackspot Program

There have been a number of Federal Accident Blackspot programs. To determine the effectiveness of the Federal programs the Committee visited Canberra to hear from Federal Government officials. A program from 1990-91 to 1992-93 demonstrated $4 crash savings per $1 spent, representing about a two-thirds reduction in people hospitalised in crashes occurring at treated sites.² The Bureau of Transport and Communications Economics evaluation of the program also found that 31.3 fatalities, plus the associated injuries, were saved annually for each $100m invested in the program.³

The current program commenced in 1996-97 and is due to finish at the end of 2001-02. Projects on all roads, except National Highways and declared sections of Roads of National Importance, which fall under a separate funding category, can be considered for inclusion in the program.

One objective of the Federal Road Safety Blackspot Program is to place significant focus on the need to reduce rural road trauma. Therefore approximately 50 per cent of the funds are for projects in non-metropolitan areas.

For a project to be eligible for funding under the Federal Road Safety Blackspot Program, the following criteria must be met:

- Discrete sites must have a minimum of three casualty crashes over 3 years; four crashes over 4 years and so on.

- For a length of road, the minimum crash criteria is three casualty crashes per kilometre of the length under consideration over 5 years, or the length to be treated must be in the worst ten per cent of road lengths in the State.

- Candidate projects must have a benefit to cost ratio of at least two.

- Up to 20 per cent of program funds are available for treatments which may not meet the above crash history criteria, but which have been recommended for treatment on the basis of an official road safety audit report.⁴
The Bureau of Transport Economics has recently released a review of the first three years of the 1996-2002 Federal Accident Blackspot program. Some of the key findings relevant to the inquiry are:

- There was very strong evidence that the program achieved its aim of improving safety at locations with a history of crashes involving death or serious injury.

- The program generated a net present value of $1.3 billion and a benefit-cost ratio of 14 (excluding expenditure on safety-audited projects).

- The program was not uniformly effective in reducing the number of casualty crashes. In non-urban areas, traffic islands on intersection approaches, indented right and left turn lanes, non-skid surfaces, and pedestrian facilities had no statistically significant effect on road safety.

- In non-urban areas, there was very strong evidence that signs and new traffic lights with turn arrows improved safety, and moderate evidence that medians, shoulder sealing, edge lines, and improved lighting increased safety.

- The program is estimated to have prevented around 32 fatal crashes and 1,539 serious crashes over the three years. Further benefits will continue to accrue over the life of the treatments.

- If the only criterion for program expenditure was to maximise the economic return to Australia, then the proportion of expenditure in urban areas would be increased.

- The analysis supports continuing the program, but suggests modifications to increase its effectiveness.

On 22 November 2001 the Minister for Transport and Regional Services announced that if the Coalition Government was re-elected it would spend $180 million over four years to extend the program, of which half would be in regional Australia.

State Blackspot Program

There is an on-going blackspot program funded from the State Budget amounting to about $4m per annum. Project selection criteria are the same as for the Federal blackspot program and proposed treatments must have a minimum benefit-cost ratio of two. Unlike the Federal and Statewide programs which have allocations to metropolitan and rural/country areas there is no such administrative restriction on this program.

Victorian Statewide Blackspot Program

In February 2000 the Victorian Government announced a new Statewide Blackspot Program. An additional $240 million will be spent over four years to treat blackspots and potential blackspots throughout the State. Funds
are being provided from a special dividend from the Transport Accident Commission.\(^9\)

Details of the Statewide Blackspot Program funding commitments, project numbers for metropolitan and rural areas, arterial and local roads, and blackspots and potential blackspots as at June 2001 were provided by VicRoads. The rural figures are reproduced below:

**Table 5.1 Victorian Statewide Blackspot Program Funding Status at June 2001**

<table>
<thead>
<tr>
<th></th>
<th>Funding ($million)</th>
<th>Total commitments to date (1999-2001)</th>
<th>Number of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rural arterial roads</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Blackspots</td>
<td>72.0</td>
<td>28.9</td>
<td>63</td>
</tr>
<tr>
<td>- Potential blackspots</td>
<td>18.0</td>
<td>8.3</td>
<td>98</td>
</tr>
<tr>
<td><strong>Rural local roads</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Blackspots</td>
<td>24.0</td>
<td>7.2</td>
<td>43</td>
</tr>
<tr>
<td>- Potential blackspots</td>
<td>6.0</td>
<td>3.5</td>
<td>75</td>
</tr>
<tr>
<td><strong>Total Rural</strong></td>
<td>120.0</td>
<td>47.9</td>
<td>279</td>
</tr>
<tr>
<td><strong>Statewide Total</strong></td>
<td>240.0</td>
<td>82.9</td>
<td>470</td>
</tr>
</tbody>
</table>

Blackspot Funding Distribution

Table 5.2 shows how road safety funding is shared between country Victoria and the Melbourne Statistical Division.

### Table 5.2 Blackspot Program Funding in Victoria, 2000-2001

<table>
<thead>
<tr>
<th>Estimated allocations ($million)</th>
<th>Country</th>
<th>MSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal blackspots</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>State blackspots – annual Budget allocation</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>$240m Statewide Blackspot Program – total</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Blackspots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- arterial roads</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>- local roads</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Potential blackspots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- arterial roads</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>- local roads</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: VicRoads submission, Table 17, p. 54.

**Benefits of Blackspot Programs**

VicRoads stated that studies show that:

... casualty crashes are reduced by more than 25 per cent on average at treated sites.¹⁰

Evaluations of the Victorian blackspot program implemented in 1994-95 and 1995-96 found an average reduction of 11 casualty crashes per annum per million dollars invested. This represents an investment of approximately $3.8 million to save one fatality, and injured persons, for each year into the future.¹¹

Another way of expressing the effectiveness of Blackspot programs is that, for each $100m invested (in 1995 dollars) there would be 26 lives plus a considerable number of injuries, saved in each year into the future.¹²

A report by Vulcan and Corben in 1998 proposed a more conservative figure of 20 fatalities saved per annum per $100m invested, to allow for diminishing returns in future large scale programs.¹³

The Committee considers that, even at the conservative numerical value, blackspot programs represent an excellent investment.

VicRoads’ guidelines for site identification provide estimates of the percentage reduction in the number of casualty crashes that will result from the installation of a particular treatment or design element. These values
are applied to the total number of accidents that have occurred at a site to predict the road safety benefit of the proposed improvement.\textsuperscript{14}

Appendix H provides a table from VicRoads showing the upper limit of typical crash reduction resulting from particular treatments for high risk blackspot locations. The figures were last updated in June 1998.

**Potential Blackspots**

The aim of potential blackspot programs is to identify sites where there has not been a history of reported crashes but nevertheless there is a high risk of future crashes occurring. The purpose is to prevent these crashes occurring and the site becoming a blackspot.

A method has been developed for assessing the relative risk. It takes into account factors such as traffic volumes, legal speed limit and:

- Clearance to immovable roadside hazards such as trees, poles, bridge end posts, culvert endwalls, etc;
- The actual sight distance compared to the design sight distance for locations with inadequate visibility;
- Poor road alignment, unsealed shoulders or ‘no parking’ zones;
- Areas identified in formal road safety audits; and
- For school bus stops, the number of children, the number of stops and whether return journeys are on the same side or opposite side of the road.

The relative risk assessment is used to prioritise proposals.\textsuperscript{15}

Outside urban centres and towns, road crashes in country Victoria are widely dispersed over the road network, not often concentrated at any given location. This means that sites generally have to be considered in terms of crash risk, rather than crash history. This approach is being supported in the Statewide Blackspot Program under the potential blackspot/blacklength component. It is particularly relevant to the local road network.

In its submission VicRoads stated that further analyses of risk and crash characteristics on the rural road network were continuing as part of the Statewide program. Work was also being undertaken to establish a ‘prototype’ mass action approach in a continuing attempt to identify ways to maximise road safety outcomes.\textsuperscript{16}

In August 2001 VicRoads released *Guidelines for Potential Blackspots* to assist municipalities and VicRoads regional staff to develop candidate projects. The guidelines provide two categories of ‘prototype’ potential
blackspots plus a risk ranking approach for other potential blackspot projects. Appendix I gives further details.

Continuation of Blackspot Programs

The Committee agrees with VicRoads’ recommendation – that Victoria continue the current Blackspot programs at a similar level of funding beyond the life of the existing programs – to at least enable treatment of the more than 2,000 currently identified higher risk sites.

The Municipal Association of Victoria (MAV) submission recommended that the Victorian Government:

... works in conjunction with the MAV and local government in securing further funding from the Commonwealth Government to finance road safety initiatives.

The Australian Automobile Association has proposed that:

A 10-year Black Spot mitigation plan would help to create a more consistent approach to planning, funding and evaluation while at the same time minimising the impact of political whim on such an important area of public policy.

The Committee is of the view that the continuing need for blackspot funding represents, in one sense, a failure by Treasuries, road agencies and municipalities to recognise safe roads as a high priority within annual maintenance and construction programs. Safety still appears to be regarded as an ‘add-on’ to be separately identified and funded rather than an integral element in the maintenance and improvement of roads and bridges. Until this is overcome there will be a need for Blackspot programs to continue.

The Committee notes that the Federal financial contribution to fixing blackspots in Victoria is now relatively small. In fact, the annual Victorian Statewide Program far exceeds the entire Federal Blackspot funding to all States and Territories. Victoria has a satisfactory method for administering blackspot programs including public nominations, a Consultative Panel to advise the Minister on priorities and good public accountability. There appears to be no additional value added by having the Federal program administered in Canberra and it presumably comes at a cost.

Financial efficiencies could be achieved by better co-ordinating the administration of the three accident blackspot programs currently operating in Victoria. One possibility would be to obtain the current Federal blackspot program amount to Victoria as a bulk annual amount to be added to the two sources of State funds and all blackspot works therefore administered as
one program. If necessary this could be described as a Federal-State partnership with co-branding for project funding recognition purposes.

**Recommendations**

14. That State and Federal blackspot programs be continued and expanded.

15. That VicRoads seek administrative efficiencies by better co-ordination of the three blackspot programs.

**Blackspots on Low Volume Rural Roads**

As stated, blackspots are identified by the number of reported casualty crashes occurring at a location in a specified period. Because no account is taken of crash exposure, that is the volume of traffic at the site, it is less likely that hazardous sites on low volume rural roads will be quickly identified.

Some rural groups considered that the guidelines for blackspot programs had a built-in bias against rural projects, despite rural roads having a more hazardous environment. Surf Coast Shire went so far as to say that the lack of concentration of crashes had largely excluded rural municipalities from participating in blackspot programs.\(^{22}\)

The City of Greater Geelong proposed a different funding split of 20 per cent for worst rural blackspots and the remainder distributed via an equity formula.\(^{23}\)

The incorporation of potential crash locations as a blackspot category is a positive development supported by the Committee. As foreshadowed by Mr C. Jordan, then VicRoads Chief Executive, at the public hearing, the proportion of funds allocated to this category may need to be increased as the identification of sites with demonstrated crash histories becomes harder:

One of the areas that probably will need review is on the local roads system where there is 80 per cent for black spots, the 20 per cent for prospective black spots ratio may need to be reviewed. The accidents are not so concentrated, so we will probably treat every known existing black spot on the local roads system in Victoria and still not have used up the 80 per cent.
He added:

It appears likely that in the third year of the program we will have dealt with every black spot on local roads, but there is a great capacity to deal with other genuine dangerous situations on local roads.24

The recent VicRoads Guidelines for Potential Blackspots (August 2001) may be of assistance in identifying hazardous locations where collisions are likely to occur, but it is too early to tell whether those methods will be effective. The Committee supports the introduction of the ‘potential blackspot’ category. The treatments funded under the category should be evaluated and the proportion of overall blackspot funds allocated to the category kept under review.

**Recommendations**

16. That blackspot identification criteria for low volume rural roads be established.

17. That the ‘potential’ blackspot category be evaluated and the proportion of blackspot program funding allocated to the category be kept under review.

**Lack of Identification of Some ‘Blackspot’ Locations**

Despite the recent introduction of a ‘risk identification’ approach to locate potential blackspots there is still an important need to know where crashes occur. A difficulty experienced in identifying crash locations on rural local roads with low traffic volumes is the lack of reported crashes.

Whether a crash results in the need for medical treatment and thereby meets the official definition of a casualty crash is, in some instances, a question of chance. With the recent increase in vehicle safety protection, especially airbags, a crash that might previously have resulted in reported injuries could now result in just property damage and therefore not come to the attention of authorities.

VicRoads obtains Police reports for some crashes involving only vehicle or property damage, but unlike some other States, does not process them.25

The Committee asked VicRoads whether it considered making use of the Police reports of property damage crashes to assist in identifying potential hazardous locations on low volume rural roads. They responded that:
Casualty crashes (i.e. those which result in injury or death to a person) must be reported to the police and as police attend the majority of these, there is a high level of confidence in the data provided on the report form. However, police are only required to attend non-injury or ‘property damage only’ (PDO) collisions if the owner of the damaged property cannot be notified. PDO are often reported to the police at police stations and police do not usually go out on site to verify the information.

While the majority of casualty crashes are reported to the police, a minority of PDO crashes are reported. This inconsistent level of reporting means the accuracy of the data is also inconsistent.

The cost of processing a PDO collision is similar to the cost of processing a casualty crash and given that there are over 17,000 casualty crashes per year and over 30,000 PDO crashes reported to the police, the cost of processing this information would treble.\(^{26}\)

At one stage in Victoria all but the most minor property damage crashes were legally required to be reported to Police. In those days the number of reported property damage crashes was estimated to be about four times the number of casualty crashes, so the annual number of property damage crashes would probably be about 65,000. The VicRoads reply quotes over 30,000 PDO collisions being reported each year. Therefore VicRoads receives information for almost half of all property damage crashes, though the quality of that information may not be as high as for casualty crashes.

In commenting on the situation where statistics on reported crashes now only relate to crashes resulting in injury, Mr R. Smith, Manager of Engineering, City of Greater Shepparton said:

… information is the basis of every action you plan, so it is concerning that perhaps we have got less information than we had in the past.\(^{27}\)

It is best practice in occupational health and safety systems to identify and investigate all incidents, not just those involving deaths, serious injuries or large insurance claims. In aviation even ‘near misses’ are reported and thoroughly investigated.

Mr P. Daly, a Victorian road safety expert, has stated that one of the challenges for now and the future is:

To ensure that the data we collect and use is representative of all crashes, not only those with a severity over a certain threshold. This may mean that we need to examine the feasibility of systematic collection of property damage accidents.\(^{28}\)
Lack of use of property-damage-only crash reports does limit the early identification of sites that have a real crash history. For example, Mr D. Andreassen, an Australian expert on crash recording systems, has estimated that, in the case of a requirement to identify sites having three crashes per year, the inclusion of property damage crashes increases the number of sites by over 80 per cent.29

Practices for the reporting and processing of property-damage-only crash information varies across Australia, with at least some states, such as New South Wales and Queensland, requiring such information.30

There may be alternatives to using Police records – such as vehicle insurance claim and towing company records. The submission by the State Coroner contained a report on one fatal crash which recommended that consideration be given to involving the private insurance industry, and possibly the towing industry, in utilising non-injury insurance claim data to assist in the early identification of road incident frequency and hazards.31

The Committee recognises that there would be additional costs in including property damage crash data. However, the costs to the community in not identifying and quickly treating locations where crashes repeatedly occur are more substantial.

It is prudent to analyse records of property damage crashes to identify sites where a number of collisions have occurred and then examine the site in terms of whether it had the typical blackspot characteristics required under the new Potential Blackspot Nomination Assessment Process. This approach might initially be used on the more lightly used rural roads, where the current method of identifying sites having repeated crashes is less reliable.

The Committee considers that the situation regarding the reporting and processing of property damage crash records should be independently reviewed, with a view to at least utilising some of the data currently received by VicRoads.

**Recommendation**

18. That an independent review be undertaken of the costs and benefits of using property damage crash information, including insurance records, to identify locations where repeated crashes are occurring.

**How Effective Will Actions be in Improving Road Safety?**

A recent Organisation for Economic Co-operation and Development (OECD) rural road safety report warns that some intuitively reasonable actions can produce perverse results. It quotes two examples: Increasing skid resistance can reduce wet weather crashes, but permit increased speed and worsen dry weather crashes. Similarly, improved delineation
could encourage faster night speed, which on low quality roads can worsen crash outcomes.³²

Only some safety measures have good scientifically based assessments of effectiveness. In addition, as the measures are implemented at the most high-risk/treatable sites the crash reduction effects decline until use of the remedy is no longer cost-effective.

There is an on-going need to review the effectiveness of crash reduction treatments and adjust the factors, as listed in Appendix H, used to predict the outcome of proposed treatments.

**Recommendation**

**19.** That studies of the effectiveness of crash reduction measures be continued, to maintain the accuracy of the factors used to predict the outcome of treatments.

**Recommendations**

14. That State and Federal blackspot programs be continued and expanded.

15. That VicRoads seek administrative efficiencies by better co-ordination of the three blackspot programs.

16. That blackspot identification criteria for low volume rural roads be established.

17. That the ‘potential’ blackspot category be evaluated and the proportion of blackspot program funding allocated to the category be kept under review.

18. That an independent review be undertaken of the costs and benefits of using property damage crash information, including insurance records, to identify locations where repeated crashes are occurring.

19. That studies of the effectiveness of crash reduction measures be continued, to maintain the accuracy of the factors used to predict the outcome of treatments.
Endnotes

1 VicRoads, Submission to the Inquiry, August 2000, p. 54.
3 VicRoads, submission, p. 55.
4 ibid., pp. 59-60.
7 VicRoads, submission, p. 60.
8 VicRoads, submission, Table 17, p. 54.
9 VicRoads, *$240m Statewide Blackspot Program – Program Guidelines* brochure.
10 VicRoads, submission, p. 55.
11 ibid.
12 ibid. The original source was Corben, B, Newstead, S, Diamantopoulou, K, and Cameron, M, *Results of an evaluation of TAC funded accident blackspot treatments* (unpublished), Monash University Accident Research Centre, 1996.
14 VicRoads, submission, p. 55.
15 ibid., p. 58.
16 ibid.
17 VicRoads, *Guidelines for Potential Blackspots (August 2001)*.
18 VicRoads, submission, p. 93.
19 Municipal Association of Victoria, Submission to the Inquiry, 30 June 2000, p. 8.
21 The Victorian Statewide program alone totals $240m over 4 years, whereas the proposed Federal program for 2002-2006 is only $180m nationwide.
22 Surf Coast Shire, Submission to the Inquiry, 19 July 2000, p. 6.
23 City of Greater Geelong, Submission to the Inquiry, 18 July 2000, p. 4.
24 Minutes of Evidence, p. 584.
25 Victoria Police Accident Report Form (VP Form 510).
26 VicRoads, correspondence, 20 August 2000.
27 Minutes of Evidence, p. 126.
28 P. Daly, *Safety Systems for Road Infrastructure - are we doing all we should be?*, 6th Institute of Transportation Engineers International Conference, Melbourne, September 1999, p. 11.
30 ibid.
Options to Improve Infrastructure

Introduction

The Committee had two main sources for gathering views on community concerns:

- Market research surveys; and
- Submissions, and presentations at hearings, by such groups as municipalities, community road safety councils, government agencies and road user or resident groups.

This chapter summarises the concerns and proposes a number of infrastructure options to address them.

Market Surveys

Several market surveys have shown that rural roads, especially many local roads, are considered by the community to be in poor condition and there is considerable room for improvement.

A community attitude survey in 1999 revealed that roads are considered the most important issue across all Victorian communities. In an Australian survey rural women rated an adequate rural road system as a high priority.

VicRoads Annual Surveys

Since 1997 VicRoads has commissioned a series of annual research studies. The key results for rural Victoria from the study in 2000 by Quadrant Research Services were:

- Major factors perceived to cause car crashes are: speeding (43%), carelessness and lack of attention (16%) and poor road conditions (11%).
- Opinions on ways to reduce crashes: For country people driver education was the most frequently mentioned reply, with road maintenance the second most frequent reply.
• In the 1999 and 2000 surveys the proportion of all people who said ‘increase road maintenance’ was the way to reduce crashes increased from 9% to 14%.

• Country people generally favored a greater clearance distance to trees than metropolitan respondents.

• The majority said keeping all trees a certain distance from the road edge was their preferred method for dealing with trees along the roadside.

Country people generally rated poor road conditions as more likely to contribute to road crashes than did metropolitan respondents. Country respondents considered fatigue a more significant issue and they were also more receptive to proposed speed restrictions in urban areas. Country road users identified poor road conditions as a road safety problem, although they still rated speeding and driver carelessness as more likely to cause crashes. They also have a clear understanding of the role fatigue plays in compromising road safety.

These perceptions regarding speed, carelessness and fatigue are reflected in analyses of road crash data, although the data also indicates drink driving is more significant in causing crashes than the rating given by country road users participating in the VicRoads survey.

A forgiving road environment has a key role to play in reducing the severity of consequences of human failure.

The Committee considers a forgiving roadside to be a key issue in rural road safety.

1995 RACV Survey

In February 1995 the RACV conducted an extensive survey of members as part of the study leading to Victoria’s Rural Arterial Road Network Strategy. Table 6.1 summarises the results, in descending order of country preferences. It shows some differences in the priorities of country and metropolitan respondents.
### Table 6.1 Features of Country Roads Believed to be Important

<table>
<thead>
<tr>
<th>Features of Country Roads</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Country</td>
</tr>
<tr>
<td>Sealed road edges</td>
<td>24</td>
</tr>
<tr>
<td>Overtaking lanes</td>
<td>19</td>
</tr>
<tr>
<td>Good centrelines</td>
<td>12</td>
</tr>
<tr>
<td>Smooth ride</td>
<td>9</td>
</tr>
<tr>
<td>Safer intersections</td>
<td>8</td>
</tr>
<tr>
<td>Good edgelining</td>
<td>8</td>
</tr>
<tr>
<td>Wider lanes</td>
<td>5.5</td>
</tr>
<tr>
<td>Guidepost/reflectors</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: VicRoads submission, Table 15, p. 34.

### 1999 RACV Survey

In December 1999 the RACV commissioned a survey of 800 rural Victorians. The key objectives were to investigate transport and mobility issues that specifically affected rural Victorians. The key results were:

- Over one quarter (27%) rated the quality of rural roads as poor;
- About a third rated it as neither good nor poor; and
- 41% thought the quality was good or very good.

The RACV argue that the high proportion of people who think the road quality is neither good nor bad is an indicator that roads can be ‘significantly improved’.

### National Infrastructure Report Card

In mid 2001 the Institution of Engineers Australia (IEAust) reported the results of the 2000 Infrastructure Report Card, which rates the quality of public infrastructure in Australia. On a scale of A being very good to E being inadequate:

- The National Highway System was given a C rating;
- State roads received a C minus rating; and
- Local roads scored a D rating.
In relation to local roads and, in particular rural local roads, the summary comments were:

The average age of the nation’s local roads continues to increase. Lack of both capital and maintenance is an ongoing issue of concern. Local roads are rated as poor. The ‘Roads to Recovery’ funding should improve this grading over time, if funding becomes ongoing.9

**Concerns Expressed at Public Hearings**

In submissions and at hearings the Committee received evidence on a wide range of issues.

The Committee considered that the most significant issues, not in any specific order, were:

1. Vehicle speeds near schools, in shopping centres and other areas of pedestrian activity, especially on arterial roads in shopping centres of small country townships. Speeds on poor quality roads are also a concern.

2. Increasing use of large heavy trucks and medium combination vehicles on road pavements and bridges that had not been adequately constructed for their use. In some instances such trucks are failing to observe bridge load limits, road closures and other restrictions on use of parts of the road network.

3. The hazard of sharing limited road space between cars, bicycles, large trucks, and sometimes school buses on narrow, generally sealed, roads with poorly maintained edges and shoulders.

4. Dangerous roadsides for vehicles running off the roadway.

5. In some parts of Victoria there are many bridges on local roads – particularly timber bridges – requiring upgrade for safety and load carrying purposes.

6. Hazardous intersections, including inadequate warnings, dangerous intersection layouts and restricted visibility.

7. Lack of adequate road delineation, especially on the narrower roads in areas prone to fog and poor visibility due to weather conditions and darkness.

8. Rough and dangerous road pavements including surface grip problems, such as aquaplaning and skidding on wet and icy pavements.

9. Driver fatigue and the need for adequate resting places.
10. Poor or no footpaths for pedestrians and motorised wheelchairs.

11. Adequacy of school bus routes and stops, particularly if routes were shared with timber trucks and other large vehicles.

12. Railway crossing hazards.

13. Lighting.

14. Tourism-related problems including: increased traffic on some roads, hazards due to drivers being unfamiliar with the roads on which they are travelling, fatigue and lack of information and misleading information about travel distances.

Other concerns included: unsealed roads and dust, safe access to medical treatment, driver familiarity with roads, livestock and wildlife on roads, stock crossings, farm entrances, large slow-moving agricultural equipment and conflicts in towns between through and parking traffic.

Conflicting Viewpoints

The Committee noted that there were some instances where the viewpoints of groups or individuals were in conflict. The most obvious case is between the expressed need for clear roadside recovery zones (to give drivers of vehicles which have run off the roadway an opportunity to regain control) against the desire of some to preserve vegetation for visual, flora or fauna reasons.

Likewise there are conflicts between the safety needs of vulnerable road users, especially of young children near schools and elderly pedestrians in township shopping centres, and the desires of motorists and heavy vehicle operators to travel to destinations as fast as possible.

The balancing of various, often conflicting community viewpoints and priorities is not an easy one, however the Committee considers that the preservation of human life is non negotiable and should never be traded off for other economic, social and environment objectives.

Addressing the Concerns

In considering community concerns the Committee recognised that the existence of apparent hazards does not necessarily lead to crashes. For example, one lane bridges are an obvious hazard to motorists but they are rarely a place where crashes actually occur. At other sites there may be a lot of near misses, but few crashes. Infrastructure improvements may reduce crashes or perceived hazards, or both. The emphasis should be on actions that reduce actual crashes.

Options for infrastructure projects to address the concerns described above are now discussed while other ‘off-road’ initiatives are covered in Chapter 7.
Improving Speed Management

Speeding is an important issue, with community concerns particularly focusing on shopping streets, poor quality roads and near schools. Speed management actions, including speed zoning, enforcement, publicity and where appropriate, physical measures, have a significant role to play in reducing road trauma.

Speed Limits in Areas of Pedestrian Activity

Speeding was a concern in shopping streets, commercial areas and other places of pedestrian activity. A number of municipalities sought 40 or 50 km/h limits, sometimes mentioning time-based systems. Some municipalities sought the power to determine the speed limits on Main Roads in small towns where there is a diverse mix of road users. One example was Buloke Shire, which sought lower speeds in the five townships of Charlton, Donald, Birchip, Sea Lake and Wycheproof. VicRoads was said to be reluctant to lower speed limits on arterial roads. When questioned by the Committee VicRoads replied:

As part of the arterial network it is important that the carrying capacity of Main Roads is supported by appropriate speed limits which are not less than 60km/h on the arterial system. Such an approach does require that any safety issues are identified and properly treated. Mechanisms used include time of day speed limits such as the manual signs used at many school crossings and electronic signs which were trialled at High Street, Preston and are to be installed shortly on the Princes Highway, Camperdown. Other initiatives include traffic engineering works - both physical works and use of traffic control devices - to reduce vehicle speeds. In exceptional circumstances where speed related crashes have been recorded in heavily pedestrianised areas a lower speed limit may be considered.

The rural community clearly sees the issue of vehicle speeds on arterial roads in shopping and other areas of pedestrian activity as very significant. Not all arterial roads are the same nor are all townships. The Main Roads of concern are C roads that have relatively low traffic volumes. The lengths involved are only a few hundred metres, and the townships are likely to be relatively small and with a predominance of elderly residents. The delay to through vehicles of travelling 10 km/h slower over, for example, 500 metres is very small. The Committee does not agree with the VicRoads assertion that a speed limit of 60 km/h is appropriate in those circumstances.

Recommendation

20. That, if requested by the local municipality, VicRoads should reduce speed limits on Main Roads in areas of pedestrian activity in rural townships.
Speed Management of Poor Quality Roads

Another concern about speeding was the appropriateness of retaining a 100 km/h speed limit on roads having poor alignment or surfaces, for example gravel roads. The Committee agrees with Mr T. McGann, General Manager of Infrastructure at Colac Otway Shire, who said:

> The maximum speed should match the roads.¹³

There were a number of suggestions that some, or even all, unsealed roads should have a speed limit of 80 km/h.¹⁴

Evidence from the Coroner comprised reports of investigations of two fatal crashes, both of which included recommendations of lower speed limits for those sections of unsealed gravel roads where the crashes occurred.¹⁵

The Committee considers that it is quite unreasonable for unsealed roads in poor condition to have the same sign-posted maximum speed limit as high standard rural highways, which usually have wide sealed shoulders, profile edge-lining, excellent delineation and adequate clear-zones.

The same comment applies to roads where, as VicRoads says, it is clearly inappropriate to travel at the posted speed limit due to poor road alignment such as sharp curves.¹⁶

**Recommendation**

21. That VicRoads and municipalities undertake reviews of the speed management of arterial and local roads with poor alignments and road surfaces.

**Speed Limits Near Schools**

In June 1999 the Committee’s Report on the Inquiry into the Incidence and Prevention of Pedestrian Accidents recommended:

> That school zones of 40 km/h in urban areas and 60km/h in rural 100 km/h speed zones be implemented.¹⁷

The Government response in May 2000 was that the recommendation was supported using alternative implementation methods, including variable speed limit signs.¹⁸

During the current inquiry many communities mentioned school crossings, with strong support for 40 km/h time-based speed zones. Mitchell Shire quoted the situation where residential streets now had a 50km/h limit, but if the school was on a declared road the speed limit was 60 km/h.¹⁹
The Shire also mentioned that there was no government program for installing physical devices, such as road narrowing or speed humps at school crossings. The cost of installing school crossing flashing lights at 40 km/h school speed zones is $20,000 per crossing and in some instances this is due to the need for power lines to supply electricity for the yellow flashing warning lights. There would appear to be a need to develop cheaper alternative installations, including different power sources and possibly using ‘flashing speed limit’ signs rather than the current yellow lights above a speed limit sign.

For arterial roads VicRoads provides funding for variable lower speed zones on a 50/50 cost basis shared with schools or councils, on the basis of highest risk. In the case of local roads the local community meets the full cost of speed management treatments. Under the Statewide Blackspot Program, schools will be able to apply for consideration for full funding of speed management treatments on declared or local roads as ‘potential’ Blackspot treatments.

The cost of employing crossing supervisors was also of concern as the government contribution was now slightly less than one half. However the main concern was the reluctance of VicRoads to grant approval for school crossing installations.

The Committee reiterates the Recommendation for reduced speed limits near all schools.

**Recommendation**

22. That school zones of 40 km/h in urban areas and 60 km/h in rural 100 km/h speed zones be implemented at appropriate times at all schools.

**Keeping Heavy Vehicles off Inappropriate Roads**

A number of municipalities mentioned the increasing use of larger and heavier trucks on inadequate roads. For example, Loddon Shire said:

 Increased truck sizes and numbers (are) using local roads as strategic traffic routes across the state (east-west). The roads were designed and built for much smaller trucks and lower traffic volumes.

This was often related to changes in the economic use of land, as a result of changes in agricultural, pastoral, forestry or mining activity, or changes in scale. One-square-mile family farms were often being replaced by multisite company operations. Other reasons for increased use of heavy trucks included higher mass and dimension limits, increased interstate and interregional traffic and the use of road rather than rail, especially for grain and
livestock. A particular concern was the B-Double, a medium combination vehicle that is larger than the typical six axle semi-trailer, but smaller than the multiple unit road trains used in outback Australia. A major advantage of B-Doubles is that fewer trucks are needed, they feature more modern safety standards and therefore lead to lower exposure and risk of crashes.

Heavy vehicles take the shortest possible route, which causes failure of narrow sealed roads.

Source: Shire of Yarriambiack

Some municipalities told the Committee that B-Doubles are not remaining on the designated road networks and were using minor unsealed roads or disobeying load permit restrictions:

Policing B-Doubles movements along these routes is becoming a problem.25

Furthermore, some truck drivers had a non-cooperative attitude to assisting enforcement officers with their inquiries about their offending colleagues:

Their attitude has been “I did not see them doing it, I could not care less”. 26
There were also concerns about speeding, damage to weak pavements and bridges and when turning into farms entrances or running over the edges of a sealed road.27 There were particular concerns with timber cartage, including residential amenity issues, for example, noisy early morning starts, and use of large timber trucks along narrow school bus routes.28

There are insufficient funds to upgrade the very large number of weakly constructed pavements and bridges on routes likely to be used by heavy trucks. Therefore, there are two main courses of action possible:

- Move as much freight as possible by alternative modes, such as rail; or
- Increase surveillance and enforcement so that heavy trucks only travel on those arterial roads and selected local roads that are capable of carrying them.

More Use of Rail

The Committee notes that some moves are underway in Victoria to increase the proportion of freight moved by rail. These include the proposed conversion to standard gauge of many of Victoria’s railways, predominantly in western Victoria, and fast passenger rail services to Geelong, Ballarat, Bendigo and Traralgon. Ninety-six million dollars is being spent over five years to standardise rail lines in regional Victoria, including conversion of 2,000 km of track on 13 lines. The Victorian Government has made a $550 million commitment to the Regional Fast Rail project to deliver a modern, high quality service by late 2005.29 The latter may have some indirect benefits for freight movements.

The Committee recognises there are complex issues involved in attempting to alter the proportions of freight travelling by rail or road. These include safety, environment, economic efficiency, timeliness of delivery and reliability, as well as competing commercial interests within both modes of transport. Some of these have already been considered at a national level in several Federal inquiries and in subsequent Federal Government responses.30

The Committee observed that the issue of rail versus road travel is of interest to many in rural Victoria. A public inquiry on this topic by an appropriate Parliamentary Committee, might be useful in providing factual public information and an improved understanding within the Victorian community.

Recommendation

23. That the ‘rail versus road’ issue for freight be reviewed by a Parliamentary inquiry.
Truck Enforcement

The Committee gained the impression that the enforcement of heavy truck restrictions is currently ineffective for both:

- Reducing the safety hazards for law-abiding motorists; and
- Protecting the community’s valuable road infrastructure from unauthorised and inappropriate use.

The Committee enquired of VicRoads: considering the small number of enforcement officers they had to spread around the State, how effective were they in ensuring heavy vehicles complied with mass and road restrictions. VicRoads replied that:

VicRoads and the Victoria Police undertake enforcement of heavy vehicle regulations, including mass limits, route restrictions and load restraint. Officers from both agencies operate on a regional basis, which provides a strong local knowledge of heavy vehicle activities. Enforcement efforts are targeted to provide a maximum deterrence. The enforcement effort is also complemented by proactive industry education and awareness sessions conducted by VicRoads officers. Industry accreditation programs, which are promoted by VicRoads and industry bodies, provide further confidence of compliance with regulations.

Currently in Victoria there are over 200 companies operating more than 1500 vehicles, which are involved in mass accreditation schemes. These schemes use quality assurance processes to ensure that heavy vehicles do not operate overloaded. Electronic weighing devices located along the major highways in the State indicate that 95% of trucks are operating within the legal mass limits. In addition, other data from the weighing devices indicate that over 92% of heavy vehicles operate within the posted speed limit of 100 km/h.

It is known that some heavy vehicles, from time to time, travel off approved routes. Where this is detected, appropriate enforcement action is taken. Councils that may have information regarding instances of breaches of road transport regulations by heavy vehicles should refer the matter to the relevant VicRoads regional office for investigation.

The Committee is very concerned that nearly 8% of heavy vehicles are breaking the speed limit and more than 5% are illegally overloaded. It considers that the safety for all travellers could be improved by much more extensive and effective enforcement of heavy truck mass, speed and route limitations because the existing situation is clearly unsafe.

Recommendation

24. That VicRoads and the Victoria Police expand the enforcement of heavy vehicle speed, load limits and route restrictions to stop vehicles using inappropriate routes.
Widening Narrow Roads and Improving Shoulders

The community had major concerns about the hazard of sharing limited road space between bicycles, motorbikes, cars, large trucks, and sometimes school buses, on narrow roads especially those that have poorly maintained seal edges and shoulders. This was because those using smaller vehicles would invariably suffer more in the event of a crash.

Narrow roads were a concern of many witnesses. Mr J. Blackie, Manager, Technical Services, Buloke Shire Council, said:

The primary safety concern is inadequate sealed width to accommodate two vehicles in a number of locations as it forces vehicles to use the earth shoulders.32

Narrow Seal Width and Roughness

A strong community perception was that the lack of road width relative to the traffic carried was a major safety hazard. This applied particularly to the narrower and relatively heavily trafficked C roads and rural local roads. On these roads the sealed traffic lanes were too narrow, the pavement edges and unsealed shoulders were in poor condition, and there were significant numbers of large trucks.

Many municipalities complained that it was very difficult to obtain VicRoads funding for widening of C roads. Most municipalities were also unlikely to be able to afford any widening on their local roads.

The Stitch in Time – Five years of successful road maintenance in Victoria report shows that Victoria’s roads are becoming smoother and road maintenance funding has increased by around 30 per cent in that time.33

Compared to other States, the condition of the Victorian arterial road network is performing well on the annual AUSTROADS pavement performance indicator measures. Ninety-two per cent of rural arterial travel is on ‘smooth’ roads, a good situation both historically and relative to other comparable Australian States.34

The Committee concludes that the pavement condition of the rural arterial road network in Victoria is good. This provides the opportunity for VicRoads to redirect some funds from further improving the pavement smoothness of the major routes towards widening unsafe sections of narrow and relatively highly trafficked C roads.

The Committee notes that Victoria’s Road Safety Strategy 2002-2007 says Blackspot programs will include:
Widening pavement on crests or curves on rural B and C category roads at high risk locations.

The adequacy of new VicRoads methods to identify ‘high risk’ crests and curves has yet to be demonstrated and the Road Safety Strategy does not mention narrow straight sections of road. Widening of significant numbers of narrow, hazardous straight sections of C roads is unlikely under the current road funding arrangements.

The Committee considers that, in the light of community safety concerns about narrow roads, more priority should be given to road widening, particularly on the more highly used category C roads.

Recommendation

25. That VicRoads give a higher priority to widening narrow and heavily used category C roads.

Shoulder Sealing Program

Road shoulders, in this instance termed ‘sealed road edges’, were ranked as the most important feature of concern by country motorists in the 1995 RACV member survey. Table 6.2 gives the current standards for shoulder width.
Table 6.2 Standards for Shoulders on Victorian Rural Arterial Roads

<table>
<thead>
<tr>
<th>Road Class</th>
<th>Road Shoulder Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>M roads</td>
<td>Sealed shoulders on both sides of each carriageway (3m on left side; 1m on right side)</td>
</tr>
<tr>
<td>A roads</td>
<td>2.5m shoulders, sealed to 1.5m If the terrain constrains road widening or traffic volumes are generally less than 1500 vehicles per day, two 3.1m wide traffic lanes and 2m wide shoulders (sealed to 1.5m) may be adopted</td>
</tr>
<tr>
<td>B roads</td>
<td>2m shoulders, sealed ‘where warranted by accident records’</td>
</tr>
<tr>
<td>C roads</td>
<td>Maintain existing widths and standard unless warranted by accident records</td>
</tr>
</tbody>
</table>

Source: VicRoads submission, Table 21, p. 69.

An estimate by VicRoads is that some 1500 km, or two-thirds of ‘A’ category highway have shoulder seals less than 1.5 m wide, which implies a large potential for future shoulder widening and sealing. An estimate of the cost for this 1500 km of shoulder sealing is $75 million. This does not include the costs for any future shoulder sealing on B or higher volume C roads.37

Many municipalities strongly supported shoulder sealing, as did the RACV:

When shoulders are sealed as part of a road maintenance program, the safety benefits of the treatment outweigh the costs of the works on roads with traffic flows as low as 350 vehicles per day (Ogden, 1993).38

A December 2000 VicRoads report shows a statistically significant ten per cent reduction in the casualty crash rate on Victorian highways where shoulder sealing has recently been installed.39

Extensive shoulder sealing is underway or planned for M and A roads.40 Victoria’s Road Safety Strategy 2002-2007 envisages shoulder sealing on 1100 km of A category road.41 The Committee strongly supports these measures to improve country road safety.

Given the proven safety benefits of sealed shoulders there is a case for a review of the standards for road shoulders adopted in 1996 in Victoria’s Rural Arterial Road Strategy. The current restriction of shoulder sealing on B and C roads to locations ‘where warranted by accident records’ should be reviewed. A proactive approach to shoulder sealing on isolated curves and
at other identified hazardous locations on B, and even C, roads should be taken.

**Recommendations**

26. That the current restriction of shoulder sealing on category B and C roads to locations ‘where warranted by accident records’ should be reviewed.

27. A proactive approach to shoulder sealing on isolated curves and at other identified hazardous locations on category B and C roads should commence.

**Improving Edges of Sealed Pavements**

There was considerable concern, especially by cycling groups, about the poor maintenance of existing roads, particularly the edges of sealed pavements and road shoulders.42

Mr T. McGann, General Manager, Infrastructure, Colac-Otway Shire, said:

Some of the things we think might really improve road safety in our shire include not so much making the standard of the road better but mitigating the effects of what happens if you leave the road by 6 inches, or 150 millimetres now.43

The Strathbogie Shire submission provided information on ‘Jetpatching’, a promising commercial technique for sealing pavement edges that can assist pavement preservation and have road safety benefits:

One attempt to maintain safety on sealed roads, Council now has a program to increase seal width by Jetpatching seal edges. $30,000 has been allocated for 2000/01 to jetpatch approximately 30 lane kilometres. Jetpatching only increases the sealed width marginally but is a good safety initiative as it improves rideability over seal edges and reduces wear to them.44

The Committee supports such initiatives.

**Recommendation**

28. That further investigation is undertaken of techniques for cost effectively sealing pavement edges to improve safety and assist in preserving pavements.
Providing a Forgiving Roadside

Trees, poles, poorly located roadside furniture and bridge end posts and railings were frequently mentioned hazards for vehicles running off the road.

Roadside trees a potential deathtrap.
Source: Shire of Moira

An important issue raised was the difficulty in obtaining approval to remove hazardous trees. The Hepburn Shire submission said Council proposals:

… to remove potentially dangerous and hazardous trees generally lead to exhaustive, time consuming and costly public consultation with environmentalists because of the need for having to obtain planning permits for removal of native vegetation.

Surely we can develop criteria which have to be met for Councils to be able to remove native vegetation along roadsides without having to always apply for planning permits.45

A vegetation plan proposal by North Central Catchment Management Authority that would inhibit the removal of hazardous roadside trees was strongly criticised by Mr R. Cooper, Manager, Infrastructure Services, Northern Grampians Shire on the basis of the potential additional cost to the municipality:
Every tree of large girth that we remove costs $800, and that ranges down to a tube that costs $2.50 or $1.50.46

The effect on driver visibility of long grass at intersections, especially vegetation such as cumbungi, adjacent to irrigation channels was also mentioned.47

Curves and the bottoms of hills are places where hazardous roadsides can be especially lethal. For example, Murrindindi Shire mentioned their municipality contained a lot of hills and curves on which recreational motorcyclists like to ride and often lost control of their vehicles.48

Communities believe, correctly, that providing a forgiving roadside has a key role to play in improving road safety. A detailed study conducted in South Australia found that collisions with roadside hazards were the cause of almost 40 per cent of all car occupant fatalities. The study concluded that much could be done to improve the safety of roadsides.49

The risk of a severe collision occurring once a vehicle has left the road can be reduced by:

- Providing a forgiving roadside which has a recovery area or ‘clear zone’ which is clear of roadside hazards; and
- Where a hazard cannot be removed, providing barriers which bring vehicles to a controlled stop or redirect them so that they do not collide with the hazard.50

Removing Roadside Hazards

Many submissions mentioned the need to remove roadside hazards. The RACV said that:

The environment immediately adjacent to roads should be a ‘clear zone’, and ideally kept free of unprotected collision hazards.51

The Committee noted that, when considering removing a roadside object in a particular location, other competing community values and needs may need to be considered. As an example VicRoads mentioned:

… utility poles provide essential services, traffic signal poles help to control traffic and prevent crashes at intersections, and there is a high community value placed on trees for their environmental, amenity and aesthetic appeal.52
Despite this the Committee considers that not enough is being done to remove roadside hazards and it welcomes the recent request by the Legislative Assembly for the Committee to inquire into crashes involving roadside objects.\(^{53}\)

In the meantime road agencies and municipalities should give more attention to this issue. Roadside management policies need to be developed and adopted by VicRoads and municipalities.

In addition there would be value in implementing some demonstration projects using all the best roadside safety management practices to determine their effectiveness in reducing road trauma from run-off-road crashes. This approach is similar to that currently being undertaken on the Geelong Road upgrading project, where additional funds are being provided by the State Government to create a much higher standard motorway than would normally be provided.\(^{54}\)

**Recommendations**

29. That VicRoads and municipalities develop and implement roadside management policies and strategies to improve road safety.

30. That projects be trialled by VicRoads to show the effectiveness of using the best roadside safety management practices.

**Specific Curve Treatment Program**

There is a high incidence of run-off-road crashes on curves relative to the proportion of their length in the road network. Those crashes also result in severe injury, particularly if large trees, poles and posts are involved. A specific program of curve treatments to prevent single vehicle crashes was one of the suggestions made by VicRoads:

> It would be appropriate to develop a specific program to treat those curves where crashes have been reported or where there is an isolated curve with a radius below 600m. Treatments would include pavement widening, delineation, signing and treatment of roadside area.\(^{55}\)

The problem of run-off-road crashes on curves has been known for a long time, as have been suitable treatments. It is disappointing to the Committee that VicRoads are only talking about appropriateness to develop programs. A specific curve treatment safety ‘program’ is long overdue and should be initiated as a matter of urgency.

**Recommendation**

31. That VicRoads initiate a specific curve treatment safety program as a matter of urgency.
Guard Railing and Barriers Program

Where adequate clearance to roadside obstacles is not possible, roadside hazards should be protected by guardrails and other forms of barriers.

One of the priorities for roadside maintenance, according to VicRoads, is replacement of guardrails that are no longer fully effective due to deterioration caused by ageing. Strathbogie Shire proposed the reintroduction of a VicRoads-funded guard-railing program.

The Committee considers this proposal should be broadened to include other forms of barriers to prevent vehicles crashing into bridges, trees, poles, posts, embankments and other roadside hazards on rural roads that are currently not being protected.

Again the Committee found it disappointing that more was not being done to provide barriers to prevent collisions with roadside hazards. Victoria’s Road Safety Strategy 2002-2007 mentions the installation under accident blackspot programs, of new safety barriers or upgrading of existing guardrail to current standards, at 1400 locations. However, the Strategy does not indicate the basis for this target and how it compares with recent annual installation numbers. More guardrails and safety barriers are needed.

Recommendation

32. That VicRoads and municipalities increase the use of guardrails and other forms of barriers as a means to providing a safer roadside for travellers.

Safety Barriers on Single Carriageway Roads

The Swedish National Road Administration is conducting trials of a crash barrier placed on a single carriageway road to separate opposing traffic flows. The Transport Accident Commission submission stated:

Swedish authorities are currently trialling wire rope barriers along central line markings (i.e. there is no central median reserve) of a high-risk stretch of rural road. While a definitive evaluation of its safety impact is still to be conducted, there has been no report of a death or serious injury from a crash in the first 12 months of the trial.
The aim of the ‘Alternative 13-metres roads’ project in Sweden is to cost-effectively increase the traffic safety on the existing 13 metre wide roads and dual carriageway roads, with less investment cost and less land use than traditional measures. The project is being evaluated and the results are documented twice a year.\textsuperscript{60}

Between June 1998 and the end of December 2000 more than 200 kilometres were opened for traffic, some of which were conversions to dual carriageway and others were to three lanes on a single carriageway; not all of the latter have safety barriers. When the road comprises two lanes in one direction and one lane in the opposite direction the lane for overtaking changes direction every one to two kilometres. Many of the roads already had two wide lanes before the rebuilding and the aim was to make three lanes without having to extend the roadway.

So far the initiative appears to be a success with severe head-on crashes being prevented by the median barrier and the crashes into the barrier that have occurred have resulted in less severe injuries. To December 2000 there have been only four severe injuries, compared to nine fatal or severe injuries in a ‘normal’ situation. This is comparable to the crash reductions achieved by providing dual carriageways, but achieved at a much lower cost.

Travelling on the new facility has also led to a positive change in public attitude to the concept, travel speeds have increased slightly and some anticipated maintenance disadvantages, for example with mechanical snow clearing, have been less than expected.\textsuperscript{61}
The Committee noted that one of the conclusions of the Transport Accident Commission submission was that:

New technologies (especially, in the field of energy absorbing barriers) can make a substantial contribution to improved levels of safety.62

The Committee considers this Swedish initiative has potential application in Victoria and deserves detailed investigation, including identifying possible pilot sites for trialling the treatment and assessing the potential scope for wider use across the road network.

Recommendation

33. That a detailed investigation be undertaken by VicRoads of safety barriers to separate traffic streams on single carriageway roads and implemented where appropriate.

Bridge Upgrading

In some areas of Victoria there are many bridges on local roads, particularly timber bridges, requiring replacement and there is a lack of finance to realistically address the problem. Some are a road safety hazard, others are unfit for the large and heavy vehicles wanting to use them, and many have both problems.

Narrow bridge means heavy vehicles take turns passing.

Source: Shire of Yarriambiack
Bridge-related safety factors include poor alignment and pavement profile on the approaches, bridges narrower than the roadway, hazardous barriers and end posts, and poorly maintained bridge decks and inadequate lighting.\textsuperscript{63}

Detours because of bridge load limits, narrow culverts and irrigation channels were also of concern. Detours increase the time to reach a fire and may involve higher risk exposure on the often inferior detour roads. Country Fire Authority (CFA) trucks had specific problems with 15 tonne limits and ambulances with 3 to 5 tonne load limits.\textsuperscript{64}

The condition of many timber bridges was of particular concern:

With increased load limits we are finding the need for increased maintenance on timber bridges. We are experiencing a significant number in deck plank failures. These planks snap under heavy load and present a real danger to the motoring public.\textsuperscript{65}

One such case had severe consequences. A cyclist was badly injured because the bicycle wheel became stuck in the top of the bridge.\textsuperscript{66}

In response to a question about the quality and suitability of the 40 or so timber bridges in the Shire, Mr C. Walker, Deputy Manager, Technical Services, Indigo Shire Council, said:

Like all rural municipalities, we have a lot of timber bridges that are built over a stream. They are very narrow. They have old timber handrails, which spear into cars and which we now try and get away from. These exercises need to be looked at.\textsuperscript{67}

Bridge approaches and end posts are a particular hazard. Mr I. Nicholls, Manager, Environment Services, Alpine Shire Council, said:

Similar to other shires, we have inadequate widths on some of our older bridges and approaches to those bridges — for example there are often 12 metre wide roads coming into 6 metre wide bridges.\textsuperscript{68}

The RACV stated that narrow culverts presented a significant danger to drivers straying off the road through significant height differences and sometimes unforgiving culvert end-wall design.\textsuperscript{69} Mildura Rural City reported that over the years the widening of roads, but not the bridges over irrigation channels, has created a significant problem.\textsuperscript{70}

In relation to bridge safety VicRoads said in their submission:
The majority of crashes involving heavy vehicles at bridge sites has involved vehicles being railroaded along guard fence type bridge approach barriers followed by a head on impact with the bridge endpost with major consequences for the errant vehicle and potentially for cars or trains on any road or railway below the bridge.\textsuperscript{71}

If guardrails or end posts are poorly maintained or not visually detectable in darkness or poor weather conditions they become a hazard. Upgrading the protection of bridge end posts on arterial roads across country Victoria would cost $12 million.\textsuperscript{72} The estimated cost for local roads is unknown.

The Committee noted from evidence reported in Chapter 4 that half of casualty crashes at bridges occurred at night, at dusk or dawn.\textsuperscript{73} VicRoads and municipalities must give more attention to the need for lighting of bridges.

Maximum vehicle mass limits have more than tripled in the past 60 years and the proportion of vehicles loaded to that legal limit has also significantly increased.\textsuperscript{74} During the past decade or so, most spending on arterial road bridges has been because of the load carrying needs of these heavier freight vehicles. In the process of upgrading these bridges most safety concerns have been addressed, so significant progress has been made in modifying and removing bridges and culverts which presented a safety hazard.

However, the VicRoads submission reported a need for an accelerated program of rehabilitation or replacement of bridges on the local road network throughout Victoria:

An assessment of the costs to rehabilitate or replace strategically located bridges rated as 'fair' and 'poor' and to strengthen 300 bridges rated as in 'good condition' indicates that about $165 million would be required.\textsuperscript{75}

The Committee estimates the rural component of the above amount would be approximately $150m. While a start should be made on this very large task of strengthening bridges on rural local roads the emphasis in the short term should be to improve the safety of travellers by increasing the visibility and protection of existing bridges and major culverts on both rural arterial and local roads.

**Recommendations**

34. That the Government financially assist rural municipalities to upgrade bridges on rural local roads.

35. That increased attention be given to improving bridge visibility and protection, including signing, lighting, guardrails and end posts.
Improving Intersections

There were community concerns about the lack of adequate and consistent warning of some hazardous intersections and the dangers of unsealed approaches to intersections with sealed roads.

Another driving hazard was the layout of a road junction. For example, Buloke and Loddon Shires mentioned ‘inherently dangerous’ Y-shaped intersections because of the limitations of driver visibility due to the intersection layout and road alignment.76

Rural Local Traffic Management Schemes

The frequency, or density, of intersections is a safety issue in some parts of rural Victoria, leading to a higher proportion of intersection crashes. In some instances the hazard is the lack of adequate warning signs. Mr J. Wilkin, Manager, Technical Services, Surf Coast Shire stated:

Unfortunately there have been a number of instances of fatalities and major injury accidents at poorly defined intersections – the ones where the driver has no perception that he or she is actually approaching an intersection and simply drives straight through it, with dire consequences.77

There was also a problem in some irrigation areas where crossings of irrigation channels/canals adjacent to the intersection hampered visibility.

Irrigation channel crossing obstructs view of intersection.

Source: Shire of Moira
One municipal initiative the Committee considered worthy of further consideration was the City of Greater Shepparton proposal for a ‘network’ approach to the treatment of country intersections.

A typical rural local road intersection in that municipality is set in an environment consisting of: flat terrain; long straight roads on a grid network; a low-volume sealed single-lane road crossing an unsealed road; and a small bridge over an irrigation channel on the minor road close to the intersection.

Currently the standard of signing, line marking and pavement surfaces on the approaches and within the intersections varies enormously. The variation in treatment tends to be more random than based on the level of danger. This results in inconsistent, and at times misleading, messages being given to drivers as they approach each intersection.78

Cr C. Hazelman, Mayor, City of Greater Shepparton, said:

The current approach tends to be reactive and expensive, averaging $120,000 to $180,000 per site. Despite achieving successful outcomes this level of expenditure cannot be sustained in order to resolve all of the potential black spots identified in our extensive local road network.79

The City proposed that the various types of intersection within the road hierarchy be treated differently, but within each type there would be the same treatment. This should provide drivers with a more accurate perception of the real risk at that intersection. The municipality estimated that these low cost treatments would cost an average of $3,000 per intersection. It would cost around $540,000 to treat all the relevant intersections in Greater Shepparton.80

The Committee sought comment by VicRoads. Their reply was that:

A proposal similar to the one described was discussed with VicRoads regional officers some 18 months ago. It was in a preliminary state of development and since then it is understood that Council has been further developing the concept. VicRoads is prepared to discuss the matter further if Council so wishes.81

A closely related topic is the signing and possible protection of irrigation channel crossings.

Mr M. Byrne, General Manager, Engineering and Development Services, Moira Shire Council, said that following discussions with the City of Greater Shepparton, the Shire of Campaspe and VicRoads, the Shire had made a submission under the Statewide Blackspot program.82 VicRoads were subsequently asked: What is the status of the proposal and does VicRoads have any views on the topic? Their reply in August 2001 was that the
application lacked information such as proposed treatments and cost estimates that are necessary for the assessment of the treatments against the blackspot eligibility criteria.\textsuperscript{83}

The Committee considers that both these ideas have merit and should be further developed and trialled by VicRoads and the municipalities.

**Recommendation**

36. That a ‘network’ approach to the treatment of country intersections, irrigation channels and other locations by signing and other inexpensive measures to raise hazard awareness be trialled to determine its effectiveness.

**Sealing Unsealed Approaches to Intersections**

One proposal mentioned by several municipalities to improve vehicle braking and control, reduce road maintenance costs and reduce dust was sealing short lengths, up to about 100 metres, of the unsealed approaches to intersections on sealed roads.

Mr M. Byrne of Moira Shire, said:

> If you like ABS brakes on sealed roads, try them coming to an intersection on an unsealed road and you will find that you end up in the middle of the intersection.\textsuperscript{84}

In addition to safety benefits, Mr W. Tabensky, Director, Infrastructure, Baw Baw Shire, said:

> We are progressively looking at, with our budget, sealing at least 15 to 20 metres up the gravel roads to reduce that material coming out onto the intersection.\textsuperscript{85}

Not only does the treatment reduce maintenance costs for the road agency, but the hazard to motorists of encountering loose stones on the sealed road is also reduced.

There do not currently appear to be technical guidelines for this type of treatment and their development would encourage more widespread and consistent application of this worthwhile initiative.

**Recommendation**

37. That VicRoads develop guidelines for the sealing of unsealed sections of road that approach intersections with sealed roads to improve safety and reduce maintenance costs and dust.
Better Delineation

Some rural residents and municipalities had concerns about poor road delineation, especially on the narrower roads in areas prone to fog and poor visibility due to weather conditions and darkness.

The importance of delineation, such as guide posts, centre and edge lining, for safe travel was stressed. The RACV said delineation is of critical importance to the safe and efficient operation of the road system and that good delineation becomes more important as the driving population ages.86 Mr G. Smith, Director Assets and Infrastructure, Pyrenees Shire said:

If we were able to have a lot more white guide posts and some widening on curves so we could put line markings on bends, it would certainly help motorists in those environmental conditions.87

The Committee noted some municipal concern that VicRoads appeared reluctant to agree to edge lines on fog-prone sections of C roads. Mr M. Byrne, General Manager, Engineering and Development Services, Moira Shire said:

… just getting white lining up the centre of bitumen roads would be a great help where there is fog or especially going through passes on the water channel crossings.88

Centre line and edge line marking can be a great help when driving at night and in thick fog. A rural resident, Ms H. Bath, said it has enabled many people to:

… continue their contribution to local communities because they feel more confident in their capacity to drive at night.89

One of the recommendations from a study of South Australian rural roadside hazards was for edgelining of highways and major roads, regardless of the width of the road.90 However, a 1999 OECD Expert Group report Safety Strategies for Rural Roads expressed some concerns that improved delineation could increase speeds on poor standard roads leading to a higher number of, and more severe, crashes:

… care must be taken not to provide too much visual guidance on roads with relatively low design standards as it may lead to speeds which are inappropriate for the roads. But, if roadside markings are restricted to particular dangerous sites (curves, bridges, etc) the effect on speed and accidents will be less severe.91
While appreciating that there are some differing views among road safety experts as to where edgelining and other delineation treatments should be used, the Committee considers that community concerns about the reluctance of VicRoads to agree to edgelines on fog-prone sections of C roads need to be addressed. A review of edgelining and delineation practices on the rural road network should be undertaken.

**Recommendation**

38. That VicRoads and municipalities review edgelining and other delineation practices, particularly for the more narrow roads in fog-prone areas.

**Improving Pavements and Surface Grip**

Road pavement condition has a number of aspects, for example, roughness and shape primarily determine the comfort of ride for travellers; potholes are a safety hazard and may damage vehicles; and wheel ruts can become an aquaplaning hazard in wet weather. Wheel ruts are depressions along wheel paths due to compaction of the pavement caused by traffic wheel loads.

Roughness was mentioned in the RACV submission, as were potholes and other surface irregularities:

... member surveys consistently find that Victorian motorists consider a smooth ride and sealed shoulders highly important.\(^{92}\)

... potholes, pit covers in the road surface, deformed pavements and any other sudden changes in the road surface are a significant risk to motorcyclists. Similarly rough surfaces and pavement edge drops are particularly hazardous for bicycles.\(^{93}\)

Surface grip aspects mentioned by the community included skid resistance, aquaplaning and ‘black’ ice. Aquaplaning is often associated with rutting.\(^{94}\) Chief Inspector R. Penny, of Southern Grampians-Glenelg Police Division said:

In parts of the Hamilton Highway the road is now channelled. The tyres of heavy vehicles have created channels. They fill with water when it rains, and cars – perhaps driven by motorists who are not familiar with driving long distances – hit the water and can aquaplane out of control and crash.\(^{95}\)
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In addition to the Hamilton Highway rutting on parts of the Hopkins and Glenelg Highways was mentioned in the Roadsafe Western District submission.96

Icy roads and invisible ‘black’ ice on bridge decks were of concern in the colder areas of Victoria.97

Debris on roads, such as stones, manure and dairy residue was said to add to surface grip problems on some roads.98

Many people express the view that ‘poor maintenance’ is a significant contributing factor to road crashes. However, according to an OECD Expert Group, research on two lane rural roads in New York State, USA, has shown that:

Pavement upgrading at spots other than those with high accident incidence (e.g. for reasons of reducing vehicle operating costs) may have no, or initially, even negative safety effects, possibly because the improvements result in higher speeds.

According to the United States Transportation Research Board (TRB, 1987) routine resurfacing of rural roads initially increases dry-weather accidents by 10%, but reduces wet-weather accidents by around 15%. They conclude that the overall effect on safety of resurfacing rural roads is small, but that it may improve the situation at roads with an extremely high number of wet-road accidents.99
Improved maintenance on many Victorian country roads is necessary for road safety, travel speed and driving comfort reasons, but the likely impact on overall road trauma is not clear.

A high proportion of country crashes occur in wet weather conditions.\textsuperscript{100}

The Committee is concerned that the safety hazards of poor road maintenance and the particular difficulties of travelling in adverse weather conditions are not receiving sufficient attention by road authorities. Pavement rutting, for example, provides the potential for aquaplaning in wet weather.

Skid resistance programs are also important for rural road safety. VicRoads state that:

Research has shown that at sites with wet weather skidding crashes, improved skid resistance can achieve a reduction in wet weather crashes in excess of 50 per cent.\textsuperscript{101}

According to the agency, a systematic approach is being developed for the identification and treatment of sites where poor skid resistance performance may have contributed to wet weather crashes, or where it has the potential to cause crashes. This is particularly important in country cities and towns where traffic is required to stop constantly, for example, at intersections. Areas of road pavement that have inadequate skid resistance need to be identified and treated.\textsuperscript{102}

**Recommendation**

39. That attention be given to better maintaining roads, in particular, measures that improve surface grip in wet weather conditions.

**Better Stopping and Resting Places**

A number of municipalities and other witnesses mentioned the lack of stopping places and rest areas in country areas to adequately address driver fatigue. The Committee was told by Mr N. Jacobs, Chief Executive Officer, Shire of Hindmarsh, of one incident where a driver had crashed into the information centre in Nhill, ‘the very facility they want to upgrade to encourage drivers to stop’.\textsuperscript{103}

Driver fatigue is being increasingly recognised as a significant factor in many single vehicle run-off-the-road crashes. In addition some rear end crashes are now believed by road safety experts to be due to driver fatigue. A recent Federal inquiry into fatigue in transport has provided an additional public focus on this topic.\textsuperscript{104}

VicRoads says it proposes to maintain its existing network of rest areas and provide for additional areas when driving times exceed its guidelines of
approximately one hour for major highways (M and A roads) and 1.5 hours for B roads. The agency also plans to review the guidelines for rest area facilities to assess the need for additional rest areas on M, A and B roads and for upgrading existing facilities. The Committee noted that no mention is made of C roads or why the time between rest areas should be much higher on B roads.

A specific and effective measure to counter fatigue when travelling is ‘power napping’. In order to facilitate ‘power napping’, security issues and other facilities at rest areas would need to be addressed because some motorists may be reluctant to sleep in their car in an isolated location.

A number of other submissions also mentioned the provision of rest areas as a desirable safety countermeasure. The Committee therefore asked VicRoads to provide supplementary information on additional/upgraded facilities that might be required in rural Victoria, the average cost per facility and especially, how effective such facilities might be in reducing the number and/or severity of crashes. Also requested was any evidence that additional or improved rest areas would be a cost-effective crash countermeasure.

The agency reply was that:

VicRoads has produced a brochure ‘Guidelines for Rest Area Facilities’. The brochure states that it is difficult to measure the benefits that rest areas have in reducing crashes, and VicRoads has not attempted to do this.

RoadSafe Victoria, (peak body for all the Community Road Safety Councils of Victoria) has produced a brochure titled ‘Drowsy Driver Campaign’ which discusses fatigue, the need for sleep and power nap issues.

In addition, individual Community Road Safety Councils have produced their own documents, tailored for the use in their own regions.

The Committee supports the current provision of rest areas and associated publicity measures but considers a more strategically driven statewide approach is required, including the needs of travellers on C roads. Road agency attention needs to be given to the full spectrum of stopping and resting places – from spots where one can quickly and safely change drivers to elaborate facilities with toilets, picnic facilities and even playgrounds.

Better and more consistent signing of rest areas, parking bays, truck parking bays, ‘power nap’ areas and other types of stopping places is also needed. Also, in providing advance signing of a stopping place it would be useful for drivers to be told the distance to the subsequent stopping place or rest area.
Recommendation

40. That VicRoads review rest area guidelines, improve the consistency of signing and develop a specific program of resting places to combat driver fatigue throughout the rural road network.

Providing Safer Footpaths

Poor footpaths for pedestrians and motorised wheelchairs – or none at all – were often a concern to residents. The difficulties faced by pedestrians primarily related to the young and the elderly. This was particularly so in some small towns which were seen as almost being retirement villages. Concerns included the lack of footpaths; roadway edges; pedestrian crossings and poor or non-existent lighting.

Greater Geelong City Council made specific mention of the lack of pedestrian footpaths in smaller towns, such as Cressy, Lara and Anakie. Pedestrians were forced to walk on roads and share the roadway with heavy trucks.108

The Committee particularly noted concerns about motorised wheelchairs, sometimes referred to as ‘gophers’. The Indigo Shire submission stated:

Disabled persons vehicles – electric motor scooters and wheel chairs – (are) becoming more prevalent, and (have a) problem of being seen both by pedestrians and motorists.109

Again concerns were the lack of footpaths, requiring a sharing of the roadway with faster vehicles, and a lack of suitable kerb-crossovers at intersections.

Traditionally road agencies have seen footpath issues as local government matters. Providing good footpaths has often been a low municipal priority, sometimes only receiving attention when there is a negligence claim if a person fell and was injured.

New, or better, footpaths are needed in many rural locations. There is certainly a case for some of them to be seen as a valid preventative road safety treatment and, if necessary, funded from State road safety programs.

Recommendation

41. That VicRoads give consideration to including footpath provision and improvement in the list of treatments eligible for road safety funding.
School bus routes and stops were a particular concern of parents. School buses often travel on poor quality roads and have difficulties in wet weather conditions. There were particular community concerns if school buses mixed with heavy truck traffic. Safer school bus stops were considered important:

This issue is an ongoing concern in regional areas and has become a particular concern in the Greater Shepparton area in recent times. In May 2001 the Australian Transport Council released a report on *School Bus Safety in Australia*. It points out that most bus-related casualties involve children struck by vehicles while crossing the road after leaving the bus. In 3 years of national data only two out of 24 child fatalities associated with school buses were passengers in a crash-involved bus. The report proposes a *National Bus Safety Action Plan* to complement the *National Road Safety Strategy 2001-2010*.

While the adequacy and safety of roads used as school bus routes is not insignificant the main emphasis should be on bus stops. There are certainly valid concerns about the physical adequacy of many country bus stops, or lack thereof. However, probably of more relevance to road safety is the behaviour of children boarding or leaving buses on country roads and the actions of parents or others who might be picking them up. Sometimes where those vehicles park creates a visibility hazard or forces children to cross the road while the carer watches.

The Committee heard from Cr D. Joyce of the Rural City of Wangaratta that his bus company instructs drivers not to let a child off a bus unless the parents meeting the children are parked on the same side of the road. The Committee supports this worthwhile initiative, which deserves more widespread use.

Concerns about railway level crossing hazards included lack of warning of approaching trains, difficulty of seeing train wagons at night and the need for the sealing of unsealed road approaches to crossings to prevent motorists from skidding onto the rail lines when braking.

Railway level crossing crashes are small in number but have a high public profile because of the severity, both to the persons directly involved and the subsequent disruption to road and rail traffic.

VicRoads advised that they, the Office of the Director of Public Transport and VicTrack jointly manage and implement the $3 million per annum
Railway Level Crossing Improvement Program. Treatments to improve safety at railway level crossings include flashing lights, boom barriers and pedestrian gates.

The cost of conventional level crossings is prohibitive on low usage rural crossings as it costs from $120,000 to $250,000 for flashing lights and from $180,000 to $400,000 for boom barriers. VicRoads and VicTrack have established a project to develop a cost-effective alternative to address the 1500 or so crossings that are on low volume roads across Victoria and are still untreated.114

VicRoads state that:

- The Railway Level Crossing Improvement program could be expanded in order to treat more sites and prevent the occurrence of catastrophic crashes; and
- A research and development project is underway, in conjunction with VicTrack, to develop a cost-effective treatment costing between $25,000 and $30,000 suitable for most of the 1500 low volume crossings that do not have active signal protection. This should be continued.115

The Committee is aware that a low cost, advanced technology railway crossing warning system is undergoing trials in Minnesota, USA.116 A similar cost-effective treatment for Victorian rail crossings is needed.

More Overtaking Lanes

Lack of overtaking opportunities was mentioned to the Committee on several occasions. RACV metropolitan members rated overtaking lanes as the single most desired feature of rural roads and it was noted, the second highest feature by country members.117

Overtaking lanes are provided on open country roads as a means to improve overtaking opportunities, to enable drivers to safely pass slower vehicles and with less driving stress. Providing adequate overtaking opportunities reduces the likelihood of drivers attempting high risk passing manoeuvres that may lead to head-on collisions.

When drivers are forced to follow slow vehicles for periods of more than three or four minutes they may become frustrated, increasing the likelihood of taking risks.118

VicRoads stated that it is currently developing a strategy to identify the overtaking opportunity deficiencies on Victoria’s A and B roads and recommend a priority for the construction of overtaking facilities. The strategy addresses the minimum performance standards set out by *Victoria’s Rural Arterial Road Network Strategy*, that is:
• M roads: overtaking at all times;
• A roads: overtaking at least every 10 to 15 km; and
• B roads: additional lanes for safety and capacity on designated routes.

The strategy complements the existing corridor strategies recently developed for a number of highways and will be used in the development of future corridor strategies.

About 125 overtaking lanes existed on A roads in 1999. The need for an additional 67 overtaking lanes and extensions to two existing overtaking lanes has been estimated by VicRoads to cost a total of $55m, though not all would be economically justified at existing project costs and traffic volumes.\(^\text{119}\)

Few overtaking lanes exist on B roads. The need for an additional 46 overtaking lanes has been identified, and four highway sections require slow vehicle turnouts. The total cost is estimated to be $40m. Again, some projects may not be justified at this time.\(^\text{120}\)

In August 2001 VicRoads advised that an analysis of the effectiveness of overtaking lanes had commenced and information was expected to be available ‘in about three months time’.\(^\text{121}\) At the time of writing no report was available.

**Lighting**

With the exception of one VicRoads diagram relating to ‘crashes into bridges by light conditions’, night-time crashes were not mentioned in the crash statistics provided to the Committee. However the Australian Transport Safety Bureau monthly bulletin *Road Fatalities Australia* states that around 44 per cent of all fatalities nationwide occur during ‘night-time’, that is from 6pm to 6am.\(^\text{122}\) The proportion of total road travel during night-time is much lower than this; therefore night-time is a more dangerous time to travel.

Swan Hill Shire and Wodonga City mentioned lighting of arterial road intersections and arterial roads as safety issues.\(^\text{123}\) An OECD report suggests lighted intersections have crash rates nearly 20 per cent below those of unlighted intersections. It also noted that light poles need to be properly designed and sited lest they themselves become a hazard.\(^\text{124}\)

The VicRoads submission stated:

> Pedestrian visibility could be tackled by installing engineering treatments such as street lighting in higher risk locations.\(^\text{125}\)
The Goulburn Valley Community Road Safety Council suggested solar powered streetlights be installed along the bicycle track between Shepparton and Mooroopna to encourage cyclists to use it rather than the adjacent poorly lit causeway roadway.\textsuperscript{126}

The Committee considers the issues of night-time crashes, lighting and road delineation during the hours of darkness need more attention by road agencies.

**Recommendation**

42. That VicRoads and municipalities give more attention to reducing night-time rural crashes by improving lighting and road delineation.

**Tourism**

The Committee noted an on-going need for adequate co-ordination between tourism and road agencies in promoting safe tourist travel throughout Victoria.

As well as the increased demand placed on rural roads by tourist traffic there is the issue of road crashes involving tourists. It was a viewpoint of many that crashes were often due to visitors being unfamiliar with road conditions.

One view from Surf Coast Shire was that city motorists, who spend most of their driving time on sealed roads, lacked experience to drive safely on unsealed roads.\textsuperscript{127}

Another was that many crashes were fatigue-related, with some tourists attempting excessively long journeys after being given misleading information on how much travel can safely be undertaken in a day trip. An example quoted was travelling from Melbourne, along the Great Ocean Road to the Twelve Apostles rock formation at Port Campbell and returning inland via the Princes Highway. Mr P. Younis, Group Manager Infrastructure and Development, Corangamite Shire Council said:

> Often there is no signage that directs them directly to Melbourne along the main road routes. They are given incorrect information initially from their point of departure, and they are generally tired.\textsuperscript{128}

There was also mention of occasions where foreign tourists drove vehicles out of parking areas and headed down the wrong side of the road.\textsuperscript{129}

In discussions with a number of municipalities there appeared to the Committee to be a perception that there is a lack of co-ordinated strategic
planning as many of the roads the tourists use are in poor condition. VicRoads told the Committee that they had a very close relationship with the Tourism Victoria organisation and that they had also conferred with that agency and regional tourism groups in the development of Victoria’s Rural Arterial Road Network Strategy.\textsuperscript{130}

Tourist traffic is increasing considerably on some roads. Surf Coast Shire said tourist visits along the Great Ocean Road are increasing at the rate of 20 per cent per annum and the Government is encouraging this with concerted advertising campaigns so presumably it will continue to grow.\textsuperscript{131}

VicRoads and municipalities need to continue to keep in mind the specific infrastructure and safety needs of visitors and tourists, otherwise it could become a very significant problem.

### Other Worthwhile Options

Some other infrastructure options presented to the Committee and considered to be worthwhile, included:

- Short lengths of overtaking lanes in windy and/or hilly terrain, known as ‘turn outs’, to enable slow moving vehicles to pull over to allow following traffic to overtake.\textsuperscript{132}

- Use of ground cover plants to reduce weeds and tall grasses at intersections.\textsuperscript{133}

- Heating of bridge decks to minimise the formation of ‘black ice’ as has been done on 11 of the 12 new bridges on the Calder Freeway bypass at Woodend.\textsuperscript{134}

- Concrete the road pavement at rail crossings to provide better and safer road surfaces and reduce maintenance costs.\textsuperscript{135}

VicRoads should investigate these suggestions further.

### Recommendations

20. That, if requested by the local municipality, VicRoads should reduce speed limits on Main Roads in areas of pedestrian activity in rural townships.

21. That VicRoads and municipalities undertake reviews of the speed management of arterial and local roads with poor alignments and road surfaces.
22. That school zones of 40 km/h in urban areas and 60km/h in rural 100 km/h speed zones be implemented at appropriate times at all schools.

23. That the ‘rail versus road’ issue for freight be reviewed by a Parliamentary Inquiry.

24. That VicRoads and the Victoria Police expand the enforcement of heavy vehicle speed, load limits and route restrictions to stop vehicles using inappropriate routes.

25. That VicRoads give a higher priority to widening narrow and heavily used category C roads.

26. That the current restriction of shoulder sealing on category B and C roads to locations ‘where warranted by accident records’ should be reviewed.

27. A proactive approach to shoulder sealing on isolated curves and at other identified hazardous locations on category B and C roads should commence.

28. That further investigation is undertaken of techniques for cost effectively sealing pavement edges to improve safety and assist in preserving pavements.

29. That VicRoads and municipalities develop and implement roadside management policies and strategies to improve road safety.

30. That projects be trialled by VicRoads to show the effectiveness of using the best roadside safety management practices.

31. That VicRoads initiate a specific curve treatment safety program as a matter of urgency.

32. That VicRoads and municipalities increase the use of guardrails and other forms of barriers as a means to providing a safer roadside for travellers.

33. That a detailed investigation be undertaken by VicRoads of safety barriers to separate traffic streams on single carriageway roads and implemented where appropriate.

34. That the Government financially assist rural municipalities to upgrade bridges on rural local roads.

35. That increased attention be given to improving bridge visibility and protection, including signing, lighting, guardrails and end posts.
36. That a ‘network’ approach to the treatment of country intersections, irrigation channels and other locations by signing and other inexpensive measures to raise hazard awareness be trialled to determine its effectiveness.

37. That VicRoads develop guidelines for the sealing of unsealed sections of road that approach intersections with sealed roads to improve safety and reduce maintenance costs and dust.

38. That VicRoads and municipalities review edgelining and other delineation practices, particularly for the more narrow roads in fog-prone areas.

39. That attention be given to better maintaining roads, in particular, measures that improve surface grip in wet weather conditions.

40. That VicRoads review rest area guidelines, improve the consistency of signing and develop a specific program of resting places to combat driver fatigue throughout the rural road network.

41. That VicRoads give consideration to including footpath provision and improvement in the list of treatments eligible for road safety funding.

42. That VicRoads and municipalities give more attention to reducing night-time rural crashes by improving lighting and road delineation.

Endnotes


3 VicRoads, Submission to the Inquiry, August 2000, pp. 31-34.

4 ibid., p. 35.

5 Royal Automobile Club of Victoria, Linking Victoria – RACV Members Perspectives, April 1995.

6 Royal Automobile Club of Victoria, Submission to the Inquiry, June 2000, p. 7.

7 ibid., p. 8.


9 ibid.

10 Minutes of Evidence, pp. 245-6; Shire of Buloke, Submission to the Inquiry, 6 December 2000, p. 2.


12 Travelling at 50 km/h instead of 60 km/h over 500 metres increases travel time by only 6 seconds.

13 Minutes of Evidence, p. 78.

15 State Coroner, Victoria, Submission to the Inquiry, 29 March 2000.
16 VicRoads, submission, p. 65.
20 ibid., p. 3.
21 Minutes of Evidence, pp. 315-6.
22 Victoria, Government Response, op. cit., pp. 4-5.
25 ibid.
26 Cr B. Rinaldi, Mayor, Central Goldfields Shire Council, Minutes of Evidence, p. 334.
27 Minutes of Evidence, pp. 233 & 326.
28 City of Latrobe, Submission to the Inquiry, 20 February 2001, p. 2; Minutes of Evidence, p. 426.
29 Department of Infrastructure Internet site: www.doi.vic.gov.au., Regional Fast Rail.
32 Minutes of Evidence, p. 241.
36 VicRoads, submission, p. 69.
37 ibid.
38 Royal Automobile Club of Victoria, submission, p. 14.
40 VicRoads, submission, Appendix 14, p. 117.
42 Kyneton Cycling Club, Submission to the Inquiry, November 2000.
43 Minutes of Evidence, p. 78.
44 Shire of Strathbogie, Submission to the Inquiry, 20 July 2000, p. 2.
46 Minutes of Evidence, p. 273.
47 Minutes of Evidence, p. 138.
48 Cr G. Matthews, Murrindindi Shire Council, Minutes of Evidence, p. 158.

50 VicRoads, submission, p. 63.

51 Royal Automobile Club of Victoria, submission, p. 14.

52 VicRoads, submission, p. 63.


54 Details of some of the safety and operational improvements proposed on the Geelong Road are given in the VicRoads submission, p. 90.

55 VicRoads, submission, p. 63.

56 ibid., p. 74.

57 Mr P. Squires, Manager, Engineering Services, Shire of Strathbogie, Minutes of Evidence, p.142.


59 Transport Accident Commission, Submission to the Inquiry, 28 June 2000, p. 5.


61 Personal correspondence from Mr B. Corben, Monash University Accident Research Centre.

62 Transport Accident Commission, submission, p. 5.

63 VicRoads, submission, pp. 76-79.


66 Mr S. Walsh, Director, Planning and Infrastructure, Gannawarra Shire Council, Minutes of Evidence, p. 235.

67 Minutes of Evidence, p. 89.

68 Minutes of Evidence, p. 98.

69 Royal Automobile Club of Victoria, submission, p. 15.


71 VicRoads, ibid., pp. 78-79.

72 VicRoads, ibid., p. 79.

73 VicRoads, ibid., p. 28.

74 VicRoads, ibid., p. 76.

75 VicRoads, ibid., p.124.

76 Mr J. Blackie, Manager, Technical Services, Bultoe Shire Council, Minutes of Evidence, p. 243; also Shire of Loddon, Submission to the Inquiry, 7 July 2000, p. 1.

77 Minutes of Evidence, p. 60.

78 City of Greater Shepparton, Submission to the Inquiry, July 2000, p. 5.

79 Minutes of Evidence, p. 123.

80 City of Greater Shepparton, submission, p. 5.


82 Minutes of Evidence, p. 138.

Minutes of Evidence, p. 136. ABS means Automatic Braking System, which prevents wheels locking under heavy braking and enables the driver to better maintain control of steering.

Minutes of Evidence, p. 419.

Royal Automobile Club of Victoria, submission, pp. 13-14.

Minutes of Evidence, p. 201.

Minutes of Evidence, p. 138.

Ms H. Bath, Submission to the Inquiry, 13 August 2001.

Kloeden et al, op cit., p. 63.


Royal Automobile Club of Victoria, submission, p. 16.

ibid., pp. 16-17.

City of Warmambool, Submission to the Inquiry, 18 July 2000, p. 2.

Minutes of Evidence, p. 40.

Roadsafe Western District, Submission to the Inquiry, 28 June 2000, p. 1.

Minutes of Evidence, p. 97.

Minutes of Evidence, p. 408.


Royal Automobile Club of Victoria, submission, p. 49. 19% of rural crashes.

VicRoads, submission, p. 75.

ibid.

Minutes of Evidence, p. 307.


VicRoads, submission, p. 70.


Cr B. Aitken, Minutes of Evidence p. 47.


City of Greater Shepparton, submission, p. 6.

The Australian Transport Council comprises the Federal and State Ministers for roads and transport-related matters. New Zealand is also represented, as is an observer from the Australian Local Government Association.


Minutes of Evidence, p. 105.

VicRoads, submission, pp. 60-61.

ibid., p. 61.
Chapter 6 – Options to Improve Infrastructure

117 VicRoads, submission, Table 15, p. 34.
118 VicRoads, submission, p. 69.
119 ibid., p. 70.
120 ibid.
121 VicRoads, correspondence, 20 August 2001.
123 Swan Hill Rural City Council, Submission to the Inquiry, 27 June 2000, p.1; City of Wodonga, Submission to the Inquiry, 21 June 2000, pp. 2-3.
125 VicRoads, submission, p. 85.
126 Goulburn Valley Community Road Safety Council, Submission to the Inquiry, 2 August 2000, p. 2.
127 Surf Coast Shire, Submission to the Inquiry, 19 July 2000, p. 4.
128 Minutes of Evidence, p. 29.
129 Mr D. Owen, Manager Assets and Forward Planning, Moyne Shire Council, Minutes of Evidence, p. 23.
131 Surf Coast Shire, submission, p. 4.
132 There are some examples on the Great Ocean Road.
133 Goulburn Valley Community Road Safety Council, submission, p. 1.
135 Goulburn Valley Community Road Safety Council, submission, p. 2.
Other Initiatives

In addition to the physical road infrastructure options described in the previous chapter there are a number of ‘off-road’ initiatives which also should be considered.

A Specific Focus on Reducing Rural Road Trauma

An Organisation for Economic Co-operation and Development (OECD) Expert Group considers that rural road safety is a sleeping giant.1 Their report Safety Strategies for Rural Roads states that:

Though there are some emerging rural policies in road safety programs in some countries, for the vast majority the rural road safety policies are buried among urban, motorway and national safety goals and programs.2

The same applies in Australia where neither The National Road Safety Strategy 2000-2010 nor Victoria’s Road Safety Strategy 2002-2007 has a specific focus on rural road safety.3 This is despite the issue being raised nationally in the Towards an Action Plan for Rural Road Safety review prepared by the then Federal Office of Road Safety in 1995.4

The Committee considers that there is an adequate management focus by VicRoads on the safety of rural State Highways and Freeways, but the situation is not as satisfactory for the Main Road and local road parts of the rural network usually managed by municipalities. This was amply demonstrated by the much higher casualty crash rates on the latter roads – particularly the open country local roads – presented in Chapter 4.

Recommendation

43. That there be a specific concentrated focus on reducing road trauma on rural Main Roads and local roads.
Under the Saferoads Initiative municipalities are being encouraged to develop their own local government road safety strategies. The Royal Automobile Club of Victoria (RACV) believes that developing a road safety strategy and recognising it in the Corporate Plan is an important milestone in local government renewing their commitment to road safety.

A Municipal Association of Victoria (MAV) survey reveals that the majority of rural councils currently conduct some form of road safety program:

The most common road safety initiatives currently being undertaken by rural councils are road safety audits, followed by road safety strategies and road hierarchy programs.

Some municipalities have made good progress. The Latrobe City Road Safety Strategic Plan is an excellent example. However the Committee observed during the hearings a low level of knowledge and use of road safety techniques. Mr G. Smith, Director, Assets and Infrastructure, Pyrenees Shire Council, acknowledged:

We need to think of safety as much as we do of infrastructure condition. It has been a poor cousin up until now.

In response to a request from the Committee, VicRoads stated that as at August 2001:

Fifteen councils have completed development of their strategies. Further actions are underway to provide improved crash data, training, road safety implementation packages and marketing support.

The Committee strongly supports the development and implementation of municipal road safety strategic plans to encourage local commitment to road safety actions and does not think this is happening fast enough.

**Recommendation**

44. That all rural municipalities develop and implement road safety strategic plans.
Local Government Road Safety Officers

The Committee was impressed by the use in New South Wales of Road Safety Officers employed by municipalities to provide local road safety education and publicity. The Roads and Traffic Authority and the municipality equally share the cost.

While mindful of the Community Road Safety Council scheme in Victoria, the Committee considered that the NSW system was more integrated and co-ordinated and makes the municipalities more accountable. The Committee asked VicRoads to comment.

VicRoads replied that they had investigated a number of different models for the Saferoads Local Government Road Safety initiative including the NSW Local Government program. The Saferoads partners (MAV, the Local Government Professionals group LGPro, Victoria Police, RACV, Transport Accident Commission (TAC) and VicRoads) decided on a different model than NSW because:

- Victoria had the network of Community Road Safety Councils (CRSCs) which were providing many locally based road safety programs

- VicRoads had a regional network of Road Safety Officers (RSOs)/Co-ordinators that provided a broad range of support to CRSCs, local governments and schools

- The investigation of NSW’s program indicated that much of the efforts from the RSOs went into developing local road safety materials. The Saferoads model is to centrally develop a number of road safety implementation packages together with local government so that they can be used by all municipalities and CRSCs.

- The Saferoads initiative is targeting key areas of local government such as planners, risk managers, engineers, human services and public relation officers. The aim of this approach is to transfer knowledge with a view to long term adoption of road safety practices/programs by local government.\(^{11}\)

The Committee believes having a dedicated Road Safety Officer is necessary to ensure that municipal road safety programs are implemented. VicRoads currently provides only limited funding to Community Road Safety Councils. The Committee considers there should be a substantial funding contribution by VicRoads for Road Safety Officer positions. For municipalities with smaller populations the cost to a municipality of a Road Safety Officer might be shared with neighbouring municipalities. This would assist in allowing ‘regional’ ideas and programs to be introduced.
Recommendation

45. That road safety officer positions be created at a local government level to promote road safety both within the council and in the wider community, with substantial financial assistance from VicRoads.

Safety Audits of Proposed Projects

The RACV state that:

Road safety audit is a formal examination of an existing or future road or traffic project, or any project that interacts with road users, in which an independent, qualified examiner looks at the project’s crash potential and safety performance.12

There are five stages in a project when a road safety audit can be carried out: feasibility, draft design, detailed design, pre-opening, and existing road.

The earlier the audit is conducted the greater the potential safety gains relative to the cost of the corrective action. Formal audits greatly reduce the risk of subsequent safety problems that are expensive to fix. The benefit in terms of avoiding crashes and expensive remedial measures has been found to far exceed the cost of audits.13 The cost of an audit is low:

... something in the order of 0.2% to 0.5% of the total project cost.14

A road safety audit is required by VicRoads for all projects submitted for the blackspot programs and for a range of other programs. Table 7.1 provides details of the latest road safety audit requirements.

Table 7.1 Project Audit Requirements for Statewide Blackspot Program

<table>
<thead>
<tr>
<th>Project estimated cost</th>
<th>Road safety audit requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; $2 million</td>
<td>Audit all stages</td>
</tr>
<tr>
<td>$150,000 to $2 million</td>
<td>Audit at least two stages</td>
</tr>
<tr>
<td>&lt; $150,000</td>
<td>Audit at least one design stage, except for projects of a minor nature such as signage, linemarking and hazard removal</td>
</tr>
<tr>
<td>Shoulder sealing projects</td>
<td>Audit pre-opening stage for at least 20 per cent of such projects implemented in any year</td>
</tr>
</tbody>
</table>

Source: VicRoads submission, Table 19, p. 62.
In conjunction with the Local Government Professionals (LGPro) group, VicRoads hosts road safety audit training workshops for professionals working in this area, including VicRoads staff, local government staff and consultants.

The process and practice of road safety audit is well advanced in Australia and many overseas countries now look to Australia for world best practice.

From an initial focus on safety audits on existing roads, audits of the planning and design phases are now becoming increasingly important, with high returns on investment.\(^\text{15}\)

Safety audits are conducted in accordance with the Austroads Road Safety Audit Guidelines.\(^\text{16}\) It is understood that a new Austroads Roads Safety Audit publication is due soon.\(^\text{17}\) In a change in terminology the examination of the safety condition of existing roads will now be termed ‘safety reviews’.

The Committee heard concerns about the extent of road safety audits done by municipalities. For example, the RACV stated that:

In 1998, around 60% of Victorian municipalities did not use road safety audits and only around 40% undertook at least one audit per project (Daly et al, 1998). This was despite a wide acceptance of the potential benefits and low costs of audits amongst council decision-makers. Although there is anecdotal evidence to suggest the rate of use is slowly increasing, there remains reluctance in local government to commit resources to this proactive safety tool.\(^\text{18}\)

In a paper presented at the 2001 New South Wales Local Government Road Safety Conference, Mr P. Jordan of VicRoads stated that the rate of adoption of road safety audit within local government in Australia has been slow:

This has led to speculation about the level of commitment to this task by senior management of these organisations in Australia.\(^\text{19}\)

He went on to mention that there could be merit in considering legislating the audits to become a compulsory part of the process:

While large projects (generally administered by State agencies) are usually audited, generally at each stage, other small projects – such as traffic management improvements – are tending to be left unaudited.

This adds to the concerns about commitment by local government that is responsible for fewer of the large projects and more of the small ones.
The question of whether or not the road safety audit process will eventually have to be legislated for, or be made an essential element for the receipt of government funding before it becomes an integral part of the road design process for all projects, has been asked. The Borough of Queenscliffe supported the need for possible legislation, both in their submission and as stated by engineer, Mr P. Austin at a public hearing:

... if such an audit was compulsory that would really lift the culture of road safety into design work.

The Committee agrees with the RACV who:

... believes that more encouragement for local government to commit to road safety audits is necessary. Additional requirements for the use of road safety audits on projects funded by state grants may be one option worthy of further consideration.

Recommendation

46. That road safety audits be mandatory on any road project having a State Government funding contribution.

Safety Reviews of Existing Rural Roads

Until recently the term ‘road safety audits’ applied to audits during the various phases of a new road project and to those of existing roads. There has now been a change in terminology with ‘safety audits’ referring to new projects and ‘safety reviews’ applying to existing roads.

The Roadsafe Western District submission commented on the gradual deterioration of many smaller roads and considered it would be beneficial to conduct a comprehensive audit of country roads.

The Committee agrees with the recent Queensland Parliament Travelsafe Committee observation that:

... rural councils may be reluctant to spend limited funds on audits to document safety problems with their roads when they haven’t the funds needed to repair the problems they already know about.

The Queensland Committee is currently seeking public comment on whether investment in large-scale auditing of low-volume road networks is
both desirable and viable for rural local governments, and what is an appropriate level of audit activity.\textsuperscript{27}

Following a recent High Court ruling on ‘Duty of Care’, road agencies and municipalities will need to give careful consideration to the extent to which they undertake safety reviews of the existing road network.\textsuperscript{28}

At a minimum there would seem to be value in at least analysing current crash data for locations or areas with a high risk, and having documented plans to assess those locations in further detail and undertake a program of treatments.

The Committee agrees with a conclusion by Victorian road safety experts, Mr P. Daly, et al, that:

Local government must confront the issues that are preventing greater implementation of road safety audit and proactively determine how they can meet the challenges.\textsuperscript{29}

**Recommendation**

47. That safety reviews of existing roads be undertaken on a regular basis to improve road safety and satisfy potential legal liability requirements.

**Ongoing Review of Arterial Road Hierarchies**

In the rapidly changing rural economy in Victoria, arterial road hierarchy reviews are an ongoing task. A review of arterial road guidelines or their interpretation in the light of modern-day road use could see some current local roads being upgraded to arterial status or the reverse. Similarly, within the arterial categories of M, A, B and C, some arterial roads may need to be re-categorised. The ongoing review of arterial road hierarchies is important for the operational management of the rural road network.

**More Consistent Management of Local Roads**

A particular feature of some local roads is the lack of consistency between municipalities in terms of road characteristics and management. This has road safety implications, as consistency and predictability are key cornerstones of a safer road system.

The rural arterial network is managed by VicRoads, but the rural local road network is managed by about 40 municipalities. The road user travelling across municipal boundaries on local roads can sometimes be faced with quite different road practices. The physical measures to reduce traffic speeds and heavy vehicle numbers in residential streets in towns are an
example where a wide variety of sometimes confusing approaches has been used.

The Committee supports local initiatives to improve road safety and the infrastructure provided for travellers and residents. However municipalities should always bear in mind the importance of presenting a consistent, clearly understood road environment, free of hazardous surprises. This applies especially to road signs, pavement markings, roadside furniture and other visual indications of potential road hazards.

**Recommendation**

48. That, to provide a more consistent and hence safer local road network, there should be a more uniform approach to the management of local roads across municipalities.

**Municipal Local Road Hierarchy Plans**

One example of the need for a more consistent approach to local road management is local road hierarchy plans. A number of rural municipalities have undertaken, or are undertaking, road hierarchy studies, but there was no consistency in the categories used. Examples include:

- Inter-regional roads, principal local roads, access roads.\(^{30}\)
- Eleven categories of local road, including link, collector, access and minor roads.\(^{31}\)

Deciding what functional category a particular road is in is the first step in determining the appropriate road management actions, such as funding responsibility, maintenance standards and the design criteria to be used for any physical upgrading of the road and its associated bridges.

There is a long history of functional classification of arterial roads by state road agencies using national guidelines. There are currently no Victorian or national guidelines for local road hierarchies. However, recently ARRB Transport Research has done some work for the Department of Natural Resources and Environment, the agency responsible for roads and tracks in Victorian forests. The published report provides guidance on road classifications, geometric designs and maintenance standards for low volume roads.\(^{32}\) The methodology could be extended to encompass rural local roads managed by municipalities.

The Netherlands road safety strategy *Sustainable Safety* puts considerable emphasis on the functional use of the road system. This includes the identification of different road functions and formulated design features to serve those functions.\(^{33}\) Local road hierarchies are therefore not just about
managing infrastructure assets effectively, but are also important in systematically improving road safety.

The Committee considers there is a need for professional guidance in the consistent use of rural local road hierarchy categories. It would be desirable to at least obtain Victoria-wide consistency, though preferable to have a nationally consistent approach to this task. VicRoads, the Department of Infrastructure and LGPro have a role in providing this guidance.

**Recommendation**

49. That municipalities establish rural local road hierarchy plans using common categories.

**Land Use Planning**

According to VicRoads, road safety should be a prime consideration in land use planning. The Committee supports this view and hence the VicRoads recommendation that:

Increased consideration be given to road safety issues in the land use development process through inclusion of specific requirements in the proposed new Residential Code for Victoria, currently under development by the Department of Infrastructure (Planning).

The Committee noted that a draft Road Safety and Land Use Guide entitled *Safer Urban Environments* has been prepared, setting out the key road safety issues and providing checklists to be used at the various stages of the planning process, namely:

- Strategic/metropolitan plan
- Outline development/local structure plan
- Subdivision plan
- Arterial road/corridor plan
- Commercial/infill development plan.

The Guidelines provide a quick and easy reference resource for developers and planning consultants who prepare development proposals and for local and State Government officials who assess and approve those proposals.
**Recommendation**

50. That increased consideration be given to road safety issues in the land use development process through inclusion of specific requirements in relevant planning codes.

---

**Recommendations**

43. That there be a specific concentrated focus on reducing road trauma on rural Main Roads and local roads.

44. That all rural municipalities develop and implement road safety strategic plans.

45. That road safety officer positions be created at a local government level to promote road safety both within the council and in the wider community, with substantial financial assistance from VicRoads.

46. That road safety audits be mandatory on any road project having a State Government funding contribution.

47. That safety reviews of existing roads be undertaken on a regular basis to improve road safety and satisfy potential legal liability requirements.

48. That, to provide a more consistent and hence safer local road network, there should be a more uniform approach to the management of local roads across municipalities.

49. That municipalities establish rural local road hierarchy plans using common categories.

50. That increased consideration be given to road safety issues in the land use development process through inclusion of specific requirements in relevant planning codes.

---

**Endnotes**


2 ibid., p. 30.

4 In April 1995 the National Road Trauma Advisory Council conducted a Focus for the Future seminar at Wodonga. The paper and outcome were presented in a report Towards an Action Plan for Rural Road Safety published by the Federal Office of Road Safety. Subsequently Australia’s Rural Road Safety Action Plan was published by the National Road Safety Strategy Implementation Task Force in June 1996.

5 VicRoads, Submission to the Inquiry, August 2000, pp. 51-52.


7 Municipal Association of Victoria, Submission to the Inquiry, 30 June 2000, p. 7.

8 City of Latrobe, correspondence, 3 July 2001.

9 Minutes of Evidence, p. 201.


11 ibid.

12 Royal Automobile Club of Victoria, submission, p. 19.

13 VicRoads, submission, p. 61.


15 VicRoads, submission, p. 62.


18 Royal Automobile Club of Victoria, submission, p. 19.

19 P. Jordan, op. cit., p. 50.

20 ibid.

21 Borough of Queenscliffe, Submission to the Inquiry, 19 July 2000, p. 2.

22 Minutes of Evidence, p. 65.

23 Royal Automobile Club of Victoria, submission, p. 19.

24 Safety reviews have sometimes also been called network audits.

25 Roadsafe Western District, Submission to the Inquiry, 28 June 2000, p. 3.


27 ibid., p. 7.

28 High Court of Australia, Judgement on Brodie and Ghantous, 30 June 2001.


30 Shire of Mount Alexander, Submission to the Inquiry, April 2000, p. 3.

31 Shire of Yarriambiack, Submission to the Inquiry, 30 June 2000, Road Hierarchy attachment, p. 4.


33 VicRoads, submission, pp. 40-41.

34 ibid., p. 62.

35 ibid., p. 93. Recommendation 1.5.

### Appendix A

#### List of Submissions

#### State Government

<table>
<thead>
<tr>
<th>Agency</th>
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<th>Position</th>
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<tr>
<td>State Coroner's Office</td>
<td>Mr Graeme Johnstone</td>
<td>State Coroner Victoria</td>
</tr>
<tr>
<td>Transport Accident Commission</td>
<td>Mr David Healy</td>
<td>Manager Road Safety</td>
</tr>
<tr>
<td>Department of Treasury and Finance</td>
<td>Mr Grant Hehir</td>
<td>Deputy Secretary Budget and Financial Management</td>
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<tr>
<td>VicRoads</td>
<td>Mr Colin Jordan</td>
<td>Chief Executive</td>
</tr>
<tr>
<td>Victoria Police</td>
<td>Mr Robert T. Penny</td>
<td>Chief Inspector Southern Grampians/ Glenelg District</td>
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#### Local Government

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<th>Municipality</th>
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<tr>
<td>Alpine Shire</td>
<td>Mr Ian Nicholls</td>
<td>Manager Environment Services</td>
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<td>Ararat Rural City</td>
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<tr>
<td>City of Ballarat</td>
<td>Mr John McLean</td>
<td>Chief Executive Officer</td>
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<td>Bass Coast Shire</td>
<td>Mr Martin Duke</td>
<td>Infrastructure Manager</td>
</tr>
<tr>
<td>Baw Baw Shire</td>
<td>Mr Wally Tabensky</td>
<td>Director Operations</td>
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<td>Buloke Shire</td>
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<td>Shire of Campaspe</td>
<td>Mr Charles Knight</td>
<td>Director Technical and Development Services</td>
</tr>
<tr>
<td>Central Goldfields Shire</td>
<td>Mr Ken Carpenter</td>
<td>Director Technical and Environmental Services</td>
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<td>Colac Otway Shire</td>
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<td>Mr Gordon Charles</td>
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<td>Mr Bruce Hollioake</td>
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<td>Horsham Rural City</td>
<td>Mr David J. Eltringham</td>
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<td>Mr Denis Gallagher</td>
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<td>Mr Larry Naismith</td>
<td>Group Manager Engineering Services</td>
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<td>Ms Penny Holloway</td>
<td>Chief Executive Officer</td>
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<td>Mr Craig W. Niemann</td>
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<td>Mildura Rural City</td>
<td>Mr Paul Dixon</td>
<td>Acting Director Planning and Asset Development</td>
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<td>Mitchell Shire</td>
<td>Mr Mark Webster</td>
<td>General Manager Engineering and Environment</td>
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<td>Moira Shire</td>
<td>Mr Michael Byrne</td>
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<td>Mr D. D. Hogan</td>
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<td>Northern Grampians Shire</td>
<td>Mr Rod Cooper</td>
<td>Infrastructure Services Manager</td>
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<td>Pyrenees Shire</td>
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<td>Borough of Queenscliffe</td>
<td>Mr Gary Price</td>
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<td>Mr Graham N. Mostyn</td>
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<td>South Gippsland Shire</td>
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<td>Mr Phil Squires</td>
<td>Manager Engineering Services</td>
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<td>Swan Hill Rural City</td>
<td>Mr Phillip McDonald</td>
<td>Technical Support Manager</td>
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<td>Mr Neil Breeden</td>
<td>Infrastructure Planner</td>
</tr>
<tr>
<td></td>
<td>Mr Martin Hart</td>
<td>Acting Director Assets and Operations</td>
</tr>
<tr>
<td>West Wimmera Shire</td>
<td>Mr Kevin Hannagan</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>City of Whittlesea</td>
<td>Mr David Turnbull</td>
<td>Acting Chief Executive Officer</td>
</tr>
<tr>
<td>City of Wodonga</td>
<td>Mr Ray Henderson</td>
<td>Manager Infrastructure Services</td>
</tr>
<tr>
<td>Shire of Yarra Ranges</td>
<td>Mr John Ross</td>
<td>Director Physical Services</td>
</tr>
<tr>
<td>Yarriambiack Shire</td>
<td>Mr Bruce Andrews</td>
<td>Service Director</td>
</tr>
<tr>
<td>Organisation</td>
<td>Name</td>
<td>Position</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>AMA Victoria</td>
<td>Dr Paul Woodhouse</td>
<td>Director, Policy Development</td>
</tr>
<tr>
<td>Goulburn Valley Community Road Safety Council</td>
<td>Mr Graeme Williams</td>
<td>Chairperson</td>
</tr>
<tr>
<td></td>
<td>Mr Peter McPhee</td>
<td>Road Safety Officer</td>
</tr>
<tr>
<td></td>
<td>Mr John Stuart</td>
<td>Member</td>
</tr>
<tr>
<td>Goulburn Valley Road Transport Group Inc.</td>
<td>Mr Peter McPhee</td>
<td>Co-ordinator</td>
</tr>
<tr>
<td></td>
<td>Mr John Stuart</td>
<td>Finance Chairperson</td>
</tr>
<tr>
<td>Hawk’s Nest Road Ratepayers’ Association</td>
<td>Mrs Karen McKie</td>
<td>President</td>
</tr>
<tr>
<td>Kyneton Cycling Club</td>
<td>Mr Phillip Don</td>
<td>President</td>
</tr>
<tr>
<td></td>
<td>Mr Andy Moore</td>
<td>Secretary</td>
</tr>
<tr>
<td>Municipal Association of Victoria</td>
<td>Mr Rob Spence</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>Roadsafe Colac and Roadsafe Barwon</td>
<td>Mr Henk Harberts</td>
<td>Chair</td>
</tr>
<tr>
<td>Roadsafe Gippsland</td>
<td>Mr Christopher Davis</td>
<td>Chairman</td>
</tr>
<tr>
<td>Roadsafe Mildura</td>
<td>Mr Chris Wicks</td>
<td>Chairperson</td>
</tr>
<tr>
<td>Roadsafe Western District</td>
<td>Ms Di Campbell</td>
<td>Road Safety Co-coordinator</td>
</tr>
<tr>
<td>RoadWise East Gippsland Community Road Safety Council</td>
<td>Mr E.C.J. Johnson</td>
<td>Managing Director &amp; Chief Executive Officer</td>
</tr>
<tr>
<td>Royal Automobile Club of Victoria (RACV) Ltd</td>
<td>Mr Peter Stonehouse</td>
<td>Traffic Safety Network Leader</td>
</tr>
</tbody>
</table>
### Organisation

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport Workers Union of Australia Victorian/Tasmanian Branch</td>
<td>Mr Bill Noonan</td>
<td>Branch Secretary</td>
</tr>
</tbody>
</table>

### Individuals

<table>
<thead>
<tr>
<th>Name</th>
<th>Town /Suburb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms H. Bath</td>
<td>Vite Vite North</td>
</tr>
<tr>
<td>Mr J. Bertoni and Miss T. Roberts</td>
<td>Benloch</td>
</tr>
<tr>
<td>J. Darnell</td>
<td>Horsham</td>
</tr>
<tr>
<td>Mr R. McRae</td>
<td>Wallup via Horsham</td>
</tr>
<tr>
<td>Cr M. Riley</td>
<td>Rushworth</td>
</tr>
</tbody>
</table>
## Appendix B

### List of Witnesses

#### Warrnambool, 18 July 2000

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Position</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr L. Merritt</td>
<td>Chief Executive</td>
<td>Warrnambool City Council</td>
</tr>
<tr>
<td>Mr P. Reeve</td>
<td>Director Physical Services</td>
<td></td>
</tr>
<tr>
<td>Mr J. Keller</td>
<td>Infrastructure Manager</td>
<td></td>
</tr>
<tr>
<td>Mr G. Kohlman</td>
<td>Chief Executive Officer</td>
<td>Glenelg Shire Council</td>
</tr>
<tr>
<td>Cr B. Couch</td>
<td>Mayor</td>
<td></td>
</tr>
<tr>
<td>Mr D. Owen</td>
<td>Manager Assets and Forward Planning</td>
<td>Moyne Shire Council</td>
</tr>
<tr>
<td>Cr G. Coad</td>
<td>Mayor</td>
<td></td>
</tr>
<tr>
<td>Mr P. Johnston</td>
<td>Chief Executive Officer</td>
<td></td>
</tr>
<tr>
<td>Mr P. Younis</td>
<td>Group Manager Infrastructure and Development</td>
<td>Corangamite Shire Council</td>
</tr>
<tr>
<td>Sgt G. Riddle</td>
<td>Warrnambool Division</td>
<td>Victoria Police</td>
</tr>
<tr>
<td>Cr H. Templeton</td>
<td>Mayor</td>
<td></td>
</tr>
<tr>
<td>Mr G. Mostyn</td>
<td>Chief Executive Officer</td>
<td></td>
</tr>
<tr>
<td>Cr M. Leeming</td>
<td></td>
<td>Southern Grampians Shire Council</td>
</tr>
<tr>
<td>Cr M. Rentsch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chief Insp. R. Penny</td>
<td>Southern Grampians-Glenelg Division</td>
<td>Victoria Police</td>
</tr>
</tbody>
</table>

#### Geelong, 19 July 2000

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Position</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr J. McCartney</td>
<td>Manager Engineering Services</td>
<td>Greater Geelong City Council</td>
</tr>
<tr>
<td>Mr J. Henshelwood</td>
<td>General Manager Infrastructure Services</td>
<td></td>
</tr>
<tr>
<td>Mr K. Battye</td>
<td>Co-ordinator Asset Information</td>
<td></td>
</tr>
<tr>
<td>Cr B. Aitken</td>
<td></td>
<td>Surf Coast Shire</td>
</tr>
<tr>
<td>Mr J. Wilkin</td>
<td>Manager Technical Services</td>
<td></td>
</tr>
</tbody>
</table>
Rural Road Safety & Infrastructure

Wodonga, 1 August 2000

Cr P. Graham
Mr A. Gallagher
Mr C. Walker
Mr D. Parker
Mr I. Nicholls
Cr K. Klemm
Cr D. Joyce
Mr M. Styles
Mr D. Timms

Wodonga, 2 August 2000

Shepparton, 2 August 2000

Cr C. Hazelman
Mr R. Smith

Mr R. Kop
List of Witnesses

Cr Y. Davies  
Cr J. Stuart  
Mr M. Byrne  
General Manager Engineering and Development Services  
Moira Shire Council

Cr M. Williams  
Mr P. Squires  
Mr P. McPhee  
Manager Engineering Services  
Road Safety Officer  
Shire of Strathbogie

Cr K. Whan  
Cr G. Oliver  
Mr R. Dobrzynski  
Mr K. Carpenter  
Mayor  
Chief Executive Officer  
Director Technical and Environmental Services  
Delatite Shire Council

Cr G. Matthews  
Mr D. Hogan  
Mr P. Dudley  
Ms S. McAulay  
Chief Executive Officer  
Director of Infrastructure and Regulatory Services  
Community Project Officer  
Murrindindi Shire Council

Sgt T. Connell  
Yea Police Station  
Victoria Police

Ballarat, 8 November 2000

Mr P. Holloway  
Mr J. McLean  
Manager Infrastructure Planning and Management Unit  
Chief Executive Officer  
Ballarat City Council

Chief Insp. R. Barby  
Ballarat District  
Victoria Police

Mr A. Park  
Mr I. Stewart  
Infrastructure Services  
Manager of Works  
Moorabool Shire Council

Cr W. McArthur  
Mr B. Hollioake  
Works Manager  
Golden Plains Shire Council

Mr G. Smith  
Mr T. Smith  
Director Assets and Infrastructure  
Design and Assets Manager  
Pyrenees Shire Council
Swan Hill, 6 December 2000

Mr P. McDonald  
Cr L. Bonney  
Cr A. Heslop  
Sgt R. Barbary  
Mr P. Dixon  
Mr W. Eddy  
Mr G. Healy  
Sgt H. Downes  
Mr C. Davis  
Mr S. Walsh  
Mr J. Blackie  
Mr P. Overington  
Cr E. Lee  
Cr M. Donaldson

Technical Support Manager  
Mayor  
Swan Hill Rural City Council  
Swan Hill and Gannawarra Traffic Management Unit  
Victoria Police  
Manager Asset Development  
Assets Engineer  
Director of Planning and Asset Development  
Mildura Rural City Council  
Mildura Traffic Operations Group  
Victoria Police  
Chairman  
Mildura Community Road Safety Council  
Director Planning and Infrastructure  
Gannawarra Shire Council  
Manager Technical Services  
Chief Executive Officer  
Mayor  
Chairman Road Hierarchy Committee  
Buloke Shire Council

Horsham, 7 December 2000

Cr B. Gross  
Mr D. Eltringham  
Mr R. Walkenhorst  
A/g Sr Sgt W. Caddy

Mayor  
General Manager Technical Services  
Horsham Rural City Council  
Wimmera Community Road Safety Council  
Horsham Traffic Management Unit,  
Victoria Police
List of Witnesses

Mr D. Phillips  Engineering Services Manager
(Member of Central Highlands CRSC)
Ararat Rural City Council

Mr R. Cooper  Manager Infrastructure Services
Cr K. Douglas  Mayor
Northern Grampians Shire Council

Mr B. Andrews  Service Director
Cr D. Cook  Cr J. Wise
Yarriambiack Shire Council

Mr A. Lamb  Assets Engineering
Cr L. Guthridge  West Wimmera Shire Council

Bendigo, 13 February 2001

Mr N. Jacobs  Chief Executive Officer
Shire of Hindmarsh

Mr M. Webster  General Manager Engineering Environment
Mitchell Shire Council

Cr B. Rinaldi  Mayor
Mr R. Potter  Manager Engineering and Operations
Central Goldfields Shire Council

Mr C. Niemann  Chief Executive Officer
Mr J. McLinden  Director of Operations
Shire of Loddon

Sgt F. Peiffer  Wedderburn Police Station
Victoria Police

Mr I. Gilbert  Chief Executive Officer
Mount Alexander Shire Council

Bendigo, 14 February 2001

Cr L. Whelan  Mayor
Mr A. Paul  Chief Executive Officer
Mr D. Hannah  Manager Engineering
Mr G. Maguire  Manager Capital Works
City of Greater Bendigo

Mr R. Conway  Director of Infrastructure and Development
Hepburn Shire Council
Sgt P. Langdon
Daylesford Police Station
Victoria Police

Sale, 20 February 2001

Mr G. Hatt
Recreation Services Manager
Shire of East Gippsland

Cr R. Schrader

Mr L. McArthur
Team Leader, Program Delivery, VicRoads
Shire of Wellington

Mr F. Norden
Shire Services Co-ordinator

Mr M. Hart
Acting Director Assets/Operations

Mr N. Breeden
Acting Manager Infrastructure

Cr W. Henebery

Insp. G. Dorian
Victoria Police

Cr G. McRae
Manager Engineering
Shire of South Gippsland

Mr R. Ayton
Shire of South Gippsland

Sr Const. G. Slink
Korumburra Traffic Management Unit, Victoria Police

Mr W. Tabensky
Director Infrastructure
Shire of Baw Baw

Sr Const. G. Slink

Mr L. Naismith
Group Manager Engineering Services
City of Latrobe

Mr M. Duke
Infrastructure Manager
Shire of Bass Coast

Mr J. Matthews
Road Safety Officer
VicRoads

Gigdandra, 28 March 2001

Mr J. Johnson
Roads Engineer
Shire of Gilgandra

Mr M. Humphries
Services Engineer
Shire of Gilgandra
Dubbo, 28 March 2001

Cr A. Smith  
Mr S. McLeod  
Mr J. Smith  

City of Dubbo

Sydney, 29 March 2001

Ms K. Long  
Mr D. Valentine  

City of Dubbo

Mr M. Bushby  
Mr M. Nichols  
Mr J. McGuire  
Mr J. Wall  
Dr N. Fletcher  

Roads and Traffic Authority NSW

Mr I. Faulks  

NSW Parliament Joint Standing Committee on Road Safety (Staysafe)

Albury, 30 March 2001

Cr M. Read  
Mr B. McLennan  
Mr G. Sherlock  
Mr J. Ellwood  
Mr P. Meredith  

City of Albury
Corowa, 30 March 2001

Cr W. Gorman  
Mr B. Corcoran  
Mr G. Osborne  
Deputy Mayor  
General Manager  
Senior Engineer  
Shire of Corowa

Canberra, 23 April 2001

Mr N. Potter  
Ms T. Meakins  
Mr J. Benac  
Mr G. Watts  
Assistant Secretary, Roads Investment, Land Division  
Assistant Secretary (Designate), Roads Investment, Land Division  
Executive Officer, Roads Investment, Land Division  
Director of Economic Policy, National Office of Local Government  
Commonwealth Department of Transport and Regional Services

Mr I. Chalmers  
Mr P. Rufford  
Chief Executive  
National Transport Adviser  
Australian Local Government Association

Mr K. Rheese  
Mr C. Brooks  
Mr J. Goldsworthy  
Mr J. Henchy  
Mr T. Roberts  
Team Leader, Black Spot and Vehicle Recall Section  
Acting Branch Head, Safety Programs and Support Branch  
Acting Team Leader, Research Management and Strategy Section  
Team Leader, Safety Statistics and Analysis  
Research Officer, Safety Statistics and Analysis  
Australian Transport Safety Bureau

Melbourne, 14 May 2001

Mr C. Jordan  
Mr E. Howard  
Mr K. Hadingham  
Mr N. Szwed  
Chief Executive  
General Manager Road Safety  
Manager Road Programs  
Manager Road Engineering Safety  
VicRoads
Melbourne, 28 May 2001

Mr J. Lester
Mr C. Morrison
Chairperson
Executive Officer
Victoria Grants Commission

Melbourne, 25 June 2001

Mr R. Spence
Ms K. Yu
Chief Executive Officer
Policy Adviser
Municipal Association of Victoria
Appendix C

The Victorian Government Rural Arterial Road Network Strategy

The seven elements of strategy are:

1. Development of a (functional) road network that is easy for the motorist to use by providing a simple route numbering and marking scheme for country arterial roads.

2. Improvement of access between regions by providing continuous and sealed two-lane roads suitable for freight traffic and tourist traffic.

3. Provision of additional capacity on major roads by duplicating and progressively upgrading to freeway standard the highways with heavy traffic volumes that link Melbourne to major provincial centres. Other major roads are to be upgraded to reflect the amount and type of traffic they carry.

4. Making rural travel safer by:
   - Using road safety audits to identify hazardous features of the road network; continuing to improve accident blackspot sites and to offer greater protection from roadside hazards;
   - Ensuring that road warning signs are clear and well maintained;
   - Applying uniform standards to arterial roads on matters such as sealed shoulder edges, centreline marking and reflective markers; and
   - Upgrading the standard of arterial roads (road duplications, overtaking lanes).

5. Reducing freight costs by upgrading weak links in the arterial road network to improve access for freight vehicles, and providing easier access to key terminals for high-capacity vehicles to improve inter-modal efficiency.

6. Improving road facilities for tourists through improved route information, predictable road conditions and better signs.

7. Protecting and enhancing the road environment by integrating environmental management into all VicRoads work and protecting sensitive areas.

Appendix D

Relative Minimum Performance Standards for Arterial Roads

<table>
<thead>
<tr>
<th>Driver Expectation</th>
<th>Standard</th>
<th>M Roads</th>
<th>A Roads</th>
<th>B Roads</th>
<th>C Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Road width and road edges</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lane width</td>
<td>Four 3.5 metre sealed lanes (divided road)</td>
<td>Two 3.5 metre sealed lanes (note 1)</td>
<td>Two 3.3 metre sealed lanes (note 2)</td>
<td>Generally maintain existing widths and standards unless upgrading warranted by accident records</td>
<td></td>
</tr>
<tr>
<td>Shoulder width</td>
<td>3 metres left side; 1 metre right side</td>
<td>2.5 metres (note 1)</td>
<td>2 metres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoulder seals</td>
<td>Yes; both sides</td>
<td>Yes; 1.5 metres (note 3)</td>
<td>Where warranted by accident records</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridge widths</td>
<td>Generally the width between barriers shall be the full traffic lane and shoulder width on M roads where bridges are less than 75 metres long, on AS roads where bridges are less than 30 metres long and on B roads where bridges are less than 10 metres long. For longer bridges the width between barriers on each road shall be 2.0 metres wider than the traffic lanes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delineation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centre line marking</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Edge lines</td>
<td>Yes; 150mm wide</td>
<td>Yes; 150mm wide</td>
<td>Yes; 100mm wide</td>
<td>Where warranted by accident records</td>
<td></td>
</tr>
<tr>
<td>Pavement markers</td>
<td>Yes</td>
<td>Yes</td>
<td>Where warranted by accident records</td>
<td>Where warranted by accident records</td>
<td></td>
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<tr>
<td>Guide posts and reflectors</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
### Rural Road Safety & Infrastructure

<table>
<thead>
<tr>
<th>Driver Expectation</th>
<th>Standard</th>
<th>M Roads</th>
<th>A Roads</th>
<th>B Roads</th>
<th>C Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overtaking</td>
<td>Overtaking opportunities</td>
<td>At all times</td>
<td>Overtaking opportunities at least every 10-15km or for specific purposes</td>
<td>Additional lanes provided for safety and capacity on designated routes</td>
<td></td>
</tr>
<tr>
<td>Driving comfort</td>
<td>Smooth roads (note 4)</td>
<td>Good quality riding surface</td>
<td>Good quality riding surface</td>
<td>Good quality riding surface with some rougher sections</td>
<td>Good quality riding surface with some rougher sections</td>
</tr>
<tr>
<td>Signing</td>
<td>Clear/consistent signing</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Safe access onto roads</td>
<td>Access control</td>
<td>Abutting access not generally permitted</td>
<td>Restrictions on new access</td>
<td>Some limitations on new access</td>
<td>Direct access generally permitted</td>
</tr>
</tbody>
</table>

**Notes:**

Two 3.1 metre wide traffic lanes and 2.0 metre wide shoulders (sealed to 1.5 metres) may be adopted on A roads where the terrain restrains road widening or traffic volumes are generally less than 1500 vehicles per day.

Two 3.5 metre wide traffic lanes may be adopted on B roads where traffic volumes are generally greater than 1500 vehicles per day.

Seal full width (2.5 metres) where required to protect full width pavement construction, otherwise 1.5 metre seal with outer one metre grassed shoulder.

Levels of road roughness/rutting consistent with 'Stitch in Time' road maintenance strategy.

Source: VicRoads submission, Appendix 13, p. 116.
Appendices

Appendix E

**Better Roads Victoria Program**

In 1993 the State Government established the Better Roads Trust Fund. One third of the trust fund is being spent on roads in country Victoria.

Under the Better Roads Victoria program there is a special emphasis on projects that will contribute to economic development by reducing transport costs for business and improving the efficiency of our roads. As well, projects funded under the program will:

- Improve safety for all road users and make travelling more comfortable;
- Improve access for local communities;
- Create much-needed jobs in the construction industry and related support industries; and
- Encourage further tourism.

Money from the Trust Fund is spent on the following types of projects:

**Metropolitan Arterial Road Projects**

Widening and duplication of existing arterial roads and bridges serving regional and trade development. Priority is given to improving the efficiency and safety of major freight routes.

**Metropolitan Arterial Road Traffic Management**

Low-cost traffic management works directed at improving traffic flow. Works include linking and co-ordinating traffic signals, installation of turning lanes, changes to parking conditions on heavily congested roads, improved signing and line marking and improvements to the operation of road-based public transport.

**Rural Arterial Road Projects**

Transport, safety and efficiency improvements targeted at regional and trade development. Works are generally of a larger scale and include the realignment of roads and upgrading of their capacity, particularly on major freight routes.

**Rural Arterial Bridge Upgrading**

Major safety and capacity improvements to bridges on rural arterial roads.
Rural Reconstruction Projects

These are tackling a large backlog of urgent reconstruction of rural highways and arterial roads to restore their condition and improve their safety.

Rural Local Roads

Reconstruction and upgrading of local roads in rural areas where the nature and volume of traffic has been significantly affected by State Government initiatives (for example, changes in grain transport routes). Priority is given to projects of regional importance. Within this category, funds are available to repair and upgrade rural local roads affected by the cartage of timber from Crown lands.

Source: VicRoads submission, p. 105.
## Appendix F

### VicRoads Road Expenditure 1999-2000

<table>
<thead>
<tr>
<th>Expenditure Category</th>
<th>National Highways ($m.)</th>
<th>Rural State Arterials ($m.)</th>
<th>*Urban State Arterials ($m.)</th>
<th>Non-Road Expend.</th>
<th>Total ($m.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Servicing &amp; Operating Expenses</td>
<td>7.7</td>
<td>34.7</td>
<td>28.5</td>
<td></td>
<td>70.9</td>
</tr>
<tr>
<td>B1 Routine Road Pavement &amp; Shoulder Maintenance</td>
<td>4.7</td>
<td>29.9</td>
<td>12.6</td>
<td></td>
<td>47.2</td>
</tr>
<tr>
<td>B2 Periodic Pavement Maintenance</td>
<td>6.1</td>
<td>28.9</td>
<td>23.2</td>
<td></td>
<td>58.2</td>
</tr>
<tr>
<td>C Bridge Maintenance &amp; Rehab</td>
<td>1.9</td>
<td>6.9</td>
<td>8.8</td>
<td></td>
<td>17.6</td>
</tr>
<tr>
<td>D Pavement Rehabilitation</td>
<td>6.1</td>
<td>54.7</td>
<td>22.1</td>
<td></td>
<td>82.9</td>
</tr>
<tr>
<td>E Low Cost Safety / Traffic Works</td>
<td></td>
<td>13.5</td>
<td>20.9</td>
<td></td>
<td>34.3</td>
</tr>
<tr>
<td>F Asset Extensions/Improvements</td>
<td>62.1</td>
<td>112.1</td>
<td>112.4</td>
<td></td>
<td>286.6</td>
</tr>
<tr>
<td>G1 Miscellaneous Works Expend.</td>
<td></td>
<td>4.2</td>
<td>3.1</td>
<td>0.4</td>
<td>7.6</td>
</tr>
<tr>
<td>Sub Total</td>
<td><strong>88.7</strong></td>
<td><strong>284.9</strong></td>
<td><strong>231.5</strong></td>
<td><strong>0.4</strong></td>
<td><strong>605.5</strong></td>
</tr>
<tr>
<td>Local Road Expenditure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td><strong>88.7</strong></td>
<td><strong>284.9</strong></td>
<td><strong>231.5</strong></td>
<td><strong>0.4</strong></td>
<td><strong>614.0</strong></td>
</tr>
</tbody>
</table>

Note:  * For VicRoads’ two metropolitan regions, which approximate the Melbourne Statistical Division

Appendix G

Additional Rural Crash Statistics

Distribution of Casualty Crashes

The occurrence of road crashes in Victoria according to area, road classification and severity is shown in Tables G1 to G4.

The distribution of crashes by severity varies between areas of operation largely as a reflection of different operating speeds. Higher operating speeds in rural areas result in a greater proportion of fatal and serious injury crashes. For example in rural shires fatal crashes comprise 4.5% of casualty crashes, whereas in Melbourne it is 1.6%.

Table G1 Number of Fatal Crashes, Victoria, 1998

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Arterial roads</th>
<th>Local roads</th>
<th>All roads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freeways (16)</td>
<td>62 (133)</td>
<td>23 (195)</td>
</tr>
<tr>
<td></td>
<td>Highways (54)</td>
<td>62 (133)</td>
<td>113 (345)</td>
</tr>
<tr>
<td></td>
<td>Main Roads (62)</td>
<td>41 (98)</td>
<td>7 (241)</td>
</tr>
<tr>
<td></td>
<td>Forest &amp;</td>
<td>7 (241)</td>
<td>7 (241)</td>
</tr>
<tr>
<td></td>
<td>Tourist Roads</td>
<td>1 (241)</td>
<td>7 (241)</td>
</tr>
<tr>
<td></td>
<td>All arterial</td>
<td>15 (241)</td>
<td>104 (345)</td>
</tr>
<tr>
<td></td>
<td>Roads (All)</td>
<td>4 (195)</td>
<td>345 (100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Cities</th>
<th>4 (6)</th>
<th>6 (6)</th>
<th>12 (12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Shires</td>
<td>7 (6)</td>
<td>61 (98)</td>
<td>119 (119)</td>
</tr>
<tr>
<td>Total Victoria</td>
<td>23 (7%)</td>
<td>113 (33%)</td>
<td>98 (28%)</td>
</tr>
<tr>
<td></td>
<td>98 (28%)</td>
<td>7 (2%)</td>
<td>241 (70%)</td>
</tr>
<tr>
<td></td>
<td>7 (2%)</td>
<td>104 (30%)</td>
<td>345 (100%)</td>
</tr>
</tbody>
</table>
### Table G2 Number of Serious Injury Crashes, Victoria, 1998

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>All arterial roads</th>
<th>Local roads</th>
<th>All Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial roads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freeways</td>
<td>Melbourne</td>
<td>Geelong, Ballarat, Bendigo</td>
<td>Other Cities</td>
</tr>
<tr>
<td></td>
<td>181</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Highways</td>
<td>760</td>
<td>88</td>
<td>63</td>
</tr>
<tr>
<td>Main Roads</td>
<td>1,422</td>
<td>82</td>
<td>26</td>
</tr>
<tr>
<td>Forest &amp; Tourist Roads</td>
<td>44</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2,407</td>
<td>182</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>1,250</td>
<td>136</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>3,657</td>
<td>318</td>
<td>177</td>
</tr>
</tbody>
</table>

### Table G3 Number of Other Injury Crashes, Victoria, 1998

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>All arterial roads</th>
<th>Local roads</th>
<th>All roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial roads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freeways</td>
<td>Melbourne</td>
<td>Geelong, Ballarat, Bendigo</td>
<td>Other Cities</td>
</tr>
<tr>
<td></td>
<td>480</td>
<td>21</td>
<td>6</td>
</tr>
<tr>
<td>Highways</td>
<td>2,009</td>
<td>180</td>
<td>107</td>
</tr>
<tr>
<td>Main Roads</td>
<td>3,386</td>
<td>197</td>
<td>34</td>
</tr>
<tr>
<td>Forest &amp; Tourist Roads</td>
<td>73</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5,948</td>
<td>402</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>2,690</td>
<td>339</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td>8,638</td>
<td>741</td>
<td>307</td>
</tr>
</tbody>
</table>
### Table G4 Total Number of Casualty Crashes, Victoria, 1998

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Arterial roads</th>
<th>Freeways</th>
<th>Highways</th>
<th>Main Roads</th>
<th>Forest &amp; Tourist Roads</th>
<th>All arterial roads</th>
<th>Local Roads</th>
<th>All Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melbourne</td>
<td>677</td>
<td>2,823</td>
<td>4,870</td>
<td>118</td>
<td>8,488</td>
<td>4,002</td>
<td>12,490</td>
<td></td>
</tr>
<tr>
<td>Geelong, Ballarat, Bendigo</td>
<td>32</td>
<td>275</td>
<td>287</td>
<td>5</td>
<td>599</td>
<td>479</td>
<td>1,078</td>
<td></td>
</tr>
<tr>
<td>Other Cities</td>
<td>8</td>
<td>174</td>
<td>62</td>
<td>5</td>
<td>249</td>
<td>247</td>
<td>496</td>
<td></td>
</tr>
<tr>
<td>Other Shires</td>
<td>125</td>
<td>738</td>
<td>550</td>
<td>151</td>
<td>1,564</td>
<td>1,083</td>
<td>2,647</td>
<td></td>
</tr>
<tr>
<td>Total Victoria</td>
<td>842 (5%)</td>
<td>4,010 (24%)</td>
<td>5,769 (35%)</td>
<td>279 (2%)</td>
<td>10,900 (65%)</td>
<td>5,811 (35%)</td>
<td>16,711 (100%)</td>
<td></td>
</tr>
</tbody>
</table>
Casualty Crash Exposure Rates

Estimates of travel on Victorian roads are shown in Table G5.

Those for arterial roads have been estimated from VicRoads road length and traffic count inventory data. Local road travel was estimated by subtracting the arterial travel from the total travel on Victorian roads reported in surveys of motor vehicle use conducted by the Australian Bureau of Statistics.

Table G5 Estimated Annual Travel in 1998
(billion vehicle kilometres)

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Freeways</th>
<th>Highways</th>
<th>Main Roads</th>
<th>Forest &amp; Tourist Roads</th>
<th>All arterial roads</th>
<th>Local roads</th>
<th>All roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melbourne</td>
<td>6.48</td>
<td>6.17</td>
<td>11.11</td>
<td>0.26</td>
<td>24.02</td>
<td>7.0</td>
<td>31.0</td>
</tr>
<tr>
<td>Geelong, Ballarat, Bendigo</td>
<td>0.60</td>
<td>0.69</td>
<td>0.94</td>
<td>n.a.</td>
<td>2.25</td>
<td>1.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Other Cities</td>
<td>0.51</td>
<td>0.58</td>
<td>0.30</td>
<td>0.01</td>
<td>1.40</td>
<td>n.a.</td>
<td>1.4</td>
</tr>
<tr>
<td>Other Shires</td>
<td>2.10</td>
<td>3.89</td>
<td>2.61</td>
<td>0.33</td>
<td>8.93</td>
<td>2.0</td>
<td>10.9</td>
</tr>
<tr>
<td>Total Victoria</td>
<td>9.70</td>
<td>11.33</td>
<td>14.96</td>
<td>0.61</td>
<td>36.60</td>
<td>10.0</td>
<td>46.6</td>
</tr>
</tbody>
</table>

(21%)(24%)(32%)(1%)(78%)(22%)(100%)
Crash exposure rates vary depending on road standards, operating environments and traffic volumes. Average crash rates for Victorian roads are shown in Table G6. These rates reflect a combination of both mid-block and intersection crashes.

**Table G6 Average Casualty Crash Rates**
(crashes per 100 million vehicle kilometres)

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Freeways</th>
<th>Highways</th>
<th>Main Roads</th>
<th>Forest &amp; Tourist Roads</th>
<th>All arterial roads</th>
<th>Local Roads</th>
<th>All roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melbourne</td>
<td>10</td>
<td>46</td>
<td>44</td>
<td>45</td>
<td>35</td>
<td>57</td>
<td>40</td>
</tr>
<tr>
<td>Geelong, Ballarat, Bendigo</td>
<td>--¹.</td>
<td>40</td>
<td>30</td>
<td>--¹.</td>
<td>27</td>
<td>48</td>
<td>33</td>
</tr>
<tr>
<td>Other Cities</td>
<td>--¹.</td>
<td>30</td>
<td>21</td>
<td>40</td>
<td>18</td>
<td>--¹.</td>
<td></td>
</tr>
<tr>
<td>Other Shires</td>
<td>6</td>
<td>19</td>
<td>21</td>
<td>45².</td>
<td>18</td>
<td>54</td>
<td>24</td>
</tr>
<tr>
<td>Total Victoria</td>
<td>9</td>
<td>35</td>
<td>30</td>
<td>45</td>
<td>30</td>
<td>58</td>
<td>36</td>
</tr>
</tbody>
</table>

Notes:
1. Very small sample size
2. Mainly influenced by travel to the snowfields
Crash Rates per Road Length

Blackspot programs target locations with a high incidence of crashes. One associated measure is the number of casualty crashes per length of road. By dividing the number of casualty crashes in Table E4 by the road lengths in Table 2.2 in Chapter 2 the average crash rates per kilometre of road in Victoria can be calculated. The results are shown in Table G7.

**Table G7 Estimated Casualty Crash Rates**

(crashes/kilometre), 1998

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Arterial roads</th>
<th>Local roads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Free-ways</td>
<td>Highways</td>
</tr>
<tr>
<td>Melbourne</td>
<td>1.8</td>
<td>5.8</td>
</tr>
<tr>
<td>Geelong, Ballarat, Bendigo</td>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Other Cities</td>
<td>0.06</td>
<td>0.13</td>
</tr>
<tr>
<td>Other Shires</td>
<td>0.36</td>
<td>0.17</td>
</tr>
<tr>
<td>Total Victoria</td>
<td>0.92</td>
<td>0.61</td>
</tr>
</tbody>
</table>

Although local roads typically have higher crash rates per unit of travel than arterial roads, local roads carry considerably less traffic than arterial roads. As a result, Table E7 shows that the number of crashes per kilometre of road is considerably lower on local roads than on arterials.

## Appendix H

### Blackspot Crash Reduction Factors

Upper limit of typical crash reduction resulting from particular treatments for high risk blackspot locations:

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>CASUALTY CRASH REDUCTION</th>
<th>TYPICAL LIFE</th>
<th>YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTERSECTION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New roundabout</td>
<td>85</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>New signals</td>
<td>45</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Fully controlled right turn phase</td>
<td>45</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Roundabout replacing signals</td>
<td>25</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Mount signal heads on mastarms</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Channelisation, turning lanes</td>
<td>25</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Sheltered turn lanes (urban)</td>
<td>30</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Sheltered turn lanes (rural)</td>
<td>45</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Additional lane at intersection</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Skid resistant overlay</td>
<td>20</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Red light camera</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Staggered T</td>
<td>50</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Splitter Islands (rural, low volume)</td>
<td>45</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>ROAD PAVEMENT WIDENING</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add lane</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Add median strip</td>
<td>40</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Bridge widened or modified</td>
<td>25</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Bridge replaced</td>
<td>45</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Widen shoulder</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Seal shoulder with painted edgeline</td>
<td>40</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Seal shoulder with tactile edgeline</td>
<td>50</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Re-construct highway</td>
<td>25</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Overtaking lane</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Right turn lane</td>
<td>40</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Left turn lane</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>GRADE SEPARATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection grade separation (of existing signalised intersections)</td>
<td>60</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Pedestrian overpass</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>RAIL CROSSING FACILITIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TREATMENT</td>
<td>CASUALTY CRASH REDUCTION %</td>
<td>TYPICAL LIFE YEARS</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>Warning signs upgrade to flashing lights</td>
<td>70</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Warning signs upgrade to boom barriers</td>
<td>85</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Flashing lights upgrade to boom barriers</td>
<td>70</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>BARRIERS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upgrade median barrier</td>
<td>25</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Guardrail (other than for bridge end post)</td>
<td>25</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>CURVE TREATMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delineation</td>
<td>25</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Reflectorised guide posts</td>
<td>30</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Raised reflectorised pavement markers</td>
<td>15</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Tactile edgeline marking</td>
<td>15</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Barrier line</td>
<td>65</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Shoulder seal plus reseal, inside of curve</td>
<td>20</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Shoulder seal, reseal plus delineation, inside of curve</td>
<td>25</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Reshape, shoulder seal, reseal plus delineation, inside of curve</td>
<td>35</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Realignment plus delineation</td>
<td>50</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Warning/advisory signs</td>
<td>20</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Improve superelevation</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Add transition curves</td>
<td>5</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Lane widening</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.3m</td>
<td>5</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>0.6m</td>
<td>12</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Paved shoulder widening</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.3m</td>
<td>4</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>0.6m</td>
<td>8</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>1m</td>
<td>12</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Unpaved shoulder widening</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.3m</td>
<td>3</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>0.6m</td>
<td>7</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>1m</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Sideslope flattening</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flatten from 2:1 to 4:1</td>
<td>6</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Flatten from 2:1 to 5:1</td>
<td>9</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Flatten from 2:1 to 6:1</td>
<td>12</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Flatten from 2:1 to 7:1 or flatter</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>
### Rural Road Safety & Infrastructure

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>CASUALTY CRASH REDUCTION %</th>
<th>TYPICAL LIFE Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flatten from 4:1 to 5:1</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Flatten from 4:1 to 6:1</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Flatten from 4:1 to 7:1 or flatter</td>
<td>11</td>
<td>20</td>
</tr>
</tbody>
</table>

**FIXED ROADSIDE HAZARDS**

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>REDUCTION %</th>
<th>TYPICAL LIFE Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree removal (rural)</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Pole removal (lighting poles, urban)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Replace rigid poles with frangible poles</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Extend culverts</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Embankment treatment</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>Guardrail for bridge end post</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Impact attenuator</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

**PEDESTRIAN/BICYCLIST**

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>REDUCTION %</th>
<th>TYPICAL LIFE Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refuges, channelisation, kerb extension</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Pedestrian signals</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Bicycle paths, thresh-hold treatments</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

**STREET LIGHTING**

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>REDUCTION %</th>
<th>TYPICAL LIFE Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of street lighting</td>
<td>25</td>
<td>10</td>
</tr>
</tbody>
</table>

**Notes:**

- Crash Reductions are not additive, highest value is used if multiple treatments are proposed.

- Reductions apply to total casualty crashes within single intersections or mid-blocks containing treatment.

- Crash reduction factors revised 23 June 1998 to reflect actual reductions found by MUARC evaluation March 1998.

- These crash reduction percentages would only be applicable to sites that have never been previously treated before i.e. they represent upper limit percentages.

Source: VicRoads submission, Table 18, pp. 56-57.
Appendix I

Guidelines for Potential Blackspots

The VicRoads Guidelines for Potential Blackspots (August 2001) provide two categories of ‘prototype’ potential blackspots plus a risk ranking approach for other potential blackspot projects.

The ‘prototype’ categories are:

- Y junctions; and
- Unprotected bridge (and major culvert) ends.

Y-junctions in high-speed areas are recognised as high risk sites due to poor intersection geometry, with the potential for high severity head-on crashes to occur. These problems are exacerbated at sites where sight distance is restricted. The ranking methodology utilises the traffic volumes on the major and intersecting roads, a sight distance factor, and the cost of the treatment.

Unprotected bridge ends are locations that present a high-risk hazard for vehicles that run-off-the-road. The outcome of such crashes is generally severe. The ranking methodology utilises traffic volume, the route length between towns or other logical endpoints, the number of unprotected structures, and the total cost of protecting deficient structures along the route.

Other potential blackspot projects that do not fit into the two prototype categories, but have the characteristics of a blackspot site, will be prioritised on the basis of an assessment of risk. The process is based on consideration of the likelihood and the consequences of the occurrence of casualty crashes to determine a risk rating. The method incorporates:

- Three categories of ‘consequence’, based on crash types and the speed limit;
- Three categories of ‘likelihood’, derived from consideration of road classification and traffic volume range;
- A risk rating value for each of the nine possible combinations of consequence and likelihood;
- Project priorities based on the risk rating divided by the cost of the project.

Source: VicRoads, Guidelines for Potential Blackspots (August 2001), p. 3 and Attachment A.
Bibliography


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Daly, P, *Safety Systems for Road Infrastructure – are we doing all we should be?*, 6th Institute of Transportation Engineers International Conference, Melbourne, September 1999.


High Court of Australia, Judgement on *Brodie and Ghantous*, 30 June 2001.


VicRoads, *$240m Statewide Blackspot Program – Program Guidelines*.

VicRoads, *Guidelines for Potential Blackspots (August 2001)*.


