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Corangamite and Colac Otway Road Safety Strategy

Road Safety Report

Corangamite and Colac Otway Shire Councils

1 December 2008
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Corangamite and Colac Otway Road Safety Strategy

Prepared for

Corangamite and Colac Otway Shire Councils

Prepared by

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A	22/09/2008	Draft Report	Nicole Broekman Principal Transport Planner	
B	1/12/2008	Final Report	Nicole Broekman Principal Transport Planner	

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Executive Summary

This road safety strategy has been prepared in conjunction with the Corangamite Shire Council, Colac Otway Shire Council, Victoria Police (Colac Division), VicRoads and RoadSafe Colac. Colac Otway Shire and Corangamite Shire are located in Victoria, approximately 150 km and 200 km respectively south west of Melbourne.

The key objectives of the Road Safety Strategy are:

- To reduce road crashes, resulting in financial and social savings through reduced crash and trauma costs.
- To provide road safety direction for each Council, community and other interested groups and organisations.
- To promote community ownership of road safety at a community level and reinforce links between key stakeholders and local groups.
- To investigate the potential risk factors on local road infrastructure.
- To develop and implement municipal road safety strategies which are linked to each Council's Corporate Plans, and provide the basis of a targeted and relevant action program for each shire and other agencies to address key road safety initiatives.

Corangamite and Colac Otway Shires, like many rural municipalities across Victoria, are experiencing on-going road safety concerns. Injury crashes in these municipalities occur almost daily and 37 deaths have been recorded in the past five years.

In the last five years there have been 220 and 141 serious crashes in Colac Otway and Corangamite Shires respectively. Out of these crashes Colac Otway roads had 22 fatalities (including 6 on local, Council maintained roads) and Corangamite had 15 fatalities (including 4 on local, Council maintained roads). A total of 37% of all reported crashes occurred on local roads in Colac Otway Shire and a total of 46% of all reported crashes occurred on local roads in Corangamite Shire. The crash classifications that pose the most significant cause for concern on all roads throughout both Shires are crashes where vehicles veered 'off path on a curve' or 'off path on a straight'. These crashes comprise over 50% of all crashes within the two Shires.

It is known that there are three main causes of road crashes, and these are: human factors, the road environment and vehicle factors. Typically, around 95% of road crashes are caused (at least in part due) to human factors, with the road environment contributing to 28% and vehicle factors to 8%, with some overlap (two or more factors) contributing in some instances.

Road Safety Strategies for Colac Otway Shire and Corangamite Shire have been developed to address the following categories:

- Safer Road Users (Human Behaviour).
- Safer Infrastructure (Road Environment).
- Safer Vehicles (Vehicle Factors).

Safer Road User strategies identify measures to:

- Increase safety through reduction of behavioural risks, particularly targeting high risk road user demographic groups.
- Specific strategy actions have been identified to reduce Drink/Drug influenced driving, fatigued driving and excessive speed driving. These actions are focused on providing drivers with options and education to reduce the likelihood of accidents.

High risk road user groups include: Young drivers, older drivers, motorcyclists, pedestrians, cyclists and heavy goods vehicle drivers. Specific strategy actions have been formulated to increase the safety for these high risk groups. These strategies include measures such as:

- Encouraging greater road safety education and assessment for young and older drivers.
- Education and increased improvements to sensitive road areas for motorcyclists.
- Increased signage and modifications to road and path layout to protect pedestrians and cyclists.
- Education for the encouragement of safe HGV driver practices, safe and adequate rest areas.

Safer Infrastructure strategies and actions are aimed at reducing the number and severity of run-off-road and head-on crashes through creating a road environment that provides:

- Safer, clearer shoulders.
- Increased clear zones.
- Greater sight distances.
- Safe rural intersections.
- DDA compliance at intersections.
- Appropriate clear zones on roadside.
- Appropriate speed restrictions.
- Increased level of road marking and signage to safeguard against crashes.
- Increases in the number of rest stops.
- Upgrade safety improvements for rail level crossings.
- Greater awareness of school speed zones.
- Provision of school crossings.

Safer Vehicles strategies are aimed to continue to support the use of five-star rated vehicles including features such as:

- Automatic Braking Systems (ABS).
- Air bags.
- Electronic stability control.
- Cruise control.
- Speed limiters.

Safer Vehicles is recommended through promotion of the importance of safety features and also leading by example, encouraging Council fleets to introduce vehicles with increased safety features.

It is recommended that each Shire appoint an Officer as responsible for the Road Safety Strategy program. This person would be responsible for the success of the strategy through managing the strategy program and liaising with the lead agencies for each action and monitoring the outcomes.

1.0 Introduction

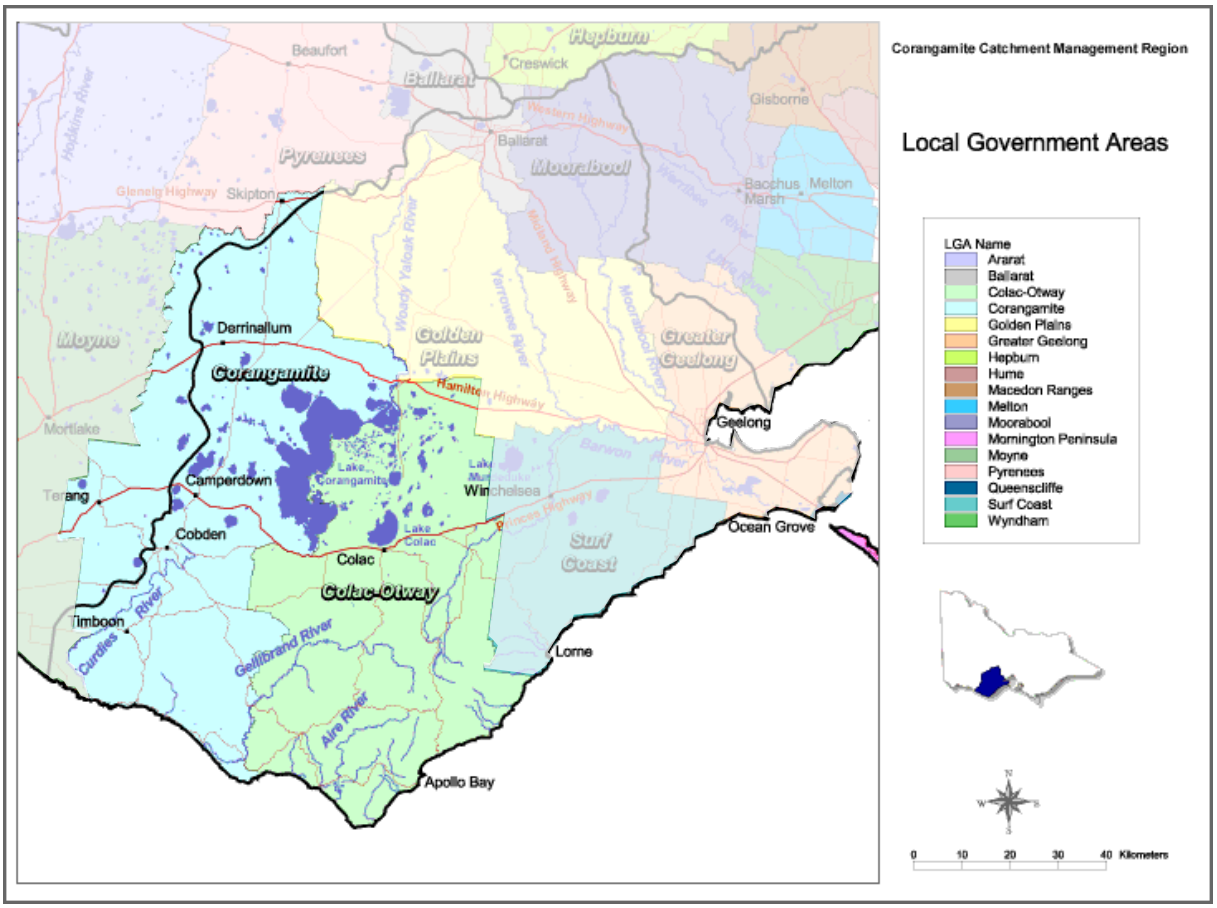
1.1 The Shires

Corangamite Shire is located in the south-western part of Victoria and covers 4,425 square kilometres. The Corangamite Shire is approximately 200 kilometres from Melbourne and 120 kilometres from Geelong.

Colac Otway Shire is located approximately 150 km from Melbourne (and 70 km from Geelong). The area of the Colac Otway Shire covers 3,443 square kilometres.

Figure 1 shows the shires in relation to surrounding shires including Geelong.

Figure 1: Corangamite and Colac Otway Shire boundaries



Source: www.dpi.vic.gov.au

1.1.1 Corangamite Shire

The Corangamite Shire is bounded by the shires of Moyne to the west, Pyrenees to the north, Golden Plains to the north-east and Colac Otway to the east, and is bounded by the coastline to the south. It contains the town of Skipton in the north, and at the southern edge at the coast includes the towns of Peterborough, Port Campbell and Wattle Hill. The western border follows the Curdies River and the towns on the border are Noorat, Terang, Taroon, Ayrford and Curdie Vale. The eastern border follows the Woady Yaloak River, Lake Corangamite and Gellibrand River.

Towns within the Corangamite Shire are Skipton, Camperdown, Noorat, Terang, Cobden, Timboon, Simpson, Port Campbell, Princetown, Derrinallum and Lismore. On 30 June 2007 the population of Corangamite Shire was estimated at 17,188[1] residents and was forecast to slightly increase to 17,619 by 2021[2]. Figure 2 indicates the area covered by the Corangamite Shire.

Figure 2: Corangamite Shire

Corangamite Shire is home to several different types of industries. These include wool growing and cropping. There is also a very large dairy industry which is one of the largest in the state. The different types of farming include milk, beef, wool, lamb and grain.

The tourist industry includes the attractions of the Great Ocean Road, the 12 Apostles, the Port Campbell National Park, fishing and volcanic hills which attract a high number of visitors to the region.

1.1.2 Colac Otway Shire

Colac Otway Shire is located in South West Victoria and extends from Cressy in the north to the ocean in the south. It is bounded by the Shires of Corangamite to the west, Golden Plains to the north and Surf Coast Shire to the east.

The main towns are Colac and Apollo Bay. Smaller towns within the shire include Beeac, Beech Forest, Birregurra, Coragulac, Cressy, Forrest, Gellibrand, Kennett River, Lavers Hill, Skenes Creek, and Wye River.

[1] Australian Bureau of Statistics

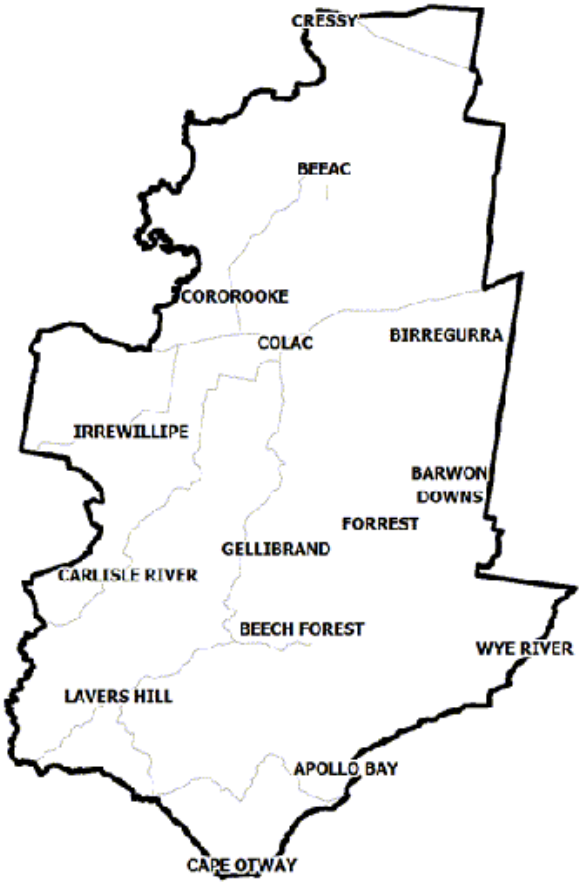
[2] forcast.id (Informed Decisions) - www.id.com.au/corangamite/forecastid/default.asp?id=277&gid=10&pg=8 (date accessed: September 2008)

On 30 June 2007 the population was estimated at 21,183[1] and is forecast to increase to 23,949[3] by 2021. Figure 3 indicates the area covered by the Colac Otway Shire.

The predominant industries within the Colac Otway Shire are relatively similar to those within Corangamite Shire and include dairy, beef, sheep, crops, specified pastures, horticulture (and organic farming), timber, manufacturing and service, construction, retail and wholesale.

The main tourist attraction within the Colac Otway Shire is the Great Ocean Road which includes Apollo Bay and many other coastal areas.

Figure 3: Colac Otway Shire



1.2 Requirement for Road Safety

Victoria's roads and road users are amongst the safest in the world but continued investment in road safety measures is required to ensure Victoria remains at the forefront of road safety.

In the past five years, 29,325[4] people have been killed or injured on Victorian roads, representing 0.6%[1] of the population. However, those affected by the road toll extend well beyond this small proportion of the population. Family, friends, and the broader community are all impacted by the costs associated with injuries or deaths on the road, both emotionally and financially.

[3] forcast.id (Informed Decisions) - www.id.com.au/colacotway/forecastid/default.asp?id=242&gid=10&pg=8 (date accessed: September 2008)

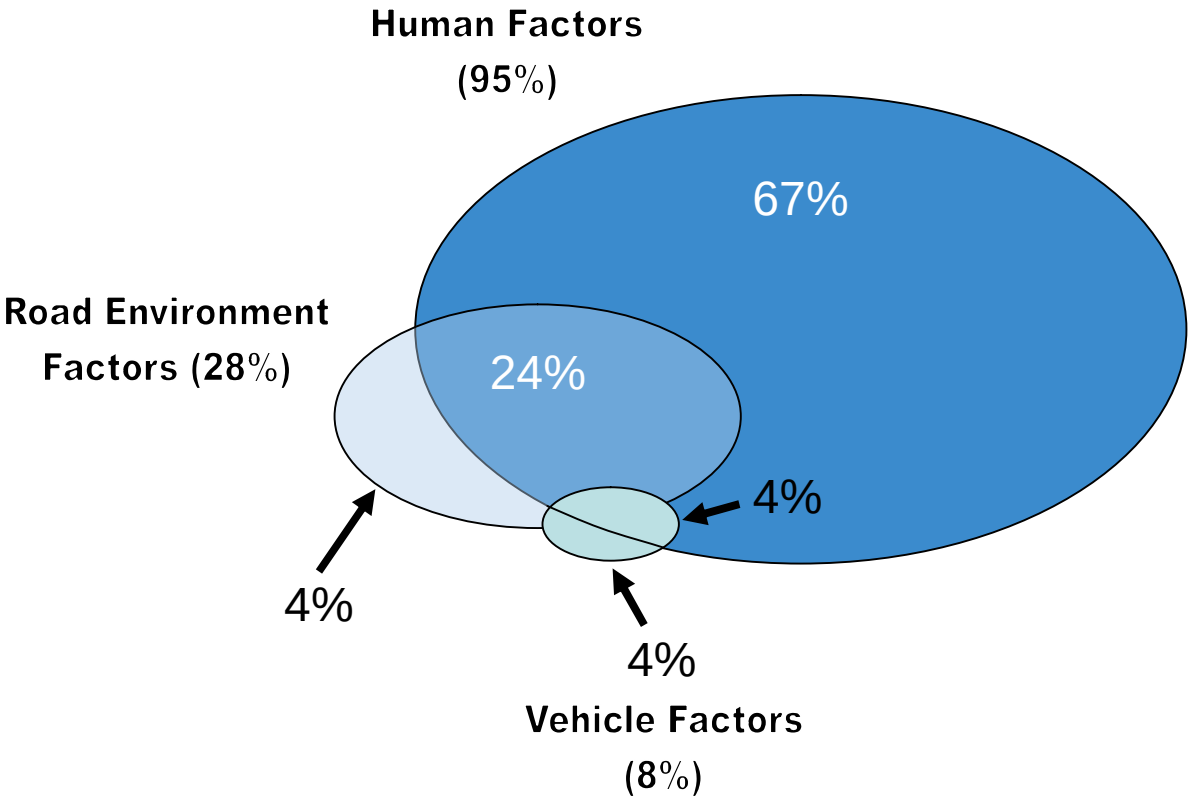
[4] VicRoads - CrashStats

While the road toll has been slowly decreasing, there is a significant need to ensure further efforts continue to decrease the toll, and that acceptance does not lead to a plateauing of these figures. The use of the road system is essential to maintain the on-going economical and social well-being of our society. Road safety is therefore of paramount importance to ensure that our everyday activities do not unnecessarily put lives at risk.

Corangamite and Colac Otway Shires, like many rural municipalities across Victoria, are also experiencing on-going road safety concerns. Injury crashes in these municipalities occur almost daily (over 300 per year) and 37 deaths (refer to Table 2) have been recorded in the past five years.

In order to address and improve road safety, the causes of road crashes needs to be considered. It is known that there are three main causes of road crashes, and these are: human factors, the road environment and vehicle factors. Typically, around 95% of road crashes are caused (at least in part) to human factors, with the road environment contributing to 28% and vehicle factors to 8%, with some overlap (two or more factors) contributing in some instances. For example 24% of crashes were caused by road environment factors and human factors. The following bubble chart indicates these contributions.

Figure 4: The Causes of Road Crashes



Source: RTANSW, 1996

The Australian Transport Safety Bureau's latest survey (Dec 2006) of community attitudes to road safety had found that the community identified four main factors contributing to road crashes, namely:

- Speed
- Drink Driving
- Inattention/lack of concentration
- Driver fatigue

It is surmised that the same factors are contributing to the road crashes in Corangamite and Colac Otway Shires.

1.2.1 Trauma and Fatalities

Road crashes contribute to an average of 348 deaths and 5,560 serious injuries on Victorian roads each year. The estimated costs of these road crashes is enormous, taking into consideration the human costs (including loss of earnings, medical, long-term care and rehabilitation costs, legal costs and disruptions to the workplace), the vehicle costs (repairs, towing) and general costs (including insurance, police, fire and road delay impacts).

Road crashes in Victoria are the principal contributor to trauma patients in hospitals making up over 50% of all major trauma patients[5]. The cost associated with road trauma is disproportionate to other types of trauma as patients frequently sustain serious injury and multiple injuries.

1.2.2 Financial Costs

In total, it is estimated by the Bureau of Transport Statistics that (in June 2006) a fatal injury crash cost an average of $1.64 million; a serious injury crash cost an average of $355,000, a minor injury crash average cost was approximately $17,600, and a property damage only crash cost averaged $7,300 per crash[6].

It is estimated [Abelson P 2001] that the Australian Government currently spend $600 million a year on road safety; and that Road Safety Programs were responsible for saving about 100 lives and 5000 hospital cases per year, as well as some other property damages. The estimated annual value of these savings amounted to $2.7 billion.[7]

1.2.3 Shifts in Trends

The number of yearly fatal crashes has been reducing with an increasing focus on road safety and vehicle improvements. Between 2002 and 2007, there has been a 20% reduction in the number of fatal crashes, while between 1990 and 2007; there has been a 40% reduction in the number of fatal crashes.

However, over the past 4 years, the number of yearly fatal crashes has remained relatively constant with a 4% variation in the number of crashes. Victoria's fatality rate of 6.38 per 100,000 people in 2007 is lower than the average fatality rate of 8.1 per 100,000 people for the rest of Australia. Victoria has recorded an average annual decrease in road deaths since 2003 of 1%. Although any decrease is a positive step, decreases of 5% for New South Wales and 9% for South Australia are realistic reduction targets.

1.2.4 Stakeholder Concerns

A stakeholder meeting was held in August 2008 to understand the local communities concerns. The meeting was represented by Colac Otway Shire, Corangamite Shire, VicRoads, RoadSafe Colac, Victoria Police Colac and Maunsell.

A number if issues were raised in the meeting and it was identified that fatigue, excessive speed, alcohol and drugs were all major issues. Trucks are becoming more of an issue within the two shires due to the industries within the shires wanting to use larger trucks on local roads which are not designed to support these types of vehicles. There are a number of roads that are highly trafficked by tourists, safety along these routes are a concern for the region.

[5] Victorian State Trauma Registry 2005-2006

[6] Supporting spreadsheet to Guidelines on economic, social and environmental cost benefit Analysis, Department of Infrastructure, 2006

[7] Returns on Investment in Public Health – An Epidemiological and Economic Analysis – Road Safety Programs and Road Trauma; Abelson, Peter - Applied Economics, July 2001.

1.3 Complimentary Road Safety Initiatives

1.3.1 Previous strategies in Colac Otway and Corangamite Shires

Both the Colac Otway and Corangamite Shires have previous road safety strategies. For both Shires it was the first road safety strategy that was prepared. The Road Safety Strategic Plan for Colac Otway Shire was prepared for use between June 2001 and June 2006 while the Corangamite Shire Road Safety Strategic Plan was developed for the period between July 2002 and June 2007. This new combined strategy will build on the previous strategies for both the Shires. This strategy will align with the following strategies.

1.3.2 Arrive Alive

"*arrive alive*" 2008-2017 is the Victorian Government's new road safety strategy. It's designed to keep Victoria at the forefront of Australian and international efforts to reduce road trauma, to deliver further major improvements to our road transport system, and to improve safety for all Victorian road users.[8]

Some of the recent initiatives of the new *arrive alive* campaign launched for 2008-2010 targeting country road users include:

- Introduce a major infrastructure program, focusing on improving safety along high risk stretches of country roads. The program will focus on improving infrastructure to reduce the incidence of the most common types of crashes in country Victoria:
  - side impact crashes: implement safety improvements at intersections, such as roundabouts,
  - vehicle activated warning signs and conversion of Y intersections to T intersections
  - run-off-road crashes: install roadside barriers, shoulder sealing and rumble lines along road edges, and remove roadside objects (such as trees and poles)
  - head-on crashes: install centre-road rumble lines, centre-road wire rope barriers and overtaking lanes.
- Implement a Greyspot Program to reduce crash risk at potentially high risk rural intersections.
- Deliver the Meeting Our Transport Challenges infrastructure program to progressively upgrade safety at level crossings in provincial Victoria. Measures to improve rail level crossing safety will include:
  - installation of automated advance warning signs at highway and high volume sites
  - installation of rumble strips to alert motorists that they are approaching rail level crossings
  - reduction of speed limits at high risk, high road speed rural rail level crossings
  - improving line of sight at level crossings including vegetation removal
  - trial the use of camera technology to improve compliance and deter unsafe behaviour at level crossings.
- Deliver targeted infrastructure improvements to reduce crashes caused by unsafe behaviour and to increase safety for specific groups of road users. These improvements will include:
  - improved speed advisory signs and non-distracting roadside signs
  - improved rest stop facilities
  - targeted motorcycle blackspot locations, blacklengths and popular touring routes.
- Increase the conspicuousness of speed zones.
- Install electronic speed limit signs at selected sites around schools.

Opportunities to deliver these *arrive alive* initiatives within the Corangamite and Colac Otway Shires have been sought to help deliver consistency across the statewide and local strategies.

arrive alive also incorporates numerous other road safety initiatives, such as the introduction of the graduated licensing program, aimed at reducing casualty crashes involving P-plate drivers, along with vehicle safety technology improvements which should help to reduce casualty crashes and crash severities.

[8] arrive alive 2008-2017, www.arrivealive.vic.gov.au (date accessed: September 2008)

The *arrive alive* 10 year target is: reduce death and serious injury by 30 percent, save 100 lives a year, prevent over 2,000 serious injuries, and reduce the severity of serious injuries.

1.3.3 Saferoads

Saferoads is a partnership between Local Government Professionals (LGPro), Municipal Association of Victoria (MAV), VicRoads, Victoria Police, Transport Accident Commission (TAC) and Royal Automotive Club of Victoria (RACV) to work with local government to improve the safety of road users[9].

Analysis of road crash statistics reveals that 7 out of every 10[9] crashes occur on roads managed by local government. The Saferoads initiative aims to reduce the incidence and severity of crashes in municipalities through:

- Multi-action programs
- Increased use of local government networks
- Increased road safety resources at the local level

The Saferoads strategy provides a framework for councils and local groups to use in developing their own local government road safety strategies. With an emphasis on road safety issues affecting pedestrians, cyclists, motorcyclists, the young and the elderly. Saferoads focuses on effective, low-cost programs that will build on the work already undertaken by councils.

This road safety strategy has been prepared taking into consideration the Saferoads guidelines on the preparation of road safety strategies, and in consultation with RoadSafe Colac.

1.3.4 RoadSafe

In Victoria there are 24 RoadSafe groups (including RoadSafe Colac which covers both Colac Otway and Corangamite Shires) which deliver programs that aim to improve road safety in their local area. Roadsafe Colac is a community group that is only funded through sponsorships. RoadSafe groups have various members from the community including staff from VicRoads, Councils, Police, road users groups, health and education professionals, emergency services, local businesses and media representatives. RoadSafe develop local community road safety initiatives to help support the local and State government programs. RoadSafe has continued support by Colac Otway and Corangamite Shires.

1.4 Road Safety Aims and Objectives

The key objectives of the Road Safety Strategy are:

- To reduce road crashes, resulting in financial and social savings through reduced crash and trauma costs.
- To provide road safety direction for each Council, community and other interested groups and organisations.
- To promote community ownership of road safety at a community level and reinforce links between key stakeholders and local groups.
- To investigate the potential risk factors on local road infrastructure.
- To develop and implement municipal road safety strategies which are linked to each Council's Corporate Plans, and provide the basis of a targeted and relevant action program for each shire to address key road safety initiatives.

[9] www.mav.asn.au/saferoads (date accessed: September 2008)

This road safety strategy has been prepared in conjunction with the Corangamite Shire Council, Colac Otway Shire Council, Victoria Police (Corangamite Division) and RoadSafe Colac.

The intention of this strategy is to focus on road safety problems and possible improvements within the Corangamite and Colac Otway Shires road network. This will enable the Councils to focus funding towards reducing casualty road crashes on local roads. The strategy has also addressed and considered the road crashes occurring on the main/declared road network. The Councils will be able to raise these issues with VicRoads and to seek State funding for improvements. Councils will be able to fund programs to educate the community who use both the local and main/declared road networks.

1.5 Format of this Report

This road safety strategy report is set out as follows:

- Chapter 1 Introduction
- Chapter 2 presents the data and findings from the road crash review. It compares the Shires with other Shires throughout Victoria, to help ascertain how the Shires rate in their safety performance. Common crash themes and trends have been identified to enable problems to be addressed.
- Chapter 3 sets out the goals and actions to be achieved by the strategy. Clear guidelines and measurable targets have been suggested to ensure the continued implementation of the programs to meet the strategy's aims.

2.0 Corangamite & Colac Otway Road Safety Performance

2.1 Crash Activity and Ranking

Data analysis of the information obtained from CrashStats provides an indication of the frequency of each classification of crash. The following crash analysis has been based on the latest 5 year crash data available for the period 1 January 2003 to 31 December 2007 unless stated otherwise.

CrashStats is the VicRoads database for all road crashes involving an injury. CrashStats is provided to users by VicRoads for the purpose of supplying information about road crashes in Victoria. This road safety initiative is for educational purposes and allows users to better understand some of the key issues about road crashes.

Data is publicly available on the VicRoads CrashStats website[10], and includes information on road crashes including:

- Participants (including vehicle type, driver and passenger gender and age)
- Crash location, date and time details
- Crash type based on the DCA system for crash classification
- Crash Severity, based on the level of injury sustained (other injury, serious injury or fatal)

The DCA crash classification system was created so that an analyst can quickly identify crash patterns at a particular location. The DCA codes are grouped according to similar factors, for example, pedestrian crashes are grouped between DCA 100-109.

A summary of the major DCA categories is provided in Table 1. A full list of DCA crash descriptions is provided in Appendix B.

Table 1: Major DCA Codes

DCA Code Range	Category	Definition
100-109	Pedestrians	Pedestrian struck on carriageway
110-119	Adjacent directions	Crashes within intersections at 90 degrees
120-129	Opposing directions	Crashes with head on vehicles
130-139	Same direction	Crashes with vehicles travelling in the same direction
140-149	Manoeuvring	Crashes while parking/reversing vehicles
150-159	Overtaking	Crashes occurring while overtaking vehicles
160-169	On-path	Striking objects on the carriageway
170-179	Off-path on straight	Striking objects off the carriageway on a straight
180-189	Off-path on curve	Striking objects off the carriageway on a curve
190-199	Passengers & Miscellaneous	Falling from vehicle/striking railway object

2.1.1 Colac Otway and Corangamite Shire Crash Overview

A summary of the total number of crashes by severity on local and main roads by Shire in the 5 year (1 January 2003 to 31 December 2007) crash period has been provided in Table 2. Crashes have been split to show the number occurring on main roads (roads under the responsibility of VicRoads) and local roads (roads under the responsibility of the local Councils).

[10] http://crashstat1.roads.vic.gov.au/crashstats/crash.htm

Table 2: Colac Otway and Corangamite Shire Crash Summary (1 January 2003 to 31 December 2007)

	Fatal	Serious	Other	Total
Colac Otway				
Local Roads	6	66	98	170
Main Roads	16	132	144	292
Total All Roads	22	198	242	462
Corangamite				
Local Roads	4	62	75	141
Main Roads	11	62	92	165
Total All Roads	15	126	167	308

*Note: Crashes which occur at the intersection of main and local roads were classified as “local road” crashes

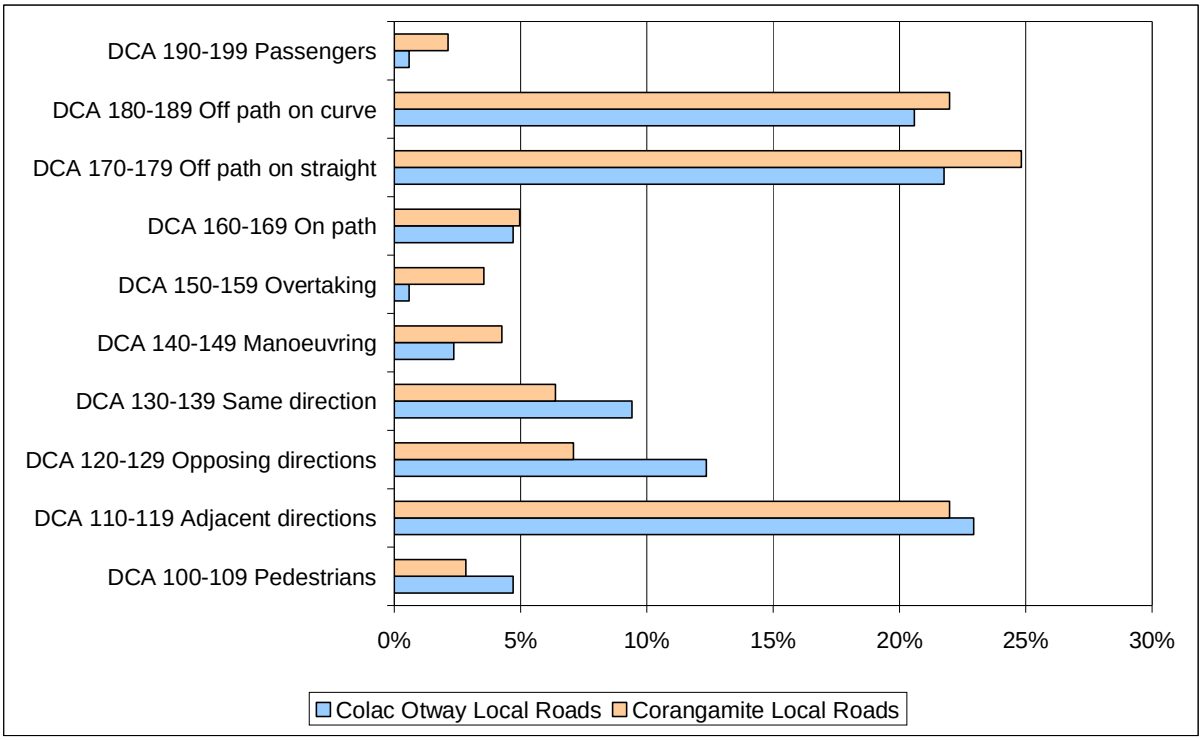
2.1.2 Corangamite & Colac Otway Shires Local Road Crash Types

The DCA crash classification groupings[11] that present as the most common for both Shires on local roads as shown in Figure 5 are:

- Crashes involving vehicles travelling in adjacent directions at intersections (DCA 110-119);
- Crashes that involved vehicles veering off path on a curve (DCA 180-189); and
- Crashes that involved vehicles veering off path on a straight (DCA 170-179).

These 3 types of crashes accounted for over two thirds of crashes within the 5 year analysis period on local roads.

Figure 5: Corangamite and Colac Otway Shires DCA comparison of crashes occurring on local roads within the shires



Refer to Appendix B for details on DCA crash types.

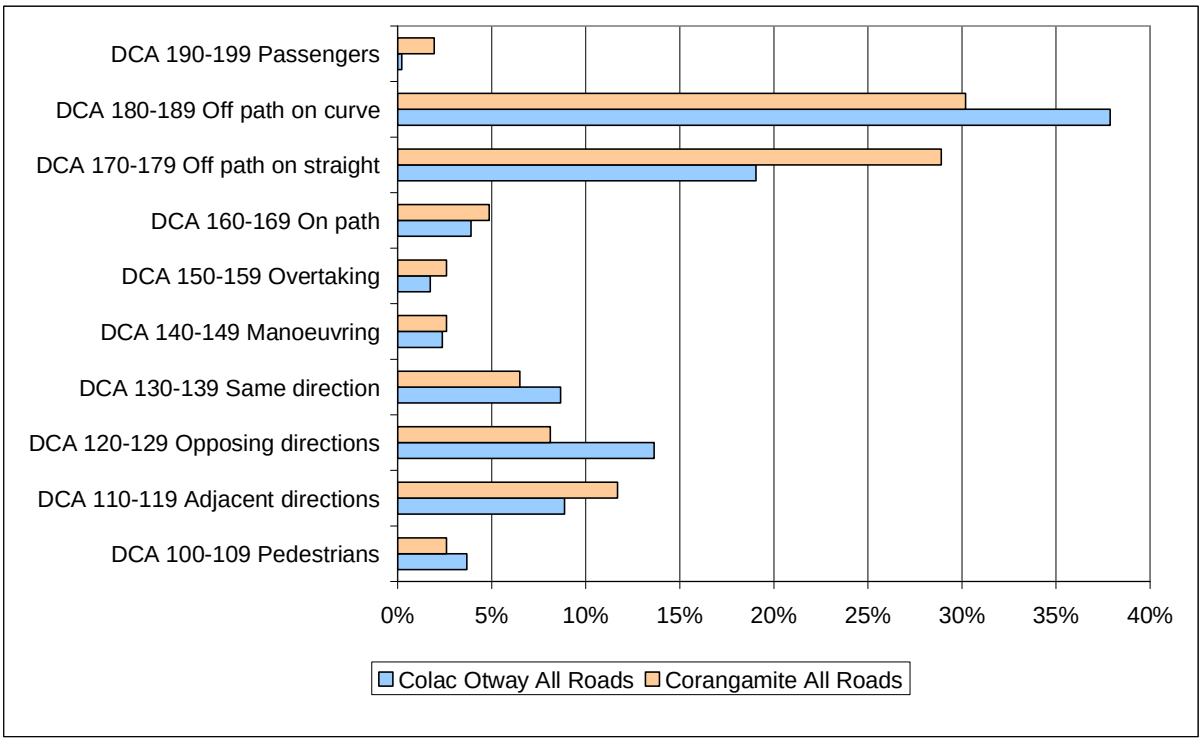
[11] Appendix B details specific DCA code classification details

2.1.3 Corangamite and Colac Otway Shires All Roads Crash Types

The crash classifications that pose the most significant cause for concern on all roads throughout both Shires are crashes where vehicles veered 'Off path on a curve' or 'Off path on a straight'. These crashes comprise over 50% of all crashes within the two Shires. Road users are more likely to be involved in a crash with vehicles travelling in adjacent directions at intersections on local roads than on main roads. Vehicle movements are more concentrated at these sites, on local roads, and the number of intersections is greater resulting in an elevated contribution from this classification.

Figure 6 displays the high concentration of crashes that are attributed to vehicles leaving the carriageway on either a straight or curved section. Crashes that occurred on local roads within the two Shires were generally more likely to involve an interaction with another vehicle whereas crashes on main roads are mostly caused by a loss of control by the driver of the vehicle.

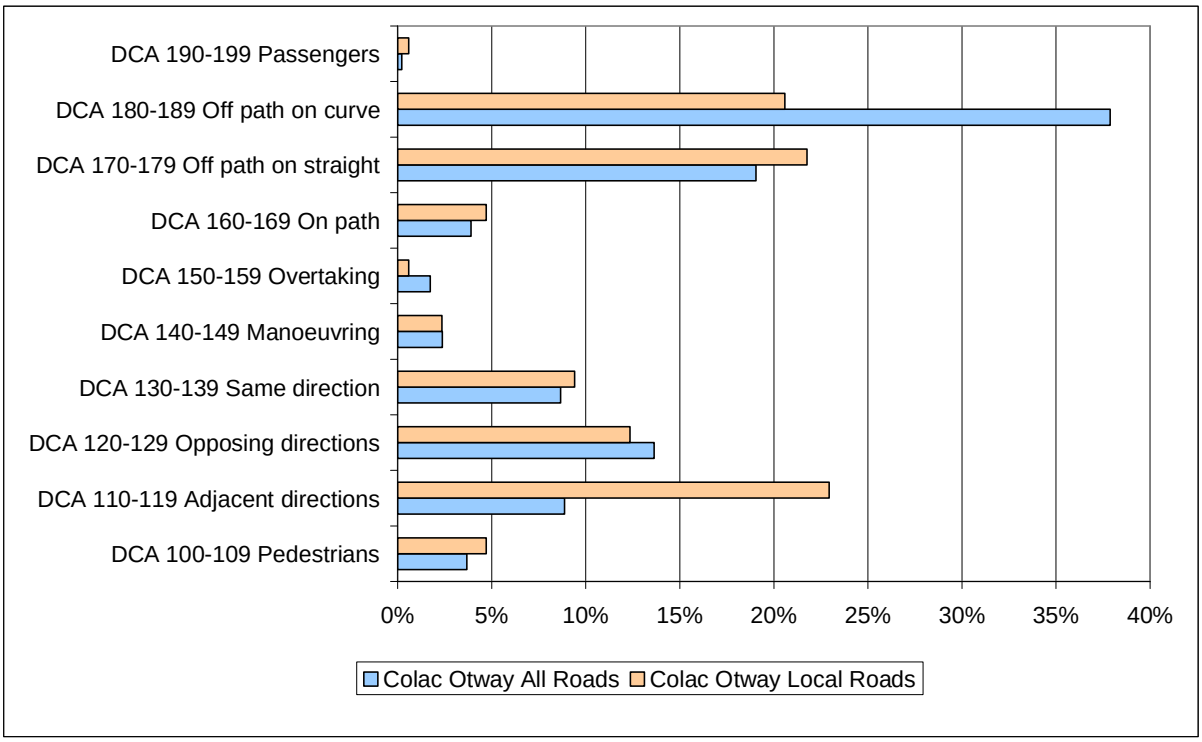
Figure 6: Corangamite and Colac Otway Shires DCA comparison of crashes occurring on all roads within the shires



Refer to Appendix B for details on DCA crash types.

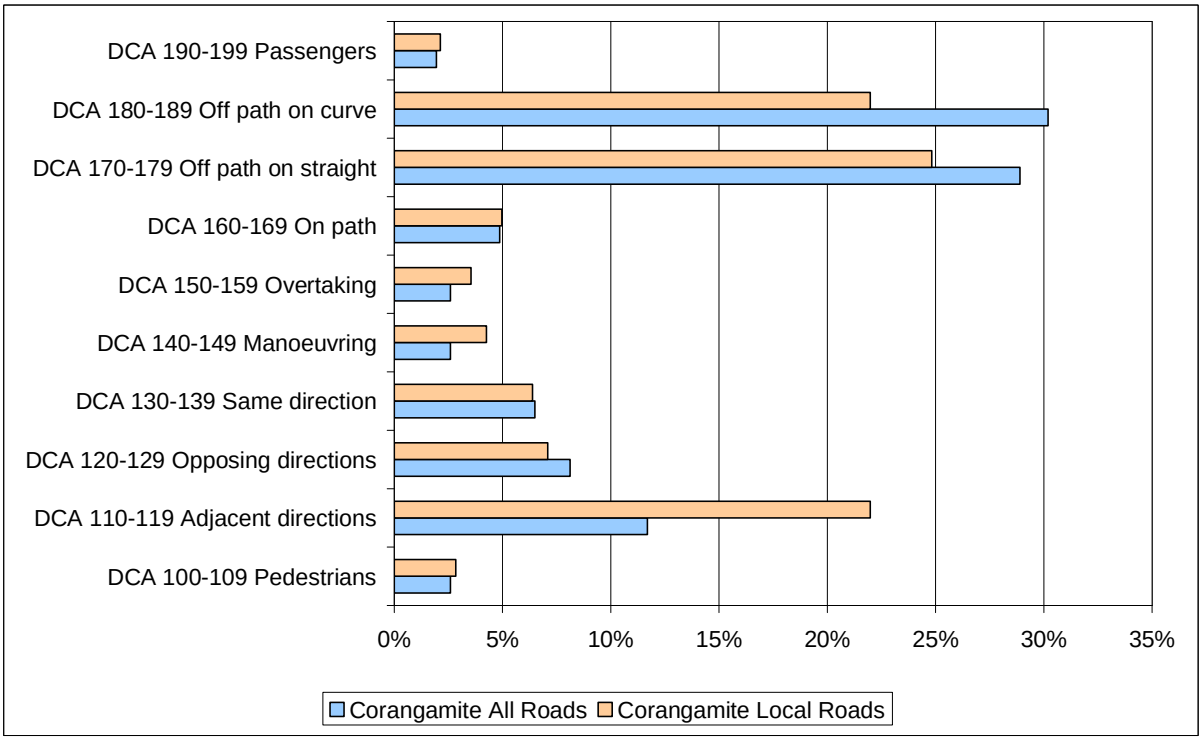
Figure 7and Figure 8 compare local road and all roads for each of the shires.

Figure 7: Colac Otway Shire DCA comparison of crashes occurring on all roads and local roads



Refer to Appendix B for details on DCA crash types.

Figure 8: Corangamite Shire DCA comparison of crashes occurring on all roads and local roads



Refer to Appendix B for details on DCA crash types.

2.2 Key Crash Facts

2.2.1 Crash severity comparison

VicRoads CrashStats data classifies the severity of a crash into three categories relating to the impact on the crash participants, namely other injury, serious injury and fatal.

Figure 9: Colac Otway - All roads

Total crashes: 462

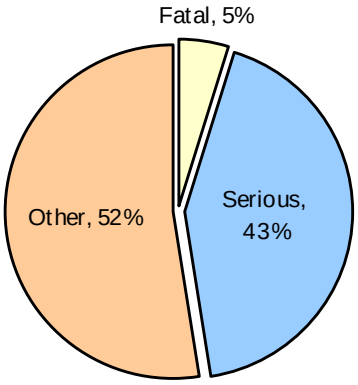


Figure 10: Corangamite - All roads

Total crashes: 308

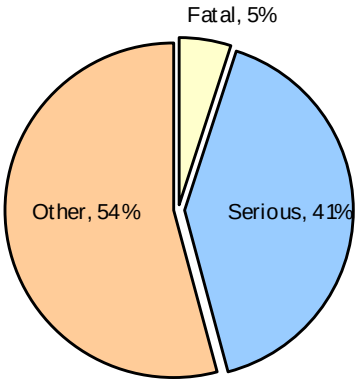


Figure 11: Colac Otway - Local roads

Total crashes: 170

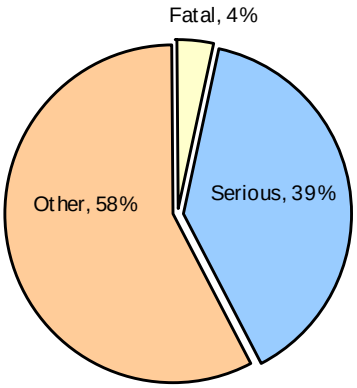
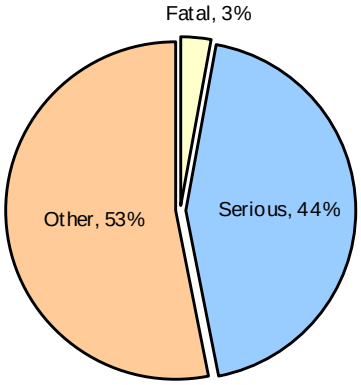


Figure 12: Corangamite - Local roads

Total crashes: 141



The data shows that although the number of crashes decreases substantially on local roads compared to main roads, the chances of being involved in a fatal crash on local roads decreases only marginally. Crashes on main roads are more likely to involve vehicles travelling at greater speeds resulting in more severe crashes.

2.2.2 Injured crash participants by Age and Gender

The age group that presented as the most vulnerable to being injured in a road crash across both Shires was between the ages of 18 to 21. In all four categories participants aged 18 years were the most likely to be injured in a crash making up 4-8% of total participants. Elderly drivers aged 60 plus attributed, on average, 10% to the total number people injured in road crashes within the Colac Otway and Corangamite Shires.

Figure 13: Corangamite Shire Age Profile – All Roads

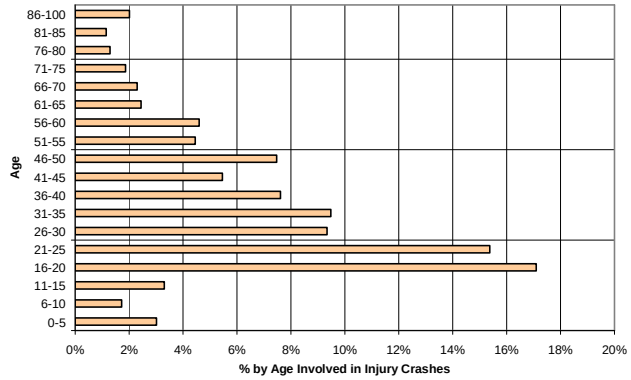


Figure 14: Colac Otway Shire Age Profile - All Roads

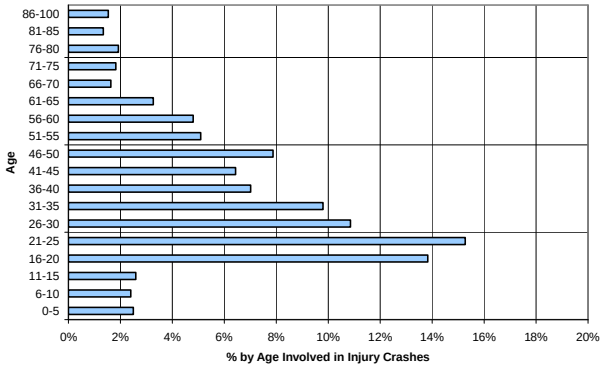


Figure 15: Corangamite Shire Age Profile - Local Roads

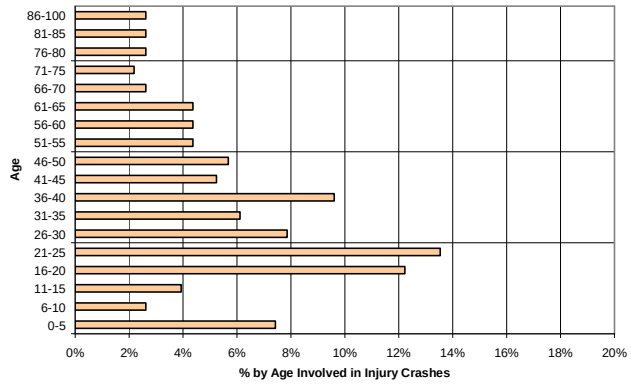
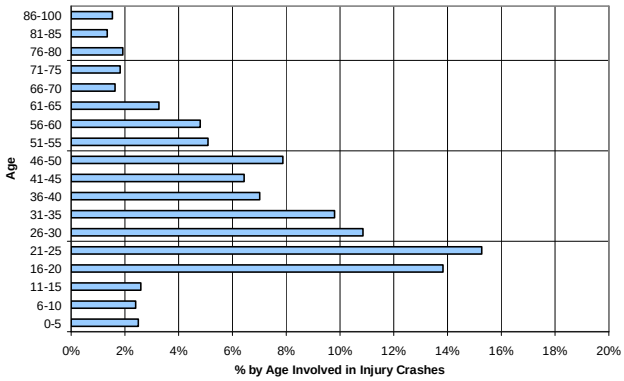


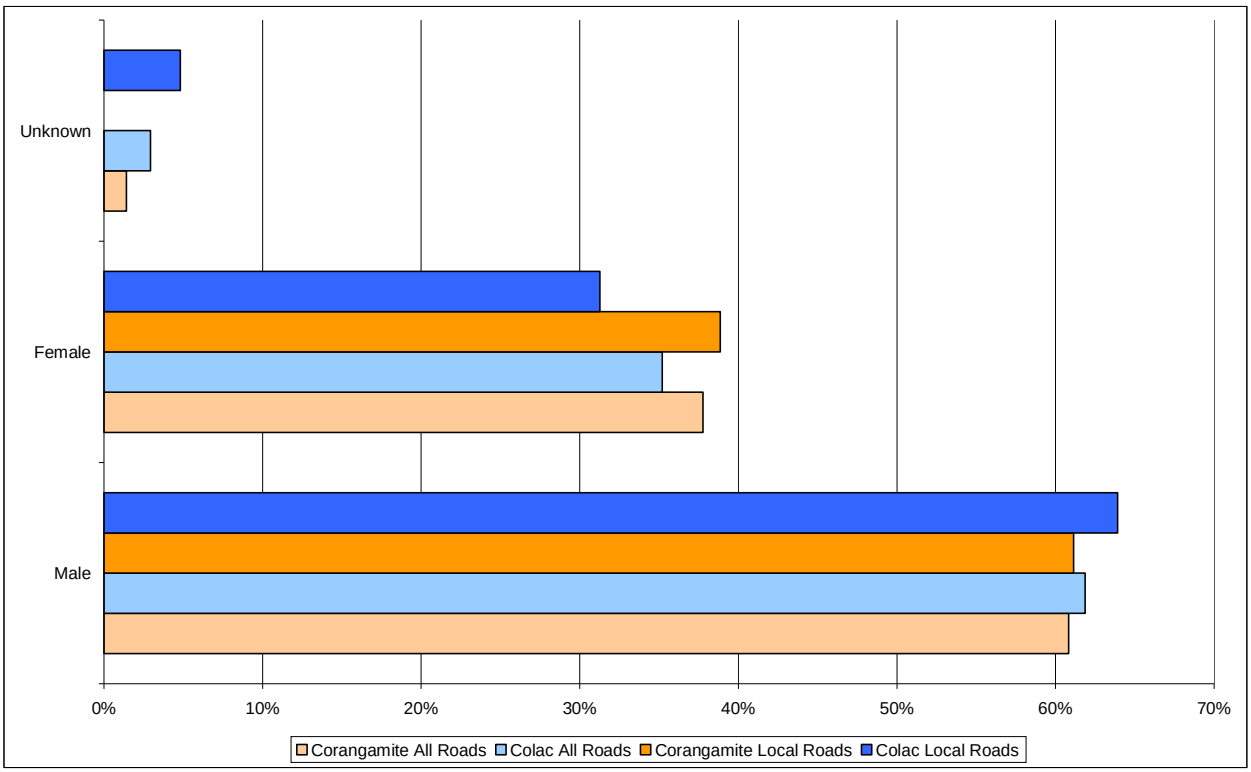
Figure 16: Colac Otway Shire - Local Roads



The analysis shows that under 18's were also significantly at risk making up approximately ten percent of the total casualties. These road users are not licensed drivers. As with aged casualties, it would generally be expected that they would participate in fewer car trips and thus their chance of being involved in a road crash might be reduced. However, their high involvement in casualty crashes may be attributable to their involvement as pedestrians or cyclists, where they are more at risk of injury. As the figures above show there is a sharp increase in the chance of injury for participants aged 18 and over, which coincides with the legal licensing age.

Male road users were almost twice as likely as females to be injured in road crashes that occurred during the 5 year analysis period as shown in Figure 17. Males were markedly more likely than females to be injured in the 'high risk' age bracket of 18-21. Males 18 years were undoubtedly the most 'at risk' of being injured in a road crash in both Shires.

Figure 17: Injured Road Users by Gender



2.2.3 Reported road and lighting conditions

Road conditions impact significantly on the type and severity of road crashes. Analysis of the CrashStats data for Colac Otway and Corangamite Shires shows that the majority of crashes occur under adequate lighting conditions during the day and when the road is dry, especially on local roads.

Table 3: Comparison of reported road conditions at the time of the crash

Road Conditions				
	Wet	Dry	Muddy	Unknown
Colac Otway - All Roads	21%	77%	1%	1%
Corangamite - All Roads	20%	79%	1%	1%
Colac Otway - Local Roads	17%	81%	2%	1%
Corangamite - Local Roads	19%	79%	1%	1%

Table 4: Comparison of reported road lighting conditions at the time of the crash

Lighting Conditions			
	Day	Dark	Dusk
Colac Otway - All Roads	78%	15%	7%
Corangamite - All Roads	69%	21%	10%
Colac Otway - Local Roads	77%	16%	7%
Corangamite - Local Roads	73%	18%	9%

2.2.4 Distribution of objects struck in road crashes

Crashes with trees account for the majority of objects struck by road users within the two Shires as illustrated by Figure 18. It is common on minor roads throughout the shire that vegetation adjacent to the carriageway runs very close to the road, often encroaching on the shoulder as shown in Figure 19 and Figure 21.

Figure 18: Comparison of objects struck in road crashes

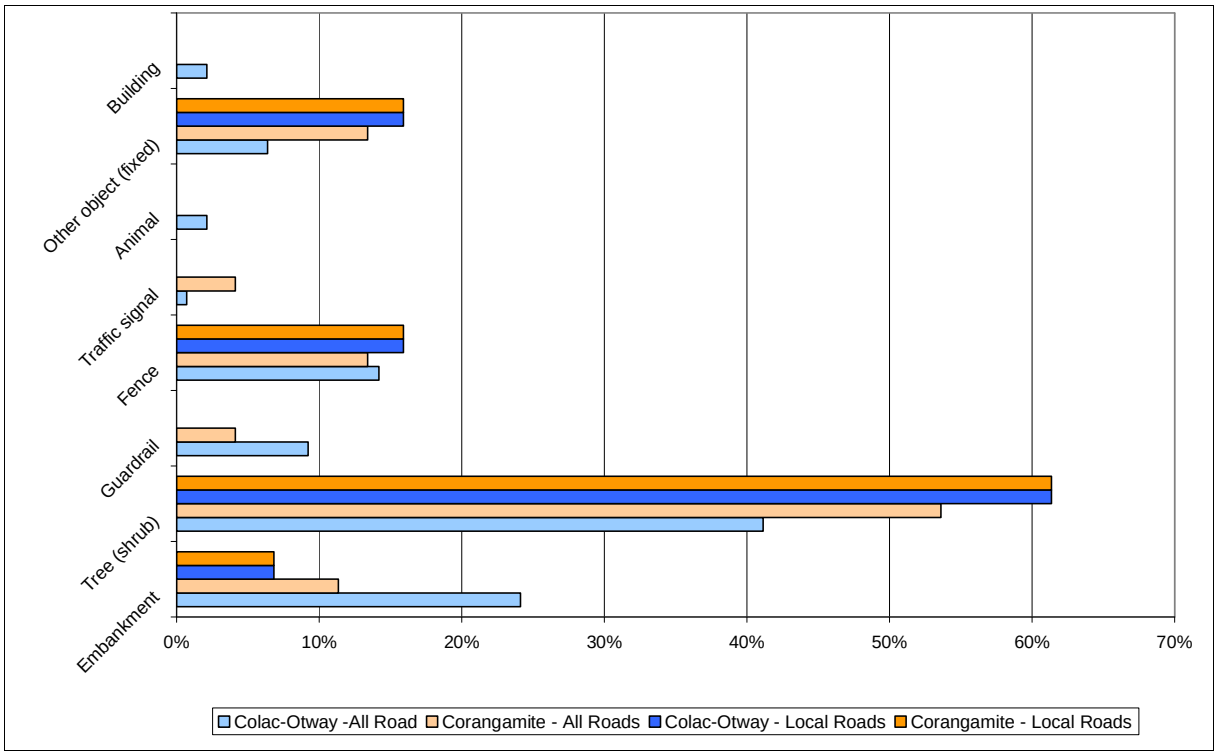
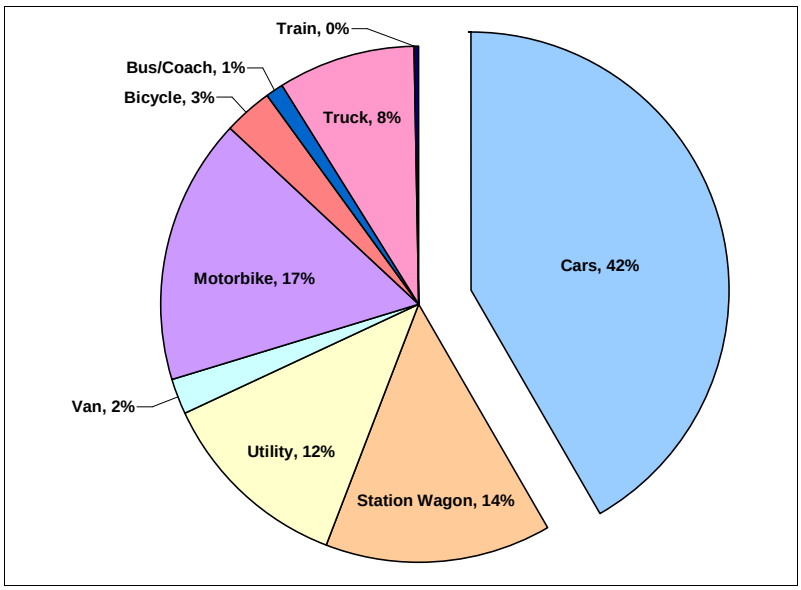


Figure 19: Timboon Curdievale Road site photo

2.2.5 Vehicle types involved in road crashes

An analysis of the types of vehicles involved in road crashes showed that the vast majority of road crashes involved cars. Figure 20 shows the average of all roads for both shires for vehicles involved in road crashes. This shows that standard vehicles (cars, station wagons, utilities and vans) account for approximately 70% of all vehicles involved in road crashes.

Figure 20: Vehicles involved in road crashes



More analysis on the involvement of some of these road users in road crashes is provided in Section 2.4.

2.3 High Crash Locations/Routes

Some sites on local roads within the two Shires pose an increased risk to road users and have recorded multiple crashes during the analysis period. Such sites are highlighted as requiring specific treatments to address the problems that are evident in the data.

2.3.1 Old Port Campbell Road

Old Port Campbell Road (a local road), a short distance from Cobden, within the Corangamite Shire has the crash data shown in Table 5.

Table 5: Old Port Campbell Road crash statistics

Location	Crash classification (DCA)	Road conditions	Date
On Old Port Campbell Rd. (505m S) between Gribbles Rd. and Trotters Rd.	183 Off left bend into object	Dry, Dark	7/11/2003
On Old Port Campbell Road (175mSE) between Beatons Rd. and Clarkes Rd.	173 Right off carriageway into object	Dry, Day	23/06/2004
On Old Port Campbell Road (450m NW) near to Beatons Road	181 Off right bend into object	Dry, Dark	28/05/2005
On Old Port Campbell Rd. (200mS) near to Gribbles Rd.	181 Off right bend into object	Dry, Dark	11/08/2006

Refer to Appendix B for details on DCA crash types.

The surface of the road is generally in reasonable condition and not likely to have contributed to the crashes at this site. The classification of crashes recorded on this road relate to loss of control resulting in the vehicle leaving the carriageway in either the left or right direction and colliding with an object on the side of the road. The clear zone provided along this stretch of road is minimal with trees and shrubbery frequently abutting the bitumen. It should also be noted that three of the four crashes occurred during dark lighting conditions. Road delineation through the implementation of reflectorised guide posts and RRPM's would aid road users who may have difficulty distinguishing the extents of the carriageway, particularly at night when poor road delineation posses the greatest risk. Embankment treatment combined with establishing a more defined clear-zone would also contribute to improved safety for road users on Old Port Campbell Road.

Figure 21: Old Port Campbell Road

2.3.2 Other Local Roads

Other local roads within the two shires that have recorded multiple crashes are shown in Table 6. Local roads that intersect with the arterial roads Princes Highway West and the Great Ocean Road feature prominently and would benefit from targeted treatment measures. Colac-Lavers Hill Road and Colac-Forrest Road are busy arterial roads that run through the town of Colac and intersect with a number of local roads. Crashes on these roads are at low speeds and involve interactions of turning vehicles, only three of the 22 incidents resulted in serious injury. Similarly the crashes that occurred within the Corangamite shire took place within close proximity to the township of Cobden. Three crashes on these roads resulted in serious injuries. There was one fatality that occurred at the intersection of Cobden South-Ecklin Road in 2005.

Table 6: Crashes on local roads – Colac Otway and Corangamite Shires

Location	Number of crashes Colac Otway	Number of crashes Corangamite
Intersecting with Cobden-Terang Road	-	8
Intersecting with Camperdown-Cobden Road	-	9
Intersecting with Colac Forrest Road	8	-
Intersecting with Colac-Lavers Hill Road	14	-
Intersecting with the Great Ocean Road	9	9
Intersecting with Princes Highway West	20	14

2.3.3 All Roads

Analysis of the Crash-Stats data for crashes on all roads within both Shire reveals the crash locations that represent the most significant risk to road users. These sites are shown in Table 7 and Table 8 for Colac Otway and Corangamite Shires respectively, which are all arterial roads. Both tables show that the Great Ocean Road is a high-crash route and poses the greatest hazard. The Great Ocean Road carries a significant number of tourist vehicles and the high volumes are reflected in the CrashStats data. The most common type of crash along these high-crash routes is consistent with those experienced across the broader Shires and involves vehicles veering off the carriageway. Interestingly, in Colac Otway Shire 55% of the crashes on the Great Ocean Road involved a motorcycle. This is mainly due to the Great Ocean Road being a scenic route, continuous curves and very popular motorcycle riders for these reasons. Hence the increased number of motorcycles riding on this road and travelling at speeds inappropriate for the conditions. The Princes Highway West also carries a high volume of traffic and as such recorded the second highest number of crashes in both Shires during the analysis period.

Table 7: High Crash Roads Colac Otway Shire – Arterial Roads

Location	Crash classifications category	Number of crashes
Great Ocean Road	Pedestrians, Opposing directions, Same direction, Manoeuvring, Overtaking, On-path, Off-path on straight and Off-path on curve	139
Princes Highway West	Pedestrians, Opposing directions, Same direction, Manoeuvring, Overtaking, On-path, Off-path on straight and Off-path on curve	75
Colac-Lavers Hill Road	Pedestrians, Opposing directions, , On-path, Off-path on straight and Off-path on curve	56
Forrest Apollo Bay Road	Manoeuvring, Off-path on straight and Off-path on curve	21
Birregurra-Forest Road	Adjacent directions and Off-path on curve	11
Timboon-Colac Road	Same direction, Overtaking and Off-path on straight	10
Skenes Creek Road	Opposing directions, Same direction, On-path and Off-path on curve	10

Table 8: High Crash Roads Corangamite Shire – Arterial Roads

Location	Crash classifications category	Number of crashes
Great Ocean Road	Pedestrians, Adjacent directions, Opposing directions, Same direction, Manoeuvring, Overtaking, On-path, Off-path on straight and Off-path on curve	44
Princes Highway West	Adjacent directions, and Same direction	37
Cobden-Port Campbell Road	Opposing directions, Off-path on straight, Off-path on curve and Passengers & Miscellaneous	24
Cobden-Warrnambool Road	Off-path on straight and Off-path on curve	15
Camperdown-Lismore Road	Opposing directions, Same direction, Off-path on straight, Off-path on curve and Passengers & Miscellaneous	15
Timboon -Nullawarre Road	Same direction, Off-path on straight and Off-path on curve	13
Lavers Hill-Cobden Road	Same direction, Manoeuvring, Off-path on straight and Off-path on curve	12

2.4 Specific Road Users

2.4.1 Crashes involving trucks

In the five years from 1 January 2003 to 31 December 2007 there were a total of 28 and 40 reported crashes involving trucks within the Colac Otway and Corangamite shires respectively.

- More than half of the crashes involving heavy vehicles in each of the shires resulted in either a fatality or serious injury.
- Crashes involving heavy vehicles within each of the shires accounts for 6% of the total number of crashes for Colac Otway shire and 13% for Corangamite shire.
- In Corangamite Shire, 15% of crashes involving a heavy vehicle resulted in a fatality, while in Colac Otway Shire approximately 11% of heavy vehicle crashes caused fatalities.
- The main type of crash that was prevalent for truck crashes was loss of control crashes (DCA 170-189), which accounted for nearly half of the truck crashes.
- More than half of the crashes for either shires occurred when a truck hit another vehicle/object rather than another vehicle hitting the truck. That said, when a vehicle hit a truck the majority were serious or fatal crashes.

Table 9: Crashes involving heavy vehicles - Colac Otway Shire

Road Type	Number of fatal truck crashes	Number of serious injury truck crashes	Number of other injury truck crashes	Total Truck Crashes
Local Roads	2	2	7	11
Main Roads	1	9	7	17
Total	3	11	14	28

Table 10: Crashes involving heavy vehicles - Corangamite Shire

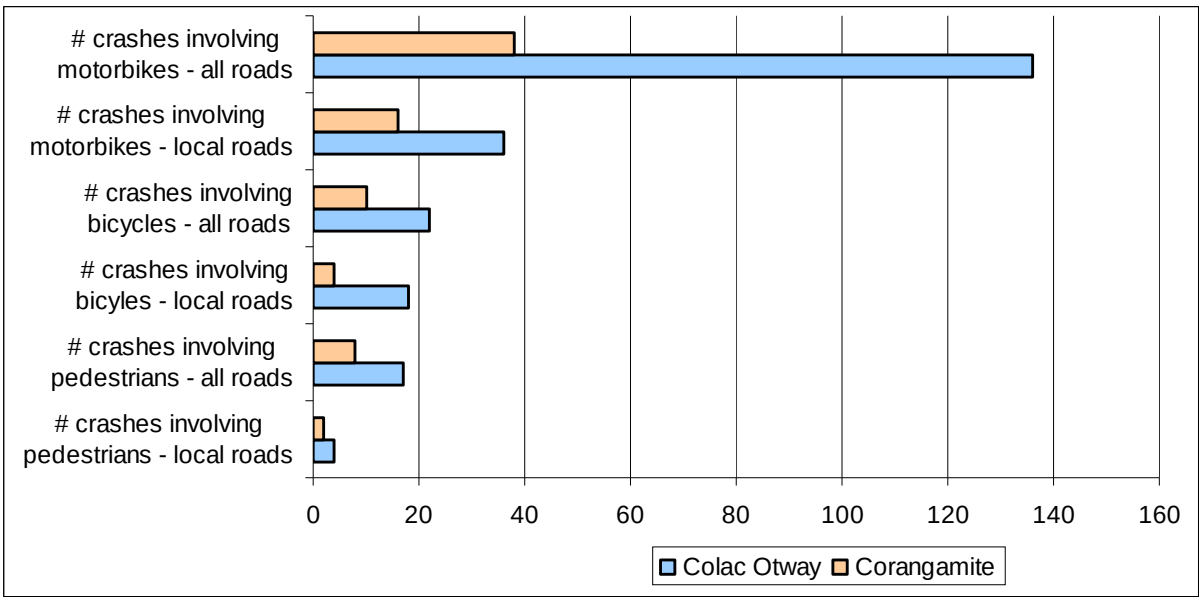
Road Type	Number of fatal truck crashes	Number of serious injury truck crashes	Number of other injury truck crashes	Total Truck Crashes
Local Roads	2	9	9	20
Main Roads	4	7	9	20
Total	6	16	18	40

These figures demonstrate how important it is to address truck related crashes, given the very high rate of fatality crashes and the fact that local roads used by timber trucks are narrow winding roads and it is a mix of traffic.

2.4.2 Impacts on vulnerable road users: motorcycles, bicycles and pedestrians

A summary of the total number of crashes involving motorcycles, bicycles and pedestrians is shown in Figure 22.

Figure 22: Number of crashes involving vulnerable road users (1 January 2003 to 31 December 2007)



A high proportion of the pedestrians involved in crashes were male where there were only two female pedestrians for Corangamite and three female pedestrians for Colac Otway. For pedestrians under the age of 15 there were two pedestrian crashes in Colac Otway and three pedestrian crashes in Corangamite. Three were also a high number of pedestrians 60 years and over, Colac Otway had five pedestrian crashes and Corangamite had one pedestrian crash.

It is interesting to note that crashes on main roads involving motorcycles in the Colac Otway Shire represents 29% of the total number of main road crashes in the Shire. 57% (or 77 out of a total of 136 motorbike crashes) occurred on the Great Ocean Road, highlighting the attraction (and also danger) of this route for these road users.

2.4.3 Crashes involving railway level crossings

Three reported crashes with trains occurred within the study period across both shires. Two of these incidents resulted in fatalities.

Corangamite shire reported two crashes at the sites listed below:

- Vite Vite Road near Factory Road, Derinallum; and
- Camperdown-Lismore Road between Brown Street and Lismore Station Road (45m North East of Lismore Station Road).

The crash at Vite Vite Road is located close to the town of Lismore and resulted in a serious injury.

Just one crash occurred within the Colac Otway shire on a local road - Barpinba-Poorneet Road between Hamilton Highway and Poorneet Station Road (17m North East of Poorneet Station Road), Wingeel. This crash resulted in a fatality.

The crash that occurred on Vite Vite Road, Derinallum took place in April 2005. Works completed at the level crossing of this site in February 2008 upgraded the intersection to include flashing lights and electronic bells. Previously only warning signage had provided forewarning of the crossing for motorists and pedestrians. The upgrade was completed as part of a program by the State Government to boost railway safety which may focus on other sites that present a significant risk such as those listed above.

Table 11: Railway level crossing road control distribution

Road control type	Number within Colac Otway Shire	Number within Corangamite Shire
Flashing Lights	14	9
Give-way Signs	8	14
Stop Signs	1	2
Boom Barriers	1	2
Position Markers	0	2
Total number of crossings	24	29

There are a total of 24 railway level crossings within the Colac Otway Shire and 29 in the Corangamite Shire. The most prevalent road control measure used within the Colac Otway Shire is flashing lights. Flashing lights are used broadly throughout the Corangamite Shire, however give-way signs are the most common form of control.

2.5 Statewide Comparison of Colac Otway and Corangamite Shires versus other Rural Shires

In order to determine how the Shires rate in the broader region, the number of crashes within Colac Otway and Corangamite Shires were compared against crash numbers in 45 surrounding rural Victorian Shires. Appendix A shows that the Colac Otway Shire ranks 31st for total number of crashes and Corangamite ranks 24th (with 1 being the highest and therefore the worse site). When the population, as at June 2007, was taken into consideration to produce a crash rate per head of population both Shires rankings decreased (and therefore improved) with 40th for Colac Otway and 31st for Corangamite.

Table 12: Shire Ranking Summary from 45 Rural Victorian Shires

Shire	Total crash ranking – All roads	Total crash ranking – Local roads	Crash ranking per head of population – All roads	Crash ranking per head of population – Local roads
Colac Otway	31	23	40	25
Corangamite	24	17	31	17

Rankings for Corangamite were higher than Colac Otway Shire in all categories reflective that the Shire covers a greater land area (of an additional 1,200 square kilometres). However Corangamite Shire has approximately 4,000 fewer residents. This could be reflective that additional traffic and crashes are partly generated by tourists and through traffic volumes on the road network, and therefore crash generation may not necessarily be a factor of population, but of total traffic flows.

Interestingly, the crash ranking were also far higher when only local roads were considered, highlighting that these shires need to focus funding towards addressing local crash issues.

2.6 Other Crash Factors

Other contributory factors which cannot be determined from CrashStats includes drink driving, fatigue and speed related crashes. The Victorian Governments *'arrive alive 2008-2017'* road safety strategy indicates a percentage of crashes which can be attributed to these crashes:

- Drink driving contributes up to 30% of driver and rider deaths on Victoria's roads each year[12]. On a per head basis, motorists on country roads are more than twice as likely to be killed in drink driving crashes compared to motorists on Melbourne roads[12].
- The incidence of driver related fatigue on country roads is particularly high when compared to metropolitan roads. It is estimated that fatigue is a factor in 20% of driver deaths on Victoria's roads each year[12]. Drivers on the road during the hours between 2am and 4am are three times more likely to be involved in a crash than those travelling from 12pm to 2pm. Heavy vehicle operators, who frequently operate at these times, are at particular risk and are estimated to be involved in twice as many fatigue related crashes as other vehicles.
- Speeding impacts both the frequency and severity of road crashes across all road types and locations. Speeding contributes to over 30% of fatalities on Victorian roads each year[12].

2.7 Summary of Key Crash Types

The key crash types for both shires were run-off road crashes which involved vehicles travelling off the carriageway on either a straight or curved section of road. When a vehicle came off the carriageway a tree (or shrub) was the most commonly hit object. The other main crash type was vehicles from adjacent directions at intersections on local roads only.

The age group that was involved in the most crashes were people aged between 16 years and 25 years. Of the pedestrians involved in crashes the clear majority were male.

Motorcycles and trucks were also over represented in crashes but cars, station wagons, vans and utility vehicles covered the majority of vehicles involved in a crash.

[12] Victoria's Road Safety Strategy: Arrive Alive 2008-2017

3.0 Road Safety Goals and Strategies

3.1 Development of Road Safety Goals and Strategies

Priorities for road safety action in Colac Otway and Corangamite Shires (CO&C) have been developed based on consideration of a number of sources including:

- Local crash statistics (VicRoads CrashStats Data)
- A Key Stakeholder Workshop
- Review of State-wide and local priorities and policy, including Victoria's Road Safety Strategy arrive alive!

The priorities that have been developed are therefore based on a combination of:

- Objective analysis of what has happened in the past
- Subjective concerns in the local community about what may happen in the future
- Opportunities to target specific groups of people in particular settings, such as different road user groups

The identified priorities address three critical elements which are: safer road users, safer infrastructure and safer vehicles. The following identifies strategies which could be implemented to improve road safety for each of the three elements.

3.1.1 Safer Road Users

Drink/drug driving

GOAL: To reduce the number of people drinking/taking drugs and driving by educating the community about the risks involved.

Drink/drug driving contributes to approximately 30% of all crashes and these drivers are more than twice as likely to crash on Victorian country roads as Melbourne roads. To achieve this goal education of the community is provided as well as being controlled by enforcement.

Table 13: Drink/drug driving Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Drink driving	Encourage liquor license holders to promote responsible serving of alcohol.	CO&C	Sporting Clubs Drink suppliers Licensed Clubs Association TAC	Responsible approach adopted by licensed venue operators to encourage consumption of low alcohol content and non alcoholic drinks.
	Advocate the restriction of alcohol advertising, particularly those surrounding sporting and social venues.	CO&C	Sporting Clubs Drink suppliers Licensed Clubs Association Colac Liquor Association	
	Maximise the effectiveness of police enforcement activities.	Police	CO&C	Reduce the number of drivers driving

Issues	Actions	Lead Agency	Partners	Outcomes
	Encourage the introduction of breath testing machines at licensed outlets.	CO&C	Police Sporting Clubs Licensed Clubs Association	under the influence of alcohol
	Encourage designated driver programs and providing patrons with free non-alcoholic beverages.	RoadSafe	Police CO&C Sporting Clubs Licensed Clubs Association	
	Promote the consumption of low-alcohol drinks at licensed venues.	RoadSafe	CO&C Sporting Clubs Licensed Clubs Association	
	Promote the introduction of interlock devices for repeat drink driving offenders and young drivers. Encourage vehicle manufacturers to consider the implementation of interlock devices into the design of new vehicles.	VicRoads	Police CO&C TAC	
	Encourage the availability of taxis and information on taxi booking hire at licensed venues	RoadSafe	CO&C Taxi Association	
	Encourage drivers who are over the limit to keep cars parked overnight at venues (i.e. no parking restrictions and good lighting)	CO&C	RoadSafe	
Drug affected driving	Maximise enforcement through increased roadside saliva testing.	Police	CO&C Australian Drug Foundation Hospitals VicRoads	Greater awareness of the associated risks and impacts of driving under the influence of drugs and road safety.
	Education of drivers to better understand the risks associated with driving under the influence of drugs.	RoadSafe	CO&C Australian Drug Foundation Hospitals TAC VicRoads	
	Investigate the potential for introducing drug interlock devices in vehicles, particularly long haul trucks and fleet vehicles.	VicRoads	CO&C Australian Drug Foundation TAC Police	
	Maximise blood tests of crash causalities at hospitals.	Hospitals	Police CO&C	

Fatigued driving

GOAL: To reduce the number of people attempting to drive while they are fatigued by informing the community of ways to reduce fatigue and providing adequate areas for drivers to pull over and recover.

Fatigued drivers are mainly prevalent on rural roads due to the high probability of long travel journeys. There are three ways to reduce the occurrence of crashes due to fatigued drivers, namely: education, providing adequate rest stops and vehicle technology. Education is the important factor to reduce fatigued drivers and there are a number of strategies state-wide and locally to help educate the community. Rest stops are discussed below. New technology is currently being developed which can alert the driver when they seem to be falling asleep at the wheel.

Table 14: Fatigued driving Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Rest stops on highways	Increase the frequency of rest stops on major roads. Improve facilities on the Princes and Hamilton Highways and the Great Ocean Road.	VicRoads	Road Safe	Increase the number of vehicles using rest stops, particularly heavy vehicle operators.
Driver rest breaks	Increase fatigue awareness and promotion of the 'drowsy drivers' campaign.	RoadSafe	CO&C VicRoads RACV	Improve the awareness of the impact of fatigue on fatal crashes. Decrease incidence of fatigue related crashes.
	Encouraging the development of in-vehicle technologies that identify the onset of fatigue and alert the driver.	VicRoads	CO&C RACV Vehicle manufacturers	
	Introduce chain of responsibility laws to ensure that commercial operators limit the number of continuous hours spent behind the wheel by drivers. Particularly focusing on heavy vehicle operators.	Fleet operators	VicRoads RACV CO&C RoadSafe	
	Ensure driver rest areas provide participants with an acceptable level of safety to encourage power napping and driver revival.	VicRoads	CO&C Police	

Excessive speed driving

GOAL: To reduce the number of vehicles travelling at inappropriate speeds for the environment by educating the community of the risks, providing appropriate environments and enforcing the speed limit.

Excessive speed contributes to approximately 30% of all crashes. Statistics show that increasing the speed of the vehicle exponentially increases the risk of being involved in a crash. Therefore a slight reduction in speed can dramatically reduce the risk of being in a crash. To reduce vehicles speeds, drivers need to be educated in the appropriate speed to be travelling for different situations and the risks that are involved at travelling at higher speeds.

Table 15: Excessive Speed driving Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Speeding and high risk driving	Implement speed limit reductions based on the risk presented at specific sites, i.e. Road sections that have recorded a high number of crashes are given priory for treatment.	CO&C (local roads) VicRoads (main roads)	VicRoads Schools Roadsafe Police	Reduce the impacts of high risk driving and speeding. Reduce the severity of crashes.
	Distribute messages about safe operation of a vehicle under varied road conditions. Utilise media publicity, highway signs and barriers and distribution of information at schools.	RoadSafe	CO&C VicRoads RoadSafe	
	Promote the installation of speed limiting devices and intelligent speed assist (ISA) in vehicles.	VicRoads	CO&C Vehicle manufacturers	
	Promote greater compliance with the speed limit through enforcement , education and road safe speed machine.	Police	VicRoads RoadSafe CO&C	

Young Drivers

GOAL: Reduce the number of crashes involving young drivers by educating them on the risks involved with driving and ways to reduce the risks.

Young drivers (18 years to 25 years) were involved in 29% of the crashes for Colac Otway and 37% for Corangamite Shires. Victoria wide young drivers represent over 25% of driver fatalities but only represent 13% of licensed drivers. Young drivers are inexperienced, risk takers and easily distracted by passengers therefore need to be educated on the risks involved while driving a vehicle. Education and regulations of licensing can help in the reduction of young drivers being involved in crashes.

Table 16: Younger Road Users Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Improving road safety of younger road users	Support information programs for younger drivers.	RoadSafe	CO&C VicRoads	Improve driver awareness and alertness of younger drivers. Broaden awareness campaigns targeting inexperienced drivers.
	Encourage further distribution of the 'HELP' message[13] to achieve reductions in the youth road toll.	RoadSafe	CO&C VicRoads	
	Assist in delivering the 'Keys Please' information sessions to learner drivers and their parents.	RoadSafe	CO&C VicRoads	
	Promote the Graduated Licensing Schemes to assist inexperienced drivers to improve their driving skills.	VicRoads	CO&C RoadSafe	

Older drivers

GOAL: Reduce the number of crashes involving older drivers by educating them on their fitness to drive and other ways they can get stay mobile without driving.

Older drivers (60 years plus) were involved in 12% of the crashes for Colac Otway and 11% for Corangamite Shires. Older drivers increase the severity of the crash as they are less likely to recover as well as a younger person. Education of drivers on their limits and refresher lessons can help in the reduction of older drivers being involved in crashes. Vehicle improvements which decrease the severity of the crash will also help with older drivers.

Table 17: Mature Drivers (60+) Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Mature aged driver road safety (60+)	Promote awareness of fitness to drive.	RoadSafe	CO&C VicRoads TAC	Increase the number of participants in the programs. Decrease the number of crashes involving mature aged drivers.
	Provide road safety presentations at retirement villages.	RoadSafe	CO&C VicRoads Local retirement villages	
	Encourage license retesting and refresher sessions.	RoadSafe	CO&C VicRoads	
	Support the RACV 'Years Ahead' program. Encourage older groups to participate in the sessions.	RACV	CO&C VicRoads	

[13] TAC program

Issues	Actions	Lead Agency	Partners	Outcomes
	Promote and support the 'Keeping Safe and Mobile' program[14].	RoadSafe	CO&C VicRoads	

Motorcyclists

GOAL: To reduce the number of motorcycles involved in crashes by educating motorcyclists and providing motorcycle friend road safety treatments.

Motorcyclists represent 14% of all crashes on the roads but there are only 3% of all registered vehicles in Victoria. Motorcyclists were involved 21% of the crashes for Colac Otway and 12% for Corangamite Shires. Motorcycles have a high risk of hitting a road side hazard as when a rider falls off the motorcycle they need a long distance in which to stop. Motorcycle education for the riders and other drivers will help reduce the likelihood of them being involved in crashes. Infrastructure improvements that take motorcycles into account and providing motorcycle treatments along popular motorcycle routes can help reduce motorcycle crashes. Technology to improve motorcycles should be encouraged to reduce the severity of the crashes.

Table 18: Motorcyclists Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Motorcyclist training	Promote increased motorcycles training and defensive driving courses.	Motorcycle Riders Association	Police VicRoads RoadSafe CO&C	Increased skills and experience of motorcyclists
Safer motor cycle riding and identification of motorcycles.	Encourage riders to maximise the use of visible and protective clothing. Promote motor bike apparel manufacturers to utilise reflective materials and light colouring.	VicRoads	CO&C Police Motorcycle Riders Association	Improved motorcycle driving skills and increased awareness of motorbikes on the road.
	Distribute and promote the motorcycle guide to the region to improve drivers' awareness of the road conditions within the Shires.	VicRoads	RoadSafe CO&C	
Improve road conditions to target specifically at motorcyclists	Target road improvement to high crash zones and road sections which pose a significant risk to motorcyclists.	CO&C (local roads) VicRoads (main roads)	RoadSafe Motorcycle Riders Association	Safer road conditions for motorcyclists. Reduced crash severity for motorcyclists.
	Install warning signs on high crash sites, principally along the Great Ocean Road where crashes involving motorcyclists are particularly high.	CO&C (local roads) VicRoads (main roads)		

[14] www.mav.ans.au/saferoads (date accessed: September 2008)

Issues	Actions	Lead Agency	Partners	Outcomes
	Encourage motorcyclists to report road hazards that present particular danger to them (such as loose stones on sealed surfaces and low visibility areas).	RoadSafe	CO&C VicRoads	
	Ensure that new road infrastructure is sensitive to motor cyclists.	CO&C (local roads) VicRoads (main roads)		

To improve road infrastructure for motorcycles funding can be sourced from the Motorcycle Blackspot Program (which is funded by the Motorcycle Safety Levy). The Motorcycle Blackspot Program targets locations where there is a high rate of motorcycle loss of control crashes, or high rate of motorcycle crashes or along popular motorcycle routes.

Pedestrians

GOAL: To reduce the number of pedestrians involved in crashes by improving pedestrian facilities.

Pedestrians were involved 2.7% of the crashes for Colac Otway and 2.5% for Corangamite Shires. Everyone is a pedestrian for a least one part of their journey and therefore it is important to ensure the safety of all pedestrians. Pedestrian safety can be implemented in a number of ways including education, enforcement (jay walking) and infrastructure. The major initiative to reduce the severity of pedestrian crashes is reducing vehicle speed. If a pedestrian is hit by a vehicle that is travelling less 40km/hr they are likely to survive. Educating the community on the importance of using designated crossings and looking out for pedestrians are all important ways to reduce pedestrian crashes. Infrastructure is also a key way to reduce pedestrian crashes by ensuring that facilities are provided for pedestrians in which pedestrian routes are catered for which don't unduly delay pedestrians in time and length of travel.

Table 19: Pedestrians Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Improve safe pedestrian movement in townships	Audit existing pedestrian crossing facilities within townships. Identify and prioritise where increased/improved pedestrian crossing facilities could improve safety of pedestrians. This is particularly a priority along high trafficked routes.	CO&C	VicRoads RoadSafe Disability Service Providers Community Health Service	Improved pedestrian access and safety in high activity zones.
	Audit existing pedestrian facilities along common pedestrian routes and identify and implement measures to increase accessibility for disabled and impaired pedestrians.	CO&C	RoadSafe VicRoads	

Issues	Actions	Lead Agency	Partners	Outcomes
	Increase off-road walking paths and pedestrian routes between major origin-destination points in local towns to reduce conflict.	CO&C	RoadSafe VicRoads	
	Increase segregation of vehicles and pedestrians at high pedestrian activity sites.	CO&C	RoadSafe VicRoads	

Cyclists

GOAL: To reduce the number of cyclists involved in crashes by improving the cyclist facilities and increasing the conspicuousness of cyclists on the road.

Cyclists were involved 3.5% of the crashes for Colac Otway and 3.1% for Corangamite Shires. Lowering speed limits and providing cyclist infrastructure can help in reducing cyclist crashes. A number of improvements to the road network such as advanced stop lines (with bicycle logos), bicycle lanes (with or without painted green road surface), connectivity of bicycle routes and signage can also provide a safer environment for cyclists.

Table 20: Cyclists Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Improved safety and segregation for cyclists	Carry out gap analysis of the existing strategic cycle network and where possible, provide cycle lanes along common and strategic cycling routes.	CO&C	VicRoads RoadSafe Bicycle Victoria	Increased awareness of cyclists and greater safety for all road users.
	Improve segregation of cyclists and vehicles.	CO&C (local roads) VicRoads (main roads)	Bicycle Victoria	
	Expand network of advanced stop lines and bicycle logos.	CO&C (local roads) VicRoads (main roads)	Bicycle Victoria	
	Increase driver advisory signs to prepare drivers for upcoming interaction with cyclists.	CO&C	VicRoads Bicycle Victoria	
	Educate the community through the bicycle education program	Roadsafe	CO&C VicRoads	

Heavy vehicle drivers

GOAL: To reduce the number of crashes involving heavy vehicles

Heavy vehicles were involved in 6% of the crashes for Colac Otway and 13% for Corangamite Shires. Adequate rest stops and enforcement would be beneficial for reducing heavy vehicle crashes. Enforcement of the 'Driving Hours Regulations' and the 'National Log Book' are recommended to ensure a high level of driver alertness and road awareness. B-double trucks should only be using B-double approved routes which are controlled by VicRoads.

Table 21: Heavy Vehicle drivers Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Crashes involving heavy vehicles	Encourage heavy vehicle drivers to attend 'fatigue laws' information sessions.	Victorian Road Freight Advisory Council (VRFAC)	CO&C VicRoads	Reduction in the severity of crashes across the Shires. Greater adherence to the regulations that promote heavy vehicle safety procedures.
	Promote acceptance and understanding of the Heavy Vehicle Fatigue Reform Package.	VicRoads	Driver Reviver sub-committee CO&C	
	Enforcement of the fatigue management strategy which stipulates maximum driver hours and record keeping provisions.	VicRoads	Police CO&C Driver Reviver sub-committee	
	Improve rest stop facilities for heavy vehicle operators.	VicRoads	CO&C	
	Support TAC 15 minute powernap campaign.	TAC	VicRoads CO&C Roadsafe	
	Improve infrastructure on key heavy vehicle routes	VicRoads	CO&C	

3.1.2 Safer Infrastructure

Run-off-road and head-on crashes

GOAL: Reduce the number and severity of run-off-road and head-on crashes through providing a more forgiving environment.

Run-off-road accounted for 57% of the crashes for Colac Otway and 59% for Corangamite Shires. Improvements to keep vehicles on the road are: edgelines, centrelines, rumble strips, RRPM's, CAM's and guide posts. Improvements to reduce the severity of the run off the road crashes are: removal of the hazard, slip based or impact absorbing poles and wire rope barrier. Head-on crashes accounted for 11% of crashes for Colac Otway and 7% for Corangamite Shires. Centre-lines can greatly assist drivers and reduce the occurrence of these crashes by around 30%[15].

Table 22: Run-off road crashes and head-on crashes

Issues	Actions	Lead Agency	Partners	Outcomes
Run-off road crashes represent a high portion of total crashes	Implement infrastructure improvements including: • Improved delineation • Warning signs • Road widening • Curve widening • Intersection improvements	CO&C	VicRoads RoadSafe	Reduce the frequency and severity of run-off road crashes.
	Improve clear-zones in line with Table 23 along run-off road high risk areas by removing road-side hazards and implementing embankment treatments.	CO&C	VicRoads RoadSafe	
	Speed limit reductions.	CO&C	VicRoads RoadSafe TAC	
	Enforcement and education.	Police	CO&C VicRoads RoadSafe	
Head-on crashes	Introduce centrelines and RRPM's.	CO&C	VicRoads RoadSafe	
	Improve the visibility of on coming vehicles by removing obstructive vegetation.	CO&C	VicRoads RoadSafe	

[15] VicRoads Crash Reduction Spreadsheet

Table 23: Road Treatments for various AADT

AADT (one-way)	Edge line required?	Carriageway type/width	Shoulder type/width	Austroads clear zone requirements	Minimum clear zone standard*
0-100	No	Unsealed 3m min	N/A	6m	1m
100-1000	No	Sealed 3m min	Unsealed 1m	6m	2m
1000-2000	No	Sealed 5m min	Unsealed 1m-3m	6.8m	3m
2000-5000	yes	Sealed 6m min	Sealed 1m-3m	6.8-9m	4m
5000+	yes	Sealed 7m min	Sealed 1m-3m	9m	9m

*to be implemented proportionately if Austroads standards are unachievable.

The Austroads "*Guide to the Geometric Design of Rural Roads, 2003*" recommends a minimum clear zone of width of 6m for roads carrying less than 1,000 vehicles per day one-way, increasing to 9m for roads carrying in excess of 5,000 vehicles per day one-way. Austroads also states that the first 4-5m of a clear zone provides the most benefit. However, such wide clear zones would have a negative impact on existing native vegetation. As such, reduced width clear zones may be more appropriate where significant levels of native vegetation exist. The clear zone would be increased to Austroads requirements if traffic volumes are in excess of 5,000 vehicles per day one-way.

It is recommended that guideposts are installed on all sealed and unsealed rural roads. Guideposts should be installed at a spacing of 150m in straight sections of road. The spacing should be reduced to between 50-100m on curved sections of road. Refer to VicRoads Traffic Engineering Manual Vol 2 Chapter 23 for details.

Funding can be sort from AusLink Blackspot Program (Federal funding) and State Blackspot Program which targets locations (sites or road lengths) where there is a proven history of crashes. The minimum requirement is a benefit cost ratio of at least two to one. The minimum crash history is at least three casualty crashes or for a road length there must be an average of 0.2 casualty crashes per kilometre, both over a five year period.

Funding can also be sort from Greyspot Program which targets locations that has been identified as having a safety risk and is specifically designed to target locations that do not meet the criteria set out in the Blackspot Programs.

Rest Stops

GOAL: Ensure adequate rest stops are provided on key routes for tourist, commuters and heavy vehicles.

Support and implement the installation of rest stops along key routes for tourists, commuters and heavy vehicles. Education is a pivotal means of informing road users of the associated risks between fatigue and road crashes. Long distance drivers, especially freight and fleet vehicles, need to be informed of the locations and applicable features of rest stops to maximise their use.

Table 24: Key Actions for implementing Rest Stops

Issues	Actions	Lead Agency	Partners	Outcomes
Rest points for drivers	Audit existing rest stops to identify current provision and condition. Review distance between and identify opportunity for increasing rest points at strategic locations.	CO&C	VicRoads RACV RoadSafe Driver reviver sub-committee	Improved rest stop facilities to allow better access for heavy vehicles. Improved facilities for tourists e.g. Picnic tables, barbeques, vegetation barriers to limit noise/danger from busy roads. Increased numbers of drivers choosing to revive at rest stops.
	Support the 'Driver Reviver' campaign and the involvement of sponsors. Encourage expansion of the program.	RoadSafe	CO&C VicRoads SES Driver reviver sub-committee	
	Ensure driver rest areas provide participants with an acceptable level of safety to encourage power napping and driver revival.	VicRoads	CO&C Police	

Railway level crossings

GOAL: Continue to improve railway level crossings as part of the ALCAM risks assessment. Upgrading railway level crossings from passive crossings (signage only) to active crossings with boom barriers and/or flashing lights.

Treatment options include:

- Advanced warning signs
- Queuing treatment
- Traffic signal coordination
- Road realignment
- Upgrade of the protection mechanisms – lights, bells, boom gates
- High intensity lights
- Train speed reduction
- Rail realignment
- Line of sight improvements
- Rumble strips
- Closure of the road

Table 25: Railway level crossings Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Improving the safety at railway level crossings across the Shires.	Assess the risk level of all level crossings within the Colac Otway and Corangamite Shires.	VicTrack	VicRoads CO&C Public Transport Division	Reduce the number of crashes involving trains. Increased driver awareness at railway level crossings. Reduction in the overall severity of
	Seek funding opportunities in the Australian Level Crossing Assessment Model (ALCAM).	VicRoads	VicTrack CO&C	

Issues	Actions	Lead Agency	Partners	Outcomes
	Promotion of the 'Don't Risk it' railway safety crossing awareness campaign.	VicRoads	CO&C	crashes in both Shires.
	Proceed with Safety Interface Agreements and advocate for further upgrades (passive to active).	CO&C (local roads) VicRoads (main roads)	VicTrack VLine	
	Promotion of the 'Walking Bus' program that encourages supervised groups of children to walk to school.	CO&C	Roadsafe	

School Safety

GOAL: Reduce the number and severity of pedestrian accidents in the vicinity of schools.

Ensure that all roads abutting schools which are used by children are assigned speed limits of 40 km/hr and have appropriate crossing facilities to ensure children can safely cross the road. This may include supervised crossings at start of school and end of school times on high volume roads within close proximity to schools.

Table 26: School speed zones Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Improving pedestrian safety in the vicinity of schools	Ensure all roads abutting access points to schools have appropriate speed treatment	CO&C	VicRoads	Reduce the number and severity of pedestrian accidents in the vicinity of schools.
	Install supervised crossings on high volume roads	CO&C	VicRoads	

3.1.3 Safer Vehicles

GOAL: Continue to support the use of five star rated vehicles. Support the inclusion of safety measures in all new cars including ABS, six air bags, electronic stability control, cruise control and speed limiters.

Table 27: Safer Vehicles Key Actions

Issues	Actions	Lead Agency	Partners	Outcomes
Improving the safety of vehicles	Promote and distribute information on vehicle ratings and encourage road users to consider vehicle safety measures such as electronic stability control and side curtain airbags. Create an awareness of next generation technologies such as intelligent speed assist and driver fatigue monitoring devices.	TAC	VicRoads Car Manufacturer Australian New Car Assessment Program (ANCAP) RACV VRFAC	Greater numbers of five star rated vehicles. Improved vehicle manufacturing standards. Implementation of advanced safety devices in new cars.
	Ensure future council fleet vehicles have a five star rating and include ABS, six airbags, cruise control and speed limiters.	CO&C	VRFAC	

3.2 Delivery of the Road Safety Strategy

In order to easily identify which areas each of the lead agencies will be looking after, the following table has been formulated from the key actions in Section 3.1. It is also recommended that for each of the lead agencies that a road safety representative is appointed to ensure all of the actions are monitored. This person would be responsible for the parts of the Road Safety Strategy and would need to work closely with the partners that will help in the delivery of the strategy.

Table 28: Actions by Organisation

Organisation	Actions
Colac Otway and Corangamite Shires	Encourage and promote the responsible serving of alcohol. Provide infrastructure that is providing a safer environment for all road users. Increase warning signs at high crash sites on local roads. Apply for funding for supervised school crossings on high volume roads. Ensure all future council fleet vehicles are five star vehicles.
VicRoads	Investigate new methods to stop drivers from using a vehicle when they are affected by alcohol and/or drugs. Encourage and promote new technologies that reduce casualty crashes. Increase frequency of rest stops on arterial roads for all types of vehicles including trucks. Increase warning signs at high crash sites on arterial roads. Promote and enforce the fatigue management strategy for truck drivers and 'Don't risk it' campaign.
RoadSafe	Educating the community on: • Drink/Drug Driving • Rest breaks • Excessive speed • Young/Mature/Motorcycle Drivers • Driver Reviver

Organisation	Actions
Police	Enforcement of drink/drug driving, excessive speed. Educating the public on safe driving principles.
Hospitals	Blood testing of patients involved in casualty crashes
Fleet Operators	Introduce a responsibility law for commercial operators to limit the number of hours spent by drivers behind the wheel and ensure drivers comply with log book requirements.
RACV	Continue to provide the 'Years Ahead' program to mature drivers
Motorcycle Riders Association	Promote motorcycle training including defensive driving training
Victorian Road Freight Advisory Council	Encourage drivers to attend 'fatigue laws' information sessions.
VicTrack	Continue to assess railway level crossings
TAC	Continue to advertise campaigns through various media types. Promote and distribute information on vehicle safety.

3.3 Strategies targeting Crashes

To be able to easily identify which strategy is targeting which crash type the following table has been devised.

Table 29: DCA's targeted by each Strategy

Strategies		DCA									
		Off path on curve	Off path on straight	Opposing directions	Adjacent directions	Same direction	On path	Pedestrians	Manoeuvring	Overtaking	Passengers
Safer Road Users	Drink/drug driving	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Fatigued driving	✓	✓	✓	✓	○	✓	✓	○	○	✓
	Excessive speed driving	✓	✓	✓	✓	✓	✓	✓	✓	✓	○
	Young drivers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Older Drivers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Motorcycles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Pedestrians	○	○	○	○	○	○	✓	○	○	○
	Cyclists	○	○	✓	✓	✓	✓	✓	✓	✓	○
	Heavy vehicle drivers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Strategies		DCA									
		Off path on curve	Off path on straight	Opposing directions	Adjacent directions	Same direction	On path	Pedestrians	Manoeuvring	Overtaking	Passengers
Safer Infrastructure	Run-off road	✓	✓	○	○	○	○	○	○	○	○
	Rest stops	✓	✓	✓	✓	✓	○	✓	○	○	✓
	Railway level crossings	○	○	○	✓	○	○	○	○	○	✓
	School safety	○	○	○	○	○	○	✓	○	○	○
Safer Vehicles	Safer Vehicles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ - Positive impact on crash type

○ – Neutral impact on crash type

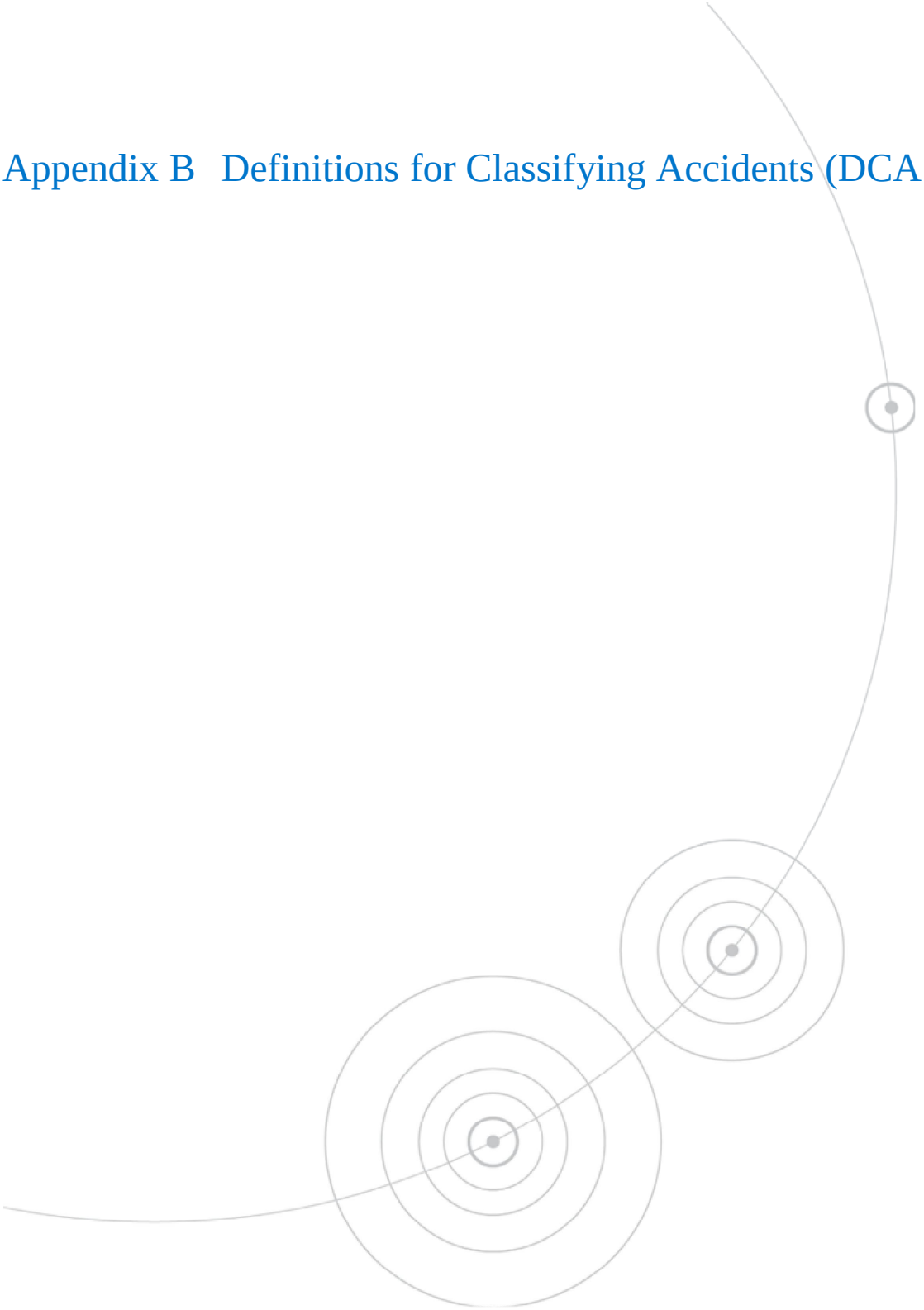
× - Negative impact on crash type

Appendix A Rural Shire Crash Ranking

Appendix A Rural Shires Crash Rankings

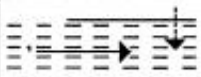
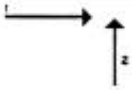
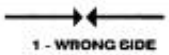
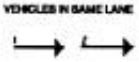
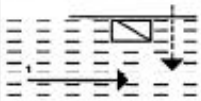
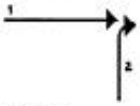
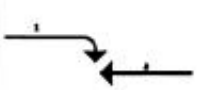
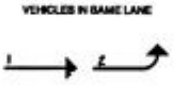
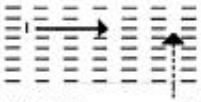
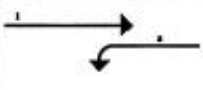
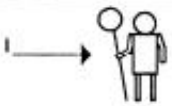
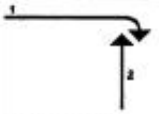
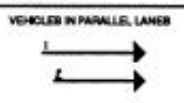
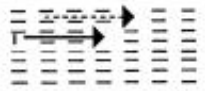
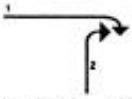
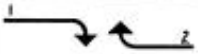
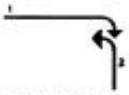
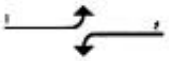
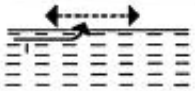
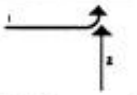
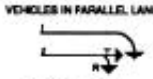
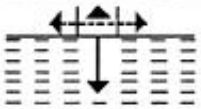
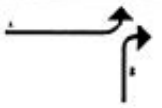
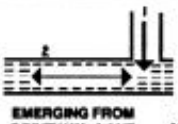
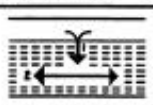
Local Government Area	Estimated Resident Population at 30 June 2007	All Roads				Local Roads				Accidents on all roads per 1000 people	Accidents on local roads per 1000 perople	Ranking by Total Accidents	Ranking by Local Road Accidents	Ranking by Acc/pop	Ranking by Local Acc/pop
		Number of accidents	Severity			Number of accidents	Severity								
			Fatal	Serious injury	Other injury		Fatal	Serious injury	Other injury						
Queenscliffe (B)	3175	**19**	2	5	12	**6**	1	2	3	5.98	1.89	1	1	1	1
Yarriambiack (S)	7658	**70**	6	28	36	**29**	2	10	17	9.14	3.79	2	3	4	4
Hindmarsh (S)	6190	**81**	7	40	34	**37**	1	18	18	13.09	5.98	3	5	15	20
Buloke (S)	7038	**87**	6	48	33	**26**	1	18	7	12.36	3.69	4	2	11	3
West Wimmera (S)	4578	**88**	9	42	37	**31**	4	13	14	19.22	6.77	5	4	33	27
Gannawarra (S)	11634	**146**	12	69	65	**62**	2	30	30	12.55	5.33	6	7	12	10
Pyrenees (S)	6763	**149**	8	72	69	**81**	2	44	35	22.03	11.98	7	13	39	43
Central Goldfields (S)	12736	**156**	11	64	81	**69**	3	27	39	12.25	5.42	8	8	10	12
Towong (S)	6256	**157**	8	90	59	**61**	1	32	28	25.10	9.75	9	6	43	40
Horsham (RC)	19323	**159**	7	104	48	**114**	3	41	70	8.23	5.90	10	19	2	19
Loddon (S)	8077	**171**	15	87	69	**171**	15	87	69	21.17	21.17	11	27	38	46
Ararat (RC)	11671	**177**	7	85	85	**72**	3	33	36	15.17	6.17	12	9	23	21
Southern Grampians (S)	17311	**195**	6	92	97	**88**	0	43	45	11.26	5.08	13	14	7	8
Hepburn (S)	14289	**205**	4	84	117	**77**	2	29	46	14.35	5.39	14	11	19	11
Northern Grampians (S)	12301	**213**	13	95	105	**89**	4	42	43	17.32	7.24	15	15	27	32
Benalla (RC)	14024	**216**	11	101	104	**125**	2	51	72	15.40	8.91	16	21	25	39
Swan Hill (RC)	21459	**236**	16	98	122	**117**	4	52	61	11.00	5.45	17	20	6	13
Indigo (S)	15480	**241**	16	109	116	**74**	4	25	45	15.57	4.78	18	10	26	5
Moyne (S)	16102	**242**	19	112	111	**78**	2	39	37	15.03	4.84	19	12	22	6
Mount Alexander (S)	17851	**252**	11	102	139	**91**	1	39	51	14.12	5.10	20	16	18	9
Glenelg (S)	20664	**275**	18	95	162	**143**	4	48	91	13.31	6.92	21	24	16	28
Strathbogie (S)	9733	**292**	23	128	141	**102**	4	42	56	30.00	10.48	22	18	44	41
Alpine (S)	12592	**307**	4	145	158	**147**	3	62	82	24.38	11.67	23	25	42	42
Corangamite (S)	17188	**311**	15	128	168	**98**	2	42	54	18.09	5.70	24	17	31	17
Mansfield (S)	7527	**312**	4	145	163	**180**	1	82	97	41.45	23.91	25	29	46	47
Golden Plains (S)	17345	**314**	24	140	150	**125**	10	59	56	18.10	7.21	26	21	32	31
Moira (S)	28223	**358**	31	167	160	**189**	9	86	94	12.68	6.70	27	30	13	26
Wodonga (RC)	34776	**402**	7	130	265	**196**	3	65	128	11.56	5.64	28	32	8	14
Bass Coast (S)	28081	**410**	12	175	223	**162**	4	74	84	14.60	5.77	29	26	21	18
Wangaratta (RC)	27569	**421**	19	148	254	**200**	7	68	125	15.27	7.25	30	33	24	33
Colac-Otway (S)	21183	**475**	22	203	250	**137**	3	52	82	22.42	6.47	31	23	40	25
Macedon Ranges (S)	40353	**486**	20	174	292	**228**	7	80	141	12.04	5.65	32	36	9	15
Surf Coast (S)	23521	**487**	15	207	265	**204**	4	85	115	20.70	8.67	33	34	37	37
Campaspe (S)	37763	**524**	20	233	271	**243**	8	108	127	13.88	6.43	34	37	17	24
South Gippsland (S)	26830	**548**	16	217	315	**207**	4	78	125	20.42	7.72	35	35	36	35
Murrindindi (S)	14228	**555**	13	232	310	**269**	4	100	165	39.01	18.91	36	40	45	45
Nillumbik (S)	62310	**603**	10	214	379	**174**	1	62	111	9.68	2.79	37	28	5	2
Mitchell (S)	32760	**632**	28	272	332	**259**	11	106	142	19.29	7.91	38	38	34	36
Mildura (RC)	52576	**669**	22	272	375	**388**	12	156	220	12.72	7.38	39	42	14	34
Wellington (S)	41998	**735**	31	291	413	**371**	13	152	206	17.50	8.83	40	41	28	38
East Gippsland (S)	41954	**744**	40	336	368	**263**	9	115	139	17.73	6.27	41	39	29	23
Melton (S)	85613	**777**	20	323	434	**420**	6	181	233	9.08	4.91	42	43	3	7
Baw Baw (S)	39078	**892**	25	355	512	**473**	9	184	280	22.83	12.10	43	45	41	44
Cardinia (S)	60753	**1175**	32	425	718	**434**	12	153	269	19.34	7.14	44	44	35	30
Mornington Peninsula (S)	142659	**2048**	48	833	1167	**808**	17	339	452	14.36	5.66	45	46	20	16
Yarra Ranges (S)	145596	**2582**	55	879	1648	**912**	13	317	582	17.73	6.26	46	47	30	22
Moorabool (S)	26843	**2757**	16	188	2553	**191**	6	77	108	102.71	7.12	47	31	47	29

Appendix B Definitions for Classifying Accidents (DCA's)



Appendix B Definitions for Classifying Accidents (DCA's)

vicroads

PEDESTRIAN ON FOOT IN TOY / PRAM	VEHICLES FROM ADJACENT DIRECTIONS (INTERSECTIONS ONLY)	VEHICLES FROM OPPOSING DIRECTION	VEHICLES FROM SAME DIRECTION	MANOEUVRING
 NEAR SIDE 100	 CROSS TRAFFIC 110	 1 - WRONG SIDE 2 - OTHER HEAD ON (not overtaking) 120	 REAR END 130	 'U' TURN 140
 EMERGING 101	 RIGHT FAR 111	 RIGHT THROUGH 121	 LEFT REAR 131	 'U' TURN INTO FIXED OBJECT PARKED VEHICLE 141
 FAR SIDE 102	 LEFT FAR 112	 LEFT THROUGH 122	 RIGHT REAR 132	 LEAVING PARKING 142
 PLAYING, WORKING, LYING, STANDING ON CARRIAGEWAY 103	 RIGHT NEAR 113	 RIGHT/LEFT 123	 LANE SIDE SWIPE 133	 ENTERING PARKING 143
 WALKING WITH TRAFFIC 104	 TWO TURNING RIGHT 114	 RIGHT/RIGHT 124	 LANE CHANGE RIGHT (not overtaking) 134	 PARKING VEHICLES ONLY 144
 FACING TRAFFIC 105	 RIGHT/LEFT FAR 115	 LEFT/LEFT 125	 LANE CHANGE LEFT 135	REVERSING 145
 UN MEDIAN-OUTPATH 106	 LEFT NEAR 116		 RIGHT TURN SIDE SWIPE 136	 REVERSING INTO FIXED OBJECT - PARKED VEHICLE 146
 DRIVEWAY 107	 LEFT/RIGHT FAR 117		 LEFT TURN SIDE SWIPE 137	 EMERGING FROM DRIVEWAY - LANE 147
 STRUCK WHILE BOARDING OR ALIGHTING VEHICLE 108	 TWO LEFT TURN 118			 FROM FOOTWAY 148
OTHER PEDESTRIAN 109	OTHER ADJACENT 119	OTHER OPPOSING 129	OTHER SAME DIRECTION 139	OTHER MANOEUVRING 149

1. Definition for classifying accidents (DCA) should be determined by first selecting a column using the text above & then by diagrammatic sub-division.
2. The sub-division chosen should describe the general movement of vehicles involved in the initial event. It does not assign a cause to the accident.
3. Supplementary codes have been defined for most sub-divisions. These codes give further detail of the initial event.

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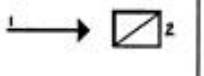
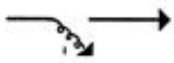
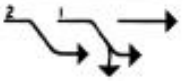
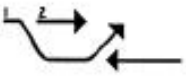
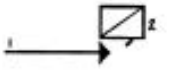
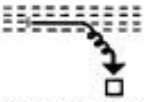
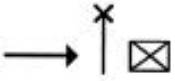
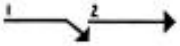
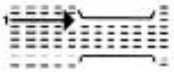
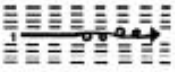
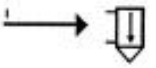
DEFINITIONS FOR CLASSIFYING ACCIDENTS

OVERTAKING	ON PATH	OFF PATH ON STRAIGHT	OFF PATH ON CURVE	PASSENGER AND MISCELLANEOUS
 HEAD ON (not sideswipe) 150	 PARKED 160	 OFF CARRIAGEWAY TO LEFT 170	 OFF CARRIAGEWAY RIGHT BEND 180	 FELL IN/FROM VEHICLE 190
 OUT OF CONTROL 151	 DOUBLE PARKED 161	 LEFT OFF CARRIAGEWAY INTO OBJECT - PARKED VEHICLE 171	 OFF RIGHT BEND INTO OBJECT/PARKED VEHICLE 181	 LOAD OR MISSLE STRUCK VEHICLE 191
 PULLING OUT 152	 ACCIDENT OR BROKEN DOWN 162	 OFF CARRIAGEWAY TO RIGHT 172	 OFF CARRIAGEWAY LEFT BEND 182	 STRUCK TRAIN 192
 CUTTING IN 153	 VEHICLE DOOR 163	 RIGHT OFF CARRIAGEWAY INTO OBJECT - PARKED VEHICLE 173	 OFF LEFT BEND INTO OBJECT/PARKED VEHICLE 183	 STUCK RAILWAY CROSSING FURNITURE 193
 REAR END 154	 PERMANENT OBSTRUCTION ON CARRIAGEWAY 164	 OUT OF CONTROL ON CARRIAGEWAY 174	OUT OF CONTROL ON CARRIAGEWAY 184	PARKED CAR RUN AWAY 194
	 TEMPORARY ROADWORKS 165	 OFF END OF ROAD 'T' INTERSECTION 175		
	 STRUCK OBJECT ON CARRIAGEWAY 166			
	 ANIMAL (not ridden) 167			
				OTHER 198
OTHER OVERTAKING 159	OTHER ON PATH 169	OTHER STRAIGHT 179	OTHER CURVE 189	? UNKNOWN 199

4. The number 1,2 identify individual vehicles involved when the DCA is linked with other vehicle/driver information.
5. These codes were used for 1987 accidents and replace the Road User Movement (RUM) code.

Produced by the Road User Behaviour Branch, Road Safety Division, VIC ROADS - DCA.pm4 & DCA2.pm4

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