



# Community Road Safety Strategy

2015 – 2020

CITY OF  
**BALLARAT**



# Table of Contents

|   |    |
|---|----|
| Table of Contents.....  | 2  |
| Executive Summary .....   | 3  |
| 1. Introduction / Background .....  | 5  |
| 1.1 The City of Ballarat's Commitment to Road Safety .....                                | 5  |
| 1.2 Responsibility for the Road Safety Strategy within the City of Ballarat .....         | 5  |
| 1.3 Integrated Approach.....  | 5  |
| 1.4 The Need for a Road Safety Strategy.....  | 6  |
| 1.5 Strategic Approach .....  | 6  |
| 1.6 Relevant Strategies .....   | 7  |
| 1.7 Road Safety Funding Programs.....   | 8  |
| 1.8 Aims and Objectives of Community Road Safety Strategy .....                           | 9  |
| 2. Characteristics of the City of Ballarat .....  | 10 |
| 2.1 An Overview of the Demographic and Geography.....                                     | 10 |
| 2.2 The Existing Transport Network .....  | 11 |
| 2.3 Road User Groups .....  | 11 |
| 2.4 Planned Growth and Development in the City of Ballarat .....                          | 13 |
| 3. Background to Redeveloping the Community Road Safety Strategy .....                    | 15 |
| 3.1 Evaluation of the Community Road Safety Strategy 2007 – 2012.....                     | 15 |
| 3.2 Development of the Community Road Safety Strategy 2015 - 2020 .....                   | 15 |
| 4. Road Safety Priorities .....   | 16 |
| 4.1 Crash History.....  | 16 |
| 4.2 Is there a problem?.....  | 16 |
| 4.3 Crash Records .....   | 16 |
| 4.4 Analysis of Crash Data .....  | 16 |
| 5. Action Plan.....   | 25 |
| 5.1 Background Considerations .....   | 25 |
| 6. Implementation of the Community Road Safety Strategy .....                             | 31 |
| 7. Evaluation of the Community Road Safety Strategy .....                                 | 31 |
| Appendix A : VicRoads – An Overview of Road Crashes in Ballarat.....                      | 32 |
| Appendix B : Crash History on Local Roads and Arterial Roads in the City of Ballarat..... | 35 |
| Appendix C : Risk Matrix for the City of Ballarat 2010 -2014 .....                        | 39 |

# Executive Summary

The City of Ballarat is committed to improving the safety of all road users. It was determined that an update of the 2007-2012 Community Road Safety Strategy was due and this strategy has been developed as part of the SafeRoads initiative. The plan is consistent with the Victoria's Road Safety Strategy and with the Safe System approach adopted by VicRoads

This Community Road Safety Strategy identifies, addresses and prioritises key issues that have arisen from a review of the statistical data and stakeholder consultation with agencies such as Police, VicRoads and emergency services.

This plan draws data from an extensive range of sources, including:

- ✓ The municipal demographics;
- ✓ VicRoads CrashStats Data for the five year period from 1 January 2010 to 31 December 2014;
- ✓ VicRoads Road Safety Performance Information for Ballarat for the period January 2010 to December 2014;
- ✓ Priority Routes and other pertinent City of Ballarat strategies; and
- ✓ Relevant Road Safety Strategies and guidance materials.

## ***Is there a problem?***

As outlined in Section 4: Victoria's Road Safety Strategy identifies that road trauma costs the Victorian community over \$3 billion each year. Previous road safety strategies have been successful in reducing the road toll, however the crash history demonstrates that there are still issues to be addressed.

- On average one person was killed every 14 weeks on a road in Ballarat, over the five years from January 2010 to December 2014.
- On average every 5 days someone was seriously injured, and

- Almost every day someone suffered injuries serious enough to require medical treatment.
- 1650 people were injured in Ballarat between 2010 and 2014 inclusive, including 18 deaths and 369 serious injuries.

Responsibility for the road network is assigned by the Road Management Act 2004, where the arterial roads are State Government (VicRoads) jurisdiction, whilst the local road network rests with Local (Municipal) Government.

Over the period from 2010 to 2014, almost half of the reported crashes (46%) occurred on local roads in the City of Ballarat. Therefore it is imperative that road safety on local roads be addressed and that the City of Ballarat submit strong Black Spot Programme applications targeted at locations with the most crashes.

## ***Analysis of the Crash History***

During the five year period from January 2010 to December 2014 there were 1213 reported casualty crashes in the City of Ballarat.

As outlined in Section 4, approximately a quarter of the crashes resulted in either a fatal (1.5%) or serious injury (26.7%). The data also indicates that:

- approximately 70%, occurred in daylight hours;
- approximately 75% occurred in dry conditions; and
- at least 73% of the crashes occurred in a 60km/h (or less) speed zone within urban boundaries.

With regard to passengers, it was found that statistically the largest group that are killed or injured in crashes in the City of Ballarat are aged less than 18, followed by the 18-21 year age group. These age groups potentially have the longest to live with acquired injuries from motor vehicle trauma and are the most dependent on other drivers for transport options.

Definitions for Classifying Accidents (DCA) are recognised and adopted descriptions used to record crash characteristics. When analysed by DCA code,

the most predominant crash types involve cross traffic vehicle impacts from adjacent directions (DCA Code 110 – 119). The second most frequent crash type involves vehicle impacts from the same direction (DCA Code 130-139). There was a high incidence of side impact and rear end crashes that occurred in the central business area of Ballarat.

VicRoads Road Safety Performance Information for Ballarat indicates that the highest risk time to travel is between 4:00pm and 6:00pm, the end of the work day, followed by school pickup time, 3:00 to 4:00pm and then lunch time, 1:00 to 2:00pm.

### ***Key Road Safety Issues***

The Priority Road Safety Issues remain consistent with the 2007 Community Road Safety Strategy. The identified key action areas for the 2015 to 2020 period are as follows:

#### **2015 - 2020 Key Action Areas**

- Road safety leadership and co-ordination;
- Safe road and path network;
- Road safety in school precincts;
- Pedestrians including motorised mobility devices;
- Safer cycling; and
- Safer driving and motorcycling.

For each of the key action areas, a number of improvement projects and proposed driver behaviour programs have been identified for implementation across the municipality, including:

#### ***2015 Priority Road Safety Issues***

- Leadership on road safety;
- Black Spot and Black Length projects;
- Safety Improvements for Pedestrians and Cyclists;
- Safety Improvements around Schools; and
- Road User Programs (i.e. novice drivers; driver distraction dangers such as mobile phone use whilst driving or walking; dangers of drugs and alcohol with driving; fatigue awareness; and driver awareness for older drivers)

# 1. Introduction / Background

## 1.1 The City of Ballarat's Commitment to Road Safety

The City of Ballarat is committed to improving the safety of all road users and considers that road safety is equally about public health and behavioural issues as the physical environment. This strategy aims to address these areas of concern.

## 1.2 Responsibility for the Road Safety Strategy within the City of Ballarat

The Project Manager for the current Community Road Safety Strategy is the Manager Infrastructure Development & Delivery at the City of Ballarat.

The Manager liaises with other departments in the City of Ballarat and with external organisations to convene the Road Safety Advisory Committee.

### Road Safety Advisory Committee

The Road Safety Advisory Committee was originally established to oversee and manage the implementation of the actions/initiatives in the Road Safety Strategic Plan 2000 and has continued for subsequent strategies.

The terms of reference of the committee are to:

- Support the development of City of Ballarat Road Safety Strategy and future iterations;
- Manage the implementation and ongoing review of the City's Road Safety Strategies;
- Review of Road Safety Funding Project Bids and priorities in relation to road safety;
- Review and development of Council policy and procedures in relation to road safety;
- Improve co-ordination of road safety efforts in the municipality and region by facilitating

and/or supporting education and/or consultative programs; and

- Improve co-ordination of reporting on Road Safety Issues/ Initiatives with Road Safe Central Highlands, Community Safety Committee, external stakeholders / partners and within Council.

The Road Safety Advisory Committee comprises of representatives from:

- Councillors;
- City of Ballarat;
- Victorian Police;
- VicRoads;
- Department of Education & Early Childhood Development ;
- SES;
- CFA; and the
- Department of Economic Development, Jobs, Transport and Resources.

## 1.3 Integrated Approach

### RoadSafe Central Highlands

The City of Ballarat is a partner in the RoadSafe Community Road Safety Council for Central Highlands which also includes representation from the Central Goldfields, Ararat, Pyrenees, Hepburn and Moorabool municipalities.

In addition to local government membership, the Council includes representatives from emergency services, community organisations and interested individuals.

The role of Roadsafe Central Highlands is to develop local community road safety initiatives that support State and Local Government programs, targeting issues such as: driving under the influence; fatigue; speed; older and young pedestrians; and bicycle safety.

## 1.4 The Need for a Road Safety Strategy

Road crashes are a major cause of human trauma in Australia. Victoria's Road Safety Strategy identifies that road trauma cost the Victorian community over \$3 billion each year with approximately 280 people killed per year, more than 5 per week. Further, there are 15 people injured on the roads every day and these serious injuries cost Victoria approximately \$2.4 billion each year.

The Victorian Government has developed a co-ordinated strategy to address road safety issues over the next 10 years. One of these initiatives is a framework to assist municipalities to develop a Road Safety Strategy that will address identified road safety issues at the local level, through partnerships with government agencies and community groups and organisations. The initiative is supported by key road safety organisations.

Victoria's Road Safety Strategy reveals that over the five year period from 2008 to 2012, approximately 44% of all casualty crashes in the rural regions of Victoria occurred on local roads. Therefore municipalities are well placed to implement road safety actions across the community. In the City of Ballarat, 562 of the 1213 reported crashes (46%) in the period from 2010 to 2014 occurred on local roads.

It is anticipated that the implementation of the 2015 – 2020 Community Road Safety Strategy for the City of Ballarat will contribute to a reduction in the incidence and severity of road crashes in the municipality. The strategy will help to identify high priority areas and recommend actions to address specific issues, promote greater road safety awareness and efficiently utilise resources at the local level.

The last Community Road Safety Strategy for the City of Ballarat was completed in 2007 and a review and update of the strategy in line with Victoria's Road Safety Strategy for 2013-2022 is now required.

## 1.5 Strategic Approach

The City of Ballarat has engaged Driscoll Engineering Services Pty Ltd to update the 2007-2012 Community Road Safety Strategy and develop a specific Road Safety Action Plan for the municipality.

This Community Road Safety Strategy has been developed as part of the SafeRoads initiative and the plan is consistent with the Victoria's Road Safety Strategy and with the Safe System approach adopted by VicRoads.

The plan aims to improve road safety for the residents of and visitors to the City of Ballarat. The approach involves the key partners in road safety in Ballarat – Ballarat City Council, VicRoads, Victoria Police, Road Safe Central Highlands as well as other key agencies. The plan integrates opportunities for safer roads and paths with measures aimed at specific road user groups: drivers, passengers, cyclists, pedestrians and motorcyclists.

The Action Plans address the following key areas:

1. Road safety leadership and co-ordination;
2. Safe road and path network;
3. Road safety in school precincts;
4. Pedestrians (including motorised scooters);
5. Safer cycling; and
6. Safer driving and motor cycling.

Each of the Action Plans identifies the key challenges, proposes recommended actions and provides performance measures to monitor completion of the action.

This Community Road Safety Strategy makes reference to the City of Ballarat's:

- Community Road Safety Strategy 2007-2012;
- Council Plan 2013-2017;
- Community Safety Strategic Plan 2014-2017;
- Ballarat Bicycle Strategy 2014-2019;

and to

- Victoria's Road Safety Strategy 2013-2022 and Action Plan 2013-2016;

- Australian Transport Councils National Road Safety Strategy 2011-2020; and
- RoadSafe Central Highlands Program.

## 1.6 Relevant Strategies

In addition to a review of the previous Community Road Safety Strategy which was developed by Ratio Consultants in 2007, this strategy has also referred to a number of other relevant strategies. Following is a summary of each of the key strategies.

### ***Victoria's Road Safety Strategy 2013-2022, Safe Roads for all Victorians***

In 2013, VicRoads in conjunction with the Victoria Police, the Department of Justice and the Transport Accident Commission (TAC), developed a Road Safety Strategy for Victoria.

The strategy and its action plans, align with the National Road Safety Strategy, which sets a target of reducing deaths and serious injuries by at least 30 percent. The target for the next ten years is to:

- reduce the number of people who die on our roads, by more than 30%; and
- reduce the number of people who are seriously injured on roads by more than 30%.

The strategy includes a matrix to identify the direction that will be taken to reduce death and injury on Victoria's roads, particularly in key areas such as speed, drink driving and driving under the influence of drugs. It also outlines the approach to improve safety for vulnerable road users such as pedestrians, cyclists and motorcyclists.

The strategy is accompanied by priority actions that will be undertaken in the first four years to meet the strategy targets. The strategy recognises that the targets are ambitious and that further research and development into new initiatives will be required. It is proposed that a further two action plans will be developed over the ten years of the strategy.

### ***Australian Transport Councils National Road Safety Strategy 2011-2020***

The National Road Safety Strategy 2011-2020 identifies that whilst there has been a measureable decrease in death on Australian roads over the past decade, there has been slower national progress in reducing the number of serious injuries and that more must be done to reduce this trauma.

The National Road Safety Strategy 2011-2020 aims to set out a path for national action on reducing fatal and serious injury crashes on Australian roads. It coincides with the International Decade of Action for Road Safety.

This strategy is founded on the internationally recognised 'Safe System' approach. This approach accepts that people using the road network will make mistakes and therefore the whole system needs to be more forgiving of those errors. This means there must be a focus on roads, speeds, vehicles and road user behaviour as well as a range of associated activities, including performance monitoring and reporting.

The National Road Safety Strategy represents the commitment of federal, state and territory governments to an agreed set of road safety goals, objectives and action priorities. It will be supported by a comprehensive performance monitoring and reporting regime.

However the strategy is not an implementation plan. The strategy recognises that the detailed planning required to give effect to the strategy, including funding, legislative and administrative arrangements, will require ongoing work by all governments and their respective agencies.

The strategy identifies that achievement of the 10-year casualty reduction targets will require a range of specific road safety actions or interventions. These are grouped under the following four 'cornerstone' areas of the strategy:

- Safe roads
- Safe speeds
- Safe vehicles
- Safe people

Under the Safe System approach, the cornerstone interventions listed in the strategy will provide safety improvements for everyone using or interacting with the road system: including while walking, cycling, riding motorcycles or scooters, travelling in cars and other light vehicles, and in heavy vehicles. In some cases additional or specific actions are included to address a particular at-risk group or risk factor, such as novice drivers, or travel in remote areas.

### ***Ballarat Road Transport Strategy***

The need to prepare the Ballarat Road Transport Strategy was identified during the development of Blueprint Ballarat - the 2005 vision for Ballarat as identified by the local community.

On this basis, VicRoads and the City of Ballarat have prepared the strategy to ensure it is responsive to the needs and aspirations of the Ballarat community.

The content of the strategy report includes:

- identifying and quantify existing road system deficiencies;
- assessment of future road needs associated with population and employment growth to the year 2030 and beyond;
- recognition of trends and needs for regional freight movements; and
- recognition of the need for greater promotion of other transport modes including walking, cycling and public transport for travel within Ballarat.

Because there has been significant development including Ballarat West Growth Area, Ballarat West Link Road and Ballarat West Employment Zone since adoption of the strategy in 2007, the Ballarat Road Transport Strategy is currently being reviewed to reflect current and future conditions.

### ***City of Ballarat Road Hierarchy***

The road hierarchy is a division of the road network into identifiable road classifications or types which reflect the functionality of the roads making up the network.

Management of the road network must provide for the:

- effective access to property;
- free flow of vehicles and pedestrians;
- management of traffic movements;
- protection of roadside amenity; and
- support of sustainable land development.

The Road Hierarchy aims to reflect the preferred movement of vehicles throughout the network and gives guidance to road managers, road users and land developers as to Council's intended road network objectives. The design of a road's physical attributes such as width, pavement strength, surfacing and other design elements are determined by its road classification.

## **1.7 Road Safety Funding Programs**

There are a number of State and Federal Government funding programs specifically available to address road safety issues. Whilst all applications are required to demonstrate a significant benefit to cost ratio and are ranked competitively against other applications, the potential benefit to the community establishes that it is worthwhile for the City of Ballarat to pursue such opportunities for potential funding. The following specific road safety funding programs are currently available:

- **Australian Government** – Department of Infrastructure and Regional Development – **Black Spot Program**
- **Victorian State Government**
  - ◆ Motorcycle Black Spot Program
  - ◆ Safer Road Infrastructure Program (SRIP)
    - Run Off Road Projects
    - Intersection Projects
  - ◆ Safer Roads and Roadsides Countermeasures Program
  - ◆ Victorian Community Road Safety Partnership Program
- TAC Community Road Safety Grants Program
  - ◆ Community Road Safety Grants
  - ◆ Small Grants Program

- ◆ Strategic Partnerships
- ◆ Community Partnerships

The Federal Government has recently amended the Black Spot Programme eligibility criteria for 2015-16 and 2016-17 to target treatments at road locations where crashes are occurring and also to allow more funding for the proactive treatment of unsafe roads. Under the new criteria, the minimum Benefit Cost Ratio for proposals has been reduced from 2:1 to 1:1. In addition, the minimum crash history of sites has been reduced from 3 to 2 casualty crashes over five years or 0.13 casualty crashes per kilometre per year over 5 years.

## 1.8 Aims and Objectives of Community Road Safety Strategy

The objectives of this strategy are to:

- ✓ Review and evaluate the implementation of the Road Safety Strategic Plan 2007 – 2012;
- ✓ Identify the current road safety priorities through updated analysis of the most recent 5 year period of crash statistics and consultation with key stakeholders;
- ✓ Develop an achievable action plan for the next five year period (2015-2022) that will address the identified issues and contributing factors; and
- ✓ Clarify the various roles and responsibilities of the partners involved in implementing the strategy;

The Strategy intends to be achievable and economically sustainable, taking into account the resources available to the local community and its key agencies.

The vision for road safety for the City of Ballarat on which this Community Road Safety Strategy is based is to:

*“Reduce the risk of injury on our roads and paths so that people of all ages and abilities are able to travel on the network to their chosen destinations, safely and with confidence.”*

This vision includes encouraging local people to get out and about on foot, by bicycle and by public transport. The vision is of a more active community, a more liveable accessible City, and complements the Ballarat Strategy and Sustainable Transport Strategy.

## 2. Characteristics of the City of Ballarat

### 2.1 An Overview of the Demographic and Geography

The municipal district of the City of Ballarat comprises of 740 square kilometres and includes Ballarat, which is one of Australia's largest inland cities and the third largest city in Victoria, and the townships of Learmonth, Buninyong, Miners Rest and Cardigan Village.

Located in Central Highlands region in Western Victoria, Ballarat is approximately 110km north-west of Melbourne and surrounded by the Shires of Hepburn, Pyrenees, Golden Plains and Moorabool. Travel time between Ballarat and Melbourne is approximately 75 minutes.



**Figure 3.1.1 City of Ballarat Municipal Boundaries**

Ballarat is in a key strategic position at the centre of some of Victoria's most important freight, tourist and commuter transport routes. Road access from Ballarat to other key regional centres is excellent via the four main highways: the Western Highway; Midland Highway; Sunraysia Highway and Glenelg Highway.

The municipality has a rich variety of topography and natural environment which comprises of rolling hills, basaltic outcrops, heavily forested areas and numerous bodies of water. The urban settlement patterns offer a diversity of living environments, including small villages and country towns, as well as the main cityscape of central Ballarat, which includes heritage architecture of national significance and international interest. Situated south of the ranges, the climate is cooler and wetter than the municipalities to the north, with an average annual rainfall of 690mm per year in the Ballarat area.

The Australian Bureau of Statistics estimates that the residential population of the City of Ballarat in 2014 is in excess of 100,000. Census 2011 data indicates that this population is well spread across the range of age groups, with a slightly younger than average population.

- ◆ Approximately 34.7% under the age of 25, a significantly greater percentage than surrounding municipalities;
- ◆ Approximately 20.8% in the 60+ age group which is a significantly lower percentage than surrounding municipalities;
- ◆ 18.9% aged 25 to 40;
- ◆ 25.6% aged 40 to 59; and
- ◆ A median age of 37 which is also medium age for Victoria and Australia.

From kindergartens, primary and secondary through to trades and cutting edge ICT, Ballarat offers a broad array of educational opportunities. The city boasts two Universities, a TAFE Institute, nine secondary schools (four government and five private) and over 50 primary schools to choose from.

A large regional centre, the City of Ballarat is a hub for medical facilities, including: two hospitals,

ambulances; numerous aged care facilities, general practitioners, medical specialists and dentists. The City of Ballarat also delivers a range of Aged Care and Maternal and Child Health Services.

The recreational interests of the community and visitors are well served across the municipality with a wide range of excellent sporting facilities, ranging from golf to tennis, swimming, rowing, netball, football, soccer, cricket, badminton, bowls, gymnastics and more. Cycling and mountain bike riding is also popular within the municipality.

Despite the population being predominantly urban with reasonable access to public transport, residents in the City of Ballarat remain dependant on their motor vehicle with limited use of public transport. The Census data shows that 7.8% of the residents do not have a motor vehicle at their dwelling however this is less than the 8.6% average across Australia. Thirty-six percent (36.1%) of homes have one motor vehicle and 52.6% of homes have two or more motor vehicles, which is representative of the national average of 35.8% and 52.6% respectively. The average number of motor vehicles per dwelling in Ballarat is 1.7, the same as the national average.

The Census data, indicates that approximately 73.9% of the total workforce travel to work in a car as either a driver or passenger, whilst only 3.1% of the population travelled to work by public transport.

## 2.2 The Existing Transport Network

As previously noted, Ballarat is in a key strategic position at the centre of some of Victoria's most important freight, tourist and commuter transport routes. Road access from Ballarat to other key regional centres is excellent via the four main highways which pass through or radiate from Ballarat. The Western Highway, the main freight route from Melbourne to Adelaide and Perth, crosses the municipality in an east west direction with a bypass of Ballarat. The Sunraysia Highway heads north from Ballarat to Mildura; the Midland Highway connects Ballarat with Geelong to the south and Bendigo to the north east; and the Glenelg City of Ballarat Community Road Safety Strategy 2015-2020








Highway connects Ballarat with the south western part of Victoria. These highways provide easy access to industrial centres such as Melbourne, Adelaide, Geelong and Portland; regional locations such as Bendigo and Mildura, and agricultural areas in the Mallee and Wimmera.

Ballarat is well serviced by public transport trains and buses with: 43 V/Line services between Melbourne and Ballarat each weekday and 54 services on weekends; a daily passenger rail service between Ballarat and Ararat; and a number of bus routes that connect Ballarat with Avoca, Maryborough, Mildura, Snake Valley and Geelong. There are also numerous school bus routes throughout the municipality and Ballarat has an extensive urban bus network operated by CDC Victoria. The network currently covers 19 routes throughout Ballarat.

Ballarat is readily accessible from all parts of Victoria and Australia being just one hour drive from Melbourne International Airport (Tullamarine) and Australia's newest domestic passenger airport (Avalon). Ballarat is also served by an airport shuttle bus that on a weekly basis, completes 69 return trips from Ballarat to Tullamarine Airport in Melbourne. Ballarat has an airport with 3 runways that are utilised for pilot training, agricultural purposes, general aviation and by emergency services aircraft.

## 2.3 Road User Groups

The road network within the City of Ballarat caters for a wide range of user groups and often these groups have conflicting needs. Significant transport planning is required to further reduce the incidence of crashes and to make the road environment more friendly for all users. Road user groups include:

-  Heavy Vehicles and Commercial Vehicles;
-  Emergency Vehicles;
-  Private Vehicles;
-  Public Transport;
-  Motorcyclists;
-  Cyclists; and
-  Pedestrians.

Driscoll Engineering Services Pty Ltd

## Heavy Vehicles and Commercial Vehicles

The size and location of the City of Ballarat means that freight transport both emanates from, and travels through, the city to external markets. With demand for transport between Adelaide and Melbourne and the need for producers in the region and neighbouring regions to transport their produce to markets and ports, including Geelong and Portland, freight transport facilities are an important requirement for an integrated transport strategy. The Central Highlands Regional Transport Strategy identifies the following priority projects that are pertinent to this strategy.

- Provision of the Ballarat Freight Hub, which will be incorporated into the imminent Ballarat West Employment Zone (BWEZ).
- Extension of the Ballarat West Link Road southwards to Greenhalghs Road, the Glenelg Highway and ultimately the Midland Highway.
- Upgrade of the Western Highway to Freeway standard from Leigh Creek to Woodmans Hill.
- Improve safety and efficiency at intersections on major highways in the region.
- Provision of additional overtaking lanes on major roads, where appropriate and possible.
- Mair Street upgrade in Ballarat's CBD.
- Improved transport links to serve Ballarat West growth areas.
- Ballarat Eastern Bypass.
- Yankee Flat Road.
- Duplication of Creswick Road (Midland Highway from Howitt Street to Western Freeway).
- Midland Highway enhancements, and
- Western Freeway / Bungaree-Creswick Road Interchange.

## Emergency Vehicles

Integrated design criteria for road safety improvements include access requirements for emergency vehicles such as fire trucks, police and ambulances.

## Public Transport

Ballarat has an extensive urban bus network which currently covers 19 routes throughout Ballarat. The bus network utilises the local road network, therefore design improvements for local roads need to refer to the integrated design criteria and consider both the potential use by buses and also the provision of safe pedestrian access to bus stops.

Key transport hubs need to continue to be accessible for pedestrians, cyclists, private vehicles and public transport.

## Motorcyclists

Motorcyclists are vulnerable road users that require consideration during the design of road safety improvements. Loose gravel, large areas of line marking and some safety barriers are all potential hazards for motorcyclists. In undertaking road maintenance activities there should be consideration of the needs of motorcyclists.

## Bicyclists

The City of Ballarat website notes that Ballarat is expanding rapidly and its age composition is changing as the city becomes a place for individuals to retire. The transport and health needs of the community will be a challenge which can be strongly supported by the benefits that cycling has to offer.

The City of Ballarat has produced a Bicycle Strategy for 2014 to 2019, recommending an integrated approach for an improved bicycle network and increased participation in cycling activities by all people, regardless of gender, age or physical capabilities.

The vision for the Ballarat Cycling Strategy is:

*"To make Ballarat a more cycling friendly environment that caters for all types of cyclist. Ballarat will provide first class facilities for all members of the community regardless of gender, age, ability and cultural background and we will promote the benefits of a healthy, active lifestyle for all residents. Well planned and varied cycling*

*facilities will make Ballarat a destination for others in the region for play, fun and competition.”*



**Figure 2.3.1 - Intersection of Wendouree Parade and Webster Street provides a slip lane for turning cyclists.**

The Strategy identifies that “Council can support community wellbeing by providing improved bicycling facilities and infrastructure”.

Council is responsible for maintaining approximately 50km of off-road bicycle paths, as well as the many kilometres of on-road bicycle lanes. Council completes a regular annual maintenance regime to keep the cycle network in an acceptable fit for use condition. Further, the City of Ballarat has a strong relationship with Ballarat Bicycle User Group, collaboratively, identifying issues and missing links with the existing network in an effort to provide an enjoyable and safe ride for all bicycle path users.

### **Pedestrians**

Walking and cycling trips tend to be shorter and more local, however these modes can play an important part in providing access around Ballarat and connecting to other modes of transport, particularly rail and buses. Central Highlands Regional Transport Strategy 2014 identifies that the City of Ballarat Community Road Safety Strategy 2015-2020

“provision of safe pedestrian and cycling paths to significant transport interchanges would improve connectivity and improve the health of the community. In addition, increasing walking and cycling trips often reduces car trips which assist in reducing congestion.”

The promotion and support of active forms of travel are important in fostering an environmentally sustainable, liveable and less car orientated community.

## **2.4 Planned Growth and Development in the City of Ballarat**

The City of Ballarat’s website recognises that “Ballarat is the capital of Western Victoria and is already one of Australia’s fastest growing regional centres, with population growth nearing two per cent and a projected population of more than 128,000 by 2026.”

To support the projected population increase Ballarat requires 15,000 new jobs in the next 15 years. The Ballarat West Employment Zone (BWEZ) will be a key driver of future employment and economic growth in Ballarat.

BWEZ is a long term project to unlock land for industry and has the potential to deliver 9,000 local jobs for our community. Situated near the Ballarat West Growth Area, the Ballarat Airport, rail infrastructure and the Western Link Road, BWEZ is an ideal site that will improve transport connections, generate investment and further enhance Ballarat as a thriving regional centre. The BWEZ will be home to a range of employment generating industries including; transport and logistics, manufacturing, construction, wholesale trade and enabling industries such as research and development. The Ballarat West Growth Area is the region’s major focus for population growth for the next few years.

The growth of population in Ballarat, together with growth in employment in Melbourne and Ballarat will encourage growth in the commuter demand for travel between Ballarat and Melbourne. Additional

public transport capacity on the Ballarat Melbourne corridor will play an important part in limiting the growth of private vehicle travel and reducing congestion on roads.

The Central Highlands Regional Transport Strategy 2014 identifies that “approximately 42% of the population of the region comprises either school children or people of retirement age. This proportion is expected to increase to 46% by 2041.” These population groups require good transport links to schools, sporting facilities, aged care facilities, health and community care facilities. In addition, vulnerable sections of the community require access to care facilities, government support facilities and community support facilities.”

Similarly the Ballarat Bicycle Strategy 2014 - 2019 identifies that the number and type of bicycle infrastructure and facilities need to reflect the City’s needs now and into the future.



**Figure 2.4.1 – Ballarat West development at Lucas.**

# 3. Background to Redeveloping the Community Road Safety Strategy

## 3.1 Evaluation of the Community Road Safety Strategy 2007 – 2012

Ratio Consultants Pty Ltd developed the City of Ballarat Community Road Safety Strategy for the period 2007 to 2012. The strategy was the result of detailed analysis of the crashes in the City of Ballarat and consultation with stakeholders. The strategy highlighted the following key action areas as a priority for the municipality. Action plans were developed for each key issue, identifying and prioritising initiatives across a five year period. Eight years has passed since the Road Safety Strategy was developed and it is now time for an update review.

### 2007 - 2012 Key Action Areas

- ✓ Co-ordination and leadership of road safety planning action;
- ✓ Road safety promotion at schools and safe school travel;
- ✓ Developing and maintaining a safe road and path network;
- ✓ Young children and their families;
- ✓ Pedestrian and motorised scooter safety;
- ✓ Safer cycling; and
- ✓ Safer driving, safer cars, and safer motorcycling.

Progress against each of the actions under the Key Actions Areas has been reviewed and summarised in a separate document, Community Road Safety Strategy 2007 – 2012 - Strategy Review. Where the actions remain a key priority for this strategy, they have been included in the Actions for this document. Refer to the Strategy Review of the Community Road Safety Strategy 2007-2012 for a progress summary against the previous strategy.

City of Ballarat Community Road Safety Strategy 2015-2020

## 3.2 Development of the Community Road Safety Strategy 2015 - 2020

The City of Ballarat has engaged Driscoll Engineering Services Pty Ltd to update the 2007 Community Road Safety Strategy and develop an updated specific Road Safety Action Plan for the municipality. The strategy summarises, addresses and prioritises key issues that have arisen from a review of the statistical data, other strategies and stakeholder consultation. The development process has included a review of crash statistics and relevant road safety strategies:

### Crash Statistics

Review of the VicRoads CrashStats Data for the five year period from 1 January 2010 to 31 December 2014. This analysis provides an overall picture of the reported crashes in the municipality for the most recent 5 year period. In addition, aspects from a review of the VicRoads Road Safety Performance Information for Ballarat relative to the rest of Victoria have been discussed in the report.

### Review of Relevant Road Safety Strategies

The following strategies have been reviewed in the preparation of the report:

- The City of Ballarat's Community Road Safety Strategy 2007 - 2012;
- Central Highlands Regional Transport Strategy;
- City of Ballarat Bicycle Strategy 2014 – 2019;
- Victoria's Road Safety Strategy 2013-2022, Safe Roads for all Victorians; and
- Australian Transport Councils National Road Safety Strategy 2011-2020.

The Road Safety Strategy has been developed to reflect the ideology of the relevant strategies and to address issues, specific to the City of Ballarat, that were identified through the stakeholder meetings and reviews of crash data and priority routes.

It is anticipated that the actions in this strategy will be progressively addressed over the period from 2015 to 2020, after which a review of the strategy will be required to investigate new priorities.

Driscoll Engineering Services Pty Ltd

## 4. Road Safety Priorities

### 4.1 Crash History

Positively, in the last five years there has been an 18% reduction in casualties compared to the five year period 2000–2005 on which the previous strategy was based. Similarly the number of fatal crashes (18) during the last five years has reduced from 22 in the 2000–2005 year period.

The crash statistics analysis showed that while the incidents are spread across all modes of road travel, the highest risk groups in Ballarat are:

- ✱ All young drivers in the 18–25 year age group;
- ✱ All young passengers, aged 13–21 years of age, closely followed by 5–12 year olds;
- ✱ Young pedestrians especially 18 to 21 year olds, followed by 22–25 year olds and teenagers;
- ✱ Older (75+) pedestrians;
- ✱ Older drivers aged over 75 years;
- ✱ Older, male cyclists aged 40 to 59 years followed by 13 to 17 year old male cyclists;
- ✱ Male motorcyclists aged 18 to 21 years followed by males aged 40 to 49 years;

### 4.2 Is there a problem?

Victoria's Road Safety Strategy identifies that road trauma costs the Victorian community over \$3 billion each year. Previous road safety strategies have been successful in reducing the road toll; however the crash history demonstrates that there are still issues to be addressed.

On average one person was killed every 14 weeks on a road in Ballarat, over the five years from January 2010 to December 2014. On average every 5 days someone was seriously injured and almost every day someone suffered injuries serious enough to require medical treatment. There were 1650 people injured in Ballarat during the five year period from 2010 to

2014 inclusive, including 18 deaths and 369 serious injuries.

### 4.3 Crash Records

Statistical data was gathered from key sources to provide a comprehensive basis for analysis for the period from January 1, 2010 to 31 December 2014. The 5 year period provided reliable data and was useful in indicating trends across the municipality. In addition, VicRoads Road Safety Performance Information document analyses the data for the period from January 2010 to December 2014 and compares it to the rest of Victoria. The key sources that were utilised in the preparation of this strategy included:

- **VicRoads Crash Stats Database**  
The Crash Stats Database contains all the crash data that is collected from Police reports for a ten year period. The data can be searched and sorted in a variety of ways and at various levels, including crash location, accident type and by road user group within the municipality and across the region.
- **Road Safety Advisory Committee Input**  
Meetings with the Road Safety Advisory Committee provided an opportunity for key players and partners to have input and identify issues that need to be addressed.

### 4.4 Analysis of Crash Data

Analysis of all the reported crashes (from VicRoads Crash Stats Database records) that occurred during the period from January 2010 to December 2014 was undertaken in the preparation of this report. VicRoads also provided 'An Overview of Road Crashes in Ballarat' for the period from 2010 to 2014 that is included in Appendix A, and 'Road Safety Performance Information' for Ballarat and Western Region. In addition VicRoads provided the 'Overview of Road Crashes' for Ballarat, Bendigo, Geelong and Shepparton for 2009 to 2013 for comparison.

Following is a summary of various aspects of the crash data over this period.

#### 4.4.1 Data Analysis

For the five year period from 1 January 2010 to 31 December 2014 there were 1213 crashes in the City of Ballarat where at least one person was killed or injured. In the 1213 crashes, 18 persons were killed, 369 persons were seriously injured and 1263 persons sustained minor injuries. Of these incidents, 651 (53%) occurred on arterial roads in the City of Ballarat and 14 of the 18 fatalities were on the arterial road network. Of particular concern is that more than 52% of the serious injury crashes occurred on local roads.

| Injury Level                       | No. of Crashes | Arterial Road Crashes | Local Road Crashes | No. of People |
|------------------------------------|----------------|-----------------------|--------------------|---------------|
| Fatal                              | 18             | 14                    | 4                  | 18            |
| Serious Injury (medical treatment) | 306            | 145                   | 161                | 369           |
| Other Injury (minor injuries)      | 889            | 492                   | 397                | 1263          |
| Total                              | 1213           | 651                   | 562                | 1650          |

**Table 4.4.1.1 – Crashes by Injury Level in the City of Ballarat from January 2010 to December 2014.**

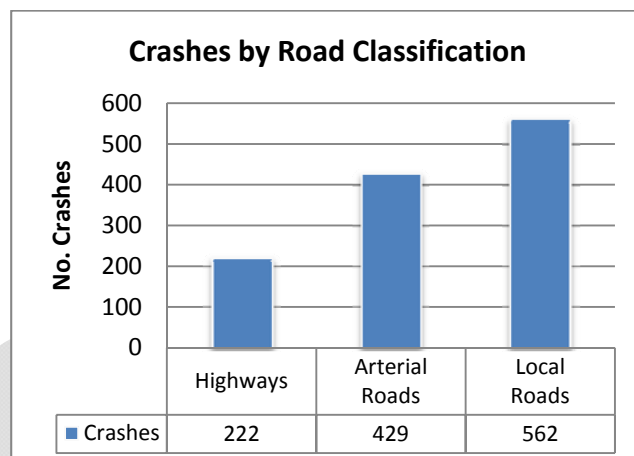
Approximately a quarter of the crashes resulted in either a fatal (1.5%) or serious injury (26.7%).

The Crash Statistics also indicate that the vast majority of crashes, approximately 70%, occurred in daylight hours, and approximately 75% occurred in dry conditions. The 2010 – 2014 Road Safety Performance Information Report for the City of Ballarat indicates that at least 72% of the crashes occurred in a 60km/h (or less) speed zone within town boundaries, raising concern about the relatively large number of serious injury crashes that occurred in urban areas.

Analysis of the location of crashes, compared to the previous Community Road Safety Strategy, indicates that a number of the previous crash locations have not been treated. Further, these locations have continued to have crashes occurring, particularly on the arterial roads and highways. The City of Ballarat

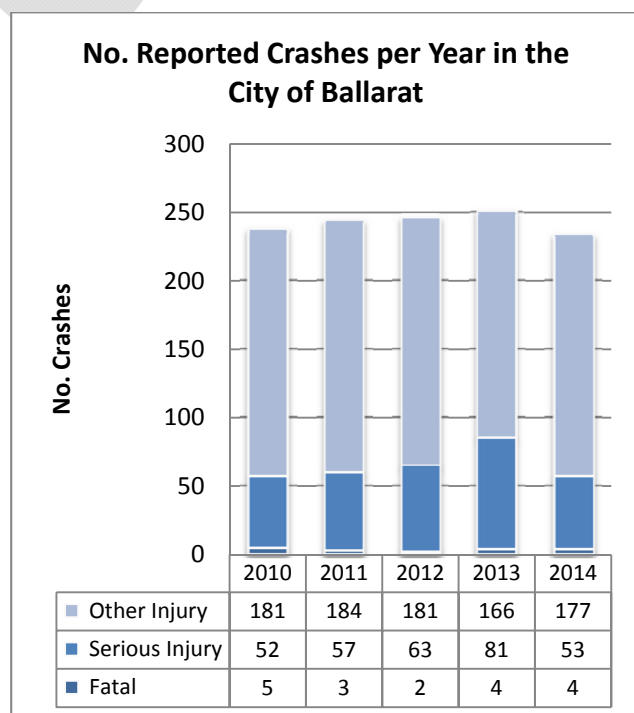
City of Ballarat Community Road Safety Strategy 2015-2020

needs to advocate for VicRoads to fund and install treatments to address road safety on the arterial roads and highways within the municipality.



**Figure 4.4.1.2– City of Ballarat Crashes by Road Classification**

Over the period from 2010 to 2014, almost half of the reported crashes (46%) occurred on local roads in the City of Ballarat. Therefore it is imperative that road safety on local roads be addressed and that the City of Ballarat submit strong Black Spot Programme applications targeted at locations with the most casualty crashes.



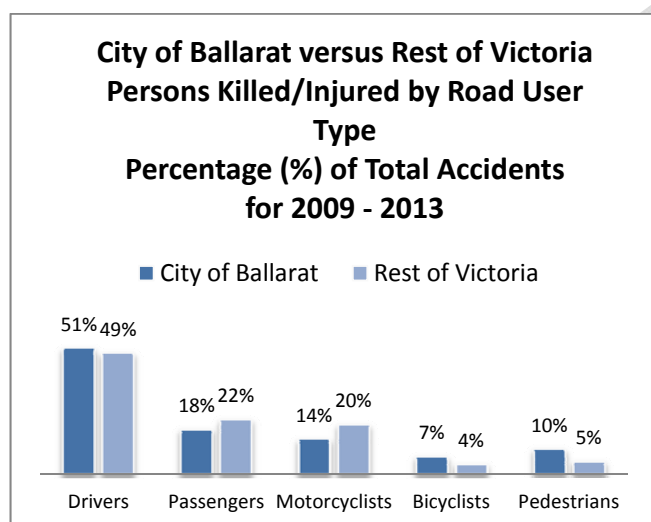
**Figure 4.4.1.3 – City of Ballarat Crashes by Year**

A comparison of the number of crashes per year over the past five years indicates that:

- the quantity of fatal crashes has marginally reduced;
- the number of serious injury crashes is now trending downward after experiencing constant increase from 2010 to 2013;
- the 'other injury' incidents have had a slight downward trend since 2011; and
- the total number of recorded casualty crashes is now trending downward after experiencing constant increase from 2010 to 2013.

#### 4.4.2 Road User Groups

Figure 4.4.2.1 compares the percentages of those killed or seriously injured by road user type with the same analysis for the rest of Victoria.

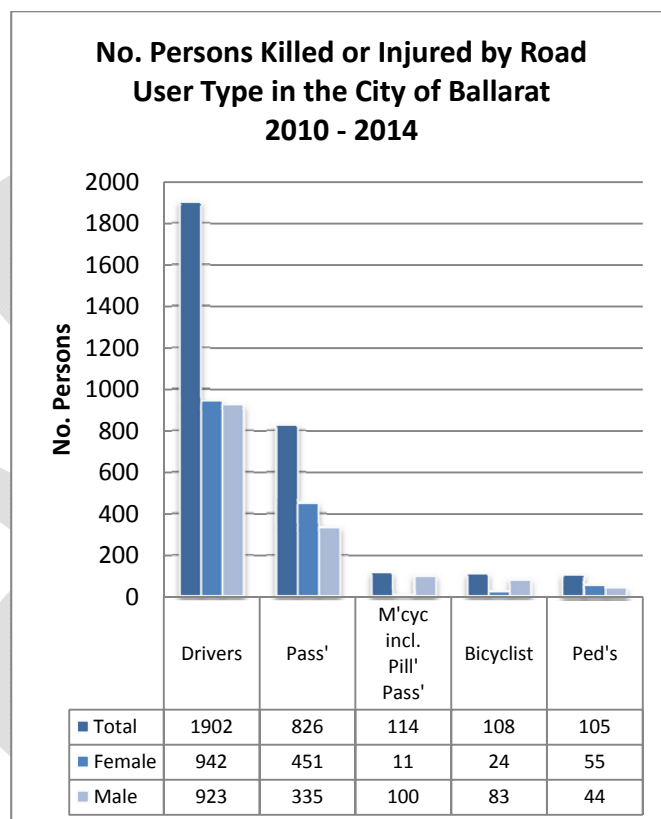


**Figure 4.4.2.1 – City of Ballarat Road User Groups involved in Crashes compared to the Rest of Victoria.**

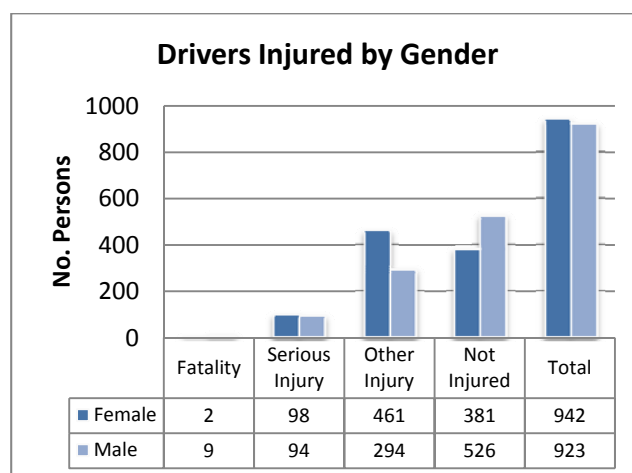
Figure 4.4.2.1 indicates that the City of Ballarat is under represented with regard to incidents involving motorcyclists but almost double the Victorian percentage of crashes involving pedestrians and cyclists. This may be a reflection of higher cycling and walking participation rates in the municipality but it does suggest a need for improved facilities for pedestrians and cyclists.

Figure 4.4.3.4 indicates that male motorcyclists are significantly higher represented (13 times) in crashes in the City of Ballarat than females. Similarly male

bicyclists are significantly higher represented (3.5 times) in crashes in the City of Ballarat than females. Therefore it is appropriate that one method of delivery for rider behavioural programs may be through predominantly male sporting and social clubs, for example cycling clubs, cricket and football clubs, trail bike motor cycle clubs, men's sheds etc.



**Figure 4.4.2.2 – No. Persons Killed or Injured by Road User Type in the City of Ballarat, 2010 – 2014**



**Figure 4.4.2.3 – Drivers Injured, 2010 - 2014**

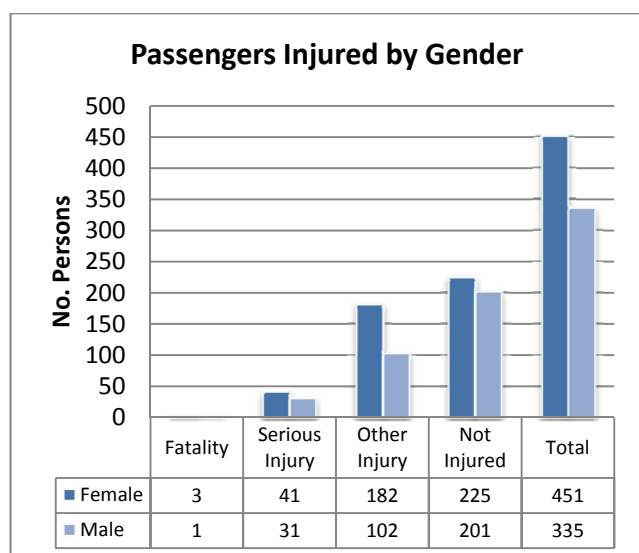


Figure 4.4.2.4 – Passengers Injured, 2010 - 2014

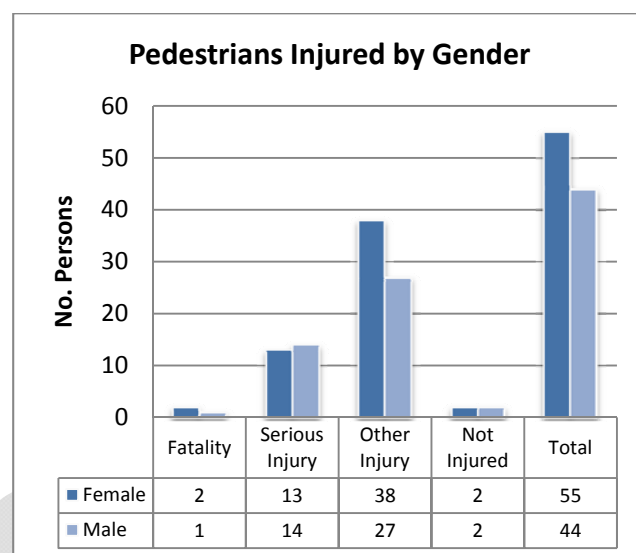


Figure 4.4.2.7 – Pedestrians Injured, 2010 – 2014

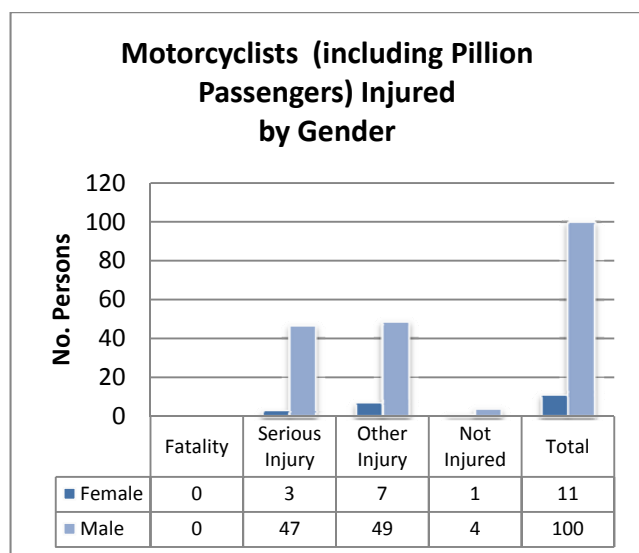


Figure 4.4.2.5 – Motorcyclists (including Pillion Passengers) Injured, 2010 - 2014

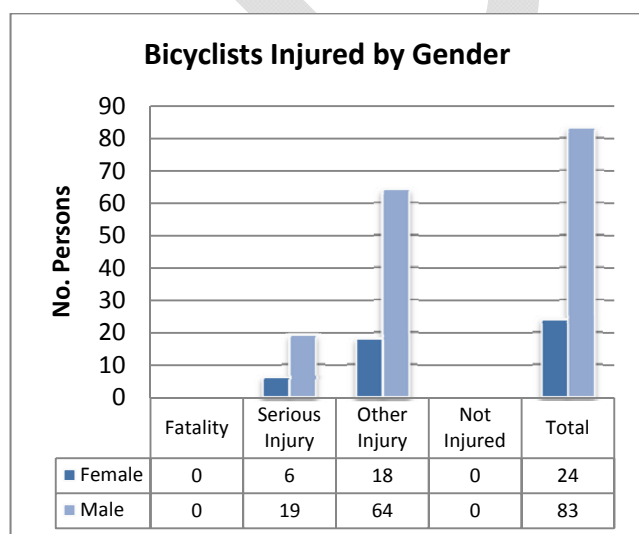


Figure 4.4.2.6 – Bicyclists Injured, 2010 - 2014

#### 4.4.3 Drivers and Passengers

Figure 4.4.3.1 indicates that the driver age category with the highest risk of drivers being killed or injured is the 18 to 21 year olds. This risk appears to decrease until approximately age 30, where it remains relatively consistent until age 60 where driving patterns tend to alter.

The 10 year age category with the second highest number of drivers killed or injured in total is the 40-49 age group. Other than complacency, there is no immediately apparent reason for this high result and it may relate to an increase in the number of hours spent travelling.

If a single (combined) category for older drivers (60+) is considered, then this group has had the second highest number of incidents over the five year period. It is evident that a driver awareness program should be targeted at elderly drivers in the municipality, particularly as this demographic is growing in Ballarat.

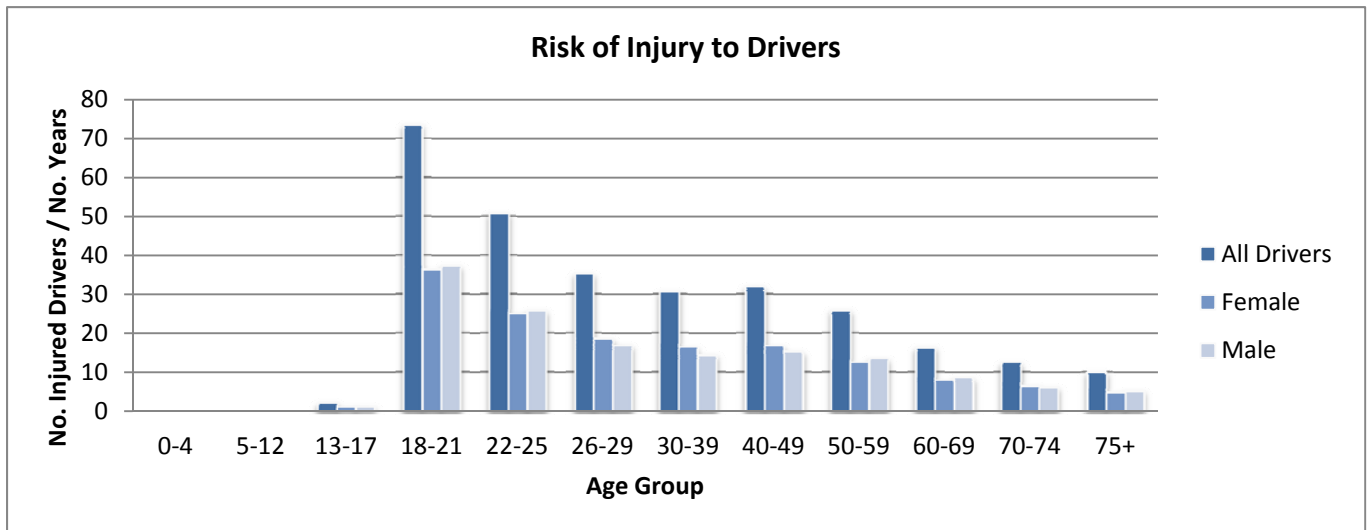


Figure 4.4.3.1 – Risk of Injury to Drivers in the City of Ballarat, 2010 to 2014

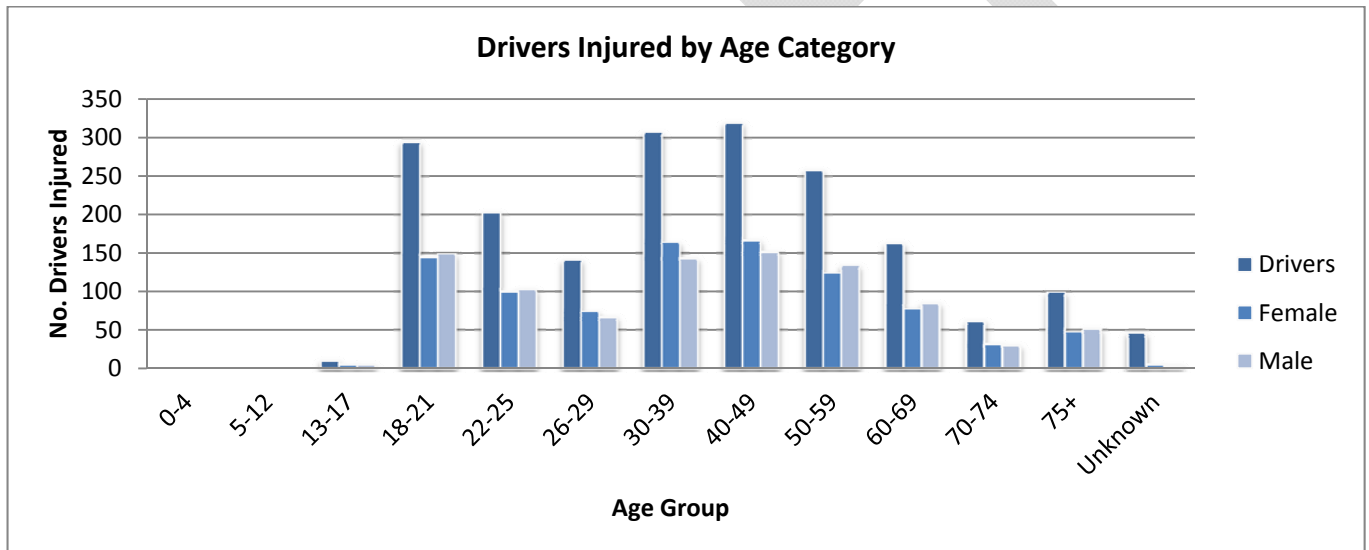


Figure 4.4.3.2 – Numbers of Drivers by Age Category Injured in the City of Ballarat, 2010 to 2014

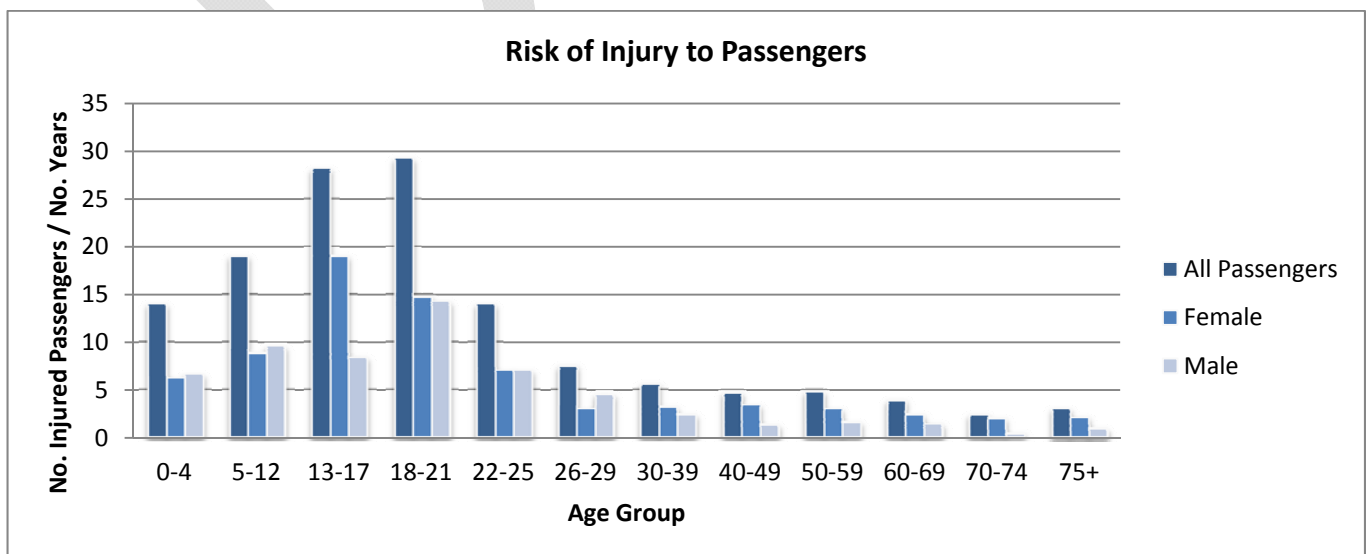


Figure 4.4.3.3 – Risk of Injury to Passengers in the City of Ballarat, 2010 to 2014

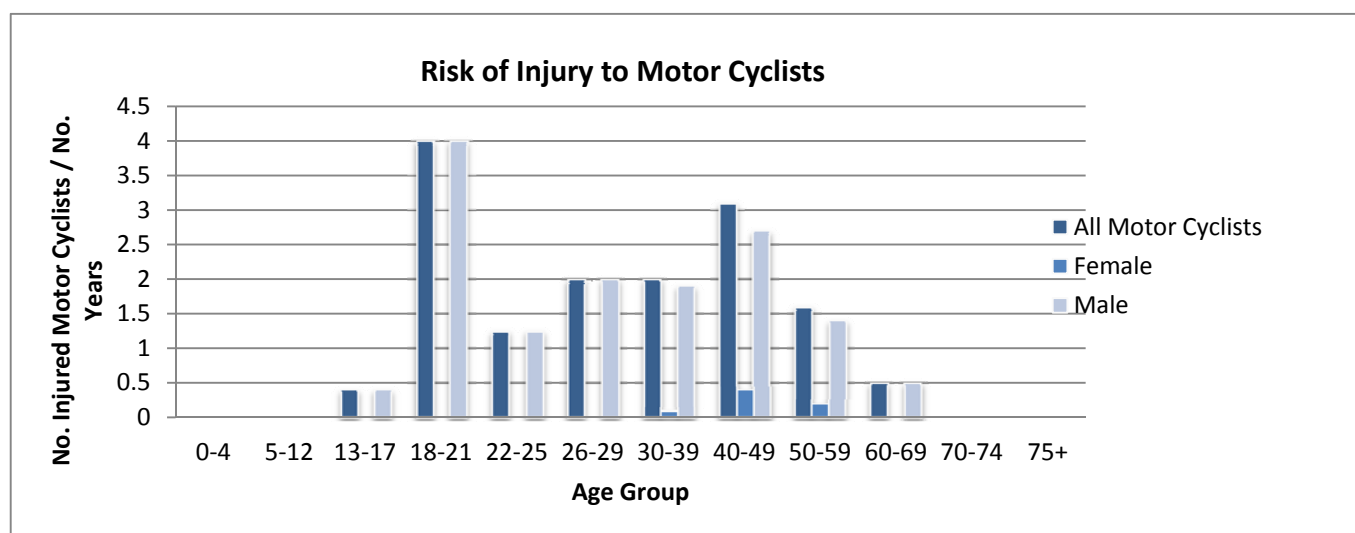


Figure 4.4.3.4 – Risk of Injury to Motorcyclists in the City of Ballarat, 2010 to 2014

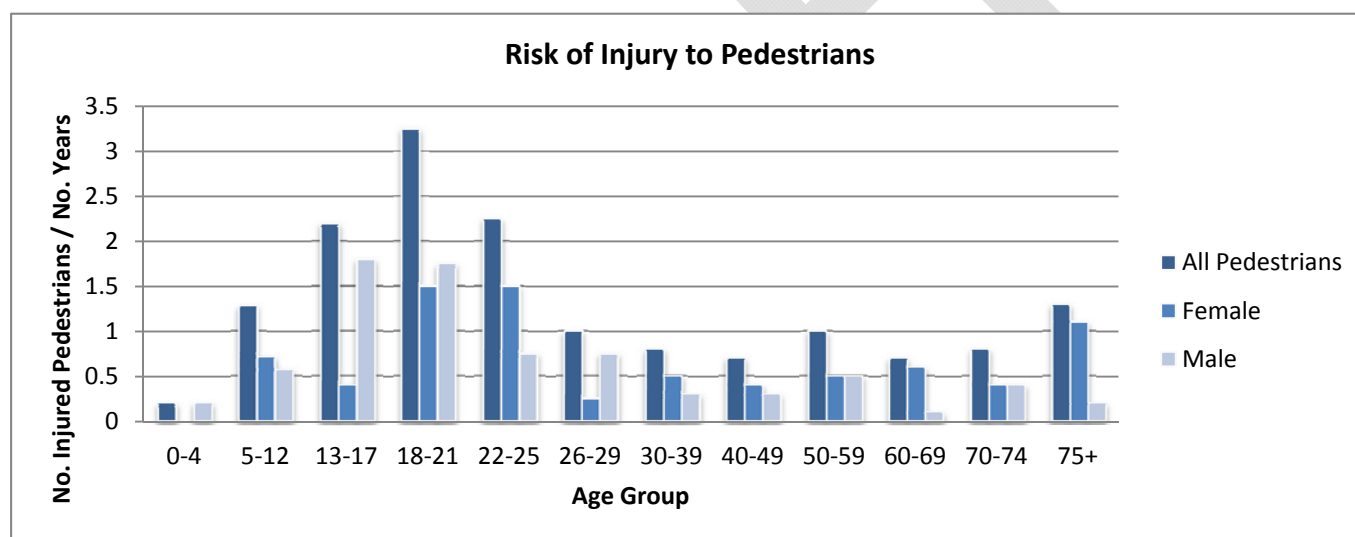


Figure 4.4.3.5 – Risk of Injury to Pedestrians in the City of Ballarat, 2010 to 2014

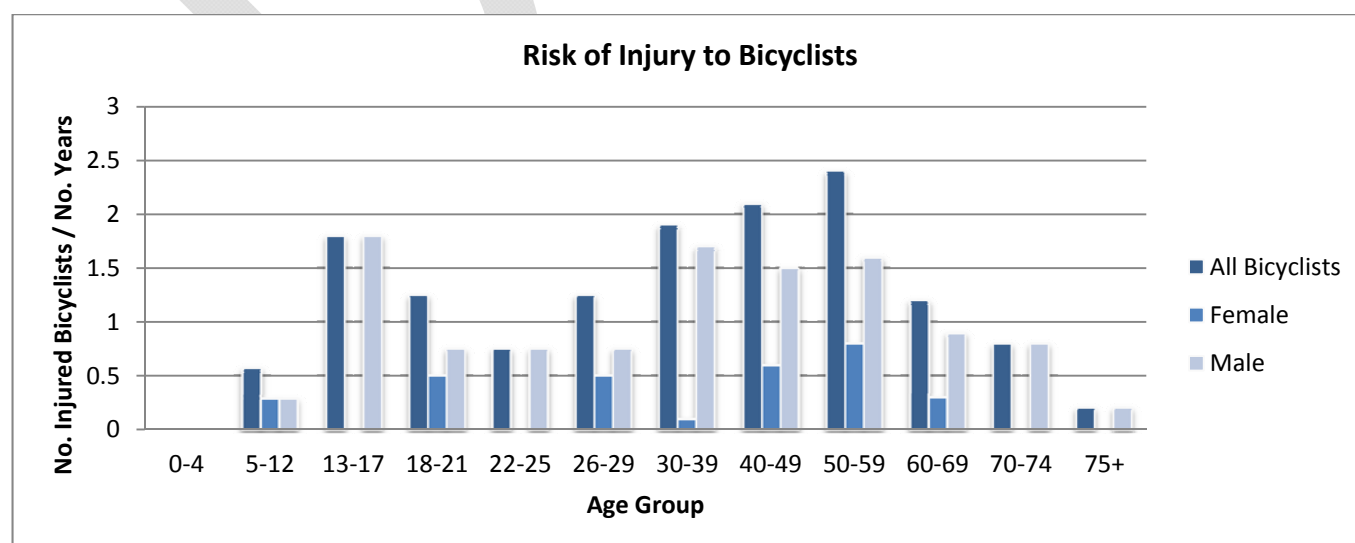


Figure 4.4.3.6 – Risk of Injury to Bicyclists in the City of Ballarat, 2010 to 2014

With regard to ages of passengers, Figure 4.4.3.3 indicates that the largest group that are killed or injured in crashes in the City of Ballarat are aged less than 18, followed by the 18-21 year age group. These age groups potentially have the longest to live with acquired injuries from motor vehicle trauma and are the most dependent on other drivers for transport options.

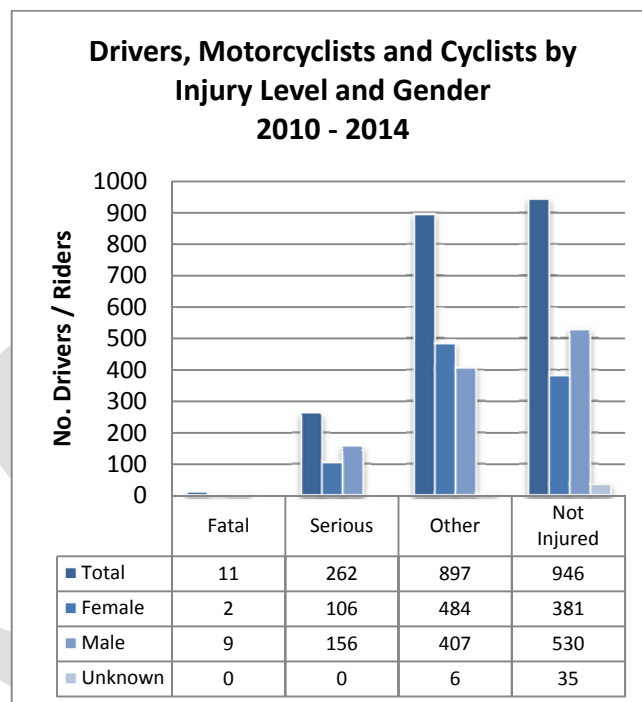
*“the largest group of passengers killed or injured in incidents in Ballarat are aged less than 18”*

For motorcyclists, Figure 4.3.4.4 shows that males aged 18 to 21 years are most at risk, however the next group most at risk is males aged 40 to 49 years. For younger riders, these results may reflect rider inexperience. This may also be true for the older age group, where riders are returning to motorcycling but are ‘out of practice’. Research also shows that impaired vision, delayed reaction time and altered balance, all of which accompany the natural aging process could contribute to crashes or mishaps among older motorcyclists. Once involved in a crash, older riders are likely to have more severe injuries and take longer to recover than younger riders. Driver behaviour programs delivered through male sporting groups may reach this target demographic.

Figure 4.4.3.6 indicates that older, male cyclists aged 30 to 59 years are the most at risk cycling group followed by 13 to 17 year old male cyclists. There may potentially be a correlation between the increased participation of older males in cycling for fitness and the number of crashes involving cyclists. Delivery of Ballarat Bicycle Strategy 2014-2019 Improvements could help to improve safety for cyclists.

Figure 4.4.3.5 indicates that there is a high incidence of pedestrians killed or injured in crashes in the City of Ballarat in the 18 to 21 year old age category. This is followed by 22 to 25 and 13 to 17 year old pedestrians that are next most at risk. Pedestrian distractions such as mobile telephones, iPods etc.

could be contributing to these crashes or there may potentially be other contributing factors such as alcohol.



**Figure 4.4.3.7 – Drivers, Motorcyclists and Cyclists involved in Crashes for the period 2010 to 2014 by Injury Level and Gender**

Figure 4.4.3.7 indicates that whilst the overall number of male and female drivers involved in crashes is similar, male drivers and riders are over represented in the serious injury and fatality crashes.

#### 4.4.4 Crash Type

To identify the most common types of crash that occurred in the City of Ballarat over the five year period, the following categories have been used to distinguish between ‘crash types’. Figure 4.4.4.1 shows the most common categories of crash type.

*Run Off Road – DCA 151, 170-173, 180-183*

*Side Impact at Intersection - DCA 110, 111, 113, 114, 116, 121 and 122 and Location Type = Intersection.*

*Head On – DCA 120*

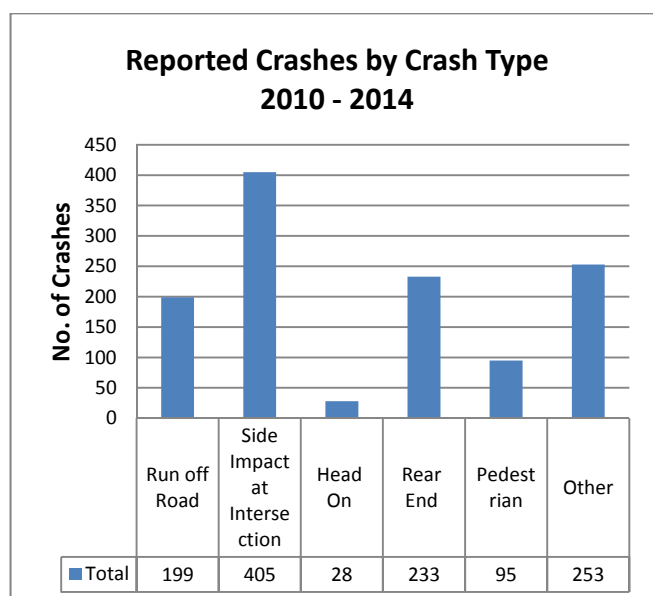
*Rear End – DCA 130-132*

*Pedestrian – DCA 100-109*

*Other – those crashes that are not included above.*

*(Note: DCA is the Definition for Classifying Accidents and is assigned by traffic experts and police to identify crash types.)*

Driscoll Engineering Services Pty Ltd



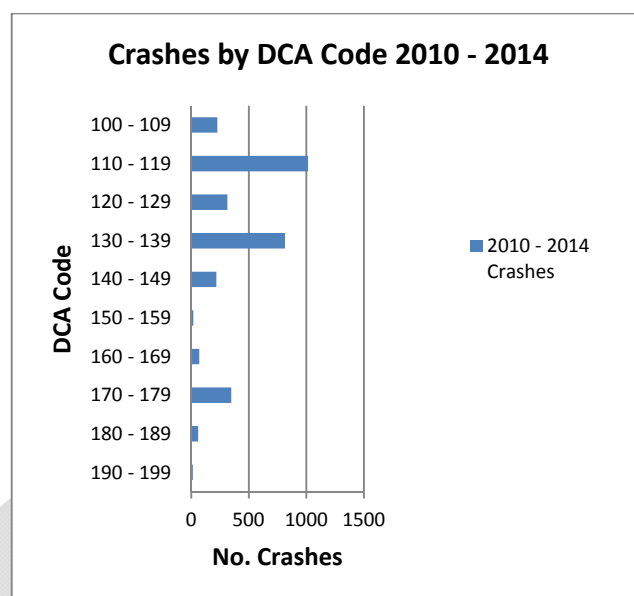
**Figure 4.4.4.1 – City of Ballarat Crashes by Crash Type**

It is apparent from Figure 4.4.4.1 that the most common types of casualty crashes reported in the City of Ballarat are side impact crashes at intersections, followed by rear end crashes. There is also a high incidence of 'Other' crashes, however this category is quite broad and the quantity reflects the total remainder of crashes.

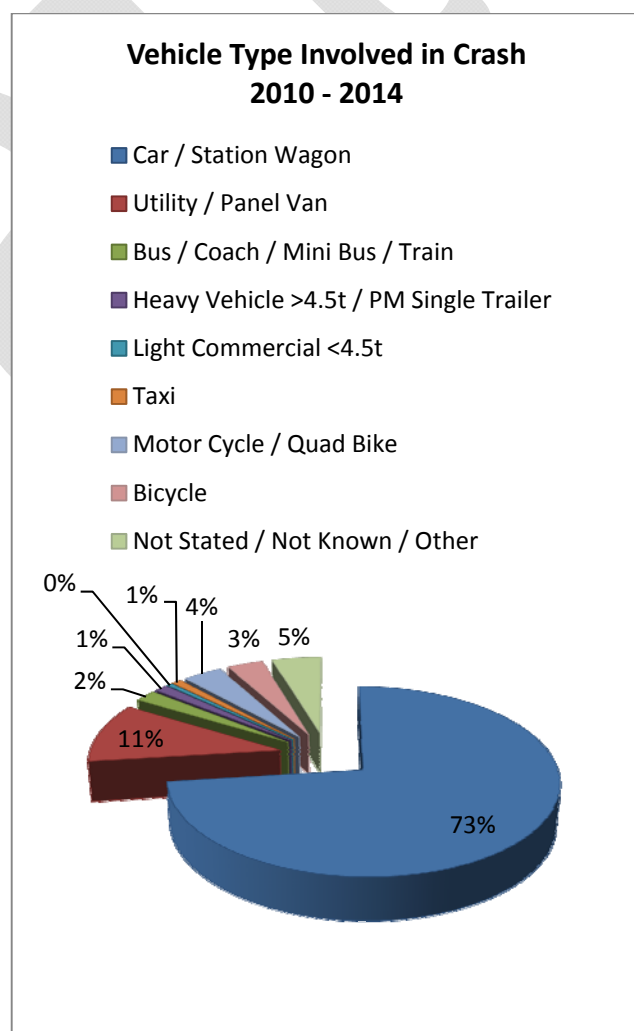
When analysed by DCA code, the most predominant crash types involve vehicle impacts from adjacent directions (DCA Code 110 – 119). The second most frequent crash type involves vehicle impacts from the same direction (DCA Code 130-139), and one of the contributing factors may be distractions such as mobile telephones.

| DCA Code  | Crash Type                        |
|-----------|-----------------------------------|
| 100 – 109 | Pedestrian Intersections          |
| 110 – 119 | Vehicles from Adjacent Directions |
| 120 – 129 | Vehicles from Opposing Directions |
| 130 – 139 | Vehicles from Same Direction      |
| 140 -149  | Manoeuvring                       |
| 150 – 159 | Overtaking                        |
| 160 – 169 | On Path                           |
| 170 – 179 | Off Path on Straight              |
| 180 – 189 | Off Path on Curve                 |
| 190 - 199 | Passenger and Miscellaneous       |

**Table 4.4.4.1 – DCA Code Categories**



**Figure 4.4.4.2 – Crashes by DCA Code**



**Figure 4.4.4.3 – Crashes by Vehicle Type**

Figure 4.4.4.3 analyses all of the vehicles involved in crashes by the type of vehicle involved.

The VicRoads Road Safety Performance Information for Ballarat indicates that the percentage of heavy vehicle crashes in Ballarat is significantly lower than for Country Victoria.

#### 4.4.5 Location of Crashes

As shown in Figure 4.4.1.2, over the period from 2010 to 2014, 562 crashes occurred on local roads in the City of Ballarat, requiring the City of Ballarat to submit strong Black Spot Programme applications for incidents on the local roads as determined annually from the crash statistics.

#### 4.4.6 High Risk Times

VicRoads Road Safety Performance Information for Ballarat indicates that the highest risk time to travel is between 4:00pm and 6:00pm, the end of the work day, followed by school pickup time, 3:00 to 4:00pm and then lunch time, 1:00 to 2:00pm.

#### 4.4.7 Comparison of Ballarat LGA with similar Regional Municipalities

A comparison of VicRoads Overview of Road Crashes in Ballarat with similar reports for the municipalities of Bendigo, Geelong and Shepparton indicates that the City of Ballarat performing relatively well in terms of road safety.

number of people seriously injured over the five year period from 2009 to 2013. The larger area of the other municipalities, and therefore likely greater distances travelled on rural roads, is potentially reflected in the severity of their crashes.

Of the four municipalities, Ballarat had the highest percentage of crashes involving a 'collision with a vehicle', i.e. cross traffic, rear end, head on collisions that are predominantly at low speed and this is reflected in the lower numbers of reported injuries. Similarly, Ballarat had the lowest number of 'collision with a fixed object' crashes, i.e. run off road crashes which often result in injuries of greater severity.

| Municipality | Pop'n   | Area (km <sup>2</sup> ) | Crash History for 2009 – 2013   |
|--------------|---------|-------------------------|---|
| Ballarat     | 100,283 | 739                     | 1233 Crashes,<br>19 Fatalities<br>375 Serious Injuries<br>1278 Minor Injuries |
| Bendigo      | 106,971 | 2999                    | 1309 Crashes,<br>36 Fatalities<br>497 Serious Injuries<br>1194 Minor Injuries |
| Geelong      | 224,926 | 1247                    | 2331 Crashes,<br>55 Fatalities<br>991 Serious Injuries<br>2059 Minor Injuries |
| Shepparton   | 63,269  | 2421                    | 799 Crashes,<br>32 Fatalities<br>415 Serious Injuries<br>696 Minor Injuries   |

**Table 4.4.7.1 – Municipal Comparison**

Although Ballarat has had more crashes in total than Shepparton, of the four municipalities, Ballarat has had the least number of fatalities and the least

## 5. Action Plan

### 5.1 Background Considerations

In 2013, Ballarat was ranked 21<sup>st</sup> out of 79 municipalities in terms of the number of people killed in road crashes and 21<sup>st</sup> in terms of the number of people seriously injured in road crashes. To address the crash history in the City of Ballarat, the following crash statistics analysis should be considered relative to the proposed actions for the Community Road Safety Strategy.

- The City of Ballarat has higher than average numbers of driver casualties (58%) compared to country Victoria (52%). This is of concern given that the majority of the population is based in the urban areas where there are lower speed zones.
- A comparison of the number of crashes per year over the five years from 2009 to 2013 indicates that the total number of reported crashes has slightly reduced, however the number of fatalities remained similar, and the number of serious injury crashes appears to be slightly increasing.
- Overall there have been approximately 10% more serious injury crashes on local roads, in the City of Ballarat than on the arterial roads. Therefore future road safety measures implemented by the City of Ballarat on local roads are expected to have a potentially significant effect on the crash history in the municipality.
- Road users in the 60+ year old age group recorded the highest proportion of fatalities in Ballarat. However the highest proportion of driver casualties were aged 40 to 49 closely followed by 18 to 21 year olds.
- The City of Ballarat is over represented in regard to crashes involving pedestrians and cyclists, having almost twice the number of pedestrian (10% compared to 5%) and cyclist (7% compared to 4%) casualties relative to the rest of Victoria.
- There is a spike in the number of pedestrian fatalities or injuries in crashes in the City of Ballarat in the 18 to 21 age category. Pedestrian distractions such as mobile telephones, iPods etc. could be contributing to these crashes or potentially there may be other contributing factors such as alcohol. The other age group that has an unusually large number of pedestrian casualties is the 50 to 59 age category.
- The largest single group of passengers injured in crashes in the City of Ballarat are aged 18 to 21, however, those aged less than 18 make up 35% of the total passenger casualties.
- With regard to cyclists, the highest proportion of casualties in the City of Ballarat is the 50 to 59 age category, closely followed by the 40 to 49 age group and then 30 to 39 year old riders.
- The highest number of motorcyclist or pillion passenger casualties in the City of Ballarat fall in the 40 to 49 age group, followed by the 30 to 39 age group.
- In terms of the type of crashes in the municipality, VicRoads Road Safety Performance Information identifies that the City of Ballarat has almost twice the number of reported 'side impact at intersection' incidents compared to the rest of Country Victoria (32% to 18% of total reported crashes). Similarly the percentage of rear end crashes is much higher than the rest of Country Victoria (19% to 11% of total reported crashes), however the percentage of 'run off road' crashes is quite low (16% compared to 34% in the rest of Country Victoria). Driver distraction programs may assist with the reduction in rear end crashes. The percentage of pedestrian related crashes is also above the Country Victoria average.

### 5.1.1 ROAD SAFETY LEADERSHIP AND CO-ORDINATION

Goal: In partnership with key agencies, provide strong direction, leadership, co-ordination and service in road safety, for the benefit of all residents of and visitors to the City of Ballarat.

| Item | Challenge   | Action   | Performance Measure  |
|------|---|--|--|
| 1.1  | Civic leadership and governance for improving road safety for all road users within the municipality. | Council to formally adopt the revised Community Road Safety Strategy.  | Revised Community Road Safety Strategy adopted.  |
| 1.2  | Civic leadership and governance for improving road safety for all road users within the municipality. | City of Ballarat to provide funding and resources and allocate responsibility for the implementation of the Community Road Safety Strategy.              | Annual budget allocations.   |
| 1.3  | Civic leadership and governance for improving road safety for all road users within the municipality. | Convene the Road Safety Advisory Committee as the ongoing interagency coordinating body for implementing the road safety plan.                           | Road Safety Advisory Committee meets at least quarterly.   |
| 1.4  | Civic leadership and governance for improving road safety for all road users within the municipality. | Participate as an active member of RoadSafe Central Highlands and work with VicRoads and Victoria Police to improve road safety in the City of Ballarat. | Active membership of RSCH. Proportion of RSCH programs that are linked to City of Ballarat Road Safety Plan. |
| 1.5  | Civic leadership and governance for improving road safety for all road users within the municipality. | Advocate for state and federal government actions that will improve road safety for residents of and visitors to the City of Ballarat.                   | Major advocacy targets to be articulated and reported on annually.   |
| 1.6  | Civic leadership and governance for improving road safety for all road users within the municipality. | Participate in the 'Shine a Light on Road Safety' campaign that is being promoted by Road Trauma Support Services.                                       | Initiatives undertaken.  |



**Figure 5.1.1.1 – Recent safety upgrades at the intersection of Lydiard Street and Landsborough Street.**

### 5.1.2. SAFE ROAD AND PATH NETWORK

Goal: Incorporate safe system principles into the design of roads and roadsides and develop innovative infrastructure treatments to improve safety.

| Item | Challenge   | Action   | Performance Measure  |
|------|---|--|--|
| 2.1  | Review of high risk sites.                          | <p>Annually review the VicRoads crash statistics, supplemented by inspections, local knowledge and community input to identify high risk sites.</p> <p>Identify potential Black Spot and Black Length sites and rank the sites for potential funding.</p> <p>Apply for road safety funding for the delivery of treatments at eligible sites.</p> <p>Advocate for VicRoads to address high incident locations (Black Spots and Black Lengths) on the arterial road network in the City of Ballarat.</p> | <p>Review conducted and priorities set.</p> <p>Treatments installed.</p> <p>Letters of support for road safety funding for treatments at Black Spots and Black Lengths sent to VicRoads.</p> |
| 2.2  | Safer traffic conditions in activity centres.       | Reduce speeds in activity centres.   | Initiatives undertaken.  |
| 2.3  | Safer traffic infrastructure in new developments.   | Critically review development plan proposals to ensure appropriate separation for pedestrians and cyclists to move about safely.   | Adequate facilities incorporated.  |
| 2.4  | Antisocial, dangerous and illegal driver behaviour. | <p>Strive to reduce 'hoon' driver behaviour by promotion of the hoon hotline and neighbourhood mail drops.</p> <p>Deliver the annual Local Area Traffic Management program.</p>  | <p>Neighbourhood mail drops completed in response to complaints.</p> <p>LATM program delivered.</p>  |

### 5.1.3. ROAD SAFETY IN SCHOOL PRECINCTS

Goal: Support schools in providing traffic safety education and road safety initiatives that are relative to primary and secondary environments.

| Item | Challenge                                       | Action  | Performance Measure   |
|------|---|---|---|
| 3.1  | Promote safe traffic conditions around schools. | <p>Promote safe dropping off and picking up of students.</p> <p>Enforce parking regulations near schools.</p> <p>Empower school administrators to initiate and lead their own road safety programs.</p> <p>Encourage alternative measures such as 'Park and Walk' to reduce traffic around schools.</p> | <p>Promotions undertaken.</p> <p>Attendances at schools by local laws officers.</p> <p>Information provided to schools.</p> <p>Promotions undertaken.</p> |
| 3.2  | Safe pedestrian and bicycle access to schools.  | <p>Strive to improve road safety in school environments and on routes to school, particularly bicycle and pedestrian routes to school.</p> <p>In partnership with RoadSafe Central Highlands continue to implement campaigns on safe access to schools.</p>   | <p>List of improvements implemented.</p> <p>Number of schools at which measures taken.</p> <p>Promotions undertaken.</p>                                  |

#### 5.1.4. PEDESTRIANS (INCLUDING MOTORISED MOBILITY DEVICES)

Goal: Provide pedestrians with improved infrastructure and safer vehicle speeds to reduce risk, while supporting the uptake of sustainable transport modes.

| Item | Challenge   | Action   | Performance Measure  |
|------|---|--|--|
| 4.1  | Safe pedestrian conditions at key activity centres. | Reduce speeds and implement appropriate engineering works at key activity centres to improve conditions for all pedestrians, particularly older people, parents with prams and people of all abilities.  | Number of improvements made.   |
| 4.2  | Maintaining a safe pedestrian path network.         | <p>Continue to plan and provide a safe and integrated pedestrian environment (Wayfinding Strategy delivered).</p> <p>Upgrade nominated pedestrian routes to have appropriate DDA installations.</p> <p>Upgrade Bus Stop facilities to incorporate DDA requirements to ensure improved pedestrian access.</p> <p>Continue to conduct regular inspections of footpaths, assisted by other partners as appropriate, and continue to update the program of footpath maintenance works. (Asset Management Plan).</p> <p>Include pedestrian safety as a key consideration of relevant Local Area Traffic Management.</p> | <p>Annual Footpath Program delivered.</p> <p>Annual delivery of the DDA Program.</p> <p>Annual delivery of the DDA Program.</p> <p>Extent of footpath inspections and improvements.</p> <p>Pedestrian safety considered as relevant to LATM.</p> |
| 4.3  | Safe departure from entertainment venues.           | Continue the operation of the Safe City Taxi Ranks.  | Safe City Taxi Rank operation supported.   |
| 4.4  | Pedestrian Awareness                                | In partnership with RoadSafe Central Highlands, promote the need for pedestrians to be aware of their personal safety and the dangers of distractions such as iPods and mobile telephone use whilst walking.   | Promotions undertaken.   |



**Figure 5.1.4.1 – Realignment of Tram Tracks on Wendouree Parade to address bicycle crashes.**

### 5.1.5. SAFER CYCLING

Goal: Provide cyclists with improved infrastructure and safer vehicle speeds to reduce their risk and support the uptake of sustainable transport modes.

| Item | Challenge                                      | Action   | Performance Measure   |
|------|--|--|---|
| 5.1  | Providing safe cycling routes.                 | <p>Implement the City of Ballarat 2014 – 2019 Bicycle Strategy Actions.</p> <p>Allocate funding for the continued implementation of the Principal Bicycle Network in the City of Ballarat.</p> <p>Continue to plan and provide a safe and integrated on and off-road network of user friendly bicycle paths which are well signed and link key destinations.</p> <p>Identify and prioritise the improvement of safe cycling routes to schools and major employers. Refer to the 2014-2019 Ballarat Bicycle Strategy.</p> | <p>Proportion of recommendations implemented.</p> <p>Status of the Smart Roads Principal Bicycle Network in Ballarat.</p> <p>Bicycle facilities installed.</p> <p>Bicycle facilities installed.</p> |
| 5.2  | Bicycle Safety Promotion.                      | In partnership with RoadSafe Central Highlands, continue to promote bicycle safety and the wearing of bicycle helmets.   | Promotions conducted  |
| 5.3  | Promoting education about safe bicycle riding. | Continue to support the provision of bicycle information and education, for all schools within the City of Ballarat.   | Number of training courses delivered (VicRoads dependent).  |



Figure 5.1.5.1 – Bicycle slip lane at Wendouree Parade and Hamilton Avenue Intersection Roundabout.

### 5.1.6. SAFER DRIVING AND MOTOR CYCLING

Goal: Promote safer driving and motorcycling.

| Item | Challenge                              | Action   | Performance Measure  |
|------|--|--|--|
| 6.1  | Novice drivers.                        | Continue to assist novice drivers to safely gain supervised experience through Lead On mentoring and programs such as the Drive 120 program, Fit to Drive, and Keys Please.  | Programs available.  |
| 6.2  | Risk taking by young drivers.          | In partnership with RoadSafe Central Highlands, run advertising and information campaigns that address risk taking by young drivers and promote safe driving.<br><br>Encourage the public to call the 'Hoon Hotline' (Crime stoppers) where appropriate.   | Promotional activities undertaken.<br><br>Promotional activities undertaken.                       |
| 6.3  | Leadership and role models.            | Support RoadSafe Central Highlands and the City of Ballarat Youth Services in the delivery of programs such as Looking After Our Mates and Fit to Drive.   | Programs delivered.  |
| 6.4  | Drink/drug driving.                    | In partnership with RoadSafe Central Highlands and Victoria Police, promote drink/drug driving messages, supported by coordinated enforcement.   | Promotional activities undertaken.   |
| 6.5  | Promote safer driving by older people. | Promote safer driving by older people. Undertake information sessions with seniors groups, in conjunction with the Walk With Care, Safe Drive Medical, RACV Wiser Driver and Years Ahead safety programs where appropriate.<br><br>In partnership with Public Transport Victoria, promote the use of public transport to older people. | Promotional activities implemented each year.<br><br>Promotional activities implemented each year. |
| 6.6  | Driver distraction                     | In partnership with RoadSafe Central Highlands, run advertising and information campaigns to promote safe driving with emphasis on driver concentration and risks associated with distractions such as mobile telephone use.   | Promotional activities run.  |
| 6.7  | Reducing vehicle use.                  | Promote Sustainable Transport.   | Sustainable Transport Strategy adopted.  |
| 6.8  | Motorcycle safety.                     | Consider the needs of motorcyclists when undertaking road maintenance activities.  | Enhanced awareness of road maintenance staff.  |
| 6.9  | Driver fatigue.                        | In partnership with RoadSafe Central Highlands, run advertising and information campaigns which address the risk of driver fatigue and promote safe driving. Address the risk of driver fatigue issue.<br><br>Continue to support the Driver Reviver program.  | Programs undertaken.<br><br>Driver Reviver program/s undertaken.                                   |

## 6. Implementation of the Community Road Safety Strategy

The Manager Infrastructure Development & Delivery of the City of Ballarat will continue to convene the Road Safety Advisory Committee and will regularly report on progress against the actions in this report.

### Road Safety Advisory Committee

The Road Safety Advisory Committee was originally established to oversee and manage the implementation of the actions/initiatives in the Road Safety Strategic Plan 2000 and for subsequent strategies, therefore the Road Safety Advisory Committee will continue to be responsible for the implementation of this Community Road Safety Strategy 2015 – 2020.

## 7. Evaluation of the Community Road Safety Strategy

Assessment of the effectiveness of this Community Road Safety Strategy will be undertaken in a number of ways.

1. The progress against each of the identified actions shall be assessed and monitored using the identified Performance Measure.
2. The most recent VicRoads annual Road Safety Performance Information for Ballarat will be reviewed annually to identify trends in the municipal crash history and determine if the identified actions in this strategy are effective.
3. At the end of the five year period (2015 – 2020) for which this strategy is applicable, a review will be undertaken to assess the effectiveness of the strategy and assign revised goals for the next iteration.

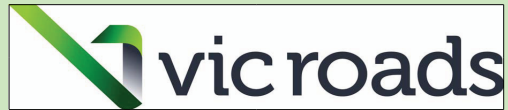


Figure 6.1.1 – Recent Road Safety Upgrades in Armstrong Street North

## Appendix A

### VicRoads – An Overview of Road Crashes in Ballarat

Draft



## AN OVERVIEW OF ROAD CRASHES IN BALLARAT

### Key Points for 2014

In 2014, BALLARAT was ranked 22nd out of 79 municipalities in terms of the number of people killed in road crashes and 33rd in terms of the number of people seriously injured in road crashes.

In 2014, the following types of road users were killed in BALLARAT giving a total of 4 persons.

|         |   |      |
|---------|---|------|
| Drivers | 4 | 100% |
|---------|---|------|

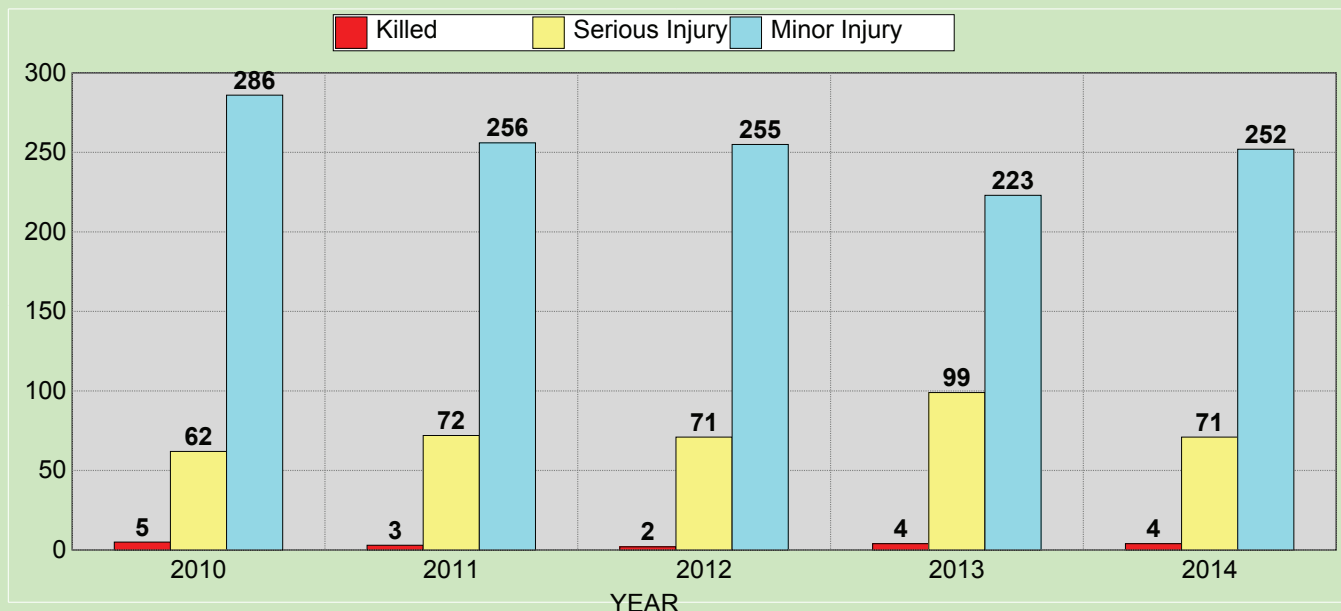
In 2014, the following types of road users were seriously injured in BALLARAT giving a total of 71 persons.

|               |    |     |
|---------------|----|-----|
| Bicyclists    | 5  | 7%  |
| Drivers       | 36 | 51% |
| Motorcyclists | 7  | 10% |
| Not Known     | 1  | 1%  |
| Passengers    | 16 | 23% |
| Pedestrians   | 6  | 8%  |

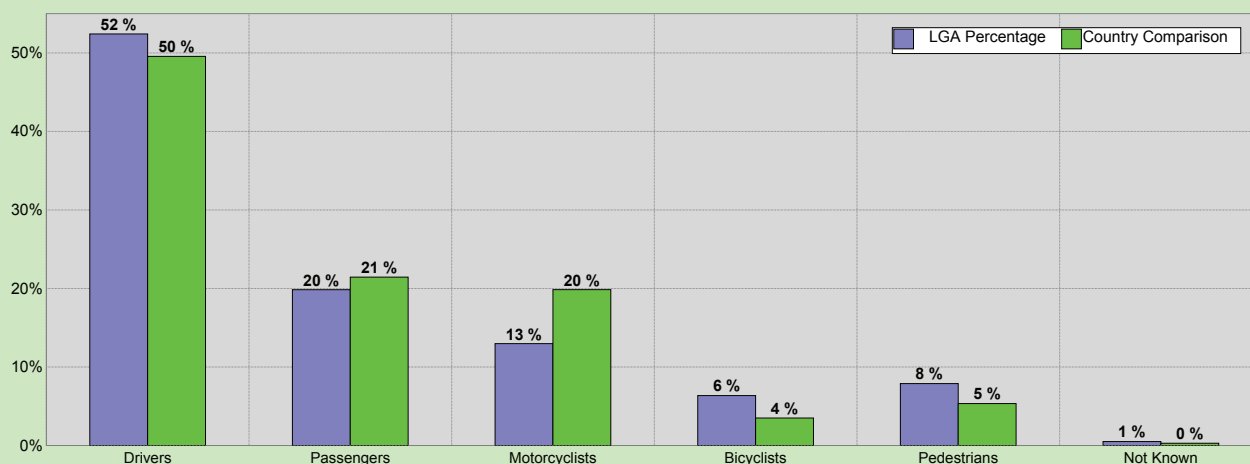
### Summary for 5 year period - 2010 to 2014

Between 2010 and 2014, there were 1225 crashes where at least one person was killed or injured in BALLARAT. In the 1225 crashes, 18 persons were killed, 375 persons were seriously injured and 1272 persons sustained minor injuries.

**BALLARAT - Road users killed and injured by year.**



## Which Road Users are killed or seriously injured in crashes in BALLARAT 2010 to 2014?



## Road Deaths and Serious Injuries by Road User Group for BALLARAT 2010 to 2014



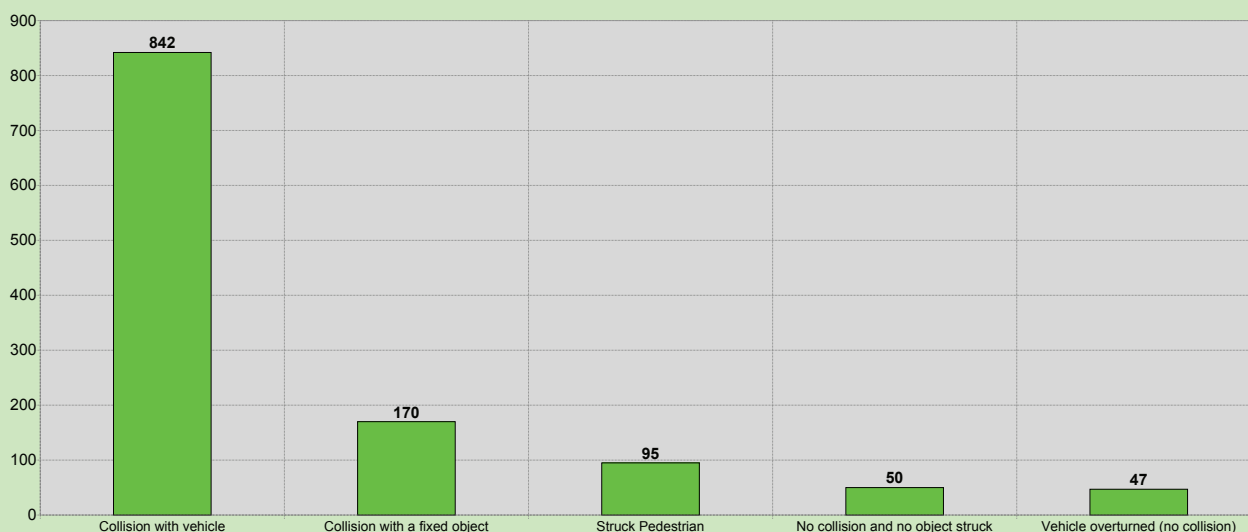
## Which age groups are involved in crashes in BALLARAT ?

Between 2010 and 2014, road users in the 17-25 year old age group recorded the highest proportion of deaths in BALLARAT.

In the same 5 year period 17-25 year olds recorded the highest proportion of serious injuries in BALLARAT.

## What types of crashes occur in BALLARAT ?

Between 2010 and 2014, the 5 most common crashes in BALLARAT were:



## Appendix B

### Crash History on Local Roads and Arterial Roads in the City of Ballarat

Draft

**Figure B.1 – Crash History on Priority Local Roads identified as Strategic Routes**

| Road  | No. Crashes               |
|---|---------------------------|
| Armstrong Street North                          | 9                         |
| Armstrong Street South                          | 9                         |
| Barkly Street                                   | 12                        |
| Burnbank Street                                 | 5                         |
| Chisholm Street                                 | 4                         |
| Cuthberts Road                                  | 10                        |
| Dana Street                                     | 14                        |
| Doveton Street North                            | 15                        |
| Eastwood Street                                 | 8                         |
| Elsworth Street                                 | 3                         |
| Eureka Street                                   | 22                        |
| Eyre Street                                     | 12                        |
| Forest Street                                   | 8                         |
| Gear Avenue                                     | 3                         |
| Gillies Road                                    | 3                         |
| Grant Street (Sebastopol)                       | 5                         |
| Greenhalghs Road                                | 3                         |
| Grevillea Road                                  | 6                         |
| Howitt Street (Creswick Road to Stawell Street) | 3 (Including 1 Fatality)  |
| Humffray Street North                           | 8                         |
| Humffray Street South                           | 5                         |
| Leith Street                                    | 3                         |
| Lydiard Street North                            | 9                         |
| Lydiard Street South                            | 8                         |
| Mair Street (Pleasant Street to Davey Street)   | 13 (Including 1 Fatality) |
| Norman Street                                   | 2                         |
| Peel Street                                     | 4                         |
| Pleasant Street North                           | 3                         |
| Pleasant Street South                           | 9                         |
| Recreation Road                                 | 6                         |
| Ring Road                                       | 2                         |
| Ripon Street                                    | 4                         |
| Rubicon Street                                  | 5                         |
| Sturt Street (West Bound)                       | 5                         |
| Sturt Street (East Bound)                       | 6                         |
| Sutton Street                                   | 2                         |
| Wendouree Parade                                | 24                        |
| Yankee Flat Road                                | 3                         |

**Figure B.2 – Other Local Roads (excluding Tracks) with >2 Reported Crashes**

| Road                     | No. Crashes              |
|--------------------------|--------------------------|
| Ascot Street             | 6                        |
| Banksia Road             | 2                        |
| Bells Road               | 5                        |
| Bell Street              | 3                        |
| Beverin Street           | 8 (Including 1 Fatality) |
| Birdwood Avenue          | 4                        |
| Bradshaw Street          | 2                        |
| Brittain Street          | 7                        |
| Buninyong Mt Mercer Road | 4                        |
| Clarke Street            | 2                        |
| Clarkson Street          | 3                        |
| Codes Forest Road        | 2                        |
| Coghills Road            | 2                        |
| Crown Street             | 2                        |
| Curtis Street            | 3                        |
| Darling Street           | 4                        |
| Dawson Street South      | 5                        |
| Dowcra Street            | 2                        |
| Dowling Road             | 2 (Including 1 Fatality) |
| Dowling Street           | 3                        |
| Edwards Street           | 4                        |
| Errard Street            | 4                        |
| Gregory Street           | 2                        |
| Grenville Street North   | 5                        |
| Grenville Street South   | 2                        |
| Hamilton Avenue          | 2                        |
| Hastings Street          | 2                        |
| Joseph Street            | 2                        |
| Kent Street              | 4                        |
| Kline Street             | 5                        |
| Landsborough Street      | 6                        |
| Learmonth Street         | 3                        |
| Ligar Street             | 3                        |
| Little Bridge Street     | 4                        |
| Marigold Street          | 2                        |
| McKenzie Drive           | 2                        |
| Millers Road             | 2                        |
| Priest Street            | 2                        |
| Pryors Road              | 2                        |
| Richards Road            | 4                        |
| Rowlands Street          | 4                        |
| Sago Hill Road           | 2                        |
| Spencer Street           | 2                        |
| Swinglers Road           | 2                        |
| Slatey Creek Road        | 1 Fatality               |
| Tait Street              | 4                        |
| Ti Tree Road             | 2                        |

|                              |   |
|------------------------------|---|
| Vickers Street               | 1 |
| Victoria Street (Sebastopol) | 4 |
| Whitelaw Avenue              | 3 |
| Windermere Street            | 3 |
| Winter Street                | 2 |

**Figure B.3 – Crash History on City of Ballarat Arterial Roads**

| Road  | No. Crashes                  |
|---|------------------------------|
| Ballarat Carngham Road                                    | 45                           |
| Ballarat Burrumbeet Road (East of Princes Street)         | 18                           |
| Ballarat Burrumbeet Road (Princes Street to Sturt Street) | 38                           |
| Ballarat Burrumbeet Road (West of Dawson Street)          | 106 (Including 2 Fatalities) |
| Geelong Road  | 44                           |
| Grant Street  | 13                           |
| Barkly Street   | 3                            |
| Drummond Street   | 30 (Including 1 Fatality)    |
| Norman Street   | 14                           |
| Ballarat Daylesford Road                                  | 9                            |
| Clunes Creswick Road                                      | 3                            |
| Howitt Street (Creswick Road to Gillies Street)           | 27                           |
| Ballarat Maryborough Road                                 | 33 (Including 2 Fatalities)  |
| Delacombe Wendouree Road (Wilshire Lane)                  | 8                            |
| Delacombe Wendouree Road (Winter Street)                  | 1                            |
| Delacombe Wendouree Road (Gillies Street)                 | 24                           |
| Mount Clear Sebastopol Road                               | 11 (Including 1 Fatality)    |

## Appendix C

### Risk Matrix for the City of Ballarat 2010 -2014

Draft

## Risk Matrix

Road Safety Matrix - Including the groups at risk, the main countermeasures and links to the action plans.

| Age     | Gender | Driver      | Passenger | Walk   | Cycle  | Motor Cycle | Main actions targeting each age group  | Refer to Action Plans   |
|---------|--------|-------------|-----------|--------|--------|-------------|--|---|
| 0 - 4   | Male   | Not Exposed | Medium    | Low    | Low    | Not Exposed |  | 2.2, 2.3, 4.1, 4.2  |
|         | Female | Not Exposed | Medium    | Low    | Low    | Not Exposed |  | 2.2, 2.3, 4.1, 4.2  |
| 5 - 12  | Male   | Not Exposed | Medium    | Medium | Low    | Not Exposed | Promote safe traffic conditions around schools. Safe pedestrian and bicycle access to schools. Provide safe cycling routes. Bicycle Safety promotion. Promoting education about safe bicycle riding.   | 2.2, 2.3, 3.1, 3.2, 4.1, 4.2, 5.1, 5.2, 5.3                               |
|         | Female | Not Exposed | Medium    | Medium | Low    | Not Exposed |  | 2.2, 2.3, 3.1, 3.2, 4.1, 4.2, 5.1, 5.2, 5.3                               |
| 13 - 17 | Male   | Low         | Medium    | High   | High   | Low         | Promote safe traffic conditions around schools. Safe pedestrian and bicycle access to schools. Pedestrian awareness. Provide safe cycling routes. Bicycle Safety promotion. Novice drivers.  | 2.2, 2.3, 3.1, 3.2, 4.1, 4.2, 4.4, 5.1, 5.2, 6.1                          |
|         | Female | Low         | High      | Low    | Low    | Low         |  | 2.2, 2.3, 3.1, 3.2, 4.1, 4.2, 4.4, 5.1, 5.2, 6.1                          |
| 18 - 21 | Male   | High        | High      | High   | Medium | High        | Antisocial, dangerous and illegal driver behaviour. Safe departure from entertainment venues. Pedestrian awareness. Novice drivers. Risk taking by young drivers. Leadership and role models. Drink/drug driving. Driver distraction. Reducing vehicle use. Motorcycle safety. Driver fatigue. | 2.2, 2.3, 2.4, 4.1, 4.2, 4.3, 4.4, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8, 6.9 |
|         | Female | High        | High      | High   | Medium | Low         |  | 2.2, 2.3, 4.1, 4.2, 4.3, 4.4, 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8, 6.9      |
| 22 - 25 | Male   | High        | Medium    | Medium | Medium | Medium      | Antisocial, dangerous and illegal driver behaviour. Safe departure from entertainment venues. Pedestrian awareness. Risk taking by young drivers. Leadership and role models. Drink/drug driving. Driver distraction. Reducing vehicle use. Motorcycle safety. Driver fatigue.                 | 2.2, 2.3, 2.4, 4.1, 4.2, 4.3, 4.4, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8, 6.9      |
|         | Female | High        | Medium    | High   | Low    | Low         |  | 2.2, 2.3, 4.1, 4.2, 4.3, 4.4, 6.2, 6.3, 6.4, 6.6, 6.7, 6.9                |
| 26 - 29 | Male   | Medium      | Low       | Medium | Medium | High        | Antisocial, dangerous and illegal driver behaviour. Safe departure from entertainment venues. Pedestrian awareness. Drink/drug driving. Driver distraction. Reducing vehicle use. Motorcycle safety. Driver fatigue.   | 2.2, 2.3, 2.4, 4.1, 4.2, 4.3, 4.4, 6.4, 6.6, 6.7, 6.8, 6.9                |
|         | Female | Medium      | Low       | Low    | Medium | Low         |  | 2.2, 2.3, 4.1, 4.2, 4.3, 4.4, 6.4, 6.6, 6.7, 6.9                          |
| 30 - 39 | Male   | Medium      | Low       | Low    | High   | Medium      | Safe departure from entertainment venues. Pedestrian awareness. Provide safe cycling routes. Drink/drug driving. Driver distraction. Reducing vehicle use. Driver fatigue.   | 2.2, 2.3, 4.1, 4.2, 4.3, 5.1, 6.4, 6.6, 6.7, 6.9                          |
|         | Female | Medium      | Low       | Medium | Low    | Low         |  | 2.2, 2.3, 4.1, 4.2, 4.3, 5.1, 6.4, 6.6, 6.7, 6.9                          |
| 40 - 49 | Male   | Medium      | Low       | Low    | High   | High        | Pedestrian awareness. Provide safe cycling routes. Drink/drug driving. Driver distraction. Reducing vehicle use. Motorcycle safety. Driver fatigue.  | 2.2, 2.3, 4.1, 4.2, 5.1, 6.4, 6.6, 6.7, 6.9                               |
|         | Female | Medium      | Low       | Low    | Medium | Low         |  | 2.2, 2.3, 4.1, 4.2, 5.1, 6.4, 6.6, 6.7, 6.9                               |
| 50 - 59 | Male   | Medium      | Low       | Medium | High   | Medium      | Pedestrian awareness. Provide safe cycling routes. Drink/drug driving. Driver distraction. Reducing vehicle use. Motorcycle safety. Driver fatigue.  | 2.2, 2.3, 4.1, 4.2, 5.1, 6.4, 6.6, 6.7, 6.9                               |
|         | Female | Medium      | Low       | Medium | Medium | Low         |  | 2.2, 2.3, 4.1, 4.2, 5.1, 6.4, 6.6, 6.7, 6.9                               |
| 60 - 69 | Male   | Low         | Low       | Low    | Medium | Low         | Pedestrian awareness. Drink/drug driving. Driver distraction. Reducing vehicle use. Driver fatigue.  | 2.2, 2.3, 4.1, 4.2, 4.4, 6.4, 6.6, 6.7, 6.9                               |
|         | Female | Low         | Low       | Medium | Low    | Low         |  | 2.2, 2.3, 4.1, 4.2, 4.4, 6.4, 6.6, 6.7, 6.9                               |
| 70 - 74 | Male   | Low         | Low       | Low    | Medium | Low         | Pedestrian awareness. Drink/drug driving. Promote safer driving by older people. Reducing vehicle use. Driver fatigue.   | 2.2, 2.3, 4.1, 4.2, 4.4, 6.4, 6.6, 6.7, 6.9                               |
|         | Female | Low         | Low       | Low    | Low    | Low         |  | 2.2, 2.3, 4.1, 4.2, 4.4, 6.4, 6.6, 6.7, 6.9                               |
| 75+     | Male   | Low         | Low       | Low    | Low    | Low         | Pedestrian awareness. Drink/drug driving. Promote safer driving by older people. Reducing vehicle use. Driver fatigue.   | 2.2, 2.3, 4.1, 4.2, 4.4, 6.4, 6.6, 6.7, 6.9                               |
|         | Female | Low         | Low       | Medium | Low    | Low         |  | 2.2, 2.3, 4.1, 4.2, 4.4, 6.4, 6.6, 6.7, 6.9                               |

### Cut off Points for Risk Matrix

No. Injuries / No. Years per Age Group

| Road User     | Low   | Medium         | High  |
|---------------|-------|----------------|-------|
| Drivers       | < 10  | ≥ 10 to < 20   | ≥ 20  |
| Passengers    | < 5   | ≥ 5 to < 10    | ≥ 10  |
| Motorcyclists | < 1   | ≥ 1 to < 2     | ≥ 2   |
| Bicyclists    | < 0.5 | ≥ 0.5 to < 1.5 | ≥ 1.5 |
| Pedestrians   | < 0.5 | ≥ 0.5 to < 1.5 | ≥ 1.5 |

Note: For all age groups, the following actions are proposed:

- Safer traffic conditions in activity centres.
- Safer traffic infrastructure in new developments.
- Antisocial, dangerous and illegal driver behaviour.
- Safe pedestrian conditions at key activity centres.
- Maintain a safe pedestrian path network.