

Towards Zero Road Safety Action Plan

2016 – 2020

Working together for a safer system



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1.0 Purpose

Purpose of the *Road Safety Action Plan 2016 – 2020*:

- outlines and prioritises the City's road safety programs and services; and
- identifies areas for improvement to guide future direction on the City's road safety programs and initiatives.

2.0 Objective

The *Road Safety Action Plan 2016 – 2020* will:

- reduce the number of crashes that result in death or serious injury within the City of Joondalup;
- aspire for zero deaths or serious injuries with specific focus on school and educational precincts within the City;
- promote, encourage and raise community awareness that road safety is a shared responsibility and choices and behaviours impact others on the road network;
- focus on vulnerable road users with existing and new road improvement projects; and
- investigate innovative road safety initiatives and undertake research and development, including trials, to reduce the risk of crashes on the City's road network.



3.0 Planning context

3.1 Federal

National Road Safety Strategy 2011 – 2020:

The *National Road Safety Strategy 2011 – 2020* was developed by the Australian Transport Council. It is a framework document for the Federal, state and local governments involved in road safety. The Strategy aims to reduce death and injury on Australian roads over a 10 year period through the 'Safe System Approach'.

The Safe System Approach requires a holistic view of the road transport system and the interactions among roads and roadsides, travel speeds, vehicles and road users. Consistent with the long-term road safety vision, it recognises that people will always make mistakes, and may have road crashes, but that those crashes should not result in death or serious injury.

The Safe System Approach is consistent with approaches adopted by other countries with low incidences of road trauma, and is a central theme of the landmark Organisation for Economic Cooperation and Development 2008 report 'Towards Zero: Ambitious Road Safety targets and the safe system approach'.

The 'Safe System Approach' identifies four key cornerstones which are reflected in the actions of this Plan:

1. **Safe road use** – influencing road user behaviour by:
 - advising, educating and encouraging road users to comply with road rules;
 - promoting the philosophy of shared responsibility;
 - encouraging road users to drive unimpaired and alert, and according to the prevailing conditions;
 - managing the gradual introduction of novices into the system and understanding their specific needs; and
 - taking action against those who break the rules.
2. **Safe roads and roadsides** – improving road infrastructure by:
 - designing and maintaining roads and roadsides to reduce the risk of crashes occurring and the severity of injury if a crash does occur; and
 - providing a transport system that supports safe outcomes.
3. **Safe speeds** – ensuring speed limits and travel speeds reflect the safety of the road infrastructure by:
 - undertaking speed enforcement and education; and
 - establishing speed limits according to the features of the road and roadside, vehicle crash-worthiness and the functional performance and known limits of the road user.

4. **Safe vehicles** – improving the safety of the vehicles in the road system by:
 - promoting safety features that reduce the likelihood of a crash (and reduce the impact of the crash on vehicle occupants as well as pedestrians and cyclists);
 - encouraging consumers and businesses to purchase safer vehicles; and
 - implementing mandatory safe vehicle procurement in Government fleets and recommending additional safety features to be considered.

The Safe System emphasises the importance of ensuring these components work in support of each other to increase the survivability of vehicle related crashes.

3.2 State

Towards Zero – Road Safety Strategy 2008-2020

The Western Australian *Towards Zero – Road Safety Strategy 2008 – 2020* sets an ambitious target of 11,000 fewer deaths and serious injury by 2020.

The Strategy was developed by the Office of Road Safety and the Road Safety Council (now identified as the Road Safety Commission) in consultation with the community, local government, special interest groups, and business and industry leaders.

Towards Zero is supported by evidence-based research conducted by the Monash University Accident Research Centre. The long term vision of Towards Zero is a road transport system where crashes resulting in death or serious injury are virtually eliminated. Towards Zero incorporates the 'Safe System Approach' identified in the *National Road Safety Strategy 2011 – 2020* (refer 'Federal' above).

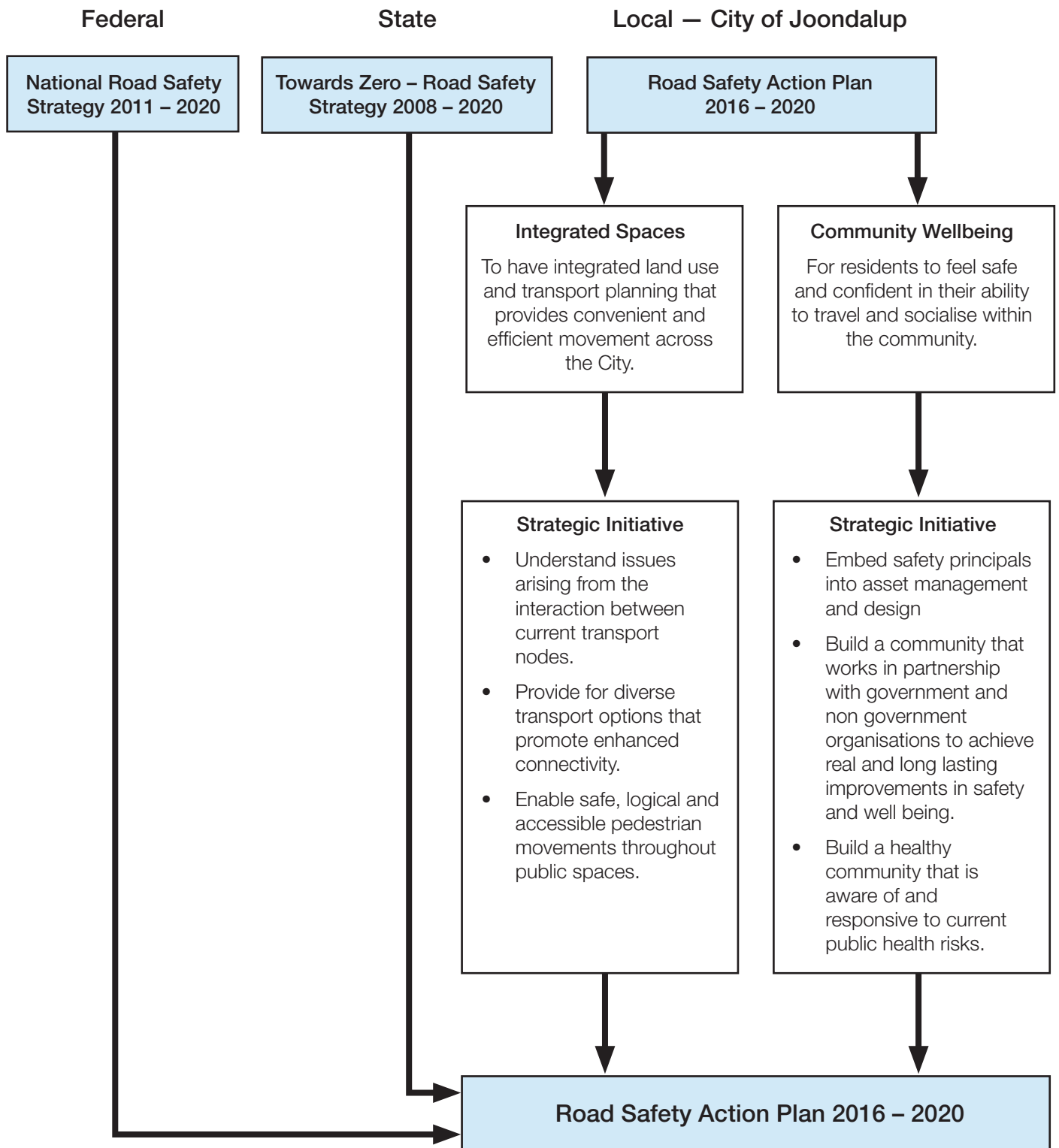
3.3 Local – City of Joondalup

Joondalup 2022:

Strategic Community Plan 2012 – 2022

The City's commitment to road safety and the national and state road safety strategies is represented within the City's *Strategic Community Plan* which identifies road safety under the strategic initiatives – Integrated Spaces and Community Wellbeing.

The overall planning context for the Road Safety Action Plan 2016 – 2020 is represented in the diagram below:



4.0 Road traffic crashes and causal factors

In the five year period from 1 January 2010 to 31 December 2014, 10,819 crashes occurred within the City's boundaries. This also includes State controlled roads such as the Mitchell Freeway, Marmion Avenue south of Ocean Reef Road and Reid Highway. Over 50 percent of the crashes that occurred on City owned roads were rear end crashes. Rear end crashes generally give the indication of congestion and are generally low impact crashes that result in minor injuries or property damage. Right angle related crashes, which are more likely to result in death or serious injury, comprised 23 percent of the total crashes.

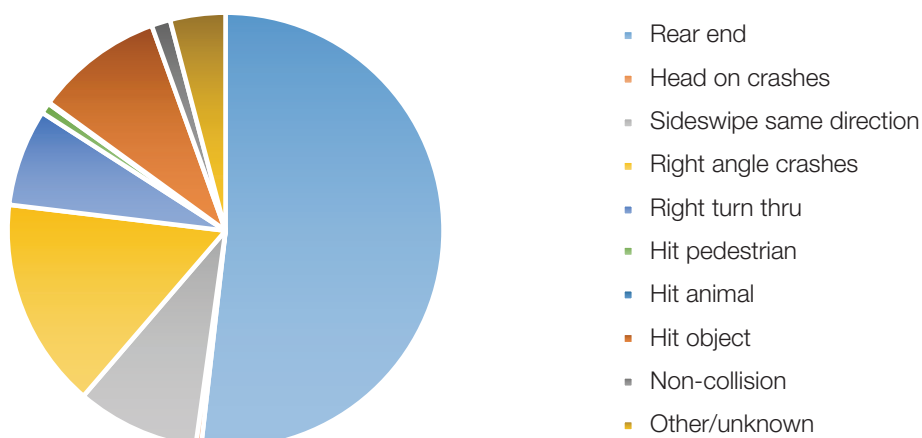
In comparison, a total of 159,401 crashes occurred in the Perth metropolitan area in the same five year period. The crashes that occurred within the City made up 6.8 percent of the metropolitan total. These road traffic crash and fatality statistics are shown in the table 1 and 2 below.

Over the last five years, 15 people have lost their lives and 303 required hospitalisation on City owned roads. Table 2 reveals the severity of crashes compared to the Perth metropolitan area.

Type of crash	City of Joondalup	City of Joondalup %	Perth metropolitan area	Perth metropolitan area %
Rear end	5,599	51.8	70,764	44.4
Head on crashes	48	0.4	1,173	0.7
Sideswipe same direction	986	9.1	18,056	11.3
Right angle crashes	1,692	15.6	31,660	19.9
Right turn thru	774	7.2	10,953	6.9
Hit pedestrian	84	0.8	2,096	1.3
Hit animal	14	0.1	481	0.3
Hit object	1,027	9.5	13,055	8.2
Non-collision	150	1.4	2,305	1.4
Other/unknown	445	4.1	8,858	5.6
Total	10,819	100	159,401	100

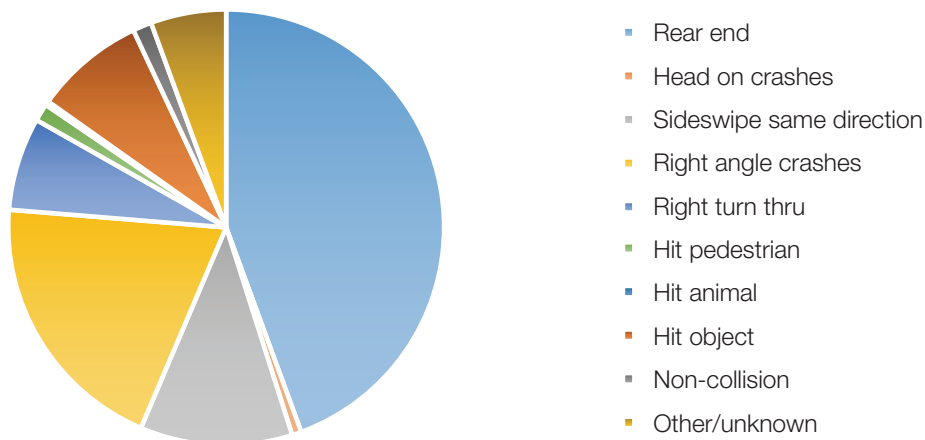
Table 1: Road traffic crash types in the Perth metropolitan area and the City (2010 – 2014)

City of Joondalup Crash Type



Graph 1: Road traffic crash types in the City (2010 – 2014)

Perth Metropolitan Area Crash Type



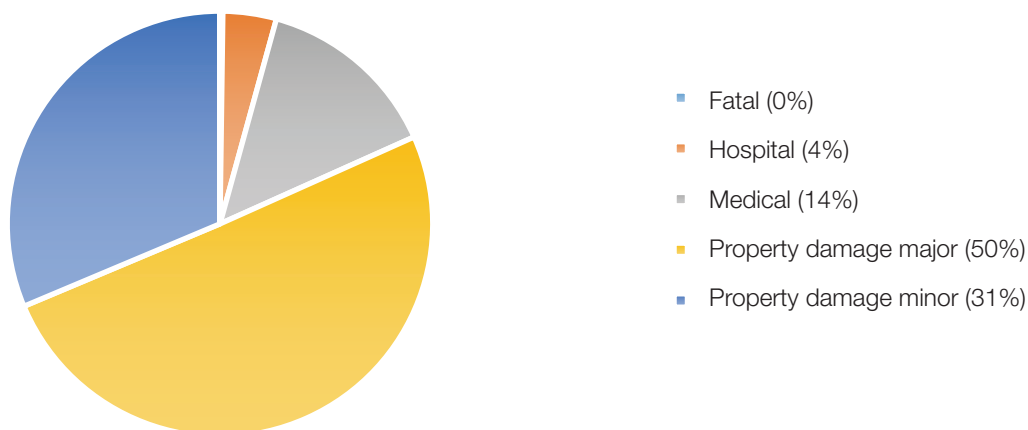
Graph 2: Road traffic crash types in the Perth metropolitan area (2010 – 2014)

Crash severity	Number of crashes – Perth metropolitan area	Number of crashes – City of Joondalup
Fatal	346	15*
Hospital	6,476	303*
Medical	22,348	1,128
Property damage major	80,285	5,305
Property damage minor	49,943	3,209
Unknown	3	-
Total	159,401	9,960

Table 2: Crash severity in the Perth metropolitan area and the City (2010 – 2014)

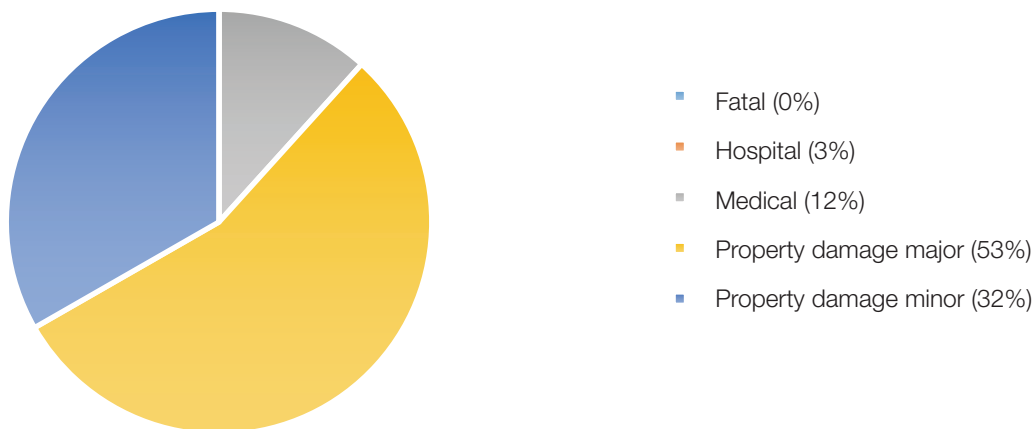
*Does not include the 859 crashes on Main Roads WA controlled roads

Number of Crashes Perth Metropolitan Area



Graph 3: Crash severity in the Perth metropolitan area (2010 - 2014)

Number of Crashes City of Joondalup



Graph 4: Crash severity in the City (2010 – 2014).

*Does not include the 859 crashes on Main Roads WA controlled roads

In the 10 year period from 2005 – 2014, the number of total crashes decreased by approximately 15 percent. Similarly, the total number of casualty crashes also decreased, but fluctuated from year to year (refer to Table 3 and Graph 1).

A more significant reduction of casualty crashes occurred in the previous five year period to December 2014, in

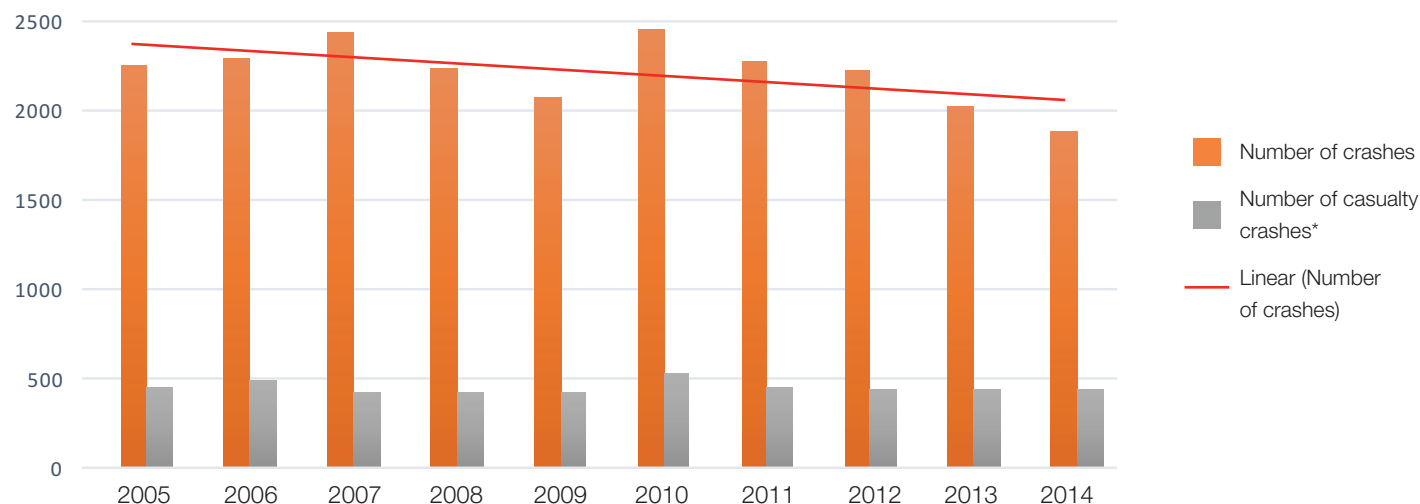
comparison to the long term 10 year period. During this period, there has also been an increase of vehicles using the Perth metropolitan area road network, as reflected in the 2011 Census. It is positive that the overall number of casualty related crashes has not increased – despite the higher vehicle demand on the road network.

Year	Number of crashes	Number of casualty crashes*
2005	2,238	451
2006	2,283	493
2007	2,432	423
2008	2,233	423
2009	2,074	429
2010	2,442	533
2011	2,265	454
2012	2,211	440
2013	2,018	434
2014	1,883	442
Total	22,079	4522

Table 3: Long term crash data City of Joondalup (2005 – 2014)

* Includes crashes resulting in death, hospitalisation and medical treatment

Number of Crashes City of Joondalup



Graph 5: Number of crashes and casualty crashes (2005 – 2014)

4.1 Blackspot grant funding

Statistical data relating to the number, type and severity of crashes enables the City to determine which sections of the City's road network require action. For example, a high number of right angle related crashes resulting in injury could indicate a fault in the design of the intersection. A review of the intersection would be undertaken.

The State Government's Blackspot grant funding program allows the City to improve intersection or road sections that meet criteria including the number, type and severity of crashes and the type of treatment that is proposed to address the issue. For example, an intersection may be improved by removing a T-junction intersection and constructing a roundabout to reduce a high incidence of right angle related crashes. The City has been very successful in obtaining Blackspot funding throughout the City's road network. This has made a positive impact in the overall reduction of crashes that occur within the City.

There are two means of obtaining Blackspot funding.

1. Requesting a Road Safety Audit (RSA).

A RSA is an examination of the safety performance of an existing or future road or intersection. It identifies any road safety issues and provides a corrective action report for improvements to be undertaken and their priority.

2. Utilising Main Roads WA (MRWA) Crash Analysis Reporting System (CARS).

This allows a crash analysis of an intersection or road section. The CARS database is used to ascertain whether an intersection or road section meets the minimum criteria for a Blackspot submission by revealing the Benefit Cost Ratio (BCR).

Examples of two locations within the City that obtained Blackspot funding by these different means are the intersection of Whitfords Avenue and Eddystone Avenue, Craigie (BCR score) and Oceanside Promenade, Mullaloo (RSA). Case studies for each are presented below.

Case Study: Whitfords Avenue and Eddystone Avenue, Craigie

The intersection of Whitfords Avenue and Eddystone Avenue was highlighted as a Blackspot project based on the crash data for the period 1 January 2005 to 31 December 2009. The crash data at this intersection revealed that 48 crashes had occurred during this period, with nine being right angle related. Of the 48 crashes, two required hospitalisation and 11 required medical treatment. The remaining 35 were a mix of major and minor property damage.

To address the high numbers of right angle crashes, the City applied for Blackspot funding for the installation of traffic signals, with the right turn from Whitfords Avenue into Eddystone Avenue being controlled by a red turn arrow.

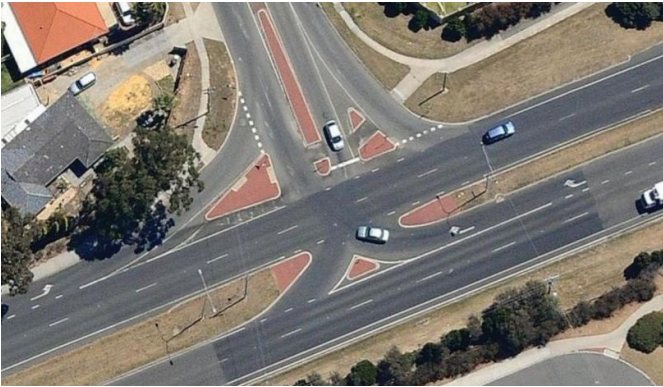


Image: Whitfords Avenue and Eddystone Avenue intersection prior to treatment.



Image: Whitfords Avenue and Eddystone Avenue intersection post construction.

The City was successful in obtaining Blackspot funding for the project and construction commenced in late 2013. The intersection improvements included:

- traffic signals to control through movements on Whitfords Avenue;
- extending the right turn pocket on Whitfords Avenue to turn into Eddystone Avenue; and
- upgraded pedestrian facilities, which also included pedestrian phasing to improve the safety of pedestrians on Whitfords Avenue and Eddystone Avenue.

The latest crash analysis for the period 1 January 2011 to 31 December 2015 has revealed that 25 crashes have occurred during this period, of which 10 occurred in 2013 – five requiring medical treatment. These crashes occurred prior to the completion of the treatment. Since works were completed, four crashes occurred in 2014 – two requiring medical treatment and four crashes in 2015 – one requiring medical treatment. The reduction in casualty related crashes gives a strong indication that the intersection improvement has had a positive outcome and ties into the Safe Systems Approach.

Case Study – Oceanside Promenade, Mullaloo – Stage One

Oceanside Promenade is an iconic tourist drive for the coastal strip. Its numerous beach access points, Mullaloo Surf Life Saving Club and Tom Simpson Park also make it a busy road.

To address pedestrian safety and speed related concerns for the section of Oceanside Promenade from Mullaloo Drive to Warren Way, a RSA was commissioned in 2009. The RSA was used in the Blackspot funding submission. Recommendations from the RSA included:

- assess the use of the road reserve as an extension of the active park and make provision for the safe separation of park users from vehicular traffic;

- review the intersection geometry at Iluka Avenue/Oceanside Promenade/Tom Simpson car park;
- ensure pathways and safe road crossings are provided on foreseeable pedestrian demand routes; and
- that the street lighting is located to illuminate the road and pathways at luminance levels and uniformity in compliance with relevant standards.

As a result of the RSA, the City completed a Blackspot funding submission which was successful, and construction commenced in late 2012. The improvements on Oceanside Promenade consisted of:

- modification to the southern and northern access points to Tom Simpson Park;
- installation of a roundabout at the intersection of Iluka Avenue/Oceanside Promenade/Tom Simpson park access;
- median separation of traffic lanes, with a minimal width median treatment between Mullaloo Drive and Warren Way consisting of red asphalt and median islands;
- shared pathways and pedestrian crossing improvements;
- street lighting improvements to appropriate standards; and
- modification of the intersection of Marjorie Street and Oceanside Promenade to a left out only arrangement.

Due to the road improvements undertaken in this section of Oceanside Promenade, the City was then successful in obtaining support from MRWA to reduce the speed limit from 50km/h to 40km/h. The lower speed limit has created a safer environment for the high pedestrian numbers crossing Oceanside Promenade.



Image: Oceanside Promenade – Mullaloo Drive to Warren Way, Mullaloo post construction.

Further to the road safety improvements completed in 2014, the City was also successful in securing Blackspot funding for Oceanside Promenade from Warren Way to West View Boulevard. Works commenced in May 2016 and will include:

- improved pedestrian crossing facilities;
- on-street parking bays along the western verge;
- flush red median with raised median islands;
- improved landscaping along the coastal shared path; and
- a new concrete path along sections of the eastern verge.



Image: Oceanside Promenade – Warren Way to West View Boulevard existing situation.

4.2 Vehicle ownership and how people travel to work

The number of vehicles owned per household impacts on the road network and the movement of City residents through the City and Perth metropolitan area. More vehicles on the road network can lead to increased congestion and congestion-related crashes such as rear end type crashes.

According to the Australian Bureau of Statistics, Western Australia recorded the largest growth (16.9 percent) for the census years of 2010, 2014 and 2015 with an overall average annual growth of 3.3 percent. In 2015, statistics showed Western Australia to have the second highest number of vehicles per 1,000 people in the country – 844 per 1,000 people.

Additional car ownership data is detailed in Appendix 1.

However despite vehicle ownership increasing, the overall number of crashes within the City has decreased in the last 10 years.

Access to public transport, cycling or walking can also have an impact on the road network and reduce the levels of congestion on the road network. Methods of travel data is detailed in Appendix 2.



Image: Oceanside Promenade – Warren Way to West View Boulevard proposed.

5.0 Key Focus Areas

The *2011 – 2015 Road Safety Action Plan* (Plan 2011) was based on the four cornerstones of the Safe Systems Approach to road safety. It also aligned with the national and state road safety strategies.

The City continuously works to improve its road network to align with the Safe Systems Approach, “Safe Roads and Roadsides”. This has contributed to a gradual decline in the overall number of crashes.

Road safety is an ongoing process of improvement and it is recognised that there is still a significant amount of work that needs to be undertaken if the City is to significantly reduce the number of deaths and serious injuries on its road network. *Action Plan 2020* recognises the positive outcomes achieved during the life of Plan 2011. This momentum will be continued with the framework and implementation of the new Action Plan.

It is acknowledged that during the life of Plan 2011, there was an increase in population and therefore an increase in the number of vehicles on the road. Despite the increase in traffic, the overall number of crashes has dropped during the life of the Plan. Congestion has also become an issue which is impacting the City’s road network, in part due to the number of vehicles per head of population, and also due to significant growth outside the City’s boundaries utilising the City’s road network. Provision of well-developed and functional cycling and pedestrian infrastructure also encourages people to walk or cycle rather than drive – reducing demand on the road network and improving the health and wellbeing of the community.

The Safe Systems Approach adopted by the Federal and State Government supports local governments in achieving a safer road network. It also acknowledges that every road user has a responsibility in road safety.

Due to the significant achievements and successful implementation of Plan 2011, the key focus areas for the Action Plan 2020 align with the State’s four key cornerstones of the Safe Systems Approach.

It is also prudent to align the City’s *Action Plan 2020* with State Government priorities in order to maximise grant funding opportunities.

Key Focus Area 1: Safe road use

Everyone has a responsibility towards road safety and recognises that people do make mistakes. This key focus area is about providing education to the wider community on safe road use behaviours and liaising with appropriate road safety stakeholders. Local government can implement traffic management initiatives to improve safety around school communities and support schools in road safety education.

Key Focus Area 2: Safe roads and roadsides

A Safe Systems approach of the City’s road network ensures a significantly reduced risk for vehicle crashes resulting in death or serious injuries. The City has a responsibility to ensure its road network meets all the required Australian standards and guidelines. The City must also obtain the approval of Main Roads Western Australia for any road improvements – including line-marking and appropriate regulatory and advisory signage.

Through State and Federal funding the City can improve the road network and focus on intersections where there is a high occurrence of right angle related crashes.

A well developed road resurfacing program can also contribute to improving safety for road uses and reducing crashes.

Together these aspects ensure that the road network and its roadsides are safer, reducing the risk of serious injuries should accidents occur.

Key Focus Area 3: Safe speeds

Speeding behaviour is a concern throughout the local community. The City, with the approval of Main Roads Western Australia, can initiate speed limit changes to ensure they are appropriate. Targeted enforcement of speed limits by the police reduces the risk of people being killed or seriously injured. Drivers can be encouraged to drive according to the conditions of the road through education on speed, limits of human tolerance and visual cues.

Key Focus Area 4: Safe vehicles

Advances in safety technology has played a key part in improving the survivability of occupants of a vehicle should it be in a crash. The ANCAP rating of vehicles enables, and encourages consumers to purchase vehicles with high safety standards and therefore increase the road safety benefits.

6.0 Actions

6.1 Key focus area 1: Safe road use

Objective		Action(s)	Target group	Timeframe
1.1	To promote road safety and road safety initiatives to City of Joondalup schools and students	<ul style="list-style-type: none"> Promote the City's role in providing support for the formation of school based Road Safety Committees. Liaise with Ranger Services regarding the schools that have a high non-compliance for parking and traffic related issues around the school. Initiate contact with the school Principal and offer to attend the school assembly to talk to parents and children about road safety around the school. Support schools in applying for a warden controlled crossings and attend site meetings organised by the WA Police's Children's Crossing Unit for new warden crossings and to organise any infrastructure changes required. Promote and raise awareness to schools what internal and external road safety resources are available by utilising the quarterly City's School Connections eNewsletter or by contacting schools directly. This includes initiatives such as RAC's B Streetsmart, Constable Care and SDERA. 	<p>City of Joondalup primary and secondary schools</p> <p>City of Joondalup primary and secondary schools</p> <p>City of Joondalup primary and secondary schools</p> <p>City of Joondalup primary and secondary schools</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>
1.2	To work in partnership with external road safety stakeholders to promote road safety programs, road safety initiatives, services and to share information	<ul style="list-style-type: none"> Liaise with WALGA Roadwise Metro-north Officer once a month to discuss potential road safety initiatives, update what is happening in the City and any other related issues or concerns. Promote programs and services offered by Road Trauma Western Australia, KidSafe and the Injury Control Council WA (ICCWA) every quarter via Social Media or Internet. Share information such as speed data or obtain traffic crash information from the WA Police for any serious crashes that may have occurred. 	<p>City of Joondalup staff</p> <p>City of Joondalup community</p> <p>City of Joondalup staff</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>
1.3	To promote to City of Joondalup residents positive road safety messages and behaviours	<ul style="list-style-type: none"> Run a minimum of two "Ride Right" Motorcycle workshops to cater for summer and winter riding. Support and promote road safety education campaigns such as drink driving, fatigue, speeding, driver distraction, wearing of seatbelts and hoon behaviour via social media, internet, community newspaper, and City events. Support and promote WALGA's Roadwise Road Safety Initiatives such as the Ribbons for Roads (November and January every year). Conduct a combined Blessing of the Roads ceremony or event, hosting on a rotational basis with the Cities of Stirling and Swan. 	<p>City of Joondalup community for new, current and returning motorcycle and scooter riders</p> <p>City of Joondalup community</p> <p>City of Joondalup community</p> <p>City of Joondalup community</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Annually</p> <p>Annually</p>

6.2 Key focus area 2: Safe roads and roadsides

Objective	Action(s)	Target group	Timeframe
2.1 To ensure road safety is considered and relevant standards are met or exceeded for planned future roads and roadsides	<ul style="list-style-type: none"> • Ensure road safety audits are undertaken before and/or after the design and construction of new road construction projects on a case by case basis. 	City of Joondalup community	Ongoing
2.2 To make improvements to current roads and roadsides	<ul style="list-style-type: none"> • Investigate traffic treatments for roads or roadsides based on community and/or City information utilising the 'Traffic Management Investigation and Intervention Guidelines' or the results of a Road Safety Audit. Adjust the City's Five Year Capital Works Program if treatment is required. • Identify potential Black Spot improvements on the City's local road network and apply for the National and State Black Spot Program funding assistance. • Upgrade major roads within the City's road network to ensure roads are safer (e.g. duplication of carriageways) by completing and submitting Metropolitan Regional Road Group (MRRG) grant funding applications on time and then schedule in the City's Five Year Capital Works Program. • Investigate the potential for improving roundabout designs to increase capacity and performance during peak periods. 	<p>City of Joondalup community</p> <p>City of Joondalup community</p> <p>City of Joondalup community</p> <p>City of Joondalup community</p>	<p>Ongoing</p> <p>Annually</p> <p>Annually</p> <p>Ongoing</p>

6.3 Key focus area 3: Safe speeds

Objective		Action(s)	Target group	Timeframe
3.1	To monitor the road network through the Traffic Count Program	<ul style="list-style-type: none"> Utilise the City's Traffic Count Program to monitor the road network by way of vehicle speeds and vehicle volumes. Obtain traffic data on local roads every three to five years and local distributor and Distributor A and B roads every three years. 	City of Joondalup Administration	Ongoing
		<ul style="list-style-type: none"> Collect and analyse traffic data counts and five year crash data to identify roads with high 85th percentile speeds. Identify priority areas based on the Traffic Management Investigation and Intervention Guidelines for appropriate countermeasures to encourage speed reduction. 	City of Joondalup community	Ongoing
		<ul style="list-style-type: none"> Record complaints from residents relating to traffic speeds and if no recent speed data available list the road for traffic counts to ascertain the 85th percentile speed. 	City of Joondalup community	Ongoing
3.2	To improve the utilisation of visual cues for speed reduction	<ul style="list-style-type: none"> Promote the 'Please Slow Down Consider Our Kids' bin sticker program to residents and schools. 	City of Joondalup community	Ongoing
		<ul style="list-style-type: none"> Continue the rollout of the program to place the 'Please Slow Down Consider Our Kids' bin stickers on residential bins on local roads where the 85th percentile exceeds the speed limit by 7km/h or more (including those roads where WA Police enforcement has been requested). 	City of Joondalup community	Ongoing
		<ul style="list-style-type: none"> Investigate other means of providing visual cues for speed reduction on local roads (such as speed boards). 	City of Joondalup community	Ongoing
3.3	To advocate for appropriate changes to speed limits	<ul style="list-style-type: none"> Facilitate safer speeds by requesting Main Roads Western Australia for the reclassification of speeds on local roads in the City where appropriate. 	City of Joondalup community and State Government	Ongoing
		<ul style="list-style-type: none"> Investigate options for speed limit reductions around suburban shopping centres and/or community facilities. 	City of Joondalup community	Ongoing
3.4	To work with the WA Police to reduce speeds on local roads	<ul style="list-style-type: none"> Share traffic count data (ECO files) with the WA Police's Traffic Intelligence Service should it meet their criteria of the 85th percentile speed being 10km/h or more over the speed limit. 	WA Police and City of Joondalup community	Ongoing

6.4 Key focus area 4: Safe vehicles

Objective		Action(s)	Target group	Timeframe
4.1	Purchase five star ANCAP rated vehicles for the City's Fleet	<ul style="list-style-type: none"> Continue purchasing five star rated ANCAP vehicles for the City's Fleet and commercial vehicles where possible and are fit for purpose. 	City of Joondalup staff	Ongoing

6.5 Supporting actions

Objective		Action(s)	Target group	Timeframe
5.1	To maximise grant funding opportunities	<ul style="list-style-type: none"> Work with the Grants and Administration Officer to identify and apply for relevant grants and funding, where appropriate. 	City of Joondalup staff	Ongoing
5.2	To apply for awards	<ul style="list-style-type: none"> Work with the Grants and Administration Officer to identify and apply for relevant awards, where appropriate. 	City of Joondalup staff	Ongoing

7.0 Review

This *Road Safety Action Plan 2016 – 2020* will be reviewed during the life of the Plan to:

- enable the evaluation of current actions;
- incorporate additional actions (as a result of advice from the Office of Road Safety and the WALGA Roadwise Program); and
- determine progress towards achieving the vision through key performance indicators.

Annual progress reports will be provided to monitor the Plan on a regular basis.

A final review will be conducted in 2020 at the conclusion of Action Plan 2020. This review will determine the effectiveness of the actions in achieving the Plan's 'vision' by examining the City's crash data and the final outcome of the Federal and State Governments road safety strategies.

8.0 References

Australian Bureau of Statistics 2011, *Census of Population and Housing*, Australian Government, Canberra

City of Joondalup, *Traffic Management Investigation and Intervention Guidelines*, City of Joondalup, Western Australia

Main Roads Western Australia 2015, *Crash Analysis Reporting System 2009-2014*, MRWA, Perth Western Australia

Road Safety Commission 2014, 2013, 2012 *Road Crash Statistics and Trends*, Western Australia, Perth.

Appendix 1

Car ownership

The 2011 census revealed that within the City there had been an increase in car ownership since 2006. Census 2011 revealed that 66 percent of households in the City have two or more vehicles. A high proportion of City residents own two or more vehicles when compared to the Perth metropolitan area. City residents with two vehicles make up 43 percent compared to 38 percent in the Perth metropolitan area. City residents with three or

more vehicles make up 23 percent compared to 19 percent in the Perth metropolitan area.

An increase in vehicles on the road network impacts congestion levels, and can also play a part in the number of crashes occurring. It is a natural assumption that more cars on the roads can mean higher levels of congestion and an increased likelihood of more crashes occurring.

Car ownership (vehicles per household)	City of Joondalup		Perth metropolitan area	
	Number of vehicles	%	Number of vehicles	%
Number of vehicles	1,673	3.1 %	38,591	6.2 %
1 vehicle	14,330	26.3 %	208,154	33.2 %
2 vehicles	23,496	43.1 %	242,997	38.7%
3 vehicles or more	12,898	23.7 %	120,809	19.3 %
Not stated	2,137	3.9 %	16,544	2.6 %
Total	54,534	100.0%	627,095	100.0%

Table 4: Car ownership, City of Joondalup and Perth metropolitan area (2011)

Appendix 2

Method of travel to work statistics

Proximity between home and work can affect the method of transport chosen. According to the 2011 census, 62 percent (51,509) of people reside within the City but work outside the City and 27 percent (22,189) of people live and work within the City.

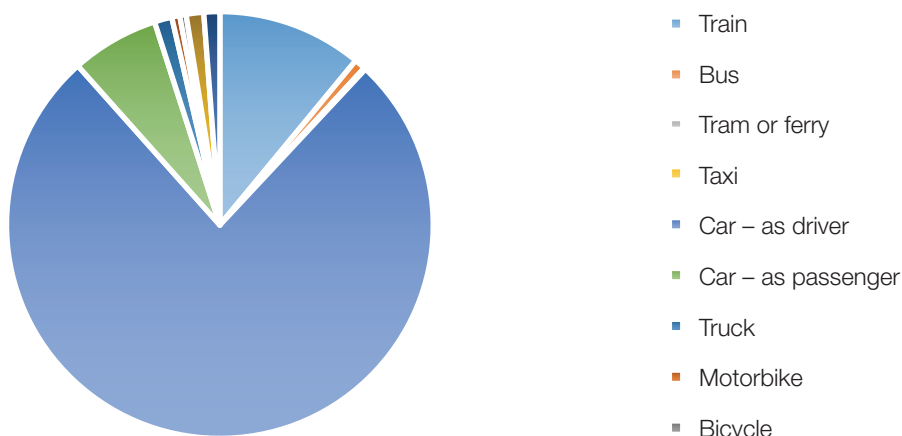
There have been changes from the previous census in peoples travel mode. More people are catching public transport, with a 15 percent increase in train usage and a 27 percent increase in bus patronage.

With traffic congestion increasing, more of the City's residents are opting to cycle or walk to work. There has been an increase of 30 percent in cycling and 26 percent in those walking. Due to the increase in walking and cycling, the provision of good quality walking and cycling facilities has become a key focus for the City. Improving the safety of these vulnerable road users is integral with the added benefit of reducing congestion and having a happier and healthier community.

Method of travel to work	City of Joondalup 2006 census statistics		City of Joondalup 2011 census statistics	
	Count	Percentage	Count	Percentage
Train	7,273	9.1%	8,397	10.4%
Bus	562	0.7%	716	0.9%
Tram or ferry	19	0%	14	0%
Taxi	87	0.1%	80	0.1%
Car – as driver	50,414	63.3%	50,910	62.8%
Car – as passenger	4,376	5.5%	3,886	4.8%
Truck	849	1.1%	741	0.9%
Motorbike	378	0.5%	423	0.5%
Bicycle	340	0.4%	443	0.5%
Walked only	845	1.1%	1,066	1.3%
Other	830	1.0%	1,056	1.3%

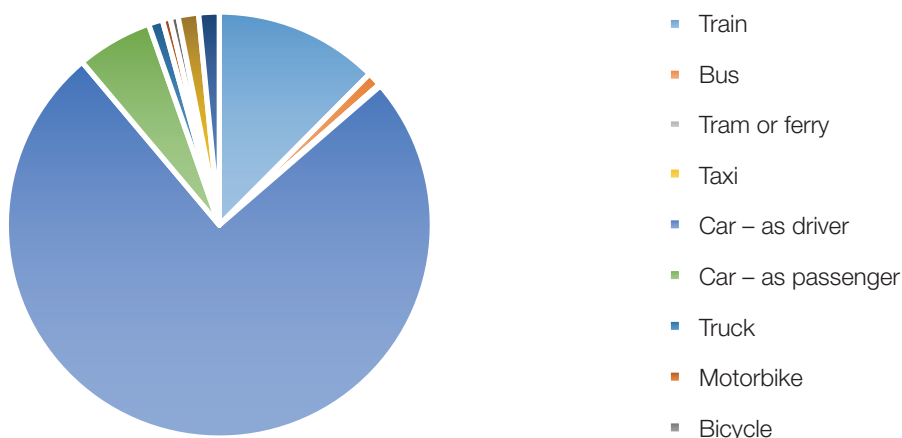
Table 5: Method of travel to work – City of Joondalup (2006, 2011)

Method of travel to work – City of Joondalup 2006



Graph 6 - Method of travel to work – City of Joondalup (2006)

Method of Travel to work – City of Joondalup 2011



Graph 7 - Method of travel to work – City of Joondalup (2011)



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