City of Fremantle

Local bicycle plan

2014 - 2018

City of Fremantle would like to thank and acknowledge the following people for their assistance in preparing this plan, and for their exceptional work and advocacy in this area.


Fremantle Mayor Dr Brad Pettitt, Cr Sam Wainwright, Phil Adams - City of Fremantle.
A word from the Mayor

Fremantle Mayor Dr Brad Pettitt talks bikes

Cycling has up to now been the neglected tool in the chest of solutions for Perth’s transport problems. Far greater investment in bike lanes could see Perth become a more sustainable and less congested city.

Liveable and sustainable cities are almost always cycling cities. Fremantle has the potential to be one of these cities. Most of our wonderful city was designed before the automobile to be a walking city, so it has the ideal foundations for more people to travel by bike more often.

Currently cycling rates in Fremantle are improving at 3% of trips. Being almost double the Perth average, Fremantle is behind many other liveable cities in Europe and North America. The goal of this plan is to illustrate what is required if Fremantle is to be the most bicycle friendly city in Australia and reach the plan’s goal of doubling the modal share for cycling between now and 2018. The plan doesn’t just focus on hard infrastructure such as new bike lanes, but also includes soft infrastructure. These are solutions which require no change in infrastructure but instead reduce barriers to implementation and promote behaviour change.

A city is defined by its infrastructures choices. Not instantly, but by hundreds of small decisions over decades. Fremantle, like Perth more generally, has made too many small decisions over recent decades in favour of the vehicle over sustainable transport. This document shows how the City can start to correct this by progressing a cycle friendly, sustainable city over the next four years and setting in train future developments.

Whilst this plan’s implementation will mean that we will see some dramatic changes in Fremantle cycling infrastructure in coming years, it is also worth acknowledging it will take a solid commitment to make Fremantle truly cycle friendly. We will have to stick at it for around 20 years to build the kind of infrastructure cities like Copenhagen or Freiburg now enjoy. What this plan does though, is put us firmly on the path through greater investment in bike infrastructure. The bicycle fills a gap in the spectrum of green travel options between walking and catching the bus, and without it is almost impossible to imagine a truly sustainable city. I hope you enjoy the ride.

Fremantle Mayor: Dr Brad Pettitt
Executive summary

The Local Bicycle Plan 2014-2018 is the City’s plan to realise our vision of making Fremantle the most bike friendly city in Australia.

The purpose of the Local Bicycle Plan 2014-2018 is to harness the potential of Fremantle as a bike friendly city by providing a comprehensive guide to the policies, programs and infrastructure investment required to realise this vision.

The City is committed to supporting and promoting cycling as a viable and sustainable transport option in order to promote increased sustainable modal split, healthy travel modes and infrastructure for a more sustainable city.

The plan begins by outlining the many benefits that riding a bike and living in a bike friendly city will achieve, including the health benefits through increased physical activity, social connections and improved community, a sense of place, a healthy environment and economy for a productive and liveable city.

The Plan then examines how the City is travelling, what our current mode share is and how it compares it to the rest of WA and other cities around the world. The plan will also identify the current facilities that the City has for cyclists and key areas for improvement.

The Local Bicycle Plan 2014-2018 focuses on three approaches to a safe, well-connected Fremantle bicycle network:

1: Everyone with access to a bike
   - The City will ensure that everyone will have access to a bike and welcomes the expansion of such incentives that provide free or affordable cycle hire in the city.

2: Hard Infrastructure - Well connected, safe and secure cycling infrastructure
   - The City will ensure that its cycling network is safe, enjoyable and a well connected with completed network of separated bike lanes, clearly marked cycle routes and clear signage a safe and legible cycling environment.
   - The City will also plan for and provide improved “end-of-trip” facilities such as bicycle lockers, secure bike parking areas that are a requirement of many bicycle trips in addition to convenient bike parking.

3: Soft Infrastructure - Education and promotional programs
   - The City will encourage a community of cycling through education, cycling promotion, behaviour change, and community support programs. We will be an advocate for school based road safety education that is inclusive of cycling skills. We will develop community based road safety education. Soft solutions give people practical information and positive reasons for using a bike.

By combining the above approaches the City aims to achieve the ambitious target of doubling its cycling rates from 2.9% to 5.8% by 2018.

With our beautiful Fremantle weather, the refreshing sea breeze from the ‘Fremantle Doctor’ and relatively flat topography, it already is one of the most bike friendly cities in Australia. Fremantle enjoys over 300 days of sunshine each year, and a climate amenable to cycling for most of the year.

What it ultimately comes down to is choice, barriers and incentives. The City recognises this. With political will and some changed priorities, the City will create transport choice for all residents, building on our natural assets of a beautiful climate and gentle topography.

Picture courtesy John Douglass, Brown Cow Design.
Introduction

Cycling has become an increasingly attractive mode of transport when compared with the congestion, cost and pollution caused by vehicle driving, and the health benefits of sustainable transport.

The rates of cycling in the Perth suburbs are low by developed countries standards, leaving significant untapped potential to increase cycling. Cycling rates in Perth near the lower end of rates within the developed world with the number of people commuting by bicycle below 2%. By contrast, many western European countries have 10-30% commuting on bikes. In Copenhagen the bicycle, with a modal share of 36%, is the most used form of transport for trips to work. Cycling rates in Fremantle and Perth have been increasing annually on a trending basis and best predictions indicate this is likely to continue.

The current bike plan 2013 to 2018 has plans for an additional 43.78 kilometres of bike path infrastructure. There is presently 47.83 kilometres of bike path infrastructure in the City made up of 16.21 kilometres of shared user paths and 31.62 kilometres of on-road.

This plan replaces the Bike Network Plan published in the Bike Plan and represents the City’s operational expertise and stakeholder comments.

The City has previously undertaken the development of a Local Bicycle Network Plan in 2003 and a detailed Fremantle Transport Strategy in 2002; and the current Fremantle Local Bicycle Plan 2011 - 2016; growth in Council interest and tourism focus development in recent times has stimulated a detailed review of the existing planning instruments relating to bicycle infrastructure within the City.

A detailed Physical Activity Strategic Plan – 2008-2012 was also developed for the City which outlined a framework and a set of objectives to assist the City to plan, develop, implement and evaluate physical activity programs and services into the future. The City has also developed a Strategic Plan: 2010-2015 in which a key imperative under transport is to “lead in the provision of environmentally and economically sustainable transport solutions.” More specifically, outcomes to be achieved under the Strategic Plan include: “Fremantle recognised as a pedestrian and cycle-friendly city” and “Increase cycling infrastructure to a specified target.”
The plan was prepared in collaboration with the guidelines set out by the Department of Transport and also respected advocates and peak bodies such as Bicycle Transport Authority, Main Roads Western Australia, RAC, Bicycle Western Australia, the Heart Foundation, Bicycle Network, Austroads, Greens Bike Vision and Sunshine Coast Regional Council.

Once viewed by policy makers as a fringe activity, cycling is now recognised as an important part of an integrated response to the transport challenges facing our urban centres and welcomes the substantial investment in cycling infrastructure by the Federal, state and local governments.

The City recognises that Governments have limited budgets and therefore, must be confident that investment in cycling infrastructure will achieve the desired objectives.

In this context, further work should be undertaken on developing benefit/cost methodology for cycling infrastructure. Further, all new cycling infrastructure should be monitored to enable ongoing evaluation of infrastructure investments. Continued investment in cycling surveys should continue. This could occur through permanent counters along strategic routes. This will enable the City to prioritise future projects and measure cycling numbers and will be aligned with Commonwealth and State policies on cycling, active and sustainable transport and transport.

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Further there is a scope to align the plan with the following National and State policies

National policies
• Moving Australia 2030 – A transport Plan for a Productive and Active Australia
• Australian Government Department of Infrastructure and Transport City’s Future National Urban Policy
• National Cycling Strategy.

State policies
• WAPC Directions 2031 and Beyond
• West Australian Bicycle Network Plan
• WAPC Liveable Neighbourhoods Operation Policy
• WAPC State Planning Policy 4.2 Activity Centres for Perth and Peel
• Public Transport for Perth in 2031
• Moving People Network Plan.

Doubling cycling in Fremantle

The City will commit to doubling the cycling rate of the community. It is aligned to National Cycling Strategy and is supported by the WA Department of Transport. This aims to double cycling as a proportion of transport by 2016 (4). This translates to a mode share target of 2.4% in WA and 3% nationally and for the City 5.8% by 2018.

The City will increase the number of people using their bikes to get to work and educational institutions and increasing the amount people use their bikes for all local trips.

In terms of mode share, the City supports the aim of the National Cycling Strategy to double our mode by the next census. The success of this would be tracked in each census as well as against the City’s bike counter network and spot surveys.

How will it be funded

The City has allocated $510,000 for direct capital investment in cycling in the 2013/2014 financial year, which does not include staff time. This includes the City Bike Plan infrastructure actions of $420,000. This is a 13% increase in spending over one financial year, with cycling project budget for 2012/2013 at $450,000.
Chapter one

The benefits of a cycle friendly Fremantle

The City’s commitment:
The City is committed to see Fremantle transform into a bike friendly city - not just because riding a bike brings so many benefits – and not just to the individual riding, but to the very heart of the city itself.

The benefits to a cycle friendly Fremantle

Healthy people

Riding a bike and a bike friendly city bring a wealth of benefits to individuals and to their community. Benefits such as increased physical activity, social connection, reduced traffic congestion, healthy environments and a healthy economy to name a few. The City will continue to be a leading advocate in promoting a healthy environment to live and work in.

Increased physical activity

Over the years, our lifestyles have become increasingly inactive and now more than half of adult Australians aged 18-75 years do not meet the recommended 30 minute minimum of moderate physical activity most days of the week. We also have one of the lowest levels of using sustainable transport in the world – walking, bicycling and using public transport. The ABS estimates the direct health vehicle costs of physical inactivity in Australia to be $1.5 billion (2, 3).

Australia is also facing an obesity epidemic, caused by physical inactivity, along with an unhealthy diet. 61% of Australian adults and 25% of Australian children are overweight or obese (4). The figures are worse higher in lower income families. The ABS puts the overall cost of obesity to Australian society and governments at $58 billion (5).

Learning to ride a bike is an excellent way for children and adults to gain skills that promote a happier, healthier and more physically active lifestyle. Cycling is a fun activity that can be enjoyed throughout all stages of life. A bike also improves work performance, with regular bicycle riders taking one less sick day per year than non-riders, saving Australian businesses $61.9m a year (6). Another study estimated absenteeism can be reduced by up to 80% by encouraging cycling to work (7).

A livable city

A livable city is one that is well connected, efficient and offers choice and dignity in the way people can move around.

Reduced congestion

A modal shift to walking or cycling, particularly for short journeys, reduces reliance on private vehicle use and public transport. Traffic congestion in urban areas, and the consequent loss of productivity, is the central basis for productivity assessments of cycling against other modes of transport. Some critics argue that increasing the numbers of cyclists on roads increases traffic congestion due to their slower pace. This argument underscores the need to appropriately integrate and design cycling infrastructure (such as separated paths, speed restrictions) to minimise adverse impacts on traffic congestion and improve safety.

The impact of congestion on WA businesses in fuel, overtime and lost business and productivity is estimated to cost an average of $20,000 per business (8). The cost of congestion to the WA economy is over $1 billion per year (9) due to lost time and smog-related health problems and is expected to double to $2.1 billion by 2020 (10). The cost to the Australian economy is $21.1 billion per year (11).
For trips under 5 kilometres, bikes are a serious competitor to vehicles (12). They are often faster than a vehicle especially in congested inner urban streets on a door to door basis. Bikes also take a portion of vehicles off the road and therefore the role in reducing overall traffic is significant.

Place making
One of Australia’s most eminent urban planners, Robert Adams believes “if you design a good street you design a good city” – because streets make 80% of the city. Streets that are bike and pedestrian-friendly are safer, more vibrant, more attractive places to be and the City recognises this. Planners are now revisiting the idea of urban village archipelagos, and creating networks of medium and high density activity centres and activity corridors to connect them. The many ambitious bike network expansions happening right now around the world are not just revolutionising the way people get around, but demonstrate a paradigm shift in the political, engineering and planning frameworks that cities typically operate under. Transport departments that once catered only for the car, are now becoming public space departments that cater for all – and by doing so are forging new and more positive partnerships with community groups and businesses.

Social connection
Cities are not just about buildings and roads, but about the collection of it’s people. Social connection is critical to our well being, yet there are signs that isolation and loneliness are increasing in Australia leading to a disconnected community and mental health issues. The way we build and organise our cities – and in particular our transport systems – can help or hinder social connection; some studies have found Australians are lagging behind, with vehicle dependency building in isolation and streets that repel rather than foster human interaction (8).

Riding a bike and living in a cycle friendly city increases social interaction. There is a link between better health and high levels of participation and social cohesion in communities. People who are socially isolated and excluded are more likely to experience low self-esteem, psychological distress and be more at risk of coronary heart disease. Research suggests that social relationships are as significant in determining health as exercise and diet. The City will lead in strong community and social connections through its many organisations and events.

A healthy environment
Vehicle dependence is high in Perth, with about 69% of the population travelling to work or study in a private motor vehicle. The spread-out nature of Perth’s population will lead the number of vehicles in the Perth metropolitan region to increase, at a projected rate of 87%, and the number of kilometres travelled is expected to increase by 130% over the next 30 years.

The West Australian population drove a combined 50 million kilometres in 2011, up from 35 million in 1996. This equates to West Australian drivers emitting around 8.18 tonnes of vehicle carbon monoxide and 12.6 tonnes of nitrogen oxides every day.

The localised environment has a direct influence on people’s wellbeing through encouraging or inhibiting physical activity. Physical features such as bicycle paths and footpaths must be kept maintained. The City will commit to maintaining attractive and well lit bicycle paths and networked to other resources.

Healthy economy
The benefits to the economy from cycling are hugely underestimated and range from individual savings to the cost of living to the economic activity generated in the manufacturing and retail sector, and the savings that can be made to state and federal budgets in transport and health costs. Looking to more affordable options, cycling is perhaps the most cost-effective response to traffic congestion. Dedicated cycle ways and on-road bike lanes are essential to making cycling safer and more appealing to a wider range of riders. They cost a fraction of the cost of the adjoining road and rail infrastructure on a per kilometre basis. Bike lanes return the equivalent of roughly $4 on every dollar spent compared with just $2 for motorway projects.

Individual savings worth potentially a million dollars over a lifetime
Replacing just one third of all trips made in a small vehicle with cycling can save $2,000 per year in fuel alone (13). One study looked at the opportunity cost of owning a second vehicle or replacing your vehicle altogether with a bike at the age of 25. It found owning one less vehicle over the period of home ownership or mortgage repayments means a household could accumulate additional $1 million in superannuation over their working life; repay a $300,000 housing loan in 12 years (instead of 25 years) with interest savings of $245,000 and free up an extra $110,000 cash (14).

Creates jobs and generates return on investment
Building and maintaining bicycling infrastructure is one of the best transport investments in terms of jobs created per million dollars. Compared with spending on road projects, bike projects create almost double the amount of jobs. A USA study found bicycle infrastructure projects created 11.4 jobs per $1 million spent, compared with 7.8 jobs for road projects. Road projects that integrate major bike and pedestrian infrastructure create around 48% more jobs than building roads alone (15).

The National Bike Paths Program funded 166 projects to build over 600kms of bike paths, which generated 46.5 jobs created per million spent. In Portland, sustained bike lane investment has created 1,000 jobs and through the creation of a bicycle culture is generating more than $100 million of economic activity each year (17).

Creates and grows an Australian bicycling industry
The economic benefits of bike paths are not limited to the jobs created during path construction. This encourages more people to ride a bike supports and grows jobs in the retail, service and manufacturing side of bicycling. The Australian Bicycle Council refer to this as the ‘Cycling Economy’, and estimate the Australian bicycling industry employs 10,000 people and generates $139,000,000 in tax revenue. More than one million bikes are sold in Australia every year; worth $1b a year in sales and accessories (18).
Increases spending in shopping areas
Replacing vehicle parking with bike parking in shopping areas is good for local economies; eight bikes can fit into one vehicle parking bay and cycling generates 3.6 times more spending per square meter of parking than vehicles according to a case study on Lyon Street in Melbourne (19 and 20). Empirical demonstrate pedestrian traffic increased as result of public domain improvements in the centers of Melbourne by 39% between 1994-2004 (21) and Perth by 13% between 1993-2009 (22).

Tourism
Many tourists use cycling as their preferred way of exploring the City. A good bike hire scheme or network of bike trails can itself become an attraction. It’s estimated that bike events and trails already generate more than $254 million a year in Australia (23). Fremantle is much more than an architectural time capsule. It provides a unique opportunity for visitors to experience and enjoy a range of cultural activities in a relaxed atmosphere. A browse through the markets or leisurely stop at one of the numerous cafes and restaurants will complement your exploration of the arts, making a visit to Fremantle a rich and rewarding experience. Bicycle facilities are an important supporting element in bicycle programs. Quite simply bicyclists need a safe and convenient place to park or store their bicycles along or at the end of most trips. The City recognizes this and supports an effective bicycle parking program. This includes basic bicycle parking strategies, bicycle rack designs, specifications and bicycle parking ordinances. Local businesses in Fremantle are starting to request that vehicle spaces are converted to bike parking - seen here at Moore & Moore café on Henry Street.

Reducing vehicle dependence and oil vulnerability
In coming years petrol prices are expected to rise. We saw a sharp spike in 2008 but little long term action has been initiated at the state or federal level to prepare for it happening again. Transport costs already account for about 17% of our household budget, and if these costs rise the choice to switch to cheaper alternatives such as cycling or public transport will be dependent on people’s location and income. Australian cities are highly vehicle dependent – approximately 80% of trips are taken by private automobile – and therefore also highly petroleum dependent.

It showed that those living in Perth’s outer suburbs, where vehicle dependency is high and public transport is inadequate will be the worst affected by rising fuel and housing costs (24).

References
Cycling has become increasingly popular in Australia over the last generation. In 2012, 18% of the Australian population would have ridden a bike in the last week, with 40% at least once in the last year. Bikes have actually outsold vehicles each year since 2000 and the average Australian household has more than one bike in working order.

City of Fremantle method of travel to work

The City’s commuting statistics reveal the main modes of transport by which residents get to work. There are a number of reasons why people use different modes of transport to get to work, including the availability of affordable and effective public transport options, the number of motor vehicles available within a household, and the distance travelled to work.

Dominant groups

In 2011, there were 1,652 people who caught public transport to work (in the City, compared with 7,902 who drove in private vehicles. Analysis of the method of travel to work of the residents in the City in 2011 compared to Greater Perth shows that 12.4% used public transport, while 59.4% used a private vehicle, compared with 10.4% and 68.9% respectively in Greater Perth. (5)

The major differences between the method of travel to work of the City and Greater Perth in 2011 were:

• A larger percentage of persons who walked only (5.5% compared to 2.2%)
• A larger percentage of persons who travelled by bicycle (2.9% compared to 1.1%)
• A larger percentage of persons who travelled by train (8.4% compared to 6.7%)
• A larger percentage of persons who worked at home (5.0% compared to 3.5%)
• The largest changes in the method of travel to work by resident population in the City between 2006 and 2011 were for those nominated:
  • Vehicle as driver (+706 persons)
  • Train (+316 persons)
  • Walked only (+140 persons)
  • Bicycle (+134 persons).

Although bicycling has increased, there is still more work to be done to make riding bikes the main mode of transport in and out of Fremantle.

Mode share

Mode share is affected by household incomes, land use patterns, and many other economic and social factors. This chapter takes a look at the overall percent mode share of Western Australia and compares it to the mode share by other countries. It will also take a look at the City’s method of transport to work from the data collected by the Australian Bureau of Statistics.

WA has a very low mode share for bicycling as seen in figure 1 below. Only 1% of trips are being taken by bike, compared to 86% taken by vehicle (counting both private drivers and passengers). This is one of the lowest proportions of people commuting to work by bicycle of any Australian capital city state.

Perth has one of the highest levels of vehicle dependency, the highest number of road kilometres per capita, and one of the lowest housing densities in the world. Many countries cities are setting ambitious mode share targets as part of their transport strategies. Over 60 cities across the Eurozone have committed to achieving at least 15% bicycling mode share by 2020, as well as other improvements for bicycle safety, under the Charter of Brussels (3).
Cyclists can be grouped into four main types

The City recognizes the different needs each group has from cycling infrastructure investment and will develop solutions that accommodate each and seek to promote cyclists to more confident cyclists through improved cycling infrastructure and support.

1. **Strong and fearless**: These cyclists tend to cycle most days and feel extremely safe and confident on any type of road.

These riders have differing needs and expectations, as they will tend to share the existing road space with vehicular modes and are likely to abstain from using designated shared paths as it slow their travel significantly. In general they are prepared to have up to five pedestrian interactions per hour on shared paths before they will commit a road. In their case, sharing a well maintained road with similar travelling vehicles is less dangerous than shared pedestrian paths. These cyclists on the road will cycle at speed and consider maintaining movement, in safety are their primary need. They will bend road rules to provide greater safety for themselves; this includes timing lights, performing hook turns, stopping past traffic waiting lines. Supporting these cyclists is about on road paths, on road conflict management, improving sight lines, geographical safety margins and reducing obstacles. These riders represent a significant proportion of existing bike riders within the City, primarily due to the challenges associated with the terrain and the attractiveness of the scenery.

The previous Fremantle Local Bicycle Plan 2011 - 2016 questionnaire results showed that out of 97 responses, 51.6% felt confident in riding in most traffic situations and are hence Enthused and Confident or Strong and Fearless classed cyclists. Although this is good, a much larger study must be conducted over the greater Fremantle in order to get a true sense of people’s attitudes to cycling (DVC, 2010 pp 65).

These cyclists may also be BMX or MTB cyclists in this case their primary needs are areas to conduct their support. The City should consider supporting local skate parks, bush and specialized MTB tracks.

2. **Enthused and confident**: People who generally ride most days and feel safe on the roads. They include commuters and recreational riders.

Recreational riders tend not to use the same network elements as other commuting users, preferring routes which provide access to natural or scenic features, such as beachside PSP along South, Bathers, Port and Leighton beach. Tourists who access the sights of the City by bicycle are an important component of recreational riding. The recreational group also comprises sporting riders that may better fit in the strong and fearless category of cyclists.

Personal safety will tend to be the overriding concern for these users. The primary issues relating to the sharing of existing road space include the safe and effective management of conflicts with other road users, together with the achievement of efficient and direct access to major links external to the local community.

In determining the target demographic to encourage cycling within the City, the largest pool of potential riders, that is enthused and confident is prioritized. In this respect, infrastructure catering to this group should be minimum standard when scoping future projects. It is expected that providing most infrastructure to meet this group’s needs, will have a trickle down effect to support the interested but concerned and no way no how groups of cyclists.

As an example of an efficient commuter network, noted by a relatively high quality permeable grid of higher order and intersecting regional roads such as Stirling Highway, Leach Highway/High Street, South Street, Hampton Road and Stock Road and other district distributor type roads such as Lefroy Road, Vehicleington Street and Marmion Street allow for direct access into and out of Fremantle from surrounding areas. In addition, many intersections along these routes have been improved to accommodate the needs of riders with links between the local off-street shared path network and on-road bicycle lanes. External to the City, effective commuter networks include the Principal Shared Path (PSP) network which runs along the Kwinana and Mitchell Freeways, connecting to Roe Highway.

![Percent mode share in Western Australia 2009](image-url)

**Fig 1: 2009 ABS statistics of percent mode share in WA**

**Mode share in other countries**

Mode share information of some major metropolitan cities in the world is presented below. They include the traditionally advanced cities (e.g. London, Paris and New York), newly developed cities (e.g. Hong Kong) and emerging mega-cities (e.g. Shanghai).

The location of the City within the inner urban ring of Greater Perth metropolitan area is such that it raises the potential for increased non-motorised transport mode share. Cycling has the potential to become an even more important mode for transport.

![Mode share for commute to work by percentage for major cities](image-url)

**Figure 2: Mode share for commute to work by percentage for major cities.**
Growing cycle participation in Fremantle

A total of 1,159 cyclists were observed in 2012 as seen in Fig 2 above. This represents a 54% increase on 2011 results and a 94% increase on the 1998 baseline.

Fremantle CBD Cordon Counts, 3 hours.

The Fremantle CBD Cordon 3 Hour Count Sites included 14 locations. In total, there were 771 cyclists counted entering and exiting the Fremantle CBD in 2012 as seen in Fig 3 above. This represents a 54% increase on 2011 observations and a 122% increase on the 1998 baseline. Only one site did not record an increase in 2012 – site F-N Train Station which decreased by 62%. In keeping with previous years, the number of cyclists observed entering Fremantle in 2012 was greater than those exiting the precinct (6).

Figure 1 in the ‘Mode Share’ section above shows that cycling has an extremely low mode share in WA and that our current mode of Transport is very unsustainable. The good news is that Figures 2 and 3 show that cycling in Fremantle is increasing at a rapid rate in the city. With a safe infrastructure put in place, the City will create an extra increase in cycling numbers and on the way to reaching our target of doubling the mode share every 5 years.
A recipe for success: Case studies

Extensive cycling rights of way in Denmark and Germany are complemented by ample bike parking, full integration with public transport, comprehensive traffic education and training of both cyclists and motorists, and a wide range of promotional events intended to generate enthusiasm and wide public support for cycling. In addition to their many bike policies and programs, Denmark and Germany make driving expensive as well as inconvenient in central cities through a integration of taxes and restrictions on vehicle ownership, use and parking. Moreover, strict land use policies foster compact, mixed use developments that generate shorter and thus more bike-able trips. It is the coordinated implementation of this multifaceted, mutually reinforcing set of policies that best explains the success of these countries in promoting cycling.

Amsterdam is one of the most frequently cited examples of a cycle-friendly city. Bikes have shaped the image of Amsterdam to such an extent that, for many people throughout the world, Amsterdam is almost synonymous with cycling. A vast network of well-connected bicycle lanes, traffic-calmed streets, and plentiful bicycle parking accommodates cyclists. Amsterdam’s canal streets are, for the most part, traffic calmed to allow cyclists easy passage without dedicated cycle lanes. Cycle lanes on other streets are wide enough for two bicycles side by side. Major streets include a priority position for cyclists to help keep them moving safely ahead in traffic. Traffic laws are just one aspect of the changes that Amsterdam has made to encourage the high share of bicycle use. When addressing cycling, cities also need to consider the need for secure bicycle parking facilities, the problem of bicycle theft, traffic safety awareness and education, and the necessity of ensuring the younger generations continue to cycle.

The key to achieving high levels of cycling appears to be the provision of separate cycling facilities along heavily travelled roads and at intersections, combined with traffic calming of most residential neighborhoods.

The success of these cities raising cycle rates illustrates the benefit of strong and sustained investment in a network of bike lanes. As these integrated networks expand and connect to the places people want to go to and from, this creates greater use, better network efficiencies and better returns on investment.

### Metropolitan cycling schemes

An example of international case studies for successful cycling schemes past and present.

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<th>Paris, France</th>
<th>Copenhagen, Denmark</th>
<th>Freiburg, Germany</th>
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<tr>
<td>Population</td>
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<td>Initial Investment in AU$</td>
<td>$160 million</td>
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<td>Value of existing infrastructure is</td>
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<td>Trips/Day</td>
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<td>1.15 million km cycled daily</td>
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Chapter three

The three approaches to a safe, well-connected Fremantle bicycle network

1. Everyone with access to a bike
2. Well connected, safe and secure cycling infrastructure and
3. Education and promotional programmes

Bike friendly Fremantle

Approach one

Everyone with access to a bike

The City’s commitment.

The City will ensure that everyone will have access to a bike and welcomes the expansion of such incentives and will support any other business that provide free or affordable cycle hire in the city.

Facilities

Cycle hire

Most people already have access to a bike. However, if you do not own a bike you can pick one up in Fremantle easily. The City is doing very well in the provision of free bike hire facilities.

A free bike hire service is now operating out of the Fremantle Visitor Centre, (1), located in bustling Kings Square. Bikes are available including an electric bike, which can be hired on any day of the week to tour, exercise or transport riders around Fremantle. This initiative forms part of the City’s Kings Square activation project and its ongoing commitment to sustainable transport options.

Fremantle’s E Shed Markets, have a fleet of quality GEKKO bikes that are available for hire Monday to Sunday at Fremantle (2).

Little Creatures Brewery hires out bikes for free to anyone who wants them. You don’t have to eat or drink at Little Creatures, (3) just leave an imprint of your credit vehicle and return the bike by sundown/around 6pm. The bikes come with locks, helmets and back racks.

The City welcomes the expansion of such incentives and will support any other business that provide free or affordable cycle hire in the city.
Approach two:
A safe, enjoyable, riding environment in Fremantle

The City will ensure that the bicycle network will be a safe, enjoyable and well connected cycling environment in Fremantle and there will be more regular signage along major existing routes to ensure maximum visibility to vehicles and cyclists.

The City will also provide “End-of-trip” facilities such as bicycle lockers, a lockable room or secure parking areas that are a requirement of most bicycle trips.

Why invest in infrastructure?

There is enormous scope to increase the modal share of cycling. There are also significant benefits to investing in cycling infrastructure, including reductions in traffic congestion, improvements to public health and reductions in obesity. Strong growth in cycling is continuing. Catering for this growth will require completing gaps on existing paths and tackling capacity limits on major cycling routes, particularly where there are safety conflicts. It also requires bike riders and vehicle drivers to share roads respectfully.

The countries that have successfully increased cycling as a mode share have had specific, measurable policies, cross-integration of relevant government agencies, and made major investments into cycling-related infrastructure and education. Cycling is regarded in many cities as a viable alternative to help relieve traffic congestion, noise and air pollution, and greenhouse gas emissions. It is also increasingly seen as a significant component of an integrated transport system.

Without strong support at a senior level within Local Government, spending on cycling infrastructure falls off the agenda. The governance structure needs to support cycling as a valid and sustainable means of reducing traffic congestion, improving health and reducing pollution and emissions — without requiring a singular champion for short-term promotion.

Key locations have been identified as priority infrastructure upgrades in 2013 are:

- Philmore Street
- Norfolk Street
- Wray Avenue
- Port Beach Road onto Curtin Avenue
- Elder Place connecting Parry Street and Queen Victoria Street
- North Mole Drive - Port Authority project
- South Terrace/Market Street from Norfolk to Elder (Cappuccino Strip).

Key locations have been identified as priority infrastructure upgrades in 2014-2018 are:

- James Street to Queen Victoria Street
- Tydeman Road
- Queen Victoria Street and The Swan Hotel (some work is getting done already)
- East Street
- Marmion Street crossing Stirling Highway
- Winterfold Road crossing Stock Road

The following pages outline some of the world’s best practice examples of bike share schemes. The City will consider an expansion of the city’s bike share scheme to include additional free bike hire facilities in local suburban hubs such as at the Hilton Community Centre, the Meeting Place in South Fremantle, community sporting organisations and North Fremantle Bowls Club.

Bike share

Bike sharing allows individuals convenient access to a bike when they need one, without the costs associated with private bicycle ownership.

The idea behind bike sharing is to provide free or affordable access to bicycles, specifically for short-distance trips within city limits.

The value provided by bike sharing schemes comes from the provision of a new form of public transport - of bicycles available to members of the public for use 24 hours a day from well placed automatic stations. In cities where these are particularly successful, it is clear that the bikes provide a new paradigm time efficient alternative for in short distance transport that is a realistic alternative to the bus, tram, taxi or private vehicle, but has infinite significant benefits to the individual and environment alike. Melbourne and Brisbane have bike sharing schemes. There are hundreds of public bike sharing schemes across the world.

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• South Street crossing Stock Road
• Lefroy/Rennie Intersection
• High Street
• Carrington Street
• Hampton Road to South Street
• Douro Road
• Parry Street crossing to South Street
• Marine Terrace and Capo D’Orlando Drive
• South Street crossing Hampton Road

Locations of Priority Upgrades

Location: Phillimore Street
Problems & Barriers for cyclists Missing link between existing and road bike lanes.
Strategy Options
Planned 2013
Standard bike lanes.
Continuous lane on both sides.

Legend
2013 upgrades
2014/2017 upgrades

Locations of Priority Upgrades

Location: Phillimore Street
Problems & Barriers for cyclists Missing link between existing and road bike lanes.
Strategy Options
Planned 2013
Standard bike lanes.
Continuous lane on both sides.
Location: Port Beach Road onto Curtin Avenue

Problems & Barriers for cyclists
Heavy industrial vehicles and no continuous, no cycle lanes makes cycling unpleasant. Limited bike parking for a premier recreational area. Safety of cyclists and pedestrians at carpark entrances is a problem.

Strategy Options
- Planned 2014-2018
  - Ideal: segregated facilities to avoid heavy vehicles
  - More bike logos and green paint at intersections and widening of bike lanes at appropriate locations.
  - Include “no parking” signs, rumble strip to separate traffic from the bike lane along Curtin Avenue at Port and Leighton Beach. Place bollard protection on remnant vegetation line to stop errant parking.

Location: Wray Avenue

Problems & Barriers for cyclists
Limited Bike access. No bike lanes or logos.

Strategy Options
- Planned 2014-2018
  - Traffic calming options to reduce the speed environment allowing a shared space.
  - Insert bike paths, bike stencils pre intersections, address kerbing.
Location: North Mole Drive

Project to be completed by Port Authority

Problems & Barriers for cyclists: Heavy industrial vehicles and no continuous cycle lanes makes cycling unpleasant.

Strategy Options

Planned 2013

A dedicated flow through of bike lanes and logos along North Mole connecting to Tydeman Road. Due to heavy and large traffic, logos and green paint would be recommended for visibility.

Planned

Fremantle Port’s project: new shared (bike/pedestrian) path along the seawall to Port Beach Road.

Location: Elder Place/Beach Street

Problems & Barriers for cyclists: missing links between existing facilities

Strategy Options

Planned 2013

Standard bike lanes on both sides.

Stencils at intersections, green paint.
Location: James Street to Queen Victoria Street

Problems & Barriers for cyclists:
Limited bike access makes conditions for cycling unpleasant. Bicycle lanes stop and start and not enough logos. Crossing intersections unsafe.

Strategy Options: Planned 2014 - 2018
- Standard bike lanes connecting James Street to Victoria Street in both directions.
- At intersections, bike lanes should continue to make crossing intersection safer with green paint.
- More logos needed in existing cycle lanes.
- This signalised intersection allows cyclists the opportunity to continue along Beach St or use the Queen Victoria Bridge (east bound). It would be advantageous if the existing pedestrian signals were upgraded to include cycle symbols that were automatically green when traffic light were green.
- Box out traffic lanes for cyclists.

Location: South Terrace/Market Street from Norfolk to Elder (The Cappuccino Strip)

Problems & Barriers for cyclists:
Limited bike access makes conditions for cycling unpleasant. Not enough room to extend road for additional infrastructure.

Strategy Options: Planned 2013
- Shared Road, an environment catering by priority for pedestrians, cyclists and vehicles.
- Signposted reduced speeds as well as low traffic volumes will promote an environment suitable for pedestrians and cyclists.
- The goal is to lower average traffic speeds, reduce the number and severity of accidents and lower the volume of through traffic.
- Additional treatments may occur.
**Location: Queen Victoria Street**

**Problems & Barriers for Cyclists**
Limited bike infrastructure and support makes conditions for cycling unpleasant.

**Street Strategy Options**
Planned: 2014 - 2018

PSP extension to Fremantle. The exist street PSP is being re-routed behind the Swan Hotel located on the corner of Queen Victoria Street & Tydeman Road. The 5m reserve needed for a PSP would bypass the conflict area outside the hotel and provide a more direct route for users wanting to access Tydeman Road. The exist SUP along the north bank could be extended to connect with the Queen Victoria SUP by providing an underpass at the bridge abutment. Both of the preceding options will be linked to the Queen Victoria Street bridge upgrade/relocation however, the north bank route would be an ideal connection to Queen Victoria Street.

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**Location: Tydeman Road**

**Problems & Barriers for Cyclists**
Tydeman has a shared path linking Port Beach Road, however linking Stirling Highway does not have a specific one.

**Strategy Options**
Planned: 2014 - 2018

Standard bike lanes segregated due to heavy vehicle traffic.

An upgrade of the PSP from north of Tydeman Road to the new Leighton Development is a current project underway.

Green paint and forward boxes at intersections. Traffic lights specific for bikes.

Fix cut out at Tydeman and Pierce Street to improve flow.

Wayfaring to improve patronage.

Enable safe bike access in and out of Bracks Street by cutting into the traffic islands at Walter Place and Tydeman Road.
Location: Marmion Street crossing Stirling Highway

Problems & Barriers for cyclists
Limited bike access makes conditions for cycling unpleasant.

Strategy Options
Planned 2014 - 2018
Standard bike lanes on both sides of Marmion Street east and west of Stirling Highway
Green paint and green bike boxes located at intersections for safer cycling.
Consider single lane for traffic and single lane for bicycles moving forward.

Location: East Street

Problems & Barriers for cyclists
Limited bike access makes conditions for cycling unpleasant.

Strategy Options
Planned 2014 - 2018
Marmion left onto East Street has good infrastructure for bike lanes, however turning right onto East Street needs attention. Suggest standard bike lanes.
Green paint and green bike boxes located at intersections for safer cycling.
Continuous bike lanes all the way down.
Location: Winterfold Road crossing Stock Road

Problems & Barriers for cyclists
Limited bike access makes conditions for cycling unpleasant. No existing bicycle lanes or logos.

Strategy Options
Planned 2014 - 2018
- Standard bike lanes. Winterfold Road section where it crosses Stock Road recommendation of a combination of on road cycle lanes on the northern side and a 3m SUP on the south.
- SUPs to parallel Stock Rd between South St and Winterfold Street, dependent on approval and co-funding by Main Roads.
- Green paint at intersections.
- A pedestrian/bicycle overpass of Stock Rd at a mid-point between South St and Winterfold Road, dependent on approval and co-funding by Main Roads.

Location: South Street crossing Stock Road

Problems & Barriers for cyclists
Limited bike access makes conditions for cycling unpleasant. No existing bicycle lanes or logos on South St or Stock Rd.

Strategy Options
Planned 2014 - 2018
- Standard bike lanes. Traffic signal modification to allow bike traffic to move through intersection safely.
- Green paint and green bike boxes located at intersections for safer cycling.
- A recommended lane crossing or bike logo’s straight over Carrington linking Rennie Crescent North as bikes have to currently do a difficult zigzag maneuver.
- There is a possibility for widening the verge creating more room for cycle lanes. Continuous and consistent bike lanes.
Location: Carrington Street and Lefroy Road intersection

Problems & Barriers for cyclists
Limited bike infrastructure and support makes conditions for cycling unpleasant.

Strategy Options
Planned 2014 - 2018
- Allow bikes to cross from Lefroy Rd to Hilton via Rennie Crescent.
- Traffic signal modification to allow bike traffic to move through intersection safely.
- Green paint and green bike boxes located at intersections for safer cycling.

Location: High Street (including the intersection with Ord Street)

Problems and barriers for cyclists
Difficulty cycling during peak traffic.

Strategy Options
Planned 2014 - 2018
- High Street is currently planned to become a closed road with the extension of Leach Hwy to Marmion St. The inclusion of continuous bike lanes may be installed as part of the works.
### Location: Hampton Road to South Street

**Problems & Barriers for cyclists**
Limited bike infrastructure and support makes conditions for cycling unpleasant.

**Strategy Options**
Planned 2014 - 2018
- Logos recommended on the bus lane on Hampton Road to make buses aware that the lane is used by cyclists.
- Whilst it is desirable that bicycles are accommodated in a separate bicycle lane, examples exist where bicycles have successfully shared in the use of bus lanes. In most circumstances cyclists may be permitted to use bus lanes when they are located next to the kerb on arterial or local roads.
- Increased separation from vehicle lane needed. The bus/bike/taxi lane can function. Adjacent path provides facility for less confident cyclists.

### Location: Carrington Street

**Problems & Barriers for cyclists**
Limited bike infrastructure and support makes conditions for cycling unpleasant.

**Strategy Options**
Planned 2014 - 2018
- Separated bike lanes for the duration.
- Traffic signal modification to allow bike traffic to move through intersection safely.
- Green paint and green bike boxes located at intersections for safer cycling.

### Map of Location: Hampton Road to South Street

- Bike lanes on both sides.
- Bike stencil.
Location: Parry Street crossing Adelaide Street to Queen Victoria Street

Problems & Barriers for cyclists
Limited bike access makes conditions for cycling unpleasant. No existing bicycle lanes or logos. Crossing intersections unsafe.

Strategy Options: Planned 2014 - 2018
Standard bike lanes down Parry Street to Queen Victoria Street. At the traffic lights, intersection to Adelaide Street, bike lanes should continue to make crossing intersection safer with green boxes located at intersection. Green paint located at each intersection and at the end of Parry Street linking Elder Street.

Location: Douro Road

Problems & Barriers for cyclists
Limited bike access makes conditions for cycling unpleasant. No existing bicycle lanes or logos.

Strategy Options: Planned 2014 - 2018
Standard bike lanes. Green paint and forward green boxes recommended at the intersection onto Hampton Road.
Location: Norfolk Street, Parry Street and South Terrace

Problems & Barriers for cyclists
Limited bike infrastructure and support makes conditions for cycling unpleasant.

Strategy Options
Planned 2014 - 2018
Connection across South Terrace from Norfolk Street to Parry Street needed. Existing facilities need to connect to allow a continuous journey.

Location: Marine Terrace and Capo D’Orlando Drive

Problems & Barriers for cyclists
Limited bike access makes conditions for cycling unpleasant. No existing bicycle lanes or logos.

Strategy Options
Planned 2014 - 2018
Standard bike lanes all the way down Marine Terrace. At traffic lights, bike lanes should continue and have one lane for traffic to continue and one for right turning traffic.
Green paint located at intersections and the bike box coloured green to visually stand out more to drivers. White paint located across Capo D’Orlando Drive for optimum safety for cyclists to cross the road.
Improve signage and connection to existing shared path on ocean side of train line to provide a shared bike path.
Bike logos need repainting.
**Location: Stock Road Overpass for cyclists and pedestrians**

Problems & Barriers for cyclists: Stock road is a very busy, high speed highway that has a large proportion of heavy vehicles and commuters. It has no off road cycling facilities and a very narrow shoulder for cycling.

There are no alternatives to travelling west to east within 500m north of south of this proposed location. Winterfold Road to the south and South St to the north. The intersection of Stock Road and South St is particularly dangerous to cyclists due to the multiple large space carparks servicing the big box retail precinct. There is no alternative to cross this road 500m away at the traffic light intersection. As a result significant evidence exists of illegal pedestrian traffic through median islands. This practice is concentrated near the nearby secondary schools.

This project would provide a vital transport node for cyclists between three schools, the suburbs premier shopping and recreation facilities and the residential community.

Strategy Options
Planned 2014 – 2018
Subject to funding.

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**Location: Crossing South Street on Hampton Road and South Terrace**

Problems & Barriers for cyclists: Limited bike access makes conditions for cycling unpleasant. Bicycle lanes or logos.

Strategy Options
Planned 2014 – 2018
Can be improved.
The City has adopted a recommendation whereby new and significant property developments in Fremantle will be required to incorporate bike racks and end-of-trip facilities to encourage cycling as a means of transport.

In light of recent amendments to the City’s Local Planning Scheme No. 4(3), specifically Amendment No. 38 - East End and Amendment No. 49 - City Centre Strategic Sites, in addition to other City initiatives including the Low Vehicle carbon City Plan 2011-2015 (4), it is recognised that there is an increasing need to consider the City’s approach to bicycle parking on public and private land and the provision of end-of-trip facilities for new commercial developments within the City.

The application of Austroads bicycle parking standards within the Scheme will mean that each new development will have to provide both short and long stay bicycle racks on site (Australian Standards 2890.3-1993 apply). This is considered appropriate for long stay racks as new developments can easily incorporate this class of rack into the overall development design, however incorporating short stay racks into new developments, especially those with a nil setback to the street, may not be possible in all instances.

Additionally, any new commercial use class development should include shower and change facilities for employees. End of trip facilities, such as shower and change facilities, are related to bicycle parking but can also provide convenience to staff for other activities such as alternative ways of getting to work (run or walk) or exercising during the work day. The City’s Low Carbon City plan 2011 – 2015 supports the requirement of showers as part of end-of-trip facilities in new development and officers consider it reasonable for Council to require large developments to provide showers, especially those with reduced vehicle parking requirements such as an Office development on any of the City centre strategic sites as set out in the Scheme Amendment No. 49.

End-of-trip facilities

The City will provide “End-of-trip” facilities such as bicycle lockers, a lockable room or secure parking areas that are a requirement of most bicycle trips.

There is also a requirement for fully lockable, undercover parking for all day use by commuters at train stations and “park and ride” bus stations.

Showers, change rooms and clothes lockers are an essential requirement for longer trips and should be provided at all work places to encourage the use of bicycle transport. The City has numerous locations in the city centre and Bike Parking/Lock and Ride at the train station and will provide a comprehensive upgrade of bicycle parking which would reduce security risks and increase the attractiveness of cycling as a mode of transport.

Bike Lockers: Canning Highway/Queen Victoria bridge, All beaches, premier parks, major shopping centres, train stations, Council carparks, Art Centres, Tourist Facilities, Fremantle Prison.

Bike pumps, tool kit: Kings Square Cycle hire facilities would be a recommended location for a pump.

U-Rails: Department of transport and BikeWest has suggested that bicycle security is optimally ensured through the installation of U-rails for short term storage of bikes at identified end-of-trip locations. Locations where long term security is required should be provisioned with a limited number of bicycle lockers or a secure cage if appropriate.

Appropriate locations for end-of-trip facilities include the aim to have dedicated bike parking within 50 meters of every shop, reserve, recreation and community facility. Bike racks should be placed at all bus stops on trunk routes (South St, Hampden Rd, Marmion St etcetra). The picture to the left is a bike parking facility in the North Quay industrial/commercial precinct.

Fremantle Train Station offers Bike parking and Bike Lock ‘N’ Ride facilities. Passengers will now be able to easily and securely use their SmartRider vehicle to enter the shelters throughout the day and not be restricted by the current access hours. Best of all, bike parking in the Lock ‘n’ Ride Bike Shelters will still be free.

The picture to the left is a bike parking facility in the North Quay industrial/commercial precinct.
Signage

The City will ensure that there will be more regular signage along major routes to ensure maximum visibility to vehicles and cyclists.

The principles of good infrastructure are to identify not only the network but also through clear signage. Signage is a critical component used to legitimise and assist the many and varied trips which cyclists make daily within the City. Cycle network signage can indicate the legal status of a facility (bike lane signs, shared path signs), regulate safe use, warn of potential hazards, and guide cyclists to their destinations.

Without directional signage, people using paths, especially for the first time, can get lost or have to walk/ride further than they expected. Some may choose to take an alternate route which may not be appropriate for their skills – for instance riding on a main road. Good signage enhances the usage of all infrastructure and allows people to make informed choices about where and how far they travel. Bike lanes on arterial roads can mostly rely upon existing road signage to get from A to B.

Without adequate signage and other navigational cues on paths, path users may:
• Get lost and choose a route to make it home that may not suit their abilities – for instance along a busy road.
• Will not make it to their destination even though it may be quite close.
• Travel much further than planned potentially beyond their capabilities.
• Become frustrated and not use the path again.

What is the solution?
The level of signage will depend on the type of path or trail but the minimum requirement is directional and distance signage to major destinations at all path and street intersections with centre line marking and route markers between them. All street crossings should be marked, especially if the path goes under a road. Maps boards are useful aids at major entry points and end points of paths and path behavioural signage should be provided separately at major path entrances (5).

Approach three:
Soft infrastructure

Education and promotional programs

Education is important in the context of improving bicycle ridership within the community as well as increasing the safety of bicycle users on the road network. This includes bicycle education at local schools and further education for the wider population.

Bicycle education programs generally improve the behaviour and habits of young cyclists, resulting in an overall reduction of risks. Educating residents regarding the location of bicycle infrastructure will assist in improving the general confidence of casual and recreational riders within the City.

Signage can have a positive effect on bicycle safety, with cyclists more likely to remain on designated routes where facilities are designed to minimise risks. Education programs would ideally be designed to address both casual and commuter cyclists, raising awareness of the designated routes, as well as the interactions between pedestrians, vehicles and cyclists.

The City’s commitment

The City will be an advocate for school based road safety education that is inclusive of cycling skills and safety training by:
• Providing a pilot cyclist training package for all schools, workplaces, community organisations pending satisfaction of participation criteria.
• Ensure bicycle road safety is included in the road safety program.
• Ensuring information is available widely within the community about bicycle road safety education and training courses.
• Investigate the building of a road simulated environment for training and activities on public land.

Active travel to school

Only 2% of Australian children are riding to school. Parents are driving their children to school out of fear that it’s unsafe for them to ride or walk, adding more traffic to the roads and perpetuating the cycle of vehicle dependency (1). There is a great opportunity to increase the number of students riding bikes to school in Perth, including Fremantle, if facilities and education programs are introduced.

The diagram on the right shows the likelihood to allow children to ride to school. Once again, a common theme preventing parents from allowing their child to ride a bike to or from school centered on road and safety issues.

Parents were likely to indicate that they would be more likely to let their child ride a bike to and from school if personal safety, SUP foot paths/cycle paths, safety of intersections/crossings or speed/volume of traffic was changed or improved (26).

In February 2012, The National Heart Foundation in collaboration with the Cycling Promotion Fund conducted an online survey with a random sample of over a thousand Australian parents with school age children. A number of excellent cycling apps for all smart phones for cycle routes around Fremantle are available to provide trip planning based on open source street maps and up to date data. Overlays of traffic, weather, gradient, path type and distance are also available.
aged children in relation to children and riding bikes to and from school. Parents associate children riding a bike to school with a range of advantages, from the positive impact that it can have on their child’s health, to the role it can play in promoting their child’s independence. 90% of parents agreed that cycling is a good way to get fit, and that it is important for children to learn to ride a bike. Whilst 70% parents surveyed think it is important for children to be able to independently ride a bike, close to 50% do not believe that it is safe for children to ride a bike to school. There are some clear barriers to children riding a bike to school: 80% parents surveyed agreed that there is too much traffic on the roads and there are not enough bike paths for children to cycle safely to school. Close to 60% of parents surveyed drive their children to school. Whilst 70% parents surveyed indicated that their child knows how to ride a bike, just over 10% children ride a bike to school at least monthly. In addition to the relatively high proportion of parents surveyed who felt confident about teaching their child to ride a bike, 45% believe it is important that children receive formal cycle training (2a). 25% parents surveyed believe their child’s school encourages children to ride a bike to school. In general, parents surveyed agreed that the Federal Government should be doing more to encourage children to ride to school. Parents were likely to indicate that they would be more likely to let their child ride a bike to and from school if personal safety, SLIP/cycle paths, safety of intersections/crossings, or speed/volume of traffic was changed or improved (2b).

Cycling road safety education and skills within the community

Local bicycle week

It is recommended that the City continue its annual endorsement of Bike Week to encourage awareness of cycling. Suggested promotional activities conducted in the past and expected to continue include:

- “Bike and breakfast” setups, similar to Bike to Work days.
- Provision of bicycle maps and information to local businesses and schools.
- Provision of prizes, such as the school bicycle tag a day system already run by a number of schools.
- Fremantle’s Ride to Work Breakfast.

Ride to Work Day is a great opportunity for all Australians to have a go at riding to work. The City encourages workers in the Fremantle CBD to try commuting to work by bike and experiencing the health, financial and environmental benefits of riding.

Driver education and awareness

Driver education and awareness programs can do much to improve safety – especially in relation to common and easily avoidable accidents. There is currently no inclusion of a cycling safety component in the process of acquiring a driver’s license in WA. Including bike awareness training as an essential part of driver training would be one of the most effective ways to improve the status and awareness of cyclists and ensure a significant improvement in drivers within a generation (3).

Research in Queensland recently found one in four drivers never check for cyclists before opening the vehicle door. Yet dooring is a hazard easily avoided through awareness campaigns. Education and materials to promote safer driver behaviour are an effective way to raise awareness and safety of cyclists on our roads.

Cycling promotion and behaviour change programs

Research shows in places with low numbers of cyclists, bikes are often linked with negative associations and prejudices. This includes cycling being uncomfortable, dangerous, slow only for sporty people, not suitable for transporting things, or even a symbol of poverty (4). Australian research certainly confirms this to be the case, with a culture of negative attitudes towards cyclists evident in studies and in any daily newspapers letters to the editor. A recent study in Queensland showed 22% of cyclists felt that they were rarely or never allowed room on the road by motorists, with motorists failing to give way, not allowing sufficient room when overtaking and driving too closely to cyclists (5). The same study found 19% of motorists didn’t regard cyclists as a legitimate road users and 20% motorists admitted to not always making room for cyclists on the road (6). The attitudes and behaviour towards on Perth roads towards bicyclists is of serious concern (7). Even though in WA bicycles have the same right of access to the road as motor vehicles and are largely governed by the same rules.

Cycling promotion programs can improve negative attitudes and behaviour, and encourage people to think of bicycling as a valid, sustainable transport option. Cycling promotion advertises the benefits and legitimacy of riding a bike as a form of transport to the public.

Examples of Cycling Promotion include:

- The WA Cycle Instead social marketing campaign
- Behaviour change and Individualised marketing such as Perth’s TravelSmart program. A program was offered to more than 15,000 residents in Fremantle in 2005 which recorded a rise in trips by bike, for those who participated of 38% that year.
- Events such as Ride to Work Day and the Freeway Bike Hike, which attracted almost 4,000 and 9,000 riders, respectively, in 2012.
- Awareness raising and information campaigns such as local and national campaigns, cycling barometers (electronic counters on public display), the Super Tuesday bike count.
- Information materials such as maps of cycle routes and the location of bike facilities, and websites with information on road safety and maintenance activities, and future events.

Increasing responsibility and liability of drivers.

A lot of the success of well connected bike networks in other cities is due to traffic laws that give cyclists equal or greater priority over drivers. There are many European countries, including Austria, Denmark, France, Germany, Italy, the Netherlands and Sweden that apply a strict liability towards cyclists which protects them in accidents, unless it can be proven that the cyclist deliberately caused the crash, encouraging drivers to be extra vigilant and cautious on the roads. In the Netherlands, the law assumes the stronger participant (e.g., a vehicle driver) is liable in the case of an accident with a weaker participant (e.g., a cyclist) unless it can be proved that the cyclist’s behaviour could not have been expected.

The Netherlands and Denmark use the law of ‘strict liability’ to protect vulnerable road users from more powerful road users. Under this law, in crashes involving vulnerable road users, unless it can be clearly proven that the vulnerable road user was at fault, the more powerful road user is found liable by default. This makes drivers more cautious around cyclists and pedestrians and is responsible for their safe roads.”

The weak version of this claim goes on to state that strict liability is a necessary component of the Dutch model and of growing cycling rates. The strong version of the claim states that strict liability alone is sufficient to create civilised streets and grow cycling rates.
In the Netherlands, Denmark and Germany motorists are assumed to be legally responsible for most collisions with cyclists, unless it can be proven that the cyclist deliberately caused the crash(9), encouraging drivers to be extra vigilant and cautious on the roads.

**Lowering traffic speeds.**
Studies have shown that a reduction in speed improves individuals’ perception of safety and increases active travel behaviour (10). At lower speeds vulnerable road users have a better chance to escape permanent injury, demonstrated in London where the introduction of 30 km/h zones has resulted in a casualty reduction of 42% (11).

Lowering vehicle speeds makes a safer cycling environment. Dutch, Danish and German cities have reduced the legal speed limit to 30kmh in most residential neighbourhood streets (12). 30kmh is the recommended vehicle speed for areas with cycle lanes, as it greatly reduces the risk of accidents and increases walking and cycling rates (13). The current vehicle speed in cycling areas has been identified as a major constraint to people choosing to cycle in Australia (14); therefore policies to reduce the speed limit in these areas should be addressed.

**Sustainability Officer.**
The City will commit to employing a Sustainability Officer who will work with major trip generators such as Notre Dame, the Port Authority and Fremantle Hospital to promote less vehicle dependence and more cycling. They could also play a major role in cycle road safety education and skills.

**TravelSmart Workplace Program**
Provides advice, tools, resources, training and network support to assist workplaces to develop and implement travel plans.

The City will investigate the merits of a TravelSmart Officer or similar role throughout this report’s life. The TravelSmart Schools Program supports schools with the various tools and resources including teacher professional development, school activities, a graduated rewards and recognition scheme, online reporting and networking tools (e.g. social media site for schools to blog their activities, share ideas and earn points for rewards), connections with events to increase walking and riding to school and opportunities for schools to showcase their achievements.

**Bicycle user group**
The Bicycle User Group (BUG) is a community based organisation set up by bike riders whose aim it is to improve cycling conditions in their local area. BUGs are usually made up of local riders who enjoy bicycle riding for transport or for recreation purposes.

They may meet on a regular basis to work out strategies to improve cycling in their community. Some BUGs organise Bike to Work days, or other bicycle commuter activities. BUGs also are involved in transport planning and work for beneficial physical changes as well as policy changes.

BUGs encourage Local Government to provide better facilities and safer routes for commuter cyclists, for children riding to school and for recreational cyclists. There are also promotional opportunities for local recreation and tourist facilities through partnering with BUG groups.

The Fremantle BUG covers suburbs in the City, as well as East Fremantle and adjoining parts of the City of Cockburn. Meetings are held on the 1st Wednesday of each month. The BUG also holds occasional social rides.

Join the campaign for better cycling facilities, get involved in the Bicycle User Group. For details of the next meeting contact fremantle.bug@gmail.com

**Dismantle**
Dismantle creates opportunities that empower people to adopt cycling as part of their everyday lives, for the betterment of the individual, the community and the planet.

**Freo Wheelers**
Mainly variations of cycling around the River Swan. Million dollar views across the river at dawn. On a good day can be as many as 90 riders, in several groups.

Fremantle will become the best bicycle city in WA by 2018 through its infrastructure by adding new cycling infrastructure and facilitating behavior change and reducing barriers.

A priority warrant system will be developed to evaluate the merits of cycling infrastructure actions as part of the best practice and standards process for the City.
Standard bike lane design

The Guide to Road Design – Part 6A: Pedestrian and Cyclist Paths provide guidance for road designers and other practitioners on the design of paths for safe and efficient walking and cycling (2).

The City will have standard bike lanes that have the following features:

1. The inclusion of on or off road lanes is appropriate for the given location in respect to traffic volume and speed.
2. A continuous, designated lane designated lane by white striping, segregated from any traffic lane.
3. The use of appropriate signs and pavement markings will improve the safety and general public acceptance of bicycles on public roadways. Regulatory and warning signs will alert bicyclists to potential conflicts and convey regulatory messages to both bicyclists and motorists at highway intersections. Where bike lanes have been provided, they should be signed as such so as not to allow vehicle parking.
4. If parking is permitted, the bike lane should be located between the parking area and the travel lane and have a minimum width of 1.5m is to be provided with the inclusion of an additional buffer desirable. The 0.5m should be located outside the door zone. The door zone (also known as the danger zone) is the area that is the width of the vehicle door when the door is open. The level of buffer between the parked vehicles and adjacent traffic lane will be comparable to the level of use. High turnover on-street parking would demand a more generous buffer. Bike users should be able to comfortably navigate an open vehicle door without fear of being sideswiped by the adjacent traffic lane.
5. Bicycle lanes should be provided with adequate drainage to prevent potentially hazardous conditions. The drainage grates should be bicycle-safe. Paths should be cambered for drainage and in locations where sedimentation occurs a rill should be constructed to prevent sediment buildup.
6. Green Paint which should be used in potential conflict areas such as intersections, roads with unusual traffic conditions, between left turn lanes, entries and exits to roundabouts, vehicle park and shopping centre entries/exits, if a cycle lane crosses a free flow or merge lane, any places where road conditions create additional risks to cyclists.

A series of prescriptive rules should be adhered to in bike planning within the City.

Rule 1: Coloured surfaces

Coloured surfaces are not prescribed by Main Roads WA. Their primary use is emphasising cycle lanes and to remind motorists that the surface is either primarily or exclusively for the use of cyclists.

The application of coloured surfaces should be limited as excessive use can be visually intrusive and lose their highlighting effect where needed most.

- Colour selection, in the interests of consistency and simplifying maintenance, is recommended to be limited to green coating Emerald Green G13 (AS 2700)
- Green painted surfaces for bicycle lanes are considered best practice and desirable treatment. It raises the prominence of the area used for cycling, and can potentially reduce traffic speeds
- Where suitable, green paint should be considered, especially if the lanes are expected to attract large numbers of cyclists
- Green surface treatments at specific locations are also becoming more prominent on bicycle lanes globally
- Austroads (NP1436) identifies green asphalt as recommended treatments for locations of potential conflict between cyclist and motor vehicle
- Approaching a green box head start facility.
- Where the cycle lane has vehicles crossing over it to make left turn maneuvers
- In contra flow cycle lanes
- In cycle lanes beside parking bays
- At junctions where certain maneuvers are limited to cyclists
- At locations where the lane highlights a potential risk, e.g. cycle lanes through pinch points
- In general, green painted treatments should be used at intersections, rather than at mid-block locations.

Rule 2: Visibility

This is using visibility to reinforce separation. Green surface treatments as well as bike logos at intersections, or buffer separation in continued lanes, greatly improves drivers perception of cycling on shared roads.

Rule 3: Roundabouts, intersections and traffic signals

It doesn’t matter how many bike lanes or paths a city has, if the intersections and roundabouts are designed only for vehicles, it’s likely conflicts and accidents will occur. The main reason cyclists get hit in roundabouts is because motorists pull out in front of bikes without seeing them - part of the problem is the flared entries and exits are designed for speed. In Europe non-flared roundabout entries force all users to slow down and change the way the driver looks for traffic already in the roundabout.

Roundabouts pose an increased risk to cyclists while achieving a significant decrease in the occurrence of right angle vehicle crashes. Within low speed environments, the rider should be positioned in the centre of the traffic lane to ensure vehicles do not push the rider to the side and in turn further mask the rider’s presence to other road users.

High speed roundabouts should have separation of the cycle facilities as well as every attempt to reduce the approach speeds of vehicles.

The practice of providing pre deflection and an acute angle of entry at roundabouts does not aid cyclist safety at roundabouts. Designs which eliminate these two aspects should be considered and pursued with the regulatory
Rule 4: Signalised intersections

Standard intersections are dangerous for bike riders, forcing bikes to merge with vehicles. Treatments include:
- advance stop lines for cyclists ahead of drivers;
- advance green lights for cyclists;
- turn restrictions for vehicles (while all turns are allowed for cyclists); and
- highly visible coloured bike lane crossings.

The need to improve facilities at signalised intersections should be a priority.

Throughout the municipality, existing facilities are compromised because of a lack of cyclist facilities at major intersections. Prime examples are: Mammon Street/Stirling Highway, Stock Road/Winterfold Road, Stock Road/South Street, South Street/ Carrington Street, Winterfold Road/Carrington Street, Leftroy Road/Carrington Street and Hampton Road/Douro Road. Some of these intersections would likely require extensive upgrades, such as South Street/Carrington Street while other intersections are located in multiple jurisdictions, such as Stirling Highway/ Mammon Street; however, these opportunities should still be investigated and prioritised according to connectivity, potential future patronage and cost.

Rule 5: Bike friendly treatments are needed at traffic lights, roundabouts and intersections.

- Improve treatments at intersections so there are no gaps in bike lanes where safe to do so.
- Provision for cycling head start boxes to assist in right turns and through movements for cyclists at busy intersections utilised by cyclists. Support through sequencing traffic lights to give cyclists a head start.
- Provide more frequent bike/pedestrian phases in the CBD to encourage people on bicycles, and reduce illegal crossing of lights.

Rule 6: Separated bike lane

- Separated bike lanes are starting to become more prominent in cities. They allow for a separated space or “buffer zone” between the bicycle lane and road traffic lane. The buffer zone can be either a painted treatment, profile marking or a median island kerbed treatment.
- These treatments are recommended on busier or high speed roads, but require additional space and might not be feasible or possible.
- Although kerbed treatments provide better protection than a painted equivalent, they are disadvantageous in that they restrict movement (cyclists riding two abreast or overtaking, and vehicles accessing driveways).

Rule 7: Other treatments

- Cycle friendly treatments through traffic calming.
- Improvements to intersections such as green painted surface treatments and median refuge widening. Other intersection treatments at traffic controlled signals are under the jurisdiction of Main Roads.
- Removal of on road vehicle parking provision or drainage grates on a bicycle route. Road widening to accommodate bicycle lanes.

Rule 8: Bike lane resurfacing

- That traffic light sensors (and symbols) are positioned across the bike and vehicle lanes rather than the centre of the traffic lane, should bicycling be sufficiently represented in the transport mix.
- Bike symbols can be installed as part of the project to show be installed to denote the lane as usable for cyclists.

Types of path

The types of path commonly used in the bicycle network are Recreational Shared Paths (RSPs) that may be appropriate where demand exists for both a pedestrian path and a bicycle path but where the intensity of use is not expected to be sufficiently great to provide separate facilities. Principle Shared Paths (PSPs) that are used are set aside for cyclists and may be appropriate where there is a significant cycling demand and very few pedestrians desire to use the path or a separate pedestrian path is provided. On a PSP path it is possible to achieve an alignment that allows cyclists uninterrupted and safe travel at a relatively high constant speed of over 30kmh.

Some RSPs function as commuter routes due to their locations and require construction to appropriate standards. A comprehensive river and beach RSP network has been the consistent intention of successive governments.

However, building RSPs along river foreshores and ocean frontages has historically been difficult and has generally been completed by the relevant local authority. Private land ownership, steep terrain, acid sulphate soils, environmental impact and native title are all issues to be resolved before construction.

Single lane roundabouts:

The rules for slowing down, giving way and indicating when approaching and exiting at roundabouts are the same for single lane or multi-lane roundabouts.

**Going left**

1. Slow down and prepare to give way as you approach the roundabout.
2. On approach you must be in the left lane unless otherwise marked on the road, and indicate a left turn.
3. You must give way to traffic already on the roundabout if there is any risk of a collision.
4. Enter the roundabout when there is a safe gap in the traffic.
5. Stay in the left lane, and try to stay in the centre of the lane as appose to the outside of the roundabout as a driver waiting to enter the roundabout will have a good visual of you.
6. Indicate your left turn until you have left the roundabout.

**Going right**

1. Slow down and prepare to give way as you approach the roundabout.
2. On approach you must be in the right lane unless otherwise marked on the road, and indicate a right turn.
3. You must give way to traffic already on the roundabout if there is any risk of a collision.
4. Enter the roundabout when there is a safe gap in the traffic.
5. Stay in the right lane, and try to stay in the centre of the lane as appose to the outside of the roundabout as a driver waiting to enter the roundabout will have a good visual of you.
6. You must indicate a left turn just before your exit unless it is not appropriate.

Treatments for existing roundabouts

**Reducing entry speeds**

As a high percentage of crashes at roundabouts involve an entering vehicle failing to give way to a cyclist, the key to increasing cyclist safety at roundabouts is to reduce the speed at which drivers enter the roundabout. It is also important to reduce the speed of drivers as they exit the roundabout. This can be done with traffic calming devices on the approach as well as ensuring the roundabout provides significant vehicle path deflection within the circulating path.

**Cyclist warning signs**

In addition to slowing drivers down before they enter roundabouts, the provision of signs that request drivers to “Watch for Cyclists” should also be considered on the approaches to roundabouts.

A good example of traffic calming can be seen on South Terrace and Wray Avenue, Fremantle. The treatment ensures vehicles do not enter the bike lane.
New roundabouts: Dutch cycle
The recommended standard for Dutch roundabouts is for there to be a physically separated circular cycle track running around the outside of the main carriageway. In urban areas, vehicles should give way to cyclists on the track (this is implemented in about 60% of urban roundabouts); whereas in rural areas, bikes generally give way to vehicles coming on and off the roundabout (4a). The track is separated from the rest of the roundabout by about 5m, allowing space for a single vehicle to stop without blocking the passage of bikes (5). Clearly marked pedestrian crossings usually run alongside the bike tracks, making both more visible. These crossings should have traffic islands to make crossing easier and should be raised about 12cm from the rest of the carriageway, starting 5m before the crossing itself to make them more obvious to vehicles (6,7). Larger two lane roundabouts generally have two entry lanes per leg of the roundabout, but only a single exit lane increasing the visibility of bikes and pedestrians using the crossings (8). Some roundabouts, known as ‘turbo roundabouts’ have spiral lane markings removing the necessity for vehicles to change lane as they negotiate it – indeed, there are raised markers between the lanes to prevent corner cutting – giving drivers fewer distractions as they exit the roundabout (9). Most cycle tracks are one-way, running in the same direction as the rest of the traffic on the roundabout, but some busy roundabouts have two-way lanes which can increase conflicts and accidents. In one such case, lights warning motorists of the presence of bikes, and more traffic islands, have been used to mitigate these conflicts (6). On the whole, roundabouts have been found to be much safer than four-way intersections, and separated tracks safer than lanes on the roundabout itself, giving cyclists right of way over drivers entering or exiting the roundabout does increase the number of accidents slightly (amounting to 52-73 extra hospital admissions a year) (4b).

Shared space roundabouts, also have a cycle track around the outside, giving bikes right of way over drivers entering or exiting (7a). The main difference is that there is no marked lane separating bikes from pedestrians, fewer warning signs, no traffic islands, and the bike track is less clearly distinguished from the vehicle carriageway (a flush paved area rather than raised red tarmac), in line with the shared space principle of minimum regulation. Despite this, a study found that 95% of bikes using the roundabout were able to proceed without stopping as drivers mostly gave way to them. It was also shown to be safer than the intersection which preceded it, but perceptions by people using it were that it was less safe although they did feel that it had improved the area and traffic flow through the junction (7b).

One experiment that has been tried for lanes on roundabouts themselves has been in Lelystad where the red tarmac bike lane runs right through the middle of a small single-lane roundabout. This moves bikes and mopeds out of drivers’ blind spots but it has not yet been evaluated to see whether it is successful in improving safety (10).

Many German cities have introduced home zones or Spielstrassen, an advanced form of traffic calming, with a speed limit of 7 kmh on neighborhood streets; vehicles are required by law to yield to cyclists, pedestrians, and children.

When any future project is implemented, the bicycle awareness checklist should be referred to ensure that the projects maintains or improves cycling infrastructure

Bicycle awareness checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
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<tbody>
<tr>
<td>The project maintains or improves the standard of existing bicycle facilities?</td>
<td></td>
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<tr>
<td>The project has considered potential improvements to the existing on-road cycling and pedestrian facilities?</td>
<td></td>
</tr>
<tr>
<td>The project has identified whether the road forms part of the principal cycle network and if so the integrated Transport Team has been notified of the project and invited to provide input at preliminary design phase?</td>
<td></td>
</tr>
<tr>
<td>Cycle friendly design standards have been applied in the project?</td>
<td></td>
</tr>
<tr>
<td>The project does not create additional risk for cyclists or pedestrians?</td>
<td></td>
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<tr>
<td>The project does not divert cyclists around a longer route?</td>
<td></td>
</tr>
<tr>
<td>The project does not impede on any potential works to improve pedestrian and cycle infrastructure in the road corridor?</td>
<td></td>
</tr>
<tr>
<td>The integrated Transport Team has been contacted to review designs prior to final sign off?</td>
<td></td>
</tr>
<tr>
<td>The project works towards the our Integrated Transport Position of prioritising pedestrians, cyclists and public transport?</td>
<td></td>
</tr>
</tbody>
</table>
References: Best practice and standards for bike infrastructure in Fremantle


5 First roundabout with bike paths and right of way for cyclists http://www.fietsberaad.nl/index.cfm?lang=en&section=Voorbeeldbank&mode=

6 Turbo roundabout with two-way priority bike paths http://www.fietsberaad.nl/index.cfm?lang=en&section=Voorbeeldbank&mode=

7 Shared Space Roundabout in Drachten http://www.fietsberaad.nl/index.cfm?lang=en&section=Voorbeeldbank&mode=


9 Semi-turbo roundabout with right of way for cyclists http://www.fietsberaad.nl/index.cfm?lang=en&section=Voorbeeldbank&mode=

10 Bicycle roundabout prevents blind spots http://www.fietsberaad.nl/index.cfm?lang=en&section=Voorbeeldbank&mode=


References: Soft infrastructure: Education and promotional programs


11 Grundy 2009 cited in BTA pl 1


15 Best Practice and Standards For Bike Infrastructure In Fremantle” for more on this.