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EXECUTIVE SUMMARY

Cycling is a healthy, clean and economical mode of transport that can play a role in addressing the significant challenges of climate change, congestion and Australia’s obesity epidemic. The benefits of cycling to both individuals and communities are numerous and include:

- Improved public health
- More equitable transport
- Reduced road congestion
- Fast door-to-door transport
- Greenhouse gas reduction
- Fuel, parking, vehicle and other cost savings
- Economic development through bicycle tourism.

One of the six community goals in the Wollongong 2020 Community Strategic Plan is that “We have sustainable, affordable and accessible transport”. One of the identified strategies to achieve this goal is that “the city is established as Bicycle-friendly”. In order to help achieve this aspiration, Council has developed a Bike Plan that includes a range of interrelated elements comprising infrastructure provision and renewal, promotion, education and advocacy.

During development of the Bike Plan, the following key cycling issues were revealed through a number of community engagement activities, crash data analysis and Council’s investigations:

- Lack of bicycle connections within and around key employment areas
- Lack of wayfinding signage throughout the bicycle network
- Lack of shared path linemarking in many locations
- Conflicts between different types of cyclists and other users on shared paths
- Obstructions on off-road facilities such as overgrown vegetation, driveway crossing grades, power/light poles, bus shelters, sign posts, fences, bollards and vehicle access barriers
- Lack of safe, convenient bicycle parking in key locations
- Negative driver attitude towards cycling and cyclists
- Prevalence of cycling accidents at intersections.
The City of Wollongong Bike Plan 2014-2018 adopts a multifaceted approach that consists of the following infrastructure and non-infrastructure measures to address these issues and play a key role in fulfilling the community’s ambition for sustainable, affordable and accessible transport:

**Bicycle Network Expansion**
Creation of new on-road and off-road bicycle connections such as shared paths and bicycle lanes that provide access to key destinations in the city.

**Existing Facility Improvements**
Enhancement of existing bicycle connections through maintenance, intersection modifications, removal of obstructions such as sign posts and redundant bollards as well as providing slow treatments and bypasses in areas of concentrated pedestrian activity.

**Linemarking**
Centreline and other regulatory linemarking to increase awareness of Wollongong’s extensive existing path network and encourage safer behaviour amongst cyclists and other path users.

**Directional Signage**
Wayfinding signage to increase awareness of the city’s bicycle connections and provide guidance to key centres and local destinations.

**Mountain Biking**
Further investigations for a potential mountain bike park at Cringila Hills.

**Bicycle Parking**
Provision of visible, safe, secure and convenient bicycle parking for short stay and all day parking needs in key locations around the city.

**Planning Controls**
Creation of a green travel plan for use by suitable developments in the City Centre and investigation of mechanisms to require green travel plan use by large developments.

**Bicycle Information**
Updating of Council’s free cycling guide and map as well as enhancement of Council’s online information to include cycleway project profiles, an interactive bicycle network map and cycling tourism opportunities.

**Bicycle Promotion**
Council run events for national Ride-to-Work day and NSW Bike Week as well as development of guided and self-guided heritage tours along the coastline cycleway.

**Bicycle Education**
Education campaigns targeting shared path usage and driver awareness in addition to ongoing cycle skills training for cyclists of various ability levels.
INTRODUCTION

Cycling is a healthy, clean and economical mode of transport that can play a role in addressing the significant challenges of climate change, congestion and Australia’s obesity epidemic. Globally, many major cities are implementing change to increase participation in safe cycling.

One of the six community goals in the 2020 Community Strategic Plan is that “We have sustainable, affordable and accessible transport”. One of the identified strategies to achieve this goal is that “the city is established as Bicycle-friendly”.

Council recognises the many benefits of cycling as a mode of transport and form of recreation. It is Council’s aim to become part of the global movement to increase cycling mode share and help fulfil the community’s aspiration for transport in the City.

Encouraging the widespread adoption of cycling as a key transport choice requires a range of interrelated elements including infrastructure provision and renewal, promotion, education and advocacy. Furthermore, cycling needs to integrate not only with other transport modes but also existing and proposed landuses to realise its full potential and provide greater transport choice to the community.

The City of Wollongong Bike Plan 2014-2018 adopts a multifaceted approach that is planned to integrate with Council’s strategies for other transport modes and presents a range of infrastructure and non-infrastructure programs for the next 5 years.

BIKE PLAN OUTCOMES

The City of Wollongong Bike Plan has a life span of 5 years after which a new plan will be developed for the following 5 year period. Although many of the measures proposed by the Bike Plan will contribute to long term goals, the City of Wollongong Bike Plan 2014-18 will primarily seek to realise the following outcomes:

- Existing Wollongong bicycle facilities are made safer
- Wollongong City Centre is highly accessible by bicycle
- Wollongong is recognised as a great destination for cycling in all its forms
- New bicycle infrastructure provided in the City of Wollongong meets best practice
• Dominance of motor vehicles within the road space on cycling routes is reduced in favour of improving bicycle safety, accessibility and road user behaviour  
• Conflicts on Council’s shared path network are reduced

BIKE PLAN OBJECTIVES

More broadly, the key objectives of the Bike Plan are to:

• Increase participation in all forms of cycling  
• Develop a safe, connected network of bicycle routes  
• Facilitate growth in bicycle tourism  
• Undertake promotion and education campaigns that will improve cycling awareness, safety and proficiency

BIKE PLAN TARGETS

The following targets will assist in tracking the success of the Bike Plan:

1. Bicycle commuter volumes are doubled by 2018  
2. Bicycle crashes per cyclist are reduced 25% by 2018  
3. Wollongong City Centre will have at least two formal east-west and two north-south bicycle connections that link surrounding areas to the core of the CBD

CYCLING BENEFITS

Cycling has a range of benefits for communities and individuals.

HEALTH

Fourteen million Australians are either overweight or obese with more than five million obese. Obesity has become the single biggest threat to public health in Australia, overtaking smoking as the leading cause of premature death and illness. Based on current trends, close to 80% of all Australian adults and a third of all children will be overweight or obese by 2025. Cycling can help to address this epidemic by providing a convenient means of incorporating low impact exercise into a daily routine or recreation.

TRANSPORT EQUITY

Cities and suburbs that provide well connected walking and cycling networks provide more equitable access to those who either do not drive or do not
have ready access to motor vehicles such as children and young people, low income groups and seniors. Shared paths are widely deployed in Wollongong’s cycling network and can improve accessibility for not only cyclists but mobility scooter and wheelchair users.

**Road Congestion**
The Australian Government estimated that for the Australian capital cities the cost of road congestion including time costs, vehicle operating costs and air pollution costs totalled approximately $9.4 billion in 2005. Furthermore, this total is estimated to rise to some $20.4 billion by 2020\(^2\). The space efficiency offered by cycling compared to motor vehicles means that more people cycling will reduce road congestion. Less car use also means less car parking is required in busy areas (multi-storey car parks cost around $30,000 per space to build).

**Recreation**
Cycling can be enjoyed in many contexts around the city providing a pleasurable means of experiencing Wollongong’s natural beauty, heritage and culture.

**Time Saving**
In many cases the bicycle offers the fastest way to travel as it provides door-to-door transport that can bypass congestion and can often be parked at the user’s destination. The human-powered nature of cycling can also reduce the time needed to be allocated to physical exercise. Upon consideration of working hours required to fund the necessities of each mode of transport, such as fares, fuel, repairs and insurances, cycling can save time for many.

**Environmental**
The average Australian car emits about 4 tonnes of carbon dioxide into the earth’s atmosphere every year. Widespread take up of cycling will support the urgent action needed to tackle climate change.

**Financial**
Average running costs for small to medium sized cars are approximately $200 per week and significantly higher costs can be expected for larger vehicles. Cycling to work can substantially reduce car travel, enabling some families to reduce the number of cars in their household.

**Tourism**
Apart from individual businesses benefiting from cycling tourism, communities in regional and rural destinations can benefit from this form of tourism. The slow and relaxed pace of bicycle tourism (especially touring) and the location of infrastructure and cycling routes in England have illustrated that cycle route users spend more and stay in serviced accommodation in greater numbers than the average visitors. The small scale nature of cycle tourism facilitates greater local ownership of facilities and resources.
compared to mass tourism, reducing the amount of economic outflow from local areas.

**Overall Economic Benefits**

A study commissioned by the Queensland Government in 2011 found that for a typical off-road path in an inner urban area generates an economic benefit totalling $1.43 per kilometre cycled, per person (see figure 1).

![Figure 1 - Overall Economic Benefits of Bicycle Paths Per km Travelled](image)
STATE AND NATIONAL CONTEXT

A number of cycling strategies, guidelines and standards exist at the national and state level. These documents present the Commonwealth and NSW Governments’ commitment to increasing participation in safe cycling by providing guidance to encourage a consistent approach to the planning, design and implementation of cycling programs. The City of Wollongong Bike Plan has been developed to be consistent with these key documents.

NATIONAL CYCLING STRATEGY 2011-2016

The Strategy has been developed as a coordinating framework identifying responsibilities of all levels of government, community and industry stakeholders to encourage more people to get on their bicycles and start riding for a better life.

The Strategy’s goal is underpinned by six key priorities and objectives.

- Cycling promotion
- Infrastructure and facilities
- Integrated planning
- Safety
- Monitoring and evaluation
- Guidance and best practice

ILLAWARRA REGIONAL TRANSPORT PLAN 2014

The Illawarra Regional Transport Plan is part of a suite regional and modal plans that take direction from the NSW Long Term Transport Master Plan. A number of bicycle related programs are identified in the plan that may assist in the delivery of bicycle infrastructure, bicycle information and promotional events in Wollongong.
**Cycling Aspects of Austroads Guides**

This document provides guidance on planning, design and traffic management of cycling facilities and is used nationwide. The information is sourced from three separate Austroads guides: the Guide to Road Design, the Guide to Traffic Management and the Guide to Road Safety.

**RTA NSW Bicycle Guidelines**

These comprehensive guidelines assist in the planning, construction and maintenance of high quality bicycle transport facilities in NSW including on-road and off-road facilities, intersection treatments, parking, linemarking and signage. This document is to be read in conjunction with Austroads Guides, which prevails where there are differences between these two sets of guidelines.

**AS1742.9-2000 Bicycle Facilities**

This Australian Standard document contains requirements for signage, pavement markings and other devices to be used on on-road and off-road bicycle facilities.

For further information on these documents, refer to the “Tools and Resources” section at the NSW Government’s Bicycle Information website [http://www.bicycleinfo.nsw.gov.au/](http://www.bicycleinfo.nsw.gov.au/)

**NSW Road Rules**

Based on the Australian Road Rules, the NSW road rules stipulates rules for riding of bicycles on roads, footpaths and shared paths. When on the road, bicycles are considered vehicles and must obey road rules such as stopping at red lights or stop signs, giving way as directed by signage and giving hand signals when turning. Bicycleinfo.nsw provides the following summary of road rules that specifically apply to cyclists:

---

City of Wollongong Bike Plan 2014-2018

13
It is compulsory to wear a correctly fitted approved helmet when riding a bike in NSW. This applies to all bicycle riders, regardless of age, including children on bicycles with training wheels and any child being carried as a passenger on a bike or in a trailer.

Some road rules apply specifically to bicycle riders. For example, bicycle riders are allowed to:
- Ride two abreast, no more than 1.5 m apart
- Overtake on the left hand side of stopped or slow moving vehicles
- Travel in Bus Lanes and Transit Lanes
- Ride on the footpath if less than 12 years old
- Ride on the footpath if you are an adult riding with and supervising, an under 12 year old
- Ride on the footpath if you are carrying a person under 10 years old as a passenger on your bicycle or in or on a bicycle trailer you are towing - not a pedicab
- Turn right from the left hand lane of a multi-lane roundabout with the proviso that you give way to traffic exiting the roundabout before you
- Travel on road shoulders.

Bicycle riders cannot:
- Ride across unsignalised pedestrian crossings
- Ride across signalised crossings unless there are special bicycle lights
- Travel in Bus Only Lanes.

Bicycle lanes are indicated by a special sign. [On roads] where bicycle lanes are provided, riders must use them whenever practicable.

Your bicycle must have:
- At least one working brake
- A bell or horn to help sound a warning to other cyclists or pedestrians.

If riding at night, your bicycle must also have:
- A steady or flashing white light that is clearly visible for at least 200 metres
- A flashing or steady red light that is clearly visible for at least 200 metres from the rear of the bike
- A red rear reflector that is clearly visible for 50 metres when light is projected onto it by a vehicle's headlight on low beam

Failing to obey road or bicycle rules may result in a fine.
LOCAL CONTEXT

The Bike Plan contributes to a number of objectives within a range of Council’s strategic planning and implementation documents.

WOLLONGONG COMMUNITY STRATEGIC PLAN

Following extensive community engagement in 2010 and 2011, Council developed the Wollongong 2022 Community Strategic Plan that outlines the community’s long term vision, values, aspirations and priorities for the city.

The City of Wollongong Bike Plan will assist in the achievement of the following goals and objectives within the Wollongong 2022 Community Strategic Plan:

1 We value and protect our environment
   1.6 The sustainability of our urban environment is improved.

2 We have an innovative and sustainable economy
   2.3 The profile of Wollongong as the regional city of the Illawarra is expanded and improved.

5 We are a healthy community in a liveable city
   5.1 There is an increase in the physical fitness, mental health and emotional wellbeing of all our residents.
   5.5 Participation in recreational and lifestyle activities is increased.

6 We have sustainable, affordable and accessible transport
   6.1 Walking, cycling and public transport is an accessible and well resourced means of transport and the use of private cars is reduced.
   6.2 Wollongong is supported by an integrated transport system.

Particular bicycle strategies that the community strategic plan describes for objective 6.1 above are:

6.1.1 The city is established as bike-friendly; and
6.1.3 Interconnected and accessible cycleways and footpaths are planned and delivered

The plan will also assist in the reviews of Council’s 4 year capital program and will be used in the development of Council's annual delivery programs for the next 5 years.

**Wollongong Development Control Plan**

The Wollongong Development Control Plan (DCP) applies to all development proposals lodged to Council and specifies controls relating to key transport modes including cycling.

New roads provided as part of a development are given a road type based on anticipated traffic volume. The DCP specifies the features to be provided within each of these road types. The current DCP requires all ‘collector’ and ‘major collector’ roads provide shared paths. Any other road must also include a bicycle path if it is on a designated cycle route (as identified in Council’s current Bike Plan). For the West Dapto Urban Release Area this requirement is also extended to ‘minor local roads’ and ‘major local roads’ meaning that only a very small number of streets within West Dapto will be provided without shared paths.

The DCP also specifies bicycle parking provision rates based on land use type. Some key land use types and their respective bicycle parking rates are shown in Table 1. Chapter E3 of Wollongong DCP 2009 contains the full land use listing of bicycle parking requirements.
## Table 1 - Wollongong DCP 2009 Extract of Bicycle Parking Requirements

(Refer to Chapter E3 of Wollongong DCP 2009 for full listing)

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Bicycle Parking Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boarding House</td>
<td>1 bicycle space per bed</td>
</tr>
<tr>
<td>Residential flat building / Multi dwelling housing / Shop Top housing / Attached Dwelling</td>
<td>1 bicycle space per 3 dwellings (residents) and 1 bicycle space per 12 dwellings (visitors)</td>
</tr>
<tr>
<td>Hospitals</td>
<td>1 bicycle space per 5 car spaces</td>
</tr>
<tr>
<td>Office premises</td>
<td>1 bicycle space per 200m² GFA for staff plus 1 bicycle space per 750 m² GFA for visitors</td>
</tr>
<tr>
<td>Business Premises / Retail Premises</td>
<td>1 bicycle space per 200m² GFA for staff plus 1 bicycle space per 750 m² GFA for visitors – business premises</td>
</tr>
<tr>
<td></td>
<td>1 bicycle space per 200m² GFA for staff plus 1 bicycle space per 1000 m² GFA for visitors – retail premises</td>
</tr>
<tr>
<td>Restaurants and take-away food premises</td>
<td>1 bicycle space per 200m² GFA</td>
</tr>
<tr>
<td>Industry</td>
<td>1 bicycle space per 200m² GFA</td>
</tr>
<tr>
<td>Educational Establishment</td>
<td>1 bicycle space per 10 students above grade 4</td>
</tr>
</tbody>
</table>

The Wollongong DCP also calls for the provision of shower and change facilities where 5 or more bicycle parking spaces are required by other parts of the DCP.
WOLLONGONG DEMOGRAPHICS

In order the plan a convenient bicycle network that has the potential to serve large numbers of both recreational and commuter riders, it is important to understand where the highest concentrations of jobs and residents exist in the city.

Population
The Census population of Wollongong City in 2011 was 192,418, living in 80,434 dwellings with an average household size of 2.51.

<table>
<thead>
<tr>
<th></th>
<th>Wollongong</th>
<th>Regional NSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (excluding O/S visitors)</td>
<td>192,418</td>
<td>100.0</td>
</tr>
<tr>
<td>Males</td>
<td>95,247</td>
<td>49.5</td>
</tr>
<tr>
<td>Females</td>
<td>97,171</td>
<td>50.5</td>
</tr>
</tbody>
</table>

Table 2 - 2011 Census Wollongong Population

Utilisation of bicycle facilities can be substantially increased if located within or close to areas of high population density. The most densely populated areas include residential areas of Wollongong City Centre and North Wollongong. Figure 2 shows the census areas within the city with the highest population density (persons per square kilometre).
Figure 2 – Highest population density in Wollongong LGA (persons per square kilometre)
Areas of high employment also provide opportunities to provide cycling connections that can be utilised by many. The employment data shown in Table 3 reveals that Wollongong City Centre has the highest proportion of employment in the Local Government Area (LGA) and is home around a quarter of all the city’s jobs. Other areas of high employment include the University of Wollongong Precinct, Port Kembla industrial area, Unanderra Industrial Park and the Dapto Town Centre.

As with areas of high population density, locating cycleways within and around areas of high employment can result in high utilisation of those paths (particularly by commuters).

<table>
<thead>
<tr>
<th>Destination Zones</th>
<th>Jobs</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wollongong City Centre (core)</td>
<td>11,628</td>
<td>16.2%</td>
</tr>
<tr>
<td>Unanderra - Mount Kembla</td>
<td>4,412</td>
<td>6.1%</td>
</tr>
<tr>
<td>Port Kembla Industrial (south)</td>
<td>4,169</td>
<td>5.8%</td>
</tr>
<tr>
<td>Wollongong City Centre (south)</td>
<td>3,465</td>
<td>4.8%</td>
</tr>
<tr>
<td>Figtree - Keiraville</td>
<td>3,316</td>
<td>4.6%</td>
</tr>
<tr>
<td>Wollongong City Centre (west)</td>
<td>3,002</td>
<td>4.2%</td>
</tr>
<tr>
<td>Port Kembla Industrial (north)</td>
<td>2,360</td>
<td>3.3%</td>
</tr>
<tr>
<td>Dapto - Avondale</td>
<td>2,281</td>
<td>3.2%</td>
</tr>
<tr>
<td>Wollongong City Centre (north)</td>
<td>1,691</td>
<td>2.3%</td>
</tr>
<tr>
<td>Berkeley - Warrawong - Windang</td>
<td>1,531</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

*Table 3 - Top 10 Employment Destination Zones*
**Journey to Work Data**

The 2011 Australian Census captured data relating to mode of travel to work. This data provides the transport mode split to work in Wollongong and when compared to previous census results, can indicate trends relating to travel. Table 4 shows the census mode of travel to results for the City of Wollongong.

<table>
<thead>
<tr>
<th>Main mode of travel</th>
<th>2011</th>
<th></th>
<th>2006</th>
<th></th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Train</td>
<td>3,957</td>
<td>4.8</td>
<td>3,887</td>
<td>5.1</td>
<td>-0.3</td>
</tr>
<tr>
<td>Bus</td>
<td>1,575</td>
<td>1.9</td>
<td>947</td>
<td>1.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Tram or Ferry</td>
<td>23</td>
<td>0.0</td>
<td>15</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Taxi</td>
<td>126</td>
<td>0.2</td>
<td>159</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>Car - as driver</td>
<td>53,259</td>
<td>64.9</td>
<td>48,072</td>
<td>62.8</td>
<td>2.1</td>
</tr>
<tr>
<td>Car - as passenger</td>
<td>4,576</td>
<td>5.6</td>
<td>4,904</td>
<td>6.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Truck</td>
<td>744</td>
<td>0.9</td>
<td>919</td>
<td>1.2</td>
<td>2.0</td>
</tr>
<tr>
<td>Motorbike</td>
<td>486</td>
<td>0.6</td>
<td>502</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Bicycle</td>
<td>642</td>
<td>0.8</td>
<td>661</td>
<td>0.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Walked only</td>
<td>2,566</td>
<td>3.1</td>
<td>2,476</td>
<td>3.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Other</td>
<td>779</td>
<td>0.9</td>
<td>639</td>
<td>0.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Worked at home</td>
<td>2,359</td>
<td>2.9</td>
<td>2,153</td>
<td>2.8</td>
<td>0.1</td>
</tr>
<tr>
<td>Did not go to work</td>
<td>9,708</td>
<td>11.8</td>
<td>9,720</td>
<td>12.7</td>
<td>-0.9</td>
</tr>
<tr>
<td>Not stated</td>
<td>1,265</td>
<td>1.5</td>
<td>1,455</td>
<td>1.9</td>
<td>-0.4</td>
</tr>
<tr>
<td>Total employed</td>
<td>82,065</td>
<td>100.0</td>
<td>76,509</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>persons aged 15+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4 - Journey to work data 2006 and 2011**

Unfortunately, participation in active travel as part of a work trip on census day has essentially remained static between 2011 and 2006, whilst the percentage of work trips by car have risen by 2.1%

It is worth noting; however, that although census results do provide an indication of travel mode splits and trends, there are inherent weaknesses in the data such as:

- The data only refers to people who worked on Census day.
- Census day weather conditions will vary year to year.
- Cycling data is not captured for those that used more than one mode of travel.
• Census day is in winter during which cyclist numbers are lower than the yearly average.
• The data is only referring to commuting to work trips on a weekday. Much of the cycling that currently occurs in the city is for leisure.

EXISTING CYCLING NETWORK

There are approximately 180km of formal bicycle connections in the city consisting of a number of off-road and on-road cycling facilities including:

Shared Paths
These are usually provided as off-road paths and allow use by both pedestrians and cyclists however cyclists are required to give way to pedestrians at all times. Shared paths also exist on a number of roads in the city and are separated from motor vehicle lanes by kerbing. The majority of the bicycle network in Wollongong, some 92km is made up of shared paths. The coastline cycleway (now identified as the ‘Grand Pacific Walk’) is almost entirely composed of shared paths.

Corrimal Street, Wollongong
**Separated bicycle paths**
These off-road paths provide space for sole use by bicycles and, where they exist, are often provided directly beside pedestrian footpaths. There are close to 1.5km of these paths in the city mainly along George Hanley Drive/Squires Way, North Wollongong and in Lang Park.

**George Hanley Drive, North Wollongong**

**Shoulder lanes (without parking):**
These on-road paths sit to the left of an edge line where parking is prohibited. These lanes also provide a breakdown lane function for motor vehicles using adjacent lanes. These facilities total about 78km in Wollongong and mainly exist on the Princes Motorway and Memorial Drive.

**Memorial Drive**
**Shoulder lanes (with parking)**
These on-road paths lie between an edge line and the road edge where parking is allowed. There are approximately 6km of shoulder lanes with parking in the city, though a number of these do not provide sufficient room for a cyclist between parked cars and the edge line.

![Porter Street, North Wollongong](image)

**Bicycle lanes**
These on-road paths are often situated between motor vehicle travel lanes and parking lanes but can be provided within other configurations. There are around 2km of bicycle lanes in Wollongong.

![Gladstone Avenue, Coniston](image)
Mixed Traffic Facilities
Cyclists can safely share travel lanes with motor vehicles in streets with low traffic speed and volume. Mixed Traffic facilities are designated routes within such environments and make up around 3km of the city’s bicycle network.

![Kurrajong Street, Windang](image)

**Problems on the Network**

**Obstructions**
Obstructions on a cycling facility can create at best an inconvenience and at worst a major safety risk. Shared paths tend to be the most affected due to the range of uses for these spaces. Obstructions on shared paths can include:

- Driveway splays
- Bus shelters
- Benches
- Power/light poles
- Traffic signal poles
- Crash barriers
- Traffic and parking signs
- Debris
- Overgrown vegetation
- Parked cars
- Poorly located holding rails
The consideration of obstructions on roads extends beyond formal cycling facilities, such as bicycle lanes and shoulder lanes, as cyclists can legally ride amongst motor vehicles or to the left of an edge line where a dedicated bicycle lane does not exist. Obstructions for on-road cyclists can include:

- Storm water grates
- Debris
- Traffic islands
- Parked cars

Bicycle shoulder lanes where parking is allowed in the city do not provide a buffer area between parked cars and the bicycle operating space. As a result, opening doors of parked cars obstruct the bicycle path of travel and create a significant safety risk to car and bicycle users.
Crawford Street, North Wollongong

Although this type of facility has, historically, been implemented in Wollongong and other cities, there is now widespread recognition of the potentially unsafe nature of bicycle shoulder lanes. The provision of a 1m buffer between parked cars and the bicycle operating space is considered to be a much safer alternative.

Bollards and other types of barriers installed on or directly adjacent to shared paths are another type of obstruction. Although they play an important role in some locations, by protecting paths from damage by prohibited vehicles, a number of these barriers can prevent access by legitimate path users (mobility scooter, pram, tandem bicycle, tricycle users and others) and create a safety hazard where they do not comply with current standards.
**Width of cycle connections**
As cycling has become more popular, demands on cycling connections have increased substantially. The coastline cycleway, which is almost totally comprised of shared paths, has a number of locations where the existing width has a detrimental impact of the level of service the facility can provide due to demand outstripping capacity.

![Popular Squires Way path in need of additional width](image)

**Deterioration**
Much of the cycleway network has been in place for many years. Subsequent wear and other factors such as tree root encroachment, damage by motor vehicles, subsidence and outdated design and construction have resulted in the poor condition of a number of cycle connections in the city.
Corrimal Street shared path deterioration caused by subsidence
(prior to replacement in 2013)

Linemarking, particularly shared path symbols, are failing in a relatively short period of time in a number of locations. A review of products in use and application practices is required to ensure better durability.
CRASH DATA

Crash data is collected by the NSW Police Force wherever a tow-away or injury crash occurs on public roads in the state. As a result, the majority of crashes that occur on shared paths in the city go unrecorded. Notwithstanding the lack of figures relating to the shared path crashes, the crash data that is collected by the NSW Police Force provides insight into incidents that create the most harm to cyclists, that is, collisions with motor vehicles at speed.

The Wollongong LGA crash data for the 5 years period ending December 2012 shows a total of 232 bicycle crashes including 4 cyclist fatalities. The following figures illustrate some key characteristics of crashes over this period.

![Figure 3 - Bicycle Crashes](image)
Figure 4 - Bicycle Crash Type

Figure 5 - Posted Speed Limit at Crash Location
Concerns about a perceived high volume of vehicle door accidents have been expressed by members of the community. The crash data shows only 6 of all 232 reported crashes for the 5 year period were vehicle door accidents. However, the occurrence of such accidents will likely rise if cycling use grows in areas with regular parking turnover, such as town centres, unless safe riding areas away from car door zones are provided.

**BICYCLE USAGE SURVEYS**

In May and September 2013, surveys of bicycle usage at 30 key locations around the city were undertaken to understand utilisation of the city’s bicycle network. The surveys were carried out during the morning and afternoon peak periods of a typical weekday to gauge commuter cycling use and between 10am and 2pm on a Saturday to determine recreational cycling patterns.

Most of the survey locations were on the NSW coast line cycleway as it currently provides the 'backbone' to the cycling network in the LGA and as a result sees very high utilisation in a number of key locations. Other locations surveyed were the University of Wollongong surrounds, Memorial Drive and several locations on the Princes Highway south of Wollongong.
The survey results have helped to identify/inform the following actions that are included the Bike Plan and future cycleway planning, design, construction and maintenance by Council:

- Increased maintenance of high use paths
- Widening of high use paths upon reconstruction
- The provision of alternate routes for cyclists will be necessary at a number of locations to minimise conflicts with other users
- Cooperation with State Government to improve the condition of connections on state road network which should have greater utilisation (e.g. Memorial Drive)

The survey results also provide valuable baseline data that when combined with surveys of the same locations in the future will help Council track the progress towards the objectives and targets of this Plan.

Figure 7 – Bicycle and Pedestrian Count Survey Extract (see Appendix 1)
COMMUNITY VIEWS

WOLLONGONG CITY COUNCIL COMMUNITY SURVEY

Council engages an independent organisation to carry out a community survey on a biannual basis in order to:

- identify what services and facilities are important to the community
- determine how Council is performing against a range of measures.

The latest comprehensive telephone-based survey of the city’s residents was completed in February 2012 with a total of 754 interviews conducted. The survey achieved a completion rate of 57%, which is considered a good response for a telephone survey in a large regional area.

The group of Council services and facilities which were considered to be of high importance but with low performance amongst respondents that used them in the preceding 12 month period included:

- Services and/or facilities for children
- Services and/or facilities for young people
- Services and/or facilities for people with a disability
- Parks/open space/sports field for active sport or recreation activity
- Parks/open space/sports field for passive recreation purpose
- Children's playgrounds
- Cycleways or shared pathways
- Public swimming pools (free entry)

Although cycleways and shared paths are explicitly noted in the above list it should be recognised that well planned bicycle connections can provide facilities for children and young people and well as provide access to parks/open space/ sports fields, children’s playgrounds and public swimming pools.

An assessment of Council facilities and services performance gaps in the survey report places cycleways or shared pathways as priority 1 along with
open space/parks/sports fields for active and passive recreational use, children’s playgrounds and services and/or facilities for children.

Responses to a question in the survey asking why respondents didn’t access a cycleway/shared pathway during the subject year indicate some areas for attention. Reasons given as “no need” and “too busy/no time” indicate the need for better education or information around the benefits of cycling whilst reasons such as “unable to access facility” and “facility doesn’t meet my/family needs” point to the need for more and safer bicycle connections.

![Survey reasons for not accessing a cycleway/shared path](image)

**Figure 8 - Survey reasons for not accessing a cycleway/shared path**

**DRAFT BIKE PLAN COMMUNITY SURVEY**

As part of the engagement strategy for the development of the City of Wollongong Bike Plan 2014-2018, Council sought comments and feedback by way of a community survey that ran from May 4 – July 3, 2013. Key stakeholders engaged via the survey included residents across the entire LGA, Council’s Active Transport Reference Group, Neighbourhood Forums, children and young people throughout the LGA and interested members of Wollongong’s cycling community.

Written materials on the survey and maps of the city’s bicycle network were distributed to Council libraries, leisure centres, pools, tourist parks, community and youth centres and Neighbourhood Forums. Postcards, which provided details about how to access the online survey, were distributed to a range of education centres, commercial enterprises, community and environmental groups and cycling-related sites throughout the LGA.

Online media usage included the development of a Draft Bike Plan webpage on Council’s website, containing access to the online survey as well as promotion via Council’s Facebook page. The use of online tools for the exhibition proved to be extremely successful, as 1,030 people completed the survey, with 993 of these surveys completed via the online survey tool.
The survey gathered data on resident and key stakeholders’ motivations for riding a bicycle as well as concerns about cycling infrastructure (cycling routes, traffic issues etc.) and non-infrastructure issues (education campaigns, safety awareness).

Below is a summary of the survey results:

- A total of 1,030 people completed the survey; with 41.4% aged 35-49 years and 67% were men.
- 97% of participants either own or have access to a bicycle, with 66% of participants riding their bicycle more than twice a week.
- Commuters, mountain cyclists, casual/leisure cyclists and on-road cyclists were approximately equally represented in the respondents, with 35% riding on bicycle paths and equal 35% riding on the road.
- Some 802 respondents identified they enjoy cycling as a form of exercise (see figure 10).
- Key barriers to cycling identified in the survey included the lack of off-road bicycle paths (431 responses), lack of on-road bicycle lanes (379 responses) and safety concerns (340 responses) (see figure 11).
- Participants identified that there is a lack of on-road bicycle lanes and off-road bicycle paths and that safety considerations restrict their cycling throughout the LGA.
- Potential areas for improvement were identified as: improving road conditions (78.6%); better awareness and attitude from drivers (80.1%); and having more, better connected, improved bicycle paths (87.6%).
- The results to the open-ended questions pointed to the need to create mountain bike and/or off-road facilities, develop bicycle paths and on-road bicycle lanes and consider design issues with existing bicycle paths.

Figures 9 and 10 below identify the respondent’s motivations for cycling and the barriers to riding a bicycle.
Figure 9 – Motivations for cycling
Key issues raised in location specific responses included:

- **Lack of space for cyclists on road along Lawrence Hargave Drive north of Austinmer**
- **Lack of cycling connection north of Austinmer**
- **Lack of formal cycling connections in Wollongong City Centre**
- **Warrawong 'missing link' between intersection of Five Islands Road/Flinders Street and King Street/Shellharbour Road**
- **Lack of safe cycling connection between Wollongong University main campus and innovation campus**
• New / improved connections required in City Centre, North Wollongong and University of Wollongong surrounds
• Lake Illawarra ‘missing link’ Hooka Creek to Kanahooka Point
• Porter Street and Crawford Avenue have bicycle symbols located under parked cars
• Confusion for path users where shared path changes to separated path near Bather’s Pavilion, North Wollongong
• Significant potential for conflicts on coastline cycleway to high demand from a range of users and existing path width at Blue Mile, Squires Way, Towradgi, Bulli Park, Sandon Point and Thirroul
• Need for bicycle parking in the City Centre
• Speed and volume of traffic makes cycling unsafe on key roads around the city including Princes Highway, Crown Street (Wollongong), Denison Street (Wollongong), Pioneer Road (Corrimal) and Lawrence Hargrave Drive (Austinmer to Stanwell Park)
• Conflicts between bicycle user types (e.g. Higher speed sporting cyclists and slower recreational riders on shared paths)

Further to the above, a modified version of the community survey was applied in a number of school workshops, held in June 2013. The workshops were conducted at 3 primary schools and 1 high school across the LGA, with a total of 116 participants. The results for the school surveys are as follows:

• 93% of students owned or had access to a bicycle and identified that they like riding a bicycle because it is fun (18.1%), they ride with friends or family (18.1%) and because it is a type of exercise (16.8%).
• Students were most interested in better connected bicycle paths, more bicycle racks, lockers and facilities along their route and having someone to cycle with.
• In the open-ended questions, 72 students provided a total of 84 comments, which were overwhelmingly positive. The major themes identified that riding is fun and enjoyable (39 respondents), riding a bicycle is good for your health and well-being (17 respondents) and improvements to paths are needed (13 respondents).
• The school survey results indicate both a significant existing use of bicycle and cycling throughout the LGA and a positive approach to cycling as leisure and fitness activity.
• Students’ concerns reflect those of the broader community, in that they have identified improvements in bicycle path networks are of interest to them.
There were also nine open submissions which focused on:

- The need to create bicycle friendly facilities in the city and improve shared paths by more signage and recognised the positive contributions that cycling makes to the community.
- Improving cycleway connections between the University and the CBD, including potential routes and concepts such as 'slow streets'.

The open submissions support the broader themes identified throughout the engagement process, which is that cycling rates in the area would improve with improved safety on the roads and greater connectivity via the development of an expanded cycling network of bicycle paths and on-road bicycle lanes.

**CYCLING ISSUES**

It is clear from the preceding chapters of this document that a number of key issues are to be addressed in order to realise the Bike Plan objectives and targets.

These issues include:

- Conflicts between different types of cyclists and other users on shared paths
- Lack of bicycle connections within and around key employment areas
- Lack of wayfinding signage and linemarking
- Lack of shared path linemarking in many locations
- Missing bicycle links in a number of key locations
- Lack of car door buffer area where on-road cycleways are provided between parked cars and edgelines/travel lanes
- Bicycle shoulder lanes provided with bicycle symbols under parked cars
- Obstructions on off-road facilities such as overgrown vegetation, driveway crossings, power/light poles, bus shelters, sign posts, fences, bollards and vehicle access barriers
- Lack of safe, convenient bicycle parking in key locations
- Allocation of road space for car parking
- Negative driver attitude towards cycling and cyclists
- Prevalence of cycling accidents at intersections.
The Bike Plan includes a range of infrastructure and non-infrastructure strategies that will help to address the wide range of cycling issues presented in the preceding chapters. The strategies will also assist in delivering the outcomes and objectives earlier in this document.

The general approach to infrastructure provision is to expand the bicycle network to better link key trip attractors and generators while also improving existing bicycle links to enhance user safety, access and amenity.

The Bike Plan includes the following broad infrastructure strategies:

- Bicycle Network Expansion
- Existing Facility Improvements
- Linemarking
- Directional Signage
- Mountain Bike Park Investigations
- Bicycle Parking

In addition, the following non-infrastructure strategies will break down perceived cycling barriers, increase awareness of cycling in the community, encourage safe behaviour among cyclists, shared path users and drivers as well as generally encourage a greater take up of cycling:

- Planning Controls
- Bicycle Information
- Bicycle Promotion
- Bicycle Education

Further to the above, a number of internal and external funding opportunities are identified that will enable the delivery of the range of strategies.
BICYCLE NETWORK EXPANSION

PRINCIPLES OF NETWORK PROVISION
The planning and design of a functional bicycle network is underpinned by the following five key principles:

Coherence
- Complete connections between key generators and attractors
- Consistent wayfinding signage across network

Directness
- Diversions kept to a minimum distance
- Satisfy existing desire lines where possible

Safety
- Avoid providing paths that are steep
- Remove obstructions within paths
- Provide adequate clearances to vehicles, infrastructure and landscaping
- Provide adequate path widths
- Aim to ensure passive surveillance
- Provide adequate sight distances

Attractiveness
- Pleasurable surroundings
- High quality paths

Comfort
- Reasonable grades
- Smooth surfaces
- Design intersections that accommodate cyclists

KEY ATTRACTORS AND GENERATORS
Locating cycling paths so that they link key trip generators and attractors is important to ensure that the bicycle network provides connectivity to desirable locations. The list below of trip generator and attractor categories were chosen for use in developing the proposed network shown in appendix 3 (full list of trip generators and attractors provided in appendix 2).

- Wollongong City Centre
- Major Town Centres
- Town Centres
- Beaches
- Parks and Sports Fields
- Tertiary Education Campuses
- Primary and Secondary Schools
- Railway Stations
- Swimming Pools
- Key Tourism Destinations
**Bicycle Network**
The future bicycle network (see appendix 3) has been developed to link the trip generators and attractors whilst addressing the broad principles of network provision mentioned above. Specific links to primary schools will require investigation through the Safe Routes to School program.

It should be noted that outside of the 'key priority areas' (identified in a subsequent section), this Plan is only identifying routes at a strategic level and implementation of bicycle connections on the final routes will require detailed site investigations with key stakeholders which may identify variations to the routes identified in this plan. Furthermore, the lifespan of this plan is 5 years at which point the next Bike Plan will further refine the planned network.

**Facility Types**
Cycling connections on the identified network are provided in a number of forms including:

- Shared paths
- Bicycle Paths
- Shoulder Lanes
- Bicycle Lanes
- Bus Lanes
- Mixed Traffic Lanes

As different facility types provide different levels of protection to cyclists, the recommended type varies depending on the volume and speed of adjacent motor vehicles. Figure 11 from the NSW Bicycle Guidelines indicates which path types are suited to particular speed/volume conditions.
Shared Paths and Bicycle Paths
As noted previously, the majority of existing bicycle paths within the city are shared paths. Shared paths can be used by pedestrians and cyclists; however cyclists are required to give way to pedestrians. Shared paths can range in width between 2.0m for low use local access routes to greater than 4.0m for high use recreation. At higher volumes, bicycle only paths are generally suggested. Guidance from Vicroads recommends the provision of separate bicycle and pedestrian paths where volumes suggest the need for a shared path greater than 3.0m (see figures 12 and 13).
Shared paths will continue to be constructed in the city to address missing links that will join existing shared paths, renewals of existing paths and new projects such as the Grand Pacific Walk (refer to ‘key priorities’ section). Bicycle only paths will see increasing use in locations where it is desirable to separate bicycle and pedestrian traffic due to high volumes.
On road facility types
The provision of on-road bicycle facilities will provide a cost effective means to expand the bicycle network, particularly for commuter routes. A range of on-road facility types will be provided depending on traffic speed and volumes, available road space and the level of protection required.

As shown in figure 11, bicycle lanes are suitable for a large proportion of roads with vehicle speeds between 40 and 60 km/hr. Key features of bicycle lanes that differ from the shoulder lanes provided in several local roads in Wollongong is that a car door buffer zone is provided between parked cars and the facility and that cyclists are required to use bicycle lanes when they are available (see figure 14).

In streets where bicycle lanes are inappropriate due to high traffic volumes, bicycle only paths can be provided on the road surface where some physical separation to parked cars or travel lanes is given. The bicycle path can be provided in one or two way configurations, however due consideration needs to be given to waste collection, driveway access, maintenance and intersection treatments (see figure 15).

Mixed Traffic Lanes allow bicycles and vehicles to share the same lane in roads with low volumes and speeds. The facilities will be provided in suitable local streets; however, their use among less confident cyclists will be limited as sharing space with motor vehicles can be intimidating. In this regard, bicycle education proposals detailed in subsequent sections of this Plan will help to improve safe cycling proficiency and driver behaviour.

The use of shoulder lanes with parking for new bicycle facilities is not proposed as part of this Bike Plan. The lack of a suitable buffer between parked cars and cyclists makes such facilities less safe than the mixed traffic lanes and bicycle lanes identified above.
It should be noted that bus lanes allow cyclist use and any future provision, particularly in major centres, will provide significant access improvements for cyclists.

**Road Space Allocation**

The provision of off-road bicycle facilities is relatively costly. The bicycle network shown in appendix 3 of this document shows some 125km of new cycleways within existing road reserves. With the total cost of providing 1km of 2.5m wide typical shared path at around $400,000, the cost of delivering the proposed network as off-road paths would be in the order of at least $50 million. Based on current spending it would take decades to implement such a network. In order to realise a timely deployment of an extensive and well-connected cycling network it will be necessary to implement alternative on-road bicycle facilities where it is safe to do so unless there is a very large increase in spending on the provision of off-road bicycle paths.

As noted previously, bicycle shoulder lanes are unsafe for cyclists as they do not provide a buffer to protect cyclists from open car doors. The provision of safe on-road bicycle facilities requires adequate clearance from parked cars. Some 15 metres of road width is required to provide car parking on both sides, bicycle lanes (including car door buffer) and two motor vehicle travel lanes. Unfortunately there are very few two lane roads in the city that are 15m or more in width. The provision of safe on-road formal cycling connections in Wollongong will require the reallocation of road space through the removal of either parking lanes or motor vehicle travel lanes.

**Creek Connections**

The coastline cycleway is a great asset for the City of Wollongong that provides excellent north-south connectivity along the eastern edge of the LGA. The provision of east-west connections between the city’s suburbs and this cycleway can be difficult due to the potential conflicts at the rail line, major and minor road intersections, property access points as well as the need for cyclists to share existing road reserves with a range of road users.

The development of paths beside suitable creeks would provide the following benefits:

- East-west connections to the coastline
- Potential separation at crossing points with the rail line and major roads where sufficiently large bridge structures exist
- Pleasurable surroundings
- Favourable grades

Council will continue investigations for suitable creek sites at which to undertake feasibility studies for high quality east-west bicycle connections.
EXISTING FACILITY IMPROVEMENTS

Although the provision of new bicycle connections is a key strategy that will contribute towards increasing safe bicycle participation, improving the 180km of existing formal cycleways in the city as well as numerous informal routes will provide a range of benefits to existing and potential users.

INTERSECTION IMPROVEMENTS

The crash data detailed in this document shows the prevalence of bicycle crashes at intersections. Furthermore, many of the site specific comments obtained through the Bike Plan community survey describe safety issues at existing cycle facility intersections. This feedback is a valuable information source that will assist in improving safety for cyclists at intersections.

Proposed modifications to intersections to improve cyclist safety include:

- Installation of give way signage and linemarking
- Installation of bicycle crossing lanterns at traffic signals on cycling routes
- Provision of cyclist and pedestrian crossings at key signalised intersections
- Local path widening on sharp path bends at intersections
- Removal or modification of obstructions
- Provision of green pavement markings to reinforce cyclist right of way

MAINTENANCE

Timely maintenance of bicycle infrastructure is critical to user safety and comfort as riders can travel at significant speeds whilst being much more vulnerable than motor vehicle drivers. Council has an established scheduled maintenance program for cycleways which is based on network inspections and includes concrete trip rectification and pruning or removal of encroaching vegetation at both ground level and head height.

The extension of the scheduled maintenance program to include removal of debris from path surfaces and remarking of faded or cracked linemarking is recommended in future service agreements.

The prioritisation of sites and determination of service levels to be achieved through the maintenance program will take into account existing utilisation, hazard risk assessment, proximity to major trip generators and attractors as well as timing of any capital works in the area.

Numerous key cycling connections in the city lie on the classified state road network. These connections include on-road facilities (such as Memorial Drive and Princes Motorway) and shared paths (including Springhill Road and
Due to high traffic volumes and other factors, debris can gather quickly on these paths. Council will seek support from the NSW Government to improve maintenance of cycle ways within the classified road network.

**Modification of Permanent Obstructions**

The maintenance actions described in the previous section will assist in the removal of a number of obstructions from the formal bicycle network. Notwithstanding this there are many obstructions that are more permanent in nature that require attention via specific infrastructure measures.

A number of modifications to a series of permanent obstructions around the city are proposed to improve cyclist safety and comfort on formal and informal cycling routes including:

- Modification of traffic islands to provide safe passing areas for cyclists
- Increase available head height at Smith Street underpass
- Modification of edge line treatments at intersections to include continuity lines
- Removal or relocation of sign posts and street furniture
- Modification of steep kerb ramps to comply with Austroads Guide
- Modification of vehicle barriers on shared paths to achieve compliance with Austroads Guide (see figure 16)

In addition to the above, the design of new traffic facilities will include adequate passing areas for cyclists.

**Road Shoulder Improvements**

Although the majority are not formal designated cycling facilities, road shoulders are used by cyclists in a number of popular riding locations around the Wollongong LGA. Council will seek to improve the following in relation to road shoulders in areas of significant cyclist demand:

- Create road shoulder if none is available at significant uphill sections
- Increase shoulder width where it is currently inadequate
- Provide level surface with adjacent travel lanes to remove unsafe edge and minimise trapping of debris

Furthermore, Council will continue to seek the support of the NSW Government to improve the availability of safe road shoulder areas for cyclists in popular locations on the classified road network (such as Lawrence Hargrave Drive) which is under the care and control of NSW Roads and Maritime Services.
BYPASSES AND SLOW TREATMENTS

The existing coastline cycleway passes through or directly beside many popular destinations in the city such as the Blue mile, Towradgi Playground, Bellambi Playground, Thirroul Playground and Pool. At these locations there is an elevated risk of conflicts between cyclists and other users. The provision of bypasses or slow treatments are proposed in order to minimise these conflicts. The form that the bypass or slow treatment takes will vary site-by-site depending on the opportunities and constraints each location presents.
LINEMARKING STRATEGY

A large proportion of the shared path network lacks line marking. Linemarking generally improves user and non-user awareness of an existing formal bicycle connection. Those undertaking work on or adjacent to a cycleway may better locate plant, materials or other potential obstructions due to better awareness that the path is a bicycle facility rather than a footpath. Centre line markings in particular can improve user behaviour on two way cycling facilities, such as shared paths, by encouraging users to keep left and be aware that there may be passing cyclists. Solid centreline markings are useful where sight distance is limited to inform users that overtaking on the right side of the path is unsafe within that particular path section.

The following measures are proposed as part of the linemarking strategy:

- Dashed Centreline marking on all shared paths and bidirectional bicycle only paths, except around tight corners or where sight distance is limited (a solid centreline and directional arrows are provided in these instances)
- Give way (holding) linemarking of shared paths at each location where shared path users must give way to crossing traffic (e.g. road crossing or footpath intersection)
- Bicycle and pedestrian symbols adjacent to all intersections and at regular intervals on shared paths
- Removal of bicycle symbols at shoulder lane facilities that are located within the car parking footprint. Consideration of existing road characteristics and utilisation will be required to determine suitable markings. Bicycle symbols to be reinstated in the adjacent vehicle lane with appropriate warning signage where low traffic volumes exist. Where the road has significant traffic volume, the provision of an alternate facility may be necessary.
- "SLOW" and "GIVEWAY TO PEDESTRIANS" pavement markings on shared paths at approaches to and within areas of concentrated pedestrian activity (this treatment may be an interim measure prior to provision of an alternate route or as a permanent feature where an alternate route cannot be realised).
DIRECTIONAL SIGNAGE STRATEGY

Effective directional signage is a key element of a coherent bicycle network. The provision of wayfinding information for users unfamiliar with a route can assist in increasing participation in cycling. It can also make other path and road users aware of the presence of a bicycle facility therefore contributing to a safe environment for all. As noted previously, there is currently very limited directional signage in the city which generally does not provide complete wayfinding between destinations.

Council has worked in conjunction with NSW Roads & Maritime Services, Shellharbour City Council and Kiama Municipal Council to develop guidelines to facilitate the provision of consistent and functional bicycle directional signage in the Illawarra. The general approach to the scheme involves placement of directional signs in advance of and at all intersections in the formal bicycle network. The level of signage and the destinations shown on the signs are dictated by whether the site lies on the Regional or Local cycleway network, each of which contains an agreed set of links that connect destinations or ‘focal points’. The signs list a maximum of two focal points along with distances in kilometres to these destinations (see below). Route name signs will also be placed above advance warning and intersection signs along named routes such as the NSW Coastline Cycleway.
In addition to the intersection and advance warning signs, a number of information signs are proposed that would provide the following information:

- Cycleway type (i.e. shared path, on-road facility or bicycle only off-road path)
- Detailed map covering start to end point of the regional link
- Less detailed map showing the regional link location within the wider regional network as well as major destinations outside the regional link
- Key destinations along or adjacent to the regional link
- Location of major public transport node
- Location of public toilets on or adjacent to the regional link
- Location of publicly accessible bicycle parking
- Hazard reporting information
- Local Council contact information
**BICYCLE NETWORK PRIORITIES**

The bicycle routes shown in Appendix 3 will be implemented over a number of years, beyond the life of this 5 year Bike Plan. The following priority areas are considered to represent the highest network development priorities and should receive attention within the lifespan of the City of Wollongong Bike Plan 2014-2018:

- **Wollongong City Centre**  
  Development of a highly accessible network of paths to serve the focal point of the region and cement its status as a city of innovation

- **Key Missing Links**  
  Completion of links that will help to connect fragmented areas of the city’s bicycle network

- **Grand Pacific Walk**  
  Implementation of initial stages of a pedestrian and cycle connection between Stanwell Park and Windang

**Wollongong City Centre**  
Wollongong City Centre has the potential to generate a dramatic increase in cycling as it:

- Has the highest residential density in the City
- Has the highest employment density in the City (~25% of all the city’s jobs are located in Wollongong City Centre)
- Is close to areas that currently have the highest cycling rates in the City (Coastline Cycleway North Wollongong)
- Is a short ride from numerous major trip generators (Wollongong University, Wollongong Hospital, TAFE campuses, WIN Stadium and Entertainment Centre, Wollongong Harbour)
- Has highest concentration of bicycle retailers in the city
- Offers the greatest variety of services
- Has very little free public parking (strengthening the economic benefit of cycling).

In spite of the potential for high levels of cycling in Wollongong City Centre and the range of benefits that would result, formal cycling connections are almost non-existent. Furthermore, Wollongong is the suburb with the highest number of bicycle crashes in the City (38 injury crashes over last 5 years).

**Simply put, an urgent focus on bicycle network development in Wollongong City Centre is needed.**
Network Layout
The proposed bicycle network layout for Wollongong City Centre is shown below.

Facility Selection
As the focal point for business in the region, pedestrian and vehicle volumes are high in many streets within Wollongong City Centre. As a result, selection of the types of cycling connections will differ from other areas in the city. High pedestrian volumes rule out the provision of shared paths in many of the core streets, necessitating a mix of on-road connection types.

Road Space Reallocation
The reallocation of road space will be necessary to provide safe on-road connections in several of the proposed streets as high traffic flows rule out the use of mixed traffic arrangements and existing road widths will not allow the retention of all parking and travel lanes whilst providing safe bicycle facilities. The two main approaches will involve the removal of parking from one side of roads or conversion to one way traffic flow.
Bicycle Lanes

For all but the highest trafficked streets (see figure 11), bicycle lanes are a suitable facility type that is economical to implement. The figures below illustrate the potential installation of bicycle lanes in a number of city centre streets.

**Figure 18 - Potential bicycle lane facility in Kembla Street at Market Street**
**Shared Paths**

Shared paths are still an appropriate treatment for some of the perimeter streets in the City Centre where pedestrian volumes are lower and adjacent roadways carry high vehicle volumes.

![Existing](image1)

![Possible Arrangement](image2)

*Figure 19 - Potential shared path extension in Corrimal Street*
KEY MISSING LINKS
The provision of connections along key ‘missing links’ in the network will deliver substantial improvements to cyclist safety, network coherence and accessibility. Although the previously mentioned City Centre and Grand Pacific Walk proposals will address a number of major missing links in the city, the other missing links described in this section are also considered to be of a high priority and are recommended for attention within the lifespan of this plan.

University of Wollongong to Figtree
The establishment of formal facilities along this route will connect the southern areas of the city that link to the princes highway to the University of Wollongong main campus and surrounding areas. Significant sections on either end of this route such as Paulsgrove Street and Princes Highway north of London Drive have already been completed.

Princes Highway, Kembla Grange
The section of the Princes Highway between Northcliffe Drive and Kembla Grange Place is considered to be the highest priority missing link in the southern area of the City. Council, in conjunction with Roads and Maritime Services is currently working to construct a shared path on this section of the highway that will result in the completion of much needed link between Kembla Grange and Dapto providing a safe north-south bicycle facility in this area.

Lake Illawarra Hooka Creek to Kanahooka Point
This section represents one of the last major missing links in the route around Lake Illawarra. The previous Lake Illawarra Authority has undertaken a feasibility assessment of a number of options for the provision of a connection on this link. The development of the Tallawarra Lands will add significantly to activity in the area and demand for bicycle facility around Lake Illawarra. Like the Grand Pacific Walk, a complete ‘Round the Lake’ bicycle facility will provide a world class cycling tourism opportunity for the City.

Windang Bridge
As one of only two road connections between Shellharbour and Wollongong LGAs, the development of a connection on Windang Bridge will resolve a major missing link in the region. A feasibility study has been completed and a preferred option involving a widening of the bridge to provide a formal bicycle path will undergo detailed design. The detailed design process will be led by Roads and Maritime Services as they are responsible for the state road and are owners of the bridge asset. Council will continue to be an involved stakeholder going forward.

Five Islands Road at Flinders Street to King Street Warrawong
The existing coastline cycleway currently bypasses much of Warrawong as it runs out to MM Beach Port Kembla (Glouchester Blvd) via Flinders Street in the
north and Parkes Street/Cowper Street in the south. A connection that links the Five Islands Road and Flinders Street junction to the intersection of Shellharbour Road and Parkes Street will provide a more logical direct north south route in this area of the city. Given the significant works necessary on the State Road network to complete this link, Council will need to work closely with Roads and Maritime Services on this project.

**Kanahooka Road - Prince Edward Drive to Brownsville Avenue**
Completion of this 400m connection will join the recently completed shared path on the Princes Highway to the Kanahooka Road shared path which extends to Kanahooka Point and the Lake Illawarra shared path.

**Cordeaux Road - Princes Highway to Gibsons Road**
The provision of a bicycle connection on this section of Cordeaux Road will connect the major link on the Princes Highway to the existing shared paths on Cordeaux road and Central Road to the west. It will also connect with a future planned cycleway connection along Cordeaux Road to Mt Kembla.

**Gladstone Avenue - The Avenue to Hickman Street and Bridge Street intersection**
The provision of formal bicycle facilities on these sections will strengthen the important link that Gladstone Avenue provides to the City Centre. The provision of a bicycle connection within and adjacent to the Bridge Street intersection is required so that cyclists do not need to merge into high volume traffic lanes. Furthermore, a formal on-road bicycle facility is needed to link the termination of the bicycle lane near Robertson Street to the shared path adjacent to Bridge Street.

**Grand Pacific Walk**
Council endorsed the creation of the Grand Pacific Walk (GPW) in 2012. The vision of the GPW project is a long term project with new sections proposed to connect to existing shared pathways to create a safe route for both pedestrians and cyclists for the entire 60km coastline of the Wollongong Local Government Area, taking advantage of the numerous spectacular outlooks and areas of high scenic quality within it.

In addition, picnic clusters and/or viewing areas are to be provided at regular intervals along the route with items such as bicycle parking, seating, water, bins, signage and guidance to local attractions and cafes. The nominated route will form a pedestrian and cyclist spine that will ultimately link the coastal villages and towns, the Wollongong CBD, existing inland bicycle facilities and future connections in this Plan.
The GPW project is progressing on two fronts:

1. **GPW MASTERPLAN - Royal National Park to Lake Illawarra**

   The masterplan includes the development of the following:
   - an overview masterplan that establishes a unified design approach
   - development of typical design solutions for the provision of adequate width and separation from vehicles
   - unique graphic style (see below) for signage
   - the definition of necessary upgrade works along the route such as seating, viewing areas and wayfinding signage.
2. GPW STAGE ONE IMPLEMENTATION - Station Street Stanwell Park to Paterson Road Coalcliff

The existing constraints on this segment include steep topography, geotechnical instability and many other restrictions within the road reserve. As a result most of this segment of the route has no provision for pedestrians and cyclists. For this reason, provision of safe access in this part of the route is considered the highest priority by Council.

A detailed costed concept plan has been completed from Stoney Creek Bridge Coalcliff to Station Street in Stanwell Park showing a new shared path alignment on the eastern side of Lawrence Hargrave Drive. This includes sections of on ground shared path, elevated portions, on street markings and a new connection from the southern end of Lower Coast Road to Lawrence Hargrave Drive.

![Stoney Creek Bridge Concept](image)

**Figure 21 - Stoney Creek Bridge Concept**

A shared path bridge at Stoney Creek, Coalcliff is under construction for completion in mid 2014.

The provision of safe pedestrian and cyclist access in the area of Coalcliff Station is particularly challenging due to the constraints of the topography and width of the road reserve. The need for safer pedestrian crossing facilities, a new bus bay and adequate width for the GPW shared path alignment on the east side of Lawrence Hargrave Drive became clear during the consultation phase. The Roads and Maritime Services has been an
enthusiastic partner in the development and design of this proposal and the project is programmed for construction during the second half of 2014.

$5.0M in funding has been made available under the Restart NSW Illawarra Infrastructure Program for the Grand Pacific Walk Stage 1 works, following a successful project application by Council. As a result, detailed design work for the Coalcliff to Stanwell Park section is nearing completion. The subsequent three year construction phase will commence during the 2014-15 financial year.

**MOUNTAIN BIKING**

As noted in the community survey section, the lack of legal mountain biking areas in the city was a major concern for many respondents. Council has limited capacity to facilitate mountain biking in the city as many areas which are desirable for mountain biking from the users’ perspective (and are often used outside of any formal arrangement) are not under Council ownership or control.

Notwithstanding this, Council has undertaken investigations into the development of a mountain bike park including a minimum 5km cross country course at a number of sites in the city and has found Cringila Hills to be the preferred site for a feasibility study. Ongoing consultation with the Wollongong Mountain Bike Club and other stakeholders will continue through this process.

Further to the feasibility work for the potential Mountain Bike Park at Cringila Hills, it is proposed that Council liaise with custodians of areas within the city that are desirable for mountain biking, such as National Parks and Sydney Water, with the aim of establishing legal areas for mountain biking.

**BICYCLE PARKING**

Lack of bicycle parking at or close to a destination can be a key barrier to cycling. Ensuring the availability of visible, safe, secure and convenient bicycle parking will be key to achieving the targets for bicycle usage set out in this plan. The provision of bicycle parking should meet the following design principles:

- Functionality
  - Easy to use
  - Will not injure user
  - Fits all bicycle types
• Durable and sturdy
  o Convenience
  o Close to destination
  o Close to bicycle routes
  o Do not obstruct pedestrian or vehicle flow

• Security
  o Passive and active surveillance
  o Rails allow locking at multiple points
  o Not accessible by vehicles

Short Stay Bicycle Parking
The availability of bicycle parking close to a destination is important to the convenience of bicycle travel. Existing formal short stay bicycle parking for public use is limited or lacking in most business centres and many other destinations across the city. As a lower level of security required for short stay bicycle parking compared to long stay parking, it can be provided in a number of configurations that have a small footprint. As a result, retrofitting short stay bicycle parking into an existing streetscape environment can straightforward and cost effective.

Short Stay Bicycle Parking
The provision of short stay bicycle parking is proposed at the following destination types listed in Appendix 2 of this plan:

- Wollongong City Centre
- Regional Centres
- Major Town Centres
- Town Centres
- Beaches
- Parks and Sports Fields
- Railway Stations
- Key Bus Stops
- Swimming Pools
- Key Tourism Destinations
  (Council Owned)
LONG STAY BICYCLE PARKING

The bulk of long stay bicycle parking in the city will be provided by private developers in response to Council's DCP requirements for such parking. Notwithstanding this, similar to short stay bicycle parking, many existing destinations do not have secure long stay bicycle parking. Implementation of long stay bicycle parking in the form of lockers should be provided in appropriate locations with centres listed in the key trips generators listing down to the Town level namely:

- Wollongong City Centre
- Dapto Regional Centre
- Warrawong Regional Centre
- Corrimal Major Town Centre
- Figtree Major Town Centre
- Fairy Meadow Major Town Centre
- Unanderra Major Town Centre
- Helensburgh Town Centre
- Thirroul Town Centre
- Bulli Town Centre
- Woonona Town Centre
- Balgownie Town Centre
- Port Kembla Town Centre
- Windang Town Centre
- Berkeley Town Centre
- Cringila Town Centre

Wollongong Railway Station Bicycle Lockers

PLANNING CONTROLS

Green travel plans aim to increase the relative accessibility of sustainable transport modes as compared to private vehicle travel. They utilise the administrative functions of an organisation to facilitate this change and can apply at a site or precinct level.
Council will investigate the development of a generic green travel plan that can be provided to small-medium developments in Wollongong City Centre. The types of measures that can possibly be part of the travel plan include:

- Provision of on-site bicycle parking
- Provision of on-site shower and change facilities
- Subsidisation of bicycle ownership
- Free bicycle maintenance
- Priority parking space allocation to car pooling
- Subsidisation of public transport

The possibility of adding additional controls to the City of Wollongong DCP requiring the development, implementation and monitoring of green travel plans for large developments will be investigated.

Further to the above, the possibility of increasing bicycle parking requirements for developments will be investigated prior to the next City of Wollongong DCP review.

**BICYCLE INFORMATION**

**Bicycle Maps**
Council released the Wollongong Cycling Map and Guide in May 2013. The map shows the existing cycling connections around the city by type as well as bicycle locker locations at key railway stations. The guide component shows information on cycling benefits, road rules, reporting hazards, bicycle workshops and retailers. The map is available in Council libraries, tourist parks, bicycle shops and tourism centres as well as online on Council’s website.

As a static information source, the hard copy cycling map and guide will lose accuracy as Council continues to implement bicycle infrastructure around the city. An updated version is proposed to be produced every two years.

The online version will be updated on at least an annual basis.

As a single map of the entire city, the cycling guide and map lacks some detail such as the type of on-road facility and which side of the road the cycling facility is on. Access to this more detailed information will be
provided on Council's website via interactive maps. Furthermore, a public bicycle parking layer will be established and also made available via the interactive map.

There are a number of other organisations that provide bicycle connection mapping for the City of Wollongong at coarse and fine levels of detail. These sources have varying levels of accuracy. Council will provide up to date mapping information to these external organisations to help ensure that the public can access more accurate cycle connection information whether they source that information from Council or elsewhere.

**ONLINE INFORMATION**

Council's existing website contains the following bicycle information:

- Online version of bicycle map and guide
- Shared path rules and etiquette
- Hazard Reporting
- Bicycles on public transport
- Local Bicycle Users Group links
- Local Bicycle Stores and Workshops listings

Every year Council constructs a number of new and replacement bicycle connections across the City many of which the broader community are not aware of. As part of the capital budget reporting process, the possibility of providing a profile on the Council website that highlights the investment made and the positive outcomes for the bicycle network will be investigated.

Furthermore, development of the following additional features will be investigated:

- Interactive bicycle network map including public bicycle parking locations (see previous section on bicycle maps)
- Cycling tourism marketing and promotion content (working with Destination Wollongong)
- Information on self-guided and guided heritage tours by bicycle (see Heritage Tours by bicycle section).
BICYCLE PROMOTION

Promotion of cycling in the community can increase participation by raising awareness of the many benefits cycling can have, particularly as a viable cheap, fun and healthy alternative to car travel. In raising the awareness of cycling in general, promotion activities can have a positive effect on behavioural aspects of interactions between cyclists and non-cyclists.

NSW Bike Week

NSW Bike Week is a NSW Government initiative that aims to raise the profile of cycling as a healthy, easy, low cost and environmentally friendly transport option for short trips. The NSW Government provides support to local communities including Local Councils for bicycle events across the state. The key objectives of NSW Bike Week are to:

- Increase the usage of local cycling infrastructure for transport and recreation.
- Provide a safe and secure environment for new and less confident cyclists to improve their cycling skills.
- Educate the community on the importance of road safety and the relevant road rules. Promote cycling as a safe and healthy mode of transport for short trip.

Council will hold a number of events each year during Bike Week, subject to funding allocations, that:

- Promote cycling
- Improve cycling skills in the community
- Increase awareness of cycling amongst non-cyclists
- Improve shared path etiquette
Ride to Work Day

National Ride to Work Day is a yearly event that helps promote commuting by bicycle through:

- Increasing the knowledge of available home to work cycle routes among non-bicycle commuters
- Establishing relationships between regular and non-bicycle commuters
- Providing opportunity to experience the health, financial and time saving benefits of cycling

Council will participate in National Ride to Work day by holding:

- Ride to Work events for Council Staff
- Ride to Work events for members of the public focussing on key employment areas in the city

Heritage Tours by Bicycle

Wollongong is a city rich with sites that showcase its heritage. State significant sites such as the Wollongong Harbour Precinct, the North Beach Precinct (including the recently restored Bathers Pavilion), the Smiths Hill Fort, Port Kembla Heritage Park and Sandon Point (a declared Aboriginal Place) are all accessible along the existing coastline cycleway. Council’s Grand Pacific Walk project will provide further cycling connectivity to a large number of important heritage sites in the city’s north. These sites include Hillcrest (the former home of Lawrence Hargrave) and the site of the first coal discovery in the Illawarra (Clifton).

Building on the success of the Wollongong City Centre Heritage Trail, it is proposed that similar trails be developed in consultation with bicycle user groups, Destination Wollongong and Council’s Wollongong Heritage Advisory Committee to link locations along the existing coastline cycleway and future Grand Pacific Walk. This would provide for a unique cycling heritage tourism experience. These trails could be provided in both guided and self-guided forms.
BICYCLE EDUCATION

The delivery of education campaigns for motor vehicles are frequent and seek to address such issues as speeding, drink driving, conflicts with pedestrians, fatigue and dangerous driving. As cycling participation continues to increase a similar focus on bicycle education campaigns will be needed to support growth in safe cycling and safe driving around cyclists.

Knowledge and awareness of cycling among cyclists and non-cyclists is key to:

- elevating the status of cycling as major transport mode
- encouraging safe and courteous behaviour on shared paths
- improving confidence among new or returning cyclists
- encouraging safer driver and cyclist behaviours on roads

The following bicycle education programs are proposed to increase the knowledge and awareness that will help to realise the above outcomes:

- Cycle Skills Training
- Shared Path Education
- Driver Awareness Education

Council will investigate potential partnerships with a range of external organisations to assist in the delivery these programs.

CYCLE SKILLS TRAINING

Surveys that aim to determine barriers to cycling have found that the lack of safe cycling opportunities is a major concern that limits cycling participation in the community. Although infrastructure provision will form a key measure to address this concern, improving cycling skills can assist by boosting confidence of riders and their ability to safely ride in a range of environments. Improving the skills of new/returning cyclists in particular can provide the confidence needed to participate in cycling on a frequent basis.

The provision of free cycle training on a regular basis is recommended. The training would benefit cyclists of a range of skill levels covering topics such as:

- Roads Rules
- Commuter Cycling
- Children's Basic Training
- Adult Beginner/Refresher Training
- Basic Bicycle Training
- Shared Path Etiquette and Safety

Mechanisms for funding these skills based programs will be investigated.
Conflict between cyclists and other users on shared paths around the city was one of the key concerns raised in the extensive draft Bike Plan community survey undertaken in June 2013. Although these conflicts can in part be attributed to the width of shared paths or the lack of alternate routes, more safe and courteous behaviour amongst path users will address many of these concerns.

Previous efforts by Council to improve behaviour on shared paths have included the ‘Share the Track’ campaign (see flyer below).

The development and deployment of a new shared path user campaign is recommended that focuses on the following key messages:

- Keep left when using a shared path
- Cyclists should use their bell to alert pedestrians
- Cyclists must give way to pedestrians
- Cyclists must travel at safe speeds
- Dogs must be kept on a short lead and should not obstruct the path

Methods for communicating these key messages can include:

- Flyers
- Behavioural Signage
- Pavement markings
- Centreline markings (refer to linemarking strategy section)
- Events at key locations
- Media campaigns
DRIVER AWARENESS EDUCATION

The vulnerability of cyclists both on and off the road can be forgotten by drivers who benefit from the protection and comfort offered by a motor vehicle. The perspective from the driver’s seat makes it difficult to appreciate issues for riders such as braking distance, grade impacts and passing space.

Driver awareness of cyclists and cycling issues will be elevated through:

- A Council road safety campaign
- Council support of relevant campaigns such as the Amy Gillett Foundation “a metre matters” campaign
- Implementation of warning and other signage as well as linemarking on on-road cycling routes.

FUNDING OPPORTUNITIES

Funding for the various proposals identified in this Plan will be derived from a range of internal and external sources. The development of costed concept plans for key infrastructure items will allow Council to more effectively bid for external funding opportunities as they arise.

COUNCIL FUNDING

Council will fund the provision of cycling infrastructure and non-infrastructure items in a number of ways. Specific funding of new cycleways, renewal of existing cycleways and associated measures such as linemarking, signage and will continue to be allocated within Council’s Capital Budget.

Bicycle infrastructure can also be provided in association with other work, for example bicycle parking provided as a component of a Council car park upgrade or a cycle connection established as part of commercial centre streetscape improvements. As a result, bicycle infrastructure will be funded indirectly from alternate Capital Budget allocations such as traffic facilities, car park improvements and commercial centre upgrades.

Further to the above, cyclists’ needs must be considered as part of all road works and road related projects, not only along designated routes. This will help to ensure that where possible the riding experience is enhanced as a result of any road works rather than hindered. In adopting this approach more dollars spent by Council will work towards creating a better cycling environment in the City.

In 2010, Council implemented pay parking on-street and in Council off-street carparks in Wollongong City Centre as part of the Inner City Parking Strategy. One key element of the strategy is to use surplus revenue from the pay parking to fund improvements to pedestrian and bicycle connections in the
City Centre. This will be an important funding source for the numerous links proposed for Wollongong City Centre.

**Private Sector Funding**
The Wollongong Development Control Plan (DCP) stipulates when bicycle facilities are to be provided as part of new developments. Several of the road types detailed in the subdivision chapters of the DCP include cycleways. Areas of the city that will receive many privately funded connections include the West Dapto land release area and the Tallawarra development.

Further to the funding and construction of bicycle paths, the private sector will also provide parking and end-of-trip facilities as required by the DCP.

**NSW Government Funding**
The following grant programs from the NSW Government will assist in the delivery of proposals in this Bike Plan:

- **Restart NSW Illawarra Infrastructure Fund** – Funding has been made available under this program for the Grand Pacific Walk Stage 1 and Cordeaux Road shared path works.

- **Connecting Centres Cycling Program** – Identified in the Illawarra Regional Transport Plan 2014, this program will seek to complete local cycle networks to regional centres in partnership with local councils.

- **Cycling Towns Program** Also identified in the Illawarra Regional Transport Plan 2014, the Cycling Towns Program will focus on bicycle infrastructure provision and encouragement in a small number of regional centres with the aim of rapidly increasing rates of cycling in these areas.

- **Co-funding grant programs** – Roads and Maritime Services provides funding for Council projects on a 50/50 contribution basis under the categories of cycleways, bicycle facilities and bicycle user support. These programs are a key funding source for many bicycle projects.

- **Coastline Cycleway Funding** – This funding grant, administered by the Department of Planning is for the design and construction of cycle connections along the NSW coastline.

- **NSW Bike Week** – This state wide event is coordinated by Roads and Maritime Services which provide funding to event organisers for promotional components of event costs.
Block Grant (Traffic Facilities) – Funding from the Roads and Maritime Services block grant may be utilised to maintain regulatory bicycle signage and linemarking on the local road network.

A number of missing links identified in this plan lie on the classified state road network. As these links will provide important regional connections in the bicycle network, Council will seek additional funding from the NSW Government for the completion of such links.

**Federal Government Funding**

A number of funding opportunities exist from the federal government for the provision of bicycle and related infrastructure. These include:

- **Roads to Recovery Program** – The construction, maintenance and upgrade of bicycle paths within the road reserve may be eligible for funding under this program.

- **Regional Development and Regional City Programs**
## ACTION PLAN

<table>
<thead>
<tr>
<th>Category</th>
<th>Measure</th>
<th>Division</th>
<th>Priority (H,M,L)</th>
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<tbody>
<tr>
<td>Bicycle Network Expansion</td>
<td>Establish formal City Centre bicycle connections</td>
<td>IS&amp;P, PD</td>
<td>H</td>
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<tr>
<td></td>
<td>Design and implement bicycle connection at Princes Highway - Northcliffe Drive to Kembla Grange Place</td>
<td>IS&amp;P, PD</td>
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<tr>
<td></td>
<td>Design and implement bicycle connections between intersection of Murphy's Avenue and John Street and 60 Stanleigh Crescent, West Wollongong</td>
<td>IS&amp;P, PD</td>
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<tr>
<td></td>
<td>Design and implement bicycle connection at Five Islands Road at Flinders Street to the intersection of Shellharbour Road and Parkes Street</td>
<td>IS&amp;P, PD</td>
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<td></td>
<td>Design and implement bicycle connection at Kanahooka Road - Prince Edward Drive to Brownsville Avenue</td>
<td>IS&amp;P, PD</td>
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<td></td>
<td>Design and implement bicycle connection at Cordeaux Road - Princes Highway to Gibsons Road</td>
<td>IS&amp;P, PD</td>
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<td></td>
<td>Design and implement bicycle connections at Gladstone Avenue - The Avenue to Hickman Street and adjacent to Bridge Street intersection</td>
<td>IS&amp;P, PD</td>
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<td></td>
<td>Undertake detailed feasibility assessment of bicycle connections at Lake Illawarra Hooka Creek to Kanahooka Point</td>
<td>ISP</td>
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<tr>
<td>Bicycle Network Expansion</td>
<td>Seek updates from Roads and Maritime Services regarding completion of the Windang Bridge cycleway detailed design</td>
<td>ISP</td>
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<td></td>
<td>Proceed with Grand Pacific Walk Stage 1 implementation</td>
<td>PD</td>
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<td></td>
<td>Progress Grand Pacific Walk future stages</td>
<td>PD</td>
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<td></td>
<td>Investigate creek sites at which to undertake feasibility studies for east-west cycleway connections</td>
<td>ISP, ES&amp;P, PD</td>
<td>M</td>
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<tr>
<td>Linemarking Strategy</td>
<td>Provide dashed centreline markings on all shared paths and bidirectional bicycle only paths except around tight corners or where sight distance is limited (a solid centreline and directional arrows are provided in these instances)</td>
<td>IS&amp;P, PD</td>
<td>H</td>
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<td></td>
<td>Provide give way (holding) linemarking of shared paths at each location where shared path users must give way to crossing traffic (e.g. road crossing or footpath intersection)</td>
<td>IS&amp;P, PD</td>
<td>M</td>
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<td></td>
<td>Provide bicycle and pedestrian symbols adjacent to all intersections and at regular intervals on shared paths</td>
<td>IS&amp;P, PD</td>
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<td></td>
<td>At shoulder lane (with parking) facilities, remove bicycle symbols that are located within car parking footprint from shoulder lanes. Bicycle symbols to be reinstated in the adjacent vehicle lane with appropriate warning signage unless vehicle volumes are not suitable for a mixed traffic arrangement.</td>
<td>IS&amp;P, PD</td>
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<td>Category</td>
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<tr>
<td>Linemarking Strategy</td>
<td>Provide &quot;SLOW&quot; and &quot;GIVEWAY TO PEDESTRIANS&quot; pavement markings on shared paths at approaches to and within areas of concentrated pedestrian activity (this treatment may be an interim measure prior to provision of an alternate route or as a permanent feature where an alternate route cannot be realised).</td>
<td>IS&amp;P, PD</td>
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<tr>
<td>Directional Signage Strategy</td>
<td>Design and implement directional signage on regional bicycle links in accordance with Illawarra Directional Bicycle Signage Guidelines</td>
<td>IS&amp;P, PD</td>
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<tr>
<td></td>
<td>Design and implement directional signage on local bicycle links in accordance with Illawarra Directional Bicycle Signage Guidelines</td>
<td>IS&amp;P, PD</td>
<td>M</td>
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<tr>
<td>Existing Facility Improvements</td>
<td>Modify traffic islands that force merging to travel lanes to provide safe passing areas for cyclists along popular on-road cycling routes</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<td></td>
<td>Remove/relocate sign posts that obstruct shared path thoroughfare</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<td></td>
<td>Remove/relocate street furniture that obstructs shared path thoroughfare</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<td></td>
<td>Modify vehicle barriers on shared paths to achieve compliance with Austroads requirements</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<td></td>
<td>Provide bypasses or slow treatments at shared path locations with high potential for conflict between cyclists and other users</td>
<td>IS&amp;P, PD, CW&amp;S</td>
<td>M</td>
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<tr>
<td></td>
<td>Install Give Way signage and linemarking at intersections</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<td></td>
<td>Install bicycle crossing lanterns at traffic signals on cycling routes</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<td>Category</td>
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<tr>
<td>Existing Facility</td>
<td>Provide cyclist and pedestrian crossings at key signalised intersections</td>
<td>IS&amp;P, PD, CW&amp;S</td>
<td>M</td>
</tr>
<tr>
<td>Improvements</td>
<td>Increase head height at Smith Street, Wollongong railway underpass</td>
<td>IS&amp;P, PD, CW&amp;S</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>Widen sharp path bends adjacent to intersections</td>
<td>IS&amp;P, PD, CW&amp;S</td>
<td>L</td>
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<tr>
<td></td>
<td>Removal or modification of obstructions at intersections</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<tr>
<td></td>
<td>Improve poorly designed Kerb ramps and other path terminations</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<td></td>
<td>Provide green pavement markings at on-road bicycle facility</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<td></td>
<td>intersections to reinforce cyclist right of way</td>
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<td></td>
<td>Extension of the scheduled cycleway maintenance program to</td>
<td>IS&amp;P, CW&amp;S</td>
<td>H</td>
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<tr>
<td></td>
<td>include removal of debris from path surfaces and remarking of faded or</td>
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<tr>
<td></td>
<td>cracked linemarking.</td>
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<tr>
<td>Seek support from the</td>
<td>Seek support from the NSW Government to improve maintenance of cycle</td>
<td>IS&amp;P</td>
<td>M</td>
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<tr>
<td>NSW Government to improve</td>
<td>ways on key classified roads.</td>
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<td>maintenance of cycle</td>
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<td>ways on key classified</td>
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<tr>
<td>roads.</td>
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<tr>
<td>Category</td>
<td>Measure</td>
<td>Division</td>
<td>Priority (H,M,L)</td>
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</table>
| Bicycle Parking  | Install short stay bicycle parking at the following categories of key trip generator and attractor locations (see Appendix 2 of this plan):  
|                  | · Wollongong City Centre  
|                  | · Sub Regional Centres  
|                  | · Major Town Centres  
|                  | · Town Centres  
|                  | · Key Bus Stops  
|                  | · Beaches  
|                  | · Parks and Sports Fields  
|                  | · Railway Stations  
|                  | · Swimming Pools  
<p>|                  | · Key Tourism Destinations (Council Owned) | IS&amp;P, PD, CW&amp;S | H                |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Measure</th>
<th>Division</th>
<th>Priority (H,M,L)</th>
</tr>
</thead>
</table>
| Bicycle Parking   | Install bicycle lockers in appropriate locations within each of the following town centres:  
|                   |   · Wollongong City Centre  
|                   |   · Dapto Sub Regional Centre  
|                   |   · Warragong Sub Regional Centre  
|                   |   · Corrimal Major Town Centre  
|                   |   · Figtree Major Town Centre  
|                   |   · Fairy Meadow Major Town Centre  
|                   |   · Unanderra Major Town Centre  
|                   |   · Helensburgh Town Centre  
|                   |   · Thirroul Town Centre  
|                   |   · Bulli Town Centre  
|                   |   · Woonona Town Centre  
|                   |   · Balgownie Town Centre  
|                   |   · Port Kembla Town Centre  
|                   |   · Windang Town Centre  
|                   |   · Berkeley Town Centre  
|                   |   · Cringila Town Centre | IS&P, PD, CW&S | M                |

City of Wollongong Bike Plan 2014-2018
<table>
<thead>
<tr>
<th>Category</th>
<th>Measure</th>
<th>Division</th>
<th>Priority (H,M,L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle</td>
<td>Seek funding to promote and provide regular free bicycle training covering the following topics:</td>
<td>IS&amp;P, PD, CW&amp;S</td>
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<tr>
<td>Education</td>
<td>· Roads Rules</td>
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<td></td>
<td>· Commuter Cycling</td>
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<td></td>
<td>· Children’s Basic Training</td>
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<td></td>
<td>· Adult Beginner/Refresher Training</td>
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<td></td>
<td>· Basic Bicycle Training</td>
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<td>· Shared Path Etiquette and Safety</td>
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<td></td>
<td>Seek funding to develop and implement shared path user education campaign</td>
<td>IS&amp;P, CC&amp;ED</td>
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<tr>
<td></td>
<td>Seek funding to develop and implement road safety campaign focusing in safe cyclist and motorist interaction</td>
<td>IS&amp;P, CC&amp;ED</td>
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<td></td>
<td>Provide in-kind support to cycling safety campaigns that seek to elevate driver awareness of cyclists and encourage safer driving behaviours around cyclists</td>
<td>IS&amp;P, CC&amp;ED</td>
<td>M</td>
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<tr>
<td></td>
<td>Implement warning and other signage and linemarking on on-road cycling routes that increase driver awareness of cyclists</td>
<td>IS&amp;P, PD, CW&amp;S</td>
<td>H</td>
</tr>
<tr>
<td>Bicycle</td>
<td>Hold Ride to Work events for Council Staff</td>
<td>IS&amp;P, CC&amp;ED</td>
<td>M</td>
</tr>
<tr>
<td>Promotion</td>
<td>Hold Ride to Work events for members of the public focussing on key employment areas in the city</td>
<td>IS&amp;P, CC&amp;ED</td>
<td>M</td>
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<tr>
<td></td>
<td>Establish guided and self-guided heritage tours along the existing coastline cycleway and future Grand Pacific Walk links</td>
<td>IS&amp;P, ES&amp;P</td>
<td>M</td>
</tr>
<tr>
<td>Category</td>
<td>Measure</td>
<td>Division</td>
<td>Priority (H,M,L)</td>
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<tr>
<td>Bicycle Information</td>
<td>Update printed Wollongong Cycling Guide and Map on biannual basis</td>
<td>IS&amp;P</td>
<td>H</td>
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<tr>
<td></td>
<td>Update online Wollongong Cycling Guide and Map on at least an annual basis</td>
<td>IS&amp;P</td>
<td>H</td>
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<tr>
<td></td>
<td>Work with Destination Wollongong to provide online cycling tourism information</td>
<td>IS&amp;P</td>
<td>M</td>
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<tr>
<td></td>
<td>Publish existing cycleways layer on the interactive maps on Council's website</td>
<td>IS&amp;P</td>
<td>L</td>
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<tr>
<td></td>
<td>Provide up to date cycleway and bicycle parking mapping information to external organisations</td>
<td>IS&amp;P</td>
<td>L</td>
</tr>
<tr>
<td>Bike Plan 2019-2023</td>
<td>Commence development of the City of Wollongong Bike Plan 2019-2023 in late 2017</td>
<td>IS&amp;P</td>
<td>H</td>
</tr>
</tbody>
</table>
**GLOSSARY OF TERMS**  
*Adapted from NSW Bicycle Guidelines, NSW Roads and Traffic Authority, 2005*

**Bicycle** - a vehicle with two or more wheels that is built to be propelled by human power through a belt, chain or gears (whether or not it is has an auxiliary motor). For the purposes of this manual ‘bike’ and ‘cycle’ mean the same thing.

**Bicycle facility** - a public facility especially constructed for bicycle traffic. This term has broad use and can refer to any part of a bicycle route, bicycle path, bicycle lane, associated signage or parking equipment.

**Bicycle lane** - is a marked lane, or the part of a marked lane beginning at a bicycle lane sign applying to the lane; and ending at the nearest of the following:

(a) an end bicycle lane sign applying to the lane;

(b) an intersection (unless the lane is at the unbroken side of the continuing road at a T-intersection or continued across the intersection by broken lines); or

(c) if the road ends at a dead end – the end of the road.

**Bicycle network** - a defined set of Bicycle routes which make it possible to travel around a region by bicycle in a safe and connected manner. In bicycle networks there is a three level hierarchy consisting of:

- **Regional routes** provide the quickest and most direct means of travelling between regional centres (the road hierarchy equivalent is the State road). These routes offer the highest priority bicycle travel through an area with few delays and a high level of consistency and quality of construction;

- **Local routes** link regional routes to local mixed traffic streets and provide a collector distributor function in the network. These routes also provide radial access to major sub-regional centres and parallel alternative access to regional routes;

- **Mixed traffic streets** provide door to door access to places where people live. They are usually residential low-volume, low-speed streets where bicycles operate within the traffic stream and dictate the traffic flow.

*Extract from NSW Bicycle Guidelines, NSW Roads and Traffic Authority, 2005*
**Bicycle path** - means a length of path for the exclusive use of bicycle riders. This facility begins at a 'Bicycle Path' sign or bicycle path line marking, and ends at the nearest of the following:

(a) an 'End Bicycle Path' sign or end bicycle path linemarking;
(b) a 'Separated Path' sign or separated path linemarking;
(c) a road (except a road-related area); or
(d) the end of the path.

**Bicycle rider** - (for the purposes of this manual) a person who is riding a bicycle. Other words used in this manual (cyclist, rider, bike rider) means the same thing. The Australian Road Rules also defines rider as a motorcycle rider or the driver of an animal drawn vehicle but these definitions do not apply within this manual.

**Bicycle route** - any marked route which forms part of a bicycle network. The route may utilise different types of bicycle facilities and may be on-road (bicycle lanes and bicycle shoulder lanes), or off-road (bicycle paths, separated paths and shared paths) in the road related area paralleling roads or through parks and reserves.

**Cycleway** - a generic term used to describe a bicycle route, bicycle lane, bicycle path or that part of a separated path used by riders.

**Edge line** - for a road, means a line marked along the road at or near the far left or far right side of the road (except any road-related area of the road).

**Footpath** - an area open to the public that is designated for, or has as one of its main uses, use by pedestrians.

**Green Travel Plan** - a long term management strategy for an occupier or site that seeks to deliver sustainable transport objectives through positive action that is articulated in a document that is regularly reviewed.

**Intersection** - an area where 2 or more roads (except any road-related area) meet, and includes any area of the roads where vehicles travelling on different roads might collide; and the area of any slip lane where the roads meet but does not include any road-related area. In these Guidelines an intersection is also the area where an off-road bicycle path or shared path intersects with a road or other bicycle path, shared path or footpath.

**Off-road** - a bicycle path or shared path is said to be off-road when it is located on a road-related area paralleling a road, or through parks or
reserves or within public transport corridors and other public or private land not open to motor vehicle traffic.

**On-road** - a bicycle facility is said to be on-road when it forms part of the road such as a bicycle lane or a shoulder shared with parked vehicles.

**Road** - an area that is open to or used by the public and is developed for, or has as one of its main uses, the driving or riding of motor vehicles.

**Road network** - the road transport planning professions recognise several different road classification systems and road types. For the purposes of this manual these road types are important:

- **Motorways and freeways** are the major urban or rural roads which provide the quickest most direct access through a region or across an urban area. They have limited access to the surrounding road network and have grade separated intersections and higher speed limits.

- **State roads** provide the quickest and most direct means of travelling between regional centres and to major centres within the State. These routes offer a high priority means of travel through an area with fewer delays and a high level of consistency and quality construction.

- **Regional roads** link State roads and highways to local roads and provide a collector distributor function in the network. These routes also provide radial access to major sub-regional centres and connections to other regional centres.

- **Local roads** provide door to door access to places where people live. They are usually low-volume, low-speed roads.

**Road related area** - is any of the following:

(a) an area that divides a road;

(b) a footpath or nature strip adjacent to a road;

(c) an area that is not a road and that is open to the public and designated for use by cyclists or animals;

(d) an area that is not a road and that is open to or used by the public for driving, riding or parking vehicles.

This can include the area that divides a road (median), the footpath or nature strip or an area designed for exclusive use by bicycles (bicycle paths).

Rules that apply to roads generally apply to road-related areas in the application of the Australian Road Rules.
**Road reserve or road corridor** - the total parcel of public land on which the road and road-related areas are located.

**Separated path** - a length of path where an exclusive bicycle path is laid adjoining a footpath. The separation may be visual (painted line) or physical (dividing strip or raised median). The facility begins at a separated path sign or separated path linemarking, and ends at the nearest of the following:

(a) an ‘End Separated Path’ sign or the end of the separated path linemarking;
(b) a ‘Bicycle Path’ sign or bicycle path linemarking;
(c) a ‘No Bicycles’ sign or no bicycles road marking;
(d) a road (except a road-related area); or
(e) the end of the path.

**Shared path** - area open to the public (except a separated path) that is designated for use by both bicycle riders and pedestrians.

**Shoulder** - includes any part of the road that is not designed to be used by motor vehicles in travelling along the road, and includes:

(a) for a kerbed road – any part of the kerb; and
(b) for a sealed road – any unsealed part of the road, and any sealed part of the road outside an edge line on the road; but does not include a bicycle path, footpath or shared path.

**LIST OF ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CC&amp;ED</td>
<td>Community Cultural &amp; Economic Development</td>
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<td>CW&amp;S</td>
<td>City Works &amp; Services</td>
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<tr>
<td>DCP</td>
<td>Development Control Plan</td>
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<tr>
<td>ES&amp;P</td>
<td>Environmental Strategy &amp; Planning</td>
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<tr>
<td>GFA</td>
<td>Gross Floor Area</td>
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<tr>
<td>IS&amp;P</td>
<td>Infrastructure Strategy &amp; Planning</td>
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<tr>
<td>LGA</td>
<td>Local Government Area</td>
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<td>PD</td>
<td>Project Delivery</td>
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<tr>
<td>RTA</td>
<td>Roads &amp; Traffic Authority</td>
</tr>
</tbody>
</table>

City of Wollongong Bike Plan 2014-2018
REFERENCES


3. Queensland Department of Transport and Main Roads 2011, Benefits of inclusion of active transport in infrastructure projects, prepared by SKM and PWC, table EX.1: benefits summary. NOTE: Based on per kilometre benefits for a typical inner urban project (where no location has been specified), in 2010 figures.


8. NSW Roads and Traffic Authority, 2005, NSW Bicycle Guidelines

9. Vicroads, Cycle notes 21 Widths of off-road shared-use paths

10. Austroads, Guide to Road Design Part 6A Pedestrian and Cycle Paths pg 66

11. NSW Roads and Maritime Services, 2012, How to prepare a Bike Plan, figure 11 pg 18
APPENDIX 1 – BICYCLE AND PEDESTRIAN COUNT SURVEY RESULTS

Surveys were conducted over two days on Saturday 18 May (10am and 2pm) and Wednesday 22 May (6am-9am, 3pm-6pm), 2013. Weather on both these days was dry. However, it was noted that weather conditions on the Wednesday were cloudy and preceded two days of rain. This could have influenced some cyclists' travel behaviour, with some possibly preferring not to ride due to a perceived chance of rain, even though there was no precipitation on that day.

Additional surveys were undertaken on Wednesday 24 July due to inconsistencies with weekday cyclist data collection at sites 11, 12, 13, 14 and 16. As with the previous counts the weather conditions on this day were also dry.
### APPENDIX 2 - KEY TRIP GENERATORS AND ATTRACTORS

<table>
<thead>
<tr>
<th>Type</th>
<th>Site</th>
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<tbody>
<tr>
<td><strong>THE REGIONAL CITY AND MAJOR REGIONAL CENTRES</strong></td>
<td>Wollongong City Centre</td>
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<tr>
<td></td>
<td>Warrawong Sub-Regional Centre</td>
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<td></td>
<td>Dapto Regional Centre</td>
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<td><strong>MAJOR TOWN CENTRE</strong></td>
<td>Comrimal Major Town Centre</td>
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<td>Figtree Major Town Centre</td>
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<td>Fairy Meadow Major Town Centre</td>
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<td>Unanderra Major Town Centre</td>
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<td><strong>THE TOWN CENTRES</strong></td>
<td>Helensburgh Town Centre</td>
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<td>Thirroul Town Centre</td>
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<td>Bulli Town Centre</td>
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<td>Balgownie Town Centre</td>
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<td>Port Kembla Town Centre</td>
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<td>Windang Town Centre</td>
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<td>Berkeley Town Centre</td>
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<td>Cringila Town Centre</td>
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<td><strong>Beaches</strong></td>
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<td>Coalcliff</td>
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<td>Scarborough/Wombarra</td>
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<td>Coledale</td>
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<td>North Wollongong</td>
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<td>Port Kembla</td>
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<td>Windang</td>
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<td>Type</td>
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<tr>
<td>Parks and Sports Fields</td>
<td>Barina Park (Barina Ave, Lake Heights)</td>
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<td>Beaton Park (Gipps Street, Gwynneville)</td>
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<td>Beaton Park Leisure Centre</td>
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<td>Athletics Track (Foley Street, Gwynneville)</td>
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<td>Bellambi Oval (Bott Dr, Bellambi)</td>
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<td>Berkeley Park (Burke Way, Berkeley)</td>
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<td>Boronia Park (Boronia Ave, Windang)</td>
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<td>Bulli Park (Trinity Row, Bulli)</td>
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<td>Cawley Park (Terrania Street, Russell Vale)</td>
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<td>Clowes Park (Railway Ave, Austinmer)</td>
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<td>Cominal Memorial Pk No 2 (Wilga St, Cominal)</td>
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<td>Cram Park (Cabbage Tree Lane, Fairy Meadow)</td>
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<td>Darcy Wentworth Park (Carlotta Cr, Warrawong)</td>
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<td>Elizabeth Park No2 (Cawley Street, Bellambi)</td>
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<td>Figtree Oval No 1 (Princes Hwy, Figtree)</td>
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<td>Fred Finch Park (Hooka Creek Rd, Berkeley)</td>
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<td>Guest Park (Balgownie Rd, Fairy Meadow)</td>
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<td>Hector Harvey Park (Gilba Road, Koonawarra)</td>
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<td>Holymount Park (Alice Street, Woonona)</td>
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<td>Jim Allen Oval (Monash St off Haig St, Wombarra)</td>
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<td>JJ Kelly Park (Keira Street, Wollongong)</td>
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<td>Judy Masters Park (Para Street, Balgownie)</td>
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<td>Keira Village Park (Keira Mine Rd, West Wollongong)</td>
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<td>King George V Oval (Port Kembla)</td>
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<td>Lakelands Oval (Lakelands Drive, Dapto)</td>
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<td>Lindsay Maynes Park (Factory Road, Unanderra)</td>
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<td>Mt Kembla Park (Avon Parade, Mt Kembla)</td>
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<td>Neville McKinnon Park (Gladstone Ave, Coniston)</td>
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<td>Noel Mulligan Oval (Carlotta Cres, Warrawong)</td>
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<td>Ray Crump Oval (James Ave, Primbee)</td>
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<td>Reed Park (Bong Bong Road, Horsley)</td>
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<td>Rex Jackson Park (Walker St, Helensburgh)</td>
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<td>Roy Johanson Park (Euroka St, Figtree)</td>
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<td>St James Park (Cliff St, Coledale)</td>
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<td>Thomas Dalton Park (Ellots Rd, Fairy Meadow)</td>
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<td>Thomas Gibson Park (Station Street, Thirroul)</td>
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<td>Towradgi Park (Towradgi Road, Towradgi)</td>
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<td>Webb Park (William Beach Rd, Koonawarra)</td>
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<td>Wiseman’s Park (Vickery St, Gwynneville)</td>
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APPENDIX 3 – PROPOSED BICYCLE NETWORK

Note: Key trip generator and attractor markers show railway station, tourism destination, secondary school, town centre, swimming pool and tertiary education locations.