

Central Coast Council
**Pedestrian Access and
Mobility Plan**
2019-2029

Bitzios Consulting

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Central Coast Pedestrian Access and Mobility Plan

© Central Coast Council

Wyang Office:

2 Hely St / PO Box 20 Wyong NSW 2259

P 02 4350 5555

Gosford Office:

49 Mann St /PO Box 21 Gosford NSW 2550

P 02 4325 8222

E ask@centralcoast.nsw.gov.au

W centralcoast.nsw.gov.au

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Glossary of Terms

ABS: Australian Bureau of Statistics

CCC: Central Coast Council

DAPS: Disability Action Plans

DDA: Disability Discrimination Act

GIS: Geographic Information System

LGA: Local Government Area

PAMP: Pedestrian Access and Mobility Plan

PAMP Route: Key pedestrian routes identified in the study, and prioritised and audited based on the distance to pedestrian attractors and generators, pedestrian crash clusters, community feedback, and relation to road hierarchy.

Pedestrian: Any person walking including: a person driving a motorised wheelchair that cannot travel at over 10 kilometres per hour (on level ground), a person in a non-motorised wheelchair, a person pushing a motorised or non-motorised wheelchair, a person in or on a wheeled recreational device or wheeled toy (source: RMS How To Prepare a Pedestrian Access and Mobility Plan).

Pedestrian Attractors and Generators: Places that are likely to have high pedestrian activity, such as shopping centres, schools, train stations, bus stops, tourist centres, medical centres, retirement villages, etc.

Pedestrian Crash Clusters: Any location up to 100 metres long with three or more pedestrian crashes over five years (source: RMS How to Prepare a Pedestrian Access and Mobility Plan).

Pedestrian Facility: Any traffic device associated with a pedestrian, including footpaths, kerb ramps, pedestrian crossings, pedestrian refuges, shared paths, bus stops, bus shelters, and pedestrian bridges.

Road Network: System of links and nodes which make up the network of roads on the ground. It includes link characteristics and turning restrictions or prohibitions (source: RMS How to Prepare a Pedestrian Access and Mobility Plan).

RMS: Roads and Maritime Services

Safe System Approach: A Safe System is an approach to road safety management. It is a holistic view of the road transport system and the interactions among roads and roadsides, travel speeds, vehicles and road users. It is an inclusive approach that caters for all groups using the road system. It recognises that people will always make mistakes and may have road crashes but the system should be forgiving and those crashes should not result in death or serious injury.

Sustainability: The process of maintaining change within a balanced environment, combining the practices of social science, civic engineering and environmental science with the technology of the future. The objective is to protect the natural environment, human and ecological health, whilst driving innovation without compromising the way of life.

TGSI: Tactile Ground Surface Indicators

Universal Design Techniques: Aims to provide all-inclusive access that eliminates the need for adaptation and specialised design for mobility-impaired community members.

Executive Summary

Overview

The Central Coast Council has developed two new planning documents: a Pedestrian Access and Mobility Plan (PAMP) and a Bike Plan. Together, these documents guide Council's ongoing provision of an active transport network for Central Coast residents and visitors over the next ten years.

This PAMP outlines the steps and investment required to achieve Council's vision to:

"Provide a safe, high-quality and well-connected network that enables pedestrians of all abilities to move efficiently and conveniently throughout the Central Coast."

It also outlines the research and analysis that underpins the development of this PAMP, and builds on the former Gosford Council's Gosford City Centre PAMP (2009) and Woy Woy Peninsula PAMP (2004).

PAMP Methodology

PAMPs in New South Wales (NSW) are developed according to the Roads and Maritime Services (RMS) Guide 'How to Prepare a Pedestrian Access and Mobility Plan'. This guide identifies three stages that involve:

- defining objectives
- collecting data, developing priority routes, and consulting on those routes
- developing a prioritised action plan for the priority routes

Community Engagement and Key Issues

Located between Sydney and Newcastle, the Central Coast offers residents and visitors a diverse mix of urban and natural landscapes, and a predominant focus on lifestyle. The population of the Central Coast is growing, and is expected to reach 415,050 people by 2036.

At the same time, the composition of the Central Coast population is changing. By 2036, about half of the population is expected to be older than 65 years. This changing population profile presents challenges for pedestrian access and mobility as older residents require safer, more accessible facilities to meet their changing mobility needs.

Community engagement for the Central Coast Council Community Strategic Plan (CSP) revealed that more and better walking and cycling infrastructure was a key priority for the community. The development of this PAMP, and the Bike Plan, addresses this community priority.

As part of the development of this PAMP and the Bike Plan, community feedback was collected in relation to paths across the Central Coast Council Local Government Area. Commencing in February 2018, this engagement process captured feedback from:

- 55 community members who attended information sessions
- 19 community stakeholders who attended workshops
- 925 online survey responses
- 1305 separate pins dropped on the online interactive map

In relation to pedestrian access and mobility, feedback from the community centred on:

- the need for more paths
- the need to improve existing paths, including from a safety and accessibility perspective
- the need to link up existing paths to provide continuous routes and networks
- the need to provide access to key locations for all residents and visitors, regardless of mobility needs

Community feedback captured during the engagement process has informed the development of this PAMP. It has particularly helped in prioritising the facilities to fund and implement over the next 10 years, which will provide the greatest benefits to most community members.

PAMP Development

Council has a responsibility to ensure that both existing facilities and new facilities are accessible to all users. This has been a key consideration in the development of the PAMP.

Council also has a responsibility to ensure that funding is allocated to locations that will benefit the most residents. These locations tend to be in high pedestrian activity areas in towns and villages, in key residential areas, near schools and near public transport.

As part of the PAMP, detailed prioritised action plans have been prepared for Gosford, Woy Woy, Wyong / Tuggerah and The Entrance. These key strategic centres have the highest pedestrian demands because of population, employment and the number of schools in each area. Gosford, Woy Woy, and Wyong / Tuggerah also attracted the most community comments during the early engagement process.

The issues raised in other towns and villages during the engagement process have also been addressed with implementation programs created in these areas as well.

To develop the PAMP, the priority routes in Gosford, Woy Woy, Wyong / Tuggerah and The Entrance were divided into discrete segments and audited to identify maintenance issues, missing links, and crossing needs or issues.

Upgrade projects or 'new-link' projects on each of the priority route segments were then ranked using a multi-criteria scoring process. The multi-criteria scoring process was informed by the key attributes and needs identified by the community during the engagement process.

In addition to the projects identified on the PAMP priority routes, Council had previously identified a number of missing link paths across the Central Coast for pedestrians. These missing links have also been included in the PAMP.

Similarly, through the engagement process the community has identified over 1,000 locations across the Central Coast, where there are existing issues and opportunities for improvement, which are not on the PAMP priority routes.

This valuable local information has been used to support an annual program to identify and fund the construction of the highest priority improvements using a specific budget allocation for this purpose.

Implementation Program

Typically, PAMPs focus on providing a schedule of prioritised new links and link upgrades on the defined PAMP priority routes. However, this PAMP also includes other localised projects previously identified by Council or raised through community engagement. These projects are presented in the PAMP through four separate schedules:

- Schedule 1: New pathways on PAMP priority routes
- Schedule 2: Facility upgrades on existing pathways along PAMP priority routes
- Schedule 3: Council identified missing links outside of the PAMP priority routes
- Schedule 4: Other community-identified projects

These four schedules have been created with identified and costed projects, which have then been 'banded' into three funding timeframes:

- Short term: Years 1 to 3
- Medium Term: Years 4 to 6
- Long Term: Years 7 to 10

The implementation plan summary for the works schedules is provided below.

Schedule	Work Type	Years 1-3		Years 4-6		Years 7-10		10 Year TOTAL		Year 10+	
		#	\$	#	\$	#	\$	#	\$	#	\$
1	New pathways on priority routes	46	4.5M	63	4.4M	-	-	109	8.9M	-	-
2	Facility upgrades on priority routes	29	0.3M	259	0.4M	-	-	288	0.7M	-	-
3	Other council identified projects					15	6.1M	15	6.1M	936	53.5M
4	Other community identified projects	-	1.5M	-	1.5M	-	2.0M	-	5M	-	-
TOTAL		75	6.3M	322	6.3M	15	8.1M	412	20.7M	936	53.5M

refers to number of individual projects

In total, more than \$74.2M has been identified to implement all of the projects and programs identified in the four schedules. The funding available to implement active transport projects, particularly pedestrian paths, depends on Council budget allocations and Council's success in seeking grants from State and Federal Government programs.

A program budget of \$2M per annum would allow approximately one third of the complete program to be delivered within the 10 year period. However, the projects delivered from the prioritised program will vary from year-to-year based on available funding.

1. Introduction

1.1. Background

Wyong Shire Council and Gosford City Council amalgamated on 12 May 2016 to form the Central Coast Council (CCC) Local Government Area (LGA). This merger brought together five existing wards: Wyong, The Entrance, Budgewoi, Gosford West and Gosford East. Figure 1 shows the wards within the amalgamated Central Coast LGA.



Source: Google Maps

Figure 1: Central Coast Council Wards and LGA boundary

As each former Council had separate strategic plans, a new strategic plan has been created for CCC. The Community Strategic Plan (CSP) represents the highest level of strategic planning for local government. The CSP aims to identify the main priorities and aspirations of the community, and outlines a set of objectives to achieve the desired vision, which is:

"We are the Central Coast. A smart, green and liveable region with a shared sense of belonging and responsibility."

The CCC adopted the new CSP in June 2018, which reinforced that active transport is a key strategic focus for the community and CCC. Active transport, which includes the movement of pedestrians and bicycles, is addressed in the CSP through the 'Liveable' theme and the objectives described in the 'Out and about in the fresh air' focus area.

CCC has developed two new planning documents to deliver on these objectives: a Pedestrian Access and Mobility Plan (PAMP) and a Bike Plan. These documents have been prepared in parallel with the two strategies carefully aligned, as many bicycle routes are also popular walking routes and implementing shared paths that can cater for both needs.

The purpose of the PAMP is to provide a consistent strategic approach for planning, prioritising and building pedestrian infrastructure. Using this approach, the PAMP provides CCC with a long-term strategy and a detailed, prioritised action plan to improve priority

pedestrian routes and other pedestrian facilities across the LGA to achieve safe, convenient and connected networks.

Together, the PAMP and the Bike Plan will guide CCC's ongoing provision of a connected active transport network for Central Coast residents and visitors over the next ten years. The implementation of these plans will help to achieve the 'Access to transport, walking and cycling' community indicator in the CSP.

Preceding this PAMP, the former Gosford Council adopted the Gosford City Centre PAMP (2009) and Woy Woy Peninsula PAMP (2004). No PAMP was adopted by the former Wyong Shire Council, instead the Wyong On-road Bicycle and Shared Pathway Strategy (2010) was adopted. CCC PAMP integrates the PAMPs of the former Gosford Council and provides an updated PAMP for the new CCC LGA.

1.2. Our vision for pedestrians

Through the implementation of this PAMP, CCC's vision is to provide a safe, high-quality and well-connected sustainable active transport network that enables pedestrians of all abilities to move efficiently and conveniently throughout the Central Coast.

The NSW Roads and Maritime Services (RMS) Guide 'How to Prepare a Pedestrian Access and Mobility Plan' (2002) defines a pedestrian as 'any person walking including any person driving a motorised wheelchair that cannot travel at over 10 kilometres per hour (on level ground), a person in a non-motorised wheelchair, a person pushing a motorised or non-motorised wheelchair and a person in or on a wheeled recreational device or wheeled toy'. This PAMP has adopted this definition of a pedestrian.

Due to the broad definition of a pedestrian, this PAMP promotes the use of 'Universal Design techniques' for locating and designing pedestrian connections. Universal Design aims to provide all-inclusive access that eliminates the need for adaptation and specialised design for mobility-impaired community members.

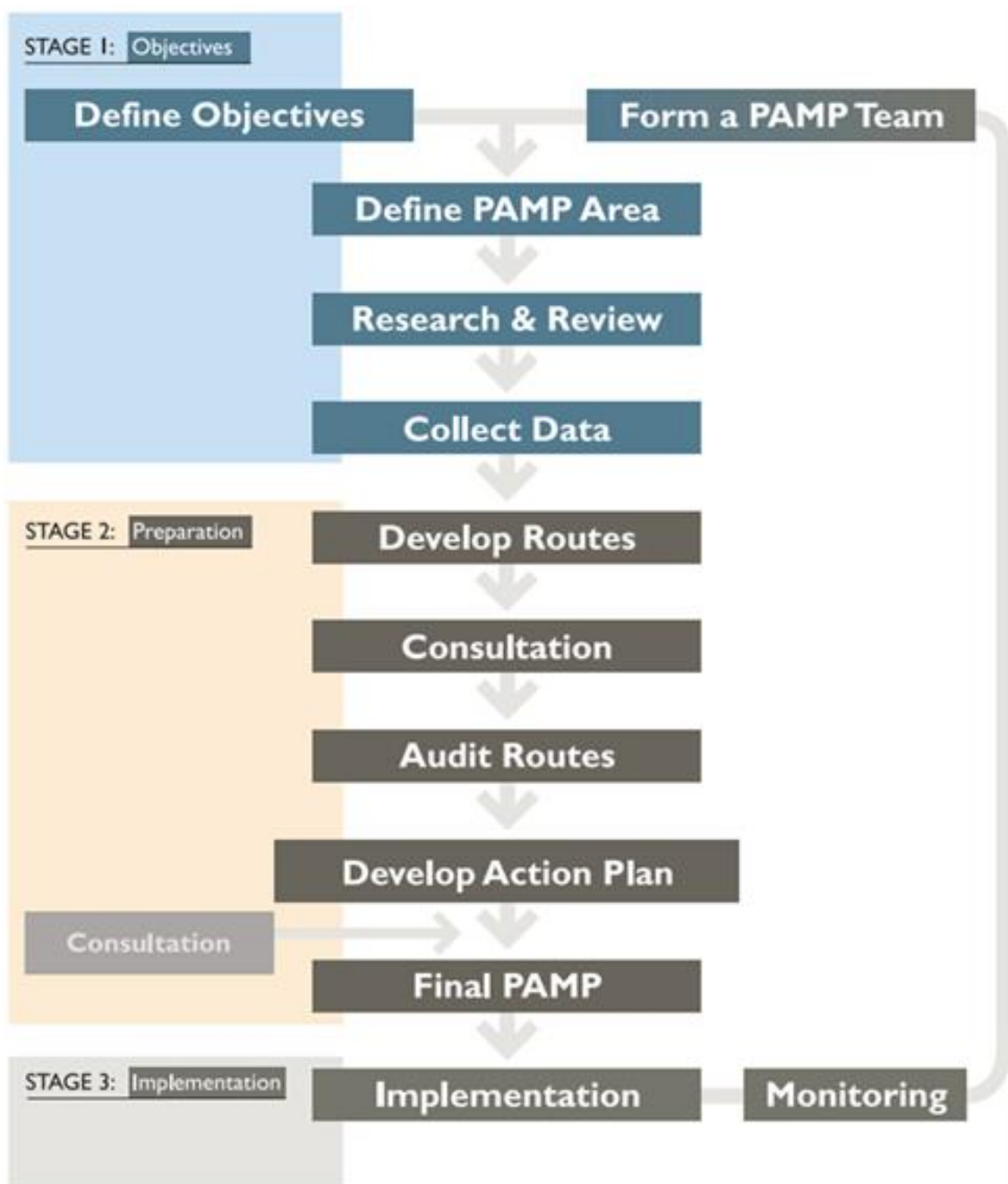
The benefits of incorporating Universal Design include increased efficiency in the design and implementation process, and reduced cost of infrastructure. The needs of mobility-impaired community members have been embedded into all aspects of this PAMP from route definition to route selection and prioritisation, and facility design.

1.3. PAMP methodology

This PAMP was developed according to the NSW RMS Guide 'How to Prepare a Pedestrian Access and Mobility Plan'. This guide identifies three stages in the PAMP process, shown in Figure 2:

- Stage 1: Objectives definition
- Stage 2: Preparation and community consultation
- Stage 3: Implementation

It is important to note that community engagement for this PAMP and the Bike Plan have been undertaken together. Many of the issues raised by the community that are relevant to the Bike Plan were also considered in this PAMP.



Source: Roads and Maritime Services – 'How to Prepare a Pedestrian Access and Mobility Plan'

Figure 2: PAMP development methodology

Given the level of community interest in walking and cycling expressed through the Stage 1 community engagement for the CSP, CCC have built a comprehensive engagement plan into the start of the PAMP process. This approach allowed both general and specific active transport issues raised by the community to shape the scope of Stages 2 and 3.

Given the early focus, a separate 'Early Engagement Report' was prepared and the community's key inputs from that report have been translated directly into strategies and actions in the PAMP.

2. Community and stakeholder engagement

2.1. Previous engagement processes

Community engagement processes were implemented as part of the development of the CSP and the Disability Inclusion Action Plan (DIAP). During these engagement processes, community members made a number of specific comments in relation to pedestrian infrastructure.

Specific comments shared by the community, which have been considered further in the PAMP, related to:

- a footpath along Blackwall Road and Orange Grove Road
- a shared path from McMasters Road to Blackwall Point boat ramp
- building a path between Ettalong and Umina
- footpaths linking the three bays suburbs (Phegans Bay, Horsefield Bay, Calala Bay) and a link to Woy Woy
- better connectivity for pedestrians on Point Clare
- a footbridge to access the waterfront from Tascott and Koolewong
- a sea wall and walkway from Terrigal–Wamberal lagoon
- a walking trail connecting Mt Elliott and Gosford as part of the COSS recreation areas
- a quality footpath from Picketts Valley to Avoca Beach, particularly a safe pedestrian crossing of Salt Water Creek on the Scenic Highway at Avoca Beach
- a lack of footpaths for the mobility-impaired, which in many areas, forces people in wheelchairs and mobility scooters to travel on the road
- uneven paths, missing links, the need for resting facilities and more maintenance of existing facilities.

2.2. Engagement process

Community and stakeholder engagement was undertaken between 12 February 2018 and 9 March 2018. The aim of this engagement was to capture community input to help identify common issues and themes in each part of the LGA, and to inform criteria for prioritising future pedestrian facilities when developing the implementation program.

The community and stakeholder groups were engaged through multiple methods, including:

- dedicated Our Coast, Our Pathways page on Council's Your Voice, Our Coast online engagement platform
- online survey available through the Our Coast, Our Pathways page
- interactive map available through the Our Coast, Our Pathways page
- answers to Frequently Asked Questions posted on the Our Coast, Our Pathways page
- emails and contact from Council staff to high needs pedestrian accessibility groups, and state and private school networks
- two community drop-in information sessions
- two workshops with representatives of community groups with an interest in pedestrian accessibility, cycling and active transport

The entire engagement process was advertised and promoted in various ways to ensure the community were aware of the engagement opportunities. These promotion activities included:

- media release and social media posts on Twitter, Facebook and Instagram to promote the online tools and drop-in information sessions
- advertisement in the Central Coast Express Advocate to promote the online tools and drop-in information sessions
- articles in Coast Connect and Coast Matters to promote the online tools and drop-in information sessions
- radio community service announcements on Star FM and 2GO/Sea FM to promote the online tools and drop-in information session

Overall, the engagement was extremely successful. All engagement activities attracted a large number of participants, including:

- 55 community members attending information sessions
- 19 community stakeholders attending the workshops
- 925 online survey responses received
- 1,305 separate pins dropped on the interactive map

2.3. Community workshops

The two interest group workshops held on Friday 23 February 2018 were attended by 19 community stakeholders. These stakeholders included various active transport groups and community groups from the Gosford and Wyong areas. Key themes that arose during both workshops included:

- ensuring continuity of paths by completing 'missing links', ensuring that accessible paths follow one side of the road (limiting the need to cross roads), and providing directional signage
- providing connectivity to key attractors such as schools, public transport and shopping centres
- separating different user groups i.e. pedestrians and cyclists
- providing more facilities along pathways including water fountains, toilets, and car parking at key locations

The top three objectives for the PAMP prioritised by workshop participants were:

- connectivity
- safety
- completing missing links

In relation to prioritising pedestrian footpath projects, workshop participants identified the following top four criteria:

- separation from road traffic (i.e. more footpaths in more places)
- safety (i.e. separated paths and better crossing facilities)
- accessibility (i.e. embed mobility-impaired user needs in every aspect of the PAMP)
- continuity of routes

2.4. Online survey

The online survey captured demographic information, travel behaviour, transport preferences and trip length, use of existing active transport facilities, and current challenges or limitations with facilities. A total of 925 questionnaires were completed, with 69% of participants being residents, and 28% indicating they both live and work in the Central Coast area.

Analysis of online survey responses identified common themes and issues. These included the lack of pedestrian footpaths, safety concerns, and the need for improvement of existing footpaths.

The accessibility and user-friendliness of the online survey ensured that a wide range of community members responded. As such, this survey captured a large proportion of the data needed to identify current infrastructure issues and potential pedestrian links.

2.5. Interactive map

The interactive map allowed participants to drop a pin and leave detailed, location-specific comments, which identified the missing links, the location of 'safety hotspots', and opportunities for improvement. This information helped illustrate areas of concern and, when considered across the entire community, the highest priority areas and potential routes for the development of the PAMP.

A total of 1,305 pins were dropped on the interactive map. Figure 3 shows where the pins were dropped on the map, and illustrates that most community issues were nominated in the areas where most pedestrian activity occurs. The locations commented on most frequently were:

- Gosford
- Woy Woy
- Wyong
- Terrigal
- Avoca Beach
- Kincumber
- Bensville
- Empire Bay
- Tuggerawong
- Mannering Park

The types of pins dropped were separated into four categories relating to accessibility, footpaths, on-road cycleways and shared paths. The location of pins, related to each category are shown in Figure 4. Approximately 22% of participants requested new or extended footpaths, 58% requested shared paths, 14% requested new or extended on-road cycleways and 6% requested additional or improved accessibility.

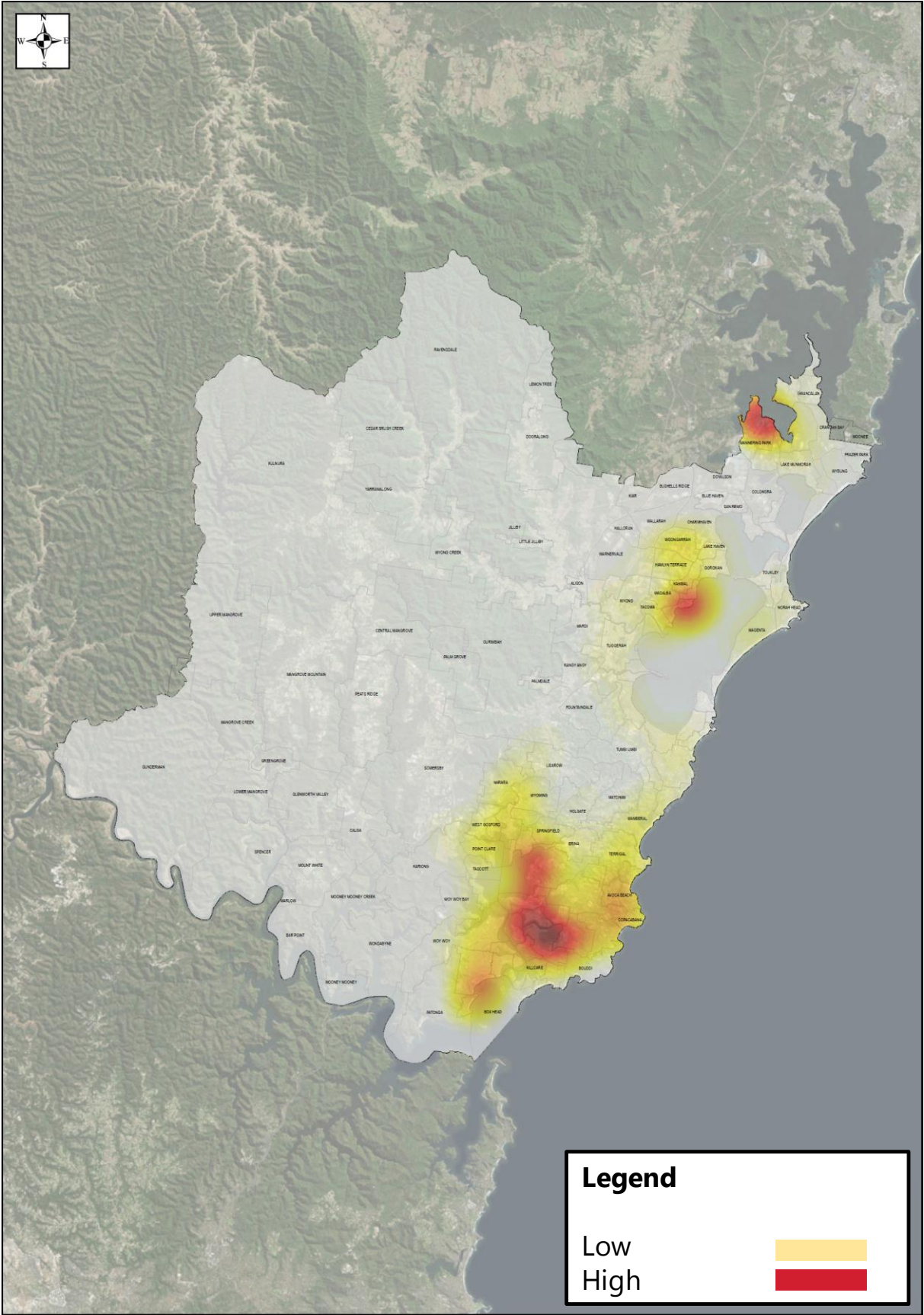


Figure 3: Heat map of Social Pinpoint

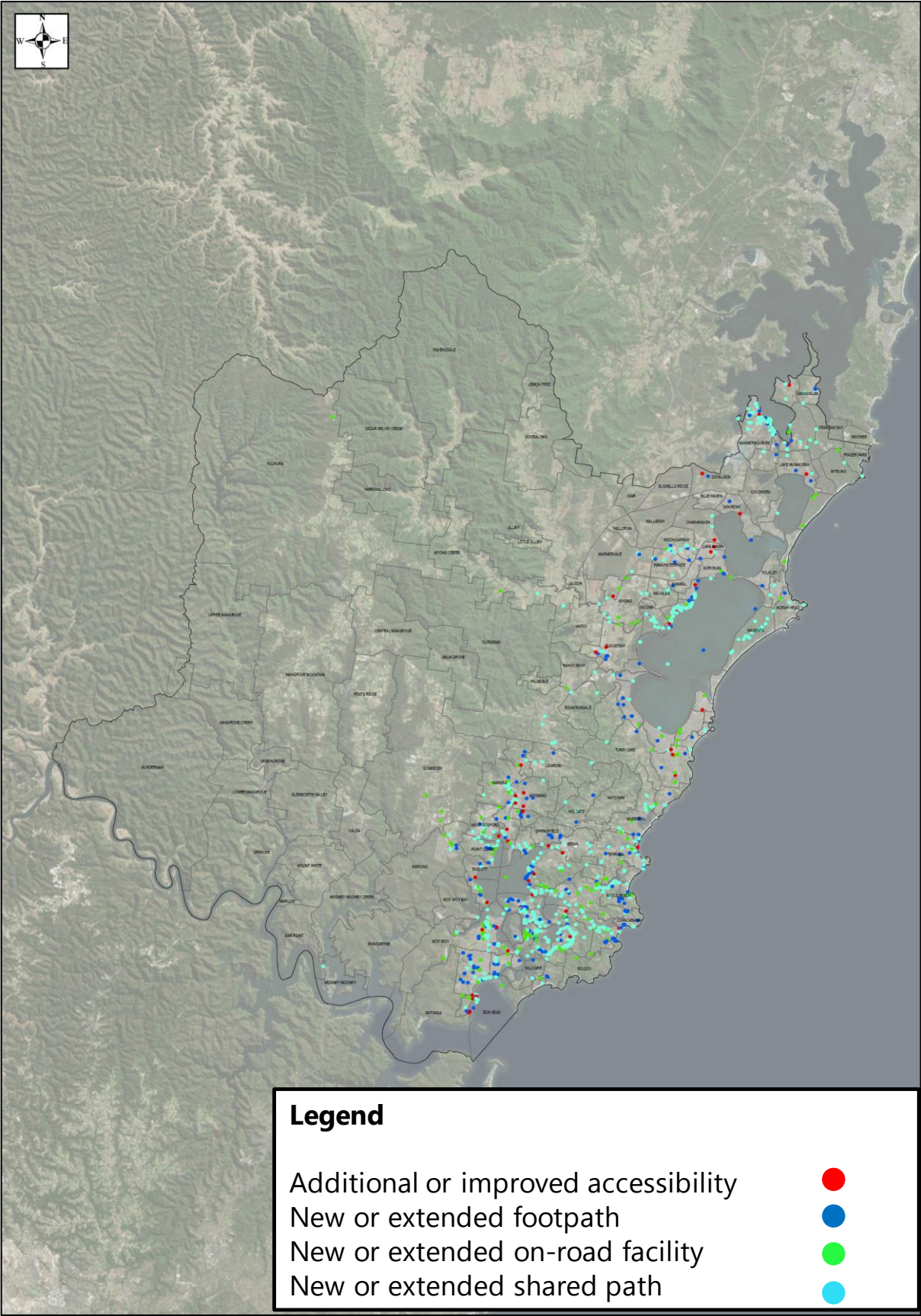


Figure 4: Social Pinpoint type of pins dropped

The pin locations and comments demonstrated the main priorities of the broader community. The three most common key words used on the interactive map related to:

- 'shared path', which was mentioned 1,113 times
- 'safety', which was mentioned 768 times
- 'children' or 'school', which were mentioned 652 times

Figure 5 shows the word cloud produced as a result of the community engagement comments.



Figure 5: Word cloud demonstrating common themes from the 'Our Coast, Our Pathways' interactive mapping tool

In relation to the criteria to be used to program pedestrian footpath projects, the following four criteria were mentioned most frequently by community members:

- separation from road traffic
- safety
- accessibility
- continuity of routes

'Separation from road traffic' and 'safety' are similar as increasing separation from the road increases pedestrian safety. Other important safety related factors identified by community members, included design details. 'Accessibility' and 'continuity of routes' are also similar, as improving the continuity of routes (or filling in gaps in the network) increases accessibility for all users. Similar to safety, other important factors for accessibility, related to design.

Throughout the engagement for the PAMP and Bike Plan, the DIAP was discussed and key issues were raised regarding accessibility to key attractors (e.g. restaurants) for people in wheelchairs and with reduced mobility. The lack of continuity and lack of maintenance of existing footpaths created greater concern for people with a disability.

Table 1 below details a summary of the key comments by location captured on the interactive map.

Table 1: Summary of key community comments by location

Key areas	Key Issues Raised or Themes
Gosford	The majority of community comments mentioned path continuity and safety for both pedestrians and cyclists in Gosford CBD and other centres near Gosford. There were also comments about improvements to pathway accessibility for mobility-impaired users.
Woy Woy	The majority of community comments mentioned the need for new or extended pathways and links around Brisbane Water.
Wyong	The majority of community comments mentioned path continuity and safety for both pedestrians and cyclists. The need for more recreational links and improved path maintenance was also discussed.
Brisbane Water	Community comments related to new or extended shared paths to nearby centres.
Tuggerawong	Community comments related to new or extended shared paths to nearby centres. There were also comments about other recreational connections along the foreshore and to nearby lakes or lagoons.
Terrigal	Community comments related to connections to other centres including Erina and Kincumber. There were also comments about other recreational connections along the beach foreshore and nearby lakes or lagoons.
Avoca Beach	Community comments related to connections to other centres like Erina and Kincumber. There were also comments about other recreational connections along the beach foreshore and nearby lakes or lagoons.
Kincumber	Community comments related to new or extended shared paths to nearby centres.
Bensville	Community comments related to new or extended shared paths to nearby centres.
Empire Bay	Community comments related to new or extended shared paths to nearby centres.
Manning Park	Community comments related to new or extended shared paths to nearby centres. There were also comments about other recreational connections along the beach and nearby lakes or lagoons.

2.6. Use of community engagement findings in the PAMP

The high level of participation in the early engagement process confirmed the importance of active transport infrastructure on the Central Coast to the community. Analysis of the data collected throughout the engagement process showed key areas of interest, which were used to inform the PAMP vision and objectives.

Under the RMS Guideline, a PAMP generally focuses on short walking links in high pedestrian activity areas. A PAMP's priorities are typically limited to 'walking distances'. Any links that are 1km or greater are ordinarily outside of the scope of a PAMP.

Community comments in relation to Terrigal, Avoca Beach, Kincumber, Bensville, Tuggerawong and Mannering Park have been considered within the Bike Plan, as these comments typically related to longer-distance connections and shared pedestrian-cyclist path needs. One of the priorities of a Bike Plan is to connect centres, which are typically longer-distance connections.

Pedestrian-related comments for Terrigal, Avoca Beach, Kincumber, Bensville, Tuggerawong and Mannering Park are broadly, rather than specifically, addressed in this PAMP. While important to those individuals who made comments, these areas are not located on the high-demand priority routes identified in this PAMP.

The areas that are considered in detail within this PAMP, based on the high levels of expected pedestrian demand and the level of community comments, are:

- Gosford
- Woy Woy
- Wyong / Tuggerah
- The Entrance

All other areas where comments were made as part of the engagement process have also been considered in preparing the PAMP. These areas have been considered in developing the whole of LGA implementation plan and program.

Community comments also identified that the accessibility and usefulness of infrastructure in key locations needs to be carefully considered in the PAMP. This feedback indicated that all residents and visitors, regardless of mobility needs, should equally be able to access these locations, and enjoy their benefits. How this can be achieved has been carefully considered in this PAMP to prioritise the implementation of facilities that have the greatest benefit to most community members.

3. PAMP Objectives

The aim of this PAMP is to provide a strategy that develops connected, safe and convenient active transport networks in high pedestrian demand areas throughout the Central Coast. The PAMP also provides mechanisms to address community concerns in low demand areas. The key objectives, as adopted from the community and stakeholder engagement and combined with the RMS Guide, are detailed below in Table 2.

Table 2: Relationship between objectives from engagement and the RMS Guide

Priority objective from the engagement	PAMP objective from the RMS Guide
Connectivity	To guide the sustainable development of safe and connected active transport networks for pedestrian activity areas across the region and connectivity with shared paths and footpaths.
	To support regional and economic development by encouraging low impact active tourism and promoting physical activity.
Safety	To accommodate the needs of all major user groups and provide access to services.
	To identify facilities and infrastructure necessary to support and encourage the use of active transport infrastructure.
	To promote walking and cycling.
Completing missing links	To set a direction, policy framework and long-term vision to develop 'complete', local active transport networks over the next 10 years.
	To support and encourage use of shared paths, footpaths and on-road bicycle facilities between centres.

It is important to distinguish the geographical differences between PAMP objectives 'within centres' and 'between centres'. Objectives within centres focus on establishing a safe, complete and connected pathway network, while links between centres aim to provide the opportunity to safely walk and cycle these longer distances for those who are likely to do so.

The objectives of the PAMP generally align with the relevant objectives from the CSP:

- K1: Create a regional network of interconnected shared pathways and cycle ways to maximise access to key destinations and facilities.
- K2: Design and deliver pathways, walking trails and other pedestrian movement infrastructure to maximise access, inclusion and mobility to meet the needs of all community members.
- K3: Provide signage, public facilities, amenities and playgrounds to encourage usage and enjoyment of public areas.
- K4: Repair and maintain wharves, jetties, boat ramps and ocean baths to increase ease of access to and enjoyment of, natural waterways and foreshores.

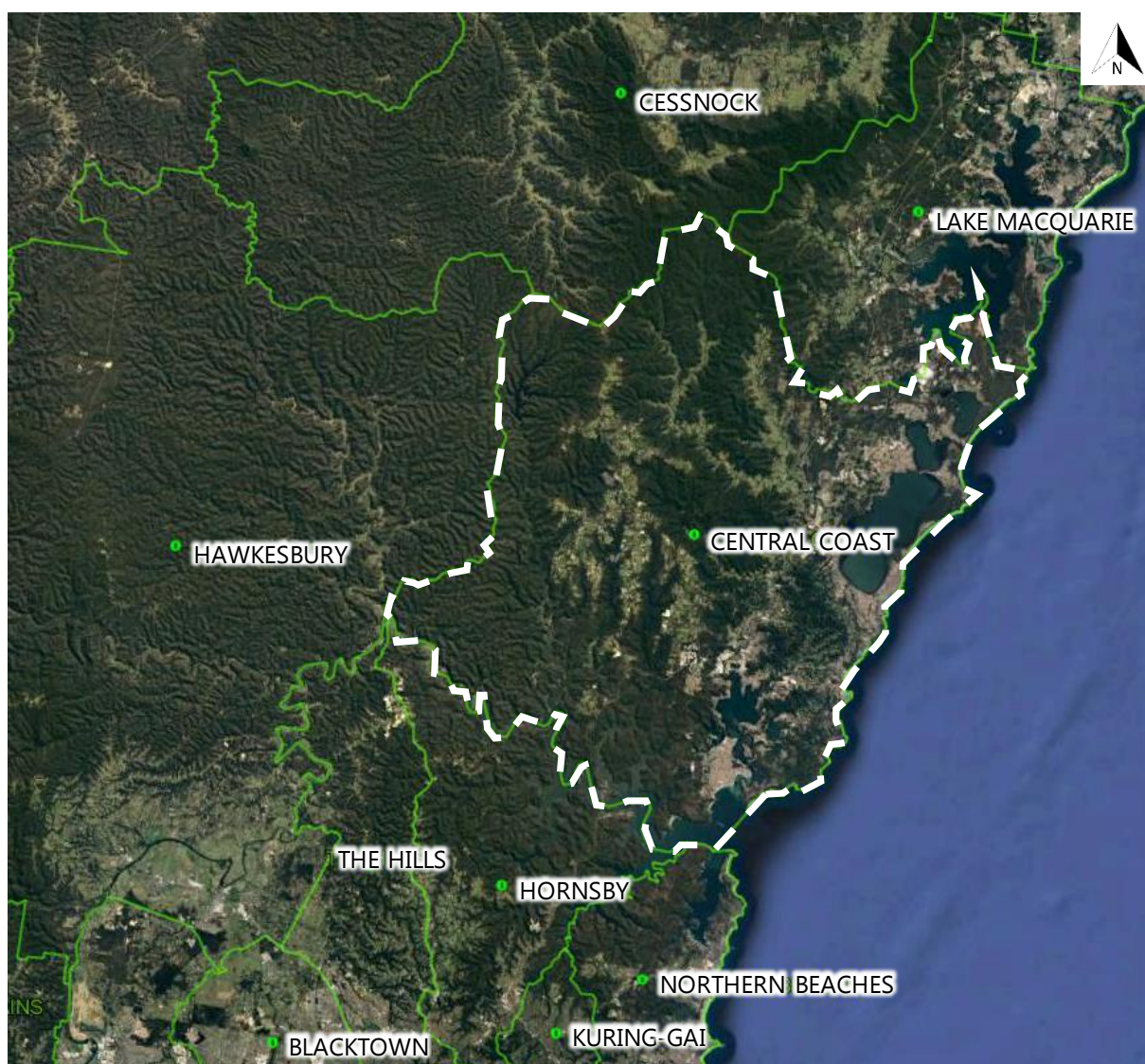
CSP objectives K3 and K4 are not directly covered by the PAMP objectives, but are relevant to pedestrian movement and accessibility.

4. Central Coast characteristics

4.1. Overview

The Central Coast LGA is located in NSW between Newcastle and Sydney, and covers approximately 1,681 square kilometres (km²). As shown in Figure 6, the Central Coast LGA is bounded to the east by the Pacific Ocean, to the south by Hornsby and Northern Beaches LGAs, to the west by Hawkesbury LGA, and to the north by City of Lake Macquarie and Cessnock LGAs.

The Central Coast area is surrounded by a mix of urban and natural landscapes. Urban development is concentrated along the coast line between the Pacific Motorway (M1) and the Pacific Ocean.



Source: NSW Globe

Figure 6: Surrounding LGA's

Approximately 60% of the Central Coast LGA is comprised of natural areas, including national parks, state forest, bushland, open space, nature reserves, beaches and waterways). The urban belt within the region is separated by green zones and a significant number of lakes and water bodies, such as Brisbane Water, Tuggerah Lake, Budgewoi Lake and Lake Munmorah.

In broad terms, pedestrians are moving from their home to a destination, from home to home on a recreation trip, or from home to public transport. The location of population density, employment density, recreational trip locations, and public transport stop locations are therefore all important 'demand drivers' when developing pedestrian routes and when prioritising works.

The Central Coast pedestrian network has approximately 1000km of existing pathways consisting of approximately 800km of footpaths and 200km of shared paths.

4.2. Population

4.2.1. Overview

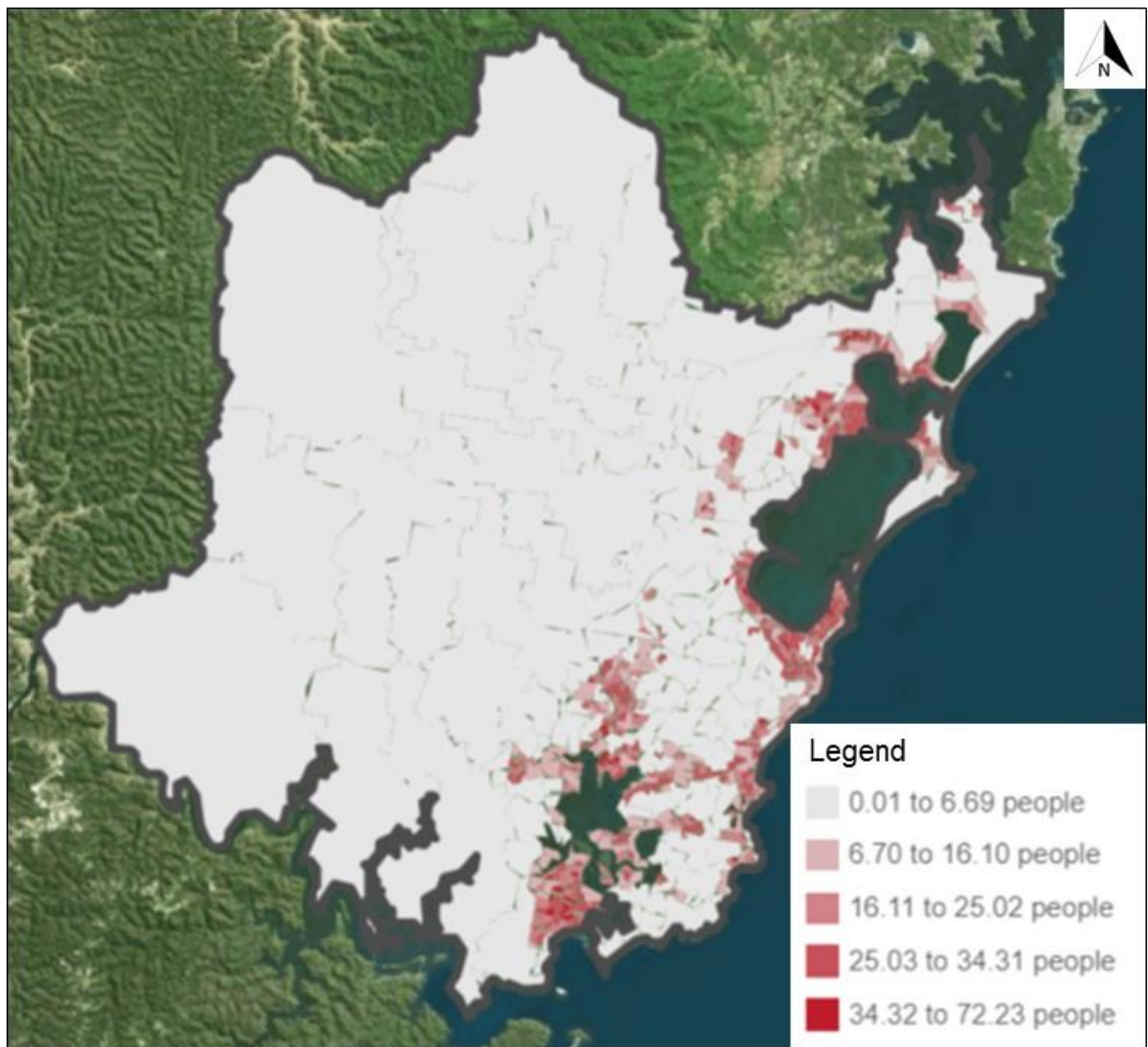
The Central Coast LGA has experienced steady population growth over recent years and had an estimated population of 327,736 people in 2016, (ABS Census of Population and Housing, 2016). The population is dispersed across a number of centres with the most populated centres being Umina Beach / Pearl Beach / Patonga, North Gosford / Wyoming, Terrigal / North Avoca, Berkeley Vale / Chittaway Bay / Glenning Valley and Woy Woy / Blackwall.

The region is characterised by low to medium density residential development and local shopping areas concentrated to the east of the M1. The area to the west of the M1 is characterised by rural land uses, national parks and state forests with a dispersed population.

4.2.2. Current demographics

The ABS defines population density as 'the average number of people per hectare'. Based on the 2016 ABS census data, the suburbs with highest population density are Gorokan, Ettalong / Booker Bay, Blue Haven, East Gosford / Point Frederick and Watanobbi. Population density across the LGA ranges from 0.07 persons per hectare (Mountains) and 27.46 persons per hectare (Gorokan), with an average population density of 1.95 persons per hectare.

Figure 7 shows the population density across Central Coast LGA.

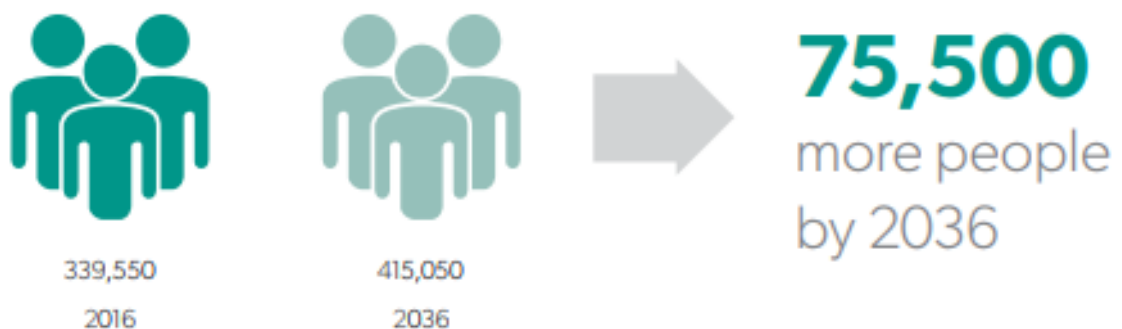


Source: Central Coast Social Atlas (<https://atlas.id.com.au/central-coast-nsw>)

Figure 7: Location and density of Central Coast population by ABS suburb

4.2.3. Potential future demographics

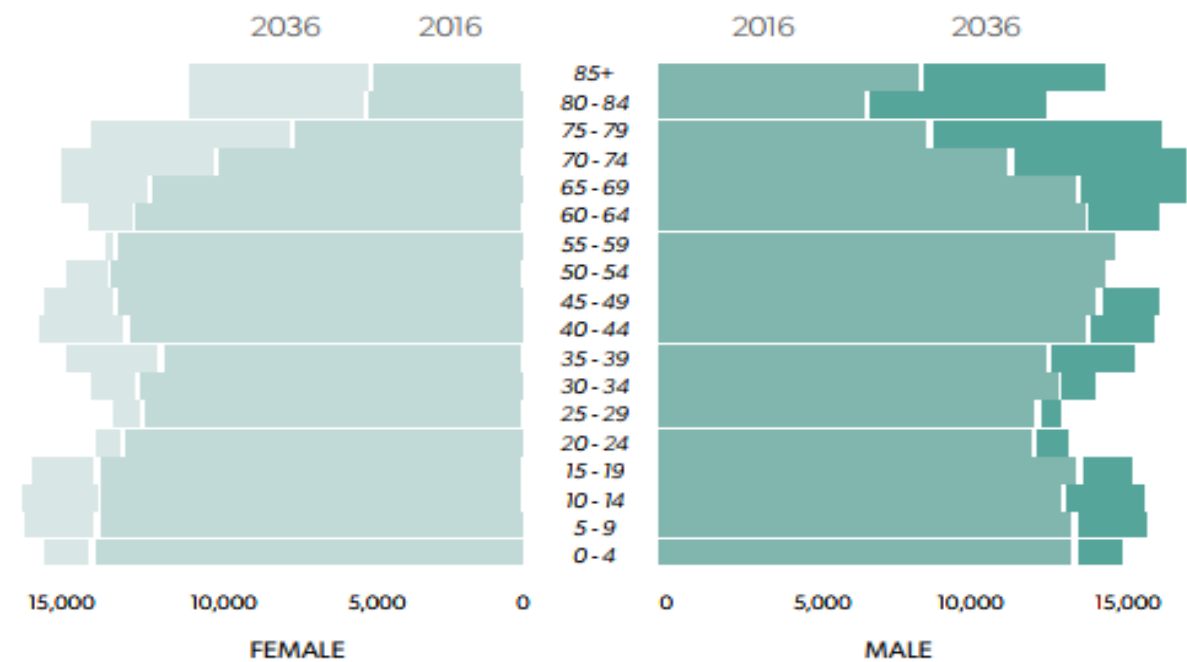
The population of the Central Coast is expected to grow to approximately 415,000 people by 2036. This represents a growth rate of 1% p.a. (compounding annual growth rate) over the next two decades, as shown in Figure 8.



Source: Central Coast Regional Plan 2016 – 2036

Figure 8: Central Coast forecast population between year 2016 and year 2036

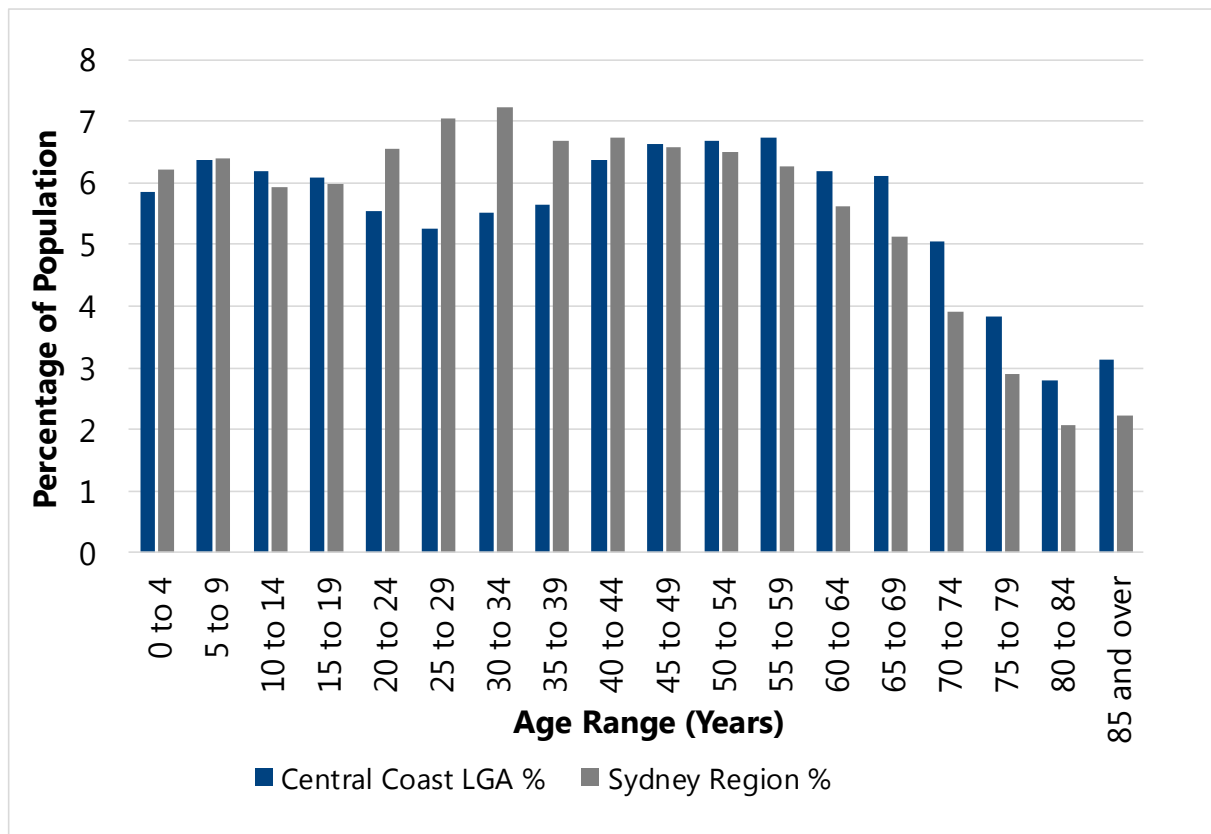
Over the next 20 years, the composition of the resident population is expected to change, with about half of this population growth being ‘Seniors’ i.e. people who are 65+ years old. Figure 9 illustrates the forecast age distribution of the population.



Source: Central Coast Regional Plan 2016 – 2036

Figure 9: Forecast age distribution between year 2016 and year 2036

The age profile for the Central Coast LGA is presented in Figure 10 with comparisons against Sydney. This comparison indicates that the Central Coast has a smaller proportion of residents aged from 20–39 years and a larger proportion of residents aged 50 years and older. The increase of older people living within the LGA (i.e. 60 years and older) presents current and future challenges for pedestrian access and mobility. Typically, the ‘seniors’ demographic group requires safe, accessible facilities for various reasons, including reduced mobility, decreased fitness and use of mobility aids.



Source: Australian Bureau of Statistics

Figure 10: Age profile of Central Coast LGA compared with Sydney Region

An ageing population will increase the number of retirees compared to workers, which is expected to translate into a higher volume of recreational trips. However, a number of recent studies have predicted that the growing senior population will be more productive than previous generations, and this may result in the senior population continuing to be engaged in the workforce in varying capacities.

The following key points need to be considered when planning for an ageing population:

- location, as an ageing population tends to move to more rural locations to escape high paced cities
- services, as more supported housing, health and aged care, leisure, tourism and recreation, and home services are required
- mode, as there is increased pedestrian mode share for the 60+ age group, and reliance on community transport services will increase
- these age groups typically have greater reliance on public transport (and community transport for the 65+ age group)
- accessible facilities, as the elderly typically have reduced mobility.

Given the above, the importance of having available dwellings that are highly accessible for more mobility-impaired pedestrians will increase over the next 18 years.

ABS population forecasts show that the Warnervale / Wallarah / Bushells Ridge area experienced the highest population growth between 2016 and 2036, with a number of major development applications already approved. There has been no construction activity to date related to these approvals and the Warnervale area has been excluded from detailed

consideration in this PAMP. This area should be considered in a future PAMP if this situation changes.

4.2.4. Pedestrian user groups

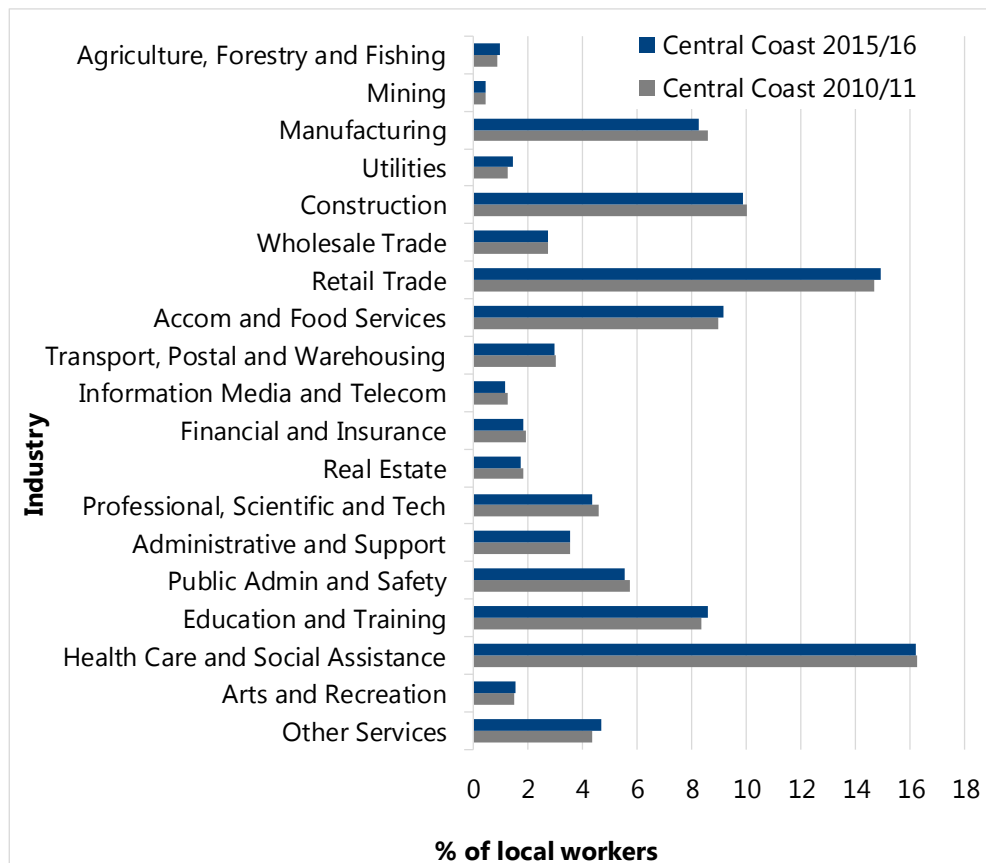
Pedestrian planning considers a number of pedestrian facility user groups based on age and assumed mobility levels. To develop this PAMP, the key pedestrian demographic groups that the plan accommodates were derived from the RMS Guide, as follows:

- infants (ages 0–4)
- pre-school (ages 5–8)
- primary (ages 9–11)
- secondary (ages 12–17)
- young adults (ages 18–25)
- adults (ages 26–59)
 - adults (a) from 26–39 years old
 - adults (b) from 40–59 years old
- elderly (ages 60+)
 - elderly (a) from 60–69 years old
 - elderly (b) 70+ years of age

4.3. Employment in the Central Coast

Employment numbers in the Central Coast LGA are generally steady, with a growth rate of approximately 2% from 2011 to 2016. The Central Coast is expected to experience a 22% increase in the number of jobs by 2036 (Central Coast Regional Plan 2036). This growth will be driven by increased commercial and retail development, manufacturing, construction, resource extraction and agriculture, and by reduced numbers of people commuting out of the region to work.

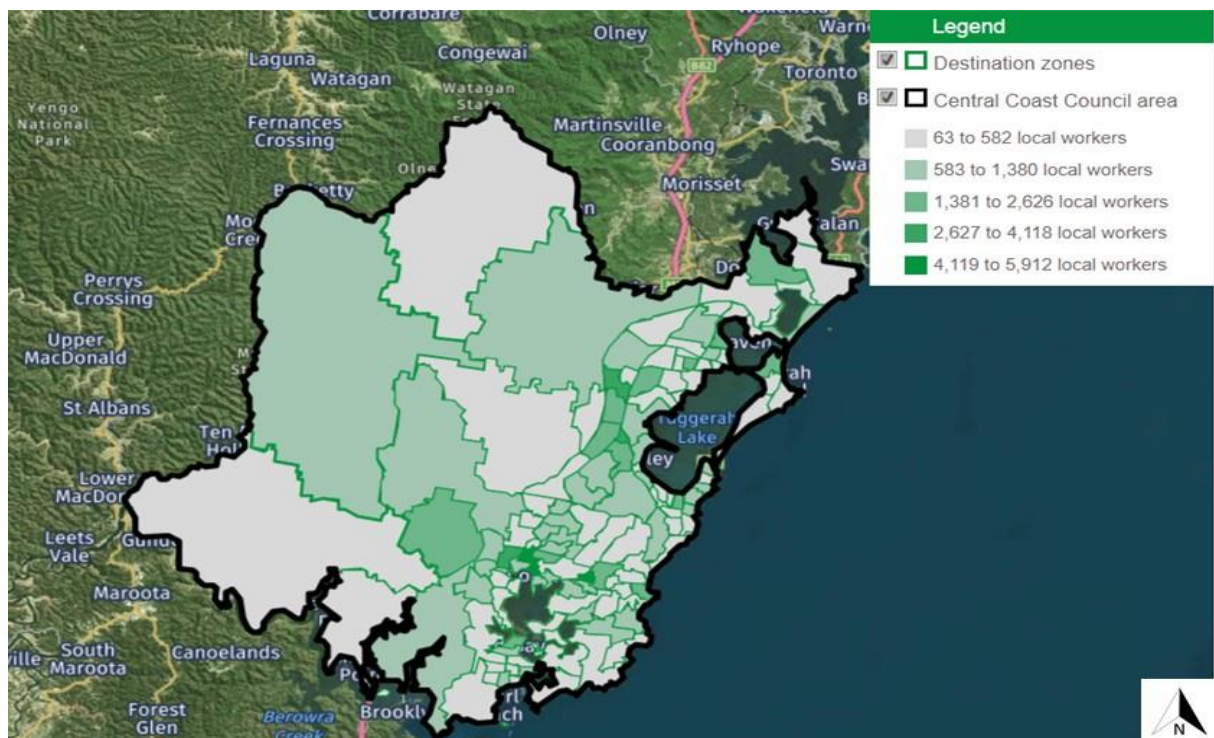
The six major employment sectors for residents within the LGA have not changed substantially from 2011 to 2016. As shown in Figure 11, the Central Coast relies heavily on the health, retail, accommodation, construction, manufacturing, tourism and education sectors.



Source: Australian Bureau of Statistics 2017

Figure 11: Types of occupation from 2011 – 2016

The ABS 2016 employment data includes employment locations for the Central Coast LGA. The locations of highest employment are Gosford, Erina, Wyong and Tuggerah as shown in Figure 12.



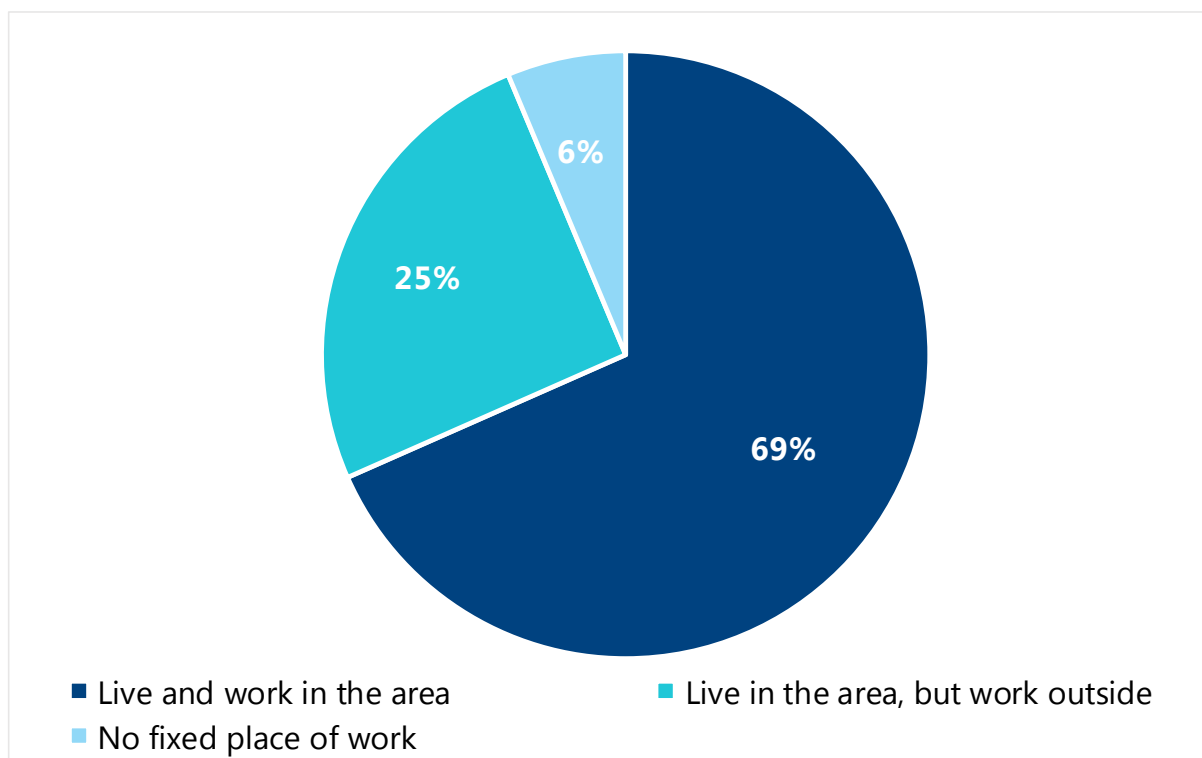
Source: Economic Profile for Central Coast LGA (<https://economy.id.com.au/central-coast-nsw/employment-locations>)

Figure 12: Local employment by ABS zone for the Central Coast LGA

4.4. Journey to Work data

Pedestrian movement for trips to and from work is typically outside of major CBD's and is typically a small proportion of all pedestrian activity. However, Journey to Work data can provide valuable insight into regular commuting patterns near key employment centres.

The ABS 2016 Journey to Work data provides work locations and the typical modal shares for trips to work by the residents of the LGA. As shown in Figure 13, the majority of Central Coast residents work in the Central Coast area, with a smaller proportion of people working outside the Central Coast in areas such as Sydney, Hornsby, and Lake Macquarie.

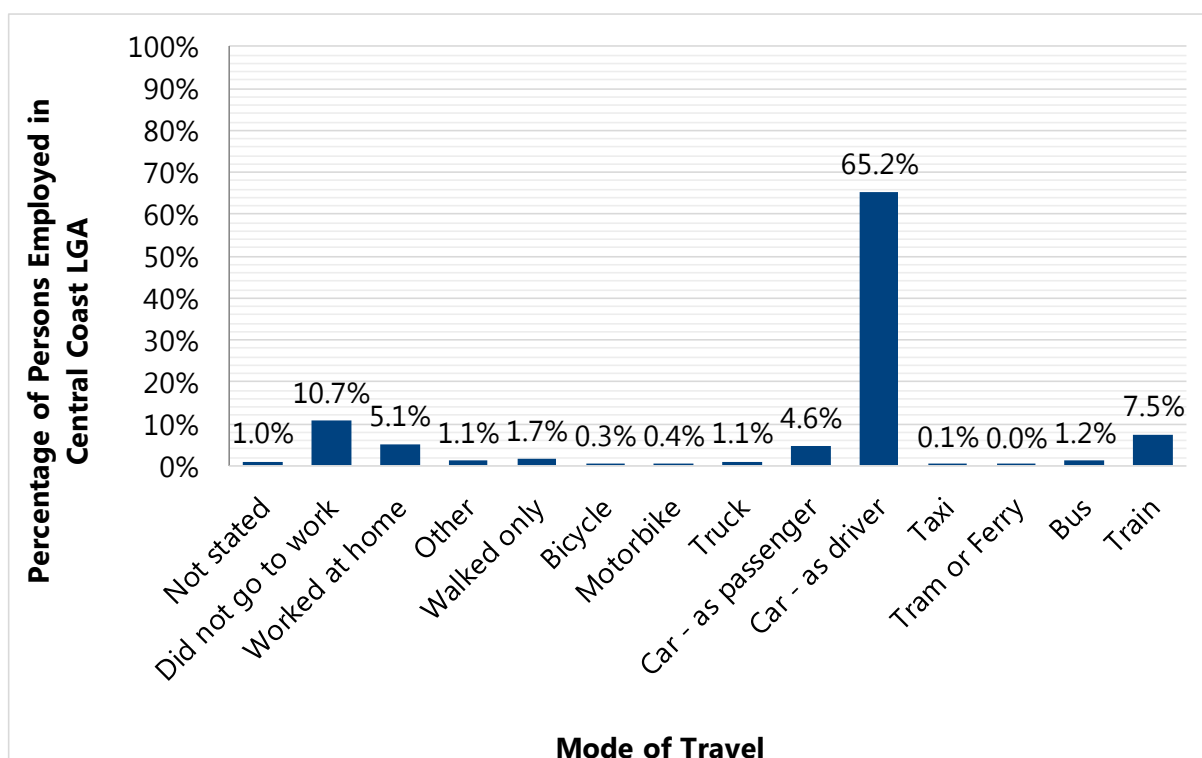


Source: Australian Bureau of Statistics 2017

Figure 13: Employment location

The main mode of transport for commuter trips by Central Coast residents (i.e. to and from work) is private vehicles. Figure 14 shows that 70% of people travel to work using private vehicles, either as a driver or passenger, and less than 2% of people walk to work.

Though not captured in the statistics, pedestrian activity forms part of every journey, either at the start or end of each travel mode, as people will move from their vehicle to their destinations i.e. school, sporting fields, work etc. This incidental activity highlights the importance of safe and connected pedestrian facilities.



Source: Australian Bureau of Statistics 2017

Figure 14: Travel share mode

4.5. Transport characteristics

4.5.1. Travel characteristics

As part of this PAMP, an online survey was undertaken to gain an understanding of current travel characteristics. This survey was open to the community for approximately one month from February 2018 to March 2018.

Consistent with the Journey to Work data, the primary mode of transport to work identified by survey participants is private vehicle. This data indicated that travel using footpaths is typically either for recreational trips i.e. to and from parks, beaches, etc. or for commuter trips i.e. from home to work. Figure 15 summarises the results of the online survey showing the primary mode of transport and trip purpose for footpath use.

The survey results also showed that over 85% of pedestrians used footpaths for travel every day or at least once per week. These results show that private vehicles are being used for the majority of the journey and pedestrian trips for a variety of shorter, localised trips to work or for recreational trips outside of work.

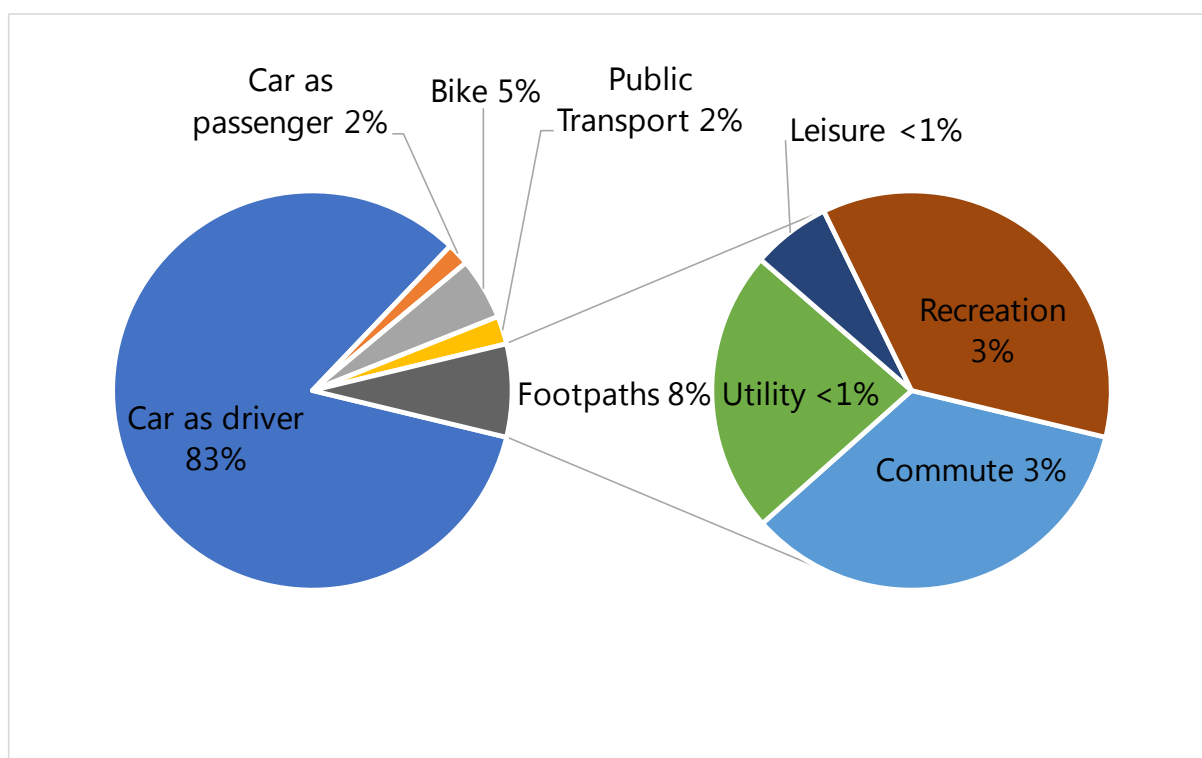


Figure 15: Weekday primary mode of transport and trip purpose for footpaths

4.5.2. Public transport

Pedestrian movement to and from bus stops and train stations is a key consideration for this PAMP. A good coverage of connected, accessible, DDA-compliant paths are valuable to increasing the potential for public transport use and reducing the impacts of private vehicle use.

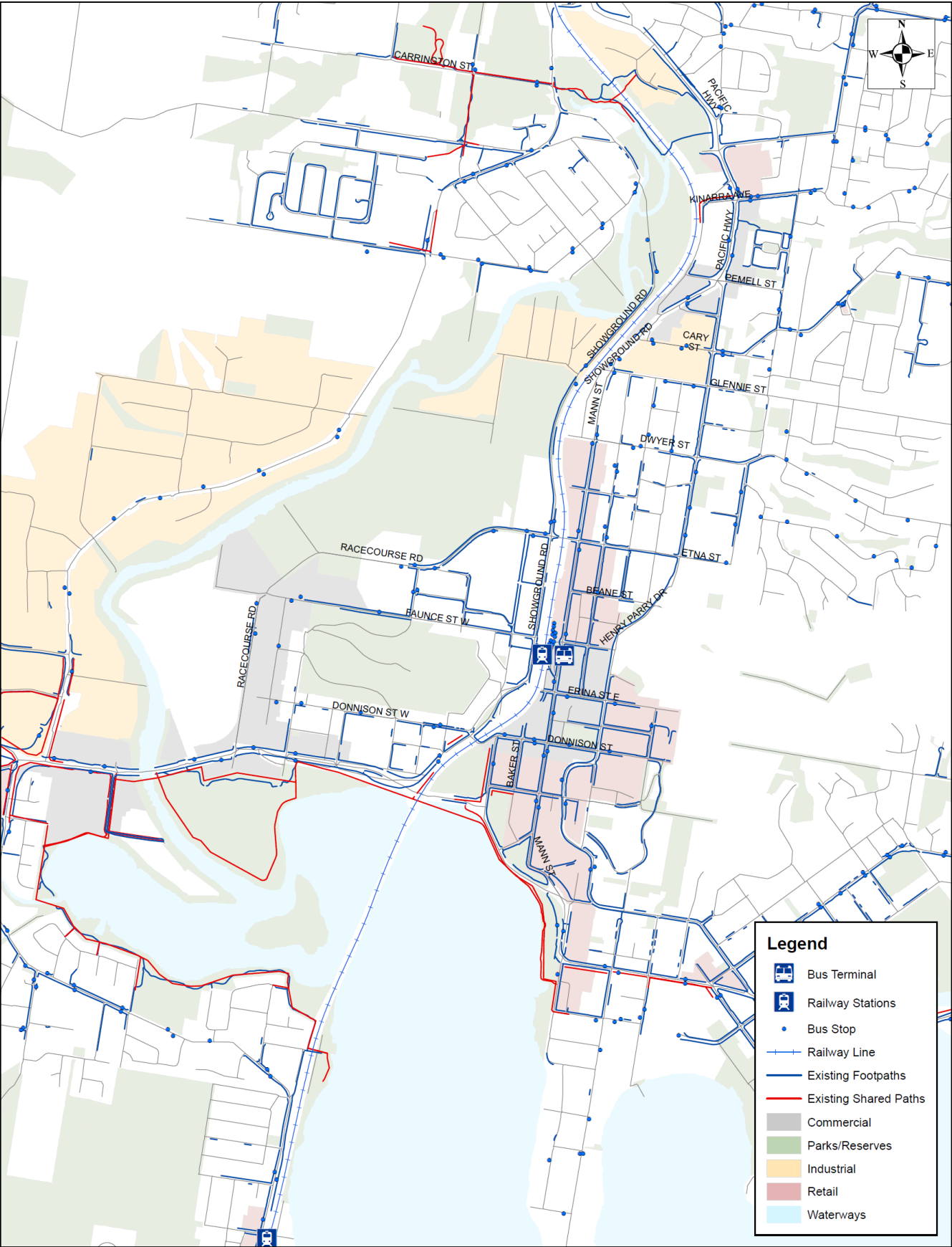
The Central Coast has an extensive public transport network with buses servicing the majority of key centres, and the rail network providing greater regional access to major destinations like Sydney and Newcastle. The rail line runs north-south through the Central Coast with the major train stations located in:

- Warnervale
- Wyong
- Tuggerah
- Gosford
- Woy Woy

In addition, major bus stations are located in:

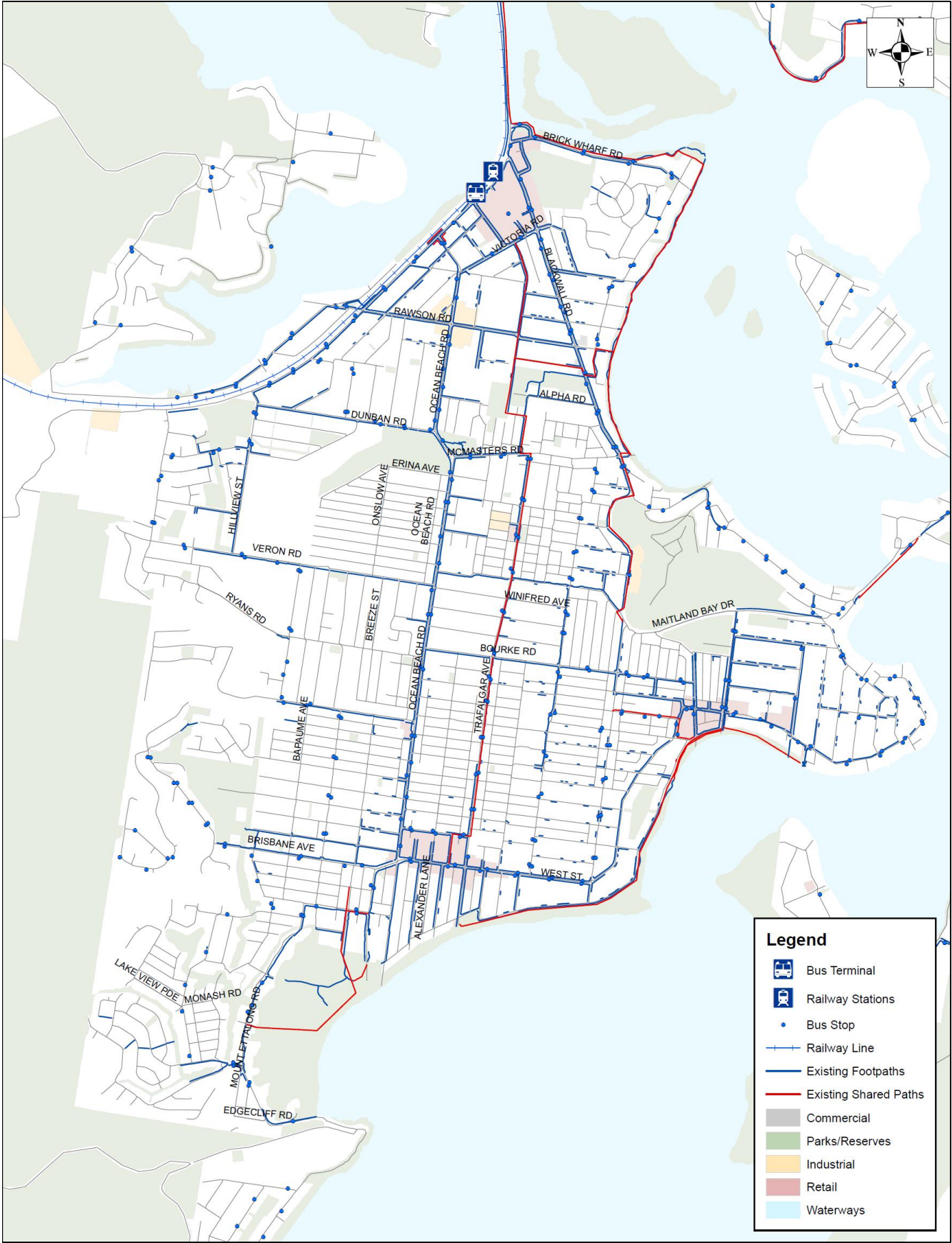
- Lake Haven
- The Entrance
- Tuggerah
- Bateau Bay
- Erina

Public transport nodes including bus stops and train stations for Gosford, Woy Woy, The Entrance, Wyong / Tuggerah, Lake Haven, Bateau Bay and Erina are shown in Figure 16 to Figure 22.



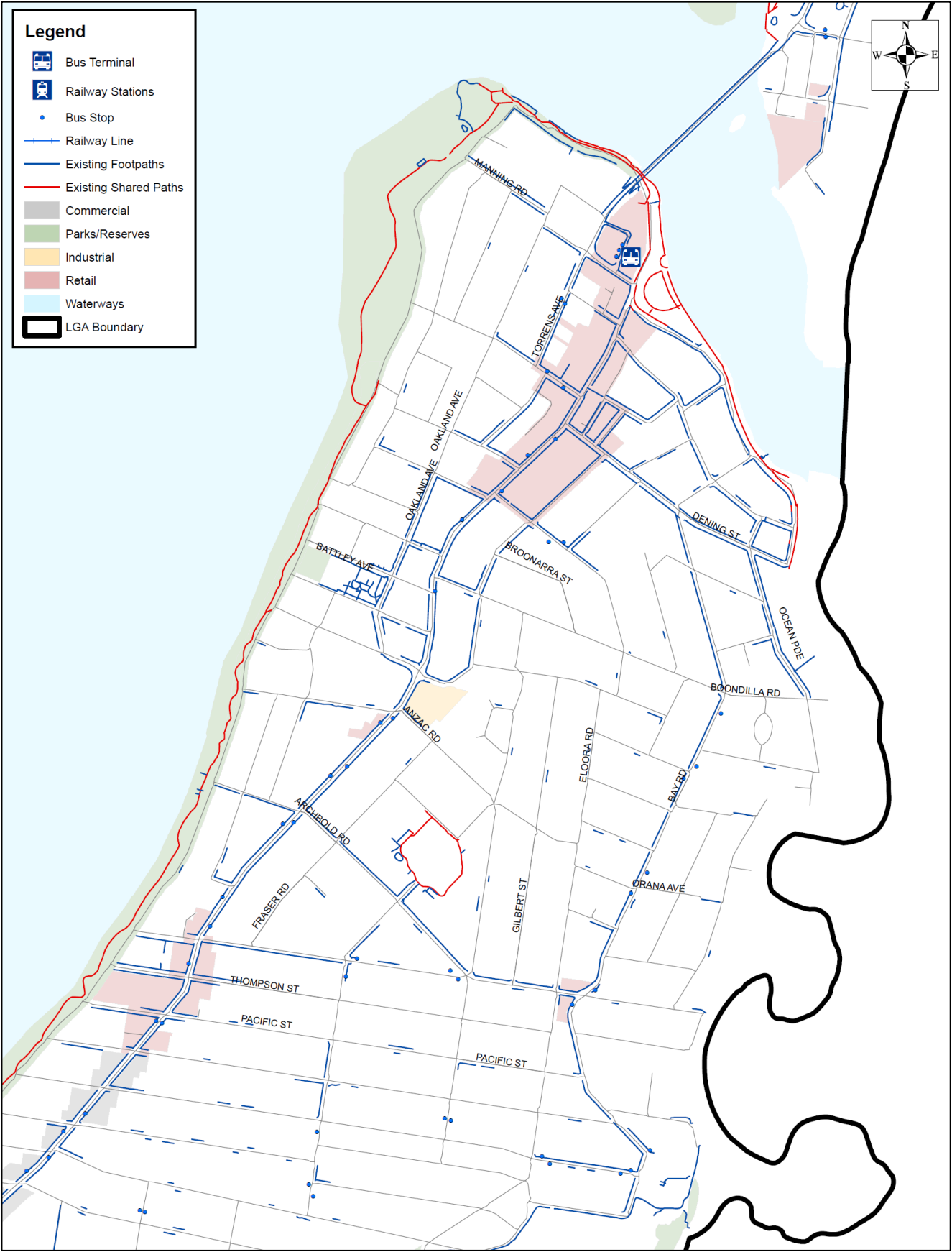
Source: Central Coast Council

Figure 16: Gosford bus stops and train stations



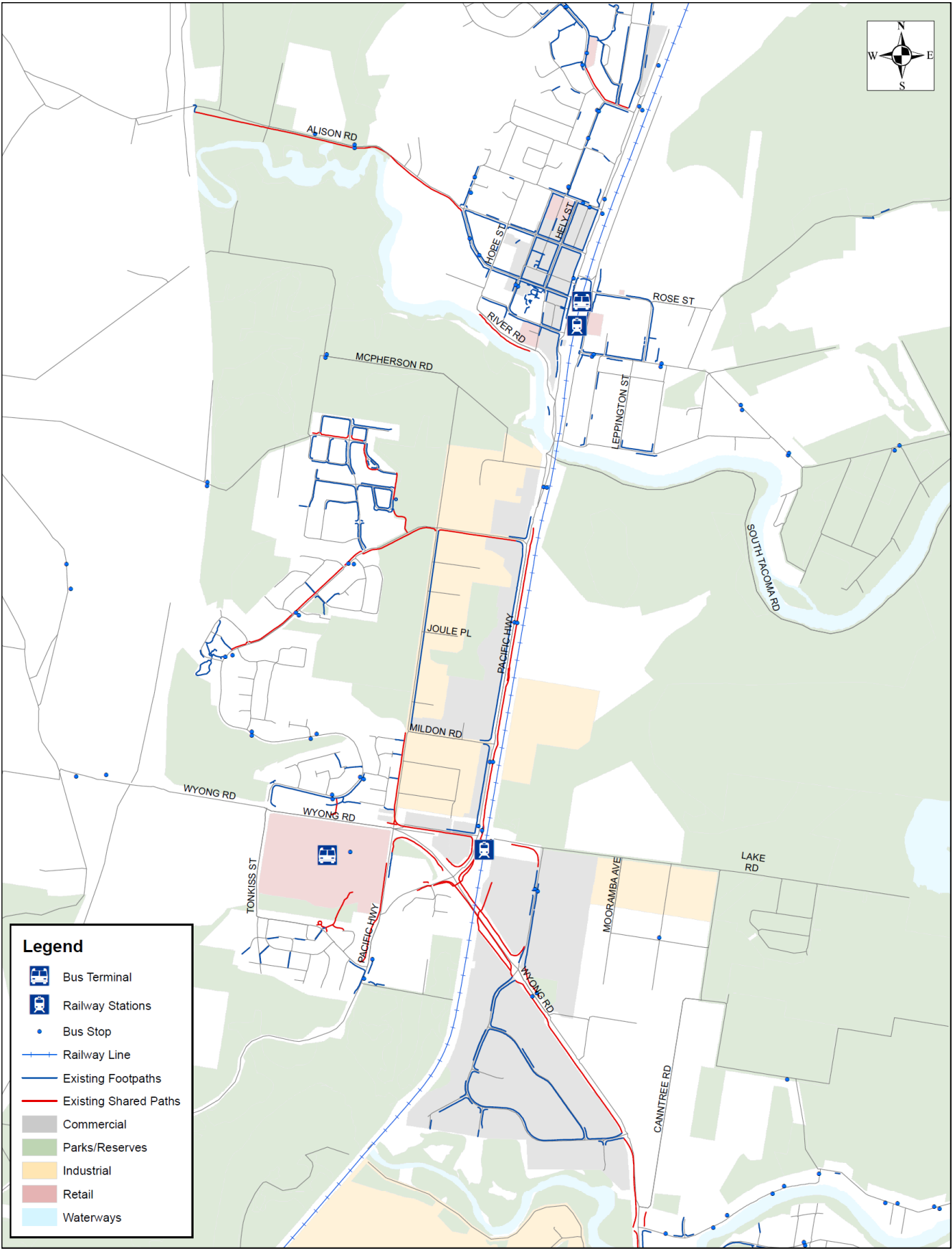
Source: Central Coast Council

Figure 17: Woy Woy bus stops and train stations



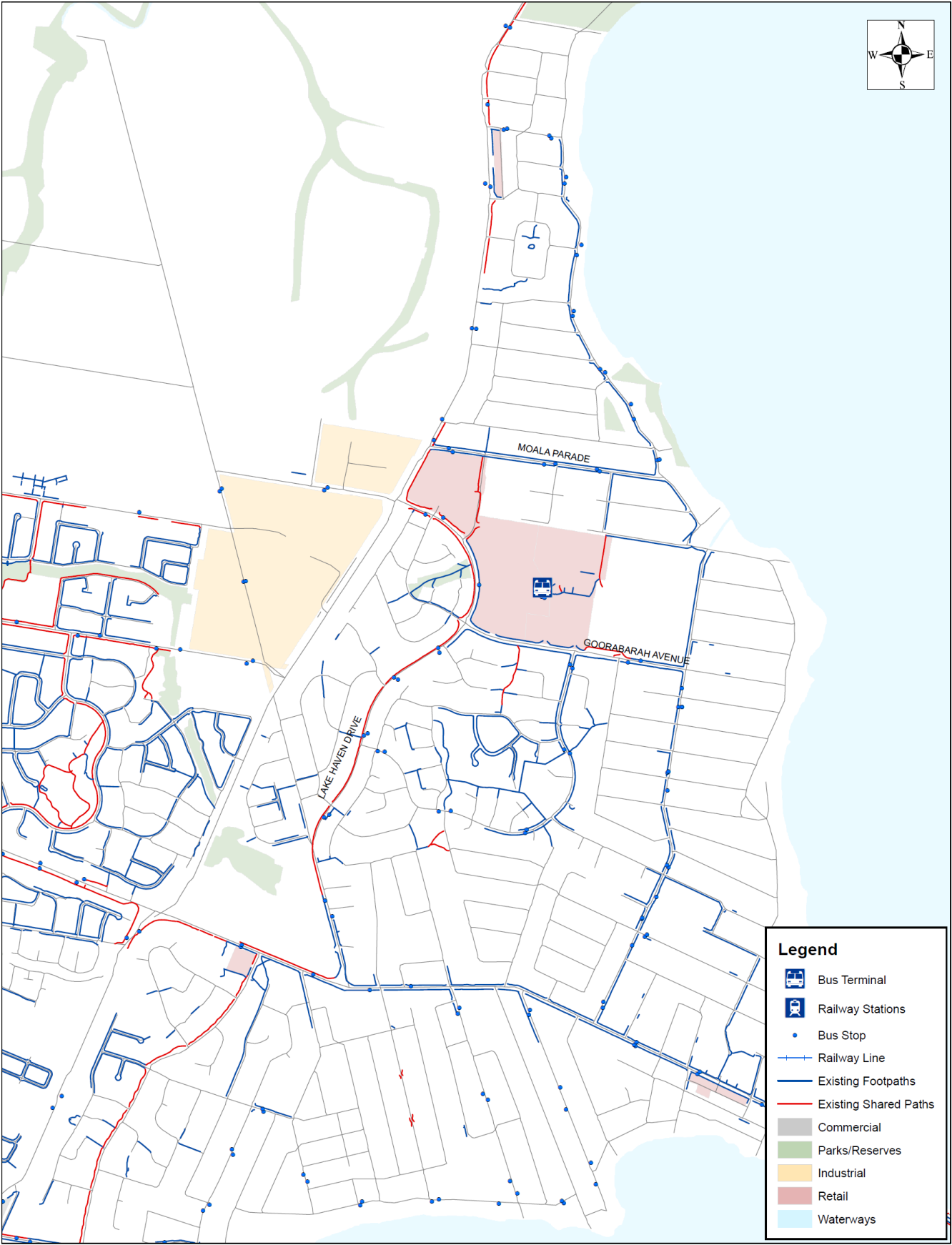
Source: Central Coast Council

Figure 18: The Entrance bus stops



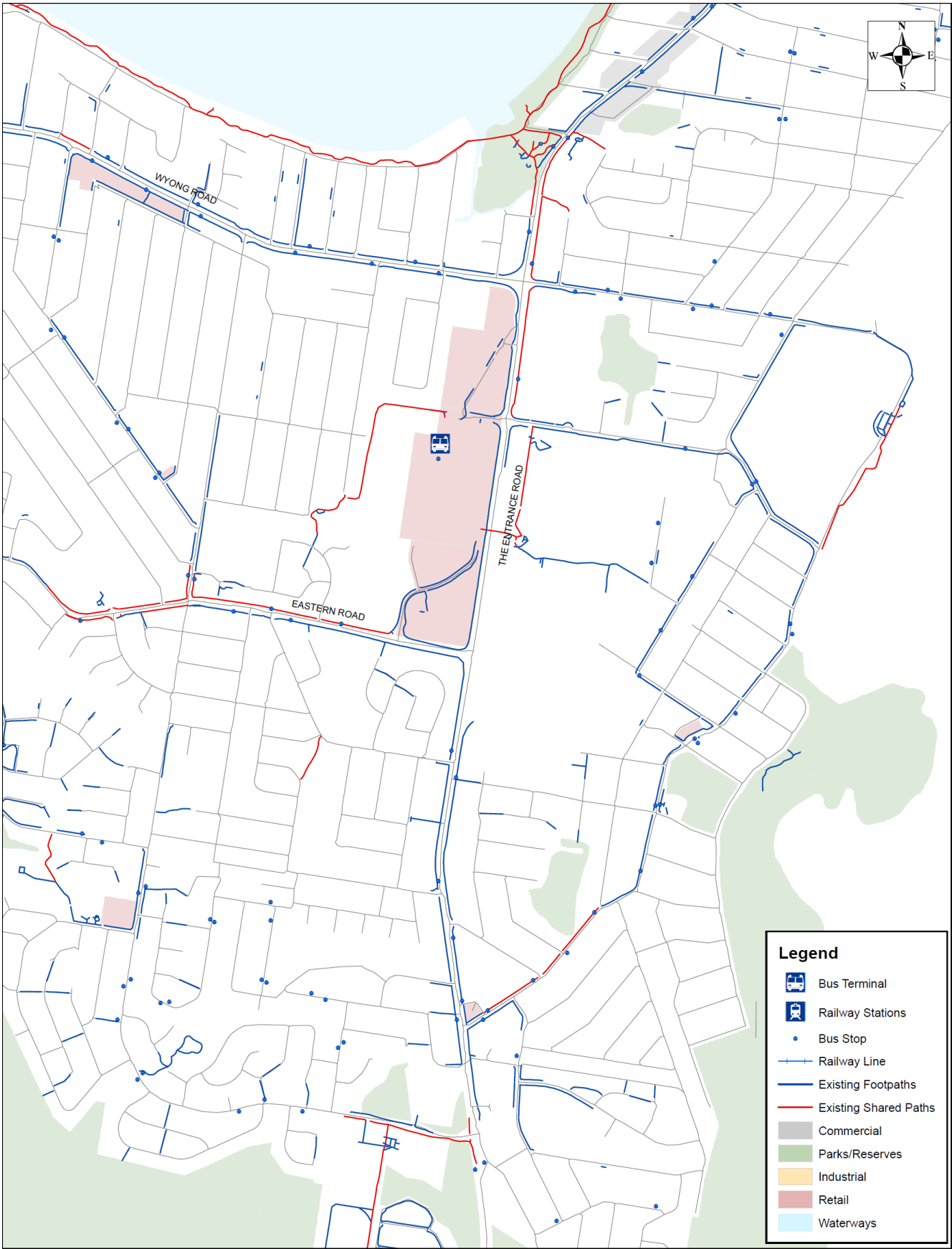
Source: Central Coast Council

Figure 19: Wyong / Tuggerah bus stops and train stations



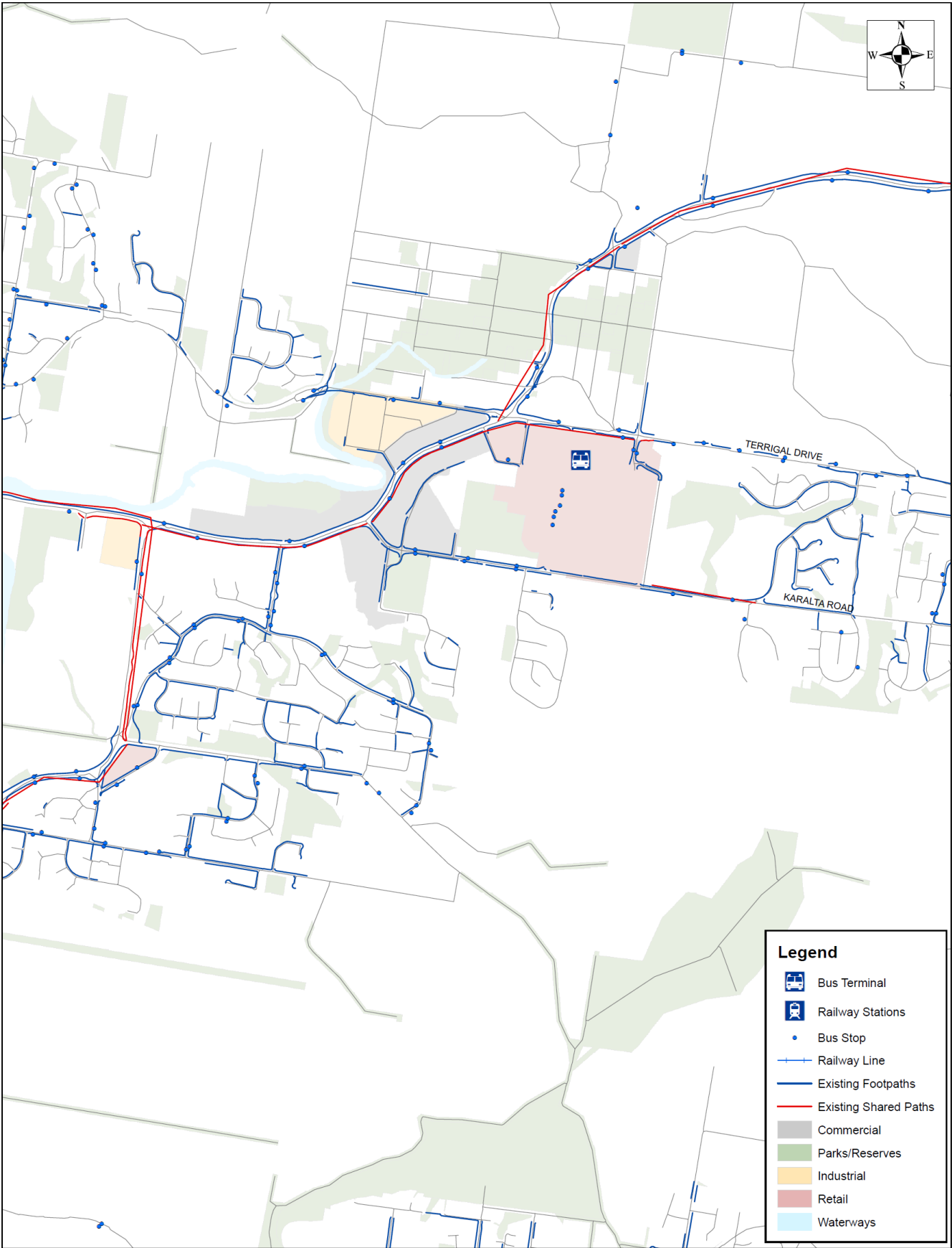
Source: Central Coast Council

Figure 20: Lake Haven bus stops



Source: Central Coast Council

Figure 21: Bateau Bay bus stops



Source: Central Coast Council

Figure 22: Erina bus stops

4.6. Summary of the pedestrian activity areas

Table 3 below shows the alignment of areas where the community raised the most issues and the high pedestrian demand areas. The areas that are mentioned two or more times are shown in bold.

Table 3: Summary of areas of Community interest areas and high pedestrian activity areas

Community and stakeholder engagement	High population areas	High employment areas	Key public transport nodes
Gosford	Gosford	Gosford	Gosford
Woy Woy	Woy Woy	Wyong	Wyong
Wyong	The Entrance	Tuggerah	Tuggerah
	Davistown	Erina	The Entrance
	Gorokan		Erina
	Terrigal		Lake Haven
			Bateau Bay

The areas that have both very high levels of community interest and high pedestrian activity are those that are mentioned two or more times in Table 3. These locations are:

- Gosford
- Woy Woy
- Wyong
- Tuggerah
- The Entrance

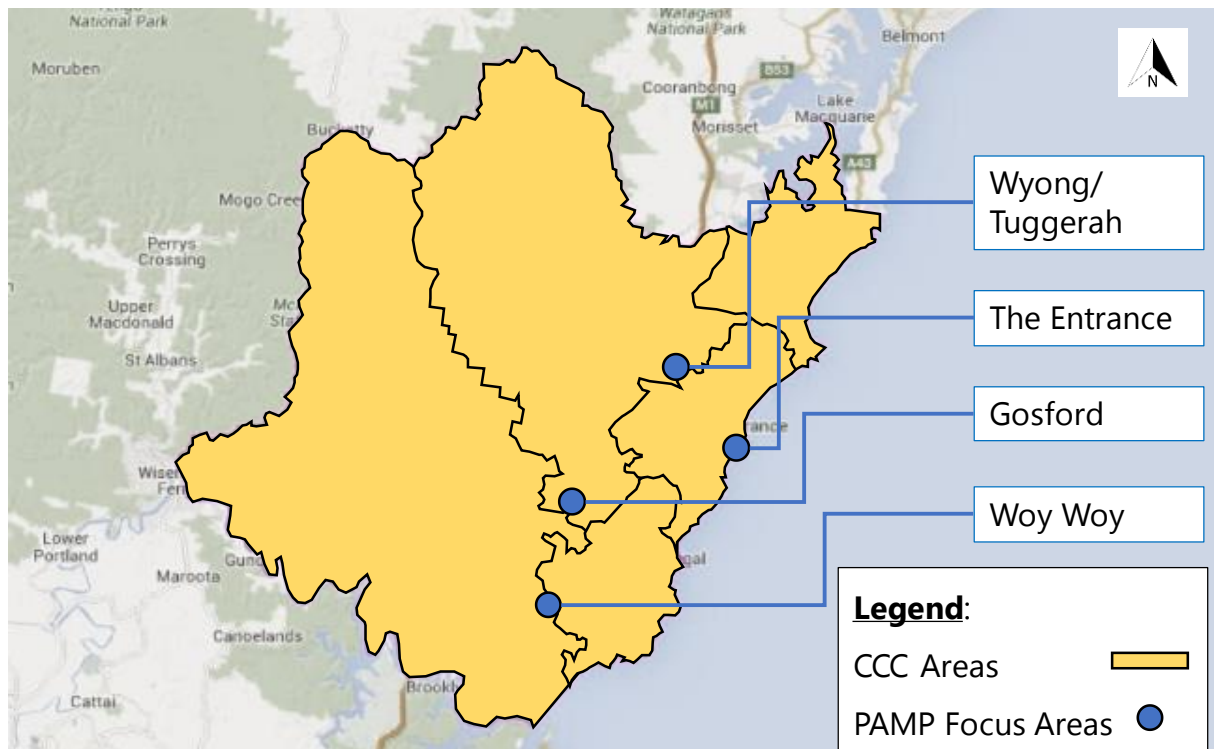
These are the areas that have been defined as the focus areas of this PAMP. This PAMP has focussed on the highest pedestrian activity areas because this is where the greatest value for investment is able to be realised, while acknowledging that investment will also be required out of these 'focus' areas over the next 10 years.

Other areas in Table 3, and all other villages, towns, and rural areas in the LGA have isolated pedestrian facility issues, which have been identified through community engagement. These issues are summarised in general terms in this PAMP and general provisions to address them have been identified.

5. PAMP focus areas

5.1. Overview

Following on from the community and stakeholder engagement, and the review of the characteristics of the Central Coast, four areas of community interest and high pedestrian activity were identified. As shown in Figure 23 these areas are Gosford, Woy Woy, Wyong/Tuggerah and The Entrance. Wyong and Tuggerah have been combined due to their geographical proximity.



Source: Google Maps

Figure 23: PAMP study precincts

Certain land-uses are considered key pedestrian generators and attractors. Typically, these include:

- shopping centres and main streets
- educational facilities
- hospitals and medical centres
- aged care facilities
- childcare centres, pre-schools, out of school hours care facilities
- community halls and facilities, neighbourhood centres, youth centres
- parks and recreational facilities

The following hierarchy of pedestrian needs was adopted for the PAMP:

- **Primary Pedestrian Activity Zone:** this is typically the main commercial area characterised by consistently high pedestrian attractors and activity i.e. from surrounding residential land uses.
- **Secondary Pedestrian Activity Zone:** this includes shops, schools, sporting facilities, car parking facilities, clubs, hospitals and community facilities (such as churches) that are not

located within the Primary Pedestrian Activity Zone. These land uses will attract activity, but generally only at certain times of the day or week.

- Tertiary Pedestrian Activity Zone: these include the land uses described as Secondary Pedestrian Activity Generators but are differentiated based on a lower level of activity. These are not located within the Primary Pedestrian Activity Zone.

The types of attractors and generators and the pedestrian activity zones were used to determine the boundary of the focus areas. These areas have been developed in partnership with the Project Steering Group.

5.2. Gosford

Prior to the amalgamation, Gosford was the main centre for the former Gosford Council. This centre includes large areas of retail, commercial and industrial land uses in Gosford, North Gosford, West Gosford, East Gosford and Point Frederick. As a result, the majority of the Central Coast's employment is located in the Gosford area. In terms of key attractors, Gosford includes Central Coast Stadium, Gosford Hospital, Gosford Station and numerous educational facilities.

Gosford was previously included in The Gosford City Centre PAMP in 2009. The focus area boundary for Gosford generally follows that included in the 2009 PAMP.

5.3. Woy Woy

Woy Woy has the largest population of all the ABS districts within the LGA. In terms of generators and attractors there are three retail / commercial areas in Woy Woy, Ettalong Beach and Umina. Ettalong Beach and Umina also include very popular foreshore areas. The area also caters for numerous educational facilities and recreation areas.

Woy Woy was previously included in The Woy Woy Peninsula PAMP in 2004. The focus area boundary for Woy Woy generally follows that included in the 2004 PAMP.

5.4. The Entrance

The Entrance is located between two key recreational areas along the beach front and along Tuggerah Lake. The main retail / commercial area is to the north but there is a smaller retail / commercial area to the south in Long Jetty. There is a large strip of visitor accommodation to the north of The Entrance. The focus area boundary includes The Entrance and Long Jetty.

5.5. Wyong / Tuggerah

Prior to the amalgamation, Wyong was the main centre for the former Wyong Council. In terms of key attractors, the Wyong / Tuggerah area contains large areas of retail and commercial development along with recreational destinations located near both Wyong and Tuggerah Stations. There are also numerous educational facilities and a long strip of industrial land use next to the Pacific Highway. The focus area boundary includes the areas surrounding the Wyong and Tuggerah Stations and a long strip between the two.

5.6. Key pedestrian attractors and generators

The key attractors and generators for each focus area are shown in Figure 24 to Figure 27.

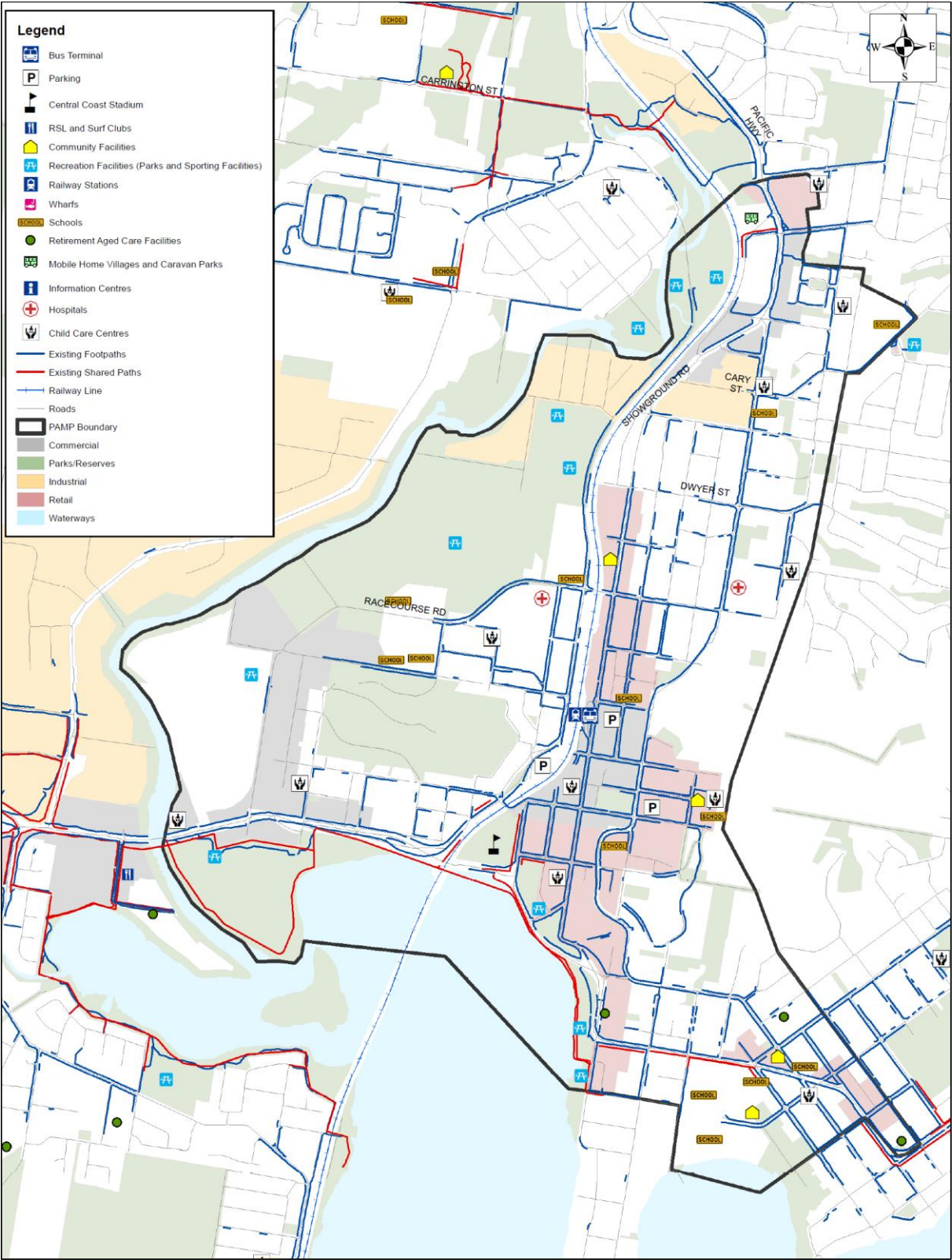


Figure 24: Gosford attractors and generators



Figure 25: Woy Woy attractors and generators

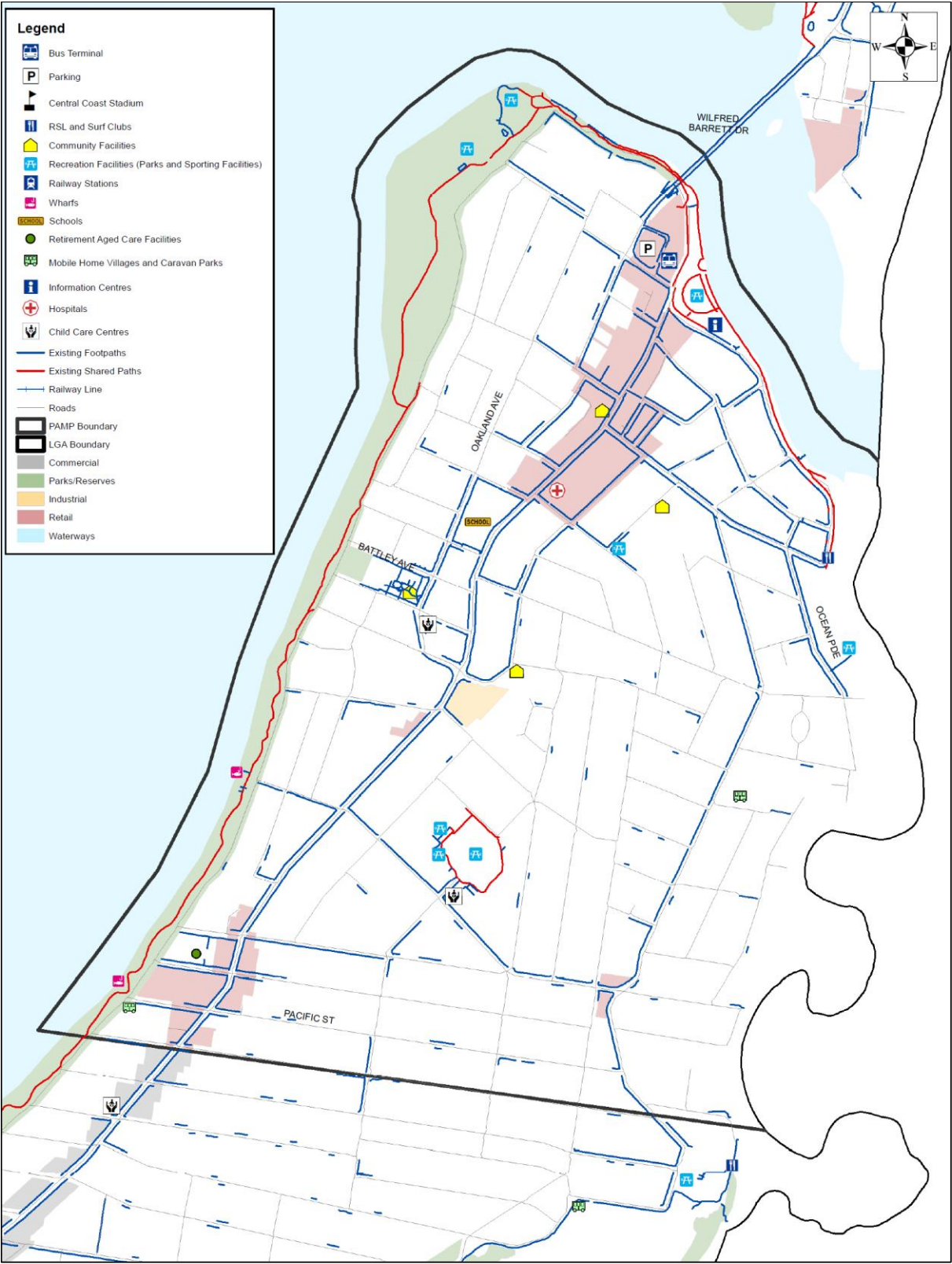


Figure 26: The Entrance attractors and generators

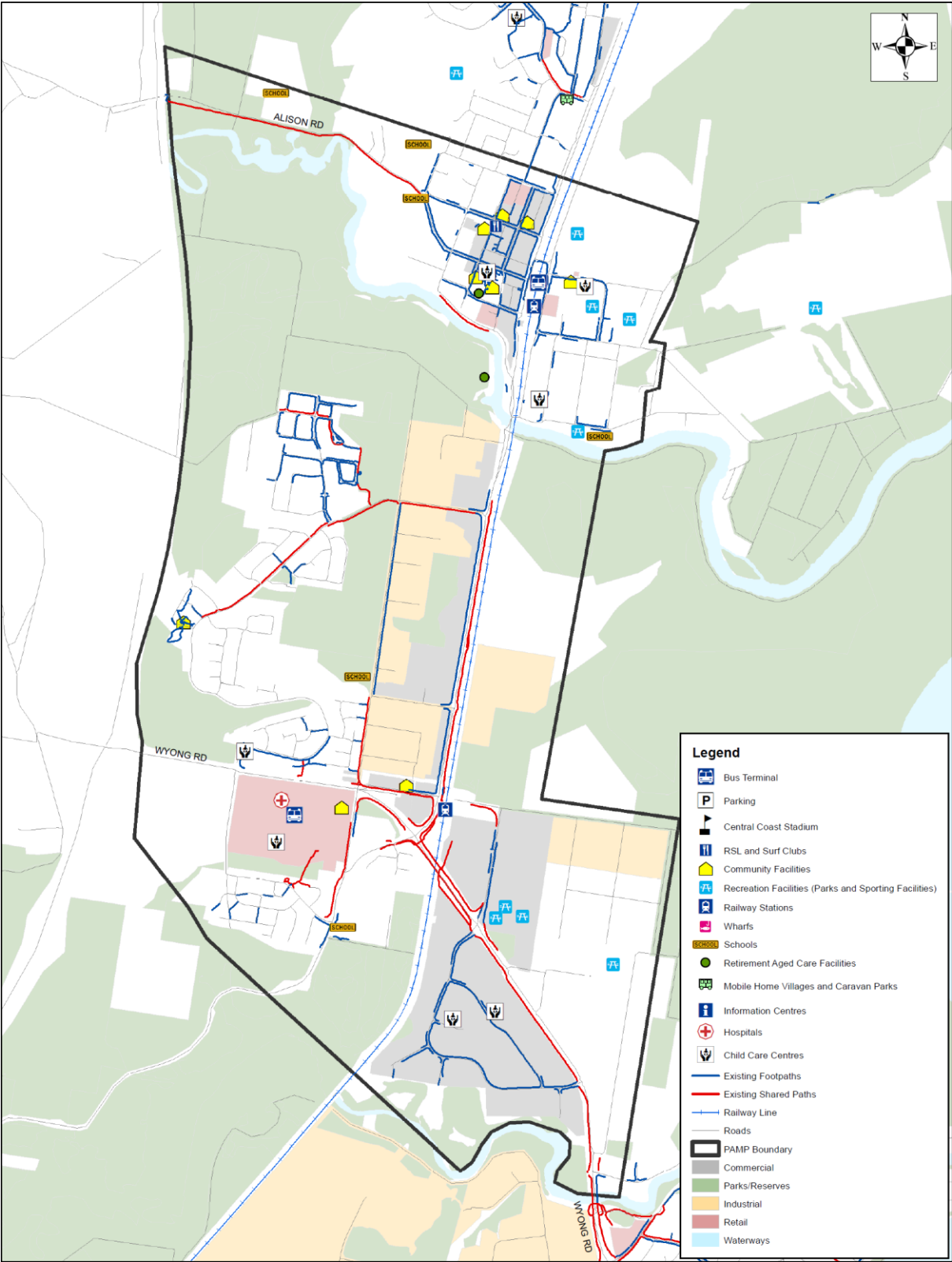


Figure 27: Wyong / Tuggerah attractors and generators

6. Research and review

6.1. Overview

The purpose of this research and review chapter is to align this PAMP with other related plans, as required in the RMS PAMP guideline. The other related plans include State Government plans, Regional plans, including the CCC Bike Plan, other PAMPs, local planning documents and other relevant plans.

Throughout the community and stakeholder engagement process, the DIAP was discussed. This plan has also been specifically included in this review.

6.2. State Government plans

6.2.1. NSW Government's Long-Term Strategic Master Plan (2014)

The NSW Government's Long-Term Strategic Master Plan sets a framework for transport policy and project investment decisions for the next 20 years. The plan recognises population growth within the region, the increasing ageing population, and a trend toward population concentrated urban areas. The plan also recognises the need for additional public and active transport options to complement the high demand on private vehicle use in the region. Key objectives of the NSW Long-Term Strategic Master Plan include:

- improved liveability and reduced social disadvantage
- economic growth and increased productivity
- improved regional development and accessibility
- improved sustainability
- improved safety and security
- improved transport integration process

The Master Plan highlights that 'walking is an important transport mode in our efforts to promote liveability around urban and regional precincts and will be better integrated into the public transport network'. Specific actions outlined in the Master Plan, relevant to the Central Coast PAMP are provided below in Table 4.

Table 4: Relevant Actions within the NSW Long-Term Strategic Master Plan

Theme within Masterplan	Action
Prioritised pedestrian access and amenity around public transport interchanges	Improved safety and lighting and prioritisation of pedestrian desire lines. Better wayfinding through standardised signage and pedestrian infrastructure at public transport interchanges. Enhanced online walking customer information and promotion tools.
A CBD Pedestrian Improvement Program, including improved pedestrian links and pedestrian infrastructure	Commencement of planning for a Pedestrian Hazard Removal Program in the city centre. Ongoing identification of areas for improved pedestrian connections.

Theme within Masterplan	Action
Identification of opportunities to improve pedestrian priority at signalised intersections on major urban centre desire lines	Exploration of the use of traffic signal technology and operating protocols to improve pedestrian priority at signalised intersections on major urban desire lines. Evaluation of a pilot scheme for the use of pedestrian countdown timers to improve the safety and convenience of crossings.
Improved pedestrian connections in major urban centres offering safe and convenient travel within and around centres	Identification and mapping of key catchments around major urban centres, in which the information will be used to improve pedestrian access in these catchments. Exploration of Australian Government funding opportunities for walking infrastructure and walkability design guidelines for new developments.
Expansion of the Walking Investment Program, including the construction of pedestrian bridges to connect walking paths safely across busy roads, with a focus on pedestrian access to centres with arterial through-traffic	Development of a NSW walking strategy to improve pedestrian access. The strategy will include investments in better walking information and a review of support for local government investment and walking networks.

6.3. Regional and local plans and strategies

6.3.1. Regional plans

6.3.1.1. Central Coast Regional Transport Plan 2013

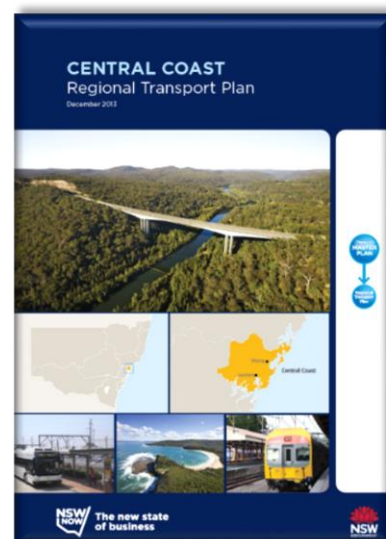
The Central Coast Regional Transport Plan sets the direction for the Central Coast for the next 20 years. The plan was prepared with the intent of complementing key directions established in the NSW Long-Term Strategic Master Plan, which include providing better transport services, ensuring effective regulation, and improving transport infrastructure.

This plan outlines key themes and actions that aim to address the main transport related challenges for the Central Coast.

The main themes outlined in the Central Coast Regional Transport Plan include:

- supporting travel to and from the Central Coast region
- supporting travel within the Central Coast region
- supporting travel in major centres and towns in the Central Coast region

Each key theme has several actions. Those actions most relevant to the PAMP relate to pedestrian activity in major centres and towns in the Central Coast region. These actions, as described in the Central Coast Regional Transport Plan, include:



- Roll out the Walking Communities Program by:
 - aiming to deliver state infrastructure investments and contribute to local government initiatives to increase the amount of people that choose to walk as their mode of travel
 - providing dedicated funding to assist local councils to improve walking infrastructure within two-kilometre (km) catchments of city centres and transport interchanges.
- Improve Information about walking and cycling routes and facilities by:
 - promoting the benefits of active transport, improving customer information, and developing guidelines and resources for local government
 - improving online resources (e.g. trip planning) to promote active transport
 - sponsoring events and community programs which promote active transport.
- Improve opportunities for walking and cycling in the, former, City of Gosford by:
 - supporting the implementation of better facilities for walking
 - providing opportunities for, the former, Gosford City Council to seek new active transport links through funding mechanisms.
- Improve opportunities for walking and cycling in, the former, Wyong Shire by:
 - supporting the implementation of better facilities for walking
 - providing opportunities for, the former, Wyong Shire Council to seek new active transport links through funding mechanisms.

6.3.1.2. Central Coast Regional Plan 2036 (2016)

The Central Coast Regional Plan aims to guide the NSW Government's land use planning priorities and decisions over the next 20 years within the CCC LGA. As the overarching framework for the region, priority actions are listed and include detailed land use plans and infrastructure funding decisions.

Transport is a key aspect identified throughout the plan. This includes planning for increased road, public transport, pedestrian and bicycle connections along the Southern Growth Corridor.



6.3.1.3. Central Coast Bike Plan

The aims of the Central Coast Bike Plan are to provide a safe sustainable network for cyclists of all abilities, to increase the continuity and connectivity of existing facilities, to encourage the use of active transport and to align with the community's desires.

The Bike Plan was assembled in accordance with the NSW Roads and Maritime Services (Roads and Maritime) guidelines – How to Prepare a Bike Plan (2012). This Bike Plan responds to issues raised by the community through a comprehensive engagement process conducted for the PAMP and Bike Plan.

The community feedback captured during the engagement process informed the development of the Bike Plan and identified areas of improvement or new infrastructure. The Bike Plan focussed on connections to and between the highest activity areas because this is where the greatest value for investment is able to be realised, while acknowledging that investment will also be required out of these areas over the next 10 years.

The Bike Plan identified a number of priority corridors through a set of criteria that were developed during the community engagement and were adopted from the Roads and Maritime guidelines. The proposed new infrastructure identified in the Bike Plan included

those on the priority corridors. The Bike Plan also identified other localised projects previously identified by Council or raised through community engagement.

The funding available to implement active transport projects, including bicycle paths, depends on Council budget allocations and Council's success in seeking grants from State and Federal Government programs.

6.3.2. Local plans

6.3.2.1. Gosford LEP (2014) and Wyong LEP (2013)

Both Local Environmental Plans (LEP) are the principal plans for guiding and encouraging responsible development. Each LEP is the higher order strategic local plan, which sets direction for the Development Control Plans (DCP). Neither of the LEPs include any specific requirements or controls for pedestrian infrastructure.

6.3.2.2. Gosford DCP (2013) and Wyong DCP (2013)

These Development Control Plans (DCP) identify Council's expectations and requirements for development based on the Gosford and Wyong LEPs. The Gosford DCP does not specify development controls for pedestrian facilities. The Wyong DCP includes specific controls for development that address usability of pedestrian routes, safe crossing points, safety when near vehicles, and lighting.

When the two DCPs are amalgamated into a single DCP for the Central Coast, it would be prudent to base pedestrian infrastructure requirements on the requirements included in the Wyong DCP. These requirements could be detailed further to reflect the findings of the PAMP.

6.3.2.3. Disability Inclusion Action Plan 2017–2021

The DIAP defines a suite of strategies and actions that Council will implement to ensure people with a disability are included and accounted for within the community. The Action Plan has a four-year time-frame.

DIAP actions (KPI's) are categorised into four sections:

- 'Attitudes and Behaviours'
- 'Liveable Communities'
- 'Employment'
- 'Systems and Processes'

Each section includes objectives, strategy areas and key actions. The category that is relevant to the PAMP is 'Liveable Communities'. This category has the objective to 'continuously improve accessibility, inclusivity and liveability of the local Central Coast community'. The strategy area, within this category, which is relevant to the PAMP is 'creating and improving accessible pedestrian paths of travel', with key actions including:

- develop appropriate PAMPs in key areas
- deliver accessible bus stops and supporting infrastructure including footpaths

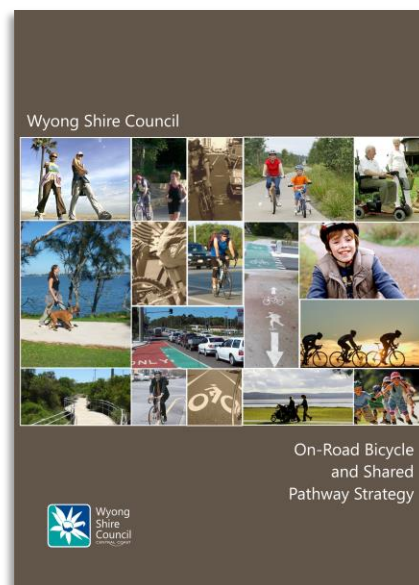


6.3.2.4. Wyong Shire Council On-Road Bicycle and Shared Pathway Strategy (2010)

The strategy demonstrates the previous Council's desire to support healthy living and sustainable transport for all members of the community. The strategy focus is on improving the health, the environment, quality of life and wellbeing of residents and visitors to the Shire through providing connections to key destinations and initiatives which encourage and support walking and cycling activity.

The vision for cycling and walking within the Shire is:

- Wyong will be recognised as a bicycle and pedestrian friendly Shire
- The Shire will be connected by a quality formed bicycle and shared pathway network, which provides for safe, convenient and enjoyable experiences
- The community will recognise the important role cycling and walking can make to improving the quality of life, through promoting healthy lifestyles, social engagement, reduced traffic congestion and improved environmental sustainability.



The strategic objectives of the Strategy are to:

- Connect the Shire's towns and villages with a high quality and formed on-road bicycle and off-road shared pathways network
- Provide an environment in which people feel confident and safe to walk and cycle
- Provide a culture within the Shire where formed on-road bicycle and shared pathways are included as an equal consideration in the planning and design of all form of development
- Provide access for cyclists and pedestrians to high quality supporting infrastructure, such as end of trip facilities to support cycling and walking becoming a part of everyday life
- Encourage the community's use of the on-road bicycle and shared pathway network

There are five key areas in the Action Plan:

- 1 Planning
- 2 Administrative
- 3 Maintenance
- 4 Design & Engineering
- 5 Education and Partnerships

There are three reports documenting the strategy including a background report, strategy document and action plan. A list of 'Proposed priority shared pathway projects' and 'Proposed priority roads for bicycle lane improvements' are included in the Action Plan. Specific targets (such as mode share targets) were not developed as part of the strategy.

6.4. Previous PAMPS

6.4.1. Woy Woy Peninsula PAMP 2004

The Woy Woy Peninsula PAMP outlines, the former, Gosford City Council's approach to improving the pedestrian network's coherence, directness, safety, comfort, attractiveness and equity of success. The key areas of study within the Woy Woy Peninsula PAMP include Woy Woy, Umina Beach, Ettalong Beach, Blackwall and Booker Bay.

The objectives of the Woy Woy Peninsula PAMP report are to:

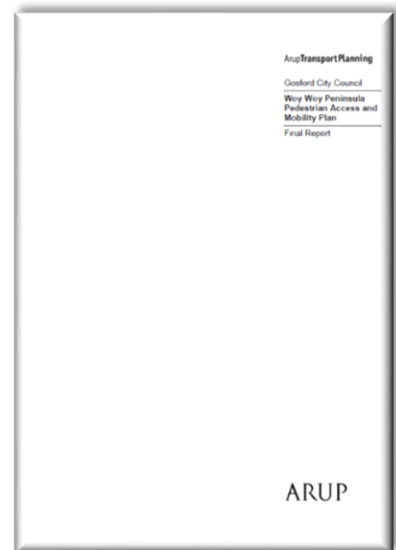
- improve pedestrian access and priority, particularly in pedestrian dense areas
- improve pedestrian network connectivity and promote safe and convenient crossing of major roads
- identify and resolve causes of pedestrian crash clusters
- improve pedestrian services for people with disabilities through the provision of pedestrian infrastructure
- provide pedestrian links with transport services to achieve an integrated land use and transport network of facilities that comply with best practice and technical standards
- ensure pedestrian facilities are employed in a consistent and appropriate manner
- link existing road users in a coordinated manner i.e. public transport and bike plans
- ensure pedestrian facilities remain appropriate and relevant to the surrounding land use and pedestrian user groups
- accommodate special event needs of pedestrians
- meet obligations under the Commonwealth Disability Discrimination Act (DDA).

To meet these objectives, the methodology of the study involved data review, surveys, community consultation, PAMP routes development, pedestrian audit of routes, action recommendations development, and consideration of Council policies and funding sources. These objectives and methodology have been considered during the development of this PAMP.

The Woy Woy Peninsula PAMP identified access barriers for pedestrians, particularly those people with reduced mobility. Some barriers included:

- lip, step or no kerb ramps
- lack of foot paving and discontinued footpath
- major cracking and raised paving in the path of travel
- poorly placed trees, bus shelters, signage, and seating impinging on paths of travel
- lack of tactile indicators at major crossings

The recommended works for each specific location within the study area is provided at Woy Woy Peninsula PAMP Appendix. These recommended works have been considered in this PAMP.



6.4.2. Gosford City Centre PAMP 2009

The Gosford City Centre PAMP report outlines, the former Gosford City Council's approach to providing an improved and interconnected pedestrian network in the city centre.

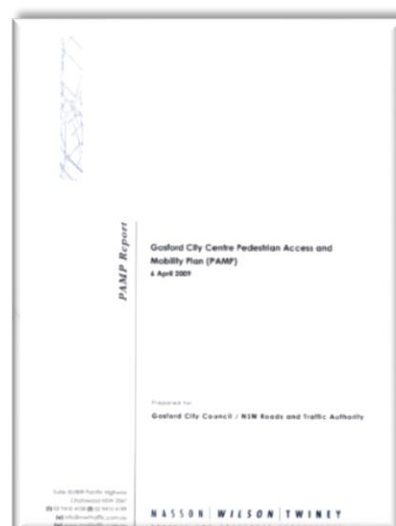
The report was structured according to the NSW Roads and Traffic Authority's (RTA, now RMS) 'How to Prepare a Pedestrian Access and Mobility Plan – An Easy Three Step Guide'.

The objectives of the Gosford City Centre PAMP are identical to the objectives outlined in the Woy Woy Peninsula PAMP. Relevant challenges identified within the Gosford City Centre PAMP report include:

- the topography of some areas form barriers to pedestrian movements, making suitable east to west routes limited
- Faunce Street suffered from poorly arranged commuter parking and lack of pedestrian footpaths, particularly toward the western end of the street near the Henry Kendall High School
- the Gosford Waterfront pedestrian footpath is an attractor for pedestrians and is identified as needing improvement works

The PAMP identified five key pedestrian routes within the city centre that should be improved, as well as recommendations on how to improve these routes.

These challenges have been considered in developing this PAMP.



7. Pedestrian crash data review

7.1. Overview

Pedestrian crash data for the Central Coast LGA was provided for the period 2011 to 2016. Crash statistics are typically assessed over a five-year period, so the data from 2012 to 2016 was analysed. The assessment focused on identifying any trends and crashes clusters within the four focus areas.

During the five-year period there were 227 pedestrian crashes recorded. When broken down by year, the number of crashes has remained relatively unchanged, as shown in Figure 28.

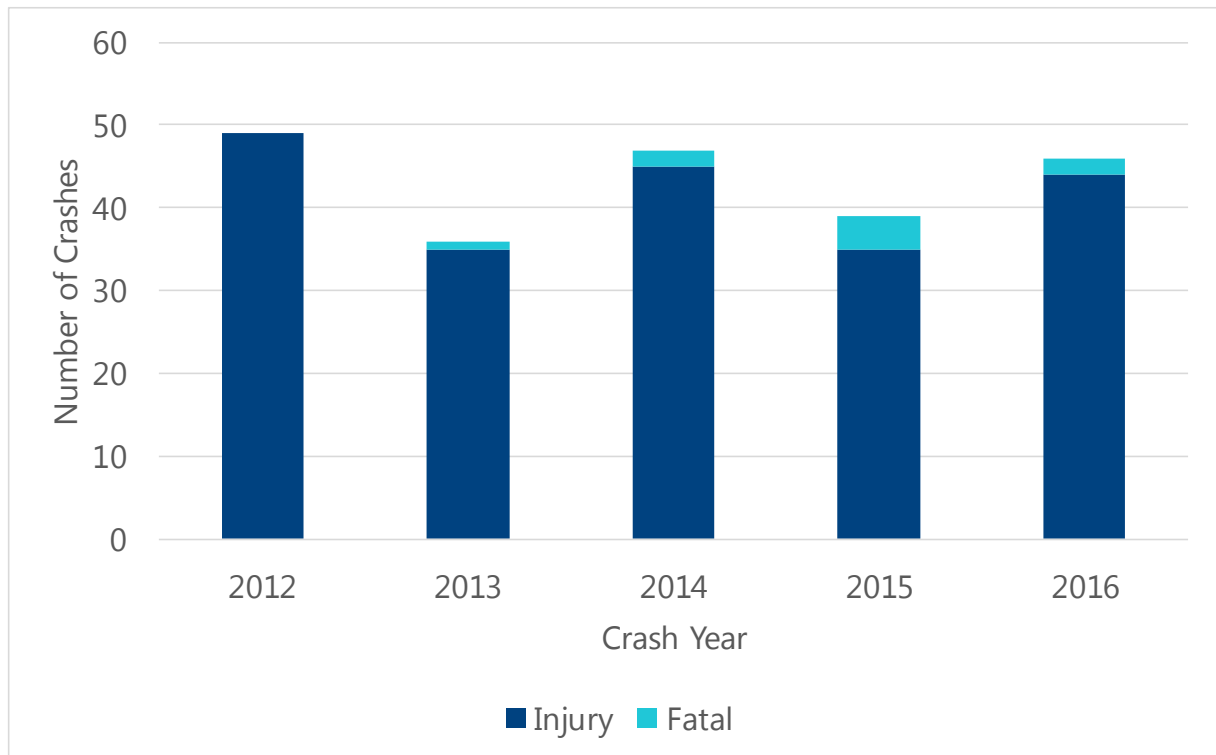


Figure 28: Total number of crashes by severity for the entire LGA

The number of fatal type crashes increased in 2015 but decreased the following year. The number of injury type crashes is significant compared to the number of fatal type crashes. The number of injury type crashes within the focus areas is also significant considering the relatively small size of each focus area, as shown in Figure 29.

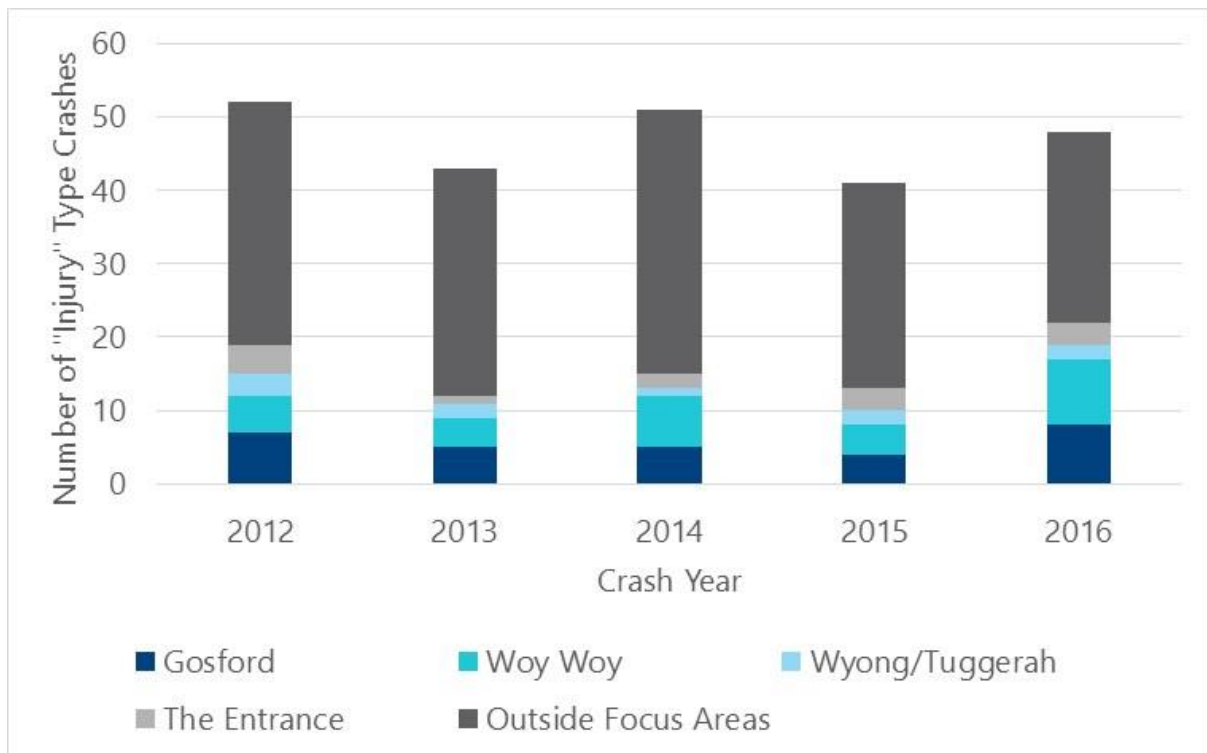


Figure 29: Total number of injury type crashes for the entire LGA

7.2. Crash summary by focus area

For the four focus areas, the results show that there were 83 pedestrian crashes recorded over the five-year period. Of the 83 pedestrian crashes, two of those were recorded as fatal type crashes with both occurring in the Gosford area in 2015.

The number of injury type crashes is significant compared to the number of fatal type crashes. Figure 23 shows the number of injury type crashes for the four focus areas by year.

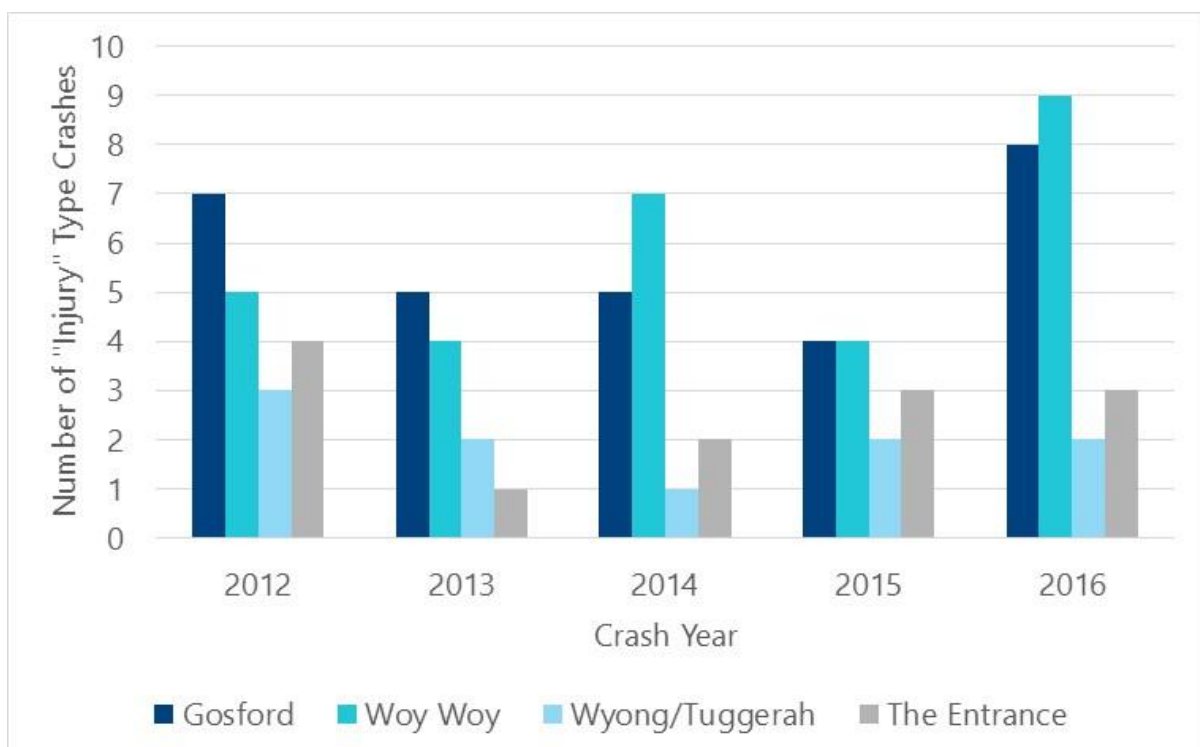


Figure 30: Pedestrian crashes for each focus area by year for injury type crashes

The key trends derived from this data are that the majority of injuries occurred in the Gosford and Woy Woy areas along the key commercial corridors where pedestrian activity would be at its greatest. General observations of the pedestrian crash data for each focus area follows:

- Gosford:
 - pedestrian crashes generally occurred along Mann Street and the Central Coast Highway, and a significant number were clustered around the Gosford Train Station
 - one of the two fatal type crashes occurred in the south of the focus area near a number of schools that are close to the Central Coast Highway
 - the other fatal type crash occurred in the west of the focus area near a number of fast food restaurants close to the Central Coast Highway.
- Woy Woy:
 - a significant number of pedestrian crashes were clustered around the Woy Woy Train Station
 - a fatal crash occurred close to Woy Woy, but this crash location is outside the PAMP focus area boundary.
- Wyong / Tuggerah: a significant number of pedestrian crashes were clustered around the Wyong Train Station.
- The Entrance: the majority of pedestrian crashes occurred around the main retail / commercial area at the northern end of The Entrance Road.

There are a number of treatments available to address crash clusters in high pedestrian activity areas. The number of crashes close to the main activity centres of each focus area suggests that a treatment that changes the priority from vehicular traffic to pedestrians may be appropriate. This treatment would require further investigation.

The pedestrian crash maps for each focus area are shown in Figure 31 to Figure 34. The pedestrian crash map for the entire LGA has been provided in Appendix E.

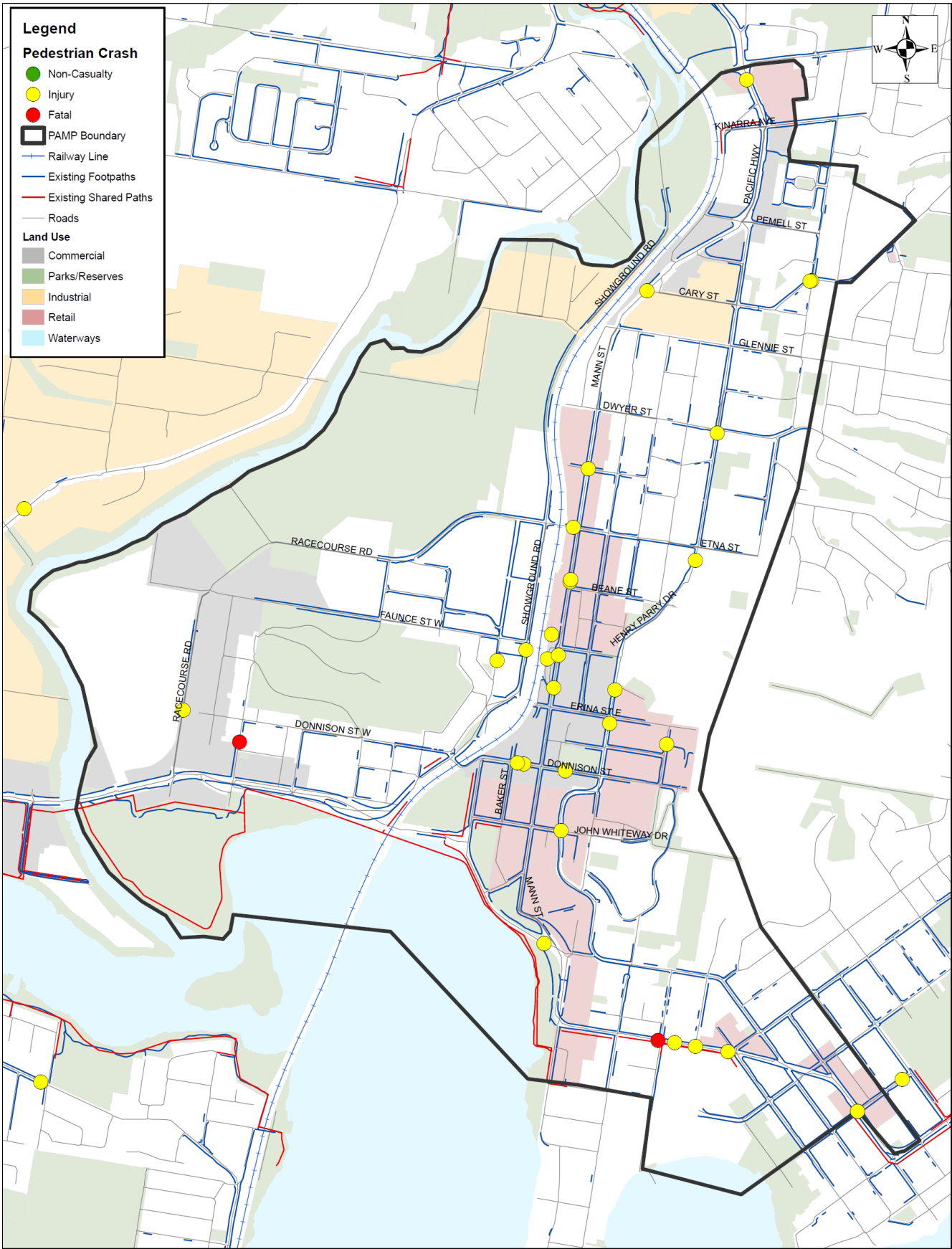


Figure 31: Pedestrian crashes for Gosford focus area

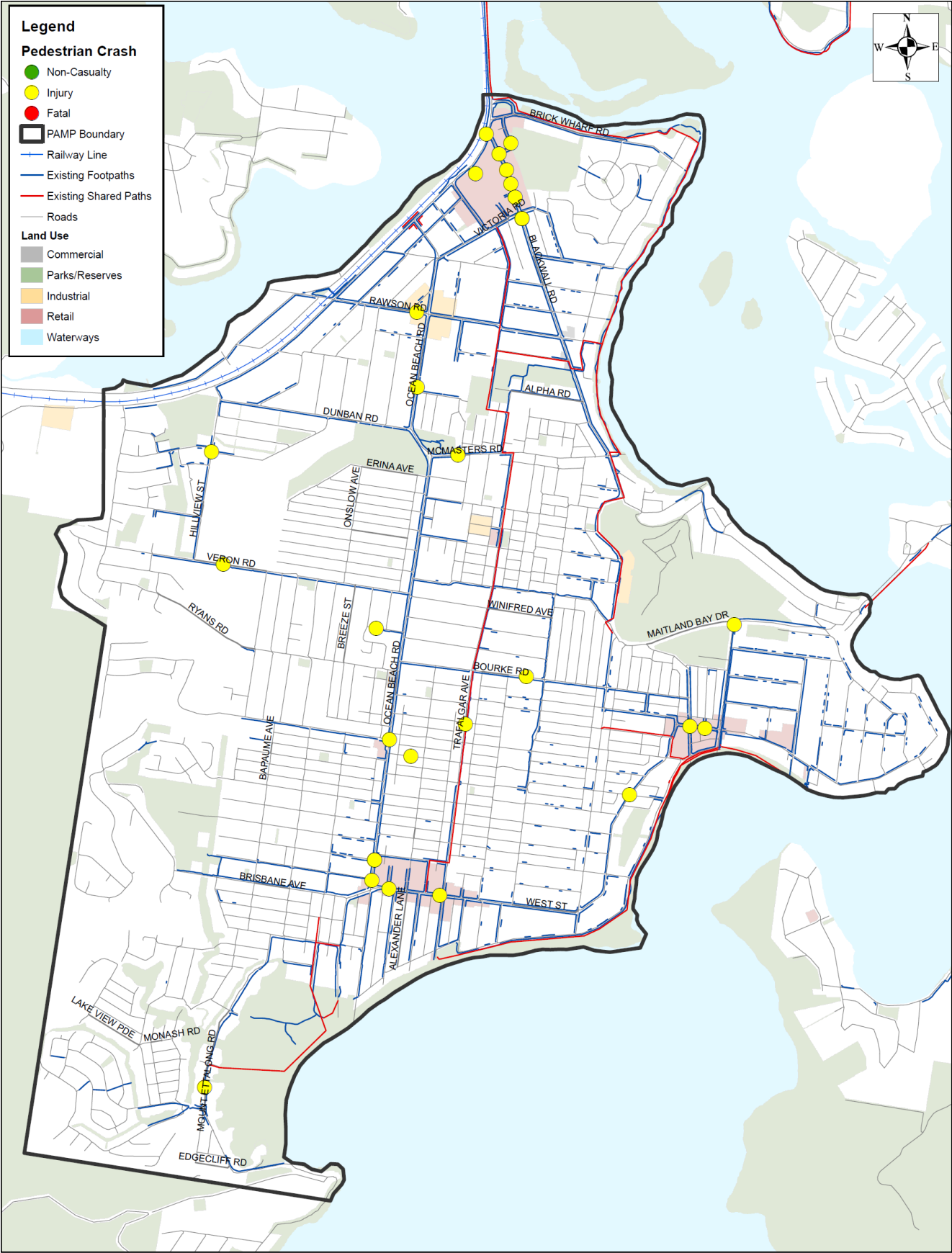


Figure 32: Pedestrian crashes for Woy Woy focus area

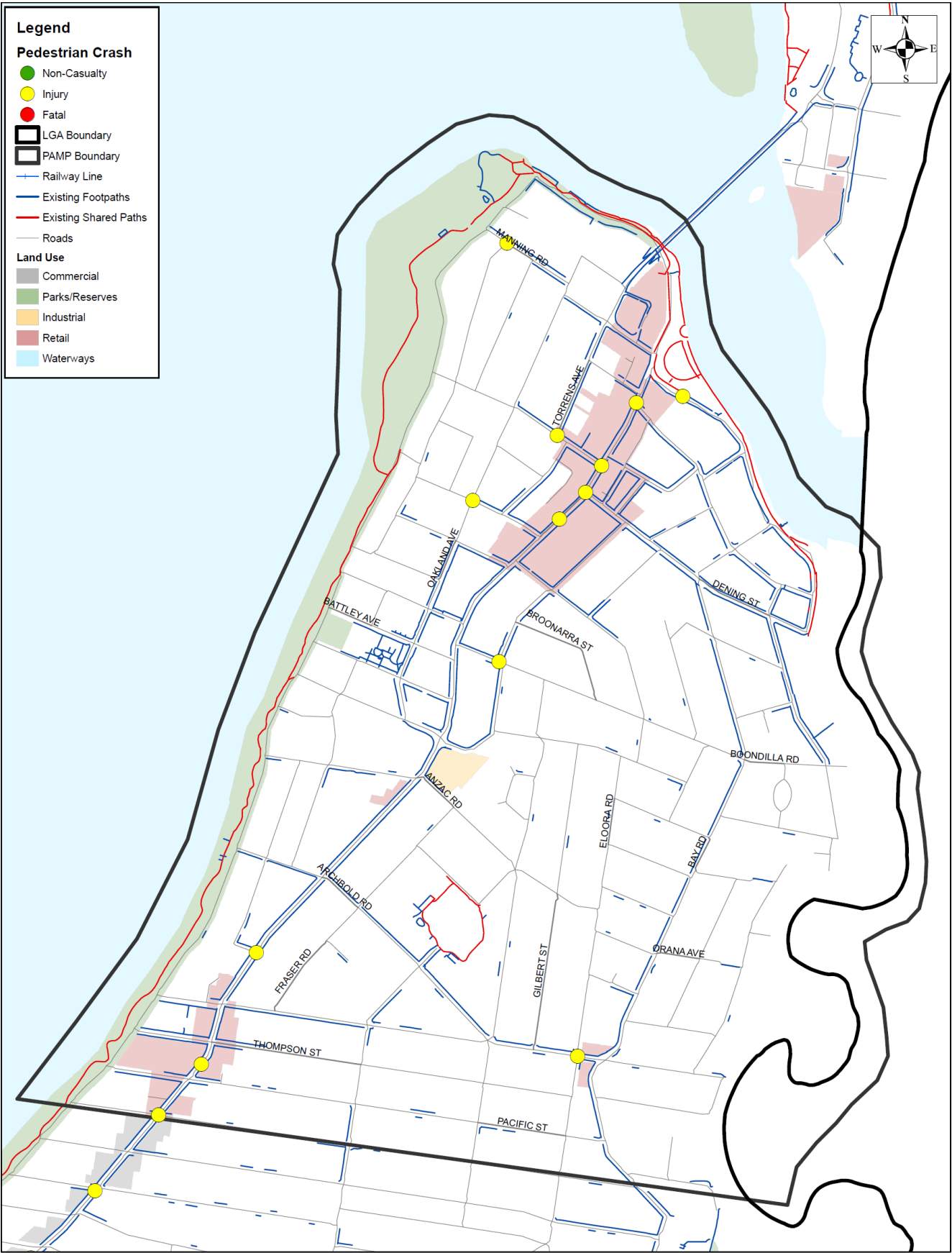


Figure 33: Pedestrian crashes for The Entrance focus area

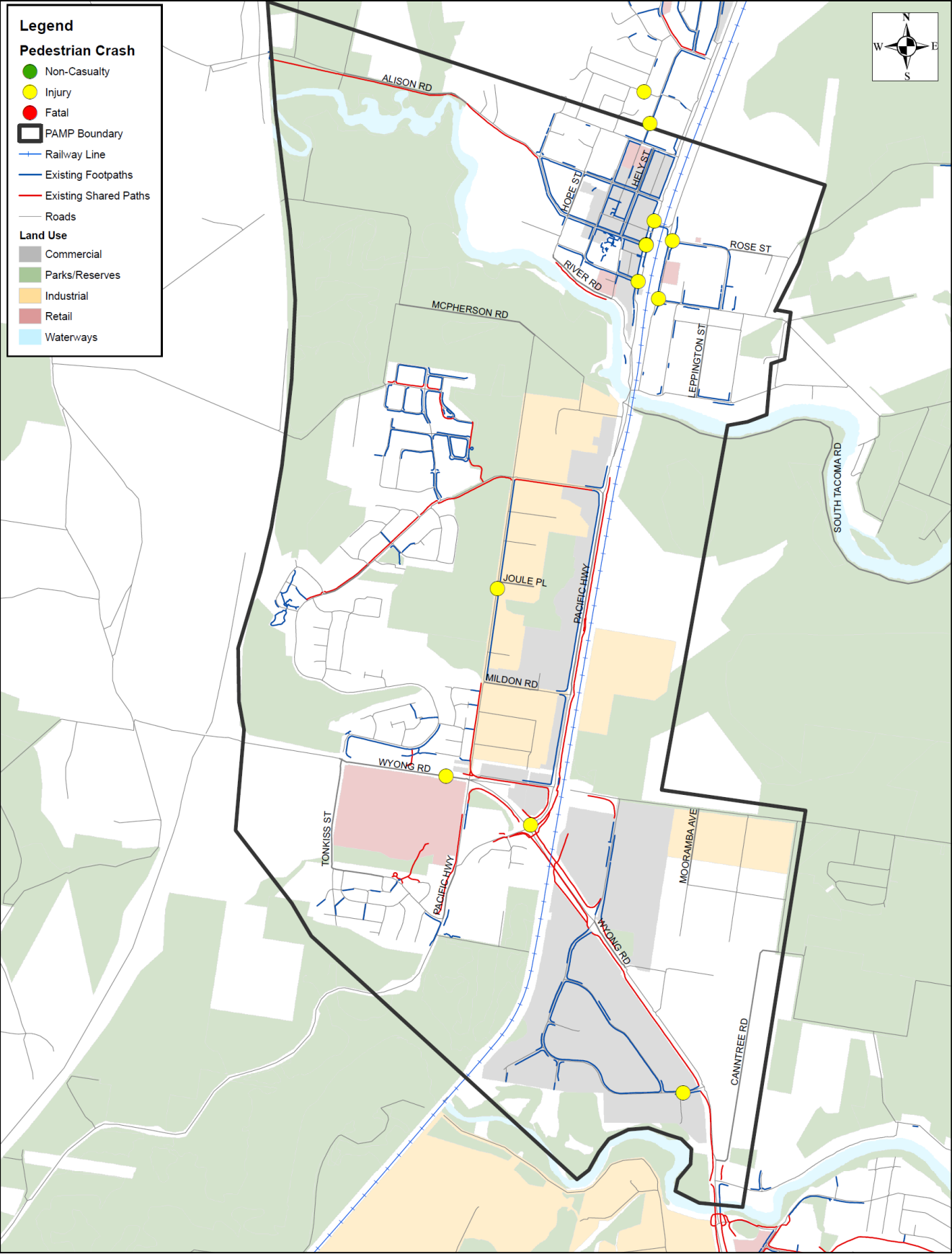


Figure 34: Pedestrian crashes for Wyong / Tuggerah focus area

8. Development of the prioritised pedestrian network

8.1. Overview

The primary purpose of the PAMP is to identify the highest priority pedestrian routes; to then identify what is needed to upgrade or augment infrastructure along these routes, and to prioritise the proposed new infrastructure.

On this basis, PAMP routes and proposed new infrastructure along these defined priority routes have been identified in this chapter. This includes 'new links' and 'link upgrades or improvements' where maintenance is needed.

The CCC has, through its previous investigations, identified a number of potential pedestrian infrastructure improvements across the LGA. Also, through the extensive community and stakeholder engagement process, a wide range of community nominated issues and potential improvements have been identified across the LGA.

The priority of these other pedestrian infrastructure projects identified are considered in the implementation schedules in Chapter 10.

8.2. Pedestrian route hierarchy

The defined PAMP routes provide a network of pedestrian links within the four focus areas. Connecting routes to form networks is important because it encourages their use for many more trip origins and destinations. That is, these connected networks have cumulative benefits for the community. These PAMP routes have also been nominated because they connect the key attractors and generators in each focus area.

The PAMP routes were selected based on the following criteria:

- distance to pedestrian trip attractors and generators
- location of existing pedestrian facilities and connectivity opportunities
- feedback from the community captured during the engagement process i.e. continuous, safe and connected routes
- inclusion in the former Gosford City Centre PAMP, Woy Woy Peninsula PAMP and Wyong Shire Council On-Road Cycleway and Shared Pathway Strategy
- road hierarchy
- location of pedestrian crashes

The PAMP routes were assigned a hierarchy: primary, secondary, or tertiary. A higher order level in the hierarchy was given to routes servicing multiple high trip generators such as town centres and key pedestrian links to train stations, bus stops, schools, and aged care facilities.

A higher priority level was also assigned to links that improved accessibility for mobility-impaired users or were located closer to mobility-impaired user generators, such as medical facilities. One of the key actions of the DIAP is to improve accessibility to public transport, so this attribute was also considered for allocation of a higher priority.

The criteria for prioritising the PAMP routes is summarised in Table 5 p.63.

Table 5: *Route Prioritisation System Criteria*

Criteria	Major Town Centre	Minor Town Centre	Local Residential Area
Primary link to pedestrian attractors / generators (including public transport and mobility-impaired user services)	Primary	Secondary	Tertiary
Secondary link to pedestrian attractors / generators (including public transport and mobility-impaired user services)	Secondary	Tertiary	Tertiary
Location of pedestrian crashes	Primary	Primary to Secondary	Tertiary
Connections between existing footpaths or towns / villages	Secondary	Secondary to Tertiary	Tertiary
Aligned with concerns from community feedback	Primary	Primary to Secondary	Tertiary
Relation to road hierarchy	Secondary	Tertiary	Tertiary

Routes or route-segments adjacent to purely residential areas were identified as having a tertiary hierarchy given the low pedestrian trip density in these areas.

The network of PAMP priority routes for each of the four focus areas was developed in close consultation with the CCC. These routes are shown in Figure 35 to Figure 38.

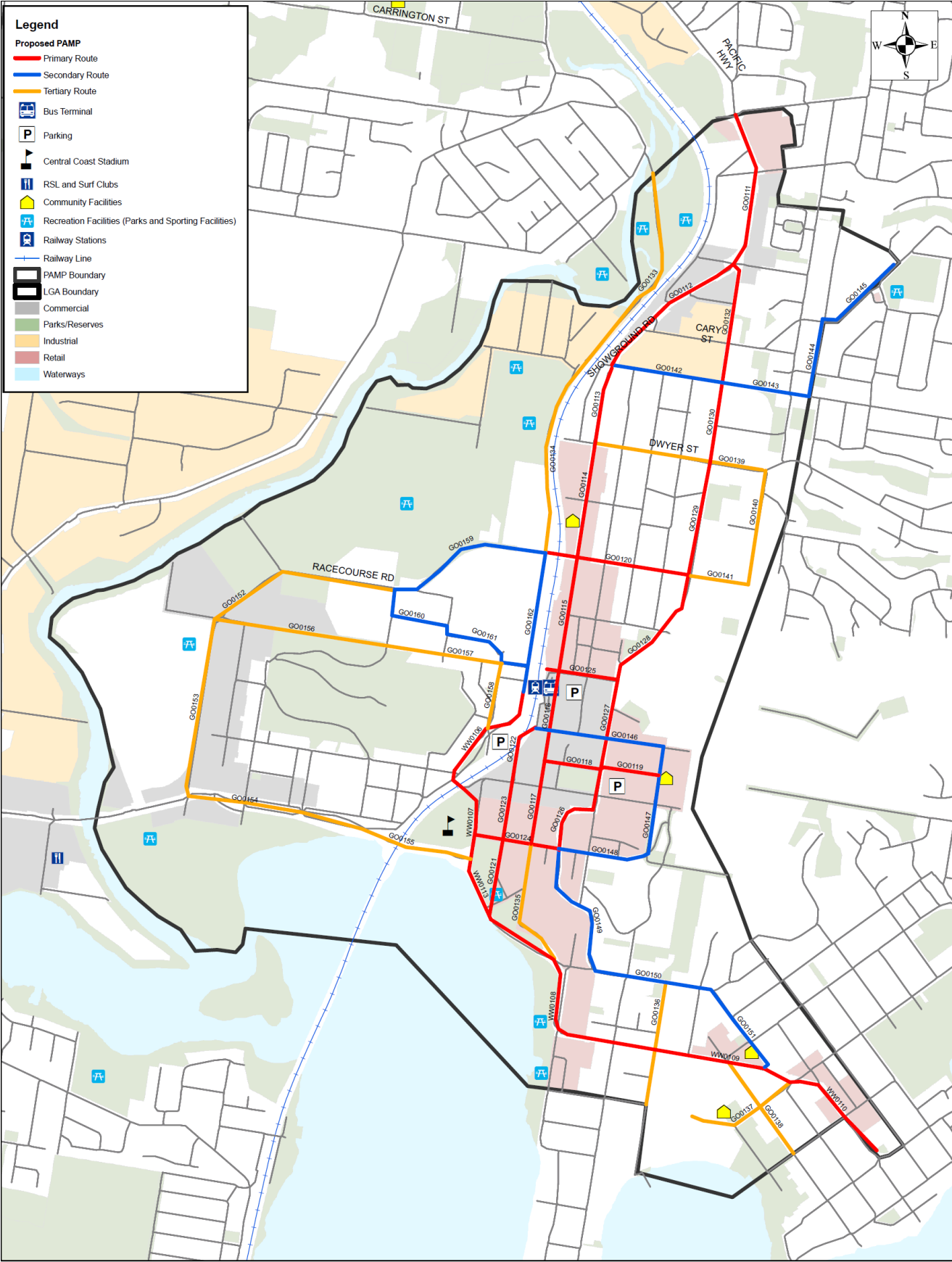


Figure 35: Gosford priority PAMP routes



Figure 36: Woy Woy priority PAMP routes

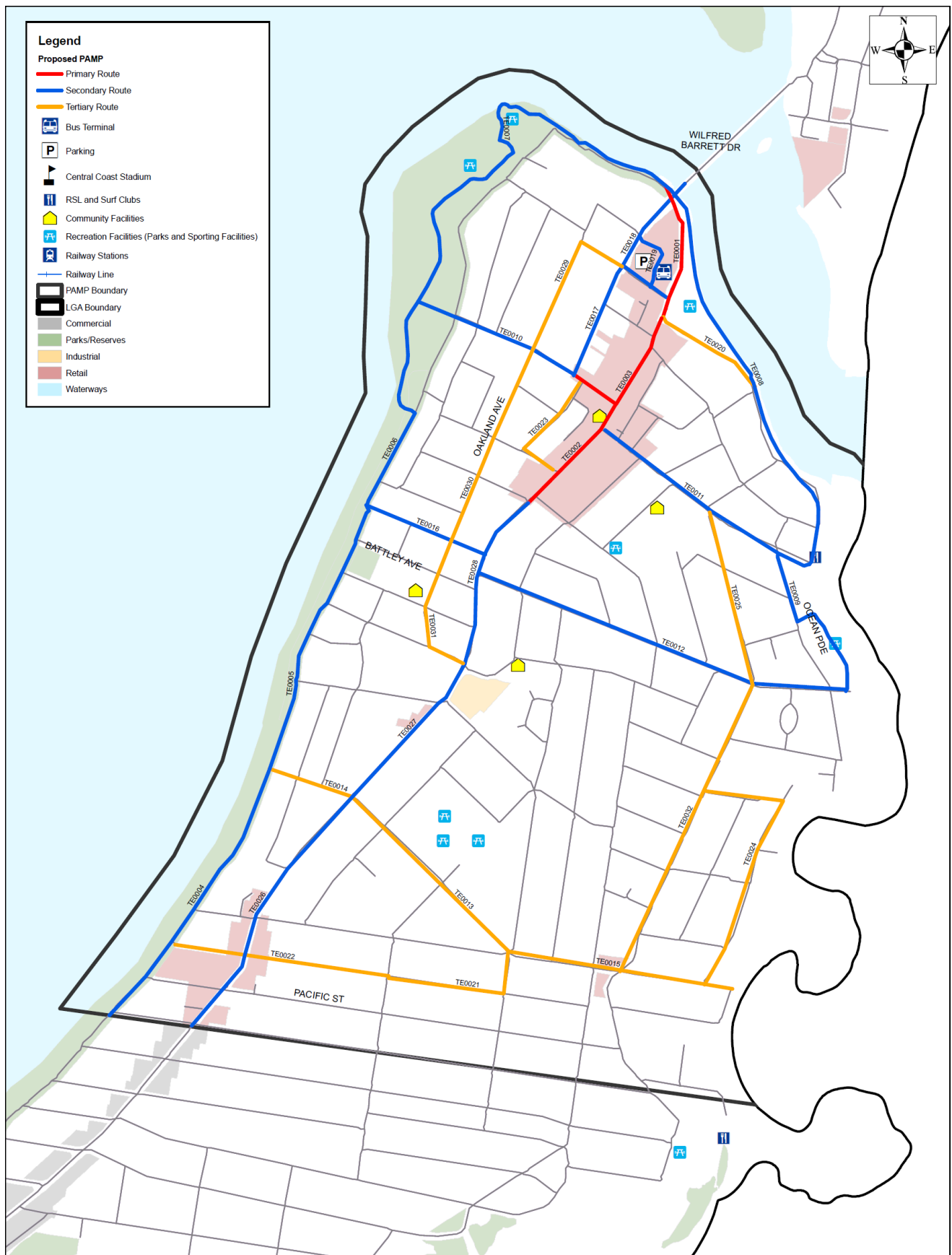


Figure 37: The Entrance priority PAMP routes

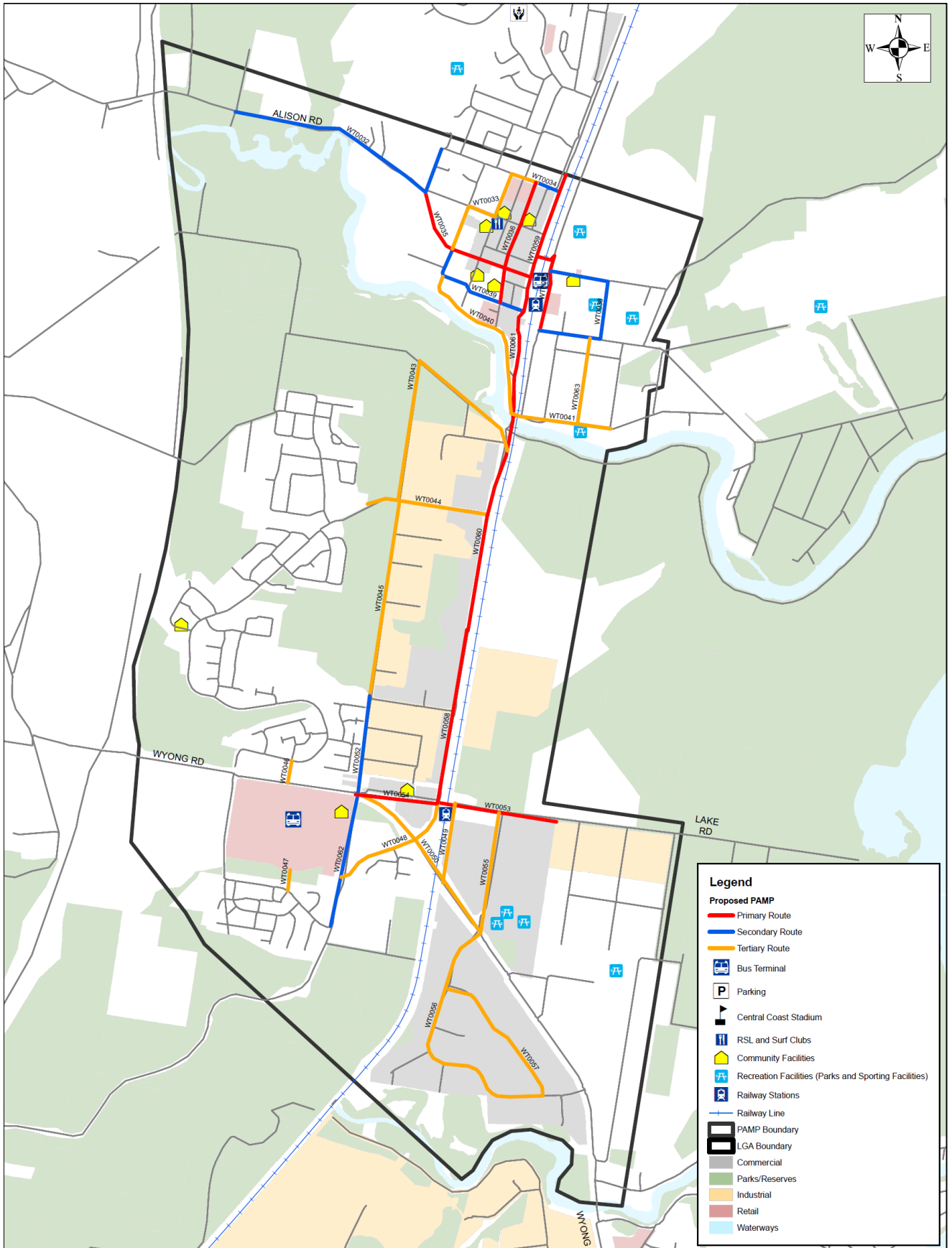


Figure 38: Wyong / Tuggerah priority PAMP routes

8.3. Route segment prioritisation criteria

To assist with the process of prioritising any new or missing links that need to be constructed, and to determine where upgrades need to occur first, each of the PAMP routes was split into smaller sections for scoring purposes. These route segments were created based on:

- PAMP route hierarchy: a single segment can only be one hierarchy i.e. wholly contained within a primary, secondary or tertiary route
- Length of segment: to evenly split the length along the PAMP route, or to split the route at logical locations.

These PAMP route segments were created with the objective of developing an equitable basis for scoring to help establish an even distribution of scoring. A map of the segments and the corresponding segment IDs are provided in Appendix C.

To prioritise each PAMP route segment, a set of criteria and a scoring scheme was developed. The scoring scheme was based on the outline provided within the RMS Guide, and then customised to include additional criteria identified during the community and stakeholder engagement process. The four key criteria identified through this process were:

- separation from road traffic
- safety
- accessibility
- continuity of routes

Separation from road traffic is considered a design criterion, so it is discussed in the design standards section of the PAMP. Safety is a standard criterion in the RMS Guide and was retained for this PAMP.

Accessibility and continuity of routes are not standard criteria. However, these criteria were added because they were specifically identified through the community engagement process. The route segment prioritisation scheme used for this PAMP is shown in Table 6 p.69.

8.4. Criteria details

The attractors and generators included in the criteria are:

- parking stations or parking areas
- RSL and Surf Life Saving Clubs
- community facilities
- recreational facilities
- major public transport nodes e.g. train stations
- jetties
- schools
- aged care facilities
- mobile home villages and caravan parks
- information centres
- hospitals
- child care centres.

Table 6: Criteria and scoring of each PAMP route segment

Category	Criteria	Performance conditions	Score
Land use	Number of attractors / generators within 200m	more than 5 locations 3–5 locations 1–2 locations 0 locations	10 8 5 0
	Land use type	retail and commercial educational facilities recreational facilities residential and other	10 9 8 5
Traffic impact	Road hierarchy	state or regional road local road	5 3
Safety	Identified pedestrian crashes (five-year average) within 100m	more than 3 reported crashes 3 reported crashes 2 reported crashes 1 reported crash	10 8 6 5
Continuity of routes	Addition to existing facilities	filling in gaps extension of existing path	10 8
Accessibility and inclusion ¹	DDA and DAPS Act compliance	achievable not achievable	10 0
Path type		shared path pathway	5 3
Cost and constructability		low medium high	5 3 1
Total			

¹ This is essentially a pass/fail test. If there is little to no possibility that the segment can be made DDA compliant, then it is scored a zero.

The 'Number of attractors / generators within 200m' criterion under the 'Land Use' category was modified from the example provided in the RMS Guide, which shows these as separate criteria i.e. the 'Number of attractors / generators' and the 'Proximity to attractors / generators'). Due to the size and density of the focus areas for this PAMP, a much better spread of scores was achieved by combining the two criteria.

The following criteria from the RMS Guide were not included in this PAMP:

- the 'Future development with attractors / generators' criteria under 'Land Use' category
- the 'Identified hazardous area' criteria under 'Safety' category
- the 'Demonstrated path' criteria under 'Facility Benefits' category

8.5. Scoring system

Scoring of the PAMP route segments is provided in Appendix D. This scoring of the PAMP route segments details how each segment addresses the criteria, and, therefore, how each segment addresses the PAMP objectives. Key explanations for the criteria scoring are:

- Continuity of routes:
 - A score of 10 means that the PAMP route segment is filling in a gap in the network and addressing accessibility for all users and continuity of the network.
 - A score of 8 means that the PAMP route segment is an extension of an existing path, but does not connect to another pathway. Though an extension to a pathway is increasing accessibility, as more users are able to access the pathway, it is not increasing continuity, as a closed loop is not being created.
- Accessibility and inclusion:
 - A score of 10 means that the PAMP route segment was not observed to have any major obstacles that would prevent it from being constructed to a compliant standard. Major obstacles were, for example, steep grades that were not able to be rectified and existing structures that restrict movements.
 - Any PAMP route segment that received a score of 0 had one, or both, of these issues.

The scoring of the PAMP route segments is applied to the **proposed new infrastructure** (i.e. new paths) to prioritise the works.

8.6. Pedestrian route audits

Existing facility audits were undertaken to:

- identify gaps and missing links in the existing network (i.e. for 'new link' projects)
- identify issues, accessibility deficiencies or maintenance needs on existing pedestrian facilities on the PAMP routes

Existing facility audits were undertaken on all high and medium priority PAMP routes to identify issues and potential remedial works. Auditing of issues, or deficiencies, were based on criteria outlined in the Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths.

The audit considered footpaths, kerb ramps, crossings, bus stops and other pedestrian facilities. However, the audit was limited to 'high level' issues that would fundamentally impact on use of the paths or an issue with the path that would prevent or inhibit access to the paths. Minor aesthetic issues such as pavement cracks were not included in the audit.

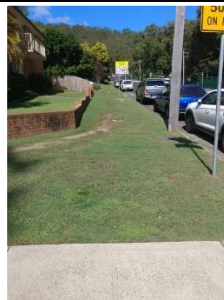


A checklist was developed, based on the relevant standards, for each issue:

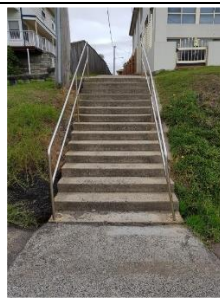


- Missing links:
 - path continuity,
 - public transport
 - schools
 - shops
 - other.
- Maintenance issues:
 - vegetation growing over path

- crossing condition adequate for users
- path conditions that would inhibit accessibility
- other.
- Obstructions to paths:
 - bollards, signs or posts
 - pinch points (narrow path, walls, etc.)
 - other.
- Crossing points:
 - signalised
 - zebra
 - refuge
 - raised
 - none.
- Other issues:
 - cars parked across paths
 - bins on path.

The identified audit issues also considered the comments received during the community and stakeholder engagement, both in general terms and on a location-specific basis on the key routes. Some examples of issues found during the audits are shown in Table 7 below and p.72.

Table 7: Example Audit Issues

Description	Picture
<p>Missing links:</p> <p>A clear pedestrian desire line is observed in the grass between the low brick fence and road. In the background is a School Zone traffic sign meaning that the pedestrians are walking to and from the nearby school.</p>	
<p>Maintenance issues:</p> <p>Vegetation growing over path obstructing path users. The garden bed is constructed behind the property boundary. However, the vegetation within the property has not been cleared recently.</p>	
<p>Obstructions:</p> <p>An approximately three metre (m) wide pathway has been maintained along the Central Coast Highway. However, in some places, during the construction other assets in the vicinity may be overlooked and thus further consideration should be given to issues such as relocation of power poles, street signs, traffic pedestals and kerb</p>	

Description	Picture
ramps, or additional width in these locations.	
<p>Obstructions:</p> <p>The design and construction of the stairs does not allow access for pedestrians of all abilities.</p>	
<p>Crossing points:</p> <p>At this location there were north-south crossings, but no east-west crossings. There are large residential catchments to the east and west of this school so there is likely to be a demand for additional crossings.</p>	
<p>Other issues:</p> <p>This sign was placed on the pathway close to a car parked on the pathway in a steep area.</p>	

During the existing facility audits, it was noted that the Tactile Ground Surface Indicators (TGSIs) at kerb ramps or crossing points, where included, were a similar colour to the pavement. This is likely to cause issues for vision impaired pedestrians. Further investigation is needed to assess the colour of TGSIs on the standard CCC pavement colours.

In summary, the number of issues identified during the audits of PAMP routes including missing 'links' and the need for new 'links' were:

- Gosford – 217 issues
- Woy Woy – 17 issues
- The Entrance – 34 issues
- Wyong / Tuggerah – 20 issues

The process of identifying missing or new links, and identifying upgrade works on existing facilities has enabled construction works schedules to be defined for the priority PAMP routes, and for these works to be prioritised, as discussed in Chapter 10.

It is important to note that CCC has a separate program for regular pathway maintenance. The works identified in Chapter 10 are for works that would typically fall outside of what would be classed as maintenance works.

9. Design standards

9.1. Overview and reference standards

The design standards to be applied for this PAMP include adopting the principles of Universal Design, which aim to provide all-inclusive access that eliminates the need for adaptation and specialised design for mobility-impaired community members. The National Road Safety Strategy Safe System Approach will also be adopted and where opportunity presents use innovative techniques to achieve the desired outcomes following the principles of safety, accessibility and connectivity.

The design standards adopted for PAMPs typically include a combination of Australian Standards, Austroads Guides, and local RMS technical directions and model drawings. Some of the reference documents used include:

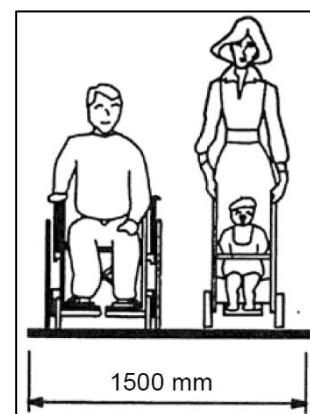
- Footpaths and Kerb Ramps:
 - Australian Standard AS 1428.4.1 – 2009: design for Access and Mobility
 - Austroads Guide to Road Design Part 3, Geometric Design
 - Austroads Guide to Road Design Part 6A, Pedestrian and Cycle Paths
 - NSW Bicycle Guidelines (RTA 2005).
- Crossings:
 - RMS model drawings MD R173.B01.A1
 - Austroads Guide to Road Design Part 4, Intersections and Crossings
 - Australian Standards AS 1428.1 – 2009: Design for Access and Mobility
 - Australian Standards AS 1742.10: Pedestrian Control and Protection
 - RMS Technical Direction TDT 2002/12b (Stopping and Parking Restrictions at Intersections and Crossings)
 - RMS Technical Direction TDT 2001/01a (Pedestrian Refuges)
 - Australian Standards AS 1158.4.
- Bus Stops:
 - Disability Standards for Accessible Public Transport 2002.

Design standards continually evolve, and it is common to construct new facilities to the updated standards while upgrading existing facilities to these new standards, where it is reasonable to do so. Going forward, design standards should be consistent across the Central Coast LGA. Reference to standards specific to the Central Coast LGA are included in the Civil Works Specification.

9.2. Pathway widths

Historically, CCC standard pathways were 1.2 m wide, but this has recently been updated to 1.5 m. According to the AGRD Part 6A, 1.5 m is sufficient width for a wheelchair and pram to pass simultaneously. This is considered a reasonable standard width and addresses a number of the principles of Universal Design.

The recommended minimum pathway widths for each of the PAMP routes, based on the width requirements of the AGRD Part 6A, is:



- primary PAMP route – 2.4 m wide (minimum)
- secondary PAMP route – 1.5 m wide (minimum)
- tertiary PAMP route – 1.5 m wide (absolute minimum of 1.0 m wide in constrained areas)

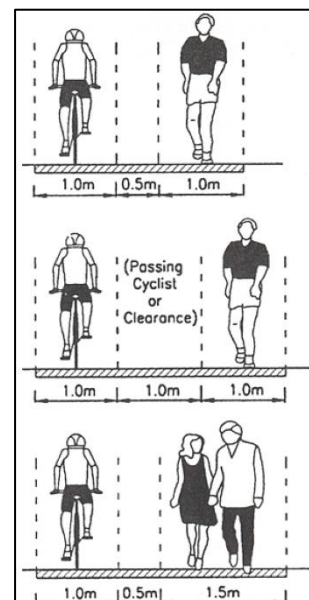
In areas of high wheelchair use, a pathway of 1.8 m wide should be considered to allow two wheelchairs to pass simultaneously.

9.3. Shared path widths

The CCC standard drawing for a shared path shows a width of between 2.5 m to 3.0 m wide, consistent with the RMS Standard and Australian Standard AS1742. This width addresses a number of the principles of Universal Design. The recommended shared path widths for the PAMP, as adopted in the NSW Bicycle Guidelines and AGRD Part 6A, are:

- local path – 2.5 m wide (e.g. connections to building frontages)
- regional path – 3.0 m wide (e.g. connections between centres)
- recreational path – 3.5 m wide (e.g. waterfront or through park and recreational areas)

In general, path widths increase with speed and volume or where there are recorded safety issues.



9.4. Kerb ramps

Kerb ramps are used, where required, to provide a smooth transition between path level and road level. In general, the kerb ramp standard drawing applied by CCC is consistent with those of RMS and the Australian Standards.

9.5. Road crossings

Where pathways intersect with roads, crossings are typically required. The type of crossing is dependent on a range of factors including:

- traffic, pedestrian and cyclist volumes
- road speed
- road width and cross section
- sight distances
- road hierarchy
- RMS warrants

These factors also help determine right of way at the crossing. Priority for pedestrians should be considered on each of the primary routes identified within this report. There are a range of treatments and crossing types to achieve this outcome including:

- pedestrian only streets e.g. William Street, Gosford
- shared zone e.g. Alison Road, Wyong
- raised threshold / wombat crossing e.g. The Entrance Road, The Entrance
- zebra crossings e.g. Blackwall Road and Oval Avenue, Woy Woy

Each of these crossing, or treatment types, are typically used near local and neighbourhood centres, which are characterised by high pedestrian activity and low vehicle speeds. These crossings should also be accessible to user groups with specific needs e.g. school children, the elderly, mobility impaired persons, carers and persons with prams.

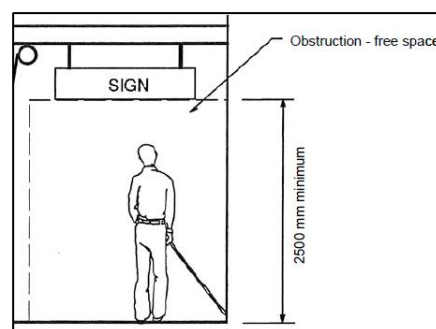
9.6. Gradients

The CCC standard drawings for gradients of pathways and shared paths notes that all paths shall be constructed in accordance with the requirements of Austroads and RMS supplements. In general, this means achieving DDA and DAPS Act compliance.

9.7. Vertical clearance

The CCC standard drawings for pathways and shared paths include a minimum vertical clearance for vegetation of 2.5 m, and a requirement to be constructed according to Austroads and RMS supplements.

The AGRD Part 6A and RMS supplement do not include requirements for situations where the vertical clearance requirement cannot be achieved. Where this requirement cannot be met, adequate measures should be included to alert users of the obstructions. For example, existing pathways through sub-standard height tunnels could have advance warning signage and reflective hazard tape.



9.8. Road cross-section standard drawings

One of the criteria raised during the community and stakeholder engagement was separation from road traffic. CCC road cross-section standard drawings show pathways separated from road traffic by a kerb and gutter. This is consistent with other local Councils and is considered appropriate. Where possible, the separation distance between the traffic lane and path should be maximised.

9.9. Example implementation issues

There were a number of occasions during field audits where the incorrect use of treatments was identified, with an example shown in Figure 39.



Figure 39: Incorrect shared path end treatment near driveway crossover

It is understood that this 'terminal' treatment was installed for numerous reasons, but mainly to highlight the nearby intersection and to restrict unauthorised motorbike access to pathways. However, this example does not physically prevent motorbike access. It is also worth noting that the AGRD Part 6A states that 'it is generally impractical to restrict motorcycles and to do so may result in a hazard for cyclists'. Central Coast Council will only install such terminal treatments when all other considered options have been exhausted or would be insufficient to address matters. Figure 40 shows an example of a typical terminal treatment that although does not adversely obstruct legitimate users, presents such a hazard.



Source: Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths

Figure 40: Pathway terminal treatments

As a general rule, pathway terminal treatments should not be implemented unless absolutely required. For example, a pathway that intersects with a road and has pedestrian/cyclist and vehicle crashes could warrant a terminal treatment. It is important to note that the purpose of terminal treatments is to highlight the end of pathway.

9.10. Construction Costs

The average cost per metre for the construction of pathways (1.5m wide) and shared paths (2.5m wide) have been developed based on actual construction costs.

The costs used to develop the priority works plan are as follows. It is important to note that the costs should be considered a *minimum* cost:

- pathway 1.5m wide - \$250 per metre
- pathway 2.4m wide - \$400 per metre
- local shared path 2.5m wide - \$450 per metre
- regional shared path 3.0m wide - \$540 per metre
- recreational shared path 3.5m wide - \$630 per metre

For the proposed new infrastructure, the costs for pathways have been applied based on the hierarchy of the route. Primary routes have been costed as 2.4m wide paths and secondary and tertiary routes have been costed as 1.5m wide pathways. These costs represent a minimum cost, and construction costs would increase for any routes that are identified as shared paths.

The cost of construction for all pathway links will be refined during project development. The final cost of construction could be significantly more subject to topography, existing infrastructure, environmental constraints and the final alignment of each pathway link. Pathway costs are known to range up to \$3,000 per metre as a result of these impacts.

The costs of rectifying issues identified during existing facility audits, such as maintenance works, were developed in consultation with CCC considering other similar projects. The following costs were applied:

- vegetation clearing - \$500 per location
- crossing condition (i.e. line marking) - \$1,000 per issue location
- path condition (i.e. pavement grinding or patching) - \$400 per location
- relocating bollards, posts or signs - \$1,000 per location
- relocating power poles and telegraph poles - \$20,000 per location
- narrow paths (i.e. modifying retaining wall) - \$20,000 per location
- kerb ramp (i.e. re-build) - \$2,000 per location
- TGSi (i.e. re-install) - \$200 per location

The cost included in the PAMP for these issues is the cost to rectify specific issues, rather than ongoing maintenance costs. This PAMP recognises the CCC has a separate team and separate funding for regular maintenance of pathways. As this PAMP was prepared alongside the Bike Plan, it only considers rectifying issues for pathways and not the shared paths. Rectifying issues for shared paths and cycleways are included in the Bike Plan.

10. Implementation and funding

Central Coast Council acknowledges that sustainability must be considered when developing the active transport network and that a minimal impact approach is key to protecting the environment.

The implementation of the Action Plan will follow and be in accordance with globally recognised sustainability practices and principles. Council will ensure that all appropriate materials, resources and practices are not just cost effective but also environmentally friendly.

In return this approach will actively contribute towards place making, creating important healthy, vibrant and happy neighbourhoods and centres for everyone to enjoy.

10.1. Overview

In developing this PAMP there have been multiple sources of input identifying existing issues and needs, as well as potential projects to address these issues and needs. Some of the identified issues and needs are located outside the PAMP priority areas i.e. Gosford, Woy Woy, Wyong / Tuggerah and The Entrance. Other issues and needs, while located in these defined areas, are not located along the defined 'priority routes' which have been determined using the structured process defined in the RMS guide.

In addition to the defined PAMP process, and to capture the extensive community and stakeholder input received, a series of prioritised works schedules have been created. These works schedules are described below in Table 8.

Table 8: Descriptions of the work schedules

Schedule	Works Type Definition	Prioritisation Method	Project Source(s)
1	New pathways on PAMP priority routes	As described in Chapter 8	Community-identified and route audits
2	Facility upgrades on PAMP priority routes	As described in Chapter 8	Community identified and route audits
3	Council identified projects	Construction cost divided by number of community responses received	Council-provided GIS file plus community input provided for locations other than PAMP priority routes
4	Other community identified projects	To be determined, but annual funding allocation proposed	Community identified projects located outside PAMP priority routes.

10.2. Works prioritised for Schedule 1

Schedule 1 involves proposed new infrastructure on the PAMP priority routes. The full list of projects has been prioritised in Appendix A. The preliminary scoring resulted in a number of segments achieving the same final score. To further differentiate the scoring of these segments, the following process was applied, in order:

- rank based on segment hierarchy e.g. primary, secondary or tertiary
- rank based on cost i.e. lowest to highest cost

Schedule 1 projects for Gosford, Woy Woy, Wyong / Tuggerah and The Entrance are shown in Figures 41 to 44. It is important to note that Figures 41 to 44 may show paths that were constructed prior to the completion of the PAMP.

10.3. Works prioritised for Schedule 2

Schedule 2 involves upgrades to existing pedestrian facilities along the priority routes defined in the PAMP. These works were first prioritised based on segment score, as described in Chapter 8, and then on the basis of the upgrade cost. The scoring of works prioritised in Schedule 2 is included in Appendix A.

Schedule 2 projects for Gosford, Woy Woy, Wyong / Tuggerah and The Entrance are shown in Figures 41 to 44. It is important to note that Figures 41 to 44 may show upgrades to existing facilities that were completed prior to the completion of the PAMP.

10.4. Works prioritised for Schedule 3

The CCC proposed a number of pathways to fill in critical gaps in the existing pathway network which are located outside of the PAMP priority areas and routes.

These 'Other Council Projects' have been included in a separate works schedule, costed and prioritised. Maps showing the location of the 'Other Council Projects' are included in Appendix B. It is important to note that Appendix B may show 'Other Council Projects' that were completed prior to the completion of the PAMP.

As the 'Other Council Projects' are located outside of the PAMP priority areas and routes, these have not been prioritised as part of the PAMP. The 'Other Council Projects' are listed from least expensive to most expensive project. The ranking of works prioritised in Schedule 3 is included in Appendix A.

10.5. Works prioritised for Schedule 4

During the engagement process 1,305 separate pins were dropped across the LGA by community members using the online interactive map. Many of these community identified projects are located outside the PAMP priority areas and routes.

Given the number of projects that need to be evaluated and prioritised, an annual budget is proposed to be allocated by Council to address these issues by location. The projects to be delivered will be determined annually, in consultation with the community and using the scoring criteria detailed in Section 8.4.

10.6. Funding needs summary

In total, more than \$74.2M has been identified to implement all of the projects and programs identified in the four schedules. The funding available to implement active transport projects, particularly pedestrian paths, depends on Council budget allocations and successful grant applications for State and Federal Government programs.

Considering all potential funding sources, a program budget of \$2M per annum would allow 29% of the complete program to be delivered within 10 years. However, projects delivered from the prioritised program will vary from year-to-year based on the available funding.

In summary, each PAMP priority area has the following funding needs over the next 10 years to implement priority projects from Schedules 1 and 2 along the PAMP priority routes:

- Gosford priority area: \$2,871,000
- Woy Woy priority area: \$2,862,000
- Wyong / Tuggerah priority area: \$1,859,000
- The Entrance priority area: \$2,079,000

In addition to the PAMP priority projects, nearly \$48M in 'missing link' projects have been identified for implementation across the entire LGA. These projects are identified in Schedule 3 with funding forecast from Year 7 onwards.

Given the number of local issues and projects identified by the community, a separate location-based annual path improvement funding program is warranted. This funding program, included as Schedule 4, would be used to respond to the highest priority issues and concerns raised by the community through the engagement process or via ongoing customer enquiries.

The priority of the Schedule 4 projects would be determined in consultation with the community and using the scoring criteria detailed in Section 8.4. An annual budget of \$500,000 or 25% of the total annual budget is recommended for this program.

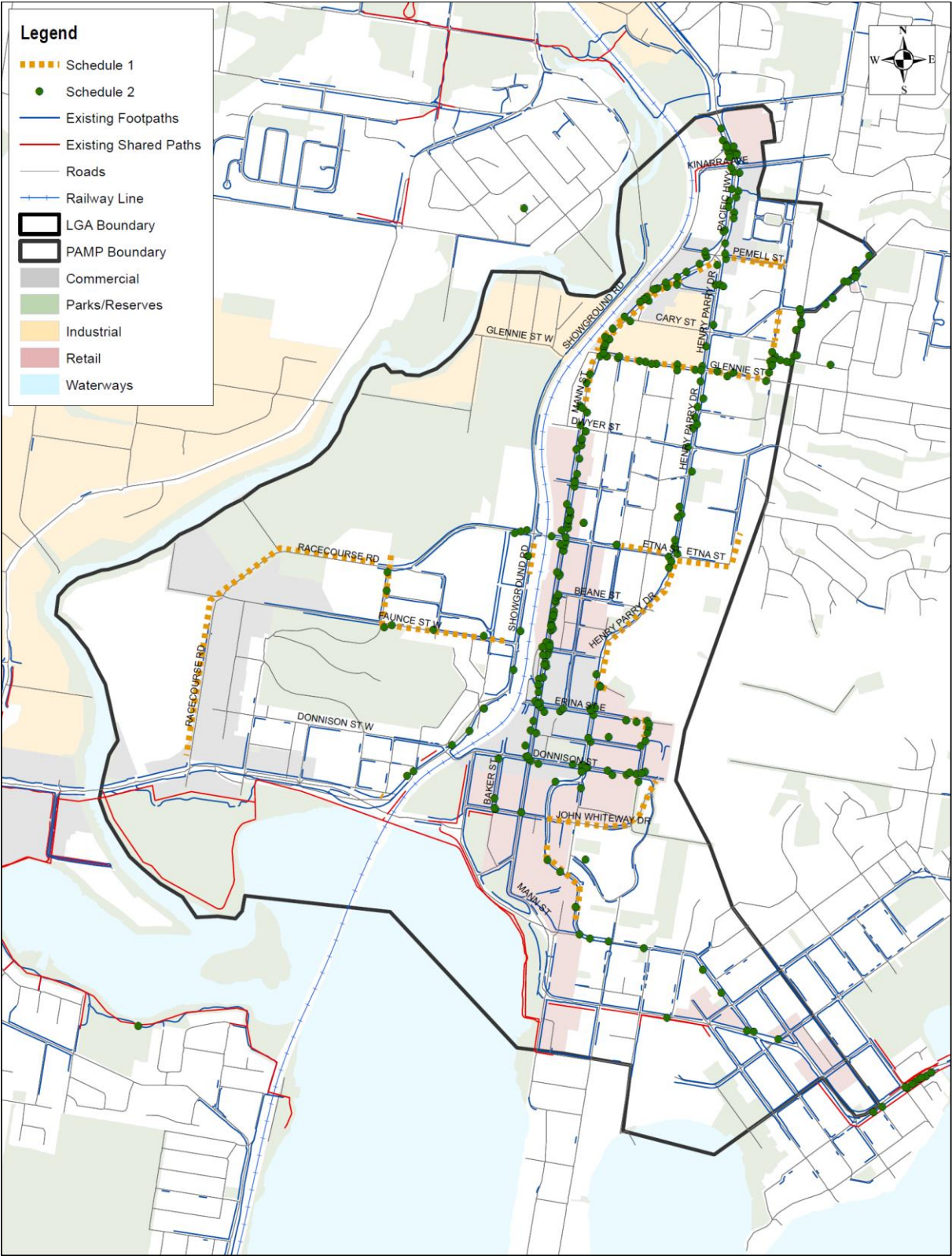


Figure 41: Gosford Works Map (Schedules 1 and 2)

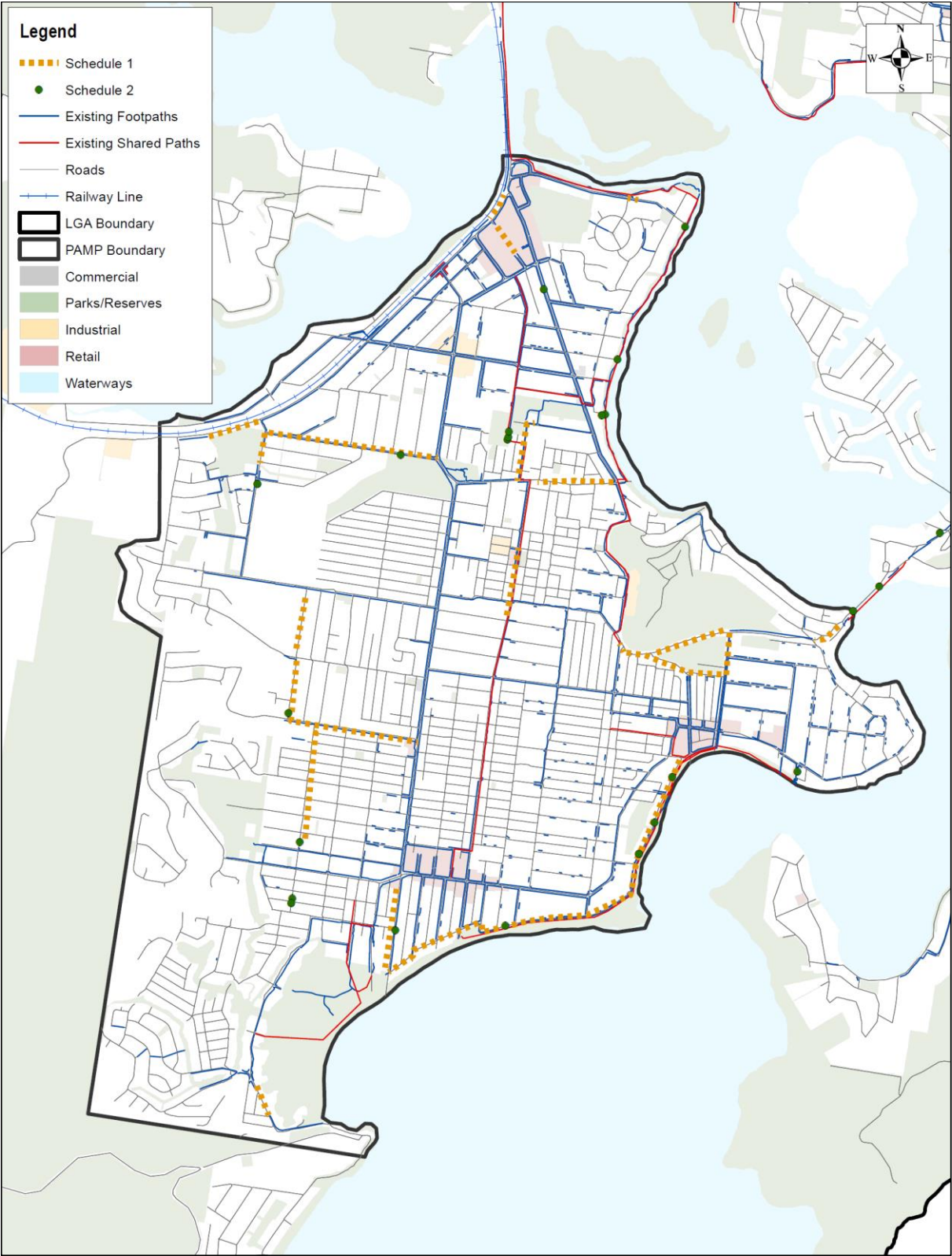


Figure 42: Woy Woy Map (Schedules 1 and 2)

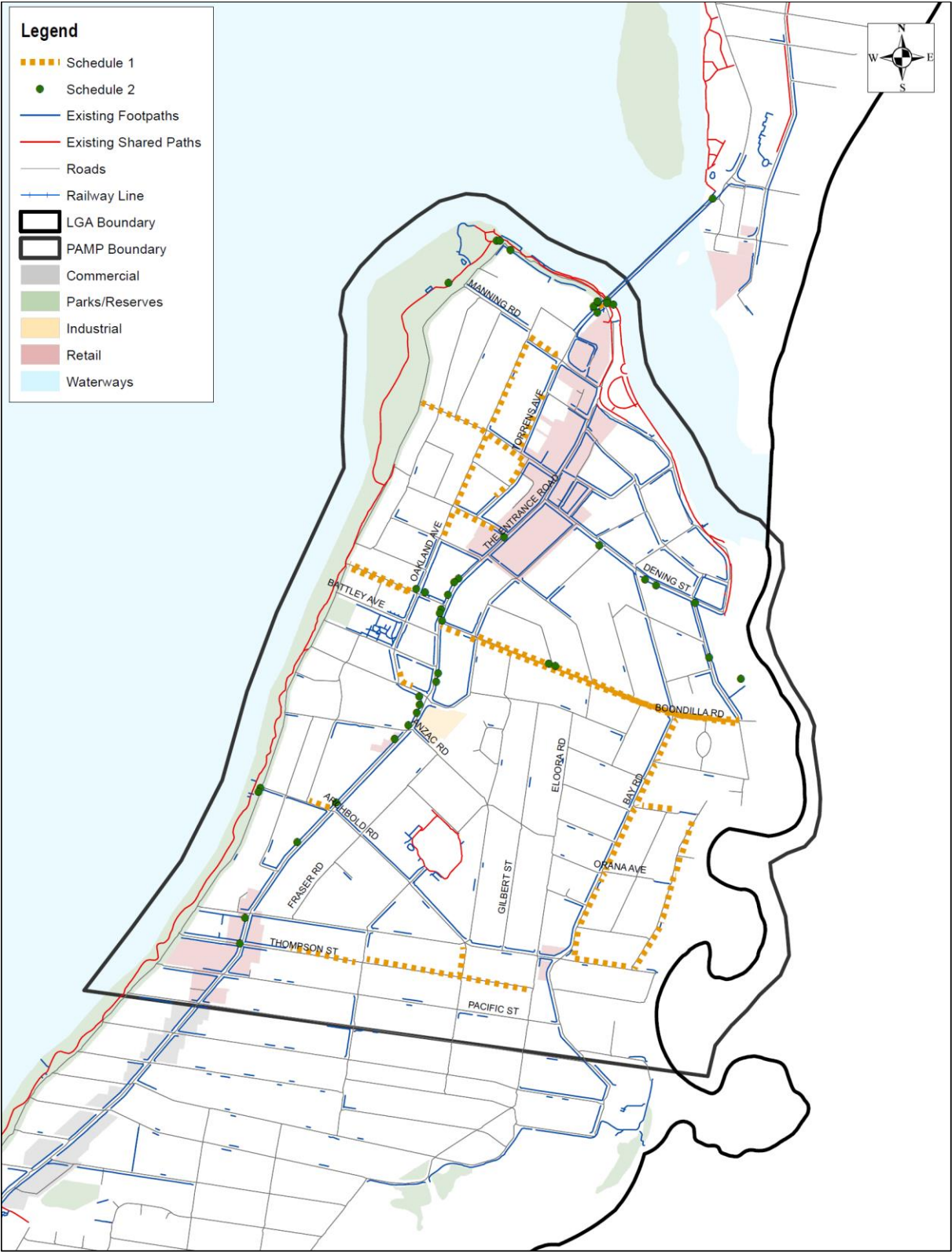


Figure 43: The Entrance (Schedules 1 and 2)

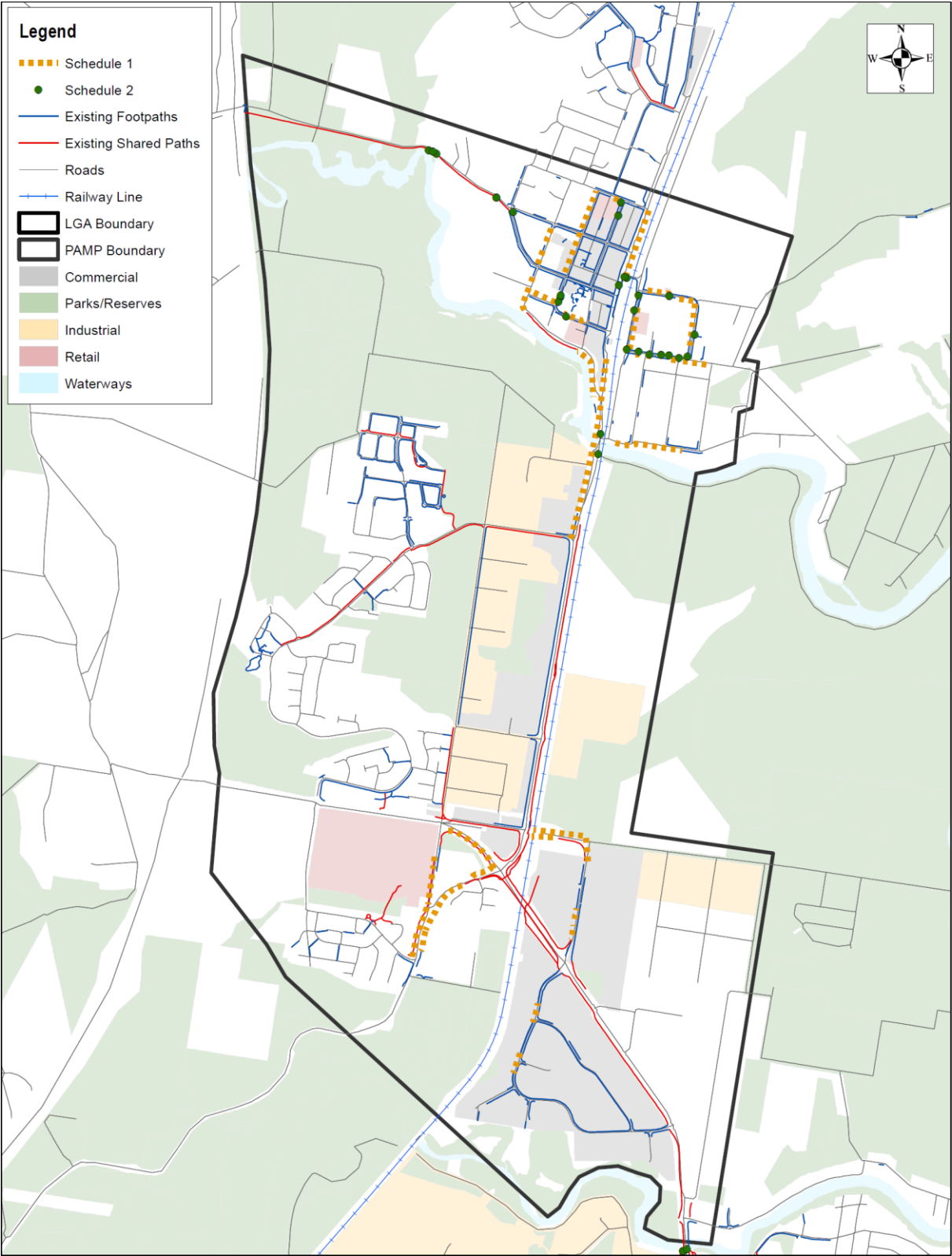


Figure 44: Wyong / Tuggerah (Schedules 1 and 2)

10.7. Potential funding sources

10.7.1. Roads and Maritime Services

RMS will generally fund works on State Roads including crossings and kerb ramps. State Roads are 100% funded by RMS, while works on Regional and Local Roads are Councils responsibility. RMS contributes funding for road crossing facilities and kerb ramps only. Figure 45: Central Coast State & Regional Roads shows the Central Coast State & Regional Roads

Within the study area, the following classifications apply for funding purposes:

- State roads – Pacific Motorway (M1), Pacific Highway (A1), Central Coast Highway (A49) Wyong Road (B74), Sparks Road (B70), Wallarah Road (B70), Main Road (B70), Terrigal Drive (MR505), Avoca Drive (MR504)

All other roads are considered local roads and are under the jurisdiction of CCC. Further details of RMS funding can be found in the 'Council Projects Funded by the RTA, Memorandum of Understanding' June 2009.

10.7.2. Transport for NSW

Works associated with train stations, particularly installing disabled access, is the responsibility of Sydney Trains. The CCC may consider seeking joint funding for works, such as upgrading pedestrian accessibility and linkages to the local road network across the railway line.

10.7.3. Section 7.11 and 7.12 contributions

The Environmental Planning and Assessment Act 1979 contains provisions which allow a consent authority to impose a contribution requiring the dedication of land free of cost or the payment of a monetary contribution, or both, for the provision of public amenities or public services.

Council may seek contributions for new pedestrian facilities in the area to cater for increased demand by new developments provided a contributions plan is in place.

10.7.4. Other funding sources

Other potential funding sources include:

- Council rates
- planning agreements
- works associated with specific services, such as broken or sunken Telstra pits, are usually carried out by the respective service providers
- RMS (formerly RTA) Active Transport and Cycleway grants
- other NSW Government grants, such as NSW Planning dollar-for-dollar grants to councils for the NSW Coastline Cycleway
- Commonwealth Government grants, such as 'Roads to Recovery' funds and Australian Greenhouse Office grants.

A number of these funding sources, such as State government grants have guidelines and specific requirements to meet to be eligible for funding.

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10.8. Works schedules summary

The PAMP is intended to be implemented over a 10-year horizon, which is the usual the life of a PAMP. Work schedules have been created for each works type and divided into:

- Short term: Years 1 to 3
- Medium term: Years 4 to 6
- Long term: Years 7 to 10.

A summary of the funding required by Schedule by time period is provided below.

Schedule	Work Type	Years 1-3		Years 4-6		Years 7-10		10 Year TOTAL		Year 10+	
		#	\$	#	\$	#	\$	#	\$	#	\$
1	New pathways on priority routes	46	4.5M	63	4.4M	-	-	109	8.9M	-	-
2	Facility upgrades on priority routes	29	0.3M	259	0.4M	-	-	288	0.7M	-	-
3	Other council identified projects					15	6.1M	15	6.1M	936	53.5 M
4	Other community identified projects	-	1.5M	-	1.5M	-	2.0M	-	5M	-	-
TOTAL		75	6.3M	322	6.3M	15	8.1M	412	20.7M	936	53.5 M

refers to the number of individual projects

10.9. Monitoring and evaluation

Monitoring and evaluation of the works program is recommended to be managed through a PAMP database. The monitoring program should include:

- a record of all proposed pedestrian works undertaken
- comparison of crash statics before and after implementation
- comparison of pedestrian count information before and after implementation
- an evaluation of what works have attracted the most pedestrians or resulted in the most reduction in crashes
- based on the above (along with land use and road network changes, ongoing community engagement, and council inspections) periodic updating of the PAMP schedules.

11. Conclusions and recommendations

11.1. Conclusions

Feedback captured during the community and stakeholder engagement process for the Bike Plan and PAMP clearly indicated that the Central Coast community values active transport. Through this engagement process, the community has highlighted that accessible, safe and connected pathways are needed in more locations around the LGA.

Most pedestrian crashes were clustered around key activity centres and there was strong community feedback related to the high pedestrian activity areas in Gosford CBD, Woy Woy, and Wyong / Tuggerah. These locations align with the highest pedestrian-generating sources in the LGA based on population, employment clusters, schools and health facilities. The Entrance is also an area where high levels of pedestrian demand are expected.

As a result, Gosford, Woy Woy, Wyong / Tuggerah and The Entrance are the locations where the PAMP priority routes have been defined in accordance with the RMS guidelines. The priority routes have been mapped in Appendix C and scored in accordance with the adopted criteria in Appendix D.

It has also been recognised that the community identified hundreds of issues and improvement ideas during the engagement process. Not all of these ideas and issues were located in the PAMP priority areas, and are instead located throughout the LGA, including clusters of feedback in Tuggerawong, Terrigal, Avoca Beach, Kincumber and Bensville.

Typically, PAMPs focus on providing a schedule of prioritised new pathway links and link upgrades on defined PAMP priority routes. However, the mix of additional project locations and types of projects identified by CCC and the community led to the need to generate four implementation schedules.

These implementation schedules are aligned with available funding mechanisms, and were developed to support the process of prioritising projects and allocating funding. The four schedules are:

- Schedule 1: New pathways on PAMP priority routes
- Schedule 2: Facility upgrades on existing pathways along PAMP priority routes
- Schedule 3: Council identified missing links outside of the PAMP priority routes
- Schedule 4: Other community-identified projects

Schedules 1 to 4 are intended to be rolled-out over a 10-year period (subject to available funding), with Schedules 1 and 2 implemented first followed by Schedule 3. Schedules 1 to 3 have been ranked and costed in Appendix A. Schedules 1 and 3 have been mapped in Appendix B and Schedule 2, facility upgrades on existing pathways, in Appendix F.

For Schedule 4, given the diversity of project locations and types, an annual funding allocation has been proposed. This funding would be used to respond to the highest priority issues and concerns raised by the community through the engagement process or customer enquiries.

11.2. Recommendations

It is recommended that Council implement the Works Schedules identified and described in this PAMP. As part of this process Council will need to source and allocate funding to implement Schedules 1 to 4.

The four schedules outlined in this PAMP have been created with identified and costed projects, which have then been 'banded' into three funding timeframes:

- Short term: Years 1 to 3
- Medium term: Years 4 to 6
- Long-term: Years 7 to 10

A summary of the implementation plan for the works schedules is outlined below.

Schedule	Work Type	Years 1-3		Years 4-6		Years 7-10		10 Year TOTAL		Year 10+	
		#	\$	#	\$	#	\$	#	\$	#	\$
1	New pathways on priority routes	46	4.5M	63	4.4M	-	-	109	8.9M	-	-
2	Facility upgrades on priority routes	29	0.3M	259	0.4M	-	-	288	0.7M	-	-
3	Other council identified projects					15	6.1M	15	6.1M	936	53.5 M
4	Other community identified projects	-	1.5M	-	1.5M	-	2.0M	-	5M	-	-
TOTAL		75	6.3M	322	6.3M	15	8.1M	412	20.7M	936	53.5 M

refers to number of individual projects

A full list of pathway projects is included in Appendix A for Schedules 1 and 3, along with separate maps for Schedule 2 in Appendix F.

To implement Schedule 4, it is recommended that Council establish internal processes and resources to continue to engage with local communities, to refine the issues and projects identified through the engagement process delivered as part of this PAMP.

In addition to implementing Schedules 1 to 4, and monitoring and reporting on the performance of the PAMP, it is recommended that CCC:

- develop a program of future sub-area local PAMPs or pedestrian studies for areas including Erina, Bateau Bay, Terrigal, Toukley, Lake Haven, Lake Munmorah, Avoca Beach and Kincumber.
- undertake targeted community engagement for the lake edge pathways to find a compromise between the needs of adjacent residents and the needs of the broader community