

# Nowra Riverfront Precinct

Integrated Transport Plan

Version 4  
August 2023











# Quality Assurance

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# 1.

## Introduction



# 1. Introduction

## 1.1 Background

Crossley Transport Planning was commissioned by Shoalhaven City Council (SCC) to investigate opportunities to enhance local connectivity within Nowra Riverfront Precinct and connectivity to Nowra CBD and Shoalhaven Riverfront.

The Nowra Riverfront Precinct is an area that is recognised as having significant potential to shape the future of Nowra and to create a liveable place with high-value amenities to be enjoyed by both residents and visitors alike.

The precinct has been identified as a priority in the Illawarra – Shoalhaven Regional Plan 2041. The plan recognises the importance of the Riverfront Precinct to create a “vibrant riverfront entertainment and leisure precinct”.

In response Shoalhaven City Council and the Nowra Riverfront Advisory Taskforce (NRAT) commenced investigating movement and place issues and set a vision for the precinct, including built asset and open space development, riparian zone enhancement and strengthening its connectivity.

## 1.2 Purpose

The purpose of this study is to generate opportunities that align with the future vision for the Riverfront Precinct.

## 1.3 Scope of Work

The study is focused on investigating the walking, cycling and public transport environment and involves:

- A movement and place analysis of the precinct and its surrounding local network
- A site investigation and an onsite site “walk-shop” with the project team
- A performance gap analysis and quantification of walking, cycling and public transport issues by identifying barriers to the realisation of the vision and function of the precinct.
- Generating targeted opportunities to close the deficit gap and support the realisation of the vision.
- Select the preferred suite of opportunities in collaboration with key stakeholders (NRAT, SCC, TfNSW & DPE) at a workshop event.



Figure 1: Nowra Riverfront Precinct (Source: CrossleyTP, 2023)

# 2.

## Setting the Direction

This section describes the vision for the Nowra Riverfront Precinct and how the desired outcomes contribute towards achieving local and state policy objectives.



## 2. Setting the Direction

### 2.1 Vision and Objectives

The place-based vision statements for the Nowra Riverfront Precinct have been developed by the Nowra Riverfront Advisory Taskforce in collaboration with Shoalhaven City Council and members of the Transport Working Group, including Transport for NSW and Department of Planning and Environment.

The vision is to create an activated riverfront entertainment and leisure precinct. The development will include built assets as well as enhancements to the open space and riparian zones. The precinct will be an important connection between the CBD and the Shoalhaven River.

The vision statements are paired with the following objectives:

- To increase the safety of all transport modes in the precinct
- To enhance existing open public spaces and ensure new developments support the collective place vision for the precinct.
- To improve connections between the Nowra Bridge, Riverfront Precinct, CBD and Shoalhaven District Memorial Hospital.
- To strengthen the existing gateway and showcase the attractions within the precinct.
- To encourage and leverage investment in Nowra Bridge, Riverfront Precinct and Shoalhaven District Memorial Hospital



Figure 2: Shared User Path on the Nowra Bridge (Source: CrossleyTP, 2023)



Figure 3: Bridge Road / Princes Highway intersection (Source: CrossleyTP, 2023)



## 2.2 Policy Alignment

Key Local and State Government Priorities relevant to the outcomes of this study are summarised in Figure 4.

The vision and objectives for the Nowra Riverfront Precinct contribute towards:

- Improving the attractiveness of public and active transport
- Improving safety for all users
- Planning for an inclusive transport environment for people of all ages and abilities
- Improving amenity of public spaces adjacent to the Princes Highway corridor and connectivity to key activity nodes within the precinct.

## 2.3 Targets and Benchmarks

To identify the performance deficits for the precinct and its surrounding local network, targets defined in government plans and policies have been adopted to form benchmarks.

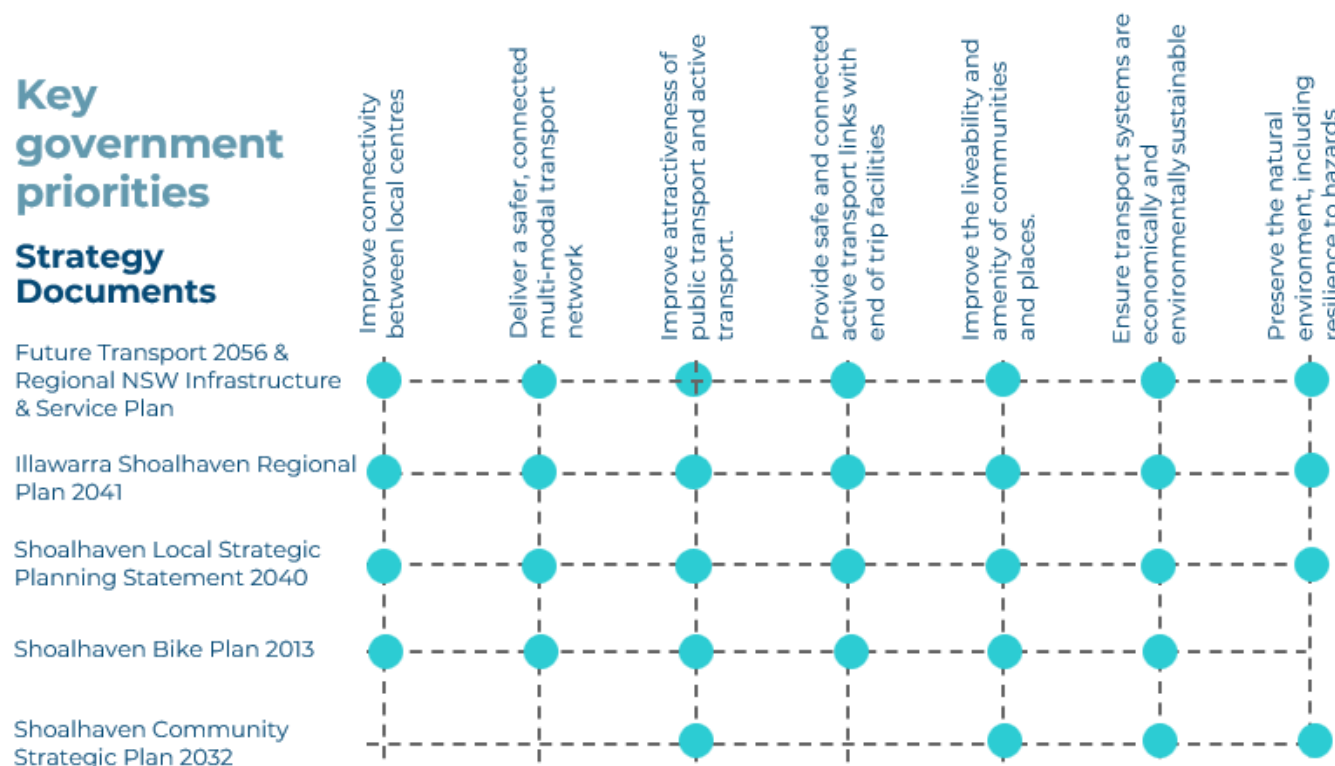


Figure 4: Local and State government priority alignment.



Table 1: Relevant benchmarks to measure place function, walking, cycling and public transport and alignment to the corridor's vision and objectives

Metric	Benchmark	Nowra Riverfront– relevant vision & objectives					Citation
		Enhance place function	Improve safety	High quality public transport	High quality active transport	Inclusive	
Mode Share	4% to 8% Walk				●		Regional NSW Infrastructure and Services Plan, 2017
Mode Share	2% to 5% Cycle				●		Regional NSW Infrastructure and Services Plan, 2017
Mode Share	3% - 5% public transport			●			Regional NSW Infrastructure and Services Plan, 2017
Walking comfort	Level of Service D		●		●		TfNSW Walking Space Toolbox, 2020
Cycling Comfort	Stress Level 2		●		●		TfNSW Cycleway Design Toolbox, 2020
Bus Stop DDA Compliance	Compliant			●		●	TfNSW Disability Inclusion Action Plan 2018 - 2022
30 minute local communities	30 minute public transport trip to significant centre	●			●		Illawarra Shoalhaven Regional Transport Plan
15 minute neighbourhood	15-minute walk or ride to everyday amenities and services	●		●	●	●	Future Transport Strategy 2056

# 3.

## Understanding Place

This section provides an evidence-based understanding of Nowra Riverfront Precinct and key surrounding local centres.





## 3. Understanding Place

### 3.1 Place Function

Council's Local Strategic Planning Statement defines Nowra Riverfront Precinct as an important development area. Its function is to support the wellbeing of the community, the health of the river and the economy of the Nowra CBD.

As shown in Figure 5 there are a cluster of services and amenities at the Nowra Riverfront Precinct including a swimming pool, other community facilities and parks.

The surrounding area extending to Nowra CBD offers other amenities such as schools, a hospital and a shopping centre.

The nearest train station is Bomaderry which provides access to key employment areas such as Wollongong and Sydney.

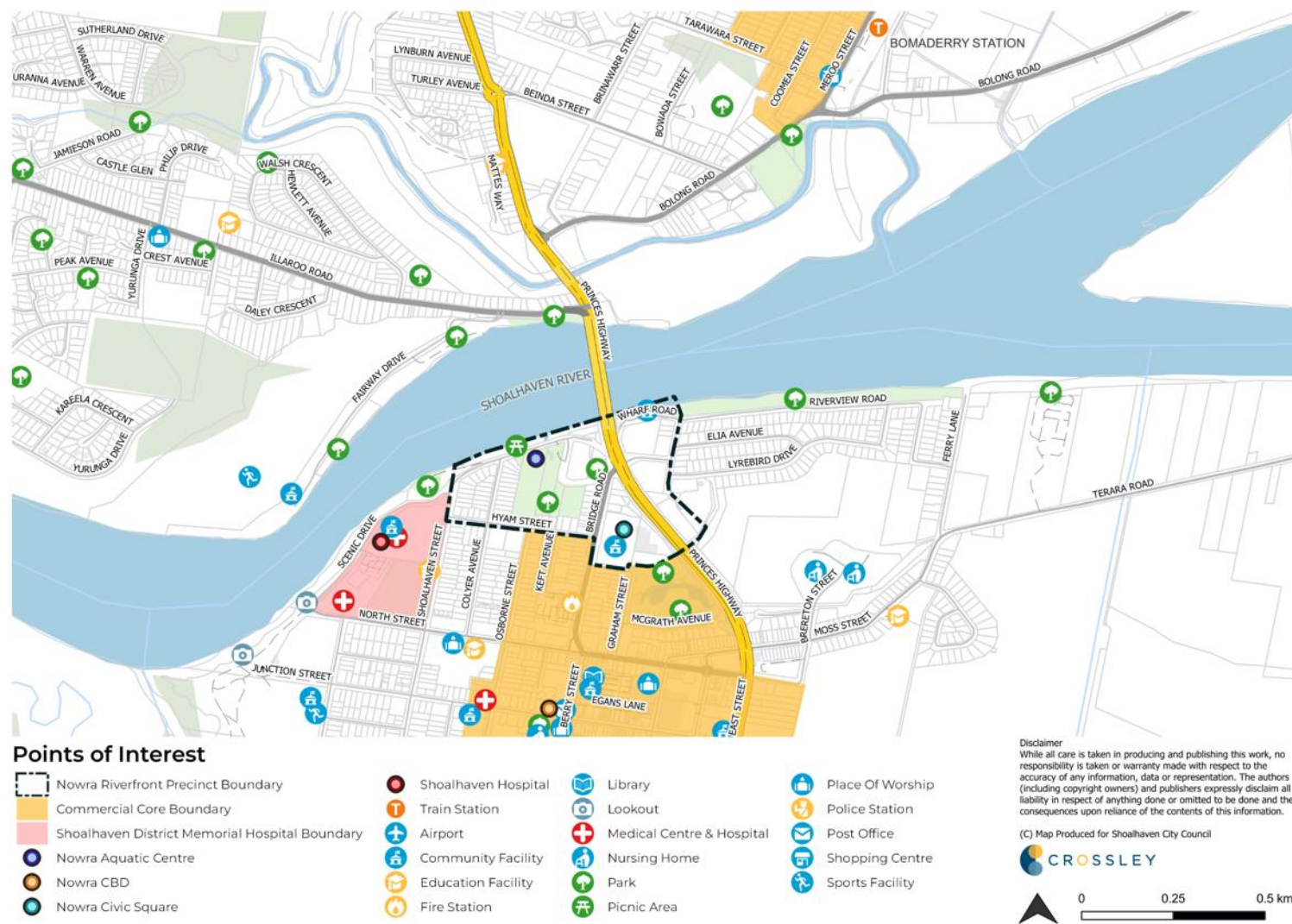


Figure 5: Community facilities and areas in and around Nowra Riverfront Precinct (Source: Six Maps Clip & Ship)

## 3.2 Land Use Zoning

The Nowra Riverfront Precinct is mainly dominated by B4 Mixed Use land zoning providing access to living needs for local residents.

There is also a significant portion of RE1 Public Recreation land zoning within the precinct which includes the Nowra Aquatic Park. This reinforces the precincts function as an entertainment and leisure precinct. This is followed by SP3 Tourist zoning adjacent to the Nowra Public Wharf and some R3 Medium Density Residential Housing.

Just south-west of the Precinct boundaries, Nowra Hospital and the schools within the area are currently zoned as SP2 Infrastructure.

To the east of the Precinct, low density residential land uses are segregated from the mixed use zoning and commercial core by the Princes Highway.

The Nowra CBD is a compact centre located immediately south of the Nowra Riverfront Precinct defined by B3 Commercial Core and B4 Mixed Use land uses.

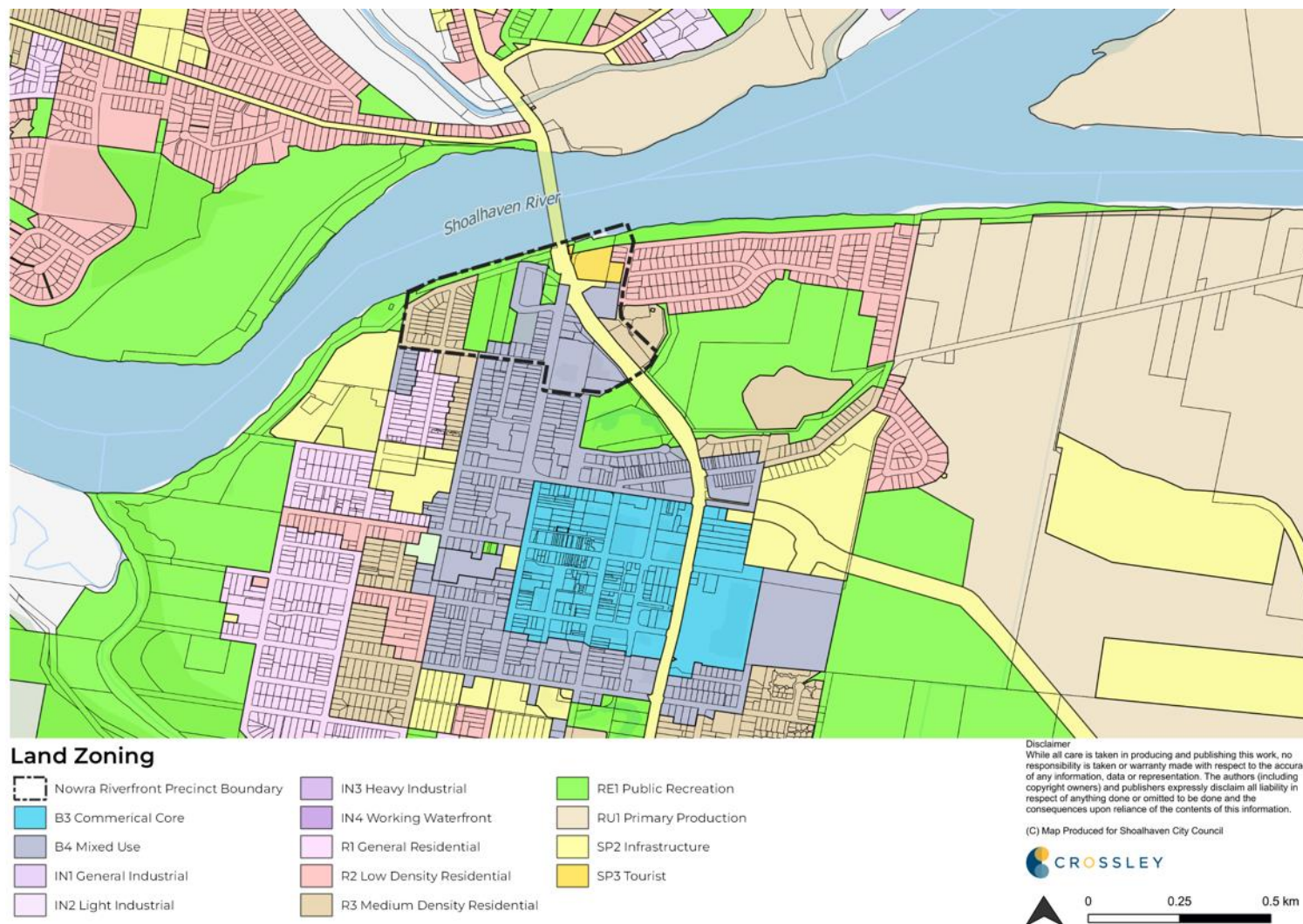


Figure 6: Land use zoning (Source: DPIE's Environmental Planning Instrument - Land Zoning.)



## Key places within the study area



Figure 7: Nowra Aquatic Park (Source: CrossleyTP, 2023)



Figure 8: Scenic Drive (Source: CrossleyTP, 2023)



Figure 9: Nowra Public Wharf (Source: CrossleyTP, 2023)



Figure 10: Princes Highway (Source: CrossleyTP, 2023)



## Key places outside the study area



Figure 11: Bomaderry Station (Source: CrossleyTP, 2023)



Figure 12: Shoalhaven Hospital (Source: CrossleyTP, 2023)



Figure 13: Shoalhaven Entertainment Centre (Source: CrossleyTP, 2023)



Figure 14: Nowra CBD (Source: CrossleyTP, 2023)

### 3.3 Residential Population

The Riverfront Precinct Area straddles across two SA1 boundaries. However, due to the amount of open space contained in the Precinct, the relative population in the study area is low.

Immediately around the Riverfront, there is about 1,100 residents living to the east of the Princes Highway; with a further 1,000 people living to immediately to the south of the precinct on the western side of Princes Highway.

This suggests a strong desire line east and west across the highway into the Precinct to access the open space and amenities contained in the area.

The north to south desire line is mainly serviced by the Nowra Bridge.

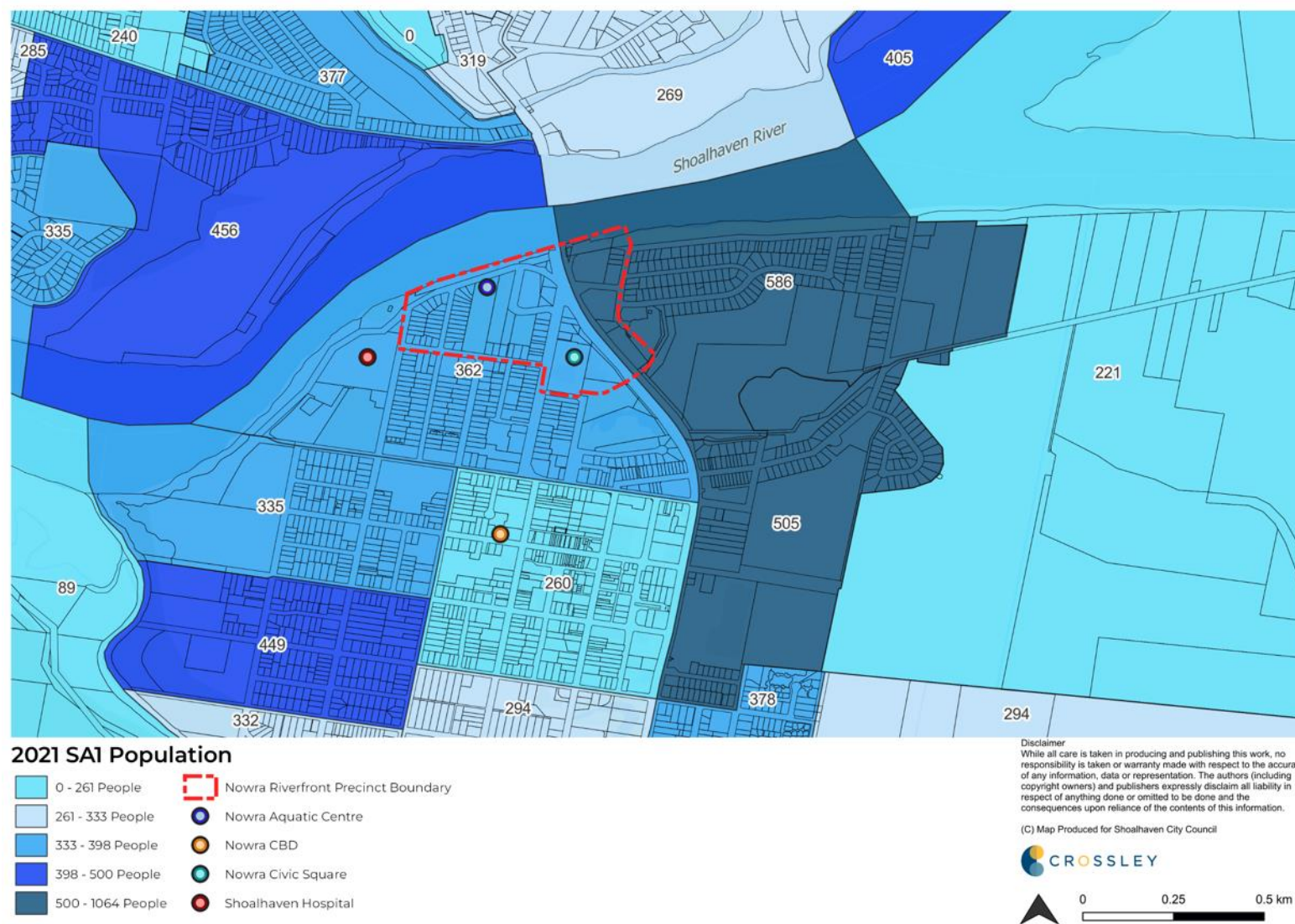


Figure 15: Existing population numbers and population densities at a SA1 level (2021)  
(Source: Australian Bureau of Statistics)

## 3.4 Population Demographics

### 3.4.1 Age and Sex

The Nowra Riverfront Precinct is included within the Nowra district boundary as shown in Figure 16. The estimated resident population in 2021 for Nowra was 10,063 persons.

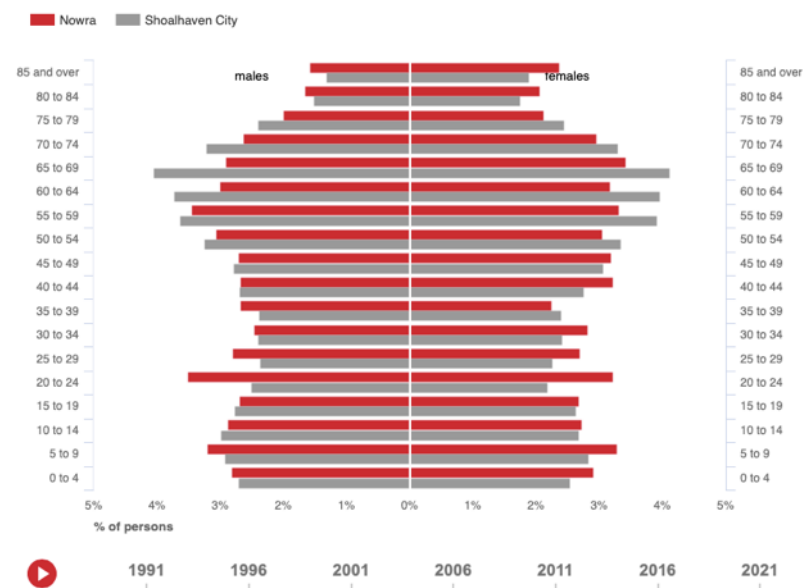
Based on the age-sex pyramid, the 20-24 years old and 55-59 years old age group are the most populous in 2021. Furthermore, through a comparison of ages, it is evident that the general population of Nowra on average is much younger than the entire Shoalhaven City LGA.

From 2016 to 2021, the district's population increased by around 826 people (9%) with the largest increases in Young Workforce (25-34 years old) and Parents and Homebuilders (35 – 49 years old). The changes in the population demographics demonstrate the requirement to provide a transport network which caters for all ages and abilities; with strengthening desire lines to employment and education facilities.



Figure 16: Nowra District boundary  
Source: Profile.id, 2021

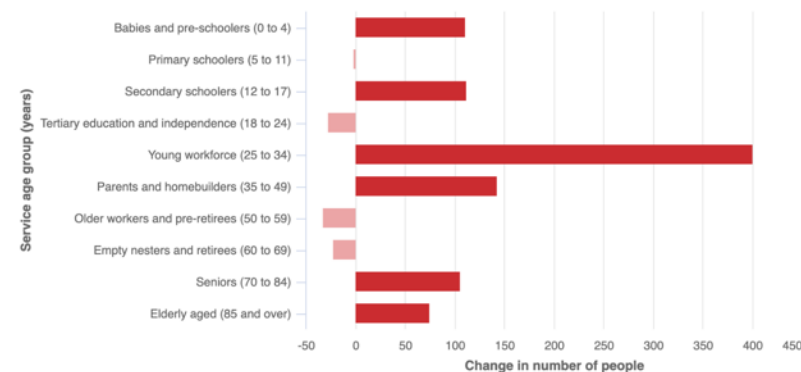
### Age-sex pyramid, 2021



Source: Australian Bureau of Statistics, Census of Population and Housing, selected years between 1991-2021 (Enumerated data). Compiled and presented in profile.id by id (informed decisions).

### Change in age structure - service age groups, 2016 to 2021

Nowra - Total persons



Source: Australian Bureau of Statistics, Census of Population and Housing, 2016 and 2021 (Usual residence data). Compiled and presented in profile.id by id (informed decisions).

Figure 17: Change in age-structure for Nowra District, 2021  
Source: Profile.id, 2021



### 3.4.2 Place of Work and Travel Mode

As shown within Table 2, the main employment centres within the Shoalhaven SA3 zone are Nowra, North Nowra – Bomaderry and Ulladulla which are connected by the Princes Highway.

Table 3 provides a breakdown of residency for workers within Nowra which indicates that an overwhelming majority of people who live in Nowra and North Nowra work locally. Other key areas include Culburra Beach, Berry – Kangaroo Valley and Callala Bay – Currarong.

Shoalhaven City Council have identified that the Riverfront Precinct is an important development area for tourism and recreation to help support its economy. This means that the study area is likely to contribute towards the growth in number of jobs and could strengthen the density of employment opportunities in Nowra CBD area, thereby strengthening the opportunity for live-work community and shorter travel distances to reach work.

At present, the preferred choice of travel to reach work is via private car at more than 70 per cent. Sustainable travel options comprise a very small percentage of trips with public transport mode share achieving 0.3% and active transport (5.5%).

There is the opportunity to provide a wider choice of travel modes to existing and future resident workers which could contribute to a higher uptake of walking, cycling and public transport given that a significant portion of Nowra's work force lives locally within the area.

Method of travel to work, 2021

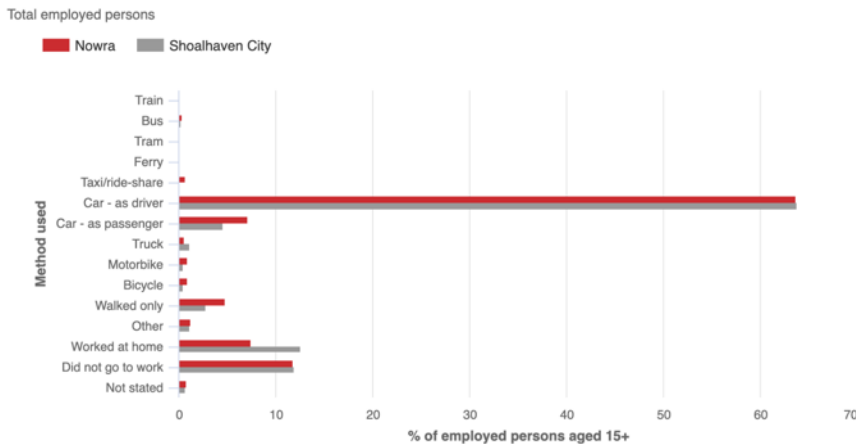


Figure 18: Employment location of resident workers by LGA and Method of travel to work. Source: Australian Bureau of Statistics, 2021

Table 2: Location of residence for workers within Shoalhaven (SA3 zone)  
Source: Australian Bureau of Statistics, 2021

Rank	Statistical Area Zones	Employment	Percentage
<b>TOTAL</b>	<b>Shoalhaven (SA3)</b>	<b>34,361</b>	<b>100 %</b>
1	Nowra (SA2)	15,084	43.90 %
2	Ulladulla (SA2)	5794	16.86 %
3	North Nowra – Bomaderry (SA2)	4038	11.75 %

Table 3: Location of residence for workers within Nowra (SA2 zone).  
Source: Australian Bureau of Statistics 2021

Rank	Statistical Area Zones	Employment	Percentage
<b>TOTAL</b>	<b>Nowra (SA2)</b>	<b>15084</b>	<b>100 %</b>
1	Nowra (SA2)	5865	38.88 %
2	North Nowra - Bomaderry (SA2)	3201	21.22 %
3	Culburra Beach (SA2)	764	5.06 %
4	Berry – Kangaroo Valley (SA2)	756	5.01 %
5	Callala Bay – Currarong (SA2)	604	4.00 %

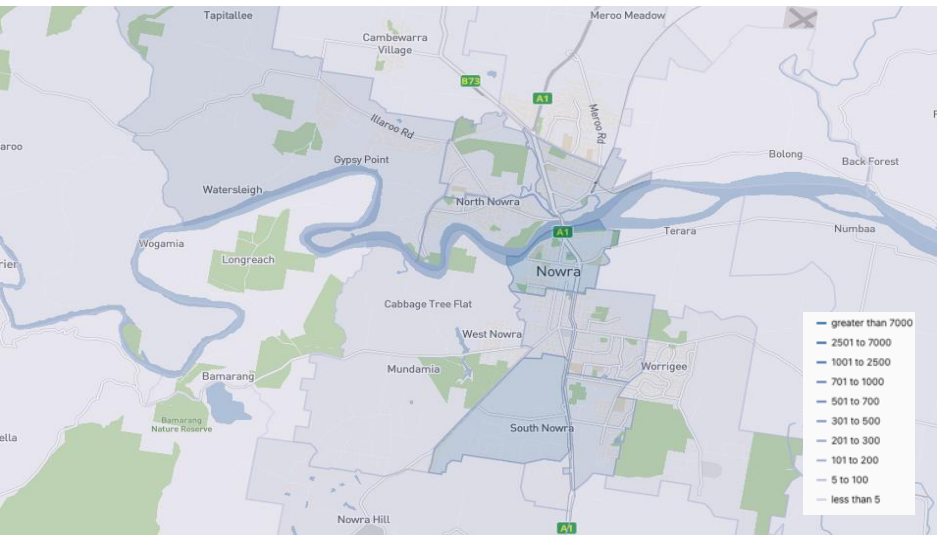


Figure 19: Local jobs, per km². Source: TfNSW Movement and Place

# 4.

## Understanding movement

This section presents the transport network within and around the Nowra Riverfront Precinct and describes how it integrates with the land-uses





## 4. Understanding Movement

### 4.1 Traffic Environment

#### 4.1.1 Road Hierarchy

Princes Highway acts as a Primary Road connection across the Shoalhaven River providing direct access to the Nowra Riverfront Precinct, Nowra CBD, North Nowra and South Nowra via the Distributor Road network.

The Princes Highway is a divided carriageway comprising two to three lanes in each direction. It provides regional connections to Sydney, Wollongong and key tourist destinations such as Moss Vale, Jervis Bay and Batesmans Bay towards the border with Victoria.

Bridge Road, North Street and Moss Street are all part of the Distributor Road Network. These streets distribute local traffic from the Highway into the local street network; and vice versa..

Other key streets such as Scenic Drive, Hyam Street, Pleasant Way, Graham Street and Shoalhaven Street provide key access routes around the Riverfront Precinct.



Figure 20: Functional Road Hierarchy  
(Source: TfNSW OpenData Hub, 2021)

## 4.1.2 Speed Zones

There are four speed zones within the wider road network surrounding the Nowra Riverfront Precinct:

- 70km/h along the Princes Highway
- 60km/h along the sub-arterial network in:
  - North Nowra along Illaroo Road
  - Bomaderry along Bolong Road
  - Terara along Terara Road
- The local road network within the Riverfront Precinct and around Nowra operates at a 50km/h speed limit.
- Immediately outside the Riverfront Precinct there is an amalgamation of 40km/hour school zones along North Street, Shoalhaven Street, Colyer Avenue, Osborne Street and Moss Street which create a low speed environment for parts of the day.
- Site investigations revealed motorists tended to exceed the speed limit during non-peak hours and aggressively honked horns if other drivers were not progressing as quickly. This behaviour was observed within the 70km/h speed zone.

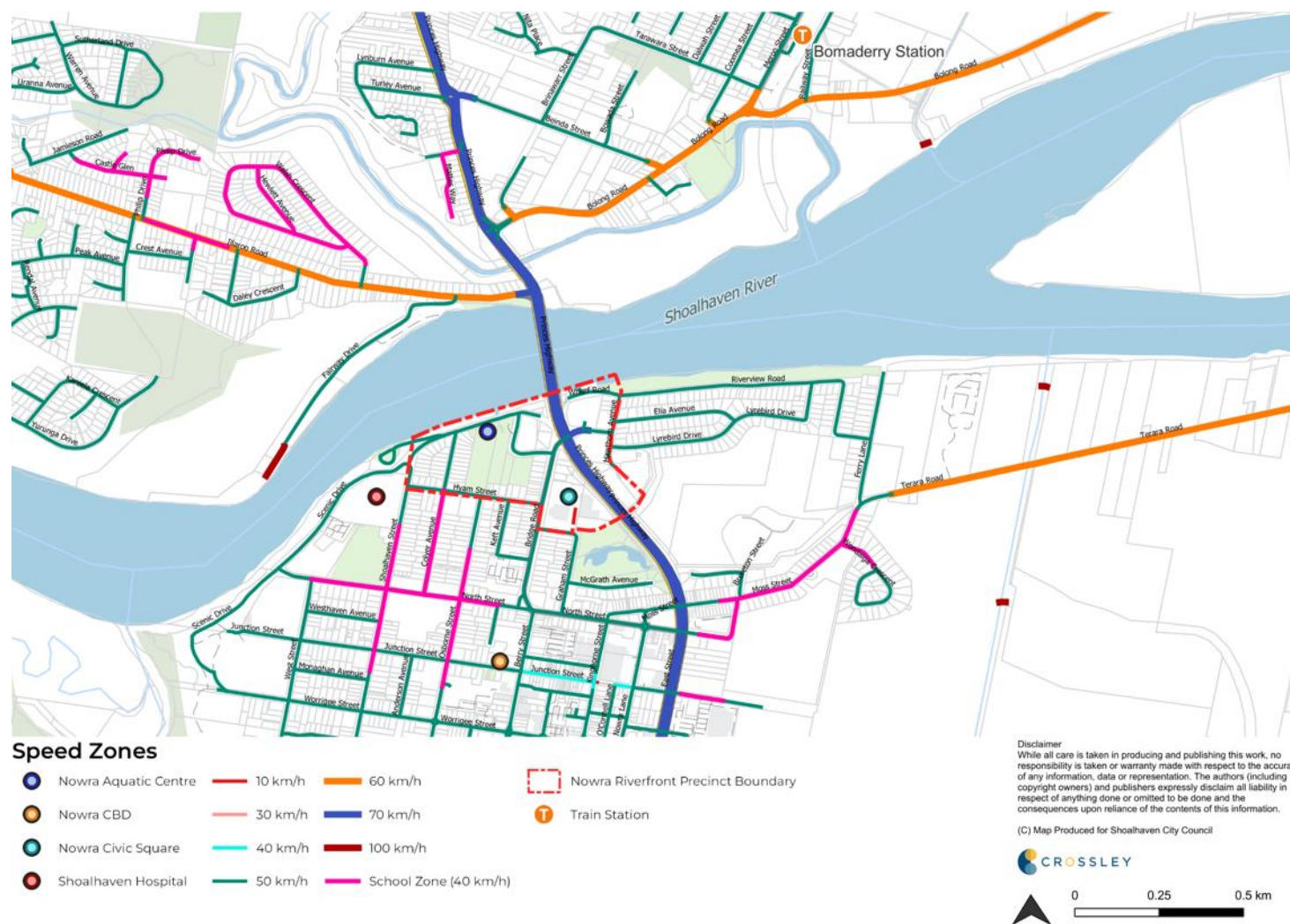


Figure 21: Speed Zones  
(Source: TfNSW OpenData Hub, 2021)

## 4.2 Public Transport

### 4.2.1 Bus Routes

There are some bus services in operation providing connectivity to the Aquatic Centre, Civic Square, Shoalhaven Hospital and the CBD.

The bus services are privately operated by Nowra Coaches as part of the Greater Nowra Bus Network.

There are four main routes which serve the Riverfront Precinct. As shown in Figure 22, these are circuitous which create long journeys which make using the bus, a less attractive option for those who have access to a private car.

The bus frequencies are also low and make it a less reliable or viable option if needing to get places, such as the train station, for a particular time. The frequencies can also contribute to longer waiting periods and the requirement to provide good waiting facilities at bus stops.

Other bus routes that pass through the Riverfront Precinct include **110, 111, 112, 131, 132, S510.**

Table 4: Main bus services within Nowra

Bus Route	Description	Weekday Frequency	Weekend Frequency
101	East Nowra & Worrigee to Nowra (LoopService)	Every 60 minutes	Every 60 minutes
102	Basin View to Bomaderry Station & Nowra via St Georges Basin (Loop Service)	Every 120 minutes	Every 120 minutes
102X	Bomaderry Station to St Georges Basin via Nowra & Sanctuary Point (Loop Service)	Every 120 minutes	Every 120 minutes
106	West Nowra to Nowra via UOW Shoalhaven Campus (LoopService)	4 services during the PM	2 services during the PM

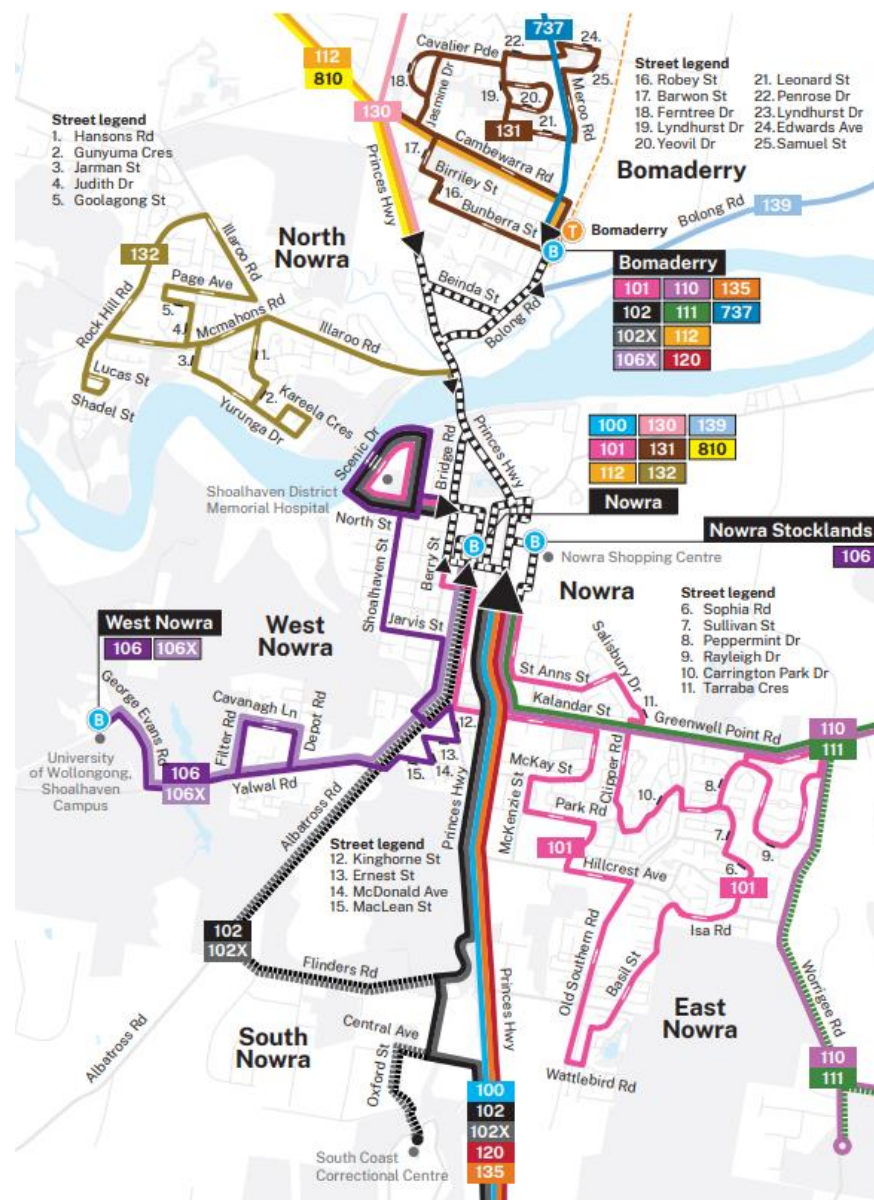


Figure 22: Bus routes along Scenic Drive  
(Source: GTFS, 2021)

## 4.2.2 Public Transport Travel Time

Figure 23 illustrates how far you can travel within a 30-minute bus journey from Nowra Riverfront; and the locations that are inaccessible by bus.

This assesses the potential for people to use public transport to access key places within and outside the Riverfront Precinct.

As shown, the 30-minute catchment provides access to/from many facilities and significant points of interests including Bomaderry Railway Station, Nowra CBD, Shoalhaven Hospital, Nowra Aquatic Centre and recreational spaces such as parks.

In terms of levels of attractiveness to use the bus; Bomaderry and North Nowra are located around 2.5 kilometres away from the Riverfront Precinct and would take a person over 30 minutes to access via the bus compared to a 10-minute car ride and a 20-minute bicycle ride.

This considerably longer travel time by buses reflects the circuitous nature of the current bus routes.

Furthermore, there are only 4 bus stops located immediately within the Riverfront Precinct, which impact the feasibility to access bus services.

Overall, this presents an unattractive travel mode choice for residents and visitors in comparison to driving and/or riding a bike.

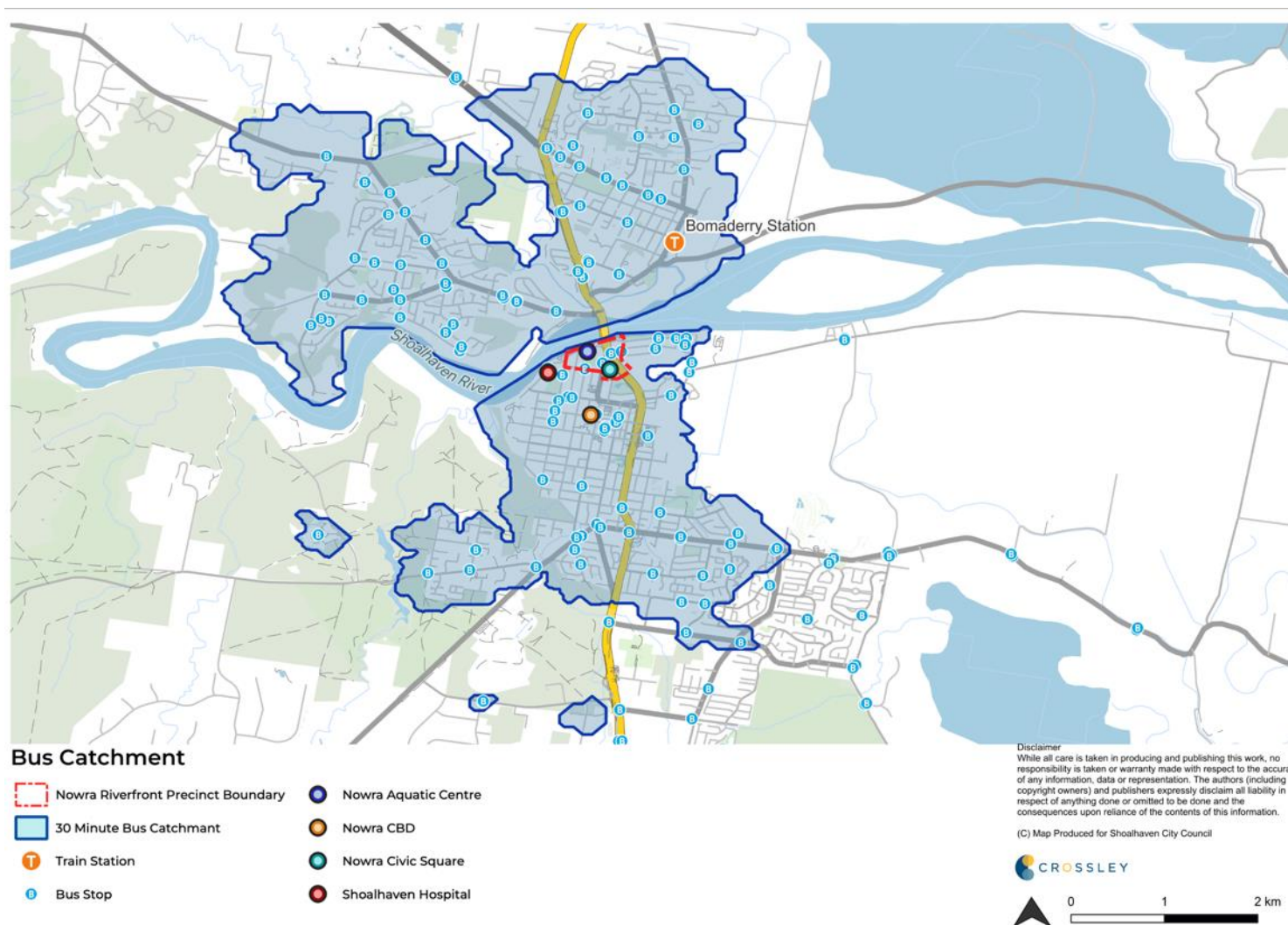


Figure 23: 30 minute bus catchment based on current bus network  
(Source: TravelTime Isochrones generated on January 2023)

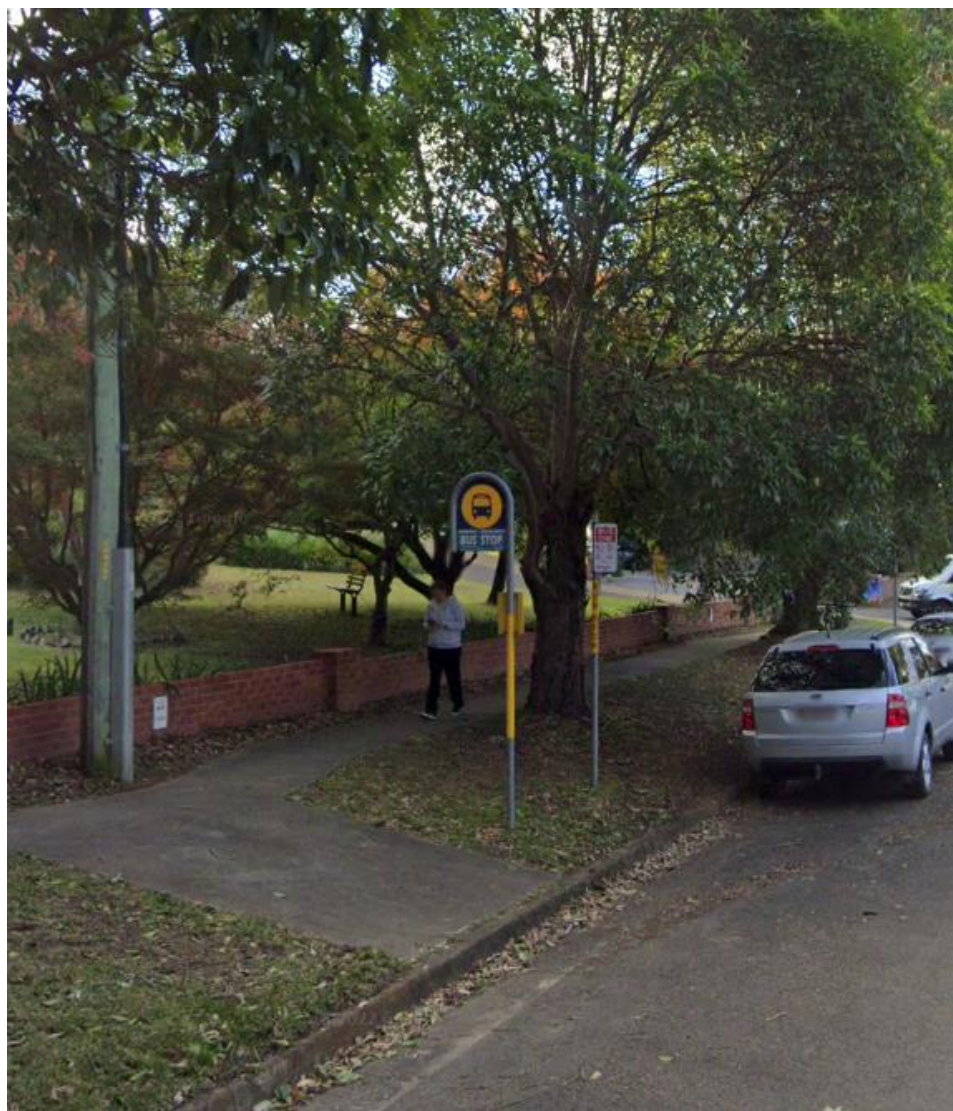


Figure 24: Typical bus stop on Shoalhaven Street provides a flag and timetable  
(Source: CrossleyTP, 2022)



Figure 25: Bus stop on Scenic Drive serving hospital (Source: CrossleyTP, 2022)



Figure 26: Bus stop on Bomaderry Train Station provides shelter, seating, timetable and flag  
(Source: CrossleyTP, 2022)



## 4.3 Cycling Environment

### 4.3.1 Bicycle Facilities

The existing bicycle facilities are illustrated in Figure 27.

Access to and from Bomaderry and North Nowra can be achieved by riding through the shared-user path which runs along the Princes Highway.

However, south of the Riverfront Precinct, the bicycle network is no longer continuous and is disjointed. Riders from Nowra CBD must ride in mixed traffic conditions alongside general traffic on the local and sub-arterial road network to access the Riverfront Precinct.

Along Princes Highway, the shared user path only extends to Junction Street and for the majority of its length offers a mixed traffic environment. This means people riding must share the same travel lane as motorists travelling 60-70 km/h. This creates a high stress environment for people riding.

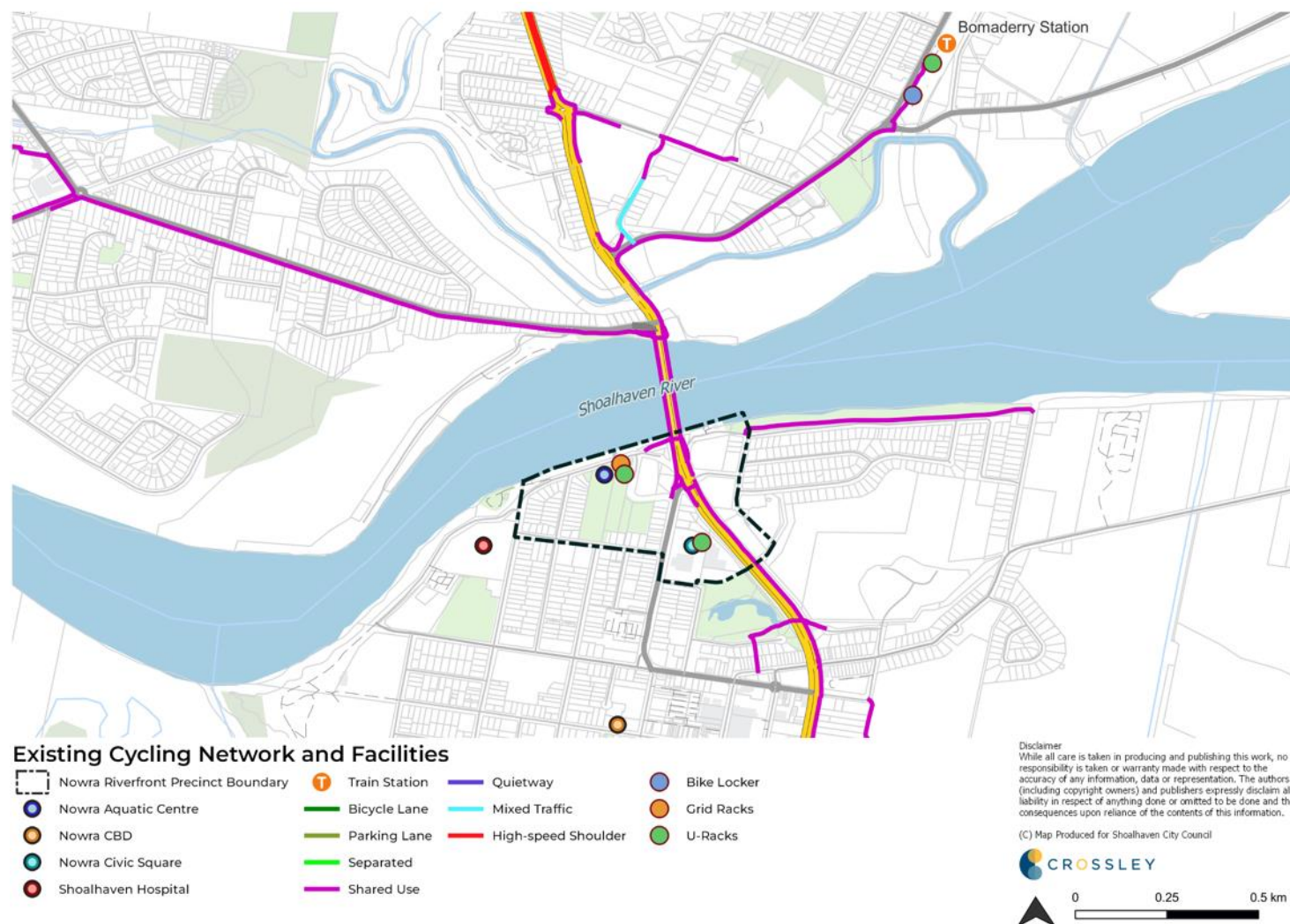


Figure 27: Existing bicycle network and facility type  
(Source: TfNSW OpenData Hub, 2021)

### 4.3.2 Cycling Catchment

The 20-minute cycling catchment from the Riverfront Precinct is extensive. This demonstrates the potential to reach key places such as Bomaderry, North Nowra, South Nowra and West Nowra, if good bicycle facilities are provided.

Through a direct comparison of the cycling catchment and public transport catchment, the coverage is very similar and comparable. Meaning what can be achieved in a 30-minute bus ride can also be achieved within a shorter 20-minute cycling ride.

This shows the importance and potential of cycling as a sustainable transport mode choice to reduce the reliance on private vehicle usage given the infrequency of public transport services within Nowra and the Riverfront Precinct.

Based on travel mode choice to work in the previous section, cycling as an active transport mode is being underutilised and this can be directly linked to the limited cycling infrastructure within the study area.

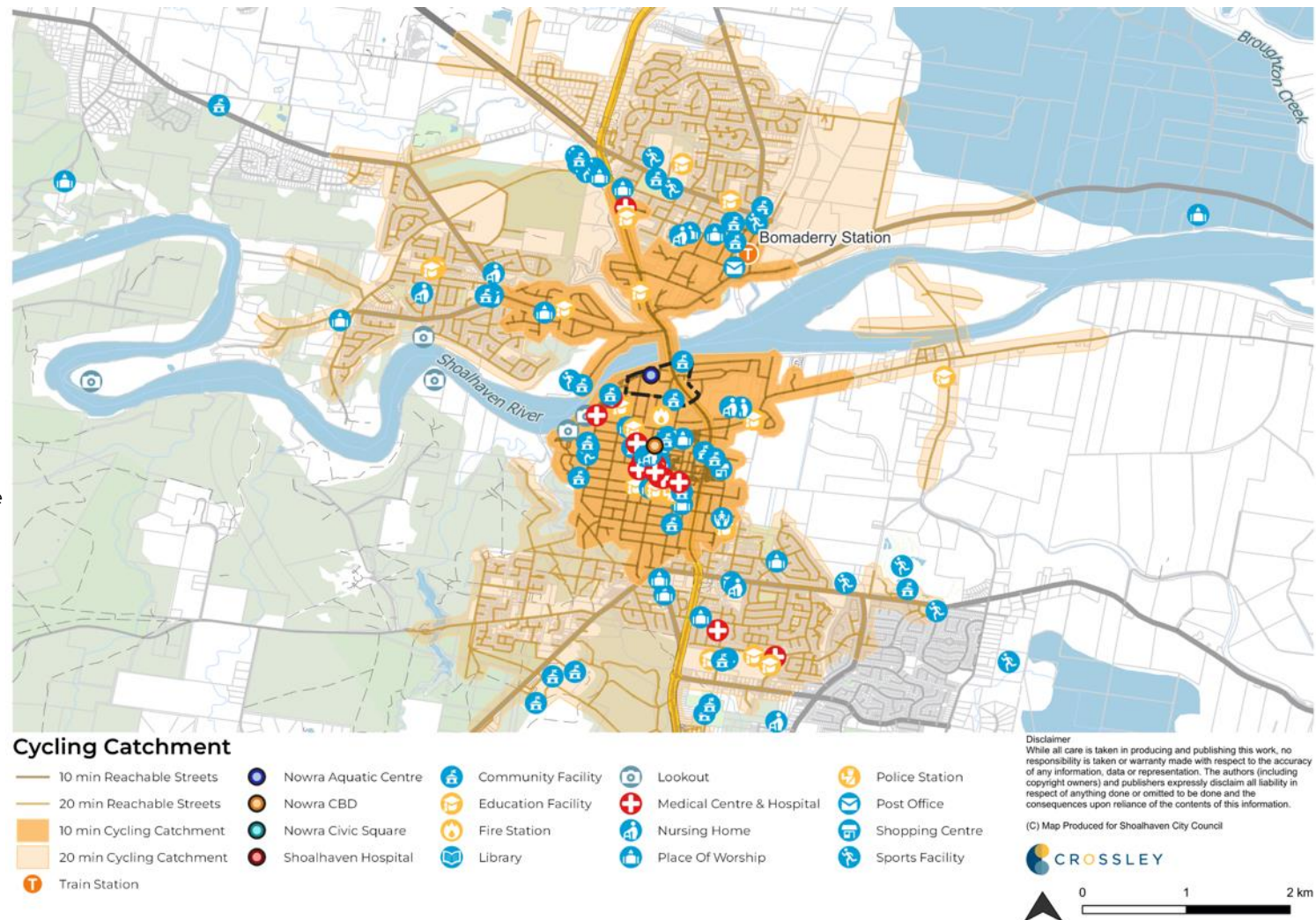


Figure 27: 10-minute and 20 minute cycling catchment shows the potential role of cycling and objectively demonstrates the impact of the bridge impeding access east and north. (Source: CrossleyTP, 2022)



Figure 28: Unattractive underpass at Campbell Place Track (Source: CrossleyTP, 2022)



Figure 29: Shared user path from Belinda St to Princes Highway with signage (Source: CrossleyTP, 2022)



Figure 30: Bike hire locker in Walsh Memorial Park far from the Bomaderry Station (Source: CrossleyTP, 2022)



Figure 31: Bike racks in the Nowra Aquatic centre (Source: CrossleyTP, 2022)



Figure 32: Share user path along Wharf Road (lacks signage) (Source: CrossleyTP, 2022)



Figure 33: Bike racks at Shoalhaven City Council building (Source: CrossleyTP, 2022)

## 4.4 Walking Environment

### 4.4.1 Footpath Network

Princes Highway provides the longest continuous walking facility within the Riverfront Precinct, connecting residents between North Nowra, Bomaderry and Nowra CBD.

Footpaths within the Riverfront Precinct are provided on the local road network along Hyam Street, Bridge Road, Shoalhaven Street, Scenic Drive and Osborne Street. These provide connections toward the Nowra Civic Square, Shoalhaven Hospital and to Nowra CBD.

The footways provided are typically 1.2 metres wide as per minimum Council standards.

With the temporary closure of the underpass at Nowra Bridge, the signalised crossing at Pleasant Way/Bridge The upgrades planned for the underpass by TfNSW appear to be limited. Therefore, the road intersection is the primary east-west crossing point through the Princes Highway for residents walking or cycling.

At this location, people must cross 2 legs of the intersection and 6 lanes of traffic along high volumes and high speeds of traffic with long waiting times which makes for an unattractive experience.

The only other east-west footpath connections are at Campbell Place underpass and signalised crossing at Moss Street which also do not offer comfortable walking and cycling experiences; and deemed to create unfeasible detours for people walking from the Riverfront Precinct.

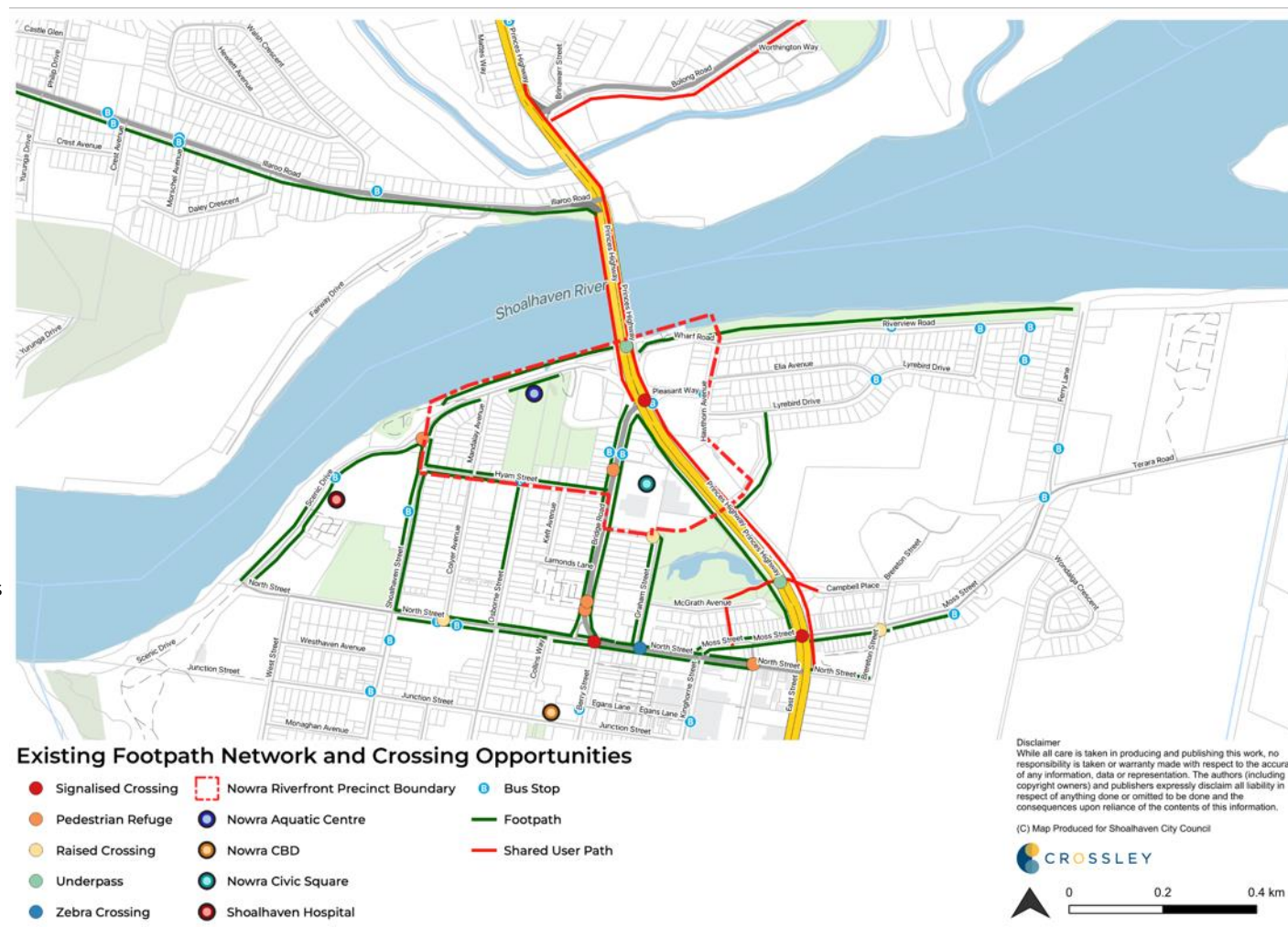


Figure 34: Pedestrian footpath network and crossing facilities  
(Source: CrossleyTP in combination from data from TfNSW OpenDataHub and GoogleMaps, 2021)

## 4.4.2 Walking Catchment

A 15-minute walking catchment was completed for the Nowra Riverfront Precinct using the Nowra Aquatic Centre as a starting point.

This walking catchment covers the entire Riverfront Precinct, part of the Nowra CBD and other key activity nodes such as the Shoalhaven Hospital, schools and parks.

This demonstrates the potential walkability and liveability of the Riverfront Precinct if an all ages and all abilities walking network is provided.

It is important to note that destinations on the northern side of Shoalhaven River such as Bomaderry Train Station are not within the 15-minute walking catchment.

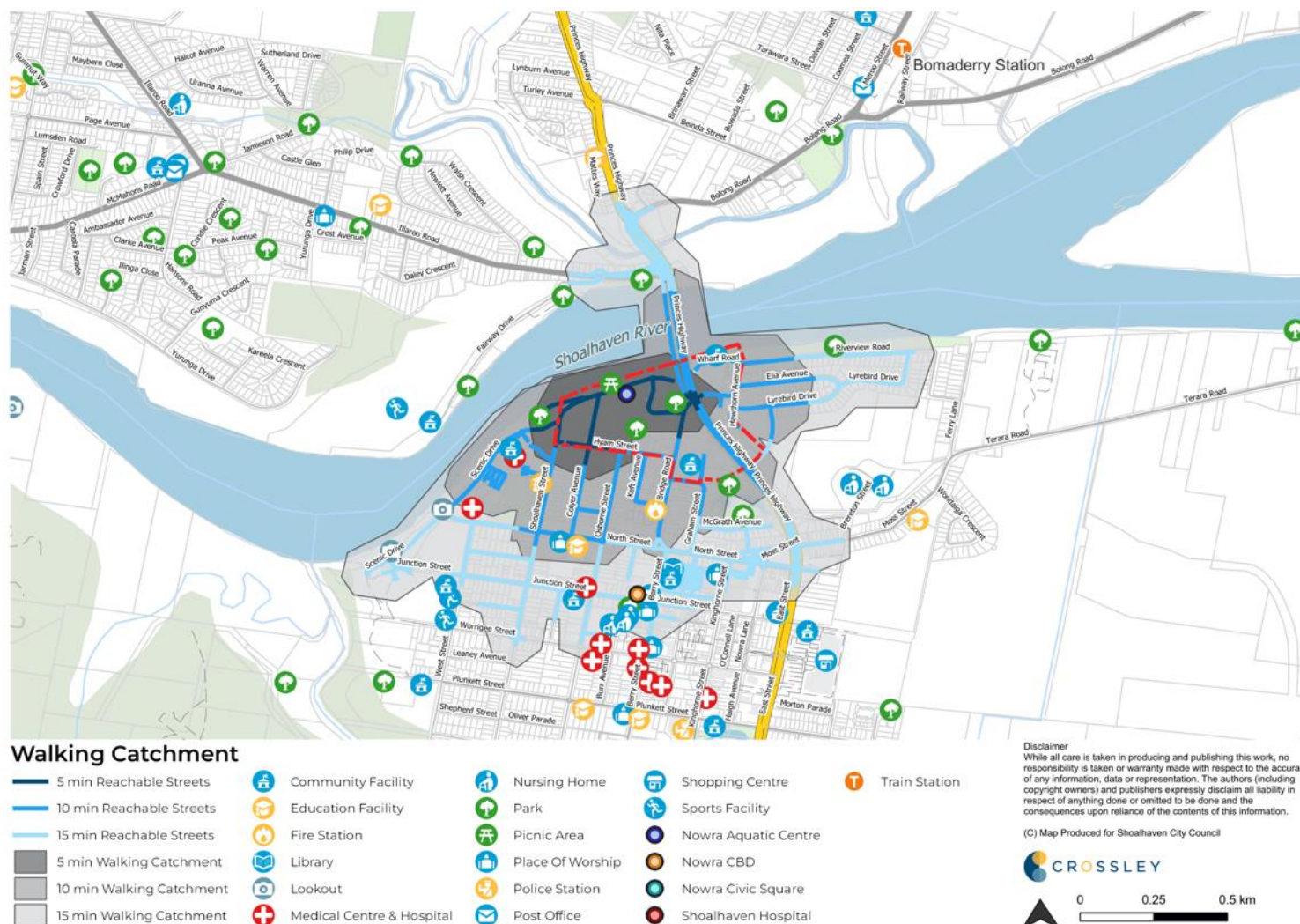


Figure 35: A 15-minute walking catchment shows the potential role of walking and objectively demonstrates the impact of the bridge impeding access east and north. (Source: CrossleyTP, 2022)



Figure 36: Pedestrian refuge on Bridge Road (Source: CrossleyTP, 2022)



Figure 37: Signalised crossing with high volume vehicle and its long crossing distance (Source: CrossleyTP, 2022)



Figure 38: Uneven pedestrian surface along Bridge road (Source: CrossleyTP, 2022)



Figure 39: Narrow footway at Nowra Bridge alongside a heavy traffic creating a noisy environment (Source: CrossleyTP, 2022)



Figure 40: Unattractive environment at underpass of Campbell Place (Source: CrossleyTP, 2022)



Figure 41: Narrow footway along Scenic Drive, and lack of places to rest, shade or lighting. (Source: CrossleyTP, 2022)

# 5.

## Movement and Place Analysis

This section overlays the Movement and Place function for the surrounding network within Nowra to derive street typologies and performance benchmarks.

The function and benchmarks are used to complete a movement and place analysis to objectively identify deficiencies for people walking, cycling and using public transport.



## 5. Movement and Place Analysis

### 5.1 Corridor Classification and Street Topology

The Movement and Place Function for the local road network in Nowra has been classified according to the street topologies within the NSW Movement and Place Framework (2020). The majority of the network comprises local streets with the following locations classified as main streets due to the higher movement and place functions

- The western section of the corridor from Princes Highway to Bridge Road, and North Street have a relatively high movement function as it is the primary link to the Riverfront Precinct and Nowra CBD. However, these streets also accommodate place activity including local shopping strip and local amenities. Other main streets include Berry Street and Kingshorne Street.
- Junction Street has a higher place function with the majority of shops in Nowra CBD located on the street. However, there remains a significant movement function to and from the Princes Highway.
- Local streets with lower movement function such as Scenic Drive and Shoalhaven Street have a balance of medium movement and place function as they are access roads to key activity nodes such as the hospital and aquatic centre.

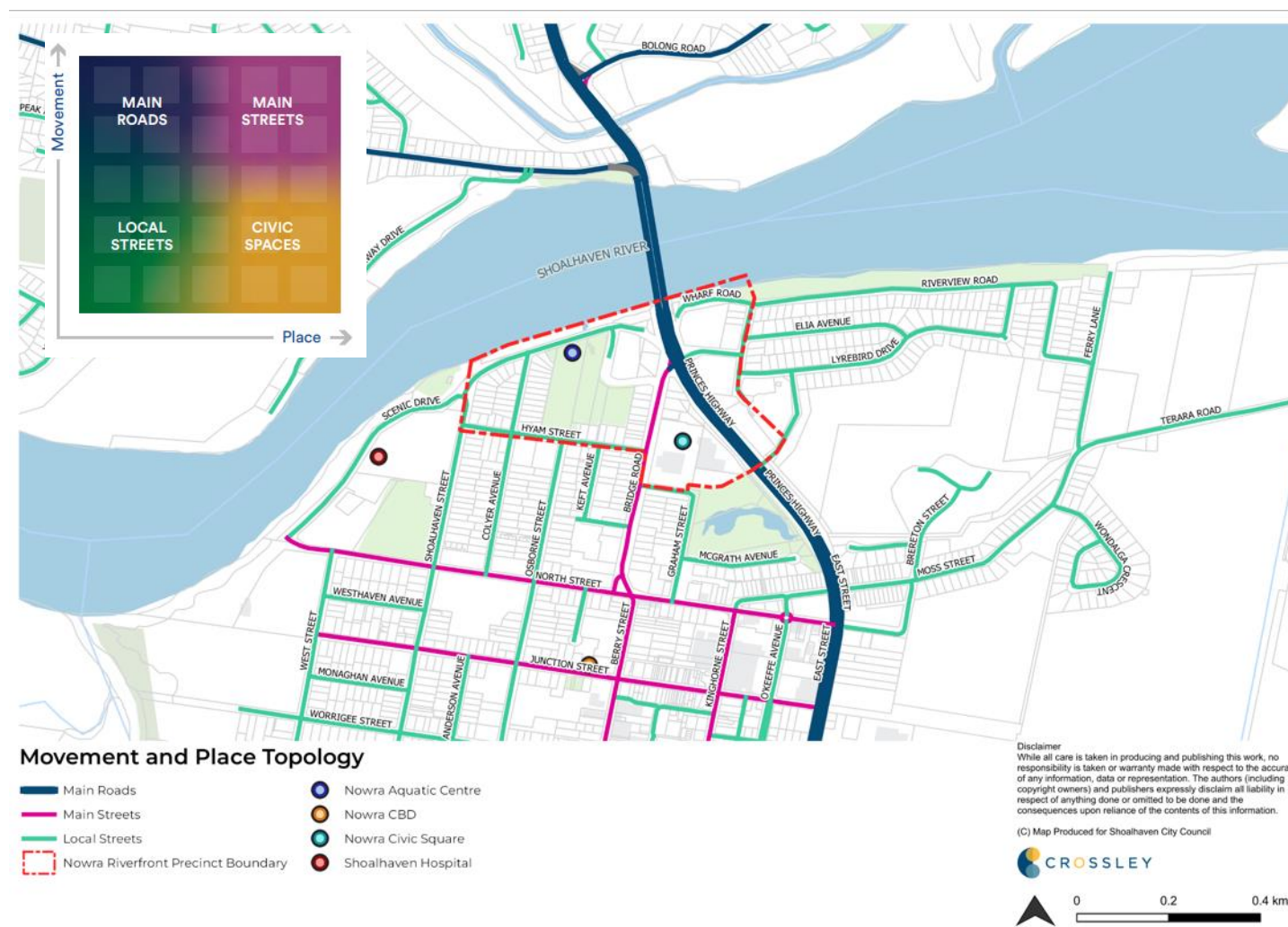


Figure 42: Corridor Classification (Source: CrossleyTP, 2022.)



## 5.2 Journey to Work Analysis

As described in Section 4 walking, riding a bike and catching the bus are unattractive travel options due to lack of facilities, access, infrequent services and/or significantly longer journey times in comparison to the private car.

Subsequently, as evidenced by the Journey to Work data, there is a high level of car dependency within Nowra with 78% of resident workers commuting by car. This is 5% more than the Shoalhaven City average.

Similarly, a smaller proportion of people walk, ride or use the bus within Nowra compared to Shoalhaven City.

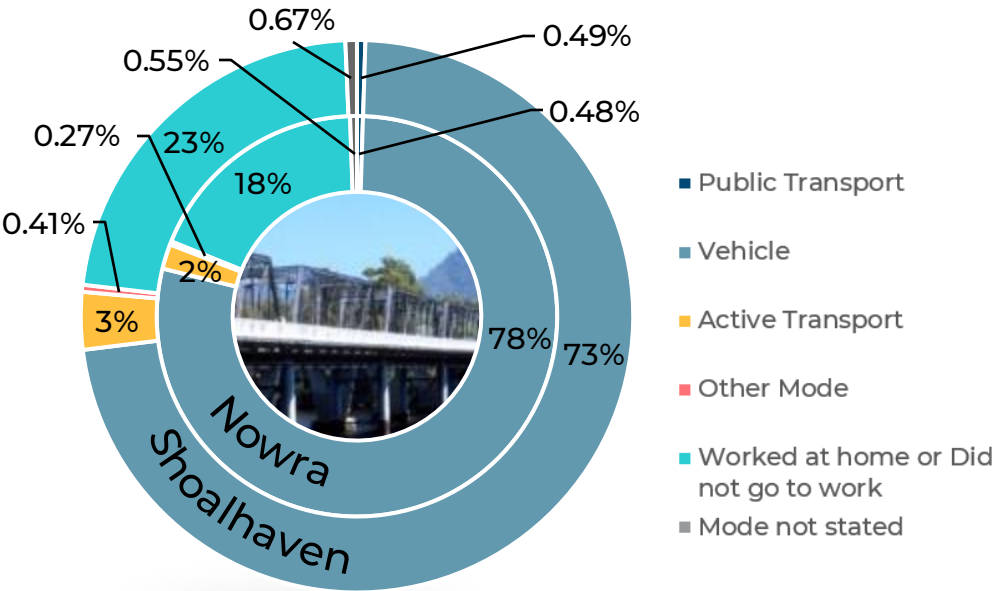


Figure 43: Travel to Work for Nowra and Shoalhaven LGA  
(Source: CrossleyTP, 2022, data sourced from Australian Bureau of Statistics, Census of Population and Housing 2016)

Table 5: Mode share gap analysis

Metric	Benchmark	Performance*	Performance Gap
Mode Share	4% to 8% Walk	1.5%	- 6.5%
Mode Share	2% to 5% Cycle	0.5%	- 4.5%
Mode Share	3% - 5% public transport	0.5%	- 4.5%

\*Note, this analysis is based on journey to worktrips. Mode share data for 'all trip purposes' was not available.

The Regional NSW Infrastructure and Services Plan, 2017 identified a range of mode share targets which have been adopted as a benchmark for Nowra.

As shown, the current mode share falls below the mode share range forming a target to increase:

- Walking by 6.5%
- Cycling by 4.5%
- Public transport by 4.5%

In considering that a majority of residents are working locally in the Riverfront Precinct or Nowra, walking, cycling and public transport are considered as feasible travel choices. With these shorter journeys, active and public transport plays a key role in achieving Journey to Work targets.

Due to the density and proximity of local services and amenities; walking, cycling and public transport has the potential to play a significant role in connecting people to these facilities. Therefore, all trip purpose mode share targets should reflect this role and function for these modes.

## 5.3 Walking Space Assessment

In 2020, Transport for NSW launched the Walking Space Assessment Guideline and spreadsheet tool. The guide standardises the approach to measure the level of comfort for people walking along a footway defined by levels of service ranging from A to F. The calculation is based on footway width, level of separation from traffic and number of people using the footway.

An acceptable level of comfort for the study area is Level of Service D and adopted as the benchmark for this study.

The footpaths in Nowra Precinct include Type 2, Type 3 and Type 4. Type 4 are those located alongside key amenities such as the swimming pool, and should provide a wider footpath to accommodate the additional flows of people.

To achieve a LoS D, the following widths are outlined in Table 6.

Table 6: Widths for different footpath types to achieve LoS D

Footpath Type	Not Adjacent to Active Frontage	Adjacent to Active Frontage
Type 2	1.9 m + 0.6 m Passing Zone	
Type 3	2.6m	2.8m
Type 4	3.2m	3.4m

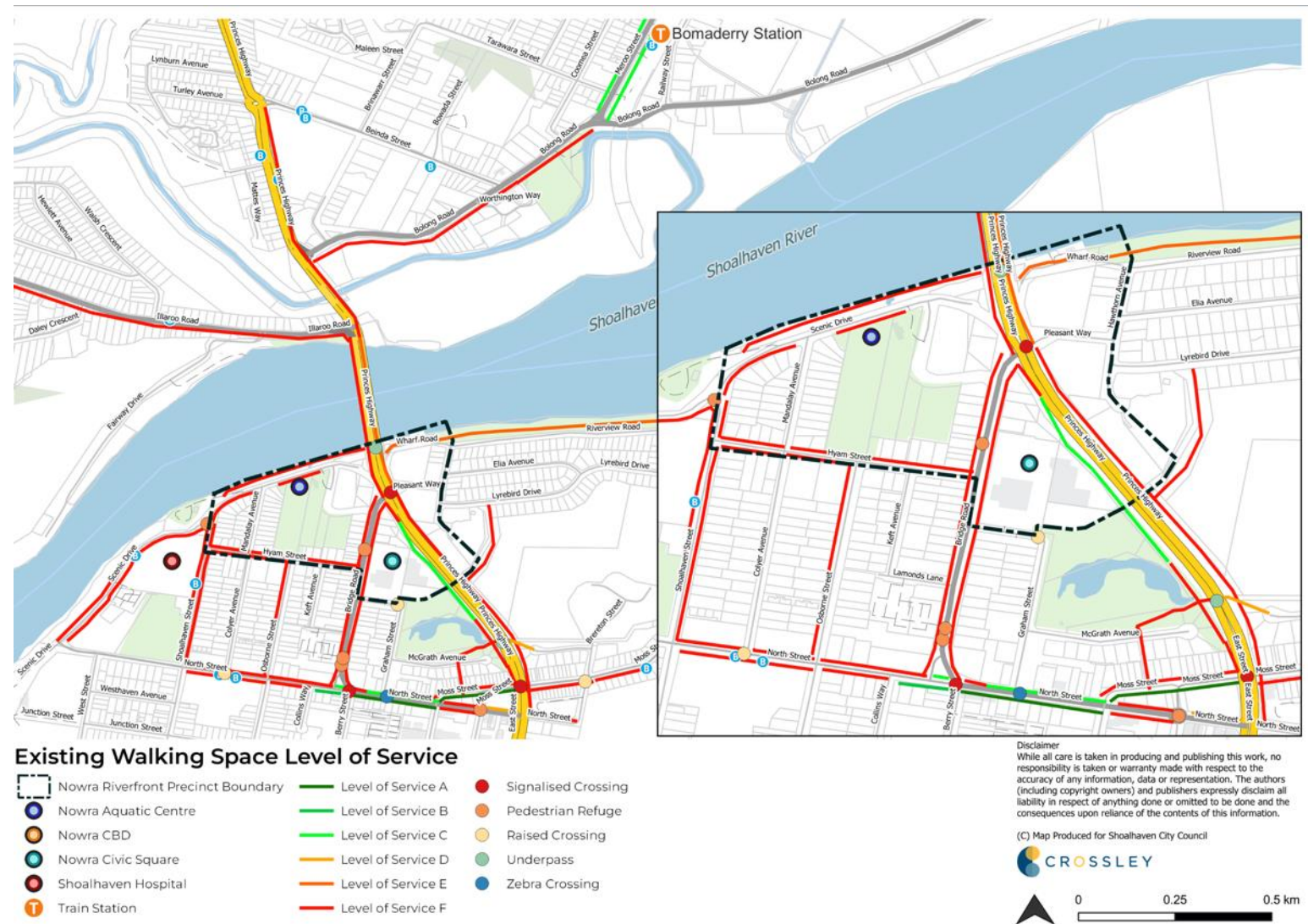


Figure 44: Walking Space Levels of Service – Walking Space Guide (Source: CrossleyTP, 2022)



## 5.4 Cycling Stress Level Assessment

In December 2020, Transport for NSW released the Cycleway Design Toolbox. The toolbox provides a methodology to assess the level of cycling comfort.

The aim is to provide cycling facilities which are suitable and accessible for all ages and abilities (8-80).

This translates to designing for the '**interested but concerned**' rider type who represent around 48% of the population; and if catered for, would mean providing a facility that attracts up to 70% of the population. This sets the **minimum performance benchmark** at **Stress Level 2**. The level of stress for people riding is calculated as per Table 7 and applied to the existing conditions on Nowra Riverfront Precinct.

Table 7: Cycling stress levels and associated environmental conditions

	Stress Level 4	Stress Level 3	Stress Level 2	Stress Level 1
Separation from traffic (Toolbox)	Mixed traffic Multiple lanes High volumes High Speed	Mixed traffic Busy road	Buffered from traffic Or Mixed traffic low speed (<50), low volume	Fully separated on low trafficked streets

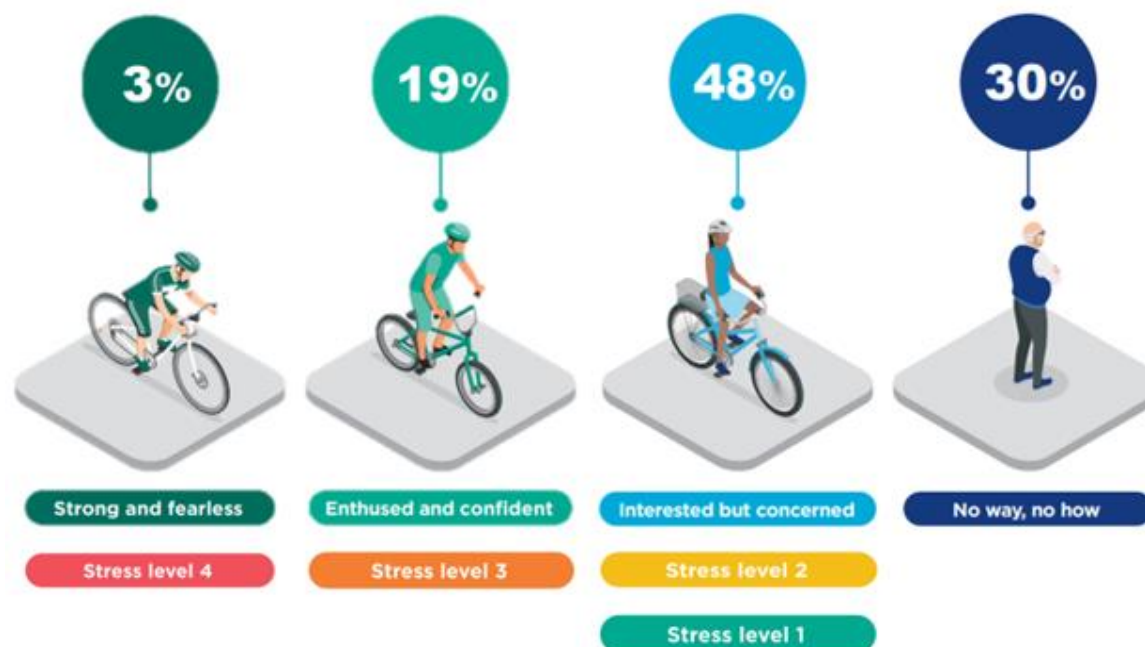


Figure 45. Cycling stress levels associated with each rider group in the Cycleway Design Toolbox (2020).

## 5.4.1 Cycling Stress levels

Bicycle facilities along the local network within and south of the Riverfront Precinct mostly consist of mixed traffic environment where cyclists mix with general traffic and trucks travelling at least 50km/h.

This presents a high stress environment that is likely to attract only the 'strong and fearless' and 'confident and enthused' riders.

Low stress cycling links exist primarily along Princes Highway and the sub-arterial roads at Illaroo Road and Bolong Road connecting North Nowra and Bomaderry to the Riverfront Precinct.

However, there are no safe separated facilities for people cycling to/from the Nowra CBD or within the Riverfront Precinct.

This means most of the community do not have direct access to safe and comfortable bicycle facilities which will take them door-to-door to key local amenities.



Figure 46: Cycling Stress Assessment – Cycleway Design Toolbox  
(Source: CrossleyTP, 2022)

## 5.5 Public Transport Assessment

### 5.5.1 Bus Stop DDA Compliance

A key NSW Government priority is the goal of making public transport more accessible for customers with mobility impairments or disabilities.

In Australia, legislative requirements are set by the Disability Standards for Accessible Public Transport 2002 (DSAPT), made under the Disability Discrimination Act 1992 (DDA). DSAPT requires that public transport stops should have, among others:

- A firm, even, and unobstructed boarding area large enough for the deployment of a boarding ramp (for passengers using wheelchairs or mobility aids).
- Tactile ground surface indicators (TGSIs) to guide passengers who are visually impaired.
- An adjacent footpath of at least 1.2m wide that provides unhindered access to the stop.
- A clearly visible sign.

A desktop DDA audit of the existing bus stops within the Riverfront Precinct and the surrounding area shows that there are no compliant bus stops within the study area.



Figure 47: Location of DDA compliant bus stops  
(Source: Disability Standards for Accessible Public Transport 2002 and GTFS, 2021, modified by CrossleyTP 2022)



Table 8: DDA compliance assessment of bus stops  
(Source: Disability Standards for Accessible Public Transport 2002 and GTFS, 2021, modified by CrossleyTP 2022)

Stop ID	Stop Name	Board Point Compliance	Access Path Compliance	TGSI Compliance	Bus Stop Sign Compliance
2541193	Shoalhaven Hospital, Scenic Dr	Yes	Yes	No	No
254147	Shoalhaven Hospital, Shoalhaven St	Yes	Yes	No	Yes
2541141	St Michaels Primary School, Near North St	No	Yes	No	No
2541143	North St & Colyer Ave	No	Yes	No	No
254112	Nowra High School, Moss St	Yes	Yes	No	No
2541492	Moorehouse Park, Hyam St	No	Yes	No	No
254182	Bridge Rd opp Shoalhaven Council Nowra	No	Yes	No	No
2541302	Pleasant Way at Hawthorn Ave	No	No	No	No
2541283	Hawthorn Ave opp Elia Ave	No	No	No	No
2541284	Mavromattes Reserve, Riverview Rd	No	No	No	No
2541348	Lyrebird Dr at Riverview Rd	No	No	No	No
2541349	Riverview Rd after Lyrebird Dr	No	No	No	No
2541468	75 Riverview Rd	No	No	No	No
2541276	Ferry Lane opp 15	No	No	No	No
2541469	Lyrebird Dr opp Elia Ave	No	No	No	No
2541125	East St near Pleasant Way	No	Yes	No	No

## 5.5.2 Bus Stop Accessibility

In May 2021, Transport for NSW released a toolbox providing planning guidelines for the selection of bus priority infrastructure based on the street typology as defined by the Movement and Place Framework.

There are not many bus stops present within the Riverfront Precinct. This means there is a need to increase the bus stop density, particularly at the Nowra Aquatic Centre, to enhance accessibility to existing bus services.

The bus stops located nearby are 'local stops' and according to the Bus Priority Toolbox require a connecting footpath and a crossing facility.

As shown, the bus stops around the Precinct are connected to a footpath (1.2m wide), however, not all of them have a crossing facility to enable people to access the the opposing bus stop safely and comfortably.

In terms of access by bike, there are no bus stops with end of trip facilities to park.

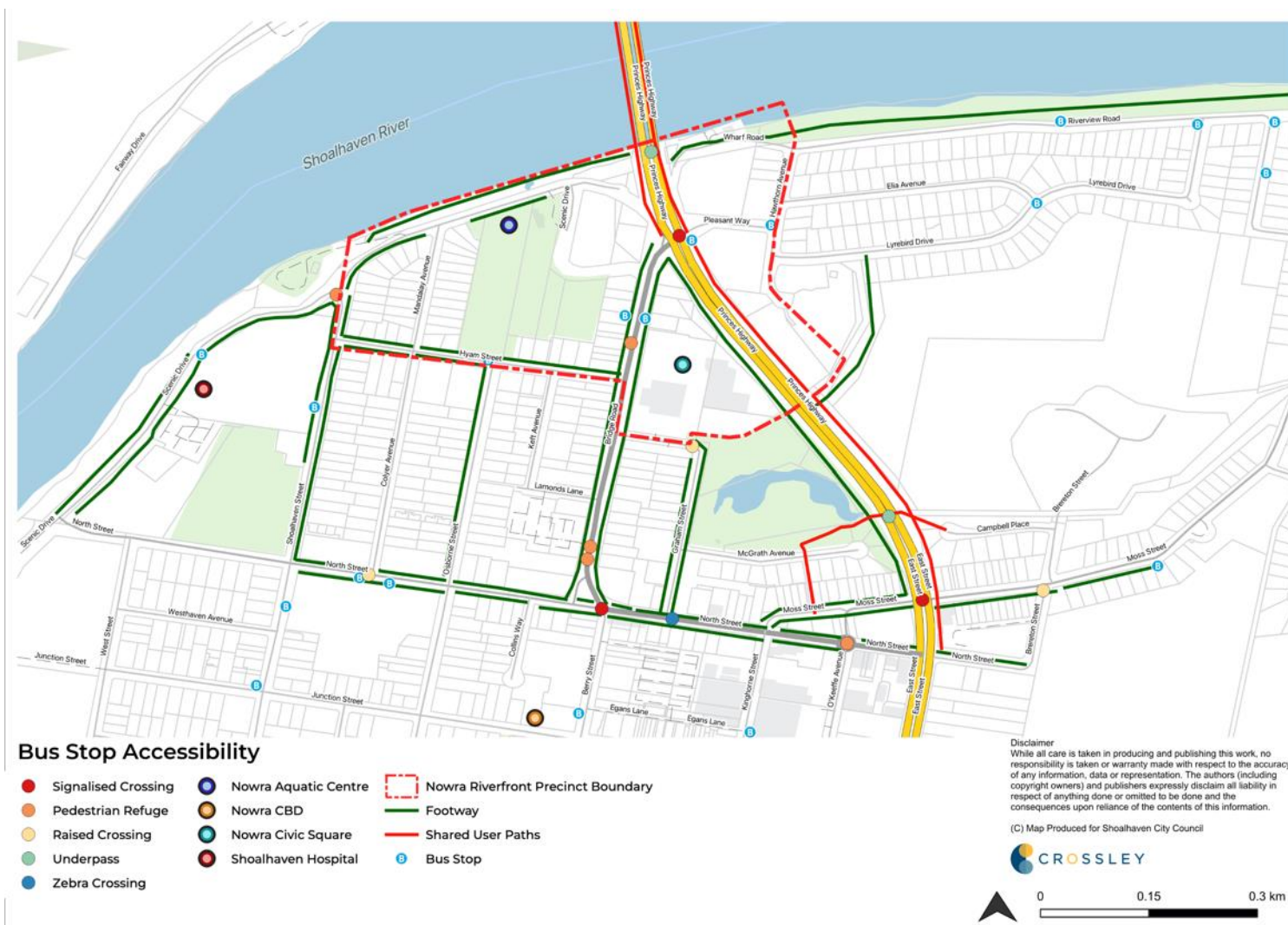


Figure 48: Bus stop accessibility  
(Source: CrossleyTP 2022)



# 5.6 Crash History and Safety

## 5.6.1 Crash Severity

Figure 49 shows the location of crashes for the most recent five-year period.

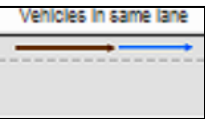
The crash severity breakdown within the Riverfront Precinct is as follows:

Severity	Number
Fatal	0
Serious	10
Moderate	18
Minor / Other Injury	8

The crash severity breakdown within Nowra CBD are as follows:

Severity	Number
Fatal	1
Serious	7
Moderate	18
Minor / Other Injury	5

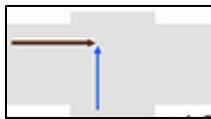
The top three crash types are as follows:



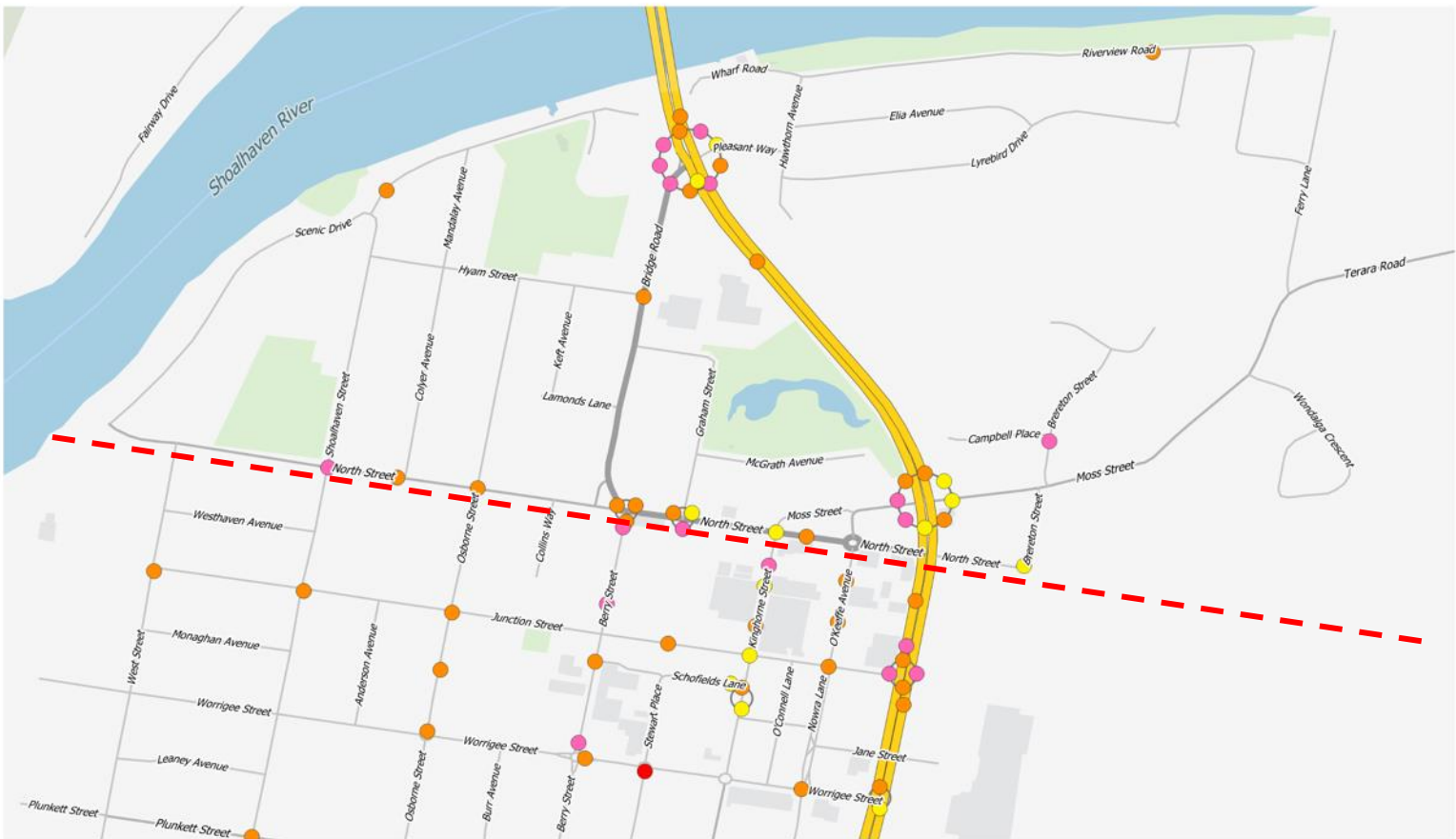
Rear end



Right through



Cross traffic



General Crash Analysis (2017-2021)

- Fatal
- Serious Injury
- Moderate Injury
- Minor/Other Injury

**NOTE: Anything outside the Riverfront Precinct to the north of North Street is part of the walking catchment and hence was analyzed together with the precinct.**

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0 0.15 0.3 km

Figure 49: Location of crashes and severity (Source: CrossleyTP, 2021)

## 5.6.1 Walking and Cycling Crashes

Figure 50 shows the location of crashes involving a person walking or cycling for the most recent five-year period, and included 10 crashes.

The crash severity breakdown within the Riverfront Precinct are as follows:

Severity	Number
Fatal	0
Serious	6
Moderate	3
Minor / Other Injury	1

The crash severity breakdown within Nowra CBD are as follows:

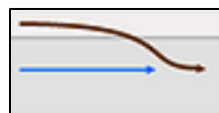
Severity	Number
Fatal	1
Serious	6
Moderate	1
Minor / Other Injury	3

The most common crash type includes:

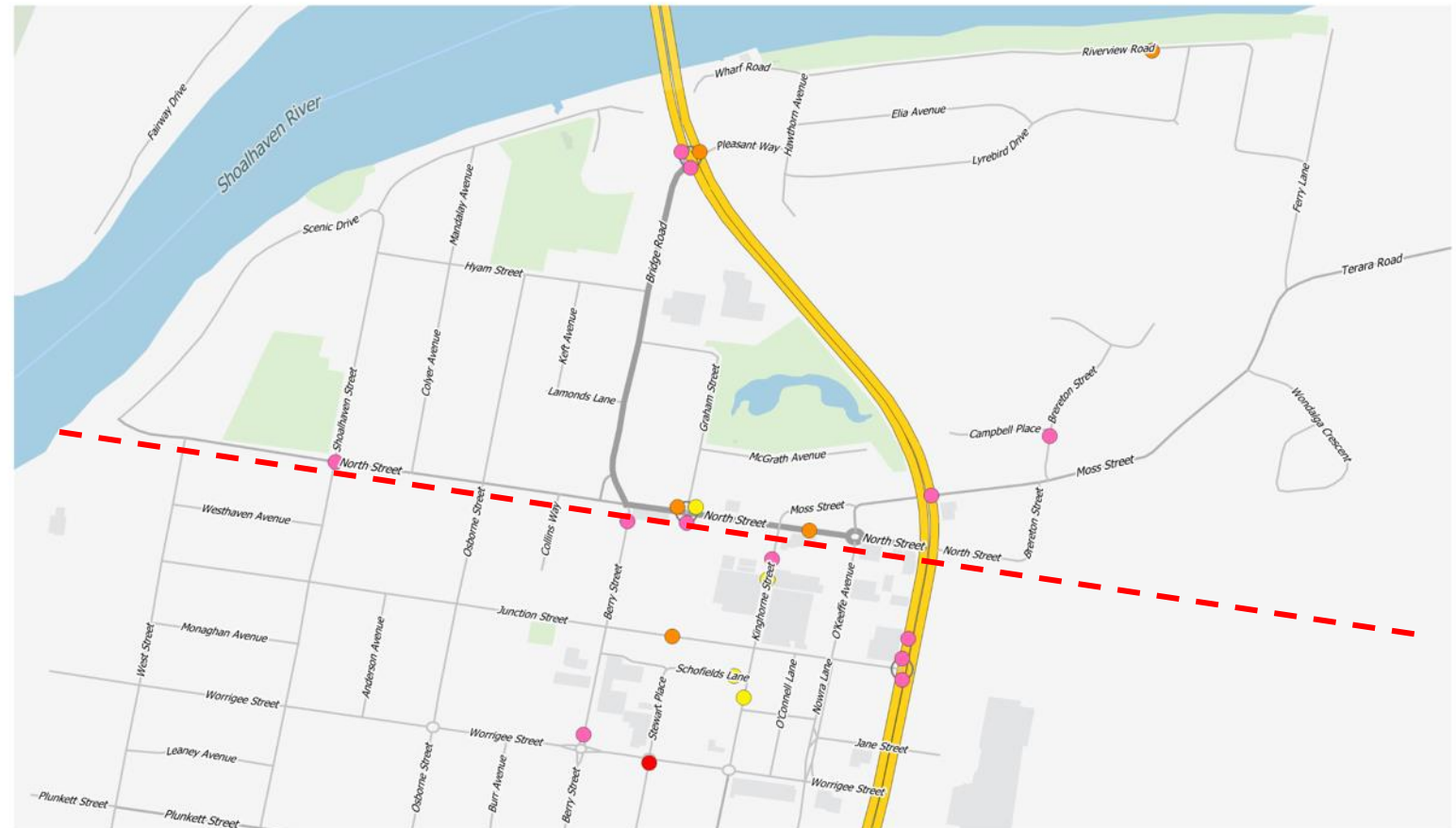


Near side ped

Far side ped



Off footpath



### Walking and Cycling Crash Analysis (2017-2021)

- Fatal
- Serious Injury
- Moderate Injury
- Minor/Other Injury

**NOTE: Anything outside the Riverfront Precinct to the north of North Street is part of the walking catchment and hence was analyzed together with the precinct.**

Figure 50: Location of crashes and severity  
(Source: CrossleyTP, 2021)



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The tables below provides a summary of the *Within* and *to/from* movement function for each mode of transport and the potential level of access to reach key destinations based on existing infrastructure provision and travel catchments (access).

Table 9: Movement within function matrix for Riverfront Precinct

Mode	Movement Within Function Key Trip Attractors				
	Primary Schools, High Schools and Child Care Centres	Shoalhaven Memorial Hospital	Nowra Civic Square	Nowra Aquatic Centre	Recreational Parks
Public Transport	●	●	●	●	●
Walking	●	●	●	●	●
Cycling	●	●	●	●	●
Private Vehicle	●	●	●	●	●

Table 10: Movement to/from function matrix for Riverfront Precinct

Mode	To/From Movement Function Key Trip Attractors				
	Nowra CBD	Bomaderry (inc. Railway Station)	North Nowra	West Nowra	South Nowra
Public Transport	●	●	●	●	●
Walking	●	●	●	●	●
Cycling	●	●	●	●	●
Private Vehicle	●	●	●	●	●

● Access with appropriate infrastructure

● Potential access with limited infrastructure

● No potential access and no infrastructure



## 5.7 Proposed and Committed Upgrades

Figure 51 illustrates Council's planned walking and cycling network. The planned links are sourced from the following strategic documents:

- 2019 Nowra Riverfront Planning Controls and Masterplan
- 2022 Nowra Riverfront Concept Plan
- Nowra CBD Masterplan

All subsequent analysis and assessments have been completed for the Riverfront Precinct with these proposed and committed upgrades to represent the *Future Business As Usual* scenario.

An assessment of this future year scenario aims to objectively score the scenario and compare it to the vision for the Precinct. This will generate a set of deficiencies or performance gaps to inform the development of the Masterplan and Planning Controls for the Precinct.

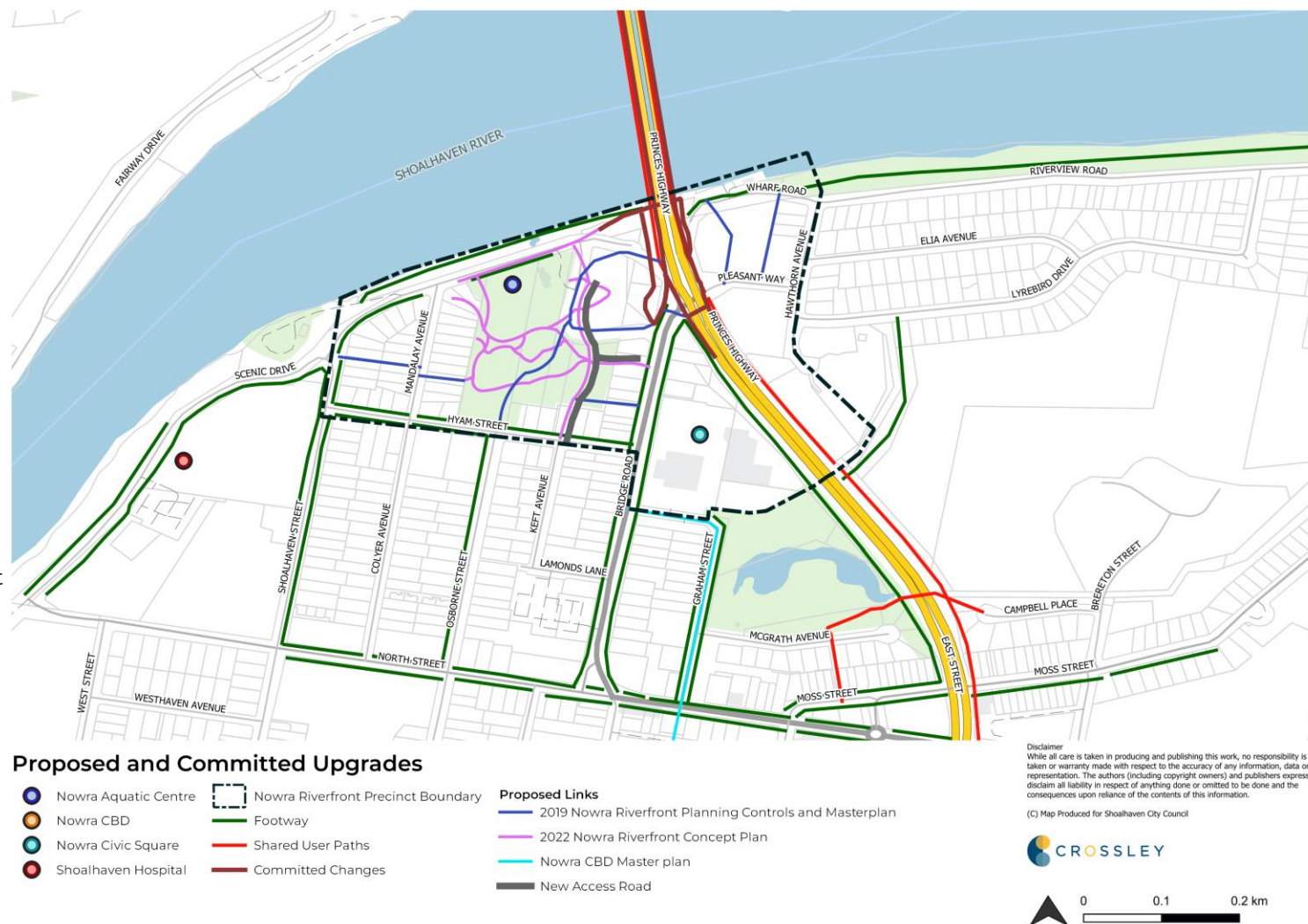


Figure 51: Proposed and committed upgrades network  
(Source: CrossleyTP, 2022)

## 5.8 Built Environment Indicators Tool Assessment

The NSW Movement and Place Framework has established a set of 36 built environment performance indicators for evaluating projects from a place-based perspective. The indicators are based on qualities that contribute to a well-designed built environment and are grouped under five themes relating to user outcomes. The user outcomes reflect the levels of access and service to participate in everyday life.

The Built Environment Indicator Calculator Tool is used to visually display the performance gap between the existing built environment and desired future vision for a study area.

For this study, the following user outcomes were assessed in the BEI indicator tools:

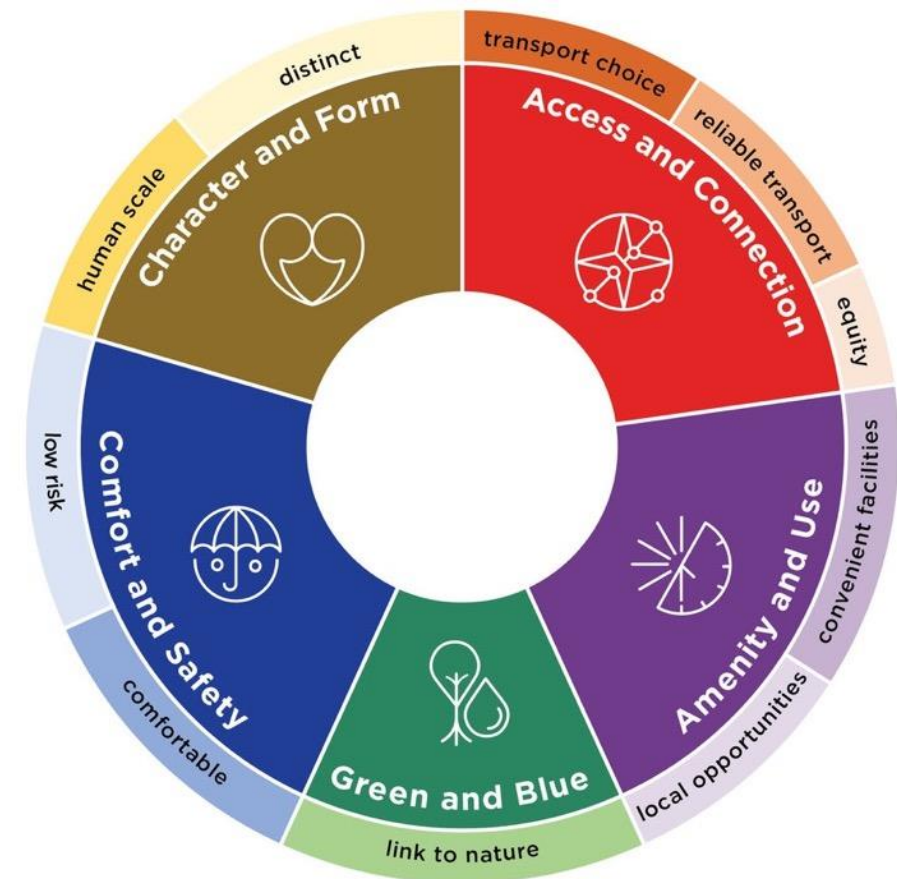
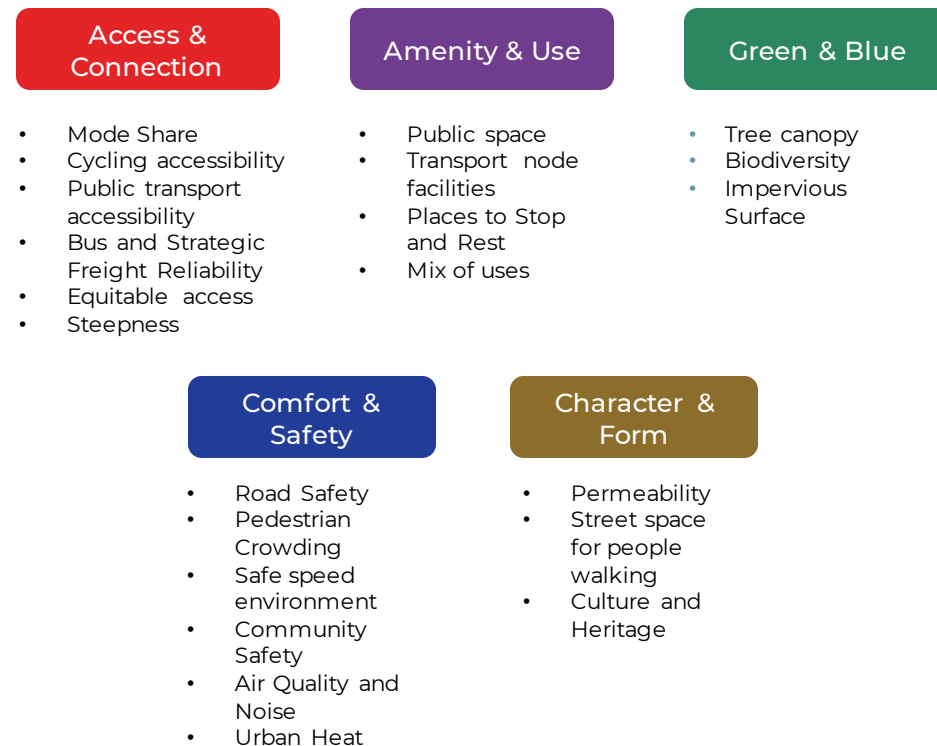


Figure 52: Built Environmental Indicators five themes and user outcomes (Source: TfNSW Movement and Place)



## 5.8.1 Built Environment Indicators (BEI) Assessment Score

Figure 53 illustrates the BEI score for the Riverfront Precinct based on the proposed and committed changes within strategic council documents as listed previously in Section 5.7.

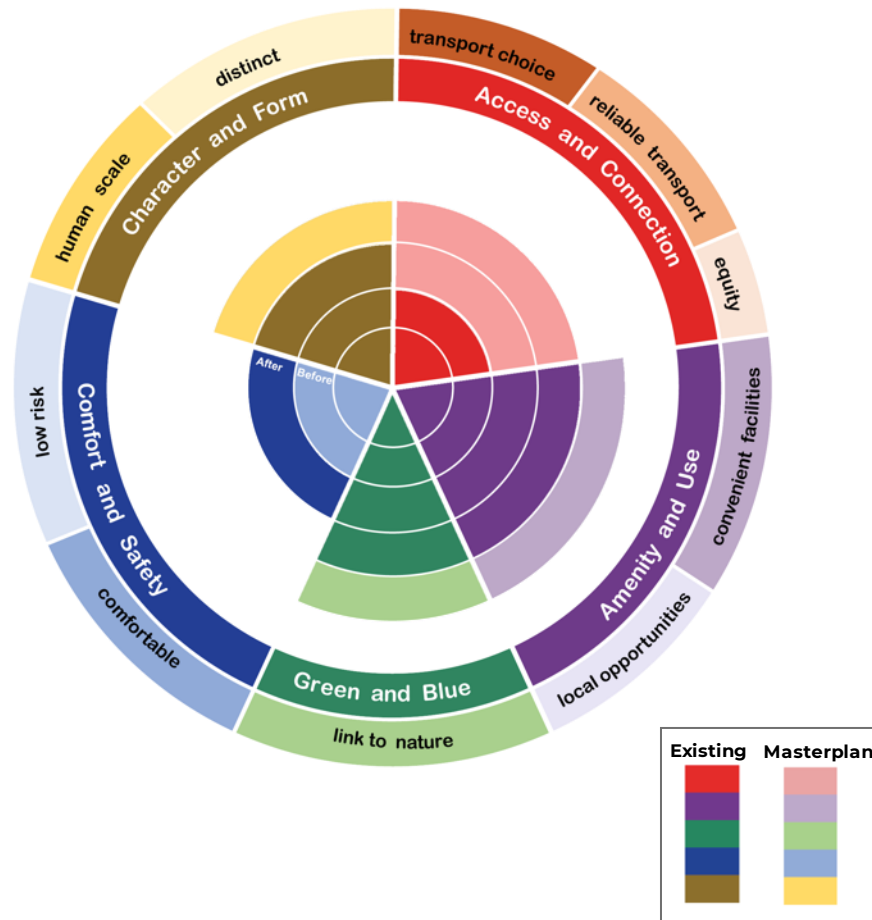


Figure 53: The BEI score of Proposed and Committed Upgrades in Nowra River Precinct  
(Source: CrossleyTP, 2023)



### Access and Connection

The upgrades to existing shared user paths and cycling crossing opportunities makes cycling a more viable sustainable mode choice. New road accesses and footway connections improves walkability.



### Amenity and Use

Activation of the park into public spaces and new footway connections allows residents to access local living needs easier. The population density is expected to increase with the development of medium-density residential developments.



### Green and Blue

Rejuvenating low-level vegetation around Nowra Aquatic Centre and transforming Graham Street into a green grid to connect the CBD and Riverfront Precinct will help improve biodiversity.



### Comfort and Safety

Nowra Bridge upgrades lead to higher traffic volumes and potentially higher vehicle speeds leading to greater potential for conflict between road users. This will increase the risk of crashes and make an uncomfortable crossing experience for people walking and cycling. There are also no plans for additional lighting or footway widening at the pedestrian underpass on Wharf Road and Campbell Place.



### Character and Form

There are no additional heritage sites being added within the Riverfront Precinct. However, the Graham Lodge will be more significantly featured within the precinct through adaptive re-use in an updated conservation management plan. Average building height will also increase with medium-density residential developments improving the street aspect ratio of the streets within the precinct.



The tables below provide a summary of the *within* and *to/from* movement function for the future business as usual scenario. This considers the proposed infrastructure upgrades planned to identify the potential for each mode to connect people to key attractors within the Precinct or to/from the Precinct.

Table 11: Movement within function matrix for Riverfront Precinct

Mode	Movement Within Function Key Trip Attractors				
	Primary Schools, High Schools and Child Care Centres	Shoalhaven Memorial Hospital	Nowra Civic Square	Nowra Aquatic Centre	Recreational Parks
Public Transport	●	●	●	●	●
Walking	●	●	●	●	●
Cycling	●	●	●	●	●
Private Vehicle	●	●	●	●	●

Table 12: Movement to/from function matrix for Riverfront Precinct

Mode	To/From Movement Function Key Trip Attractors				
	Nowra CBD	Bomaderry (inc Railway Station)	North Nowra	South Nowra	West Nowra
Public Transport	●	●	●	●	●
Walking	●	●	●	●	●
Cycling	●	●	●	●	●
Private Vehicle	●	●	●	●	●

● Access with appropriate infrastructure
 ● Potential access with limited infrastructure
 ● No potential access and no infrastructure

# 6.

## Issues for the Riverfront Precinct

This section identifies the deficits in realising the vision for the precinct..

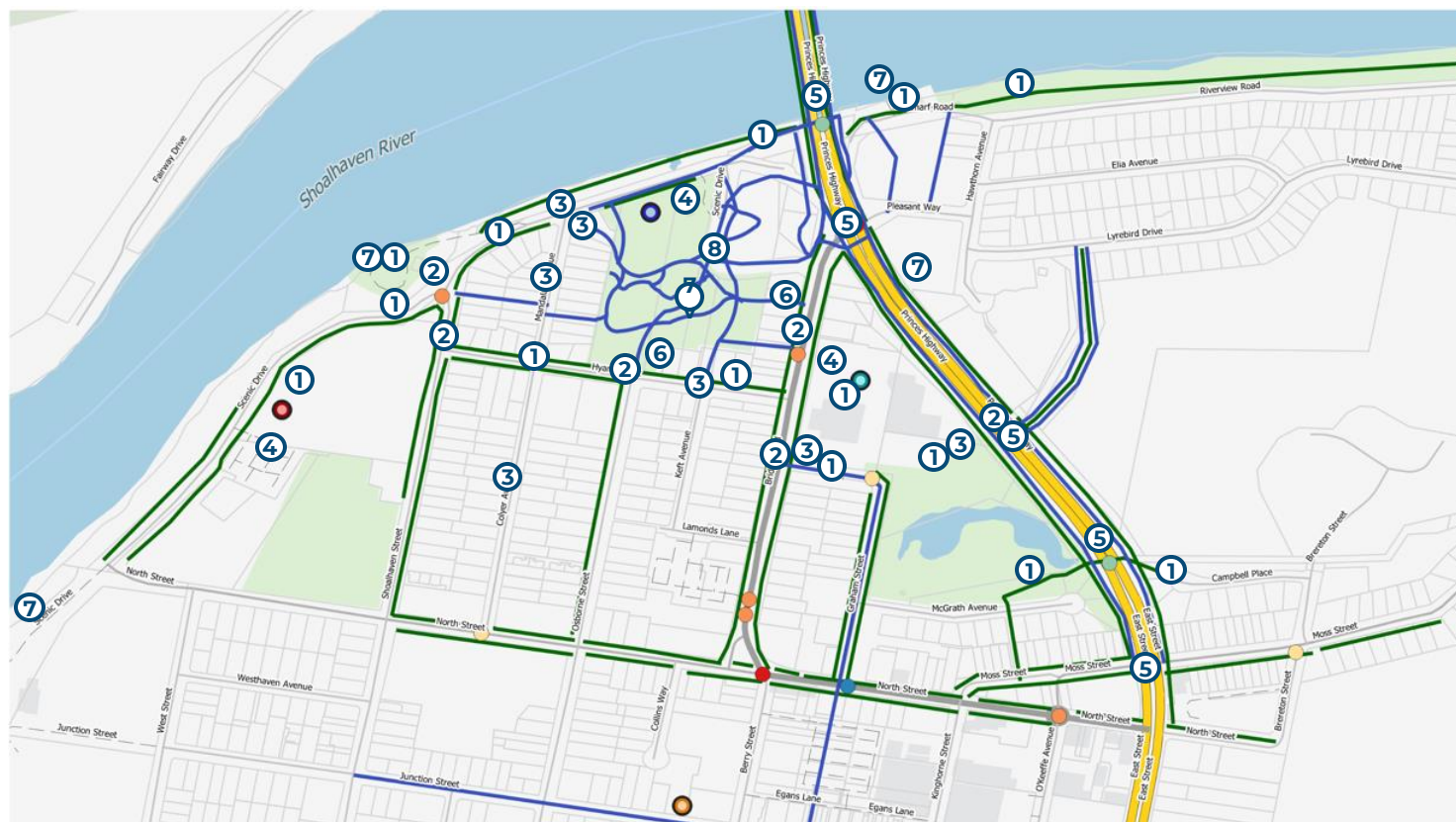


## 6. Issues for the Riverfront Precinct

### 6.1 Issue Identification

The movement and place analysis served as building blocks for issue identification. The following issues have been identified for the Riverfront Precinct

1. Lack of appropriate cycling facilities, end of trip facilities and attractors to connect key activity nodes.
2. Pedestrian priority crossing facilities at mid-block and intersections of streets are limited and do not currently meet pedestrian desire lines within the precinct.
3. Missing footpath links preventing walkable access to key activity nodes and public transport nodes resulting in a low walkability precinct.
4. If alternative sustainable transport modes are not provided, extra visitor trips could exceed parking supply for the Riverfront Precinct.
5. Limited attractive east-west active transport connections across the Princes Highway creating severance between residents and key activity nodes.
6. Public transport service frequencies are limited with low bus stop density and non-DDA compliant bus stops.
7. Riverfront Precinct is lacking cultural amenities, heritage sites and some attractors to help define its character. The precinct does not have a strong sense of place.
8. The potential closure of Scenic Drive (off Bridge Road) as part of the Nowra Bridge project may impact overall accessibility to the aquatic centre and adjacent private property. Traffic will have to be diverted to Hyam Street.



#### Issues for the Nowra Riverfront Precinct



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Figure 54: Issues for the Nowra Riverfront Precinct  
(Source: CrossleyTP, 2023)

# 7.

## Opportunities for the Riverfront Precinct

This section identifies the opportunities in creating a people-first precinct by linking opportunities directly to how it can influence the key outcomes within the Built Environment Indicators Tool and provide a step0-change towards achieving the vision for the Precinct.



Merro Street

# Key Tactics Towards A People-First Precinct



## Improving Transport Choice

- Walking
- Cycling
- Public Transport
- Transit Stop Accessibility



## Improving Convenient Facilities

- Proportion of Public Space
- Transport Node Facilities
- Resting Facilities



## Improving Comfort & Safety

- Shade and Lighting
- Suitable Crossing Facilities
- Traffic Calming Devices
- Speed Limit Reduction



## Building Distinct Character

- Heritage sites
- Art Murals
- Place - Building

# 7. Opportunities for the Riverfront Precinct

## 7.1 Improving Transport Choice

### 7.1.1 Walking

Every trip begins and ends with walking and therefore everyone is a pedestrian at some point. People walking, also use our streets to rest, sit, play, socialise and wait. This makes people our highest priority and walking infrastructure a key element for the Precinct.

Creating an attractive walking experience will help improve transport choice within the precinct by converting the percentage of private vehicle usage into active transport and public transport mode share and reinforcing the idea that the built environment supports walking as a viable and sustainable travel mode choice. The bridge underpass can be identified as a priority link which can help deliver a 15-minute neighbourhood. Given the limited opportunity for new crossings across the Princes Highway in the shorter and medium term, this link would improve east-west connectivity within the Precinct and reduce the severance imposed by the highway.

Treatments to increase the attractiveness and viability of walking for all ages and abilities include:

- Installing missing footpath links and aiming for 2.0m wide
- Widening existing footpaths to 2.0m where possible (see Table 13).
- Improving walking permeability by creating short blocks (<200m)
- Providing appropriate crossing facilities at intersections and mid-blocks (zebra, wombat continuous footpath treatments)
- Reduce waiting times at signalized crossings to less than 45 seconds
- Create opportunities to pause and engage with the environment (seating, bike racks, artworks, community board, play equipment, water feature)
- Improving walking surface (removing defects)

Table 13: Minimum footpath widths based on council policy and guidelines.

Existing Council Policy	Walking Space Guideline NSW
Minimum 1.2m footpath	Minimum 2.0m footpath

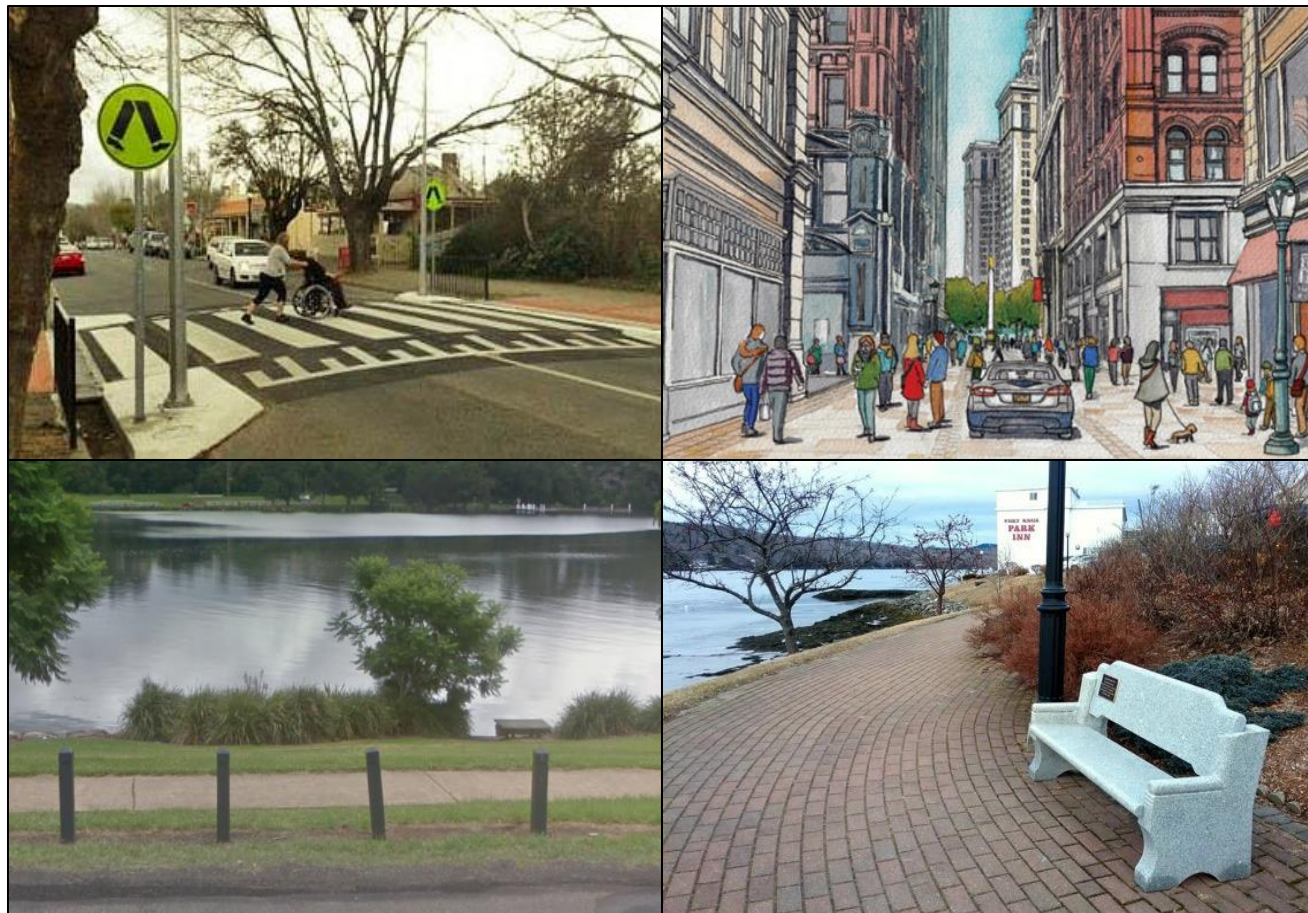


Figure 55: Examples of appropriate crossing facilities and footpath widening.

### 7.1.2 Cycling

Creating a viable and attractive cycling experience will help improve transport choice within the Nowra Riverfront Precinct which will contribute to a greater percentage of active transport and public transport mode share and lower dependence on private vehicle usage.

An appropriate cycling facility should be implemented based on the available space in the local road network.

The local road network within the precinct has an average pavement width of 7-11 metres making shared user paths, quietways and bi-directional cycleways the most feasible treatment types for providing safe and comfortable cycling connections for the *Interested but concerned rider* type.

Providing continuous and signed bicycle connections to places within the 15- minute cycling catchment will inform people about where they can access within 15-minutes; whilst the facility type will create an attractive and welcoming environment for around 70% of the population living within reach of the all ages and all abilities network.



Figure 56: Shared User Path next to the waterfront

Table 14: Required widths for a shared user path

Facility Type	Compromises	Footway Width
Shared User Path	Space & comfort for people walking	2.0m minimum 2.5m desirable
	Buffer between people & traffic	
	Removal of green verges and pervious surfaces	
	Removes opportunity to install seating or bus shelters	

Table 15: Road widths for a bi-directional cycleway and quietways

Facility Type	Compromises	Road Pavement Width
Bi-directional Cycleway	Without parking	Minimum 9.0m
	Parking on one-side	Minimum 10.6m
	N/A	Minimum 12.6m
Quietway	Dedicated space for riders Requires slow speeds (30km preferred)	Less than 9.0m wide

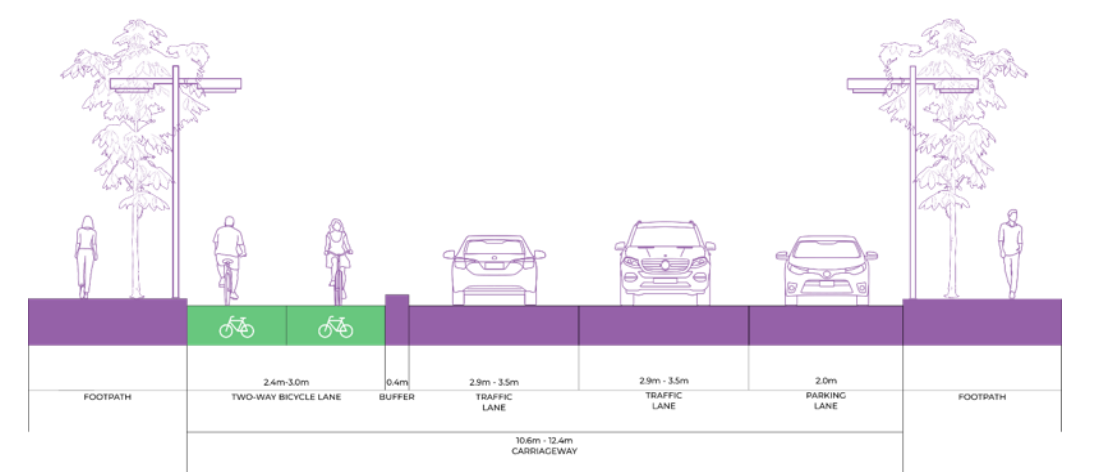


Figure 57: Typical cross-section of a street with a bi-directional cycleway with single parking

### 7.1.3 Public Transport

Public transport plays an important role and function in connecting people living in the Riverfront Precinct to job opportunities located in key employment centers such as Nowra, North Nowra – Bomaderry and Ulladulla.

For public transport to be attractive, it must present users with easy access to a stop and provide high service frequency.

Public transport plays an important part in combining the to/from movement function and the within movement function of the Riverfront Precinct to create long distance journey alternatives to cars.

The following treatments increase the attractiveness and viability of public transport:

- Increase frequency of public transport services to once every 30 minutes
- Increase transit stop accessibility (footpath links to transit stops)
- Increasing bus stop density within the precinct (suggested stops illustrated in Figure 58)
- Integrating train schedules with bus schedules to help optimize and reduce overall wait and interchange time
- Improving transport node facilities (shelter, seating, DDA compliance)
- Introducing new shuttle bus route (purple line) to provide a frequent and dedicated link to Bomaderry Rail Station, Nowra CBD, the Hospital and the Riverfront Precinct. Access and egress from the Riverfront Precinct will be via North Street and Bridge Road with 3 new potential bus stops added. People are able to walk from these stops to access the Precinct, CBD, open space areas and aquatic centre.
- Improving bus services specifically between Ulladulla or North Nowra to the Nowra CBD.

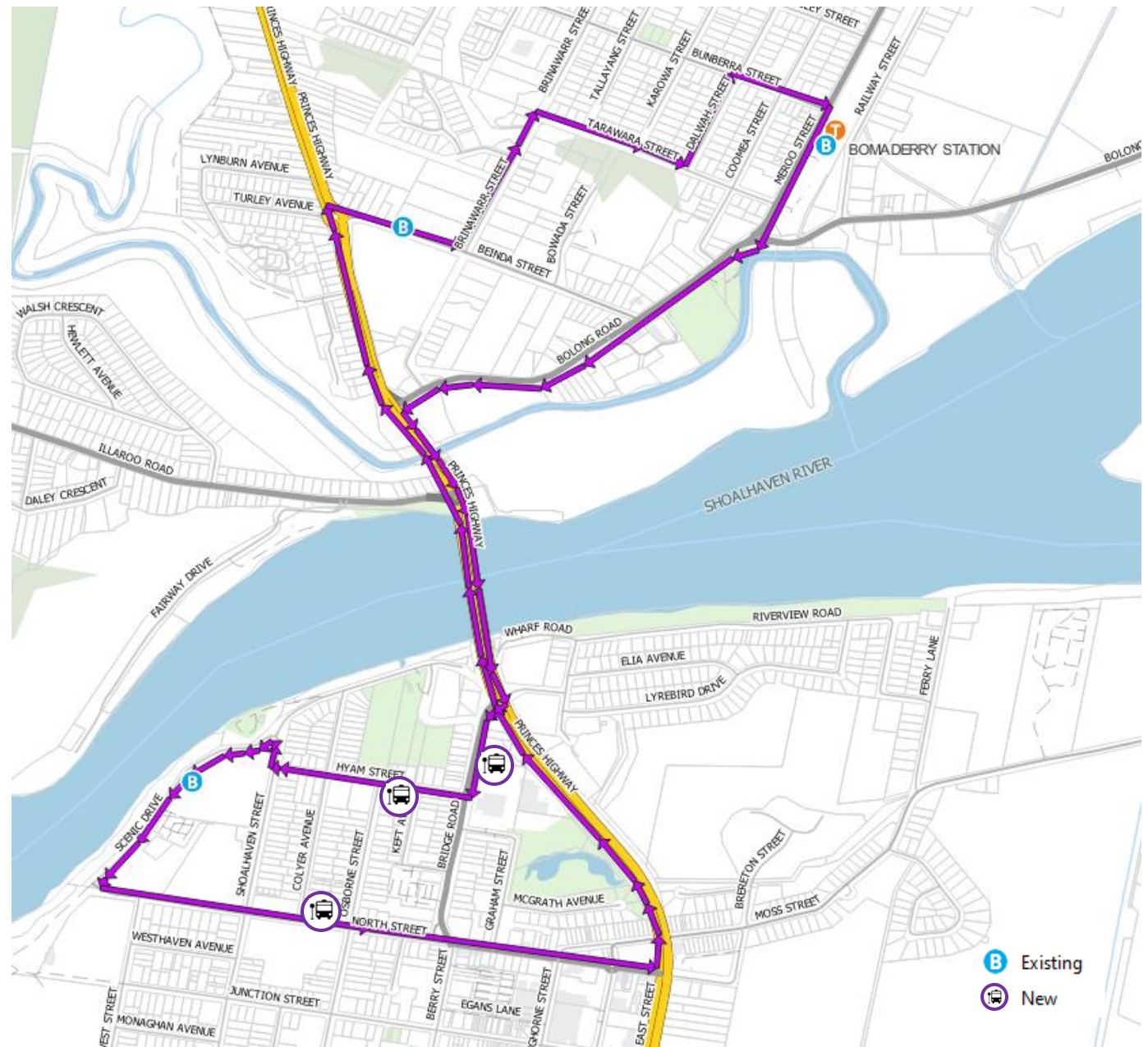


Figure 58: Proposed shuttle service route between Bomaderry Station, Riverfront Precinct and Nowra CBD

## 7.2 Improving Convenient Facilities

People are more likely to visit the Riverfront Precinct if people feel welcome to stop, pause and engage.

To feel welcome, the environment should be:

- comfortable with ample shade and shelter
- conducive to socializing with low noise levels (low traffic)
- Relaxing and safe with low traffic volumes and speed, lighting designed for people, and incorporating CPTED design principles.
- Places to stop and rest which cater for all ages and abilities (arm rests, place for a wheelchair /pram to sit alongside etc).

### 7.2.1 Bicycle Parking

Bicycle parking should be provided at convenient entry points to key amenities and services. The type of parking facility should reflect the duration of time people are expected to park. For locations where people will be staying for a long period of time e.g., at a work destination, the facility should include a dedicated shelter and security such as a bike cage.

At locations where people will be stopping for a short period of time, facilities which enable both wheels to be secured are preferred. Bike racks that require a bike to be lifted or mounted should be avoided as these have been shown to discourage women cyclists.

For major events, such as the Dragon Boat competitions, event management should consider valet bike parking facilities for participants.

### 7.2.2 Places to stop and rest

Places to stop and rest enable people who need to stop more frequently due to levels of fitness, medical issues or age; to do so and safely reach their end destination. To support all ages and abilities, seating should include features such as an arm rest to enable people to stand-up out of the seat, and varying heights and configuration to support socializing and / or privacy.

- Benches
- Seating with medium level planting
- Hammocks
- Swings



Figure 59: Examples of different sheltered cycle parking facilities



Figure 60: Examples of creative resting facilities

# 7.3 Improving Comfort and Safety

## 7.3.1 Suitable Crossing Facilities

To support walking, cycling and public transport, the design of the street environment should prioritise people. This can be done by implementing crossing facilities which make vehicles give-way to people at side roads, intersections and mid-block. Appropriate crossings include continuous footpath treatments, zebras and wombats.

## 7.3.2 Shade, shelter and Lighting

Shade and shelter come in many forms – trees, awnings, parasols – and they are need to ensure everyone can use the street whatever the weather. In warm conditions certain people struggle to maintain a healthy body temperature (pregnant women, babies, elderly, cancer patients, the sick); in rain or high winds we all welcome somewhere to shelter. To support more people to choose to walk or ride, street tree planting should strongly feature in the masterplan with the aim to provide more than 45% coverage of footpaths and bicycle facilities.

At locations where people dwell, shelters should be provided either as stand-alone structures or awnings.

Feeling safe is a basic requirement to support people to walk and ride. This extends to after dark – lighting helps people feel safe from antisocial behaviour, violence and intimidation. The masterplan should consider lighting specifically design for people which can also add character to the place:

- Catenary lighting
- Lamp posts
- Lanterns or festoons

Table 16: Comfort level provided for each crossing type

Crossing Type	Facility Type		Comfort Level
Un-signalised	Pedestrian Priority Zone / Shared Zone	Flush Pedestrian Priority Zone	High
		Pedestrian Priority Zone with Kerbs	Medium
	Zebra crossing / shared pedestrian and cyclist crossing	Raised Crossing	High
		Non-raised Crossing	Medium
	Other non-priority	Pedestrian Refuge	Low
Signalised	Signalised Crossing	0 - 30 seconds wait time	High
		30 - 60 seconds wait time	Medium
		60+ seconds wait time	Low



Figure 61: Examples of street lighting and shade from greening provided for people walking and cycling

### 7.3.3 Speed Limit Reduction

Reducing the speed of vehicles moving within the precinct will greatly increase the perceived comfort and safety of people walking and cycling.

A speed limit reduction to 30kmph around key activity nodes where there is a higher interaction between people and vehicles should be considered.



Figure 61: Pavement material and appearance

### 7.3.4 Traffic Calming Facilities

Traffic calming facilities play an important role in creating a people-first precinct as they change the way vehicles move in a high activity area providing greater priority to people walking and cycling.

Different traffic calming treatments include:

- Raised intersections
- Speed reduction devices (cushions, tables, humps)
- Mid-block pinch points (chicanes)
- Gateway extensions
- Lane narrowing
- Reduce corner radii
- Buildings and Trees
- Pavement Material & Appearance
- Mini-roundabouts

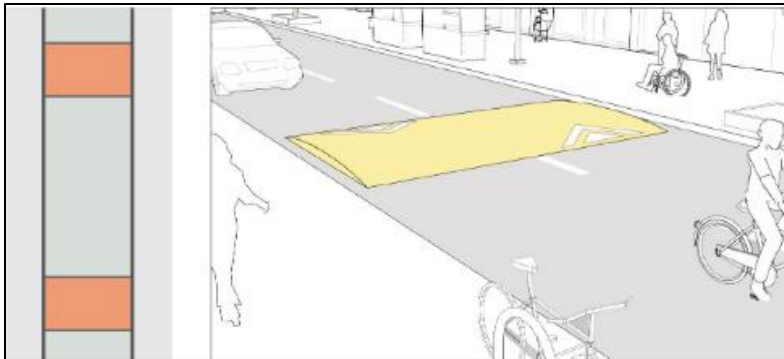


Figure 62: Speed humps



Figure 63: Chicanes and lane shifts



Figure 64: Pinch points



Figure 65: Gateway extensions

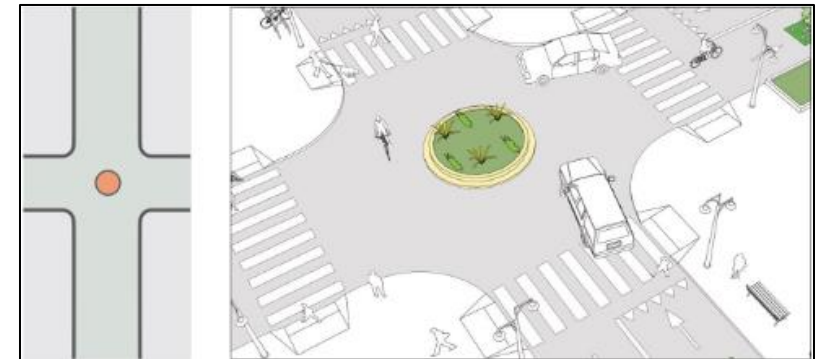


Figure 66: Mini-roundabouts

## 7.4 Building Distinct Character

### 7.4.1 Heritage Sites

Heritage sites should be promoted and celebrated with events or beautification to showcase the precinct's history.

Some of these heritage sites include:

- Graham Lodge
- Hanging Rock Lookout
- Nowra Wharf

Opportunities to incorporate local indigenous heritage and culture throughout the public realm should also be explored.

These can all be included collectively as part of the Nowra Walking Tour Guide which will boost the precinct's distinctness and character.

### 7.4.2 Art Murals

Art murals are a great way for places to build character and emphasize the priority for people.

These art murals can be on walls or pavement surfaces which help bring life to the place and provide an attractive aesthetic which can become a major attraction towards visitors.

### 7.4.3 Place making

Place making is an important part of creating a people-first precinct and making residents and visitors more connected to the place.

Opportunities for place making in Nowra Riverfront Precinct include:

- Holding community events
- Developing a dedicated waterfront cycleway track around the precinct
- Providing attractions such as sporting facilities or outdoor chess facilities
- Waterfront market stalls



Figure 67: Examples of place building, art murals and heritage sites

## 7.5 Non-Infrastructure Solutions

### 7.5.1 Event Management

During special events held by schools or the local community, the foot traffic and vehicular traffic is expected to exceed the capacity of the local road network and supply of parking.

Event managers could initiate consultation with bus service providers within Nowra and Transport for NSW to discuss opportunities for additional services or free travel on event days.

There is an opportunity to reduce the dependence on private vehicles during special events by redistributing existing bus services to special shuttle services which take people directly to their destinations from key transport node facilities such as Bomaderry Station, schools and the CBD. Access to and from the Riverfront Precinct will be via North Street and Bridge Road respectively and the infrastructure required to deliver these services can be found in Section 7.1.3. If Scenic Drive is closed, alternative arrangements could be explored by using the existing car park at Fairway Drive as a drop-off point allowing people to take advantage of the proposed new active transport link across the bridge and showcase the Shoalhaven River or consider the addition of a new access road.

This will help manage the private vehicle parking demand within the Riverfront Precinct and reduce the necessity for additional supply to be introduced into the precinct.



Figure 68: Shoalhaven River Festival



Figure 69: Community gatherings



Figure 70: Nowra High School Swimming Carnival.

## 7.6 Vehicle Parking

### 7.6.1 Parking Supply

New parking facilities should be explored with the acknowledgement that there is a potential need to reconfigure or relocate the Nowra Aquatic Centre Car Park and existing drop-off or pick up areas with the closure of Scenic Drive.

Restricted parking is recommended to be provided on the proposed new access road and opportunities to upgrade existing surface level off-street car parks to a multi-deck facility can be investigated.

The existing car park at the Shoalhaven Entertainment Centre provides a unique opportunity for a multi-deck car park that will be within walking distance and service multiple key trip attractors within the Riverfront Precinct.

Alternative ways to ease parking demand could involve working with property developers to provide additional public car parking spaces with medium-density residential developments on Colyer Avenue, Hyam Street and Mandalay Avenue or supporting sustainable modeshift towards active transport and public transport.

The car park at Fairway Drive is also underutilized and can be incorporated as a park and walk or park and ride site with the proposed new active transport link across the bridge.



Figure 71: Existing ground-level car park at Shoalhaven Entertainment Centre

Car parking design and features can also contribute to a greater parking supply by efficiently utilising the space available.

Particularly with car park layouts, one-way flow system with 45-degree angled parking is one of the most effective and efficient ways to increase parking supply and meeting parking demand.

The following advantages of this arrangement are as follows:

- It is easier and safer for drivers to exit as they are leaving their space front on. This means drivers are able to see oncoming vehicles and only need to worry about one direction of traffic.
- Requires a lower turning radius to enter and exit the car parking space. This means it is easier for drivers to park.
- Having a one-way flow system means drivers are less likely to get blocked in by cars that require large amounts of space and time to reverse into 90-degree spaces.
- This arrangement allows for more spaces per square meter of space.



Figure 72: Example of a design layout that provides greater number of car parking spaces.



## 7.7 Opportunities Summary

The tables below provide a summary of how the proposed opportunities collectively influence the movement functions within the Precinct and also to/from the Precinct. Further information about location specific opportunities can be found in the table within the Appendices.

By introducing a new express shuttle service from Bomaderry Station to key activity nodes around the Riverfront Precinct and CBD, will close the public transport services gap for the *within* movement function where connectivity to the rail station will reduce the deficit for movement *to/from* the Precinct. The potential closure of Scenic Drive allows the riverfront space to be transformed into high-quality public spaces providing benefits to people and place. Consideration for a new Precinct access road (cul-de-sac) is required to service the aquatic centre and adjacent private property. To support the loss of parking, opportunities may be explored in upgrading the existing Shoalhaven Entertainment Centre car park to a multi-level facility and the existing car park on Fairway Drive across the river to encourage people to park and walk or park and ride whilst also reinforcing use of the new proposed active transport link across the bridge.

Opportunities for lighting, shade, crossing facilities, new links and places to rest for walking and cycling all help create an attractive active transport for all ages and abilities. Collectively this will enable the potential for a 15-minute neighbourhood to be realized enabling people to choose to walk or ride to access local amenities and facilities. Particularly the bridge underpass which has been identified as a priority in being able to achieve this vision for walking and cycling and reducing east-west severance imposed by the highway. By prioritizing people over cars, this will dampen the convenience to drive and support sustainable mode shift. All of this, works towards reducing the dependency on private vehicle usage and shifting people to more sustainable transport modes for both short-distance and long-distance journeys as well as increasing activation of public spaces.

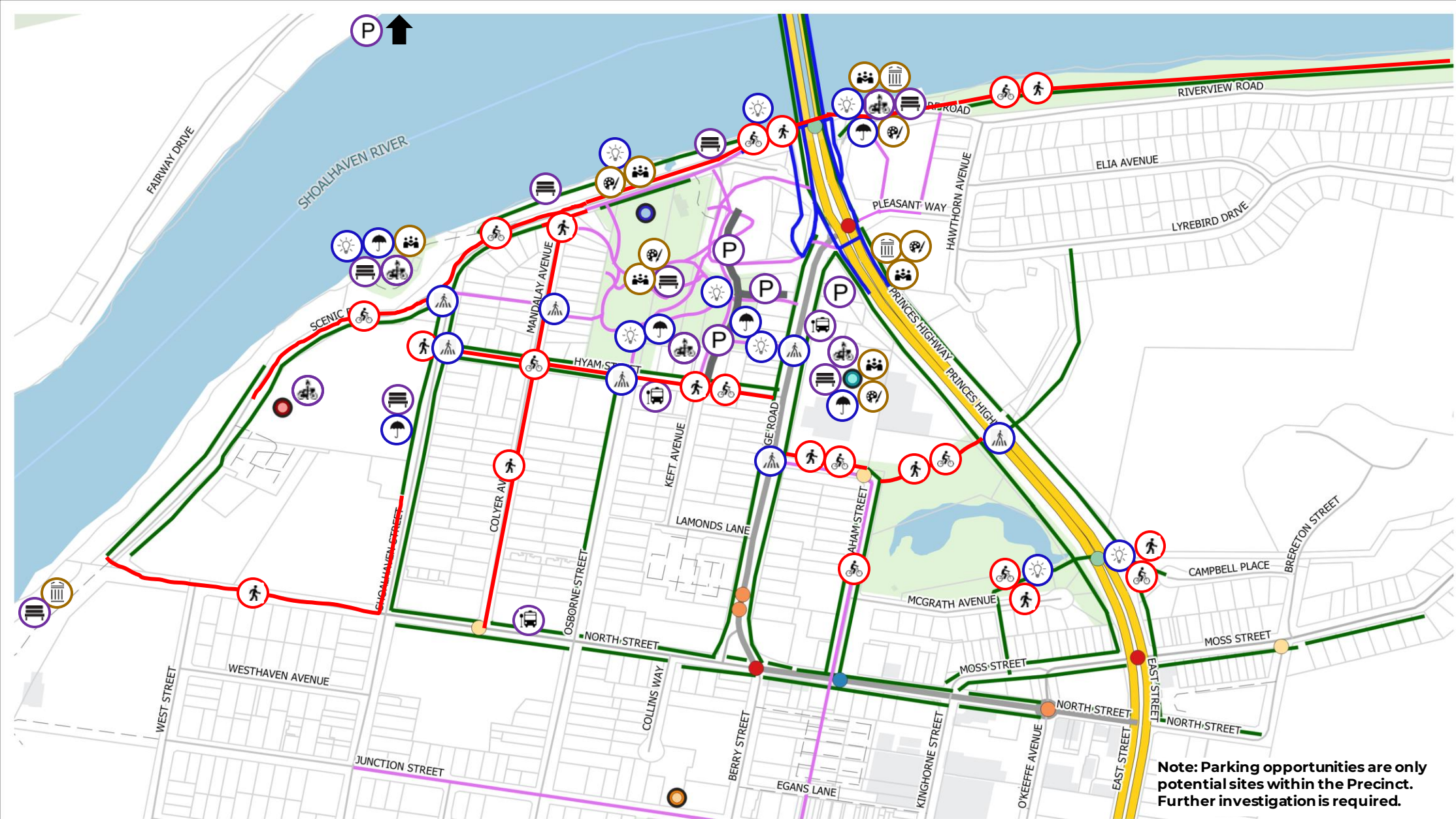
Table 17: Movement within function matrix for Riverfront Precinct

Mode	Movement Within Function Key Trip Attractors				
	Primary Schools, High Schools and Child Care Centres	Shoalhaven Memorial Hospital	Nowra Civic Square	Nowra Aquatic Centre	Recreational Parks
Public Transport	●	●	●	●	●
Walking	●	●	●	●	●
Cycling	●	●	●	●	●
Private Vehicle	●	●	●	●	●

Table 18: Movement to/from function matrix for Riverfront Precinct

Mode	To/From Movement Function Key Trip Attractors				
	Nowra CBD	Bomaderry (inc Railway Station)	North Nowra	South Nowra	West Nowra
Public Transport	●	●	●	●	●
Walking	●	●	●	●	●
Cycling	●	●	●	●	●
Private Vehicle	●	●	●	●	●

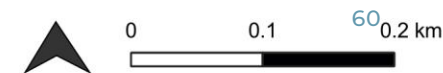
● Access with appropriate infrastructure
 ● Potential access with limited infrastructure
 ● No potential access and no infrastructure



**Note: Parking opportunities are only potential sites within the Precinct. Further investigation is required.**

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(C) Map Produced for Shoalhaven City Council



## Opportunity Map

- |                                 |                     |                      |                   |                  |                  |
|---------------------------------|---------------------|----------------------|-------------------|------------------|------------------|
| Existing Footpaths              | Signalised Crossing | Nowra Aquatic Centre | Cycling Facility  | Traffic Calming  | Mural Art        |
| Proposed Active Transport Links | Pedestrian Refuge   | Nowra CBD            | Walking Facility  | Cycle Parking    | Heritage Sites   |
| Proposed New Access Road        | Raised Crossing     | Nowra Civic Square   | Shelter           | Parking          | Community Events |
| Committed Changes Line          | Underpass           | Shoalhaven Hospital  | Lighting          | Resting Facility |                  |
| Active Transport Opportunities  | Zebra Crossing      |                      | Crossing Facility | New Transit Stop |                  |

# 8.

## Conclusion

This section provides an overall summary of all the opportunities on how they relate to each of the Built Environment Outcomes as well as whether they contribute or align to the planning objectives and vision outlined within the Nowra Place Vision.



Nowra Public Wharf



## 8. Conclusion

The Riverfront Precinct has great potential to become a people-first 15-minute neighbourhood and realise the vision for a calm and green place. The following statements summarise the overall strategy:

### Public Transport (to / from movement)

- Leverage public transport to strengthen its function to move people to/from the Precinct to key employment locations and major interchanges.
- Provide better access to public transport services by installing new DDA compliant bus stops to serve the key destinations and community located within the Precinct.
- Ensure bus stops are accessible from residents' doors with connected footpaths and crossing facilities.
- Increase the frequency of services and integrate with the train network. Consider providing a new shuttle service operating from the train station to Nowra CBD, hospital and Aquatic Centre.

### Walking and Cycling (within movement)

- Create an all ages and all abilities active transport networking within the precinct and key links into Nowra CBD and Hospital Precinct.
- Enhance connectivity across the Princes Highway by reducing waiting times at signals and enhancing alternative routes via the foreshore path.
- Create slow streets where vehicles must give-way to people
- Leverage existing utility infrastructure to implement electric charging points for bike and /or cars

### Private vehicles

People will still have the choice to drive to Precinct, and is likely to be facilitated with the Princes Highway Upgrade. Demand for private vehicles access and parking should be proactively managed to secure and protect a calm and welcoming precinct for people. Key tactics include:

- Local traffic speed zone of 40km/h or less
- Street tree planting and greening to reduce forward visibility and therefore speed.

- Long-stay parking opportunities located outside the Precinct with attractive 'last-mile' (100-200m) walking routes to key destinations like the aquatic centre.
- Planning controls which adopt maximum parking rates and include car share schemes to reduce private vehicle ownership; whilst also reducing the build cost and final housing cost (affordability). However, it is important to note that council does not have the ability to mandate car sharing schemes.



Table 19: Alignment to Nowra Place Vision strategies

5 Planning Strategies from Nowra Place Vision	Committed & Proposed Changes (business as usual scenario)	Other Opportunities (do more scenario)
Increase Safety	●	●
Enhance the Open Space	●	●
Improve Connections	●	●
Strengthen the Gateway	●	●
A Catalyst for Renewal	●	●

● Contributes to planning strategy

● Partially contributes to planning strategy

● Does not contribute to planning strategy

# 9.

## Appendices





# Appendix A

## Deficiencies and Opportunities



BEI Outcomes Affected	Issue Description	Location Function	Location Specific Opportunities
Transport Choice & Comfort and Safety & Convenient Facilities	Lack of appropriate cycling facilities, end of trip facilities and attractors to connect key activity nodes such as Nowra Aquatic Centre to Shoalhaven Hospital, Nowra CBD and the Nowra Civic Square.	Within Nowra Riverfront Precinct & To/from Nowra Riverfront Precinct	<p>Upgrade Shared User Path or Mixed Traffic links, providing shelter and clear findway signage between key activity nodes to strengthen active transport as a viable sustainable transport mode by making a more attractive experience and reducing the cycling stress levels.</p> <p>Key links to consider as part of upgrades or construction of new facilities such as Shared User Paths and separated cycle facilities include Riverview Road, Scenic Drive, Shoalhaven Street, Hyam Street, Bridge Road and Graham Street.</p> <p>Install end of trip facilities (i.e lockers, showers, step-free access sheltered cycle parking) at key activity nodes such as the Nowra Civic Centre, Nowra Hospital and at the public rest spaces along the riverfront on Scenic Drive would improve the amenity and attractiveness of cycling.</p> <p>Upgrading these key links and installing end of trip facilities will provide opportunities to create a dedicated cycling track around the Riverfront Precinct which will utilize the precinct's unique charm of bordering a waterbody to increase cycling mode share and help the precinct build a distinct character.</p>
Comfort and Safety	Pedestrian priority crossing facilities at mid-block and intersections of streets are limited and do not currently meet pedestrian desire lines within the Riverfront Precinct.	Within Nowra Riverfront Precinct	<p>Upgrade existing or install new pedestrian priority facilities at mid-blocks and intersections of streets which better suit pedestrian desire lines.</p> <p>Reduce waiting times at signalized intersections to a maximum of 60 seconds to create a more attractive walking and cycling experience.</p> <p>Locations to consider new facilities include:</p> <ul style="list-style-type: none"> <li>• <b>Scenic Drive / Shoalhaven Street intersection</b> – Upgrade existing pedestrian refuges to a zebra crossing or wombat crossing.</li> <li>• <b>Shoalhaven Street / Hyam Street intersection</b> – Steep batter grades prevent ideal walking desire lines. Opportunity to install stairs and a zebra crossing.</li> <li>• <b>Hyam Street / Osborne Street intersection</b> – Hyam Street will be a major street with direct walking and cycling access to the recreational public spaces around Nowra Aquatic Centre. Opportunity to install a mid-block zebra crossing to provide greater permeability and create an attractive walking and cycling experience.</li> <li>• <b>Bridge Road / Graham Street</b> – Another crossing opportunity along Bridge Road to link the Riverfront to the CBD given Graham Street has been identified as a pedestrian and cyclist priority link within the Masterplan.</li> <li>• <b>Bridge Road</b> – Upgrade existing pedestrian refuge to a zebra crossing to provide greater connectivity for walking and cycling from Graham Street and the Civic Square to the new recreational public spaces at Nowra Aquatic Park.</li> <li>• <b>Mandalay Avenue</b> – Install mid-block crossing to connect pedestrian laneways on either side of the street.</li> </ul>
Transport Choice	Missing footpath links preventing walkable access to key activity nodes, public transport nodes (bus stops) resulting in a low walkability precinct.	Within Nowra Riverfront Precinct	<p>Ensure every street has a single continuous footpath on at least one side of the street and install missing footpath segments which prevent existing footpath continuation.</p> <p>Locations to consider new footpaths include:</p> <ul style="list-style-type: none"> <li>• Footpath link on southern side of Scenic Drive (60m)</li> <li>• Footpath link on western side of Shoalhaven Street (300m)</li> <li>• Footpath link on northern side of North Street (150m)</li> <li>• Footpath link on northern side of Graham Street (100m)</li> <li>• Streets without existing footpaths such as Colyer Avenue, Keft Avenue and Mandalay Avenue.</li> </ul>
Convenient Facilities	Potentially limited parking availability within the Riverfront Precinct with expected increased activity and demand.	Within Nowra Riverfront Precinct & To/from Nowra Riverfront Precinct	<p>There should be a heavy focus on improving public transport and active transport modes to induce a large shift towards sustainable transport modes and help reduce or alleviate the dependence on private vehicle usage.</p> <p>However, it is inevitable that car as a mode choice will remain a major travel mode and the existing Aquatic Centre Carpark will not be undergoing any upgrades.</p> <p>To combat this increased activity and demand, the following options can be considered:</p> <ul style="list-style-type: none"> <li>• A multi-deck car park just north of the Nowra Civic Centre (Additional consideration is required with council's aspirations as landowner and shared responsibility with other land-owners)</li> <li>• Construction of medium to high density residential developments within the precinct will include a surplus of underground parking spaces accessible to the public</li> <li>• During special events, event organisers should work with bus service providers for additional shuttle services</li> </ul>
Nowra ITP · Shoalhaven City Council · August 2023			66

BEI Outcomes Affected	Issue Description	Location Function	Location Specific Opportunities
Comfort and Safety	A majority of existing footpaths within the precinct are very narrow. Although they follow the 1.2m minimum set out by council policies, they do not offer a comfortable walking environment or experience.	Within Nowra Riverfront Precinct	The Walking Space Guideline was released by Transport for NSW in 2020 with the purpose to provide a tool and set of standards to help designers achieve comfortable environments which encourage people to walk.
			There is an opportunity to widen existing narrow footpaths within the precinct, particularly around key activity nodes to help create a comfortable walking environment which will in turn strengthen walking as a more attractive transport mode choice.
			Planning and design around the installation of new footpaths should consider providing more space and strive for a minimum width of 2.0m wherever possible.
Transport Choice & Comfort and Safety	Limited attractive east-west active transport connections across the Princess Highway creating severance between local residents and key activity nodes.	Within Nowra Riverfront Precinct	There are currently only 4 ways to move across the Princess Highway which include: <ul style="list-style-type: none"><li>Wharf Road Underpass</li><li>Bridge Road / Princess Highway signalised intersection</li><li>Campbell Place Underpass</li><li>Moss Street / Princess Highway signalised intersection</li></ul>
			New pedestrian overpasses or underpasses should be investigated as a medium or long term opportunity along the Princess Highway particularly at Shearwater Way which may link directly to the Nowra Civic Square.  If new east-west connections cannot be achieved, this emphasises the importance to improve the quality and experience of the existing connections above. The underbridge access at Wharf Road should be prioritised as it is centralised around an area with the vision for a higher place function and provides a connection between many points of interests. This involves increasing lighting, shade, widening existing shared user paths and the opportunity to install art murals and cultural heritage elements which will all contribute to greater feeling of comfort, safety and ownership of the area as a community..
Transport Choice	Public transport options are limited to infrequent bus services with low bus stop density and the existing bus stops are currently non-DDA compliant.	Within Nowra Riverfront Precinct & To/from Nowra Riverfront Precinct	There are currently only 5 bus stops within the Riverfront Precinct which are all non-DDA compliant. These bus stops should include a clear boarding point, access path, have TGS1 markers and a clear bus stop sign. Shelter is not part of the DDA requirements however would increase the attractiveness of bus travel.
			There is also opportunity to install new bus stops near key activity nodes to increase bus stop density on streets such as Hyam Street, Bridge Road, Graham Street and the new proposed access road to the Nowra Aquatic Centre. This will enable residents and visitors to gain easier access to the proposed transformed recreational public spaces within Nowra Aquatic Park.
			Current bus service frequency is once every hour to once every two hours which does not offer people any flexibility in undergoing their journey by public transport. Bus services should be increased to once every thirty minutes with an opportunity to integrate a new shuttle service that prioritises travel between Bomaderry Station, the Riverfront precinct and Nowra CBD. This will largely help promote sustainable multi-modal travel and increase activation for the Riverfront Precinct, Bomaderry and the CBD.  Council or special event organisers can also work with bus service providers to reallocate or introduce temporary bus services to meet increased demand.
Distinct Character & Comfort and Safety	The Riverfront Precinct is lacking some attractions, cultural amenities and heritage sites to help define its character and make it feel distinct. The precinct does not have a strong sense of place.	Within Nowra Riverfront Precinct	Place building is an important part of creating a people-first precinct and making residents and visitors more connected to the place. Opportunities for place building in Nowra Riverfront Precinct include: <ul style="list-style-type: none"><li>Holding more community events</li><li>Developing a dedicated waterfront cycleway track around the precinct which people can regularly use</li><li>Providing attractions such as sporting facilities or outdoor chess facilities to promote a 'sticky' environment</li><li>Waterfront market stalls or food events</li><li>Installing more sheltered seating at key activity nodes to increase visitor stay duration</li></ul>
			Heritage sites within the precinct should also be promoted and celebrated with events or beautification to showcase the precinct's history and what it has to offer. There is also opportunity to incorporate indigenous heritage and culture throughout the precinct and improve connections to the land for the past, present and future.  Some of these heritage sites include: <ul style="list-style-type: none"><li>Graham Lodge</li><li>Hanging Rock Lookout</li><li>Nowra Wharf</li></ul>
			These can be included as part of the Nowra Walking Tour Guide which will boost the precinct's distinctness and character. Art murals are a great way for places to build character and emphasise the priority for people.
Nowra ITP · Shoalhaven City Council · August 2023			Art murals can also help bring life to the place and provide an attractive aesthetic which can help residents feel a greater sense of belonging and care for the place as well as become a major attraction towards visitors. These can belong either on walls or pavement surfaces and serve a great way to build character.

# Appendix B

Other



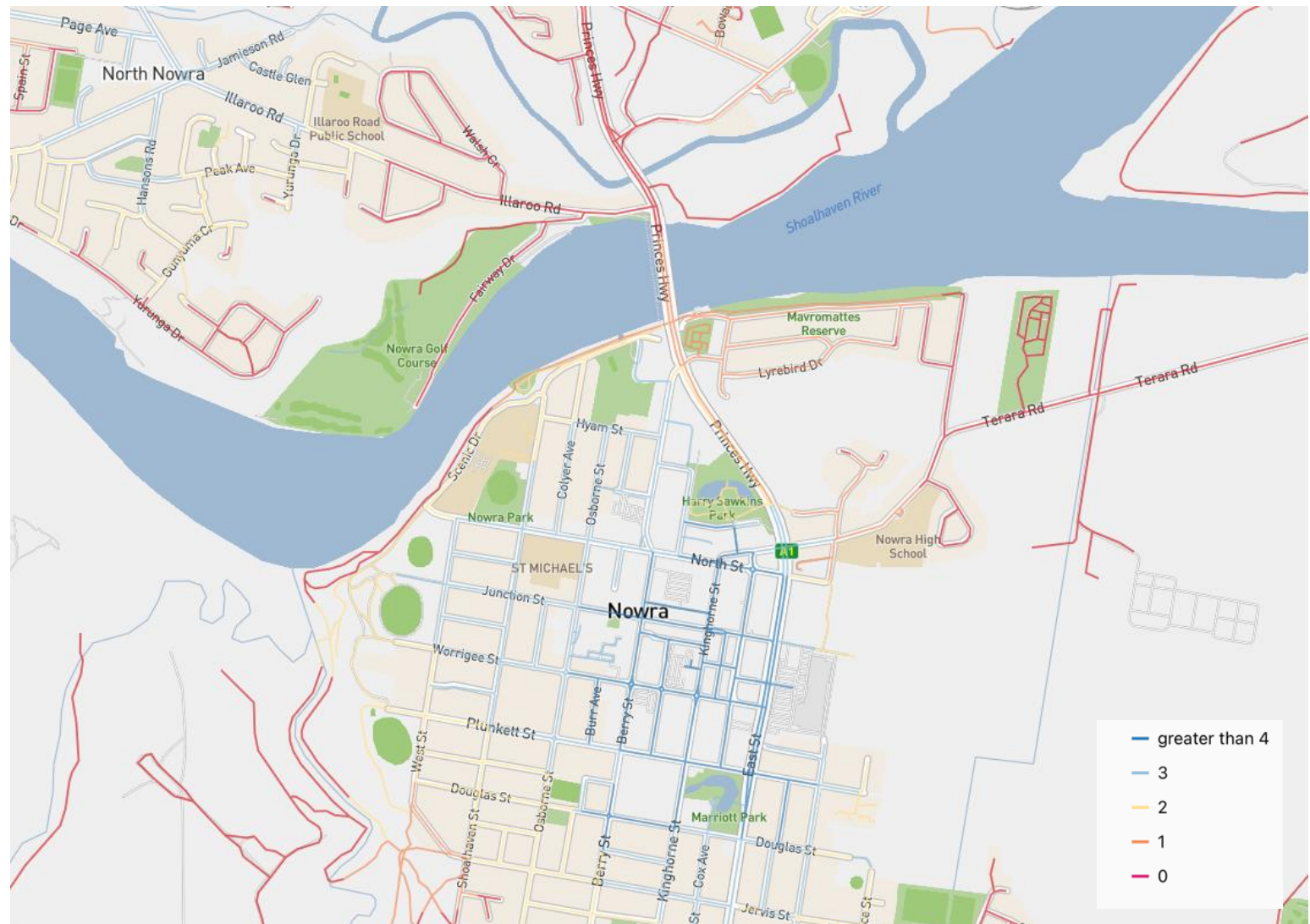
## B1. Liveability

The aspiration is for Nowra Riverfront Precinct to become a refreshed, activated and engaging community. This can be measured in terms of liveability the following key amenities should be accessible within an 800m walk.

- Childcare centre
- Community facility
- Medical centre
- Post office
- Preschool
- Shopping centre

The opportunity to complete these trips actively promotes community health and well-being and creates liveable places.

The local living indicator identifies that there are less than four of the above facilities within an 800m walking distance for Nowra Riverfront Precinct. So this area should increase the permeability and enhance the the connection to CBD, which to meet residents' living needs.



Local Living indicator, number of local living needs (Source: TfNSW Movement and Place)

## B2. Diversity of dwellings

As shown in the figure, there are four types of housing provided in the area surrounding Nowra Riverfront precinct.

- Mixed use
- General
- Low density
- Medium density

As the study area and CBD are the employment centre and the surrounding residential area cannot meet the residential workers' needs, the major travel method to work is private car. In this case, increasing the accessibility of public transport in the residential areas and street walkability are priorities, aiming to decrease the usage of vehicles.

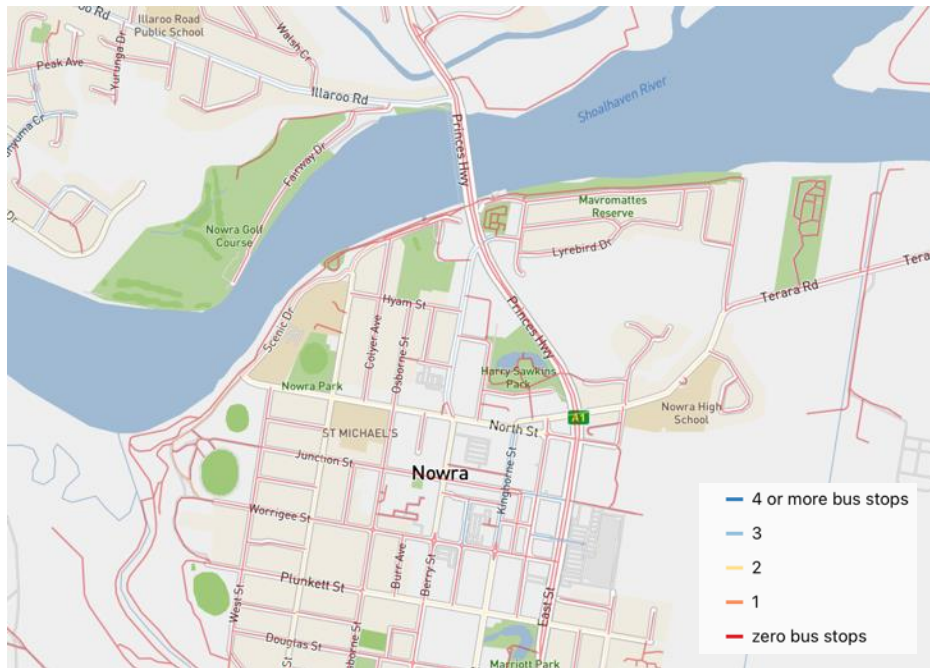


Dwelling Diversity (Source: TfNSW Movement and Place)

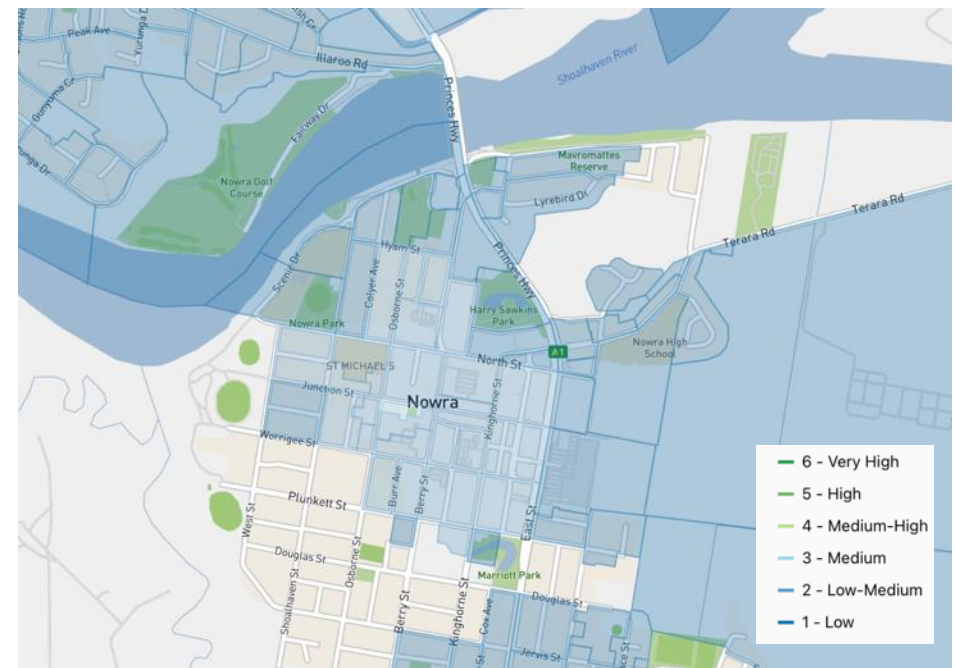
### B3. Bus stop density & Public Transport Accessibility Level

High accessibility of public transport is a key NSW Government goal.

As shown in the figures below, public transport accessibility is low across the Riverfront Precinct and surrounding area. The majority of streets in the neighbourhood do not provide access to a bus stop



Bus stop density (Source: TfNSW Movement and Place)



Public transport accessibility level (Source: TfNSW Movement and Place)

## B4. Tree Canopy

A combination of street trees and awnings create cool corridors on a hot day, and offer shelter from the rain and high winds.

To ensure our streets are inclusive, we must provide sufficient shade and shelter.

The Nowra Master Plan identifies Graham Street as a green grid to connect CBD and the Nowra riverfront Precinct; and Scenic Drive is significant cycling and pedestrian line.

At the mesh block level, the existing trees provide about 11 % to 20% coverage on streets, even some areas reach to 45%.

In this cash, the study area have big potentials to increase the street walkability and community liveability.



Street Tree Coverage at mesh block level, % (Source: TfNSW Movement and Place)



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